



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-II SEM - III

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.

Anekant Education Society's

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 II , Syllabus for Semester III**Subject: Tropical Geomorphology****Subject Code: GEO-5301****No. of Credits: 04**
-----**Course Objectives:**

1. To describe the concept of a drainage basin and its significance within the context of fluvial geomorphology.
2. To explain the basic laws and models governing fluvial processes and their applications in real-world scenarios.
3. To analyze the characteristics of drainage basin hydrology, including runoff generation and flow patterns.
4. To apply quantitative methods for measuring and assessing fluvial processes and landforms.
5. To evaluate the role of fluvial processes in shaping various landscapes through erosion, transportation, and deposition.
6. To identify the factors influencing the formation and evolution of river channels and their associated features.
7. To measure different flow types in river systems and assess the velocity of river flow using appropriate techniques.

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

CO1: Accurately describe the concept of a drainage basin and its interconnected components, demonstrating an understanding of its significance in fluvial geomorphology.

CO2: Explain the basic laws and models of fluvial processes, enabling application to practical scenarios and enhancing problem-solving skills.

CO3: Analyze the characteristics of drainage basin hydrology, discussing aspects such as runoff generation, channel formation, and discharge variations.

CO4: Apply quantitative methods to effectively measure and assess fluvial processes and landforms, demonstrating data collection and analysis skills.

CO5: Evaluate the impact of fluvial processes on landscape formation, identifying key erosional and depositional features and their significance.

CO6: Identify and explain the factors that influence river channel formation and evolution, including sediment transport and channel morphology.

CO7: Measure and assess different flow types within river systems, accurately evaluating river flow velocity using various measurement techniques.

Topics and Learning Points

Unit 1: Introduction to Tropics

Lectures: 06

1.1 Tropical Environment – Definition

1.2 Peculiarities of Tropical Climate

1.3 Classification of Tropics

1.4 Morphogenetic Regions: Temperature, Rainfall, Humidity, Vegetation

Unit 2: Tropical Weathering

Lectures: 12

2.1 Factors Influencing Weathering: Climatic, Geomorphic, Biotic, Geologic, Chronological, and Site Factors

2.2 Solubility and Mobility of Minerals in Tropics

2.3 Weathering Profile: Deep Weathering Profiles – Nature, Development, and Distribution

2.4 Tropical Soils: Process of Soil Formation in Tropics, Clay Minerals

Unit 3: Duricrusts and Laterites

Lectures: 12

3.1 Duricrusts and Laterites – Definition

3.2 Indurated Laterites: Properties and World Distribution

3.3 Classification by Site, Morphology, and Chronology

3.4 A Complete Account of Various Divisions of Lateritic Profile

3.5 Landform Development on Laterites

3.6 Distribution of Laterites in India

3.7 Theories of Origin of Iron in Laterites

Unit 4: Denudation in Tropics

Lectures: 08

4.1 Mass Movement: Types & Processes

4.2 Slope Wash

4.3 Process of Chemical Denudation

4.4 Tropical Rivers: Process of Erosion and Deposition

Unit 5: Tropical Landscape

Lectures: 08

5.1 Tropical Terrain – Relief Characteristics

5.2 Slope and Valley Forms

5.3 Domed and Boulder Inselbergs

5.4 Hillslopes and Pediments

5.5 Tropical Coasts

Unit 6: Tropical Planation

Lectures: 08

6.1 Formation and Types of Planation Surfaces

6.2 Morphology of Planation Surfaces

6.3 Penplains, Pedi Plains, Etch Plains

6.4 Double Surface of Planation

Unit 7: Landform Development in the Tropics

Lectures: 08

7.1 Role of Tectonics and Climatic Change

7.2 Nature of Changes During Quaternary: Changes in Climate and Vegetation

Reference Books:

1. Andrew Goudie, (1985): Duricrusts in tropical and subtropical landscapes, Allen Unwin, London.
2. Andrew Goudie, (1987): Environmental change.
3. Budel J. (1982) Climatic geomorphology, Princeton University Press.
4. Douglas j. & Spencer, (1985): Environmental change & Tropical geomorphology, George Allen & Unwin.
5. Feniran A. & Jeje L.K. (1983): Humid tropical geomorphology
6. Thomas, M. F. (1994): Geomorphology in the Tropics, John Wiley and Sons, Chichester
7. Thomas M.F. (1974): Tropical geomorphology, McMillan, London.
8. Tricart J. (1972): Landforms of the humid tropics, forests and Savanna, Longman, London.

