



Anekant Education Society's
Tuljaram Chaturchand College of Arts, Science and Commerce,
Baramati
(Autonomous)

Two Year Degree Program in Geography
(Faculty of Science & Technology)

Syllabus for
M.A. /M.Sc. Geography Part-I SEM - I

Choice Based Credit System Syllabus
To be implemented from Academic Year 2019-2020
(2019 Pattern)

Title of the Course: M.A. /M.Sc. Geography**Introduction:**

Tuljaram Chaturchand College has announced updates to the syllabi across various faculties, effective June 2022. In response to the rapid advancements in science and technology, as well as new methodologies in Geography and related disciplines, the Board of Studies in Geography at Tuljaram Chaturchand College, Baramati - Pune, has developed a new syllabus for the M.Sc./M.A. Semester-I Geography courses under the Choice Based Credit System (CBCS). This updated curriculum follows the model guidelines established by the U.G.C.

Pursuing a Master's degree in Geography equips students with the knowledge and skills necessary for a wide range of fulfilling careers. Geographers can find opportunities as urban planners, GIS technicians and analysts, disaster preparedness planners, educators, environmental scientists, remote sensing analysts, transportation planners, demographers, hydrologists, and more.

The Master's program will allow students to explore the spatial organization of physical features and human activities at various scales, from local to global. Students will learn to identify geographical features, understand their locations, and analyze similarities and differences among places. They will also study human-environment interactions and how both physical and cultural landscapes evolve over time. Those focusing on physical geography will gain insights into the processes that shape Earth's climate, landforms, and the distribution of flora and fauna. In contrast, students concentrating on human geography will analyze cultural phenomena such as population dynamics, development, agriculture, language, and religion.

Aims and Objectives of the New Curriculum:

1. To Maintain an Updated Curriculum:

Ensure that the syllabus reflects current trends and advancements in the field of Geography.

2. To Address Rapid Developments in Geographic Knowledge:

Incorporate the latest research and technological advancements to keep pace with the evolving discipline.

3. To Enhance the Quality and Standards of Geography Education:

Improve the overall educational experience and outcomes for students studying Geography.

4. To Provide a Broad Framework for Exchange and Dialogue:

Foster collaboration and communication within the Indian Geography community and related fields, facilitating academic mobility.

5. To Cultivate an Aptitude for Geography Among Promising Students:

Encourage those with potential for advanced study and creative contributions in Geography.

6. To Instill Confidence for Further Exploration:

Equip students with the necessary geographic knowledge applicable to various scientific and humanitarian disciplines, supporting their aspirations for higher studies and original research.

Programme Outcomes (POs) for M.A. Geography:**1. Research-Related Skills and Scientific Temper:**

Develop the ability to analyze scientific literature, formulate and test hypotheses, and identify relevant sources for research. Acquire skills to plan and write research papers while emphasizing academic integrity, research ethics, intellectual property rights, and plagiarism issues.

2. Effective Citizenship and Ethics:

Demonstrate a commitment to social equity and national development, acting with awareness of moral and ethical issues while adhering to professional ethics and responsibilities.

3. Social Competence and Communication Skills:

Show the ability to consider diverse viewpoints and present complex ideas clearly in both written and oral formats. Communicate effectively using appropriate media, fostering interactive skills to meet global competencies and facilitate group conclusions.

4. Disciplinary Knowledge:

Exhibit comprehensive knowledge and a strong theoretical foundation in the field of Geography.

5. Personal and Professional Competence:

Function independently and collaboratively within a team to achieve objectives across interdisciplinary fields. Cultivate interpersonal skills, self-motivation, adaptability, and a commitment to professional ethics.

6. Self-Directed and Life-Long Learning:

Embrace a mindset of lifelong learning, pursuing self-determined goals within the context of socio-technological changes and engaging in independent, ongoing education.

7. Environment and Sustainability:

Understand the societal and environmental implications of scientific solutions and recognize the importance of sustainable development.

8. Critical Thinking and Problem Solving:

Identify and analyze problems by examining surrounding situations holistically, generating viable solutions. Demonstrate critical thinking skills by evaluating scientific texts and themes, applying analytical and lateral thinking to design effective solutions.

Tuljaram Chaturchand College, of Arts, Science and Commerce Baramati

(Autonomous)

Board of Studies in Geography

From 2019-20 To 2021-22

Sr. No.	Name of Member	Designation
1.	Dr. Asaram S. Jadhav Head & Assistant Professor, Department of Geography, T. C. College, Baramati.	Chairman
2.	Dr. Arun S. Magar, Assistant Professor, Department of Geography, T. C. College, Baramati	Internal Member
3.	Mr. V. H. Madane Assistant Professor, Department of Geography, T. C. College, Baramati	Internal Member
4.	Mr. Vinayak D. Chavan Assistant Professor, Department of Geography, T. C. College, Baramati	Internal Member
5.	Mr. Prashant A. Shinde Assistant Professor, Department of Geography, T. C. College, Baramati	Internal Member
6.	Ms. Nayan D. Zagade Assistant Professor, Department of Geography, T. C. College, Baramati	Internal Member
7.	Dr. Amit Dhorade Professor, Department of Geography, Savitribai Phule Pune University, Pune.	External Member Vice-Chancellor Nominee
8.	Dr. Avinash Kadam Associate Professor, Department of Earth Science, Sant Gadagebaba University, Nanded	External Member from other University
9.	Dr. T. P. Shinde Head & Associate Professor, Dept. of Geography, Mudhoji College, Phaltan	External Member from other University
10.	Dr. Ramesh Nanware President, Geo- Solution PVT. LTD. Pune	Industrialist
11.	Dr. Jawahar L. Chaudhari Associate Professor, Department of Geography, M. S. Kakade College, Someshwarnagar, Baramati.	Meritorious Alumni

Semester – I

Sr. No.	Course Code	Core Compulsory Theory Paper (CCTP)	Choice Based Optional Paper (CBOP)	Core Compulsory Practical Paper (CCPP)	Credit
1	GEO-4101	Principles of Geomorphology	-	-	04
2	GEO- 4102	Principles of Climatology	-	-	04
3	GEO-4103	Principles of Economic Geography	-	-	04
4	GEO- 4104	Principles of Population and Settlement Geography	-	-	04
5	GEO- 4105	-	-	Practical in Physical an Geography	04
6	GEO- 4106	-	-	Practical in Human Geography	04
				Total Credits	24

