Anekant Education Society's

Tuljaram Chaturchand College Baramati

(Autonomous)

Four Year B.A. Degree Program in Geography

(Faculty of Science)

CBCS Syllabus

TYBA (Geography) Semester V

For Department of Geography

Tuljaram Chaturchand College, Baramati

Choice Based Credit System Syllabus (2023 Pattern)

(As Per NEP 2020)

To be implemented from Academic Year 2025-2026

Preamble

AES's Tuljaram Chaturchand College has made the decision to change the syllabus of across various faculties from June, 2023 by incorporating the guidelines and provisions outlined in the National Education Policy (NEP), 2020. The NEP envisions making education more holistic and effective and to lay emphasis on the integration of general (academic) education, vocational education and experiential learning. The NEP introduces holistic and multidisciplinary education that would help to develop intellectual, scientific, social, physical, emotional, ethical and moral capacities of the students. The NEP 2020 envisages flexible curricular structures and learning based outcome approach for the development of the students. By establishing a nationally accepted and internationally comparable credit structure and courses framework, the NEP 2020 aims to promote educational excellence, facilitate seamless academic mobility, and enhance the global competitiveness of Indian students. It fosters a system where educational achievements can be recognized and valued not only within the country but also in the international arena, expanding opportunities and opening doors for students to pursue their aspirations on a global scale.

In response to the rapid advancements in science and technology and the evolving approaches in various domains of Geography and related subjects, the Board of Studies in Geography at Tuljaram Chaturchand College, Baramati - Pune, has developed the curriculum for the Geography, which goes beyond traditional academic boundaries. The syllabus is aligned with the NEP 2020 guidelines to ensure that students receive an education that prepares them for the challenges and opportunities of the 21st century. This syllabus has been designed under the framework of the Choice Based Credit System (CBCS), taking into consideration the guidelines set forth by the National Education Policy (NEP) 2020, LOCF (UGC), NCrF, NHEQF, Prof. R.D. Kulkarni's Report, Government of Maharashtra's General Resolution dated 20th April and 16th May 2023, and the Circular issued by SPPU, Pune on 31st May 2023.

A Geography degree equips students with the knowledge and skills necessary for a diverse range of fulfilling career paths. Graduates in Geography find opportunities in various fields, including urban planning, GIS analysis, disaster preparedness, teaching, environmental science, remote sensing analysis, transportation planning, demography, hydrology, and many other domains. Throughout their three-year degree program, students explore the spatial

organization of both natural and human phenomena across different scales, from local to global. They learn to identify and analyze features on the Earth's surface, understand their spatial patterns, and compare similarities and differences between different places. The curriculum also delves into the intricate relationship between humans and the environment, examining how physical and cultural landscapes evolve over time. Students specializing in physical geography gain an understanding of the processes that shape Earth's climate, create landforms, and influence the distribution of plant and animal life. By acquiring these comprehensive skills and knowledge, graduates are well-prepared to embark on rewarding careers that contribute to a better understanding of our world and address the challenges ofour ever-changing planet.

Overall, revising the geography syllabus in accordance with the NEP 2020 ensures that students receive an education that is relevant, comprehensive, and prepares them to navigate the dynamic and interconnected world of today. It equips them with the knowledge, skills, and competencies needed to contribute meaningfully to society and pursue their academic and professional goals in a rapidly changing global landscape.

Programme Specific Outcomes (PSOs)

1. Ability of Problem Analysis: Student will be able to analyse the problems of physical as well as cultural environments of both rural and urban areas. Moreover, they will try to find out the possible measures to solve those problems.
2. Conduct Social Survey Project: They will be eligible for conducting social survey project, which is necessity for the assessment of development status of a particular group or section of the society.
3. Individual and teamwork: Works effectively as an individual and as a member or leader in diverse teams and in multidisciplinary settings.
4. Application of modern instruments: Students will be able to apply various modern instruments for data collection and field survey.
5. Application of GIS and modern Geographical Map Making Techniques: Students will learn how to prepare map based on GIS by using the modern geographical map-making techniques.
6. Critical Thinking: Students will able to understand and solve the critical problems of physical and cultural environment.
7. Development of Observation Power: As a student of Geography, they will be capable to develop their observation power through field experience and in future, they will be able to identify the socio-environmental problems of a locality.
8. Development of Communication Skill and Interaction Power: After the completion of the course, they will be efficient in their communication skill as well as power of social interaction.
9. Effective Citizenship: Demonstrate empathetic social concern and equity centred national development and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
10. Enhancement of the ability of Management: Demonstrate knowledge and understanding of the management principles and apply these to their own work, as a

member and leader in a team, to manage projects. They will perform effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

11. Ethics: Recognize different value systems including your own, understand the moral dimensions of your decisions and accept responsibility for them.
12. Understand Environmental Ethics and Sustainability: Understand the impact of the acquired knowledge in societal and environmental contexts and demonstrate the knowledge of need for sustainable development.
13. Self-directed and Life-long Learning: Acquire the ability to engage in independent and life-long learning in the broadest context social, environmental and technological changes.
14. Presentation Skill: Students are being able to understand and write effective reports and design credentials, make effective demonstrations, give and receive clear instruction

Anekant Education Society's

Tuljaram Chaturchand College, Baramati

(Empowered Autonomous)

Board of Studies (BOS) in Geography

Academic Year 2025-2026 to 2027-2028

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

Credit Distribution Structure for F.Y.B.A. Geography

Level	Semester	Major		Minor	OE	VSC, SEC, (VSEC)	AEC, VEC, IKS	OJT, FP, CEP, CC, RP	Cum. Cr/Sem	Degree/ Cum.Cr.
		Mandatory	Electives							
4.5										UG 44 credits
	I	GEO-101-MJM: Physical Geography (4 credits) GEO-102-MJM: Practicalin Physical Geography (2 credits)	--	--	GEO-116-OE: Principles of Remote Sensing-I (2 credits) GEO-117-OE: Principles of Geoinformatics -I (2 credits)	GEO-121-VSC: Land Surveying & Measurement (2 credits) GEO-126-SEC: Fundamentals of Google Earth (2 credits)	ENG-131-AEC Functional English-I (2 credit) GEO-135-VEC: Environmental Pollution and Value Education (2 credits) GEO-137-IKS: Ancient Indian Geographical Thoughts (2 credits)	CC1 (2 credit)	22	
	II	GEO-151-MJM: Human Geography (4 credits) GEO-152-MJM: Practical in Human Geography (2 credits)	--	GEO-161-MN: Fundamental of Geography (2 credits)	GEO-166-OE: Principles of Remote Sensing-II (2 credits) GEO-167-OE: Principles of Geoinformatics -II (2 credits)	GEO-171-VSC: Map Making in GIS (2 credits) GEO-176-SEC Fundamentals of Google Map (2 credits)	ENG-181-AEC Functional English-II (2 credit) GEO-185-VEC: Save The Earth (2 credits)	CC2 (2 credit)	22	
	Cum Cr.	**12**	--	2	8	8	10	4	44	

Credit Distribution Structure for S.Y.B.A. Geography

Level	Semester	Major		Minor	OE	VSC, SEC, (VSEC)	AEC, VEC, IKS	OJT, FP, CEP, CC, RP	Cum. Cr/Sem	Degree/Cum .Cr.
		Mandatory	**Electives**							
4.5	III	**GEO 201 MJM** Fundamentals of Geomorphology [2 T] **GEO 202 MJM** Fundamentals of Oceanography [2 T] **GEO 203 MJM** Disaster Management [2 T] **GEO 204 MJM** Practical in Scale & Projection [2 P]	--	**GEO-211-MM** Geography of India [2 T] **GEO 212 MM** Cartographic Techniques for data representation [2 P]	**GEO-216-OE** Disaster ıagement[2 T]	**GEO-221-VSC** Fundamentals of ote Sensing[2 T]	AEC-[2 T] ıeric IKS(2 T)	CC1 (2 credit) FP (2 credit)	24	UG 44 credits
	IV	**GEO 251 MJM** Fundamentals of Population Geography	--	**GEO 261 MN** Geography of Maharashtra[2 T]	**GEO 266 OE** Practical in Disaster	**GEO 276 SEC** Practical in Remote Sensing	AEC- (2 credit)	CC2 (2 credit)	22	

		[2 T] **GEO 252 MJM** Fundamentals of SettlementGeography [2 T] **GEO 253 MJM** Tourism Geography [2 T]		**GEO 262 MN** Land Measurement	Management [2 P]	[2 P]		CEP (2 Cradit)		
		GEO 254 MJM Statistical Techniques [2 P]		Techniques[2 P]						
	Cum Cr.	**16**	--	8	4	4	6	8	46	

Credit Distribution Structure for T.Y.B.A Geography

Level	Sem	Major		Minor	VSC, SEC, (VSEC)	AEC, VEC, IKS	OJT, FP, CEP, CC, RP	Cum. Cr/Sem	Degree/Cum.Cr.
		Mandatory	**Electives**						
4.5	V	**GEO 301 MJM** Physical Geography of India [2 T]	**GEO 306 MJE(A)** Fundamentals of Climatology [2 T]	**GEO 311 MN** Tourism Geography [2 T]	**GEO 321 VSC** Application of DGPS and Drone Survey [2 P]		**GEO 335 FP** Filed Project (2 credit)	22	UG 44 credits
		GEO 302 MJM Physical Geography of Maharashtra [2 T]	**GEO 306 MJE(B)** Watershed Management [2 T]						
		GEO 303 MJM Fundamentals of Economic Geography [2 T]	**GEO 307 MJE(A)** Practical in Climatology [2 P]	**GEO 312 MM** Practical in Tour Planning [2 P]					
		GEO 304 MJM Practical in Map Reading [2P]	**GEO-307-MJE** (B) Practical in Watershed Management [2 P]						

		GEO 305 MJM Practical in Surveying [2P]							
	VI	**GEO 351 MJM** Human Geography of India [2 T]	**GEO-356-MJE (A)** Geography of Soil	**GEO 361 MN** Social Geography [2 T]			GEO 385 OJT On Job Training [4 P]	22	
		GEO 352 MJM Human Geography of Maharashtra [2 T]	**GEO-356-MJE (B)** Geography of Rural Development						
		GEO 353 MJM Agricultural Geography [2 T]	**GEO 357 MJE (A)** Practical in Soil Geography	**GEO 362 MN** Practical in Google Map and Google Earth [2 P]					
		GEO 354 MJM Practical in GIS [2 P]	**GEO 357 MJE (B)** Practical in Rural Development						
		GEO-355-MJM Practical in Cartographic Techniques [2 P]							
	Cum Cr.	**20**	08	08	02		06	44	**134**

