



**Anekant Education Society's  
Tuljaram Chaturchand College, Baramati**

**Autonomous College**

**Two Years Degree Programme in Geography**

**(Faculty of Science and Technology)**

Revised Syllabus for

**MA/MSc. Geography Part-II Semester IV**

For Tuljaram Chaturchand College, Baramati

**Choice Based Credit System Syllabus**

**To be implemented from Academic Year 2020-2021**

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

Tuljaram Chaturchand College has decided to change the syllabi of various faculties from June, 2019. Taking into consideration the rapid changes in science and technology and new approaches in different areas of Geography and related subjects, Board of Studies in Geography after a thorough discussion with the teachers of Geography from different colleges affiliated to the Tuljaram Chaturchand College, Baramati - Pune has prepared the syllabus of M.Sc./M. A. Semester - I and Geography course under the Choice Based Credit System (CBCS). The model curriculum as developed by U.G.C. is used as a guideline for the present syllabi.

**Aims and Objectives of the new curriculum:**

- i) To maintain updated curriculum.
- ii) To take care of fast development in the knowledge of Geography.
- iii) To enhance the quality and standards of Geography Education.
- iv) To provide a broad common frame work, for exchange, mobility and free dialogue across the Indian Geography and associated community.
- v) To create and aptitude for Geography in those students who show a promise for higher studies and creative work in Geography.
- vi) To create confidence in others, for equipping themselves with that part of Geography which is needed for various branches of Sciences or Humanities in which they have aptitude for higher studies and original work.

**Learning Outcomes:**

- i) Ability of Problem Analysis: Student will be able to analyses the problems of physical as well as cultural environments of both rural and urban areas. Moreover, they will try to find out the possible measures to solve those problems.
- ii) Individual and teamwork: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

- iii) Application of modern instruments: Students will be able to learn the application of various modern instruments and by these; they will be able to collect primary data.
- iv) Application of GIS and modern Geographical Map Making Techniques: They will learn how to prepare map based on GIS by using the modern geographical map-making techniques.
- v) Examine social and environmental processes, with a particular focus on space and place, critical theory, practical application, analysis and intervention in chosen field within the discipline of Geography
- vi) Development of Observation Power: As a student of Geography Course, they will be capable to develop their observation power through field experience and in future, they will be able to identify the socio-environmental problems of a locality.
- vii) Development of Communication Skill and Interaction Power: After the completion of the course, they will be efficient in their communication skill as well as power of social interaction. Some of the students are being able to understand and write effective reports and design credentials, make effective demonstrations, and give and receive clear instructions.
- viii) A geographer has better job opportunities in government departments, Cartographer, Researcher, Teacher/Professor, Competitive Examinations, Government employer, GIS specialist, Climatologist, Transportation Manager, Surveyor, GPS Surveyors.

## M.A II - 2020-21

Workload: Four Periods per week per batch (12 Students per batch)

M.A. / M.Sc.- II			
Semester	One set of the following according to specialization from CCTP*		
III	GEO:5301	Tropical Geomorphology	04
	GEO:5302	Practical in Geomorphology	04
	<b>OR</b>		
	GEO:5303	Urban Geography	04
	GEO:5304	Practical in Population and Settlement Geography	04
	<b>Compulsory Papers</b>		
	GEO:5305	Geoinformatics-II	04
	GEO:5306	Geographical Thoughts	04
	GEO:5307	Practical in Geoinformatics	04
	GEO:5308	Watershed Management	04
	RP: 01	Combine Projects	04
	CC:03	Certificate Course	02

❖ **Objectives:**

- 1) To enable the students to use various scale and projections used to create maps.
- 2) To acquaint the students with basic of statistical data.
- 3)

❖ **Outcome:**

After study this paper students can able to identify any map scale and projection. They can also know which projection is suitable for given region.

❖ **Pattern of Examination:**

**Internal** : 40 % Marks  
**External** : 60 % Marks

**Semester – IV**

	<b>Core Compulsory Theory Paper (CCTP)</b>	<b>Choice Based Optional Paper (CBOP)</b>	<b>Theory / Practical</b>	<b>Credit</b>	<b>Core Compulsory Practical Paper (CCPP)</b>	<b>Credit</b>
GEO-5401	Geography of India	-	-	-	-	04
GEO-5402	Oceanography	-	-	-	-	04
GEO-5403	Research Methodology	-	-	-	-	04
		GEO-5404	Geography of Soils			04
		GEO- 5405	Interpretation of Topographical Maps			04
				GEO-5406	Research Project	04
<b>Total Credits of Semester - IV</b>						<b>24</b>

**Semester IV****Course: GEO: 5401 Geography of India****No. of Credits: 04****Course Objectives:**

1. To make students well aware of the location extend and neighboring countries of India and relationship with them.
2. To understand geological structure and physiographic divisions of India
3. To acquaint the knowledge of climate of India and its impact on Indian agriculture.
4. To understand drainage basin of India, major river and their tributaries and area drained by them.
5. To understand the mechanism of monsoon, active and break period of monsoon.
6. To understand the distribution of soil and forest cover in India.
7. To understand the types minerals and energy resources in India.