Semester – II

Sr. No.	Course Code	Core Compulsory Theory Paper (CCTP)	Choice Based Optional Paper (CBOP)	Theory / Practical	Credit	Core Compulsory Practical Paper (CCPP)	Credit
1	GEO- 4211	Geoinformatics - I					04
One of the following according to specialization from CCTP							
2	GEO-4201	Coastal Geomorphology	-	-	04	-	04
	GEO-4204	Population Geography	-	-	04	-	
One of the following according to specialization from CCTP							
3	GEO-4202	Fluvial Geomorphology	-	-	04	-	04
	GEO-4205	Geography of Rural Settlements	-	-	04	-	
Optional Paper (CBOP) (1 Theory + 1 Practical)							
4		Give 4	GEO-4212	Geography of Disaster Management	04		04
			GEO-4213	Practical in Surveying	04		04
Core Compulsory Practical Paper (CCPP)							
5						GEO-4214 Practical of Statistical Techniques for Geography	04
Total Credits of Semester - II							24

Semester – III

Course Code	Core Compulsory Theory Paper (CCTP)	Choice Based Optional Paper (CBOP)	Theory / Practical	Credit	Core Compulsory Practical Paper (CCPP)	Credit
GEO-5311	Geoinformatics-II	-	-	04	-	04
GEO-5312	Geographical Thoughts	-	-	04	-	04
One of the following according to specialization from CCTP						
GEO-5301	Tropical Geomorphology	-	-	04	-	04
GEO-5304	Urban Geography	-	-	04	-	04
Choice Based Optional Paper (CBOP) (1Theory + 1Practical)						
		GEO-5313	Practical in Geoinformatics	04	-	04
		GEO-5314	Watershed Management	04	-	04
One of the following according to specialization from CCPP						
				GEO-5302	Practical in Geomorphology	04
				GEO-5305	Practical in Population and Settlement Geography	04
Total Credits of Semester -III						24

Semester – IV

	Core Compulsory Theory Paper (CCTP)	Choice Based Optional Paper (CBOP)	Theory / Practical	Credit	Core Compulsory Practical Paper (CCPP)	Credit
GEO-5401	Geography of India	-	-	-	-	04
GEO-5402	Oceanography	-	-	-	-	04
GEO-5403	Biogeography	-	-	-	-	04
Choice Based Optional Paper (CBOP) (1Theory + 1Practical)						
		GEO-5411	Geography of Soils	04		08
		GEO-5412	Geostatistics	04		
		GEO-5413	Political Geography	04		
		GEO-5414	Regional Planning	04		
		GEO-5415	Tourism Geography	04		
		GEO-5416	Social Geography	02		
		GEO-5417	Interpretation of Topographical Maps & Village Survey / Project work	04		
Core Compulsory Practical Paper (CCPP)						
				GEO-5406	Dissertation / Research Project	04
Total Credits of Semester - IV						24

Mandatory 12 additional/ add-on credits for Post Graduate Programmes**Note:**

- 1. 6 credits from Group - 1 are compulsory**
- 2. Choose minimum 6 credits from Group - 2 to Group - 7**

Group-1	Human Rights Awareness Course (Semester-I):		02 credit
	Cyber Security Awareness Course (Semester-I)		02 credit
	Cyber Security Awareness Course (Semester-II)		02 credit
Group-2 Skill Component Courses	1. Subject Related Certificate Course (Sem. II)		02 credits
	2. Subject Related skill development courses (Sem. III)		02 credits
	3. Subject Related skill development courses (Sem. IV)		02 credits
Group-3	(a)	Representation in Sports at University Level	02 credits
	(b)	Representation in Sports at State Level / National level	02 credits
	(c)	Representation in Sports at International (overseas) Level	04 credits
Group-4	(a)	Selection in AVISHKAR at University Level	02 credits
Group-5	(a)	Research paper publication at National level	02 credits
	(b)	Research paper publication at International (overseas) level	02 credits
Group-6	(a)	Participation in Summer School/ Internship programme / Short term course (not less than 2 weeks duration)	02 credits
Group-7	(a)	Participation in cultural and co curricular activities/ extracurricular activities/competitions at University level / State Level	02 credit
	(b)	Participation in cultural and cocurricular activities / extracurricular activities/ competitions at International (overseas) level	02 credits

Note : 1) One Credit = 15 Lectures.

2) The Project should be initiated at on the onset of III Semester and submitted during IV

Semester.

3) FY/SY --> 4 Lectures per week.

4) Theory paper be covered with 70% actual teaching (3 actual lectures per week) and 30%

Component (1 lecture per week) of self-study should be further evaluated through Group

Discussion / Seminar / Open Book Test / MCQ / Essay writing / Assignment etc.

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Tuljaram Chaturchand College of Arts, Science and Commerce, Baramati

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Department of Geography**M.A/M.Sc. Geography Syllabus structure****2019 Pattern**

SEM	Course Code	Course title	Course Type	No. of Credits
I	GEO 4101	Principles of Geomorphology	Theory	04
	GEO 4102	Principles of Climatology	Theory	04
	GEO 4103	Principles of Economic Geography	Theory	04
	GEO 4104	Principles of Population and Settlement Geography	Theory	04
	GEO 4105	Practical in Physical Geography	Practical	04
	GEO 4106	Practical in Human Geography	Practical	04
II	GEO 4201	Coastal Geomorphology	Theory	04
	GEO 4202	Fluvial Geomorphology	Theory	04
	GEO 4203	Population Geography	Theory	04
	GEO 4204	Geography of Rural Settlements	Theory	04
	GEO 4211	Geoinformatics - I	Theory	04
	GEO 4212	Geography of Disaster Management	Theory	04
	GEO 4213	Practical in Surveying	Practical	04
	GEO4214	Practical of Statistical Techniques for Geography	Practical	04
III	GEO 5301	Tropical Geomorphology	Theory	04
	GEO 5302	Practical in Geomorphology	Practical	04
	GEO 5303	Urban Geography	Theory	04
	GEO 5304	Practical in Population and Settlement Geography	Practical	04
	GEO 5305	Geoinformatics-II	Theory	04
	GEO 5306	Geographical Thoughts	Theory	04
	GEO 5307	Practical in Geoinformatics	Practical	04
	GEO 5308	Watershed Management	Theory	04

IV	GEO 5401	Geography of India	Theory	04
	GEO 5402	Oceanography	Theory	04
	GEO 5403	Research Methodology	Theory	04
	GEO 5404	Geography of Soil	Theory	04
	GEO 5405	Interpretation of Topographical Maps	Practical	04
	GEO 5406	Research Project	Project	04

M.A./M.Sc. Geography, Syllabus for Semester I**Subject: Principles of Geomorphology****Subject Code: GEO-4101****No. of Credits: 04**
-----**Course Objectives:**

1. To introduce geomorphology, covering its definitions, nature, scope, and historical context.
2. To explore geomorphology and tectonics, focusing on Earth's internal structure, seismic waves, and plate tectonics.
3. To analyze weathering and mass movement processes, identifying various types and their associated landforms.
4. To study hill slopes, including processes, forms, and models of hill slope evolution.
5. To examine fluvial processes and landforms, including stream classification, river dynamics, and the Davisian Cycle of Erosion.
6. To investigate glacial processes, types of glaciers, and the resulting erosional and depositional landforms.
7. To understand coastal processes, analyzing the effects of sea waves, currents, and tides on coastal erosion and deposition.
8. To study aeolian processes in desert environments, focusing on wind erosion, transportation, and the formation of aeolian landforms.