Choice Based Credit System Syllabus

Mapping of Program Outcomes with Course Outcomes**Class:** MA/MSc-II**Subject:** Geography**Course:** Tropical Geomorphology**Course Code:**

GEO 5301

Weightage: 1= weak or low relation, 2= moderate or partial relation, 3= strong or direct relation

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

Justification for the mapping**PO1: Research-Related Skills and Scientific temper**

Course outcome Co4, Co5, Co6 and Co7 are contributes to identifying research-related skills promote a holistic understanding of denudation processes in tropical regions, emphasizing critical thinking, objectivity, interdisciplinary collaboration, and a scientific temper that values empirical evidence and methodological rigor.

PO2: Effective Citizenship and Ethics

CO3 requires students to acquire effective citizenship in the context of tropical geomorphology involves taking responsibility for how tropical climates influence geomorphic processes aligns

with effective citizenship by empowering individuals to actively contribute to environmental sustainability, natural hazard mitigation, climate change advocacy, cultural and biodiversity preservation, and the prevention of environmental injustice.

PO4: Disciplinary Knowledge

CO1, CO2, CO3, CO4, CO5 contribute to the development of students' disciplinary knowledge in oceanography. These outcomes draw on interdisciplinary knowledge, integrating principles from geomorphology, climatology, karst geology, speleology, soil science, environmental science, and hydrology. This interdisciplinary approach is essential for gaining a comprehensive understanding of the characteristic landforms, processes, and environmental dynamics in tropical regions.

PO7: Environment and Sustainability:

CO6 contribute to the knowledge of and need for sustainable development. For example, CO2 requires students to investigating mass wasting events in tropical regions aligns with environmental awareness and sustainability by providing valuable insights for informed decision-making, promoting sustainable practices, enhancing community resilience, and safeguarding ecosystems against the adverse effects of landslides and soil erosion. This knowledge is fundamental for achieving a balance between human activities and the preservation of natural environments in the face of global environmental challenges.

M.A./ M.Sc. Geography II , Syllabus for Semester III**Subject: Practical in Geomorphology****Subject Code: GEO-5302****No. of Credits: 04**

Course Objectives:

1. To understand the principles of geomorphological mapping and the use of symbols.
2. To apply direct and indirect measurement techniques for hill slope analysis.
3. To conduct field surveys for various geomorphological features.
4. To collect and analyze soil and sediment samples using appropriate methodologies.
5. To interpret geographic maps in terms of geomorphological forms and processes.
6. To utilize GPS technology for surveying and mapping geomorphological features.
7. To plot and interpret data obtained from fieldwork and laboratory analyses.

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

CO1: Define and utilize geomorphological symbols in mapping, creating geographic representations of small areas or basins.

CO2: Demonstrate the ability to conduct hill slope analysis using clinometers and topographic profiles, identifying key segments of the landscape.

CO3: Perform field surveys, including channel cross sections and beach profiles, and accurately collect sediment samples.

CO4: Analyze soil and sediment samples, estimating grain size parameters and interpreting the results effectively.

CO5: Interpret maps and data in terms of geomorphological forms and processes, linking theory to practical applications.

CO6: Employ GPS technology for accurate surveying and preparation of geomorphological maps.

CO7: Present data from field and laboratory work clearly and concisely, using appropriate graphical methods for interpretation.