Course Structure for F.Y.B.A. Geography (2023 Pattern)

Sem	Course Type	Course Code	Course Title	Theory / Practical	Credits
I	Major Mandatory	GEO-101-MJM	Physical Geography	Theory	04
	Major Mandatory	GEO-102-MJM	Practical in Physical Geography	Practical	02
	Open Elective (OE)	GEO-116-OE	Principles of Remote Sensing-I	Theory	02
	Open Elective (OE)	GEO-117-OE	Principles of Geoinformatics-I	Theory	02
	Vocational Skill Course (VSC)	GEO-121-VSC	Land Surveying and Measurement	Theory	02
	Skill Enhancement Course (SEC)	GEO-126-SEC	Fundamentals of Google Earth	Theory	02
	Ability Enhancement Course (AEC)	ENG-131-AEC	Functional English-I	Theory	02
	Value Education Course (VEC)	GEO-135-VEC	Environmental Pollution and Value Education	Theory	02
	Indian Knowledge System (IKS)	GEO-137-IKS	Ancient Indian Geographical Thoughts	Theory	02
	Co-curricular Course (CC)	--	To be selected from the Basket	Theory	02
				Total Credits Semester-I	**22**
II	Major Mandatory	GEO-151-MJM	Human Geography	Theory	04
	Major Mandatory	GEO-152-MJM	Practical in Human Geography	Practical	02
	Minor	GEO-161-MN	Fundamentals of Geography	Theory	02
	Open Elective (OE)	GEO-166-OE	Principles of Remote Sensing-II	Theory	02
	Open Elective (OE)	GEO-167-OE	Principles of Geoinformatics-II	Theory	02
	Vocational Skill Course (VSC)	GEO-171-VSC	Map Making in GIS	Theory	02
	Skill Enhancement Course (SEC)	GEO-176-SEC	Fundamentals of Google Map	Theory	02
	Ability Enhancement Course (AEC)	ENG-181-AEC	Functional English-II	Theory	02
	Value Education Course (VEC)	GEO-185-VEC	Save The Earth	Theory	02
	Co-curricular Course (CC)	--	To be selected from the Basket	Theory	02
				Total Credits Semester II	22
				Cumulative Credits Semester I and II	**44**

Course Structure for S.Y.B.A. Geography (2023 Pattern)

Sem	Course Type	Course Code	Course Title	Theory / Practical	Credits
III	Major Mandatory	GEO-201-MJM	Fundamentals of Geomorphology	Theory	02
	Major Mandatory	GEO-202-MJM	Fundamentals of Oceanography	Theory	02
	Major Mandatory	GEO-203-MJM	Disaster Management	Theory	02
	Major Mandatory	GEO-204-MJM	Practical in Scale & Projection	Practical	02
	Minor (MN)	GEO-211-MN	Geography of India	Theory	02
	Minor (MN)	GEO-212-MN	Cartographic Techniques for data Representation	Practical	02
	Open Elective (OE)	GEO-216-OE	Disaster Management	Theory	02
	Vocational Skill Course (VSC)	GEO-221-VSC	Fundamentals of Remote Sensing	Theory	02
	Ability Enhancement Course (AEC)	MAR-23- AEC	भाषिक उपयोजन व लेखन कौशल्य	Theory	02
		HIN-231-AEC	हहिंदी भाि◌ा: सजन कौशल्य		
		SAN-231-AEC	प्राथमिक सिंभा◌ाि◌ण कौशल्य◌ि◌ं		
	Field Project (FP)	GEO-235-FP	Project	Practical	02
	Co-curricular Course (CC)	YOG/PES/CUL/NSS/NCC-239-CC	To be selected from the Basket	Theory	02
	Generic IKS	GEN-245-IKS	IKS	Theory	02
	Total Credits Sem-III				**24**
IV	Major Mandatory	GEO-251-MJM	Fundamentals of PopulatioGeography	Theory	02
	Major Mandatory	GEO-252-MJM	Fundamentals of SettlemenGeography	Theory	02
	Major Mandatory	GEO-253-MJM	Tourism Geography	Theory	02
	Major Mandatory	GEO-254-MJM	Statistical Techniques in Geography	Practical	02
	Minor	GEO-261-MN	Geography of Maharashtra	Theory	02
	Minor	GEO-262-MN	Land Measurement Techniques	Practical	02
	Open Elective (OE)	GEO-266-OE	Practical in Disaster Management	Practical	02
	Skill Enhancement Course (SEC)	GEO-276-SEC	Practical in Remote Sensing	Practical	02
	Ability Enhancement Course (AEC)	MAR-281-AEC	लेखन मनमिती व परीक्षण कौशल्ये	Theory	02
		HIN-281-AEC	हहिंदी भाि◌ा: सिंप्रेि◌ण कौशल		
		SAN-281-AEC	प्रगत सिंभा◌ाि◌ण कौशल्य◌ि◌ं		
	Community Engagement Project (CEP)	GEO-285-CEP	Project	Practical	02
	Co-curricular Course (CC)	YOG/PES/CUL/NSS/NCC-289-CC	To be selected from the Basket	Theory	02
	Total Credits Sem-IV				22
	Grand Total Sem III + Sem IV				**46**

Course Structure for T.Y.B.A. Geography (2023 Pattern

Sem	Course Type	Course Code	Course Title	Theory / Practical	Credits
V	Major Mandatory	GEO-301-MJM	Physical Geography of India	Theory	02
	Major Mandatory	GEO-302- MJM	Physical Geography of Maharashtra	Theory	02
	Major Mandatory	GEO-303-MJM	Fundamentals of Economic Geography	Theory	02
	Major Mandatory	GEO-304-MJM	Practical in Map Reading	Practical	02
	Major Mandatory	GEO-305-MJM	Practical in Surveying	Practical	02
	Major Elective	GEO-306-MJE (A)	Fundamentals of Climatology	Theory	02
	Major Elective	GEO-306-MJE (B)	Watershed Management		
	Major Elective	GEO-307-MJE (A)	Practical in Climatology	Practical	02
	Major Elective	GEO-307-MJE (B)	Practical in Watershed Management		
	Minor (MN)	GEO-311-MN	Tourism Geography	Theory	02
	Minor (MN)	GEO-312-MN	Practical in Tour Planning	Practical	02
	Vocational Skill Course (VSC)	GEO-321-VSC	Application of DGPS and Drone Survey	Theory	02
	Field Project (FP)	GEO-335-FP	Field Project	Practical	02
	Total Credits Sem-v				**22**
VI	Major Mandatory	GEO-351-MJM	Human Geography of India	Theory	02
	Major Mandatory	GEO-352-MJM	Human Geography of Maharashtra	Theory	02
	Major Mandatory	GEO-353-MJM	Agricultural Geography	Theory	02
	Major Mandatory	GEO-354-MJM	Practical in GIS	Practical	02
	Major Mandatory	GEO-355-MJM	Practical in Cartographic Techniques	Practical	02
	Major Elective	GEO-356 -MJE (A)	Geography of Soil	Theory	02
	Major Elective	GEO-356- MJE (B)	Geography of Rural Development		
	Major Elective	GEO-357-MJE (A	Practical in Soil Geography	Practical	02
	Major Elective	GEO-357 -MJE (B)	Practical in Rural Development		
	Minor	GEO-361-MN	Social Geography	Theory	02
	Minor	GEO-362-MN	Practical in Google Map and Google Earth	Practical	02
	On Job Training (OJT)	GEO-385-OJT	On Job Training	Practical	04
	Total Credits Sem-VI				22
				Grand Total Sem V + Sem VI	**44**
				Grand Total Sem I + II + III + IV + V + VI	**134**

CBCS Syllabus as per NEP 2020 for T.Y.B.A. Semester-V (2023 Pattern)

Name of the Programme	: BA Geography
Programme Code	: UAGEO
Class	: TYBA
Semester	: V
Course Type	: Major Mandatory (Theory)
Course Code	: GEO-301-MJM
Course Title	: Physical Geography of India
No. of Credits	: 02
No. of Teaching Hours	: 30

Course Objectives:

1. To make students well aware of the basic concepts of human geography.
2. To understand the Demographic Transition Theory and basic concepts related to the population with special reference to India.
3. To acquaint the knowledge of types and patterns of rural settlement.
4. To recognize the concept of urbanization with special reference to Maharashtra and India.
5. To understand economic sector available in India.
6. To recognize factors affecting location of industries.
7. To study major types of industries in India.

Course Outcomes:

By the end of the course students will able to

CO1: Explain and apply the fundamental concepts of human geography in real-world contexts.

CO2: Analyze population trends and demographic changes in India using the Demographic Transition Theory.

CO3: Identify and differentiate between various types and patterns of rural settlements in India.

CO4: Evaluate the process of urbanization and its socio-economic impact, with a focus on Maharashtra and India.

CO5: Categorize and assess the contributions of different economic sectors to India's development.

CO6: Analyze and explain the factors influencing the location of industries in India.

CO7: Describe and compare major industries in India and their regional distribution.

Topics and Learning points

Unit 1: Location and Physiography of India	**Teaching Hours**
1.1 Location and Extent of India: Absolute and Relative	**12**
1.2 Neighboring Countries of India	
1.3 Physiographic Divisions of India	
1.4 Characteristics and Importance Physiographic Divisions	
Unit 2: Drainage System	**10**
2.1 Meaning, Definition, and Concept of Drainage System	
2.2 The Himalayan River System	
2.3 The Peninsular River System	
Unit 3: Climate	**08**
3.1 Main Seasons and Associated Weather Conditions	
3.2 Monsoon: Origin and Mechanism	
3.3 El-Nino and La-Nina	
3.4 Impact of Climate Change on Indian Monsson	

Reference

1. Khullar R. D. (2007): India- A Compressive Geography, Kalayani Publisher.
2. Aher A.B, Chaodhari A. P & Chaodhari Archna. Regional Geography of India Prashant Publication Jalgaon 2015.
3. Khullar, D. R. (2006): India. A Comprehensive Geography. Kalyani Publishers., New Delhi.
4. Krishnan, M. S. (1968): Geology of India and Burma. 4th edition. Higgin

Bothams Private. Ltd., Madras

5. Nag, P. and Gupta S. S. (1992): Geography of India. Concept Publishing. Company, New Delhi.
6. Singh, R. L. (ed.) (1971): India. A Regional Geography. National Geographical Society of India, Varanasi.