Course Outcomes:**After completion of this course, students will be able to:****CO1:** Describe geomorphology, including its definitions, nature, scope, and historical context.**CO2:** Explain the internal structure of the Earth, seismic waves, and the principles of plate tectonics.**CO3:** Identify and analyze various types of weathering and mass movement processes and their associated landforms.**CO4:** Discuss hill slope processes, forms, and models of hill slope evolution.**CO5:** Analyze fluvial processes, including stream classification, river dynamics, and the Davisian Cycle of Erosion.

CO6: Describe glacial processes, types of glaciers, and the resulting erosional and depositional landforms.

CO7: Examine coastal processes and their impacts on coastal erosion, transportation, and deposition.

CO8: Explore aeolian processes in desert environments, focusing on wind erosion, transportation, and the formation of aeolian landform

Topics and Learning Points

- 1. Introduction to Geomorphology** (6 Lectures)
 - 1.1 Definitions, Nature, and Scope of Geomorphology
 - 1.2 History of Geomorphology
 - 1.3 Basic Concepts in Geomorphology
 - 1.4 Branches of Geomorphology
 - 1.5 Hierarchy of Spatial and Temporal Scales in Geomorphology
 - 1.6 Geologic Timescale

- 2. Geomorphology and Tectonics** (8 Lectures)
 - 2.1 Internal Structure of the Earth
 - 2.2 Seismic Waves and Types
 - 2.3 Wegener's Continental Drift Theory
 - 2.4 Theory of Plate Tectonics and Associated Landforms
 - 2.5 Holmes Convectional Current Theory
 - 2.6 Gravity and Isostasy
 - 2.7 Folds: Types and Landforms
 - 2.8 Faults: Types and Landforms

- 3. Weathering and Mass Movement Processes** (6 Lectures)
 - 3.1 Types of Weathering and Related Landforms
 - 3.2 Types of Mass Movement

- 4. Hill Slopes** (8 Lectures)
 - 4.1 Hill Slope Processes and Forms
 - 4.2 Models of Hill Slope Evolution

- 5. Fluvial Processes and Landforms** (8 Lectures)
 - 5.1 Genetic Classification of Streams
 - 5.2 Playfair's Law
 - 5.3 River and Stream, Drainage Basin, and Drainage Network Patterns
 - 5.4 River Processes: Erosion, Transportation, and Deposition
 - 5.5 Fluvial Landforms: Erosional and Depositional
 - 5.6 Davisian Cycle of Erosion

6. Glacial Processes and Landforms (8 Lectures)

- 6.1 Glacial System: Types of Glaciers
- 6.2 Glacial Processes: Erosion, Transportation, and Deposition
- 6.3 Glacial Landforms: Erosional and Depositional

7. Coastal Processes and Landforms (8 Lectures)

- 7.1 Sea Waves, Currents, and Tides
- 7.2 Coastal Processes: Erosion, Transportation, and Deposition
- 7.3 Coastal Landforms: Erosional and Depositional

8. Aeolian Processes and Landforms (8 Lectures)

- 8.1 Aeolian Environment
- 8.2 Wind Processes: Erosion, Transportation, and Deposition
- 8.3 Aeolian Landforms: Erosional and Depositional
- 8.4 Work of Water in Desert Environments and Associated Landforms

Reference Books

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, London.
4. Christiansen, E.H. & Hamblin, W.K. (2008). *The Earth's Dynamic Systems*. Macmillan, New York and Collier Macmillan, London.
5. Holmes, A. (1944). *Principles of Physical Geology*. Thomas Nelson and Sons Ltd, London.
6. Huggett, R.J. (2008). *Fundamentals of Geomorphology*. Routledge, London and New York.
7. Goudie, A.S. (2004). *Encyclopedia of Geomorphology*. Routledge, London and New York.
8. Kale, V.S. (2014). *Landscapes and Landforms of India*. Springer, London/New York.
9. Kale, V.S. & Gupta, A. (2010). *Introduction to Geomorphology*. Universities Press, Hyderabad.
10. Migon, P. (2010). *Geomorphological Landscapes of the World*. Springer, London/New York.
11. Ollier, C.D. (1981). *Tectonics and Landforms*. Longman, London.
12. Singh, S. (2011). *Geomorphology*. Prayag Pustak Bhawan, Allahabad.
13. Siddhartha, K. (2001). *The Earth's Dynamic Surface*. Kishore, Delhi.
14. Spark, B.W. (1972). *Geomorphology*. Longman, New York.

15. Steers, A. (1958). *The Unstable Earth*. Methuen, London.
16. Strahler, A.H. & Strahler, A.N. (1992). *Modern Physical Geography*. John Wiley, New York.

Choice Based Credit System Syllabus (2019 Pattern)

Mapping of Program Outcomes with Course Outcomes**Class:** M.A./MSc. Geography I**Subject:** Geography**Course:** Principles of Geomorphology**Course Code:** GEO 4101**Weightage:** 1= Weak or low relation, 2= Moderate or partial relation, 3= Strong or direct relation

Course Outcomes	Program Outcomes (POs)							
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
CO 1				3				
CO 2		2						
CO 3				3				
CO 4				2				
CO 5		2				2	2	
CO 6						2		
CO 7						2		

Justification for the mapping**PO 2: Effective Citizenship and Ethics:**

CO2- A comprehensive understanding of fluvial processes empowers citizens to make informed decisions, promote sustainable practices, and advocate for ethical policies that safeguard water resources and the broader environment. This knowledge is essential for effective citizenship and contributing to a more sustainable and ethically responsible society.

CO5- The role of fluvial processes in effective citizenship and ethics is centered around informed decision-making, responsible behaviors, and active participation in the protection and sustainable management of river systems. By understanding and respecting fluvial dynamics, citizens contribute to a more resilient, sustainable, and ethically conscious society.

PO4: Disciplinary Knowledge:

CO1- The concept of a drainage basin and its interconnected components is fundamental to disciplines such as hydrology, geography, environmental science, and civil engineering. It provides a framework for understanding water movement, managing water resources, and

making informed decisions about land use and environmental conservation.

CO3-Understanding the characteristics of drainage basin hydrology, including precipitation, runoff, and stream flow patterns, is essential for various disciplines such as hydrology, meteorology, civil engineering, and environmental science. This knowledge contributes to effective water resource management, flood prediction, and the sustainable development of watersheds.

CO4- Understanding these different flow types within a river system is crucial for disciplines such as hydrology, ecology, geology, civil engineering, and environmental science. This knowledge contributes to effective water resource management, sustainable river basin planning, and the preservation of aquatic ecosystems.