Topics and Learning Points

Unit 1: Geomorphological Mapping (04 Lectures)

- 1.1 Chart showing symbols
- 1.2 Preparing a geographic map of a small area/basin using toposheets/field data
- 1.3 Interpretation of the map in terms of forms and processes

Unit 2: Hill Slope Analysis (04 Lectures)

- 2.1 Direct and indirect measurements using clinometers and profiles from toposheets
- 2.2 Identification of segments
- 2.3 Dalrymple et al.'s nine-unit land surface model - understanding the nature of processes

Unit 3: Field Survey (07 Lectures)

- 3.1 Surveying and plotting of stream or gully channel cross-section, beach profile, or slope profile
- 3.2 Quadrat or traverse survey of sediment size on riverbed or beach
- 3.3 Analysis of shape and size of coarse sediment (Zingg's classification)
- 3.4 GPS survey and preparation of beach, river channel map set using GPS

Unit 4: Laboratory Work (05 Lectures)

- 4.1 Analysis of one sandy and one clayey sample
- 4.2 Plotting of data on probability graph paper
- 4.3 Estimation of grain size parameters
- 4.4 Interpretation of results

Reference Books:

1. Aackombe, R. V. and Gardiner, V. (1983). *Geomorphological Field Manual*.
2. Chorley, R. J., Schumm, S. A., & Sugden, D. E. (1984). *Geomorphology*. Methuen, London.
3. Goudie, A. (1990). *Geomorphological Techniques*. Unwin Hyman, London.
4. Hart, M. G. (1986). *Geomorphology: Pure and Applied*. George Allen and Unwin, Pune.
5. Kale, V. S. & Gupta, A. (2001). *Introduction to Geomorphology*. Orient Longman, Calcutta.
6. King, C.A.M. (1966). *Techniques in Geomorphology*. Edward Arnold, London.

Mapping of Program Outcomes with Course Outcomes

Class: MA/MSc-II

Subject: Geography

Course: Practical in Geomorphology

Course Code: GEO 5302

Weightage: 1= weak or low relation, 2= moderate or partial relation, 3= strong or direct relation

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

Justification for the mapping

PO1: Research-Related Skills and Scientific temper

Course outcome Co4, Co5, Co6 and Co7 are contributes to identifying research-related skills promote a holistic understanding of denudation processes in tropical regions, emphasizing critical thinking, objectivity, interdisciplinary collaboration, and a scientific temper that values empirical evidence and methodological rigor.

PO2: Effective Citizenship and Ethics

CO3 requires students to acquire effective citizenship in the context of practical geomorphology involves enhancing field sketching skills in documenting geological features and landforms aligns with effective citizenship by empowering individuals to actively contribute to environmental

advocacy, community engagement, environmental education, the preservation of geological heritage, and scientific integrity.

PO4: Disciplinary Knowledge

CO1, CO2, CO3, CO4, CO5 contribute to the development of students' disciplinary knowledge in Geomorphology. These course outcomes collectively contribute to the development of students' disciplinary knowledge in geomorphology. The outcomes cover key aspects of landform recognition, data collection techniques, map interpretation, laboratory analysis, and sediment logical concepts. This comprehensive approach ensures that students are well-prepared to engage in research and practical applications within the field of geomorphology.

Subject: GEO : 5303 Urban Geography

No. of Credits: 04

No. of Periods: 64

Course Objectives:

1. Understand the processes of urbanization, including historical context.
2. Develop skills in analyzing and interpreting spatial patterns within urban areas, including land use, housing patterns.
3. Explore the economic functions of cities, examining the role of various industries, employment patterns, and the impact of globalization on urban economies.
4. Gain a fundamental understanding of key concepts in urban morphology, including land use, street patterns, building types, and the relationship between form and function.
5. students will gain a nuanced understanding of the historical development of urban forms.
6. Understand the role of transportation systems and infrastructure in shaping urban accessibility, connectivity.
7. Investigate demographic trends in urban areas, including population dynamics, migration patterns, age structure, and the social implications of demographic changes.