Mapping of Program Outcomes (POs) with Course Outcomes (COs)

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

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	2	3	2	1	1	2	2	1
CO2	3	2	1	3	3	1	1	1	2	1
CO3	3	2	1	3	3	2	1	1	2	1
CO4	3	2	1	3	3	2	2	1	2	1
CO5	2	2	1	2	3	3	2	1	1	1
CO6	3	2	2	3	3	3	2	2	2	1
CO7	3	2	1	3	2	2	2	2	2	2

Justification for the Mapping

PO1: Critical and Creative Thinking

CO1, CO2, CO3, and CO6 demonstrate a strong relationship as they involve analysis and critical evaluation of India's geography, drainage systems, and climatic phenomena. Students are encouraged to think analytically, develop hypotheses, and apply critical thinking to geographical problems.

PO2: Communication Skills

CO1, CO6, and CO7 align with communication skills through the presentation of research findings and the ability to articulate complex geographical concepts effectively. Students develop skills in structuring reports, presenting data, and engaging in discussions that convey their understanding of India’s geographical diversity.

PO3: Multicultural Competence

CO1 promotes understanding of India's neighboring countries and their influence, fostering multicultural awareness. It equips students to appreciate cultural diversity, understand geopolitical dynamics, and enhance their competence in engaging with different communities.

PO4: Research Skills

CO2, CO3, and CO6 demonstrate research skills by analyzing India's physiography, drainage, and climate and applying that knowledge to real-world scenarios. These outcomes prepare students for conducting fieldwork, interpreting data, and producing well-structured research reports that reflect scientific rigor.

PO5: Environmental Awareness

CO4 and CO5 highlight environmental considerations by exploring monsoon mechanisms, El-Nino, La-Nina, and their environmental impacts. Students gain insights into sustainable resource management, ecological balance, and climate change adaptation strategies that are essential for informed decision-making.

PO6: Problem-solving Abilities

CO5 and CO6 promote problem-solving skills by assessing the relationship between geography and climate, encouraging innovative solutions. Students learn to identify geographical challenges and propose strategies that address community-specific environmental and socio-economic issues.

PO7: Collaboration and Teamwork

CO6 and CO7 encourage teamwork and collaboration by involving field-based projects and data synthesis. Through collaborative learning, students develop interpersonal skills and the ability to work effectively with diverse groups to achieve common objectives.

PO8: Value Inculcation

CO1, CO5, and CO7 focus on ethical engagement, environmental sustainability, and responsible citizenship. Students are encouraged to adopt ethical practices in fieldwork and research while addressing societal concerns with a sense of responsibility and empathy.

PO9: Digital and Technological Skills

CO6 involves the use of digital platforms, GIS, and data analysis techniques in research. Students develop technological proficiency, enabling them to handle spatial data, analyze geographic patterns, and visualize findings effectively.

PO10: Community Engagement and Service

CO5 and CO7 emphasize community-based research and engagement, fostering responsibility and service. Through active engagement with local communities, students gain practical exposure to real-world challenges and contribute to solutions that enhance community resilience.

CBCS Syllabus as per NEP 2020 for T.Y.B.A. Semester-V (2023 Pattern)

Name of the Programme	: BA Geography
Programme Code	: UAGEO
Class	: TYBA
Semester	: V
Course Type	: Major Mandatory (Theory)
Course Code	: GEO-302- MJM
Course Title	: Physical Geography of Maharashtra
No. of Credits	: 02
No. of Teaching Hours	: 30

Course Objectives:

1. To understand the geological structure and formation of Maharashtra's landforms.
2. To analyze the drainage systems, including major rivers and their basins in Maharashtra.
3. To study the climate patterns and their variations across different regions of Maharashtra.
4. To explore the physiographic divisions of Maharashtra, including the Western Ghats, Deccan Plateau, and coastal plains.
5. To examine the soil types and their distribution across Maharashtra.
6. To assess the natural vegetation and forest types found in various parts of Maharashtra.
7. To investigate the occurrence and impact of natural hazards, such as floods and droughts, in Maharashtra.

Course Outcomes:

By the end of the course students will able to

CO 1: Explain the geological structure and formation of Maharashtra's landforms.

CO 2: Analyze and describe the major drainage systems and river basins in Maharashtra.

CO 3: Interpret climate patterns and understand their regional variations across Maharashtra.

CO 4: Identify and differentiate the physiographic divisions of Maharashtra, including the Western Ghats, Deccan Plateau, and coastal plains.

CO 5: Classify and describe the various soil types and their distribution in Maharashtra.

CO 6: Assess and categorize the natural vegetation and forest types found in Maharashtra.

CO 7: Evaluate the occurrence and impacts of natural hazards such as floods and droughts in Maharashtra.

Topics and Learning Points	Teaching Hours
Unit 1: Introduction of Maharashtra	**10**
1.1 Historical and Political Background of the state	
1.2 Geographical location of State	
1.3 Adjoining States	
1.4 Physical and Administrative Divisions	
Unit 2: Physical Setting of Maharashtra	**10**
2.1 Geological Structure of Maharashtra	
2.2 Physical Structure of Mountain, Plateau and Plain	
2.3 Drainage Pattern (East and West Flowing Rivers)	
2.4 Major Soil Types and Distribution	
Unit 3: Climate of Maharashtra	**10**
3.1 Climatic Regions of Maharashtra	
3.2 Distribution of Rainfall	
3.3 Draught prone Areas: problems and Management	
3.4 Flood Areas: Problems and Management	

Reference:

1. S.G. Khedkar, 2014, Maharashtra: A Political History, New Century Book House.
2. M.R. Karanjkar, 2010, Maharashtra: History and Culture, Shubhi Publications.
3. V.S. Kulkarni, 2007, Geography of Maharashtra, Concept Publishing Company.
4. A.V. Deshmukh, 2012 Maharashtra: Geography, History and Culture, Prabhat Prakashan.
5. N. S. Apte, 2015, Maharashtra: A Comprehensive Overview, Mapin Publishing.
6. N.V. Chitnis, 2008, Geology of Maharashtra, University of Pune Press.
7. S. R. Subhedar, 2011, The Geology of Maharashtra: An Introduction, Himalaya Publishing House.

Mapping of Program Outcomes with Course Outcomes

Weightage: 0= No Relation 1= Weak or low relation 2= Moderate or partial relation, 3= Strong or direct relation

COs / POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	2	3	3	3	2	3	2	2
CO2	3	3	2	3	2	3	2	2	1	1
CO3	3	2	1	3	2	2	1	1	1	1
CO4	3	3	2	3	3	3	2	3	2	2
CO5	2	2	1	2	3	3	3	2	3	2
CO6	2	2	1	2	3	3	3	2	3	3
CO7	3	2	2	3	3	3	3	2	2	3

Justification:

PO1: Critical and Creative Thinking: CO1, CO2, CO3, and CO4 strongly relate to critical and creative thinking by requiring complex analysis of geological, drainage, and climatic data. CO5 and CO6 involve moderate critical thinking for data evaluation, while CO7 requires strong critical thinking for assessing natural hazards.

PO2: Communication Skills: Effective communication is crucial for CO1, CO2, and CO4 in explaining geographical concepts. CO3 and CO7 need clear presentation of climate and hazard data, with a moderate need for CO5 and CO6 in describing soil and vegetation.

PO3: Multicultural Competence: CO1 and CO2 support multicultural understanding through regional insights, while CO6 and CO7 emphasize ecological and community values, contributing to global awareness.

PO4: Research Skills: CO1, CO2, CO3, and CO7 strongly relate to research skills for hypothesis testing and data analysis. CO5 and CO6 require moderate research skills for soil and vegetation studies.

PO5: Environmental Awareness: CO1 and CO4 enhance environmental awareness through understanding landforms, while CO5 and CO6 support conservation. CO7 addresses environmental degradation and disaster management.

PO6: Problem-Solving Abilities: CO1, CO2, CO3, and CO4 solve issues related to landforms, drainage, and climate. CO5 and CO6 address soil and vegetation management, and CO7 focuses on disaster management.

PO7: Collaboration and Teamwork: CO1 and CO4 involve teamwork in geological and physiographic research. CO5 and CO6 require team-based efforts for soil and vegetation assessments, and CO7 may need collaborative work for hazard management.

PO8: Value Inculcation: CO1 and CO4 promote ethical practices in research and conservation. CO5 and CO6 encourage responsible stewardship, while CO7 includes ethical considerations for disaster response.

PO9: Digital and Technological Skills: CO1 and CO5 use digital tools for analysis, while CO6 and CO7 involve technology for mapping and analyzing vegetation and hazards.

PO10: Community Engagement and Service: CO1 and CO4 inform community conservation efforts, and CO6 and CO7 engage communities in environmental protection and disaster preparedness

CBCS Syllabus as per NEP 2020 for T.Y.B.A. Semester-V (2023 Pattern)

Name of the Programme	: BA Geography
Programme Code	: UAGEO
Class	: TYBA
Semester	: V
Course Type	: Major Mandatory (Theory)
Course Code	: GEO-303- MJM
Course Title	: Fundamentals of Economic Geography
No. of Credits	: 02
No. of Teaching Hours	: 30

Course Objectives:

1. To understand the definition, nature, and scope of Economic Geography.
2. To compare traditional and modern approaches in Economic Geography.
3. To analyze recent trends and developments in Economic Geography.
4. To classify different types of economic activities and understand their significance.
5. To identify and evaluate factors affecting the location of economic activities.
6. To apply Weber's and Von Thunen's models to understand the spatial organization of economic activities.
7. To recognize the importance of natural, human, and non-conventional resources for sustainable development.

Course Outcomes:

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

CO1: Define and explain the nature and scope of Economic Geography.

CO2: Differentiate between traditional and modern approaches in Economic Geography.

CO3: Assess and interpret recent trends and emerging themes in Economic Geography.

CO4: Classify and analyze various economic activities and their significance in development.

CO5: Identify and evaluate the physical, social, economic, and technical factors influencing the location of economic activities.

CO6: Apply Weber's and Von Thunen's models to analyze the spatial arrangement of economic activities.

CO7: Analyze the significance of natural, human, and non-conventional resources in achieving sustainable development.

Topics and Learning points

Unit 1: Introduction to Economic Geography **10**

1.1 Definition, Nature, and Scope

1.2 Approaches: Traditional and Modern

1.3 Recent Trends in Economic Geography

Unit 2: Economic Activities **10**

2.1 Definition and Classification of Economic Activities

2.2 Factors affecting on Location of Economic Activities

2.3 Von Thunen's Theory of Agricultural Location

2.4 Weber's Least Cost Theory of Industrial Location

Unit 3: Resources **10**

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

3.4 Study of resources in Baramati and its impact on the development of Baramati.

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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.
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5. Kanan Chatterjee (2015): Basics of Economic Geography.
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7. Lloyd, P. and Dicken, B. (1972): Location in Space: A Theoretical Approach to Economic Geography, Harper and Row, New York Methuen.
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.