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

- CO1.** Aware of the location, extend and neighboring countries of India and relationship with them.
- CO2.** Understand the geological structure and physiographic divisions of India and its important.
- CO3.** Understand the different seasons, climate of India and its impact on Indian agriculture
- CO4.** Understand drainage basin of India, Major River and their tributaries and area drained by them.
- CO5.** Understand the mechanism of monsoon, active and break period of monsoon, and trend of monsoon in past years.
- CO6.** Aware about distribution of soil in India and suitability of that soil for specific crops, also forest cover in India.
- CO7.** Understand the types of minerals and energy resources in India and its impact on development industrialization in India

**Topics and Learning Points**

<b>Unit – 1: Introduction of India</b>	<b>06</b>
1.1. Geographical and relative location of India	
1.2. Frontiers of India	
1.3. Strategic Significance	
1.4. Geological Structure	
<b>Unit – 2: Introduction of India</b>	<b>06</b>
(Main physiographic divisions & their importance)	
2.1 The northern mountains	
2.2 The north Indian Plain	
2.3 The peninsular plateau	
2.4 The coastal lowlands	
2.5 The islands Structure	
<b>Unit – 3: Drainage System</b>	<b>06</b>
3.1 Himalayan drainage systems	
1. Ganga	
2. Brahmaputra	
3. Indus	
3.2 Peninsular drainage system	
A) East Flowing Rivers:	
1) Godavari	
2) Krishna	
3) Mahanadi	
B) West Flowing Rivers	
1) Narmada	
2) Tapi	
3) Mahi	
<b>Unit – 4: Climate</b>	<b>06</b>
4.1 Main Seasons & Associated weather conditions:	
1) The winter	
2) The summer	
3) The rainy/monsoon	

4) The retreat monsoon

4.2 Origin and mechanism of monsoon:

A) Traditional concept: Halley's view

B) Recent Concept:

1) Role of Tibet plateau

2) ITCZ

3) Jet Stream

4) El-Nino

### **Unit – 5: Soil**

**06**

5.1 Major soil types and their distribution in India

- 1) Alluvial soil
- 2) Black soil
- 3) Red soil
- 4) Laterite and Lateritic soils
- 5) Forest and Mountain soils
- 6) Arid and Desert soils
- 7) Saline and Alkaline soils
- 8) Peaty and Marshy soils

5.2 Soil degradation and soil conservation

### **Unit – 6: Forest**

**06**

6.1 Main forest types and their distribution in India:

- 1) Moist Tropical forests
- 2) Dry Tropical forests
- 3) Montane Sub-tropical forests
- 4) Montane Temperate forests
- 5) Alpine forests