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

- CO1. Gain an awareness of the historical context of urbanization, recognizing key milestones and transitions in the development of urban areas over time.
- CO2. Equipped with the skills and knowledge necessary to critically analyze and interpret spatial patterns within urban areas.
- CO3. Gain a comprehensive understanding of the economic dynamics of cities, preparing them to contribute to informed discussions on urban economic development.
- CO4. Understand the ability to classify and analyze different land uses within urban areas, distinguishing between residential, commercial, industrial, and recreational zones.
- CO5. Gain a understanding of the historical development of urban forms
- CO6. Well-equipped to contribute to the planning and development of transportation systems that enhance urban accessibility.

CO7. Well-prepared to contribute to informed discussions on demographic trends in urban areas and to participate in the development of policies

Topics and Learning points

Unit – 1: Introduction to Urban Geography	07
1.1 Nature of Urban Geography	
1.2 Scope of Urban Geography	
1.3 Significance of Urban Geography	
1.4 Relation to other disciplines	
Unit – 2: Urbanization	07
2.1 Meaning of Urban settlement and urbanization.	
2.2 Brief review of spatial- temporal variations in urbanization in the world	
2.3 Urbanization curve	
2.4 Contemporary factors of urbanization	
Unit – 3: Urban Morphology	07
Models of urban structure:	
3.1 Park and Burgess Model	
3.1.2 Homer Hoyet Model	
3.1.3 Harris and Ullman Model	
3.4 Characteristics and demarcation of CBD	
Unit – 4: Urban Classification	04
4.1 Criteria used for classification	
4.2 Functional classification of towns and cities	
Unit – 5: Urban Demography	08
Characteristics of urban population:	
5.1 Growth of Urban population	
5.1.2 Density of population in cities	
5.3 Age, sex and occupational structure	

Unit –6: City and its Region **04**

- 6.1 Concepts of city region and various synonymous terms used
- 6.2 Criteria used to demarcate the city region

Unit –7: Central Place **08**

- 7.1 Christaller's Central Place Theory
- 7.2 Rank-size relationship and rank-size rule
- 7.3 Hierarchy of urban settlements

Unit –8: Contemporary Urban issues **08**

- 8.1 Price of land and vertical and horizontal growth of cities
- 8.2 Scarcity of housing and growth of slums
- 8.3 Problems of civic amenities
- 8.4 Urban transport problem
- 8.5 Urban Environmental pollution

Unit –9: Urban policy and planning **07**

- 9.1 Urban development policy in India
- 9.2 Need & Element of city plan
- 9.3 Use of GIS in Urban Planning

Reference Books:

1. Bhattacharya: Urban Development in India, Shree publication
2. Brian, R.K. (1996): Landscape of Settlement Prehistory to present, Routledge, London
3. Carter (1972): Fourth edition: The study of Urban Geography, Arnold, London
4. Hall P. (1992): Urban and Regional Planning, Routledge, London
5. K. Siddharth and S. Mukherji : Cities, Urbanization and Urban Systems
6. Kundu, A. (1992): Urban Development and Urban Research in India, Khanna Publication
7. Mayer and Kohan: Readings in Geography
8. Northam: Urban Geography
9. Roy Turner: Indian's Urban Future
10. R.B Mandal-V.G A Textbook (Concept publishing Company)
11. Shah Manzoor Alam: Urbanization in Developing Countries
12. Singh.K.and Steinberg.F. (eds)(1998): Urban India in Crisis. New Age Interns

Choice Based Credit System Syllabus

Mapping of Program Outcomes with Course Outcomes

Class: MA/MSc-II
Course: Urban Geography

Subject: Geography
Course Code: GEO 5303

Weightage: 1= weak or low relation, 2= moderate or partial relation, 3= strong or direct relation

	Programme Outcomes (POs) Urban Geography							
Course Outcomes	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
CO 1				2				
CO 2				2				
CO 3				2				
CO 4	2			3				
CO 5				2				
CO 6				2				
CO 7		2						