PO 6: Self-directed and life-long Course:

CO5-The role of fluvial processes in self-directed and lifelong Course is instrumental in fostering interdisciplinary knowledge, critical thinking, problem-solving skills, adaptability, and an appreciation for the environment. Individuals who engage in continuous Course about fluvial systems are better equipped to navigate a world shaped by complex interactions between human activities and natural processes.

CO6- Studying the factors influencing the formation and evolution of river channels is not only intellectually stimulating but also empowers individuals to become lifelong learners with a deep appreciation for Earth's dynamic processes and the interconnectedness of natural systems.

CO7- Utilizing measurement techniques and tools is not only instrumental in acquiring specific knowledge within a discipline but also in developing a range of transferable skills. These skills, acquired through self-directed and lifelong Course, empower individuals to navigate a dynamic and ever-changing world, fostering adaptability, critical thinking, and continuous personal and professional growth.

PO7: Environment and Sustainability:

CO7- Fluvial processes is central to environmental sustainability. Understanding and managing these processes contribute to responsible land use, the protection of ecosystems, and the sustainable use of water resources. By incorporating this knowledge into

environmental policies and practices, communities can strive to achieve a balance between human needs and the preservation of natural systems, ensuring the long-term health and resilience of river ecosystems and the broader environment.

M.A./M.Sc. Geography, Syllabus for Semester I**Subject: Principles of Climatology****Subject Code: GEO-4102****No. of Credits: 04**

Course Objectives:

1. To introduce climatology, including its relationship with meteorology and its nature and scope.
2. To explore the evolution, structure, and composition of the Earth's atmosphere, as well as issues like ozone layer depletion.
3. To examine insolation, including solar and terrestrial radiation, and factors affecting it.
4. To understand temperature concepts, measurement techniques, and the effects of temperature inversion.
5. To analyze atmospheric pressure, wind patterns, and models of atmospheric circulation.
6. To investigate atmospheric moisture, including the hydrologic cycle and forms of precipitation.
7. To study atmospheric stability and the characteristics of air masses and fronts.

Course Objectives:**After completion of this course, students will be able to:**

CO1: Describe the nature and scope of climatology and its development in relation to meteorology.

CO2: Explain the evolution, structure, and composition of the Earth's atmosphere, including the implications of ozone depletion.

CO3: Analyze insolation and its variations, including factors affecting solar and terrestrial radiation.

CO4: Discuss temperature measurement methods, controls, and the concept of temperature inversion.

CO5: Evaluate atmospheric pressure distribution, wind patterns, and the general circulation of the atmosphere.

CO6: Describe the hydrologic cycle, forms of precipitation, and methods of measuring atmospheric moisture.

CO7: Assess the stability of the atmosphere, including various lapse rates and characteristics of air masses and fronts.

Topics and Learning Points

1. **Introduction to Climatology** (6 Lectures)
 - 1.1 Meteorology and Climatology
 - 1.2 Nature and Scope of Climatology
 - 1.3 Development of Climatology
 - 1.4 Tropical Climatology
2. **Earth's Atmosphere** (8 Lectures)
 - 2.1 Evolution
 - 2.2 Structure and Composition of Atmosphere
 - 2.3 The Ozone Layer Depletion
 - 2.4 Aurora: Types
3. **Insolation** (10 Lectures)
 - 3.1 Solar and Terrestrial Radiation
 - 3.2 Electromagnetic Spectrum
 - 3.3 Factors Affecting Insolation
 - 3.4 Latitudinal and Seasonal Variation
 - 3.5 Effect of Atmosphere
 - 3.6 Greenhouse Effect
 - 3.7 Heat Budget
 - 3.8 Mechanisms of Heat Transfer
4. **Temperature** (6 Lectures)
 - 4.1 Heat and Temperature
 - 4.2 Temperature Measurements and Controls
 - 4.3 Lapse Rate
 - 4.4 Temperature Inversion
 - 4.5 Types of Inversion
5. **Atmospheric Pressure and Winds** (12 Lectures)
 - 5.1 Pressure Measurement and Distribution
 - 5.2 Factors Affecting Distribution of Pressure
 - 5.3 Wind Observation and Measurement

- 5.4 Factors Affecting Wind
- 5.5 Geostrophic Wind and Gradient Wind
- 5.6 Models of General Circulation of the Atmosphere
- 5.7 Eddy Theory
- 5.8 Local Winds
- 5.9 Jet Stream
- 5.10 Cyclones and Anticyclones
- 6. **Atmospheric Moisture** (6 Lectures)
 - 6.1 Atmospheric Moisture
 - 6.2 Hydrologic Cycle
 - 6.3 Evaporation and Condensation
 - 6.4 Forms of Condensation
 - 6.5 Precipitation
 - 6.6 Types of Precipitation
 - 6.7 Measurement of Humidity
- 7. **Atmospheric Stability** (6 Lectures)
 - 7.1 Lapse Rates: Normal, Environmental, Dry Adiabatic, and Wet Adiabatic
 - 7.2 Stable and Unstable Air
 - 7.3 Absolute Stability
 - 7.4 Absolute Instability
 - 7.5 Conditional Instability
- 8. **Air Masses and Fronts** (6 Lectures)
 - 8.1 Introduction to Air Masses and Fronts
 - 8.2 Types of Air Masses
 - 8.3 Types of Fronts

Reference Books

1. Critchfield, H.J. (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. Savindra Singh (2005): Climatology. Prayag Pustak Bhawan, Allahabad.
6. Trewartha: Introduction to Weather and Climate.
7. More, Pagar, Thorat (2014): Elements of Climatology & Oceanography. Atharv Publication, Pune.

Choice Based Credit System Syllabus (2019 Pattern)

Mapping of Program Outcomes with Course Outcomes

Class: M.A./MSc. Geography I

Subject: Geography

Course: Principles of Climatology

Course Code: GEO 4102

Weightage: 1= Weak or low relation, 2= Moderate or partial relation, 3= Strong or direct relation

Program Outcomes (POs)								
Course Outcomes	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
CO 1				2			2	
CO 2							3	
CO 3							2	2
CO 4				3				
CO 5							3	
CO 6				2			2	
CO 7					2			

Justification for the mapping

PO4: Disciplinary Knowledge:

CO1- Comprehensive understanding of climatology concepts is highly useful for disciplinary knowledge across a range of fields. It informs decision-making processes, guides sustainable practices, and contributes to addressing the complex challenges associated with climate variability and change.

CO4- Comprehensive understanding of the composition and layers of the atmosphere is essential for various disciplines. It forms the basis for studying weather patterns, climate dynamics, environmental interactions, space exploration, and more, contributing to a holistic

understanding of Earth's atmospheric system.

CO6- Knowledge of global wind circulation and wind patterns is a cornerstone for various scientific disciplines. It provides insights into atmospheric dynamics, climate variability, and the interconnectedness of Earth's systems, contributing to advancements in weather forecasting, climate science, environmental management, and the sustainable use of natural resources.