6.2 Deforestation and conservation of forest

### **Unit – 7: Minerals and Energy Resources**

**06**

7.1 Distribution and Utilization of Minerals:

- 1) Iron Ore
- 2) Manganese
- 3) Bauxite



## 7.2 Distribution and Utilization of Energy Resources:

1. Coal
2. Petroleum
3. Natural gas

## 7.3 Major power projects in India:

1. Hydro electric
2. Thermal Power
3. Atomic power

**Unit – 8: Agriculture****06**

## 8.1 Distribution and Production of Major Crops:

- 1) Rice
- 2) Wheat
- 3) Cotton
- 4) Sugarcane

## 8.2 Green revolution in India:

1. Components of the Green Revolution
2. Merits and demerits of Green Revolution in India

## 8.3 Factors affecting Indian Agriculture:

1. Environmental Factors
2. Technological Factors
3. Institutional Factors

**Unit – 9: Industries****06**

## 9.1 Major Industries in India:

1. Cotton Textile
2. Sugar
3. Iron and Steel

## 9.2 Major Industrial Regions in India

## 9.3 Problems of Industrial development

**Unit – 10: Population****06**

## 10.1 Growth and distribution of population in India

## 10.2 Composition and structure of Population:

1. Rural-Urban
2. Age-sex

3. Religious
4. Marital status
5. Occupational structure

### Reference Books:

1. Agrawal A. N. (2019): "Indian economy, Developmental Problems and policies" New Age International Pvt. Ltd.
2. Bhende, Asha A and Kanitkar Tara (2015): "Principles of Population Studies", Himalaya Pub. House, New Delhi.
3. Chandana R. C. (2016): "Geography of population", Kalyani Publishers, New Delhi.
4. Chopra S. N. - India, an Area Study.
5. Deshpande C. D. (1992): "India: A Regional Interpretation", Indian Council of Social Science Research and National Book Centre, New Delhi
6. Dubey and Negi - Economic Geography of India.
7. Gopal Singh (1976): "Geography of India" Atma Ram Pub., Delhi
8. Khullar D. R. (2018) : "India: a Comprehensive Geography" Kalyani Publishers
9. Majid Husain (2008): "Geography of India", Tata McGraw Hill, New Delhi
10. Mathur, S. M. (1994): Physical Geology of India, National Book Trust, New Delhi, India.
11. Memoria, I. B. - Geography of India.
12. Singh R. L. (1971): "India-A Regional Geography". NGSI, Varanasi.
13. Randhawa, M. S. (1947): The Birth of the Himalayas.
14. Saigal, Umesh (1994): Lakshadweep, National Book Trust, New Delhi, India.
15. Sharma and Continuo - Economic and Commercial Geography of India.
16. Singh, R. L. et. al. (1971): India: A Regional Geography, National Geographical Society of India, Varanasi.
17. Tamta, B. R. (1994): Andaman and Nicobar Islands, National Book Trust, New Delhi, India.
18. Wadia D. N. (1993): Geology of India, Tata McGraw Hill, New Delhi
19. Census of India Report – website- <http://censusindia.gov.in/>

## Choice Based Credit System Syllabus

### Mapping of Program Outcomes with Course Outcomes

**Class:** M.A/M.Sc. II

**Subject:** Geography

**Course:** Geography of India

**Course Code:** GEO: 5401

**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				2				
CO 5				2				
CO 6				1				
CO 7				2				

#### Justification for the mapping

**PO 2: Effective Citizenship and Ethics:**

CO1- Understanding India's location, extent, and relationships with neighboring countries is essential for effective citizenship and ethical considerations in regional and international affairs. Effective citizens can play a significant role in promoting peace, cooperation, and ethical practices in India's interactions with its neighbors.

**PO 3: Social Competence:**

CO1- Having knowledge of India's geography and its relationships with neighbouring countries is a critical aspect of social competence. It helps individuals navigate cultural diversity, engage effectively in international relations, promote peaceful solutions to conflicts, and foster cross-cultural understanding, which are all essential components of social competence in an increasingly interconnected world.

**PO 4: Disciplinary Knowledge:**

CO 2- Understanding the geological structure and physiographic divisions of India is a fundamental aspect of disciplinary knowledge in geography. This knowledge forms the foundation for comprehending India's landforms, natural resources, and environmental processes.

CO 4 - knowledge of India's drainage basin, major rivers, and their tributaries is a critical component of disciplinary knowledge in geography. It enables students to analyze hydrological, environmental, cultural, and developmental aspects related to the country's river systems.

CO 5 The mechanism of the monsoon, along with its active and break periods, is a vital component of disciplinary knowledge in geography. It provides a basis for understanding the climatic, environmental, and societal aspects of this significant meteorological phenomenon in the Indian subcontinent and other regions affected by monsoons.

CO 6 The distribution of soil and forest cover in India is a vital component of disciplinary knowledge in geography. It provides a foundational understanding of the country's environmental diversity, ecosystems, and natural resource utilization, which are integral to various geographical subfields and critical for informed decision-making in land use and conservation.

CO 7- Types of minerals and energy resources in India are essential for geographical knowledge, particularly in the fields of resource geography, economic geography, environmental geography, energy geography, and geopolitics. These resources are vital for India's economic development, energy security, and environmental sustainability.

**PO 7: Environment and Sustainability:**

CO 3- Knowledge of India's climate and its impact on agriculture, the environment, and sustainability is integral to geographical studies. It informs agricultural practices, environmental conservation efforts, and sustainable development strategies, recognizing the role of climate in shaping India's geography and influencing the well-being of its people.

**M.A. /M.Sc. Geography II SEM IV****Course: GEO: 5402, Oceanography****No. of Credit: 04****Periods: 64****Course Objectives:**

1. To understand the basic knowledge of Oceanography.
2. To study coastal geomorphology by focusing on how coastal regions are formed.
3. To study processes of waves, tides, and streams go through to create boulders, coral
4. To understand importance of coastal zone with future resources approach.
5. To know the geological, physical, chemical and biological features and process that affect the surface of the ocean.
6. To differentiate between underwater formation, sea water formations, sea water composition and qualities.
7. To develop an appreciation for the diversity and importance of life in the ocean.