Justification for the mapping

PO1: Research-Related Skills and Scientific temper

Course outcome Co4 contributes to identifying research-related skills promote a holistic understanding of the ability to classify and analyze different land uses within urban areas requires a combination of research-related skills and a scientific temper. This involves systematic data collection, proficiency in GIS technology, understanding of regulations, interdisciplinary knowledge, predictive modeling, and effective communication

PO2: Effective Citizenship and Ethics

Co7 requires students to acquire effective citizenship in the context of being well-prepared to contribute to informed discussions on demographic trends in urban areas and participating in

policy development enhances students' capacity for effective citizenship and ethical engagement. These skills empower individuals to actively contribute to the well-being of their communities, advocate for just and equitable policies, and consider the broader ethical implications of their actions in the context of urban dynamics.

PO4: Disciplinary Knowledge

CO1, CO2, CO3, CO4, CO5 and Co6 are contributing to the development of students' disciplinary knowledge. Each course outcome represents a specific area of disciplinary knowledge in the broader field of urban studies and planning. The justification for each outcome lies in the importance of these knowledge areas for preparing students to address contemporary urban challenges, make informed decisions, and contribute meaningfully to the development and sustainability of urban areas.

Subject: GEO: 5304 Practical in Population and Settlement Geography**No. of Credits: 04****No. of Periods: 64****Course Objectives:**

1. Develop skills in collecting and analyzing demographic and settlement data.
2. Enhance proficiency in mapping techniques and spatial analysis related to population and settlement patterns.
3. Apply theoretical knowledge to real-world case studies of population dynamics and settlement patterns.
4. Gain practical experience through field visits to observe population and settlement characteristics.
5. Engage with local communities to understand their demographic and settlement needs.
6. Learn the process of population projection using demographic data.
7. Explore principles of settlement planning and design.

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

CO1. Design surveys, gather relevant data, and utilize statistical methods to analyze and interpret population and settlement data.

CO2. Create thematic maps, utilize Geographic Information Systems (GIS), and conduct spatial analyses to understand the spatial distribution of populations and settlements.

CO3. Critically analyze case studies, identify key demographic and settlement trends.

CO4. Develop observational skills, document spatial patterns, and analyze on-site data to complement classroom learning.

CO5. Design and conduct community surveys, interviews, and focus group discussions to gather qualitative data.

CO6. Apply demographic methods to project future population trends and understand the implications for settlement planning.

CO7. Design hypothetical settlements considering factors such as land use, infrastructure.

Topics and Learning points**Unit – 1: Population Geography** **06****Demographic indices:**

- 1.1 Mean age at marriage and fertility
- 1.2 Measures of mortality, IMR & A.S.D.R Dependency ratio

Determinants of Demographic transition:

- 1.1 Demographic transition-applied to Maharashtra
(birth rate and death rate)
- 1.2 Pull-push factors affecting volume of migration-
simple correlation matrix
- 1.3 Rural urban composition of population

Unit – 2: Settlement Geography **06**

- 2.1 Gravity model by W.J. Reilly and Zipf, its application (potential population surfaces)
Indices of C.B.D
- 2.2 Stages according to urbanization curve
- 2.3 Rank size rule
- 2.4 Gini Coefficient concentration index

Unit – 3: Village Survey/ Urban Survey **08**

- 3.1 Preparation of questionnaire
- 3.2 Collection of Population and settlement data
- 3.3 Data analysis and preparation of report

Reference Books:

1. Economic and Political weekly-Special issue of population survey
2. Liendzore J.M Techniques in Human Geography
3. Martin Cad: Analytical Urban Geography
4. Siddharth, K and Mukherjee, S (1999): Cities urbanization and urban systems
5. Chandana, R., C. Population, Geography

6. Yeats, M.H. (1978): An introduction to quantitative analysis in human Geography.
7. Carter Harold: Urban Geography
8. John R. Weeks: Population – an introduction to concepts and issues.