PO5: Personal and professional competence:

CO7- Identifying the ideal source regions of air masses and understanding the weather conditions associated with fronts is essential for critical thinking and problem-solving in meteorology and related disciplines. This knowledge informs weather forecasting, emergency response planning, infrastructure design, and various aspects of environmental management, contributing to informed decision-making and the development of effective solutions to weather-related challenges.

PO7: Environment and Sustainability:

CO1- A deep understanding of climatology concepts is essential for critical thinking and problem-solving in diverse fields. It enables individuals to analyze complex environmental challenges, evaluate scientific information, and develop practical solutions to address the impacts of climate variability and change.

CO2-Comprehending the Earth's evolution, particularly the changes in its atmosphere, is a cornerstone for critical thinking and problem-solving in addressing contemporary global challenges, encouraging sustainable practices, and fostering advancements across multiple disciplines.

CO3-The laws of radiation and solar radiation's interaction with the atmosphere is fundamental for critical thinking and problem-solving across various fields, from climate science and renewable energy to urban planning, agriculture, health, and beyond. It forms the basis for addressing challenges and creating innovative solutions in a wide array of disciplines.

CO5-Understanding the factors affecting solar radiation distribution empowers critical thinkers to address challenges related to energy, climate, agriculture, construction, and policy-making by considering these influences and devising innovative solutions.

CO6-Comprehending global wind circulation and wind patterns empowers critical thinkers to address challenges in weather prediction, climate modeling, renewable energy, aviation, agriculture, disaster management, urban planning, and various other fields. It provides a foundation for problem-solving and innovation by leveraging the insights derived from these wind dynamics.

PO7: Critical thinking and problem solving:

CO3- The laws of radiation and how solar radiation interacts with the atmosphere, critical thinkers can address challenges related to climate change, renewable energy, weather forecasting, environmental impact, health, technology, and design. It serves as a foundation for problem-solving and innovation in diverse fields, facilitating the development of sustainable solutions and informed decision-making.

M.A. /M.Sc. Geography, Syllabus for Semester I**Subject: Principles of Economic Geography****Subject Code: GEO-4103****No. of Credits: 04**
-----**Course Objectives:**

1. To introduce the concepts, definitions, and approaches in Economic Geography.
2. To classify and analyze economic activities and the factors influencing their location.
3. To define resources, classify them, and evaluate their significance in economic development.
4. To understand the concept of economic development and the various measures and models associated with it.
5. To examine the role of transportation and communication in economic activities.
6. To analyze trade types, factors affecting international trade, and the role of e-commerce.
7. To explore the economic development of India, including historical perspectives and contemporary challenges.

Course Outcomes:**After completion of this course, students will be able to:****CO1:** Define and explain the scope and significance of Economic Geography.**CO2:** Classify economic activities and assess the factors influencing their geographical distribution.**CO3:** Identify and classify resources and evaluate their role in sustainable economic development.**CO4:** Analyze the measures of economic development and classify countries based on economic indicators.**CO5:** Discuss various modes of transportation and communication and their impact on economic activities.**CO6:** Evaluate the dynamics of international trade, including problems and prospects for India.**CO7:** Assess the economic development trends in India, including the impact of globalization and regional disparities.

Topics and Learning Points

- 1. Introduction to Economic Geography (6 Lectures)**
 - 1.1 Definition, nature, and scope
 - 1.2 Approaches: traditional and modern
 - 1.3 Recent trends in Economic Geography

- 2. Economic Activity (10 Lectures)**
 - 2.1 Definition and classification of economic activities
 - 2.2 Factors of location of economic activities: physical, social, economic, and technical
 - 2.3 Location of economic activities: Weber's and Von Thunen's model

- 3. Resources (8 Lectures)**
 - 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

- 4. Economic Development (8 Lectures)**
 - 4.1 Definition and concept of economic development
 - 4.2 Measures of economic development
 - 4.3 Classification of countries on the basis of economic development
 - 4.4 Rostow's and Myrdal's model

- 5. Transport and Communication (6 Lectures)**
 - 5.1 Various modes of transport
 - 5.2 Geographical factors and transportation
 - 5.3 Various means of communication
 - 5.4 Role of transport and communication in the economy

- 6. Trade (6 Lectures)**
 - 6.1 Definition and types of trade
 - 6.2 Factors affecting international trade

6.3 Problems and prospects of international trade with reference to India

6.4 E-commerce

7. Economic Development in India

(6 Lectures)

7.1 Pre-and post-independence economic development in India

7.2 Green revolution in India

7.3 Need for a new green revolution in India

7.4 Regional disparities in India

7.5 Impact of globalization and privatization on economic development

8. Contemporary Issues

(10 Lectures)

8.1 Regional disparities in Maharashtra

8.2 Role of the IT industry in economic development in Maharashtra

8.3 Case study of one local agro-based industry: Economic analysis, problems, and prospects (e.g., sugar factory, winery, agro-tourist centre)

Reference Books

1. Alexander, J.W. (1977): Economic Geography, Prentice Hall of India Pvt. Ltd., New Delhi.
2. Chorley, R.J. and Haggett, P. (1970): Socio Economic Models in Geography, Concept Publishing Company Pvt. Ltd., New Delhi.
3. Garnier, B.J. and Delobez, A. (1979): Geography of Marketing, Longman.
4. Hartshorne, T.A. and Alexander, J.W. (2010): Economic Geography, PHI Course, New Delhi.
5. Kanan Chatterjee (2015): Basics of Economic Geography.
6. Knox, P., Agnew, J., and McCarthy, L. (2008): The Geography of the World Economy, Hodder Arnold, London.
7. Lloyd, P. and Dicken, B. (1972): Location in Space: A Theoretical Approach to Economic Geography, Harper and Row, New York.
8. Mitra, A. (2002): Resource Studies, Sreedhar Publishers, Kolkata.
9. Patil, S.G., Suryawanshi, R.S., Pacharne, S., and Choudhar, A.H. (2014): Economic Geography, Atharav Prakashan, Pune.
10. Ray, P.K. (1997): Economic Geography, New Central Book Agency (P) Ltd., Calcutta.
11. Saxena, H.M. (2013): Economic Geography, Rawat Publication, Jaipur.

12. Siddhartha, K. (2000): Economic Geography: Theories, Processes, and Patterns, Kisalaya Publications, New Delhi.
13. Smith, D.M. (1971): Industrial Location: An Economic Geographical Analysis, John Wiley and Sons, New York.
14. Pagar, Thorat & More (2015): Agriculture Geography (Marathi), Atharv Publication, Pune.
15. More, J. (2014): Geography & Agriculture for MPSC Examination (Marathi), Atharv Publication, Pune.