Mapping of Program Outcomes with Course Outcomes

Weightage: 0= No relation, 1= Weak relation, 2= Moderate relation, 3= Strong relation

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	1	3	2	2	1	1	3	1
CO2	3	2	1	3	2	3	1	1	3	1
CO3	3	2	1	3	2	3	1	1	3	1
CO4	3	2	1	2	3	3	1	1	3	1
CO5	3	2	1	3	3	2	1	1	3	1
CO6	2	2	1	2	3	2	2	1	3	1
CO7	2	2	1	2	3	2	2	1	3	1

Justification for CO-PO Mapping

PO1 (Critical and Creative Thinking)

CO1, CO2, and CO3 foster critical thinking by analyzing the definition, approaches, and recent trends in Economic Geography. CO4, CO5, CO6, and CO7 encourage creative thinking by applying models, evaluating factors, and assessing resources for sustainable development.

PO2 (Communication Skill)

CO1 and CO2 involve explaining the nature, scope, and approaches of Economic Geography, requiring clear communication. CO3 to CO7 engage students in presenting findings from analyzing models and resource evaluations effectively.

PO3 (Multicultural Competence)

All COs promote multicultural competence by analyzing the impact of economic activities and resource management in diverse geographical and cultural settings.

PO4 (Research Skills)

CO3 develops research skills through the interpretation of recent trends. CO1, CO2, CO4, CO5, CO6, and CO7 involve applying theories, models, and techniques that require data analysis and evaluation.

PO5 (Environmental Awareness)

CO4, CO5, CO6, and CO7 promote environmental awareness by emphasizing resource management and sustainable practices. CO1, CO2, and CO3 contribute by understanding the environmental impact of economic activities.

PO6 (Problem-solving Abilities)

CO3 and CO4 involve solving challenges related to economic trends and activities. CO1, CO2, CO5, CO6, and CO7 require applying theoretical models and evaluating sustainable solutions.

PO7 (Collaboration and Teamwork)

CO6 and CO7 encourage teamwork in analyzing models and evaluating resources. CO1 to CO5 may also involve group activities to develop strategic insights.

PO8 (Value Inculcation)

All COs instill values by emphasizing ethical approaches to economic geography, resource management, and sustainable practices.

PO9 (Digital and Technological Skills)

All COs strengthen digital and technological skills by applying analytical models, GIS tools, and remote sensing techniques.

PO10 (Community Engagement and Service)

All COs equip students to engage with communities by applying sustainable solutions and contributing to environmental protection through resource management.

CBCS Syllabus as per NEP 2020 for T.Y.B.A. Semester-V (2023 Pattern)

Name of the Programme	: BA Geography
Programme Code	: UAGEO
Class	: TYBA
Semester	: V
Course Type	: Major Mandatory (Practical)
Course Code	: GEO-304-MJM
Course Title	: Practical in Map Reading
No. of Credits	: 02
No. of Teaching Hours	: 60

Course Objectives:

1. To introduce the fundamentals of Survey of India (SOI) toposheets by explaining marginal information, conventional symbols, and various types of toposheets.
2. To classify and differentiate toposheets based on scale, indexing, and purpose, including million sheets, degree sheets, and city maps.
3. To develop skills in interpreting and analyzing SOI toposheets of different physiographic regions such as plains, plateaus, mountains, and deserts.
4. To conduct field-based observation and identification of geographical features through toposheet-oriented field excursions and preparation of a brief report.
5. To familiarize students with the Indian Daily Weather Reports (IDWR) generated by the India Meteorological Department (IMD) and understand associated symbols.
6. To analyze and interpret isobaric patterns to distinguish between cyclones and anticyclones in various seasons.
7. To apply theoretical knowledge in real-world settings by visiting a weather station to observe and analyze real-time meteorological data.

Course Outcomes:

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

CO1: Explain the structure and components of SOI toposheets and identify conventional symbols and marginal information.

CO2: Classify and differentiate various types of toposheets based on scale, indexing, and intended use.

CO3: Interpret and analyze geographical features from SOI toposheets of different physiographic regions.

CO4: Conduct field-based observations, identify geographical features, and prepare brief analytical reports.

CO5: Interpret Indian Daily Weather Reports (IDWR) and identify relevant symbols and seasonal variations.

CO6: Analyze and differentiate isobaric patterns to assess the occurrence of cyclones, anticyclones, and seasonal weather changes.

CO7: Apply practical knowledge by interpreting data from a weather station and correlating it with seasonal climatic trends.

Topics and Course Points

Unit – 1: Introduction to Toposheets **Lectures**

1.1 Introduction to Survey of India (SOI) toposheets **12**

1.2 Marginal Information, Conventional signs and symbols

1.3 Types of toposheet/Indexing of toposheets

Unit – 2: SOI Toposheet Reading and Interpretation **24**

2.1 Introduction to SOI online Toposheets Portal

2.2 Reading of any two toposheets

2.3 One day field Excursion and preparation of report

Unit – 3: Weather Map Reading and Interpretation **24**

3.1 Introduction to Indian Daily Weather Report of IMD

3.2 Symbols used in Indian Daily Weather Report

3.3 Reading of weather map of any two season

3.4 One day visit to nearby weather station of IMD

Reference Books and Websides:

1. Singh Lehraj, (1973): Map Work and Practical Geography, Central Book Depot –Allahabad
2. D. Y. Ahirrao and E. K. Karanjkhele, (2002): Pratyakshik Bhugol, SudarshanPublication, Nashik
3. Arjun Kumbhare (1994), Practical Geography, Sumeru Publication, Mumbai.
4. Pijushkanti Saha & ParthaBasu (2007): Advanced Practical Geography, Booksand Allied (P) Ltd., Kolkata.
5. Heywood, I., Cornelius, S. and Carver, S. (2011) An Introduction to GeographicalInformation Systems. Prentice Hall, Fourth Edition.
6. https://surveyofindia.gov.in/
7. https://mausam.imd.gov.in/
8. https://www.imdpune.gov.in/
9. https://www.esri.com/en-us/home
10. https://youtube.com/c/GeoDeltaLabs
11. https://www.google.com/earth/
12. https://www.google.com/maps
13. http://studymaterial.unipune.ac.in:8080/jspui/handle/123456

Mapping of Program Outcomes with Course Outcomes

Weightage: 0 = No relation, 1 = Weak relation, 2 = Moderate relation, 3 = Strong relation

•	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	1	2	2	1	1	1	2	1
CO2	3	2	1	2	2	2	1	1	2	1
CO3	3	2	1	3	2	3	1	1	2	1
CO4	3	2	1	2	3	3	1	1	2	1
CO5	3	2	1	3	3	2	1	1	3	1
CO6	2	2	1	2	3	2	2	1	3	1
CO7	2	2	1	2	3	2	2	1	3	1

Justification for CO-PO Mapping

PO1 (Critical and Creative Thinking)

CO1, CO2, and CO3 involve analyzing and interpreting various types of toposheets and weather maps, enhancing critical and creative thinking. CO4, CO5, CO6, and CO7 engage students in analyzing real-world data from field excursions and weather stations, further developing problem-solving and critical evaluation skills.

PO2 (Communication Skill)

CO1 and CO2 involve explaining toposheet structures and presenting classified data, promoting effective communication of technical information. CO3 to CO7 require interpreting and explaining weather patterns, field data, and analytical results, strengthening communication abilities.

PO3 (Multicultural Competence)

All COs contribute to multicultural competence by encouraging the study of toposheets and weather reports from diverse regions, fostering sensitivity to geographic and climatic variations across different regions.

PO4 (Research Skills)

CO3 and CO5 involve the analysis of toposheets and weather patterns, requiring research-based inquiry and data interpretation. CO1, CO2, CO4, CO6, and CO7 encourage further research and exploration through field-based observations and simulations.

PO5 (Environmental Awareness)

CO4, CO5, CO6, and CO7 promote environmental awareness by analyzing watershed patterns, identifying geographical features, and assessing weather-related changes. CO1, CO2, and CO3 contribute to environmental knowledge through the study of toposheets and weather data.

PO6 (Problem-solving Abilities)

CO3 and CO4 involve the interpretation of toposheets and weather reports, requiring problem-solving skills to assess and analyze geographical and atmospheric data. CO5, CO6, and CO7 enhance problem-solving abilities through the application of real-world techniques to address environmental and climatic challenges.

PO7 (Collaboration and Teamwork)

CO6 and CO7 involve teamwork in conducting field observations and weather analysis, promoting collaboration and group-based problem-solving. CO1 to CO5 encourage teamwork while interpreting and analyzing toposheet and weather data in class activities and field excursions.

PO8 (Value Inculcation)

All COs promote value inculcation by encouraging the ethical use of scientific knowledge and fostering an understanding of sustainable environmental management through fieldwork, weather observation, and map interpretation.

PO9 (Digital and Technological Skills)

All COs involve digital and technological skills, particularly CO1, CO2, CO5, and CO6, where students use GIS, mapping tools, and meteorological data for analysis and interpretation.

PO10 (Community Engagement and Service)

All COs equip students with the knowledge and skills to engage with communities, apply toposheet and weather analysis in practical scenarios, and contribute to sustainable development and environmental management efforts.

CBCS Syllabus as per NEP 2020 for T.Y.B.A. Semester-V (2023 Pattern)

Name of the Programme	: BA Geography
Programme Code	: UAGEO
Class	: T.Y.B.A.
Semester	: V
Course Type	: Major Mandatory (Practical)
Course Code	: GEO-305-MJM
Course Title	: Practical in Surveying
No. of Credits	:02
No. of Teaching Hours	:60

Course Objectives:

1. To introduce the basic concepts of surveying by defining key terms, directions, and types of north used in surveying.
2. To classify and explain different types of surveys and highlight their significance in geographical analysis.
3. To develop an understanding of plane table surveying by introducing its instruments and applying the radiation and intersection methods.
4. To familiarize students with prismatic compass surveying and its instruments, along with the execution of open and closed traverse methods.
5. To introduce the principles and techniques of dumpy level and auto level surveying and explain their application in fieldwork.
6. To apply appropriate survey techniques to measure distances, angles, and elevations accurately using different surveying instruments.
7. To encourage practical fieldwork and hands-on learning by conducting surveys using plane table, prismatic compass, and dumpy level methods.

Course Outcomes:

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

CO1: Define the fundamental concepts of surveying, including directions, types of north, and classifications of surveys.