**Course Outcomes:****By the end of the course, students will be able to:****CO1.** Understand the diversity and importance of life in the ocean**CO2.** Understand the various processes related to oceanography**CO3.** Understand the relationship between man and the ocean.**CO4.** Identifies physical features of the sea floor such as its topography, sediment type and distribution or available resources.**CO5.** Describe the properties of water, emphasizing how these properties change in the presence of salt.**CO6.** Evaluate threats to marine or coastal environment.**Topics and Learning Points****Unit- 1: Introduction to Oceanography****No. of Periods**

- 1.1. Definition and Meaning of Oceanography
- 1.2. Foundation of Modern Oceanography
- 1.3. Contribution of Oceanographers in the subject
- 1.4. Post-war Oceanography
- 1.5. Modern Trends

**08**

<b>Unit- 2: Origin of the Ocean Basins</b>	<b>08</b>
2.1 Continental Drift	
2.2 Seafloor Spreading	
2.3 Plate Tectonics	
2.4 World Oceans, their origin and distribution	
<b>3 Unit- 3: The Ocean Floor</b>	<b>08</b>
Relief of the Ocean Bottom	
3.1 Continental Margin: Continental shelves and slopes	
3.2 Oceanic Ridges and Rises	
3.3 Abyssal Plains	
3.4 Oceanic Trenches	
3.5 Volcanoes on ocean floor	
3.6 Coral Reefs and Atolls	
3.7 Offshore Islands	
<b>Unit- 4: Properties of Sea Water</b>	<b>12</b>
4.1 Factors affect temperature on water and distribution	
4.2 Factors affecting density	
4.3 Origin and composition of sea salt and residence time	
4.4 Carbon dioxide and carbonate cycles	
4.5 Viscosity	
4.6 Surface tension	
<b>Unit- 5: Marine Sediments</b>	<b>08</b>
5.1 Lithogenous particles (Derived from Rocks)	
5.2 Biogenous particles (derived from organisms)	
5.3 Hydrogenous particles (derived from Water	
5.4 Distribution of sediment deposits	
5.5 Oceanic ooze	
5.6 Correlation and age determination	
<b>Unit- 6: Ocean resources</b>	<b>08</b>
T.C.College	

- 6.1 Natural resources- gaseous, liquefied and solid chemical parameters
- 6.2 Available resources
- 6.3 Exploited resources
- 6.4 Unexploited resources
- 6.5 Account of known but unexploited oceanic reserves

### **Unit- 7: Oceanic Pollution**

**08**

Causes and measures

- 7.1 Etiology of marine & oceanic pollution
- 7.2 Possible natural disturbances causing pollution in oceans
- 7.3 Anthropogenic activities resulting in oceanic pollution
- 7.4 Oceanic pollutants and their characteristics for human benefits
- 7.5 Known remedial measures for pollution at sea & oceanic level

### **Reference Books:**

1. Basu S.K. (2003) (ed): Handbook of Oceanography, Global Vision, Delhi.
2. Davis Richard A. (1972): Oceanography, Addition Wesley Publishing Co.
3. Garrison Tom (1999): Oceanography, Brooks/ Cole Wadsworth, New York.
4. Garrison Tom (2004): Essentials of Oceanography. Thompson, Australia.
5. Grant Gross M. (1982): Oceanography, Prentice hall, Ince, New Jersey.
6. King Cuchlain A. M (1962): Oceanography for Geographers (ED) Edward Arnold.
7. Sharma & Vatal (1962): Oceanography for Geographers. Chaitanya Publishing House, Allahabad
8. Thurman Harold V. (1985): Introductory Oceanography. Bell & Howell Co. London.
9. Weisberg J. and Howard P. (1974): Introductory Oceanography. McGraw Hill, Kogakusha, Tokyo

## Choice Based Credit System Syllabus

## Mapping of Program Outcomes with Course Outcomes

Class: M.A/M.Sc. II

Subject: Geography

Course: Oceanography

Course Code: GEO5402

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			2	
CO 3		2		3				
CO 4	2			3				
CO 5	2			2			2	
CO 6	2							3

## Justification for the mapping

**PO1: Research-Related Skills and Scientific temper**

Course outcome Co4, Co5, Co6 are contributes to identifying physical features of the seafloor, such as its topography, sediment type and distribution, and available resources, is an essential research skill in the field of geography, particularly in oceanography and marine geology. This skill is crucial for understanding the Earth's surface and the distribution of resources in the ocean.

**PO2: Effective Citizenship and Ethics,**

CO3 requires students to acquire effective citizenship in the context of oceanography involves taking responsibility for the well-being of our oceans. This includes understanding the impact of human activities on marine ecosystems, such as pollution, overfishing, and habitat destruction, and actively participating in efforts to protect and preserve these environments.



**PO4: Disciplinary Knowledge**

CO1, CO2, CO3, CO4, CO5 contribute to the development of students' disciplinary knowledge in oceanography. For example, CO1 requires students to understanding the diversity and importance of life in the ocean is a crucial aspect of disciplinary knowledge in the field of geography, particularly in the sub-discipline of marine geography. The ocean is teeming with a wide array of life forms, from the smallest microorganisms to the largest marine mammals, and this diversity plays a vital role in shaping our planet and human societies.