Mapping of Program Outcomes with Course Outcomes

Class: MA/MSc-II

Subject: Geography

Course: Practical in Population Geography

Course Code: GEO: 5304

Weightage: 1= weak or low relation, 2= moderate or partial relation, 3= strong or direct relation

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

Justification for the mapping

PO1: Research-Related Skills and Scientific temper

Course outcome Co3 and Co5 CO3 emphasizes research-related skills and a scientific temper by requiring students to critically analyze case studies, identify demographic and settlement trends, and design and conduct community surveys, interviews, and focus group discussions. These skills not only contribute to students' proficiency in research methodologies but also instill a scientific mindset characterized by objectivity, critical thinking, and ethical research practices. This

combination of skills and temper is essential for conducting meaningful research and contributing to evidence-based decision-making in the field of urban studies and community development.

PO2: Effective Citizenship and Ethic

CO6 contributing to the development of students' Effective Citizenship and Ethics. the process of population projection using demographic data enhances effective citizenship by providing individuals with the knowledge and tools to actively engage in community development, advocate for social justice, and contribute to informed decision-making. Additionally, it aligns with ethical principles by promoting responsible and forward-thinking citizenship that considers the well-being of both current and future generations.

PO4: Disciplinary Knowledge

CO1, CO2, CO3, CO4, CO5 and Co6, Co7 are contributing to the development of students' disciplinary knowledge. each course outcome represents a specific aspect of disciplinary knowledge necessary for students to excel in the field of urban studies and demographic analysis. Together, these outcomes cover a wide spectrum of skills and knowledge, ensuring that students are well-equipped to address the complexities of population and settlement dynamics and contribute meaningfully to the field.

Subject: GEO: 5305 Geoinfoematics II

No. of Credits: 04

No. of Periods: 64

Course Objectives:

1. Introduce students to the fundamental concepts of remote sensing.
2. Explain the fundamentals of electromagnetic radiation (EMR), the electromagnetic spectrum, and spectral signatures.
3. Define and differentiate types of platforms used in remote sensing.
4. Explain the principles and differences between across-track and along-track scanning sensors.
5. Understand the concept of spatial resolution.
6. Introduce the basic principles, types, and steps of image interpretation.
7. students gain a comprehensive understanding of the fundamental principles, technologies, and applications in the field of remote sensing.

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

- CO1. Understand the definition of remote sensing, the underlying principles, and the conceptual framework of acquiring information from a distance.
- CO2. Comprehend the effects of atmospheric conditions on remote sensing data acquisition.
- CO3. Identify various platforms and understand their characteristics.
- CO4. Differentiate between these scanning mechanisms and understand their applications.
- CO5. Understand the concept of spatial resolution and its importance in image interpretation.
- CO6. Apply fundamental principles and techniques to interpret remote sensing images.
- CO7. Understand the fundamental principles, technologies, and applications in the field of remote sensing.

Topics and Learning Points:**Unit – 1: Introduction to Remote Sensing****05**

- 1.1 Remote Sensing: definition, concept and principles
- 1.2 History and development of Remote Sensing in India

Unit – 2: EMR and EMS	10
2.1 EM Radiation, EM Spectrum, Spectral Signature	
2.2 Interaction of EMR with atmosphere	
2.3 Interaction of EMR with Earth's surface	
2.4 Black body radiation, Laws of radiation	
Unit – 3: Platforms and Satellites	15
3.1 Platform: Types and characteristics	
3.2 Satellites: Geo-stationary and Sun synchronous	
3.3 Earth Resources Satellites: LANDSAT, SPOT, IRS, IKONOS satellite series	
3.4 Meteorological satellites: INSAT, NOAA, GOES	
Unit – 4: Sensors	08
4.1 Sensors: Across track (whiskbroom) and along track (push broom) scanning	
4.2 Optical mechanical scanners: MSS, TM, LISS, WiFS, PAN	
Unit – 5: Resolution	05
5.1 Spatial Resolution	
5.2 Spectral Resolution	
5.3 Resolution	
5.4 Radiometric Resolution	
Unit – 6: Image Interpretation Techniques	05
6.1 Basic principles, types, steps and elements of image interpretation	
6.2 Techniques of visual interpretation and interpretation keys	
Unit – 7: Aerial Photography	12
7.1 Aerial camera: Components	
7.2 Aerial Photography: Definition and characteristics	
7.3 Types of aerial photographs Types of Aerial Photographs Based on the Position of the Camera Axis	
7.4 Types of Aerial Photographs Based on Scale	