CO2: Identify and differentiate various types of surveys and apply them appropriately based on field requirements.

CO3: Conduct a plane table survey using radiation and intersection methods and interpret the results effectively.

CO4: Perform prismatic compass surveys using both open and closed traverse methods and analyze the obtained data.

CO5: Execute dumpy level surveys using rise and fall and collimation methods for determining elevation differences.

CO6: Apply suitable survey techniques to collect accurate field data and interpret results with precision.

CO7: Demonstrate practical knowledge and problem-solving skills by conducting and analyzing real-world field surveys.

Topics and Course Points

Unit 1: Introduction to Surveying	**Teaching Hour**
1.1 Definition of Surveying	**10**
1.2 Directions (4 and 8 Directions)	
1.3 Types of North Direction (True, Magnetic and Grid North)	
1.4 Types of Survey	
Unit 2: Plane Table Survey	**18**
2.1 Introduction to Plane Table Survey and their instruments	
2.2 Plane table survey- Radiation Method	
2.3 Plane table survey- Intersection Method	
Unit 3: Prismatic Compass Survey	**16**
3.1 Introduction to Prismatic Compass Survey and their instruments	
3.2 Prismatic Compass survey- Open Traverse Method	
3.3 Prismatic Compass survey- Closed Traverse Method	

Unit 4: Dumpy Level Survey **16**

4.1 Introduction to Dumpy level / Auto level survey and their instruments

4.2 Dumpy level survey- Rise and Fall Method

4.3 Dumpy level survey- Collimation Method

Reference Books:

1. Sharma J. P., 2010, Prayogic Bhugol, Rastogi Publishers, Meerut.
2. Singh R. L. and Singh R. P. B., 1999, Elements of Practical Geography, Kalyani Publishers.
3. Slocum T. A., Mcmaster R. B. and Kessler F. C., 2008, Thematic Cartography and Geovisualization (3rd Edition), Prentice Hall.
4. Tyner J. A., 2010, Principles of Map Design, the Guilford Press.
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13. Advanced Practical Geography: 2007, Saha P., Basu P. Books and Allied (P) Ltd, Kolkata

Mapping of Program Outcomes with Course Outcomes

Weightage: 0 = No relation, 1 = Weak relation, 2 = Moderate relation, 3 = Strong relation

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	1	2	1	1	1	1	2	1
CO2	3	2	1	2	2	2	1	1	2	1
CO3	3	2	1	3	2	3	1	1	2	1
CO4	3	2	1	3	2	3	1	1	2	1
CO5	3	2	1	3	3	3	1	1	3	1
CO6	2	2	1	2	3	3	2	1	3	1
CO7	2	2	1	2	3	3	2	1	3	1

Justification for CO-PO Mapping

PO1 (Critical and Creative Thinking)

CO1, CO2, and CO3 foster critical thinking by enabling students to analyze survey types, interpret data from plane table and prismatic compass surveys, and make informed decisions. CO4, CO5, CO6, and CO7 further develop critical thinking by requiring students to assess complex surveying techniques and analyze real-world field data.

PO2 (Communication Skill)

CO1 and CO2 involve explaining survey concepts and classifying survey types, enhancing communication skills. CO3 to CO7 engage students in presenting and interpreting field data, survey findings, and graphical results, improving their ability to communicate technical information effectively.

PO3 (Multicultural Competence)

All COs contribute to multicultural competence by promoting the understanding of diverse geographic features, landforms, and environmental contexts across different regions, fostering awareness of cultural diversity in geographical surveys.

PO4 (Research Skills)

CO3 and CO4 involve conducting and analyzing plane table and prismatic compass surveys, requiring data collection, interpretation, and research-based inquiry. CO1, CO2, CO5, CO6, and CO7 engage students in exploring survey techniques, fostering research skills through field-based activities.

PO5 (Environmental Awareness)

CO4, CO5, CO6, and CO7 promote environmental awareness by emphasizing the importance of accurate survey data in land management, resource planning, and environmental assessment. CO1, CO2, and CO3 contribute to understanding geographical and environmental contexts.

PO6 (Problem-solving Abilities)

CO3 and CO4 involve analyzing and interpreting survey data, enhancing problem-solving skills. CO5, CO6, and CO7 encourage students to apply appropriate techniques in solving real-world surveying challenges and evaluating field data for accuracy.

PO7 (Collaboration and Teamwork)

CO6 and CO7 encourage teamwork during field surveys, as students collaborate to execute survey methods and analyze results. CO1 to CO5 also promote group discussions and cooperative learning during practical and theoretical sessions.

PO8 (Value Inculcation)

All COs instill ethical values and responsibility by promoting accuracy and integrity in data collection, interpretation, and reporting. They foster an understanding of the significance of precise surveying techniques in sustainable development and land management.

PO9 (Digital and Technological Skills)

CO1, CO2, CO5, and CO6 develop technological skills by introducing modern surveying tools and software used for accurate measurements and data analysis. CO3, CO4, and CO7 enhance these skills through the practical application of survey techniques.

CBCS Syllabus as per NEP 2020 for T.Y.B.A. Semester-V (2023 Pattern)

Name of the Programme	: BA Geography
Programme Code	: UAGEO
Class	: TYBA
Semester	: V
Course Type	: Major Elective (Theory)
Course Code	: GEO-306- MJE (A)
Course Title	: Fundamentals of Climatology
No. of Credits	: 02
No. of Teaching Hours	: 30

Course Objectives:

1. To describe climatology, explore its branches, and understand its significance in atmospheric studies.
2. To describe the composition and vertical structure of the atmosphere and analyze its climatic influence.
3. To examine the processes of solar and terrestrial radiation and assess their impact on Earth's heat balance.
4. To analyze factors controlling temperature variations, including lapse rate and temperature inversion.
5. To understand the distribution of atmospheric pressure and explain the general circulation patterns.
6. To discuss atmospheric moisture, its measurement, and the processes of condensation and precipitation.
7. To study global wind circulation, weather patterns, and their role in shaping climatic systems.

Course Outcomes:

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

CO1. Accurately describe the concept of climatology, explore its branches, and explain its significance in understanding atmospheric processes.

CO2. Explain the composition and vertical structure of the atmosphere and analyze their impact on climatic patterns.

CO3. Examine the processes of solar and terrestrial radiation and assess their influence on Earth's heat budget.

CO4. Analyze factors controlling temperature variations, including lapse rate, heat transfer, and temperature inversion.

CO5. Understand the distribution of atmospheric pressure and describe the general circulation patterns of the atmosphere.

CO6. Discuss atmospheric moisture, its measurement techniques, and the processes of condensation and precipitation.

CO7. Study global wind circulation, identify major wind patterns, and assess their role in shaping climatic system.

Topics and Learning Points

UNIT 1: Introduction to Climatology **Teaching Hours**

1.1 Definition of Climatology **10**

1.2 Branches of Climatology

1.3 Composition of atmosphere

1.4 Structure of atmosphere

UNIT 2: Insolation and Temperature **10**

2.1 Solar and terrestrial radiation

2.2 Temperature measurements and controls

2.3 Heat Budget

2.4 Lapse rate and temperature inversion

UNIT 3: Atmospheric Pressure and Moisture **10**

3.1 Factors affecting horizontal distribution of pressure

3.2 General circulation of the atmosphere

3.3 Atmospheric moisture and measurements

3.4 Forms of condensation

3.5 Understanding long-term climate trends in Baramati

References:

1. Singh, S. (2005). Climatology. Prayag Pustak Bhawan, Allahabad.
2. Singh, R. L. (1999). Climatology and Oceanography. Central Book Depot, Allahabad.
3. Das, P. K. (1987). The Monsoons. National Book Trust, India.
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6. Siddhartha, K. (2001). Atmosphere, Weather and Climate. Kisalaya Publications, New Delhi.
7. Singh, Y. (2012). Geography of India. Lakshmi Narain Agarwal Publishers, Agra.
8. Indian Meteorological Department. (Annual Reports). Climatic and Weather Reports of India and Maharashtra. IMD, Pune.

Mapping of Program Outcomes with Course Outcomes

Weightage: 0= No relation, 1= Weak relation, 2= Moderate relation, 3= Strong relation

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	1	2	2	1	1	1	1	1
CO2	3	2	1	2	2	2	1	1	1	1
CO3	3	2	1	3	2	3	1	1	1	1
CO4	3	2	1	2	3	3	1	1	1	1
CO5	3	2	1	2	3	2	1	1	1	1
CO6	2	2	1	2	3	2	2	1	1	1
CO7	2	2	1	2	3	2	2	1	1	1

Justification for Ratings

PO1 (Critical and Creative Thinking)

CO1, CO2, CO3, CO4, and CO5 involve analyzing, interpreting, and critically assessing atmospheric processes, radiation, and climatic patterns. CO6 and CO7 require

critical evaluation of moisture processes and wind circulation, encouraging the application of analytical skills to understand climatic phenomena.

PO2 (Communication Skill)

CO1 and CO2 require effectively communicating climatological concepts and atmospheric processes. CO3 to CO7 involve explaining and presenting findings related to atmospheric dynamics, climatic processes, and environmental patterns in a clear and organized manner.

PO3 (Multicultural Competence)

All COs contribute to understanding climatology and atmospheric dynamics, which inherently require an awareness of global contexts and diverse environmental conditions across regions. Studying global wind patterns, climatic systems, and environmental challenges fosters multicultural awareness and sensitivity.

PO4 (Research Skills)

CO3 involves detailed analysis of solar and terrestrial radiation, requiring advanced research and analytical skills. CO1, CO2, CO4, CO5, CO6, and CO7 engage students in investigating, analysing, and interpreting atmospheric phenomena, fostering an inquiry-based approach to **scientific exploration.**

PO5 (Environmental Awareness)

CO4, CO5, CO6, and CO7 emphasize understanding environmental issues such as temperature variations, atmospheric moisture, and wind circulation, which contribute to environmental knowledge. CO1, CO2, and CO3 explore fundamental atmospheric processes that enhance awareness of environmental dynamics.

PO6 (Problem-solving Abilities)

CO4 involves analysing factors controlling temperature variations, which require solving complex atmospheric challenges. CO3, CO5, CO6, and CO7 require identifying and understanding various factors influencing climate and weather patterns. CO1 and CO2 contribute to addressing fundamental climatological concepts.

PO7 (Collaboration and Teamwork)

CO6 and CO7 involve collaboration in studying and interpreting atmospheric processes, wind patterns, and moisture processes. CO1 to CO5 may require some collaborative effort, though less extensively, in discussing and analysing climatic and environmental concepts.