CO2 outcome indicate disciplinary knowledge in geography related to oceanography encompasses a broad spectrum of processes, from the physical dynamics of ocean waters to the chemical and biological interactions, geological features, and the human and environmental impacts on the world's oceans. This knowledge is crucial for addressing environmental challenges, promoting sustainable development, and effectively managing coastal and marine resources.

CO3 outcome indicate The relationship between humans and the ocean is a critical area of disciplinary knowledge in oceanography. Geographers study this relationship from various perspectives, encompassing social, economic, environmental, and cultural dimensions. Here's an overview of the disciplinary knowledge in geography related to the relationship between man and the ocean

CO4 requires student to identifying physical features of the seafloor involves an interdisciplinary approach that combines geological, oceanographic, and geospatial techniques. Geographers and oceanographers work together to collect, analyze, and interpret data to better understand seafloor topography, sediment types, and the distribution of resources. This knowledge is crucial for scientific research, resource management, environmental protection, and various applications in marine geography.

CO5 outcome indicate water is a vital substance with unique properties, and its characteristics can significantly change in the presence of salt. In geography, an understanding of these properties is crucial when studying various aspects of the Earth's physical and human systems. Here are some key properties of water and how they change in the presence of salt.

**PO7: Environment and Sustainability:**

CO2 and CO5 contribute to the knowledge of and need for sustainable development. For example, CO2 requires students to learn the environment, and sustainability is crucial for students studying geography and related fields. Oceanography is the scientific discipline that focuses on the study of the world's oceans, and it plays a significant role in environmental and sustainability considerations.

CO5 indicates that understanding how the properties of water change in the presence of salt is fundamental to studying the physical and chemical characteristics of seawater. This knowledge is essential for addressing environmental and sustainability challenges in oceanography, including the effects of climate change, ocean acidification, and the preservation of marine ecosystems. Sustainable practices in oceanography aim to maintain the delicate balance of marine environments, considering the unique properties of saltwater.

**PO8: Critical Thinking and Problem solving**

CO6 contribute to the development of students' critical thinking and problem-solving skills. For example, CO6 require students to Evaluating threats to marine or coastal environments is a crucial aspect of oceanography, as it helps us understand and address the challenges facing these ecosystems. Critical thinking is essential in assessing these threats and formulating effective solutions.

**M.A. /M.Sc. Geography II SEM IV**  
**Course: GEO: 5403, Research Methodology**

**No. of Credit: 04**

**Periods: 64**

**Course Objectives:**

1. Understand the purpose and significance of research in various fields.
2. Understand the goals and objectives achieved through the formulation of a research design.
3. Learn techniques for identifying and formulating a clear research problem.
4. Understand the principles of sampling design.
5. Understand the concept of a questionnaire and its application in data collection.
6. Familiarize students with fundamental concepts and principles of research.

**Course Outcomes:**

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

**CO1.** Gain an understanding of why research is conducted across different disciplines.

**CO2.** Understand the purpose of a research design in guiding the research process.

**CO3.** Acquire skills in identifying and defining research problems.

**CO4.** Understand the principles and techniques involved in selecting samples for a study.

**CO5.** Grasp the concept of a questionnaire and its role in collecting data.

**CO6.** Develop a deep understanding and appreciation for the variety and significance of marine life.

**Topics and Learning Points**

**Unit- 1: Introduction to Research Methodology**

**No. of Periods**

- 1.1. Meaning and objectives of research
- 1.2. Characteristics of Research
- 1.3. Types of Research
- 1.4. Various steps in Research Process
- 1.5. Research Methods versus Methodology

**10**

<b>Unit- 2: Research Design</b>	<b>08</b>
2.1 Research Design definition	
2.2 Purpose of a Research Design	
2.3 Characteristics of Good Research Design	
<b>Unit- 3: Research Problem</b>	<b>06</b>
3.1 Definitions of the Research Problem	
3.2 Identification of a Research Problem	
3.3 Technique involved in defining a problem	
<b>Unit- 4: Sampling Design</b>	<b>08</b>
Sampling Design – Definition of Population,	
4.1 Sample and Sampling Design	
4.2 Advantages and disadvantages of Sampling	
4.3 Characteristics of a good sample	
4.4 Types or method of sampling	
<b>Unit- 5: Methods of Data Collection</b>	<b>06</b>
5.1 Primary Data	
5.2 Questionnaire Method	
5.3 Questionnaire – definition	
5.4 Merits and demerits	
5.5 Questionnaire Method	
Interview Method	
5.6 Observation Method/Field	
Work Method	
5.7 Secondary Data	
<b>Unit- 6: Data Analysis</b>	<b>12</b>
Variables and their types	
6.1 Hypothesis- definition and types	
6.2 Measure for Central Tendency and Dispersion	
6.3 Correlation and Regression Analysis	
6.4 Time series analysis	
<b>Unit- 7: Technical writing and reporting of research</b>	<b>06</b>
7.1 Types of research report	
7.2 Dissertation and thesis, research paper, review article, short communication, conference presentation, meeting report, etc.	
7.3 Structure and organization of research reports- Title, abstract, key words, introduction, methodology, results, discussion, conclusion, acknowledgements, references, footnotes, tables and illustration	
7.4 Literature Review	
<b>Unit- 8: Research ethics, plagiarism and funding agencies</b>	<b>06</b>
8.1 Research ethics	