Choice Based Credit System Syllabus (2019 Pattern)

Mapping of Program Outcomes with Course Outcomes

Class: M.A./MSc. Geography I

Subject: Geography

Course: Principles of Economic Geography

Course Code: GEO

4103

Weightage: 1= Weak or low relation, 2= Moderate or partial relation, 3= Strong or direct relation

Program Outcomes (POs)								
Course Outcomes	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
CO 1				2	3			
CO 2		2						
CO 3		2	3					
CO 4						2		
CO 5			3					
CO 6							2	
CO 7				2				

Justification for the mapping

PO 2: Effective Citizenship and Ethics:

CO2- By understanding the demand of the population and the availability of raw materials, individuals can actively participate in ethical decision-making, advocate for sustainable practices, and contribute to a more equitable and environmentally responsible society. It fosters a sense of global citizenship, encouraging actions that prioritize the well-being of both

current and future generations.

CO3- Being aware of these factors and advocating for fair labor practices is part of effective citizenship. Citizens can contribute to ethical industrial practices by supporting companies that prioritize fair labor conditions, promoting transparency, and advocating for policies that protect workers' rights. Additionally, participating in discussions about labor practices and staying informed about industry standards can contribute to a more ethical and responsible industrial landscape.

PO 3: Social competence and communication skills:

CO3- Being aware of labor-related aspects in industrial zones enhances social competence by promoting empathy, cultural awareness, and collaboration. It also improves communication skills. An understanding of labor dynamics in industrial zones enhances social competence by fostering effective communication, promoting collaboration, and encouraging advocacy for ethical practices. These skills are valuable in a professional context and contribute to building strong relationships within and beyond the workplace.

CO5- A well-developed and efficient transportation system is integral to a nation's economic prosperity, and it also plays a crucial role in enhancing social competence and communication skills by connecting people and facilitating the exchange of ideas and resources.

PO 4: Disciplinary Knowledge:

CO1- Understanding these economic aspects in transportation is critical for making informed decisions, ensuring sustainable development, and addressing societal needs. It also highlights the interconnected nature of disciplines and the importance of a holistic approach to solving transportation challenges.

Co7- By delving into the specifics of these industries, scholars, students, and professionals can gain a holistic view of India's economy, its global connections, and the intricate dynamics shaping various sectors.

PO5: Personal and professional competence:

CO1- Competence in these economic aspects empowers individuals to make informed decisions, adapt to changes, manage resources effectively, and navigate both personal and professional landscapes with greater confidence and success.

PO6: Self-directed and Life-long Course:

CO4- Course about the value of land and its proper use enables individuals to make informed decisions about investments, lifestyle choices, environmental conservation efforts, and community development. It fosters a deeper understanding of the intersection between economics, ecology, and human activities, empowering self-directed learners to engage with their surroundings more meaningfully and sustainably.

PO7: Environment and Sustainability:

CO6- By comprehending these factors, policymakers, urban planners, and industry stakeholders can make informed decisions that promote industrial locations and practices aligned with environmental sustainability goals. This includes encouraging the adoption of cleaner technologies, promoting resource efficiency, reducing pollution, and minimizing the ecological footprint of industrial activities.

M.A./M.Sc. Geography, Syllabus for Semester I

Subject: Principles of population and settlement geography

Subject Code: GEO-4104

No. of Credits: 04

Course Objectives:

1. To understand the definition, nature, and scope of Population and Settlement Geography.
2. To analyze the factors affecting population distribution and density.
3. To examine the components of population growth and their implications.
4. To evaluate the structure and characteristics of different populations.
5. To explore the concepts of fertility and mortality in demographic studies.
6. To classify human settlements and understand their patterns.
7. To study rural and urban settlements and their socio-economic implications.

Course Outcomes:

After completion of this course, students will be able to:

CO1 Define and explain key concepts in Population and Settlement Geography.

CO2 Analyze population distribution patterns and their influencing factors.

CO3 Assess the impact of demographic changes on society.

CO4 Interpret population structure data and its significance.

CO5 Understand and explain fertility and mortality trends.

CO6 Classify different types of human settlements and their characteristics.

CO7 Critically evaluate case studies related to rural and urban settlements.

Topics and Learning Points**1. Introduction to Population and Settlement Geography (8 Lectures)**

- 1.1 Definition, nature, and scope of Population Geography
- 1.2 Development of Population Geography as a discipline
- 1.3 Approaches to the study of Population Geography
- 1.4 Definition, subject matter, and scope of Settlement Geography
- 1.5 Development of Settlement Geography
- 1.6 Approaches: genetic, spatial, and ecological

2. Population Distribution (8 Lectures)

- 2.1 Population distribution and factors affecting distribution
- 2.2 Density: definition and types
- 2.3 Factors affecting density of population
- 2.4 Population density in India
- 2.5 Urbanization: definition and stages
- 2.6 Trends and levels of urbanization in India

3. Population Growth and Trend (8 Lectures)

- 3.1 Concept of population growth
- 3.2 Components of population growth (fertility, mortality, and migration)
- 3.3 Theory of Demographic Transition
- 3.4 Malthusian Theory
- 3.5 Population growth and trends in India
- 3.6 Migration: concepts of migrant, immigration, and emigration

4. Population Structure and Characteristics (6 Lectures)

- 4.1 Age and sex structure
- 4.2 Concept of aging of populations
- 4.3 Dependency ratio
- 4.4 Sex ratio: definition and affecting factors
- 4.5 Sex ratio in India
- 4.6 Population composition: religious, linguistic, ethnic, marital, and educational
- 4.7 Literacy: definition and measures
- 4.8 Literacy in India

5. Fertility and Mortality (6 Lectures)

- 5.1 Concepts: fertility, fecundity, sterility, cohort
- 5.2 Crude birth rate and total fertility rate
- 5.3 Concept of baby boom
- 5.4 Concepts of mortality and morbidity
- 5.5 Death rate and its measures
- 5.6 Levels and trends of mortality in India

6. Human Settlement (8 Lectures)

- 6.1 Classification: urban and rural

- 6.2 Rural-urban dichotomy
- 6.3 Site and situation aspects in settlement
- 6.4 Types: compact, semi-compact, hamleted, and dispersed
- 6.5 Patterns of settlement

7. Rural Settlements**(8 Lectures)**

- 7.1 Definition and classification of villages
- 7.2 Size and spacing of villages
- 7.3 Nearest neighbor analysis
- 7.4 Concepts of dispersion and nucleation
- 7.5 Factors affecting dispersion and nucleation

8. Urban Settlements**(8 Lectures)**

- 8.1 Concepts: urban place, urban agglomeration, urban sprawl
- 8.2 Urban settlement hierarchy
- 8.3 Urban-rural fringe
- 8.4 Rank-size rule
- 8.5 Central Business District (CBD)

Reference Books

1. Bhende, A. and 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. (Rep. 2010): 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. Hudson, (1970): Geography of Settlement, Macdonald & Evans Ltd., London.
7. Khullar, D. R. (2011): India: A Comprehensive Geography, Kalyani Publication, New Delhi.
8. Michel Chisholm (1973): Studies in Human Geography, London.
9. Mishra, R.S. (1975): Economics of Growth and Development, Somaiya Publication Pvt. Ltd.