PO8 (Value Inculcation)

All COs foster value inculcation by promoting an understanding of environmental processes and their implications for sustainable practices. They encourage ethical thinking regarding climate change, environmental preservation, and responsible decision-making.

PO9 (Digital and Technological Skills)

All COs indirectly involve the use of digital tools, data interpretation techniques, and climate simulation models, promoting familiarity with technology and enhancing students' ability to work with meteorological data and computational analysis.

PO10 (Community Engagement and Service)

All COs contribute to enhancing awareness of climate-related challenges, which can be applied to educate communities and participate in climate action initiatives. Understanding climatology equips students to engage in environmental service and community-based solutions.

CBCS Syllabus as per NEP 2020 for T.Y.B.A. Semester-V (2023 Pattern)

Name of the Programme	: BA Geography
Programme Code	: UAGEO
Class	: TYBA
Semester	: V
Course Type	: Major Elective (Theory)
Course Code	: GEO-306- MJE (B)
Course Title	: Watershed Management
No. of Credits	: 02
No. of Teaching Hours	: 30

Course Objectives:

1. To define the concept of a watershed, explain watershed management, and discuss its principles.
2. To understand the necessity of watershed management and identify associated challenges and problems.
3. To explain the hydrological cycle, identify its stages, and analyze its importance in watershed management.
4. To examine the processes involved in interception and evaluate the concept of water balance.
5. To describe the meaning and importance of water conservation in the context of watershed management.
6. To understand the concept of soil conservation and explore techniques used for its preservation.
7. To apply various water and soil conservation techniques to enhance watershed sustainability.

Course Outcomes:

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

CO1. Define the concept of a watershed, explain watershed management, and describe its guiding principles.

CO2. Analyze the necessity of watershed management and identify the key challenges involved in its implementation.

CO3. Explain the hydrological cycle, identify its stages, and assess its role in maintaining watershed balance.

CO4. Evaluate the processes of interception and analyze the concept of water balance in a watershed.

CO5. Describe the meaning and significance of water conservation and apply relevant techniques in watershed management.

CO6. Understand the concept of soil conservation and implement various techniques to prevent soil degradation.

CO7. Apply appropriate water and soil conservation techniques to promote sustainable watershed management.

Topics and Learning Points

Unit 1: Concept of watershed management **Teaching Hours**

1.1 Definition and concepts of watershed **10**

1.2 Principle of watershed management

1.3 Necessity of watershed management

1.4 Problems in watershed management

Unit 2: Hydrological process in watershed **10**

2.1 Concept and stages of Hydrological Cycle

2.2 Process of Interception

2.3 Water Balance

2.4 A Case Study of mini-watershed near Baramati.

Unit 3: Water and Soil Conservation in watershed **10**

3.1Meanng and Concept of Water Conservation

3.2 Meaning and Concept of Soil Conservation

3.3 Water Conservation Techniques

3.4 Soil Conservation Techniques

References:

1. Tideman, E. M. (1996). Watershed Management: Guidelines for Indian Conditions. Omega Scientific Publishers, New Delhi.
2. Sharma, R. K. & Sharma, T. K. (2002). Watershed Planning and Management. Dhanpat Rai Publications, New Delhi.
3. Narayanaswamy, N. (2008). Soil and Water Conservation in India. ICAR Publications, New Delhi.
4. Wani, S. P., Rockström, J., & Oweis, T. (2009). Rainfed Agriculture: Unlocking the Potential. International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Hyderabad.
5. Kale, V. S. (1998). Introduction to Geomorphology and Hydrology of Peninsular India. Universities Press, Hyderabad.
6. Gawande, S. S. (2015). Watershed Development and Management. Nirali Prakashan, Pune.
7. Indian Council of Agricultural Research (ICAR). (2010). Handbook of Agriculture. New Delhi.
8. Maharashtra State Water Policy Reports. Government of Maharashtra Publications.

Mapping of Program Outcomes with Course Outcomes

Weightage: 0= No relation, 1= Weak relation, 2= Moderate relation, 3= Strong relation

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**
CO1	3	2	1	2	2	1	1	1	1	1
CO2	3	2	1	2	2	2	1	1	1	1
CO3	3	2	1	3	2	3	1	1	1	1
CO4	3	2	1	2	3	3	1	1	1	1
CO5	3	2	1	2	3	2	1	1	1	1
CO6	2	2	1	2	3	2	2	1	1	1
CO7	2	2	1	2	3	2	2	1	1	1

Justification for CO-PO Mapping

PO1 (Critical and Creative Thinking)

CO1, CO2, and CO3 involve defining watershed concepts, analysing challenges in watershed management, and assessing the role of the hydrological cycle in maintaining watershed balance. CO4, CO5, CO6, and CO7 encourage evaluating interception processes, applying conservation techniques, and promoting sustainable watershed management, fostering critical and creative thinking.

PO2 (Communication Skill)

CO1 and CO2 require explaining watershed principles and discussing challenges involved in its implementation, promoting effective communication of ideas. CO3 to CO7 involve presenting hydrological processes, conservation techniques, and sustainable management practices, enhancing the ability to articulate scientific concepts.

PO3 (Multicultural Competence)

All COs promote understanding of watershed management practices across diverse geographical and cultural contexts. The application of conservation techniques and the evaluation of environmental challenges in different regions enhance multicultural competence

by fostering sensitivity toward environmental diversity.

PO4 (Research Skills)

CO3 involves assessing the hydrological cycle and evaluating its impact on watershed balance, encouraging research-based analysis. CO1, CO2, CO4, CO5, CO6, and CO7 engage students in investigating and implementing appropriate conservation techniques, promoting research skills through inquiry and evidence-based practice.

PO5 (Environmental Awareness)

CO4, CO5, CO6, and CO7 emphasize the significance of water and soil conservation and their role in maintaining watershed balance. CO1, CO2, and CO3 build environmental awareness by introducing watershed management principles and highlighting the importance of sustainable practices.

PO6 (Problem-solving Abilities)

CO4 involves analysing interception processes and evaluating water balance, which requires applying problem-solving techniques. CO3, CO5, CO6, and CO7 emphasize identifying and addressing challenges in maintaining watershed stability through appropriate conservation techniques. CO1 and CO2 contribute by identifying and analysing key challenges in watershed management.

PO7 (Collaboration and Teamwork)

CO6 and CO7 involve applying water and soil conservation techniques in a collaborative environment to promote sustainable watershed management. CO1 to CO5 encourage collaborative discussions and analyses of watershed processes and challenges, fostering teamwork and knowledge-sharing.

PO8 (Value Inculcation)

All COs foster value inculcation by promoting the importance of environmental stewardship, sustainability, and responsible management of natural resources. Understanding watershed management principles encourages ethical decision-making and the adoption of sustainable practices.

PO9 (Digital and Technological Skills)

All COs indirectly contribute to enhancing digital and technological skills by encouraging the use of digital tools, data analysis, and geospatial techniques to assess watershed conditions and apply conservation techniques.

PO10 (Community Engagement and Service)

All COs enhance knowledge of watershed management, enabling students to engage with communities and implement sustainable solutions. Understanding conservation techniques equips them to participate in community-based watershed management initiatives and contribute to environmental improvement.

CBCS Syllabus as per NEP 2020 for T.Y.B.A. Semester-V (2023 Pattern)

Name of the Programme	: BA Geography
Programme Code	: UAGEO
Class	: TYBA
Semester	: V
Course Type	: Major Elective (Practical)
Course Code	: GEO-307- MJE (A)
Course Title	: Practical in Climatology
No. of Credits	: 02
No. of Teaching Hours	: 60

Course Objectives:

1. To introduce the concept of wind rose diagrams and develop the ability to prepare and interpret simple and compound wind rose diagrams.
2. To understand the process of temperature measurement and analyze climatic variations through hythergraph and climograph.
3. To develop skills in constructing and interpreting climatographs to understand climatic patterns and trends.
4. To explain the concept of water balance and identify its key components in the context of hydrological analysis.
5. To perform calculations for water budget and evaluate the water balance of a region using appropriate methods.
6. To analyze the seasonal distribution of temperature, precipitation, and humidity through various graphical techniques.
7. To interpret climatic data, identify patterns, and apply analytical techniques for understanding climate variability.

Course Outcomes:

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

CO1. Prepare and interpret simple and compound wind rose diagrams to analyze wind patterns and frequency.

CO2. Measure temperature variations and construct hythergraphs and climographs to analyze seasonal climatic trends.

CO3. Construct and interpret climatographs to understand and compare climatic variations.

CO4. Explain the concept of water balance, identify its components, and assess its role in watershed management.

CO5. Calculate the water budget of a region and evaluate the balance of hydrological components.

CO6. Analyze and compare seasonal climatic data through graphical representation and interpretation.

CO7. Interpret climatic data and apply analytical methods to assess climate variability and trends.

Topics and Learning Points

Unit 1: Wind and Climatic Data Analysis **Teaching Hours**

1.1 Introduction to Wind Rose Diagram **20**

1.2 Preparation and Interpretation of Simple Wind Rose Diagram

1.3 Preparation and Interpretation of Compound Wind Rose Diagram

Unit 2: Temperature and Humidity Data Analysis **20**

2.1 Temperature and its Measurement

2.2 Construction and Interpretation of Hythergraph

2.3 Construction and Interpretation of Climograph

2.4 Construction and Interpretation of Climatograph for Baramati City

Unit 3: Water Budget Analysis **20**

3.1 Introduction to Water Balance/Budget

3.2 Components of Water Budget

3.3 Calculation of Water Budget

3.4 Interpretation and Application of Water Budget for Baramati City

References:

1. Chow, V. T. (1964). Handbook of Applied Hydrology. McGraw-Hill, New York.
2. Barry, R. G. & Chorley, R. J. (2003). Atmosphere, Weather, and Climate (8th Edition). Routledge, London.
3. Singh, Savindra. (2005). Practical Geography: A Systematic Approach. Prayag Pustak Bhawan, Allahabad.
4. Ghosh, A. (1996). Practical Geography: A Laboratory Manual. Orient Longman, Kolkata.
5. Reddy, M. A. (2016). A Textbook of Hydrology. Laxmi Publications, New Delhi.
6. Das, P. K. (1987). The Monsoons. National Book Trust, India.
   climatological trends.
7. Singh, R. L. & Singh, R. P. B. (1991). Elements of Practical Geography. Kalyani Publishers, New Delhi.
   techniques in climatology.
8. Rao, D. P. (2002). Remote Sensing and GIS for Environmental Studies. Tata McGraw Hill, New Delhi.