7.5 Geometry of an aerial photograph

Reference Books:

1. Anji Reddy, M. (2004): Geoinformatics for environmental management. B.S.Publications
2. Campbell, J.B. (2002): Introduction to Remote sensing. TaylorPublications.
3. Chang.T.K. (2002): Geographic Information Systems. Tata Mc Graw Hill
4. Drury, S.A. (1987): Image Interpretation in Geology. Allen andUnwin.
5. Francis Tar Bernhardsen. Geographical Information Systems. JohnWiley.
6. Gupta, R.P. (1990): Remote Sensing Geology. Springer Verlag.
7. Heywood.I, Cornelius S, Crver Steve. (2003): An Introduction to Geographical Information Systems. PearsonEducation
8. Jensen, J.R. (2000): Remote Sensing of the Environment: An Earth resourcePerspective Prentice Hall.
9. Joseph George (2003): Fundamentals of remote sensing. UniversitiesPress.
10. Lillesand, T.M., and Kieffer, R.M. (1987): Remote Sensing and Image Interpretation,John Wiley.
11. Ram Mohan Rao. (2002): Geographical Information Systems. Rawat Publication.
12. Sabbins, F.F. (1985): Remote sensing Principles and interpretation. W.H. Freemanand company
13. Skidmore A., (2002): Environmental modeling with GIS and Remote Sensing. Taylorand
14. Wise S., (2002): GIS Basics. Taylor Publications

Mapping of Program Outcomes with Course Outcomes

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

Justification for the mapping

PO1: Research-Related Skills and Scientific temper

Course outcome Co5, Co6, Co7 are contributes to identifying research-related skills. CO5-CO7 emphasizes research-related skills and a scientific temper by focusing on spatial resolution, image interpretation, and remote sensing. These outcomes equip students with the skills and mindset needed to engage in rigorous research, analyze spatial data, and apply remote sensing technologies with scientific integrity.

PO4: Disciplinary Knowledge

CO1, CO2, CO3, CO4, CO5 and Co6 are contributing to the development of students disciplinary knowledge. the disciplinary knowledge justification for CO1-CO7 lies in the comprehensive coverage of essential concepts and principles in remote sensing. These outcomes ensure that students develop a robust foundation, allowing them to navigate the complexities of acquiring, processing, and interpreting remote sensing data across various applications and scenarios.

Subject: GEO: 5306 Geographical Thoughts**No. of Credits: 04****No. of Periods: 64****Course Objectives:**

1. Examine the contributions of Greek scholars to the development of physical and mathematical geography.
2. Compare and contrast systematic and regional approaches in geography.
3. Explore different paradigms that have shaped geographical thought.
4. Explore the conceptual developments in geographical thought.
5. Explore humanistic and welfare approaches in geography.
6. Define applied geography and explore its significance.
7. Explore the connection between geography and public policy.

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

- CO1. Understand the foundational concepts introduced by Greek thinkers in geography.
- CO2. Differentiate between determinism and possibilism and recognize their implications.
- CO3. Familiar with various paradigms and their influence on geographical theories.
- CO4. Understand the key concepts of areal differentiation, regional synthesis, locational and spatial analysis, and system analysis.
- CO5. Understand the humanistic and welfare perspectives in geographical studies.
- CO6. Understand the practical applications of geography and its relevance in addressing real-world issues.
- CO7. Understand how geographical knowledge contributes to the formulation and implementation of public policies.