8.2 Plagiarism

8.3 Use of plagiarism detection software's

8.4 Research opportunities and funding agencies

### Reference Books:

1. Gaum, Carl G., Graves, Harold F., and Hoffman, Lyne, S.S., (1950): Report Writing, 3rd ed., New York: Prentice-Hall.
2. Kothari, C.R. (2004): Research Methodology: Methods and Techniques, New Age International (P) Ltd., New Delhi – 110002.
3. Kothari, C.R., (1984): Quantitative Techniques, 2nd ed., New Delhi: Vikas Publishing House Pvt. Ltd.
4. Mishra Shanti Bhushan and Shashi A. (2011): Handbook of Research Methodology, Educreation Publishing, New Delhi – 110075.
5. Pandey, P. and Pandey, M.M. (2015): Research Methodology: Tools and Techniques, Bridge Center, Romania, European Union.
6. Tandon, B.C., (1979): Research Methodology in Social Sciences. Allahabad, Chaitanya Publishing House.
7. Ullman, Neil R. (1978): Elementary Statistics, New York: John Wiley & Sons, Inc.
8. Yamane, T., Statistics (1973): An Introductory Analysis, 3rd ed., New York: Harper and Row.

## Choice Based Credit System Syllabus

## Mapping of Program Outcomes with Course Outcomes

Class: M.A/M.Sc. II

Subject: Geography

Course: Research Methodology

Course Code: GEO: 5403

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
CO 1	2			2			
CO 2				2			
CO 3	2			2			
CO 4				2			
CO 5				2			
CO 6				2			

## Justification for the mapping

**PO1: Research-Related Skills and Scientific temper**

Course outcome Co3, are contributes to understanding the diverse motivations behind research, the role of research design, and the skills involved in problem identification are essential for individuals engaging in research activities. Coupled with a scientific temper, these elements contribute to the rigorous and impactful pursuit of knowledge across various disciplines.

**PO4: Disciplinary Knowledge**

CO1, CO2, CO3, CO4, CO5 and Co6 are contributing to the development of students' disciplinary knowledge in Research Methodology. These course objectives align with the diverse needs and practices of different disciplines. They provide students with a well-rounded set of skills and knowledge that can be applied across various fields, emphasizing the interdisciplinary nature of research and the specific requirements of each discipline.

**M.A. /M.Sc. Geography II SEM IV**  
**Course: GEO: 5404, Soil Geography**

**No. of Credit: 04**

**Periods: 64**

**Course Objectives:**

1. To understand soil as key component of the earth's biosphere and climate system.
2. To get information about the soil genesis and provide information about the soil resources of area.
3. To foresee global consequences of direct and indirect impact of human activity on soil condition.
4. To visualize soil as a system of interacting components with interrelated physics, chemistry and biology
5. To studies the factor that influence soil formation and geographic distribution of soil.
6. To recognise the significance of soil as a resource.