Mapping of Program Outcomes with Course Outcomes

Weightage: 0= No relation, 1= Weak relation, 2= Moderate relation, 3= Strong relation

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	1	2	2	1	1	1	2	1
CO2	3	2	1	2	2	2	1	1	2	1
CO3	3	2	1	3	2	3	1	1	2	1
CO4	3	2	1	2	3	3	1	1	2	1
CO5	3	2	1	2	3	2	1	1	2	1
CO6	2	2	1	2	3	2	2	1	2	1
CO7	2	2	1	2	3	2	2	1	2	1

Justification for CO-PO Mapping

PO1 (Critical and Creative Thinking)

CO1, CO2, and CO3 involve constructing and interpreting various climatological diagrams such as wind rose diagrams, hythergraphs, and climographs, which require critical thinking and analytical skills. CO4, CO5, CO6, and CO7 engage students in interpreting climatic data, analysing water balance, and evaluating hydrological components, encouraging problem-solving and creative approaches to understanding climate variability.

PO2 (Communication Skill)

CO1 and CO2 involve presenting and explaining graphical representations of climatic trends, improving the ability to communicate complex data. CO3 to CO7 require interpreting and analysing climatological information, enhancing the students' ability to articulate their findings and observations effectively.

PO3 (Multicultural Competence)

All COs contribute to understanding climatic variations and hydrological patterns across different regions and contexts, fostering multicultural awareness. The study of global climate patterns and variations encourages sensitivity to diverse environmental conditions

and geographic diversity.

PO4 (Research Skills)

CO3 emphasizes constructing and interpreting climatographs, which require in-depth research and data analysis. CO1, CO2, CO4, CO5, CO6, and CO7 involve analysing climatic trends, evaluating hydrological components, and applying analytical techniques, promoting inquiry and research-oriented learning.

PO5 (Environmental Awareness)

CO4, CO5, CO6, and CO7 focus on understanding water balance, analysing seasonal climatic data, and evaluating climate variability, all of which contribute to enhancing environmental awareness. CO1, CO2, and CO3 reinforce awareness by emphasizing the analysis of wind patterns and climate trends.

PO6 (Problem-solving Abilities)

CO4 involves analysing water balance and evaluating its role in watershed management, which requires problem-solving skills. CO5, CO6, and CO7 emphasize the application of analytical methods to assess climate variability and trends, encouraging the development of solutions for hydrological challenges. CO1, CO2, and CO3 contribute by enhancing analytical and interpretative skills.

PO7 (Collaboration and Teamwork)

CO6 and CO7 involve analysing seasonal climatic data and interpreting trends, which may require collaborative teamwork in data collection and interpretation. CO1 to CO5 encourage collaborative discussions while analysing climatic patterns, water balance, and hydrological processes.

PO8 (Value Inculcation)

All COs promote value inculcation by fostering awareness of climate variability, water balance, and the importance of sustainable watershed management. Understanding and applying analytical methods encourages ethical decision-making and sustainable environmental practices.

PO9 (Digital and Technological Skills)

All COs contribute to enhancing digital and technological skills by requiring the use of data analysis, statistical techniques, and digital tools to construct, interpret, and analyse climatological diagrams and hydrological data.

PO10 (Community Engagement and Service)

All COs equip students with the knowledge and analytical skills necessary to assess climatic trends and hydrological processes, enabling them to engage with communities and contribute to environmental sustainability and climate adaptation effort

CBCS Syllabus as per NEP 2020 for T.Y.B.A. Semester-V (2023 Pattern)

Name of the Programme	: TYBA Geography
Programme Code	: UAGEO
Class	: TYBA
Semester	: V
Course Type	: Major Elective (Practical)
Course Code	: GEO-307- MJE (B)
Course Title	: Practical in watershed management
No. of Credits	: 02
No. of Lectures	: 30

Course Objectives:

1. To develop skills in watershed delineation using both traditional and digital methods.
2. To perform and interpret morphometric analysis of watersheds to understand their characteristics.
3. To analyze stream networks and surface water flow within watersheds using hydrological models.
4. To assess the impact of land use changes on water resources within a watershed.
5. To utilize GIS and remote sensing tools for accurate watershed mapping and analysis.
6. To conduct land use and land cover mapping using remote sensing data.
7. To apply GIS techniques in evaluating watershed health and developing management strategies.

Course Outcomes:

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

CO1: Demonstrate the ability to delineate watersheds using both traditional methods and digital tools.

CO2: Perform and accurately interpret morphometric analysis to assess watershed characteristics.

CO3: Analyze stream networks and simulate surface water flow using hydrological models within a watershed.

CO4: Evaluate the effects of land use changes on the availability and quality of water resources in a watershed.

CO5: Utilize GIS and remote sensing tools to conduct precise watershed mapping and analysis.

CO6: Conduct and interpret land use and land cover mapping using remote sensing techniques.

CO7: Apply GIS techniques to evaluate watershed health and formulate effective management strategies.

Topics and Learning points

Unit 1: Watershed Delineation and Stream Ordering **Lectures**

1.1 Delineation of Watershed **20**

1.2 Stream ordering Methods

1.3 Calculation of Bifurcation Ratio

1.4 Slope analysis in Watershed

Unit 2: Morphometric analysis of Watershed **20**

2.1 Linear Characteristics of Watershed

2.2 Areal Characteristics of watershed

2.3 Relief Characteristics of Watershed

Unit 3: Areal Precipitation and Water Balance **20**

2.1 Isohyetal Method of Areal Precipitation

2.2 Thiessen Polygon Methods of Areal Precipitation

2.3 Calculation of Water Balance

References:

1. Murthy, J. V. S. (1994): Watershed Management in India, Wiley Eastern Ltd., New Delhi
2. Pranjape, S., Joy, K. J., Machado, T., Varma, A. K. and Swaminathan, S. (1998): Watershed-Based Development, Bharat Gyan Vigyan Samithi, New Delhi
3. Mutreja, K. N. (1990): Applied Hydrology, Tata McGraw-Hill Pub. Co. Ltd., New Delhi
4. Singh, R. J. (2000): Watershed Planning and Management, Yash Publishing House,

Bikaner

5. Strahler, A. N. (1964): Handbook of Applied Hydrology, Ven Te Chow, Ed., Section --4 II, McGraw-Hill Book Company, New York

Mapping of Program Outcomes with Course Outcomes

Weightage: 0= No relation, 1= Weak relation, 2= Moderate relation, 3= Strong relation

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	1	3	2	2	1	1	3	1
CO2	3	2	1	3	2	3	1	1	3	1
CO3	3	2	1	3	2	3	1	1	3	1
CO4	3	2	1	2	3	3	1	1	3	1
CO5	3	2	1	3	3	2	1	1	3	1
CO6	2	2	1	2	3	2	2	1	3	1
CO7	2	2	1	2	3	2	2	1	3	1

Justification for CO-PO Mapping

PO1 (Critical and Creative Thinking)

CO1, CO2, and CO3 require critical thinking by engaging students in delineating watersheds, performing morphometric analysis, and simulating surface water flow using hydrological models. CO4, CO5, CO6, and CO7 further enhance critical thinking by evaluating the effects of land use changes, conducting GIS-based watershed mapping, and applying analytical techniques to develop management strategies for watershed health.

PO2 (Communication Skill)

CO1 and CO2 involve interpreting and explaining the outcomes of watershed delineation and morphometric analysis, requiring effective communication of technical information. CO3 to CO7 engage students in presenting and explaining results from hydrological models, land use mapping, and GIS-based watershed assessments, strengthening their ability to communicate scientific findings clearly.

PO3 (Multicultural Competence)

All COs contribute to multicultural competence by examining the effects of land use changes and watershed characteristics in diverse geographic contexts. The application of GIS and remote sensing tools to study environmental variations across regions promotes an understanding of multicultural environmental challenges.

PO4 (Research Skills)

CO3 involves simulating surface water flow using hydrological models, which requires research and data analysis. CO1, CO2, CO4, CO5, CO6, and CO7 engage students in exploring and applying GIS and remote sensing techniques to assess watershed characteristics and evaluate management strategies, fostering strong research skills through data interpretation and evidence-based analysis.

PO5 (Environmental Awareness)

CO4, CO5, CO6, and CO7 promote environmental awareness by emphasizing the assessment of land use changes, water quality, and watershed health. CO1, CO2, and CO3 contribute to understanding the impact of watershed characteristics and hydrological processes on environmental sustainability.

PO6 (Problem-solving Abilities)

CO3 and CO4 involve analysing hydrological processes and assessing land use impacts, requiring problem-solving skills to develop appropriate solutions. CO1, CO2, CO5, CO6, and CO7 encourage applying GIS and remote sensing tools to solve complex watershed management challenges, promoting analytical and problem-solving abilities.

PO7 (Collaboration and Teamwork)

CO6 and CO7 involve collaborative efforts in applying GIS and remote sensing techniques for land use mapping and watershed evaluation, encouraging teamwork in data collection and analysis. CO1 to CO5 may involve group work in interpreting watershed data and developing management strategies.

PO8 (Value Inculcation)

All COs foster value inculcation by promoting the importance of sustainable

watershed management, environmental stewardship, and ethical use of GIS and remote sensing technologies. Understanding the effects of land use changes and hydrological processes instils a sense of responsibility for environmental protection.

PO9 (Digital and Technological Skills)

All COs contribute to developing digital and technological skills by incorporating GIS, remote sensing, and hydrological modelling into watershed analysis. Mastering these techniques enhances students' ability to use technology effectively for environmental management.

PO10 (Community Engagement and Service)

All COs enhance knowledge of watershed management, empowering students to engage with communities and apply GIS-based solutions for sustainable water resource management. Understanding the effects of land use changes and promoting watershed health enables them to contribute to environmental conservation efforts in their communities.

CBCS Syllabus as per NEP 2020 for T.Y.B.A. Semester-V (2023 Pattern)

Name of the Programme	: BA Geography
Programme Code	: UAGEO
Class	: TYBA
Semester	: V
Course Type	: Minor (Theory)
Course Code	: GEO-311- MN
Course Title	: Tourism Geography
No. of Credits	: 02
No. of Teaching Hours	: 30

Course Objectives:

1 To understand the diverse nature and broad scope of Tourism Geography.

2 To provide understanding of recent and emerging types of Tourism.

3 To gain insights into specialized forms of tourism.

4 To understand the characteristics and sustainability of tourism.

5 To explore the socio-cultural determinants of tourism.

6 To classify and analyse diverse tourism trends,

7 To enabling the students with the dynamic nature of the tourism industry.

Course Outcomes:

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

CO1. Understand of the definition, nature, and scope of tourism.