Choice Based Credit System Syllabus (2019 Pattern)

Mapping of Program Outcomes with Course Outcomes**Class:** M.A./MSc. Geography I**Subject:** Geography**Course:** Principles of population and settlement Geography**Course Code:** GEO

4104

Weightage: 1= Weak or low relation, 2= Moderate or partial relation, 3= Strong or direct relation

Program Outcomes (POs)								
Course Outcomes	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
CO 1				2				
CO 2					3			
CO 3			3					
CO 4					2			
CO 5						2		
CO 6			3					
CO 7						2		

Justification for the mapping**PO3: Social competence and communication skill:**

CO3- A strong foundation in demographic concepts and population theories enhances social competence by providing a deeper understanding of societal issues, fostering better communication skills across diverse audiences, and enabling more informed and empathetic engagement with contemporary socio-economic challenges.

CO6- Understanding these factors, individuals can engage in more informed and empathetic discussions, communicate effectively about social, economic, and environmental issues related to settlement patterns, and contribute meaningfully to discussions on urban development, community empowerment, and equitable resource distribution.

PO4: Disciplinary Knowledge:

CO1- By grasping these basic principles and concepts in population geography, scholars, researchers, policymakers, and students gain a comprehensive understanding of how human populations are distributed, how they evolve over time, and how these patterns shape societies, economies, and the environment. This interdisciplinary knowledge aids in addressing societal challenges, planning for sustainable development, and formulating effective policies to meet the needs of diverse populations.

PO5: Personal and professional competence:

CO2- By applying demographic concepts and population theories to explain past and present population characteristics, individuals gain insights that empower them to make informed decisions, predict trends, understand societal changes, and develop strategies that align with demographic realities in both personal and professional spheres.

CO4- Understanding the worldwide distribution of population is invaluable for personal growth, professional development, decision-making, and fostering a more globally aware and culturally sensitive approach to various aspects of life and work.

PO6: Self-directed and Life-long Course:

CO5- Course various theories in population geography fosters a range of skills and attributes that are valuable for self-directed and lifelong Course. It promotes critical thinking, interdisciplinary understanding, problem-solving, adaptability, and continual engagement with knowledge, enhancing personal and professional growth.

CO7- Comprehending the major types and patterns of settlements enriches self-directed and lifelong Course by providing a multifaceted understanding of historical, cultural, geographical, social, and environmental aspects. It encourages a deeper exploration of societal dynamics and contributes to personal and professional growth.

M.A./M.Sc. Geography, Syllabus for Semester I**Subject: Practical in physical Geography****Subject Code: GEO-4105****No. of Credits: 04**
-----**Course Objectives:**

1. To understand the principles of drainage network analysis and methods of stream ordering.
2. To conduct drainage basin relief analysis using grid methods.
3. To develop skills in creating climatic element diagrams.
4. To interpret various climatic diagrams and their applications in geography.
5. To analyze climatic classification systems, particularly Köppen's classification.
6. To apply geomorphological techniques to practical scenarios in geography.
7. To enhance map interpretation skills through practical exercises in geomorphology and climatology.

Course Outcomes:**After the completion of the course, Students will be able to**

- CO1 Analyze drainage networks using Strahler's and Horton's methods.
- CO2 Proficiency in creating and interpreting relief maps and hypsometric analyses.
- CO3 Competence in constructing climatic element diagrams such as climatographs and hythergraphs.
- CO4 Understanding of the applications of climatic classification in geographical studies.
- CO5 Capability to conduct practical exercises in geomorphology and climatology effectively.
- CO6 Enhanced skills in map interpretation and geographical analysis.
- CO7 Ability to integrate theoretical knowledge with practical applications in geography.

Topics and Learning Points**1. Drainage Network (2 Hours)**

- 1.1 Stream ordering and bifurcation ratio
- 1.2 Strahler's method
- 1.3 Horton's method

2. Drainage Basin Relief Analysis (3 Hours)

- 2.1 Relief analysis for a 3 to 5 order drainage basin (based on grid method)
- 2.2 Absolute relief map
- 2.3 Relative relief map
- 2.4 Hypsometric analysis
- 2.5 Basin cross profiles
- 2.6 Block diagram (multiple section)

3. Climatic Element Diagrams (3 Hours)

- 3.1 Climatograph
- 3.2 Climograph
- 3.3 Simple wind rose
- 3.4 Hythergraph
- 3.5 Water budget

4. Climatic Classification (2 Hours)

- 4.1 Köppen's classification

Reference Books

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
6. Strahler: Physical Geography
7. Robinson: Elements of Cartography, 6th Edition

Choice Based Credit System Syllabus (2019 Pattern)

Mapping of Program Outcomes with Course Outcomes**Class:** M.A./MSc. Geography I**Subject:** Geography**Course:** Practical in physical Geography**Course Code:** GEO 4105**Weightage:** 1= Weak or low relation, 2= Moderate or partial relation, 3= Strong or direct relation

Program Outcomes (POs)								
Course Outcomes	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
CO 1				2				
CO 2						3		
CO 3				3		2		
CO 4			2					
CO 5				2				
CO 6			2	2				
CO 7						2		

Justification for the mapping**PO3: Social competence and communication skill:**

CO4- knowledge about the worldwide distribution of climate and drainage networks enhances social competence by fostering empathy, improving communication skills across diverse groups, and enabling informed discussions and collaborations on global environmental issues.

CO6- Awareness of the factors influencing drainage networks contributes to social competence and communication skills by empowering individuals to engage in informed discussions, advocate for sustainable practices, collaborate effectively with communities, and address environmental challenges in a holistic manner.

PO4: Disciplinary Knowledge:

CO1- Understanding of the basic concept and classification of drainage basins is essential across disciplines. It forms the foundation for studying landscapes, managing water resources, preserving ecosystems, planning infrastructure, and formulating policies that ensure sustainable development and environmental conservation.

CO3- Climate classification is a fundamental tool that provides a framework for understanding, studying, and making informed decisions across various disciplines. It serves as a basis for research, planning, and implementing strategies that consider the diverse environmental conditions experienced across the globe.

CO5- Awareness of the various types of drainage systems is invaluable across disciplines. It contributes to understanding landscape formation, managing water resources, planning infrastructure, assessing environmental impacts, and making informed decisions in diverse fields that interact with the natural environment.

CO6- knowledge of the factors affecting drainage networks is fundamental across disciplines. It facilitates understanding landscape processes, predicting water flow, managing natural resources, planning infrastructure sustainably, assessing environmental impacts, and making informed decisions related to land use and water management.

PO6: Self-directed and Life-long Course:

CO2- Conducting weather and climate observations in the field is a powerful tool for self-directed and lifelong Course. It empowers students to explore, think critically, develop skills, and foster a genuine interest in understanding the natural world.