**Course Outcomes:**

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

**CO1.** Understand the concept and principles of soil formation.

**CO2.** Understand the role of essential nutrient for plant growth and development.

**CO3.** Understand the impact of man as an active agent of soil transformation, erosion and degradation.

**CO4.** Understand the students to realize soil and environmental problems.

**CO5.** Understand the significance of soil conservation and methods of soil reclamation.

**CO6.** Understand knowledge about the character and profile of different soil type

**Topics and Learning Points**

**Unit- 1: Introduction to Geography of Soil**

**No. of Periods**

1.1 Definition

**04**

1.2 Nature and Scope of Soil Geography

1.3 Development of Geography of Soil

1.4 Soil as a Natural Resource

**Unit- 2: Soil Formation and Soil Profile**

**06**

2.1 Factors of Soil formation: Parent Material, Climate, Biota, Time, Topography.

T.C.College

2.2 Soil Profile : Definition and Structure

**Unit- 3: Components and Characteristics of Soil** **06**

3.1 Soil component: Minerals, Organic Matter, Air and Water.

3.2 Physical, Chemical and Biological characteristics of soil.

3.3 Nutrients in Soils: Primary, Secondary and Micronutrients

**Unit- 4: Classification and types of Soil** **06**

4.1 Land Capability Classification

4.2 Land Suitability Classification

4.3 Types of Soil with reference to India

**Unit- 5: Problems related to soil and Soil Conservation** **08**

5.1 Soil Problems: Soil Pollution, Acidification, salinization and Soil health

5.2 Soil Conservation: Definition and various methods of Soil Conservation,

5.3 Soil Conservation in India

5.4 Role of RS and GIS in Soil Conservation

### References Books:

1. A.S. Gustafson, (2007): "Soils and Management" Published by Agrobios (India).
2. Brady, N. C., and Weil, R. R. (2008): The Nature and Properties of Soils, Prentice Hall, New Jersey
3. Bridges, E. M. and Davidson, D. A. (1982): Principles and Applications of Soil Geography, Longman
4. Birkeland, P. W (1999): Soils and Geomorphology, Oxford University Press, New York.
5. C. E. Miller, L.M. Turk, (2001): "Fundamental of soil Science" Biotech Books Delhi.
6. Daji, J. A. (1970): A Textbook of Soil Science, Asia Publication House, New York.
7. Lal, R. (ed.), (2002): Encyclopedia of soil science. Marcel Dekker, New York.
8. Miller, R. W. and Donahue, R. L. (1992): Soils: An Introduction to Soils and Plant Growth, Prentice-Hall of India, New Delhi.
9. Pitty, A. F. (1978): Geography and Soil Properties, Methuen and Co., London.
10. S. C. Panda, (2007): "Soil water conservation and dry farming" Published by Agrobios



## Choice Based Credit System Syllabus

## Mapping of Program Outcomes with Course Outcomes

Class: M.A/M.Sc. II

Subject: Geography

Course: Geography of Soil

Course Code: GEO: 5404

Weight age: 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			2	
CO 2	2			3				
CO 3							3	
CO 4							3	
CO 5		3		3			2	
CO 6	2			3				

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

CO2 and CO6 contribute to the development of student's research-related skills and scientific temper. For example, CO2 requires students to learn research-related skills and maintaining a scientific temperament, you can make valuable contributions to the understanding of essential nutrients in soil geography and their impact on plant growth and development.

CO6 and indicates research-related skills and maintaining a scientific temperament, students can contribute to a deeper understanding of the character and profile of different soil types in geography, which is essential for sustainable land use, environmental conservation, and agricultural practices.

**PO2: Effective Citizenship and Ethics:**

CO5 requires students are essential to help them understand the significance of soil conservation and methods of soil reclamation in soil geography. Students can nurture ethical and responsible citizenship among students, fostering an understanding of the significance of soil conservation and soil reclamation in soil geography. This, in turn, contributes to a more sustainable and environmentally conscious society.

**PO4: Disciplinary Knowledge**

CO1, CO2, CO5 and CO6, contribute to the development of students' trans-disciplinary knowledge. For example, CO1 requires students to know the concept and principles of soil formation in geography involve a holistic understanding of the dynamic processes that shape the Earth's crust and provide the foundation for ecosystems and human societies. Students should learn to analyze and interpret soils in various environments and recognize the importance of sustainable soil management for the well-being of the planet.

CO2 indicates that students to understand the role of these essential nutrients in plant growth and development is vital for geography of soil studies, as the availability of these nutrients in the soil directly affects the type of vegetation that can thrive in a given area. Soil properties, nutrient content, and pH levels can vary widely across geographic regions, influencing the types of plants that can be sustained and the agricultural practices that are suitable for a particular location.

CO5 requires students understand the significance of soil conservation and the various methods of soil reclamation are essential for students studying soil geography. These practices are not only important for sustainable agriculture and land use but also for the preservation of natural ecosystems and the overall health of the environment.

CO6 indicates that students studying soil geography should develop a thorough understanding of the character and profile of different soil types. Soil profiles are typically characterized by distinct horizons, and these horizons can vary depending on the soil type and the local environment.

**PO7: Environment and Sustainability**

CO1, CO3, CO4 and CO5 contribute to the knowledge of and need for sustainable development. For example, CO1 requires students to understand the concept and principles of soil formation is crucial when studying environmental science and sustainability. Soil formation, also known as pedogenesis, is a complex process influenced by several key principles and factors.

CO3 and CO4 require students to understand the impact of human activities on soil transformation, erosion, and degradation is crucial for sustainable environmental management. Sustainable land use practices, reforestation, soil conservation methods, and responsible land development are essential for mitigating these negative effects and protecting soil resources for future generations.

CO5 indicates that students to know environmental science and sustainability, it is essential for students to understand the significance of soil conservation and methods of soil reclamation. Soil conservation and reclamation are vital components of sustainable land management.

**M.A. /M.Sc. Geography II SEM IV****Course: GEO: 5405 Interpretation of Topographical and Weather Maps****No. of Credit: 04****Periods: 64****Course Objectives:**

1. Understand the basics of SOI topographical maps.
2. Interpretation of relief features on topographical maps..
3. Introduction to weather maps and their significance.
4. To Proficiency in GPS survey techniques, including reading and area measurement.
5. Practical experience through a one-day field visit and the ability to report on the excursion.
6. Recognition of signs and symbols used in weather maps.
7. Interpretation of weather maps for different seasons.