Topics and Learning Points:

Unit –1: Historical Development of Geographical Thought **20**

- 1.1 Greek contribution to Physical and Mathematical Geography.
- 1.2 Roman: Contributions of Strabo, Ptolemy
- 1.3 Arab School: Contribution of AlBattani, Al Masudi, IbnKhalidun.
- 1.4 Contributions of Explorers and its impact
- 1.5 Contributions of Varenus and E. Kant
- 1.6 A brief account of different schools:
 - a) German: Ratzel, Humboldt
 - b) French: Vidal de La blache, Jean Brunhes
 - c) British: H. Mackinder, H.Fleure:
 - d) American: Carl O Sauer, E.Huntington
- 1.7 Indian Schools of thoughts

Unit –2: Dualism in Geography **06**

- 2.1 Determinism and Possibilism
- 2.2 Systematic versus Regional Geography
- 2.3 Physical versus Human Geography

Unit –3: Paradigms, approaches and Models in Geography **08**

- 3.1 Paradigms in Geography
- 3.2 Evolutionary approach and its impact on Geography
- 3.3 Types of Models used in Geographical Studies

Unit –4: A) Conceptual Development

B) Major Revolutions: Their impacts **12**

- 4.1 Areal Differentiation, Regional Synthesis, Locational and Spatial Analysis, System analysis.
- 4.2 Quantitative Revolution, Behavioural Revolution, Geo-informatics revolution: Their impacts

Unit –5: Trends in Geography **08**

5.1 Humanistic and Welfare Geography

5.2 Marxist Geography,

5.3 Radical Geography,

5.4 Geography of Gender

Unit –6: Applied Geography **06**6.1 Applied Geography: Definition, meaning and Significance; Examples
Geography and Public Policy**Reference Books:**

1. Cooke, R. U. and Doornkamp, J. C. (1974): Geomorphology in Environmental Management, Clarendon Press, Oxford.
2. Coffey, W. J. (1981): Geography : Towards a general spatial systems approach, Mathuen, London
3. Dikshit, R. D. (1997): Geographical Thought: A Contextual History of Ideas, Pub. By A.
4. Frazier, J. W. (1982): Applied Geography, Prentice Hall, Englewood Cliffs.
5. Hershov, R. (1959): Perspectives of Nature of Geography, Rand Mac Nally and Co.
6. Hussain, M. (1995) : Evolution of Geographical Thought, Rawat Pub., Jaipur
7. Singh I. (2006): Diverse aspect of Geographical Thought, ALFA Publications, New Delhi

Mapping of Program Outcomes with Course Outcomes**Class:** MA/MSc-II**Subject:** Geography**Course:** Geographical Thoughts**Course Code:** GEO 5306**Weightage:** 1= weak or low relation, 2= moderate or partial relation, 3= strong or direct relation

	Programme 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				2				
CO 3	2			2				
CO 4	2			2				
CO 5				2				
CO 6		2						
CO 7		2		2				

Justification for the mapping

PO1: Research-Related Skills and Scientific temper

Course outcome Co3 and Co4 contributes to identifying research-related skills. Students will not only grasp fundamental geographical concepts but also develop the skills necessary for effective research and contribute to the scientific understanding of geographic phenomena.

PO2: Effective Citizenship and Ethics

Co6 and Co7 requires students to acquire effective citizenship in the context of being well-prepared to contribute to these learning outcomes not only equip students with the practical applications of geography but also instill a sense of responsibility, ethical considerations, and active citizenship. By understanding how geographical knowledge can be applied to real-world issues and policy development, students are prepared to make meaningful contributions to society.

PO4: Disciplinary Knowledge

CO1, CO2, CO3, CO4, CO5 and Co7 are contributing to the development of students' disciplinary knowledge. Each course outcome contributes to a well-rounded understanding of geography as a discipline, encompassing historical foundations, theoretical frameworks, analytical tools, human perspectives, practical applications, and policy relevance. This disciplinary knowledge equips students to engage critically with the complexities of the geographical world.