CO3- Course about climate classification methods promotes self-directed and lifelong Course by nurturing critical thinking, data interpretation skills, environmental awareness, interdisciplinary connections, and a passion for exploring and understanding the complexities of climates worldwide.

CO7- exploring the major types and patterns of drainage basins promotes self-directed and lifelong Course by fostering critical thinking, interdisciplinary connections, spatial visualization skills, problem-solving abilities, and an enduring curiosity to understand the complex geological processes shaping our world.

M.A./M.Sc. Geography, Syllabus for Semester I**Subject: Practical in Human Geography****Subject Code: GEO-4106****No. of Credits: 04**

Course Objectives:

1. To understand crop combinations and diversification using Weaver's and JasbirSingh's methods.
2. To analyze network structure through various measurement techniques.
3. To explore population indices and projections for demographic studies.
4. To learn measures of nucleation and dispersion in population geography.
5. To apply analytical methods to evaluate agricultural and demographic data.
6. To develop skills in calculating and interpreting various geographical indices.
7. To enhance knowledge of statistical methods applicable to geography

Course Outcomes:**After the completion of the course, Students will be able to**

CO1 Ability to analyze crop combinations and diversifications using Weaver's and Jasbir Singh's methods.

CO2 Proficiency in measuring network structure using ratio measures and various indices.

CO3 Competence in interpreting population indices such as age-sex pyramids and infant mortality rates.

CO4 Understanding of population growth rates and projection techniques.

CO5 Capability to calculate measures of nucleation and dispersion effectively.

CO6 Enhanced skills in applying statistical methods to geographical data.

CO7 Ability to integrate theoretical knowledge with practical applications in agricultural and population geography.

Topics and Learning Points

- 1. Crop Combination and Crop Diversification** (2 Hours)
1.1 Weaver's method
1.2 Jasbir Singh
- 2. Measures of Network Structure** (3 Hours)
2.1 Ratio measure
2.2 Alpha, beta, gamma, etc.
2.3 Associated number, cyclomatic number
- 3. Population Indices and Projection** (3 Hours)
3.1 Age-sex pyramid
3.2 Infant mortality rate
3.3 Population growth rate
3.4 Population projection
- 4. Measures of Nucleation and Dispersion** (2 Hours)
4.1 Rank size rule
4.2 Nearest neighbor analysis
4.3 Calculation of centrality

Reference Books

1. Bhende, A. and 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. (Rep. 2010): Geography of Population, Concepts, Determinants and Patterns, Kalyani Publishers, New Delhi.
4. Clark, J. I. (1973): Population Geography, Pergamon Press Ltd., Oxford.
5. Hudson, (1970): Geography of Settlement, Macdonald & Evans Ltd., London.
6. Khullar, D. R. (2011): India A Comprehensive Geography, Kalyani Publication, New Delhi.
7. Michel Chisholm (1973): Studies in Human Geography, London.

Choice Based Credit System Syllabus (2019 Pattern)

Mapping of Program Outcomes with Course Outcomes

Class: M.A./MS.c Geography I

Subject: Geography

Course: Practical in Human Geography

Course Code: GEO 4106

Weightage: 1= Weak or low relation, 2= Moderate or partial relation, 3= Strong or direct relation

Program Outcomes (POs)								
Course Outcomes	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
CO 1			2	2				
CO 2						2		
CO 3			3					
CO 4			3			2		
CO 5				2	2			
CO 6			3					
CO 7			2			2		

Justification for the mapping

PO3: Social competence and communication skill:

CO1- proficiency in growth rate calculations goes beyond numerical skills; it cultivates the ability to comprehend, analyze, and communicate data effectively. This skill set enhances social competence by enabling individuals to engage in informed discussions, advocate for evidence-based decisions, and contribute meaningfully to various societal and interdisciplinary conversations.

CO3- By studying crop combinations, individuals develop a holistic understanding of the interplay between agriculture, society, economy, and the environment. This knowledge enhances social competence by fostering empathy, promoting informed discussions, and enabling effective communication on issues related to agriculture, food systems, and societal well-being.

CO4-Applying theories from human geography to society enhances social competence by fostering critical analysis, interdisciplinary understanding, cultural sensitivity, effective communication, a global perspective, community engagement, problem-solving abilities, and empathy. These skills are invaluable in navigating and contributing to a complex and diverse society.

CO6- Understanding population structure and characteristics across different countries enhances social competence by promoting cultural sensitivity, global perspective, effective communication, empathy, analytical skills, community engagement, informed decision-making, and active participation in societal issues. These skills are crucial for fostering inclusive and respectful interactions in diverse communities and global settings.

CO7- Understanding and predicting population growth in different countries enhance social competence by promoting cultural sensitivity, global awareness, effective communication, critical thinking, community engagement, informed decision-making, and fostering empathy and social responsibility. These skills are crucial for engaging constructively in discussions and addressing societal challenges in an increasingly diverse and dynamic world.

PO4: Disciplinary Knowledge:

CO1- Understanding growth rate calculations provides a foundational skill set applicable across various disciplines. It enables individuals to analyze trends, make informed decisions, and contribute meaningfully to fields that rely on data interpretation, forecasting, and planning.

CO5- By comprehending population dynamics and their role in shaping policies, individuals gain a multidisciplinary understanding that spans various fields. This knowledge allows for informed decision-making, strategic planning, and the development of effective policies that cater to the evolving needs of societies, economies, and environments.

PO5: Personal and professional competence:

CO5-Understanding population dynamics enhances personal and professional competence by enabling informed decision-making, fostering adaptability, strengthening leadership skills, promoting cultural competence, enhancing problem-solving abilities, guiding ethical

considerations, and fostering a mindset of continuous Course and adaptation. These competencies are invaluable across various professions and contribute to personal growth and professional success.

PO6: Self-directed and Life-long Course:

CO2- The ability to calculate rates and apply them to various states in India fosters self-directed and lifelong Course by promoting data analysis skills, regional understanding, research exploration, statistical proficiency, critical thinking, policy awareness, interdisciplinary Course, and a global outlook. These skills are instrumental in navigating and understanding the complexities of a diverse and dynamic society.

CO4- Applying theories in human geography to understand society promotes self-directed and lifelong Course by fostering critical analysis, interdisciplinary understanding, cultural sensitivity, research exploration, problem-solving skills, personal reflection, communication abilities, and a commitment to continuous Course. These skills are vital for navigating a complex and diverse world and contributing meaningfully to society.

CO7- Understanding population growth and predicting future settings facilitates self-directed and lifelong Course by promoting data analysis skills, understanding demographic trends, fostering research exploration, applying statistical techniques, critical thinking, policy awareness, global perspectives, and personal decision-making based on anticipated demographic changes. These skills are crucial for navigating a rapidly changing world and making informed choices across various facets of life.