**Course Outcomes:****By the end of the course, students will be able to:****CO1.** Ability to identify and interpret information on SOI topographical maps.**CO2.** Proficiency in identifying and analyzing relief features on topographical maps.**CO3.** Ability to read and interpret weather maps.**CO4.** Competence in using GPS for surveying and measurement.**CO5.** Practical experience in the application of GPS technology.**CO6.** Ability to compile and report on field observations and measurements.**CO7.** Recognition and understanding of isobaric patterns and their variations.**Topics and Learning Points**

<b>Unit – 1: Study of S.O.I Topographical Maps</b>	<b>No. of Periods</b>
Introduction to SOI topographical maps	<b>08</b>
Indexing systems and conventional signs and symbols	
Grid references: 4-figure grid, 6-figure grid and International grid reference	
<b>Unit – 2: Interpretation of S.O.I toposheets</b>	<b>20</b>
2.1 Relief:	

- 1) Distribution of Spot heights
- 2) Bench marks,
- 3) Trigonometrical Points
- 4) Types of Slopes
- 5) Major landforms from contour patterns

#### 2.2 Drainage network:

- 6) Types-trellis, dendritic, radial, etc.
- 7) Streams with water
- 8) Streams without water
- 9) Influence of relief on drainage

#### 2.3 Natural Vegetation

- 10) Types of vegetation,
- 11) Association of relief and drainage,
- 12) Reserved Forest
- 13) Protected Forest

#### 2.4 Land Use

- 14) Agriculture
- 15) Mining
- 16) Areal distribution and impact of physical landscape.

#### 2.5 Settlements:

- 2) Amenities, etc,
- 3) Distribution,
- 4) Relative size,
- 5) Relative distance (dispersed, nucleated etc)

#### 2.6 Transport and Communication:

1. Types of roads,
2. Railway lines,
3. Facilities of communication

### **Unit – 3: Interpretation of Weather maps**

**20**

- 3.1 Introduction to Weather maps
- 3.2 Sign and symbol used in weather map.
- 3.3 Isobaric Patterns
  - 1) Cyclones
  - 2) Anticyclones
  - 3) V Shaped cyclones
  - 4) V shaped anticyclones
  - 5) Col

### 3.4 Interpretation of weather maps

- 1) Summer season
- 2) Winter season
- 3) Rainy season

## **Unit – 4: GPS Survey of Village**

**06**

### 4.1 Introduction of GPS

- 1) Space segment
- 2) Control segment
- 3) user segment

### 4.2 GPS Survey

- 1) GPS Reading and Area Measurement

### 4.3 One day field visit and excursion report

## **Reference Book:**

1. Archer J. E and Dalton T. H. (1968), Field work in Geography B.T. Batsford Limite
2. Dury G.H. (1960): Map Interpretation. Sir Isaac Pitman and Sons Limited, Pitman House, Bath.
3. Gupta, K. K. and Tyagi, V. C. (1992): Working with maps, Survey of India Publication, Dehradun.
4. Jones P. A. (1968): Field work in Geography. Longmans, Green and Company Limited.
5. Meux A. H. (1960): Reading Topographical Maps. University of London Press Limited.
6. Petrie N. (1992): Analysis and Interpretation of Topographical Maps. Orient Longman Limited Calcutta.
7. Ramamurthy, K. (1982): Map interpretation, Madras.
8. Tamaskar B.G. and Deshmukh V.M. (1974): Geographical Interpretation of Indian Topographical Maps. Orient Longman Limited, Bombay.
9. Vaidyanadhan. R. (1968): Index to a set of 60 topographical maps, CSIR, New Delhi.

## Choice Based Credit System Syllabus

## Mapping of Program Outcomes with Course Outcomes

Class: M.A/M.Sc. II

Subject: Geography

Course: Interpretation of Topographical and Weather Maps

Course Code: GEO: 5405

Weight age: 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				
CO 2	2			2				
CO 3				2				
CO 4				2				
CO 5	2			2				
CO 6	2			2				

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

CO2, Co5 and CO6 contribute to the development of student's research-related skills and scientific temper. the justification for these competencies lies in their collective contribution to individual and collective growth in the scientific and research domains. These skills and temperaments not only enhance the capabilities of individuals but also play a pivotal role in advancing knowledge, solving real-world problems, and contributing to societal progress.

**PO4: Disciplinary Knowledge**

Co1, Co2, Co3, Co4, Co5 and CO6, contribute to the development of students' trans-disciplinary knowledge. The collective justification for these competencies lies in their alignment with the foundational principles of geography, environmental science, and meteorology. These skills are crucial for professionals working in diverse roles, including spatial analysis, environmental management, weather forecasting, and surveying.