CO2. Recognize and articulate the economic, social, and cultural importance of tourism.

CO3. Categorize tourism based on nationality, understanding the distinctions between domestic and international tourism.

CO4. Analyse the impact of physical determinants such as relief, climate, forests, and water bodies on tourism development and experiences.

CO5. Identify and evaluate the influence of religious, historical, and cultural factors on tourist attractions and destination choices.

CO6. classify and analyse diverse tourism trends.

CO7. Understand the dynamic nature of the tourism industry.

Topics and Learning Points

UNIT 1: Introduction to Tourism Geography **Teaching Hour**

1.1 Definition, meaning and concept of tourism **10**

1.2 Nature and Scope of Tourism Geography

1.3 Importance of Tourism in Geography

UNIT 2: Determinants of Tourism Development **10**

2.1 Physical (Relief, Climate, Forest, Water)

2.2 Socio-Cultural (Religious, Historical)

2.3 Political (Policies)

2.4 Other (Accessibility, Safety of Tourist)

UNIT 3: Classification of Tourism **10**

3.1 Classification of Tourism based on

1. Nationality
2. Travel Period
3. Purpose of Tourism

3.2 Recent Trends in Tourism

3.3 Tourism Potential and Attractions in Baramati

References:

1. Cooper, C. and Hall, M., (2008). Tourism and Leisure: Issues and Challenges. Channel
2. View Publications, Bristol.
3. Goeldner, C. R. and Ritchie, J. R. B., (2017). Tourism: Principles, Practices, Philosophies. John Wiley & Sons, Hoboken.
4. Singh, V. and Joshi, S., (2012). Tourism Planning and Development: Concepts and Issues. Sterling Publishers, New Delhi.
5. Page, S. and Connell, J., (2009). Tourism: A Modern Synthesis. Cengage Learning, Hampshire.

6. Seth P.N., (1985), Successful Tourism Management, Sterling Publisher Ltd., New Delhi.
7. Mhatre, S., (2015), Tourism Geography: An Integrated Approach. Himalaya Publishing
8. House, Mumbai.

Mapping of Program Outcomes with Course Outcomes

Weightage: 0= No Relation, 1= Weak or low relation , 2= Moderate or partial relation, 3= Strong or direct relation

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**
CO1	2	2	1	0	0	0	0	0	0	2
CO2	2	2	1	1	1	0	0	0	0	1
CO3	1	1	3	0	0	0	0	0	0	2
CO4	1	1	2	3	2	0	0	0	1	0
CO5	1	1	1	2	3	0	0	0	0	0
CO6	1	1	1	1	1	3	1	0	0	0
CO7	1	1	1	1	1	1	3	0	0	0

Justification:

- **PO1 Critical and Creative Thinking**:CO1 and CO2 require critical thinking about tourism definitions and economic impacts. CO3 involves understanding cultural differences in tourism, requiring diverse thinking approaches.CO4 to CO7 involve factual knowledge and industry dynamics more than critical or creative thinking.
- **PO2 Communication Skill**:CO1 and CO2 require effective communication about tourism concepts and economic impacts.CO3 involves communicating effectively across cultural differences. CO4 to CO7 focus more on factual knowledge and industry-specific terminology.
- **PO3 Multicultural Competence**:CO3 is directly related to understanding cultural differences in tourism. CO1 and CO2 relate to multicultural aspects through understanding tourism definitions and economic impacts. CO4 to CO7 have less direct relation to multicultural competence.

- **PO4 Research Skills**: CO4 requires research skills to analyze physical determinants of tourism. CO5 involves research in cultural influences on tourism. CO1 to CO3 and CO6 to CO7 involve less research and more practical or observational skills.
- **PO5 Environmental Awareness**: CO4 and CO5 require understanding environmental impacts and conservation in tourism. CO1 and CO2 touch on environmental sustainability in tourism. CO3 and CO6 to CO7 have less emphasis on environmental issues.
- **PO6 Problem-solving Abilities**: CO6 requires problem-solving in analyzing tourism trends and challenges. CO1 and CO2 involve problem-solving related to economic impacts and policy analysis. CO3 to CO5 and CO7 involve less direct problem-solving.
- **PO7 Collaboration and Teamwork**:CO7 involves teamwork in understanding the dynamic nature of the tourism industry. CO1 and CO2 touch on collaboration in economic and policy contexts. CO3 to CO6 involve less direct collaboration skills.
- **PO9 Digital and Technological Skills**: CO4 involves using technology to analyze physical determinants of tourism.
- **PO10 Community Engagement and Service**: CO1 and CO3 relate to community engagement in understanding tourism impacts and cultural interactions. CO2 involves community engagement in economic and cultural benefits of tourism. CO4 to CO7 involve less direct community engagement and service activities

CBCS Syllabus as per NEP 2020 for T.Y.B.A. Semester-V (2023 Pattern)

Name of the Programme	: BA Geography
Programme Code	: UAGEO
Class	: TYBA
Semester	: V
Course Type	: Minor (Practical)
Course Code	: GEO-312- MN
Course Title	: Practical in Tour Planning
No. of Credits	: 02
No. of Teaching Hours	: 60

Course Objectives:

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1. To provide students with practical knowledge and skills related to tour planning and management.
2. To familiarize students with the information about the necessary documentation for tour planning.
3. To train the students with the essential online booking process.
4. To recognize the importance of tour planning in the tourism industry.
5. To comprehend the fundamental concepts and principles of tour planning.
6. To identify the roles and responsibilities of tour planners.
7. To utilize digital platforms for marketing, booking, and customer management.

Course Outcomes:

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

CO1. Apply practical knowledge and skills to effectively plan and manage tours.

CO2. Identify and prepare the required documentation for different types of tours.

CO3. Efficiently perform online booking procedures using various digital platforms.

CO4. Articulate the importance of thorough tour planning in ensuring successful tourism experiences.

CO5. Understand and apply key concepts and principles of tour planning in practical scenarios.

CO6. Clearly define the various roles and responsibilities associated with tour planning.

CO7. Leverage digital tools and platforms for effective marketing, booking, and managing customer relationships.

Topics and Learning Points

Unit 1: Introduction of Tour planning **Teaching Hours**

1.1 Meaning of Tour planning **20**

1.2 Elements of Tour planning

1.3 Classification of Tour planning: individual, family, group and mass level

1.4 Importance of tour planning

Unit 2: Techniques of Tour Planning **20**

2.1 Preparation of Tour Planning

2.2 Tourist Guide

2.3 Computer application for tour planning.

2.4 Procedure of passport & visa application.

2.5 Booking and cancellation system

Unit 3: Planning and visit to tourist place **20**

3.1 Itinerary

3.2 Preparation of one short or long international/ national/ local tour plan.

3.3 Writing of tour report.

References:

1. Bhatt, H (2007) Tourism Planning and Development, Commonwealth Publishers,

New Delhi

2. Bhatia AK (2002), Tourism Development: Principles and Practices, Revised edition Sterling Publishers Private Limited, New Delhi.
3. Chand, M (2002) Travel Agency Management, Anmol Publication
4. Ghosh Bishwanth (2000), Tourism & Travel Management, Second Revised Edition Vikas Publishing House Pvt Ltd, New Delhi.
5. Seth, P.N. (1998). An Introduction to Travel and Tourism, Sterling Publishers Pvt. Ltd., New Delhi.
6. Muluk, Doke, Musmade, More (2021), Geography of Tourism – II, Nirali Publication, Pune
7. Sinha, P (1998). Tourism Planning. Anmol Publication Pvt. Ltd., New Delhi.
8. Pacharne, Patil, Suryavanshi, Chaudhar (2014) Tourism Geography, Atharv Publication, Pune.

Mapping of Program Outcomes with Course Outcomes

Weightage: 0= No Relation, 1= Weak or low relation, 2= Moderate or partial relation, 3= Strong or direct relation

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**
CO1	2	2	2	1	2	1	1	0	2	2
CO2	2	3	3	1	2	1	1	0	2	2
CO3	2	3	3	1	2	1	1	0	2	2
CO4	1	1	2	2	2	2	2	0	1	1
CO5	2	2	2	2	3	2	2	0	2	2
CO6	1	1	1	2	2	3	2	0	1	1
CO7	1	1	1	2	2	2	3	0	1	1

Justification:

- **PO1 Critical and Creative Thinking**: CO1, CO2, and CO3 require analytic thought and diverse thinking in planning and managing tours effectively, demonstrating a strong relation with critical and creative thinking.
- **PO2 Communication Skill**: CO1, CO2, and CO3 involve clear communication in preparing documentation, booking procedures, and customer interactions, indicating a strong relation with communication skills.
- **PO3 Multicultural Competence**: No direct relationship identified with multicultural competence.
- **PO4 Research Skills**: CO4 and CO5 involve synthesis and application of tour planning concepts, showing a moderate relation with research skills.
- **PO5 Environmental Awareness**: No direct relationship identified with environmental awareness.
- **PO6 Problem-solving Abilities**: CO4, CO5, CO6, and CO7 require problem-solving in addressing tour planning challenges and leveraging digital tools, indicating a moderate to strong relation with problem-solving abilities.

- **PO7 Collaboration and Teamwork**: CO6 and CO7 involve teamwork in roles associated with tour planning and customer management, demonstrating a moderate relation with collaboration and teamwork.
- **PO8 Value Inculcation**: No direct relationship identified with value inculcation.
- **PO9 Digital and Technological Skills**: CO1, CO2, CO3, CO4, CO5, CO6, and CO7 involve extensive use of ICT and digital platforms for tour planning and management, indicating a strong relation with digital and technological skills.
- **PO10 Community Engagement and Service**: CO1, CO2, and CO3 involve community engagement in planning and managing tours that promote societal well-being, showing a strong relation with community engagement and service.

CBCS Syllabus as per NEP 2020 for T.Y.B.A. Semester-V (2023 Pattern)

Name of the Programme	: BA Geography
Programme Code	: UAGEO
Class	: TYBA
Semester	: V
Course Type	: Vocational Skill Course (VSC) Theory
Course Code	: GEO-321-VSC
Course Title	: Application of DGPS and Drone Survey
No. of Credits	: 02
No. of Teaching Hours	: 30

Course Objectives:

1. To understand the fundamental principles of Differential Global Positioning System (DGPS) and drone survey technology.
2. To learn about the components, functioning, and accuracy of DGPS and drones in geospatial applications.
3. To develop practical skills in DGPS-based field surveying and drone-based aerial mapping.
4. To explore the diverse applications of DGPS in land surveying, infrastructure planning, and environmental monitoring.
5. To analyze the role of drones in agriculture, disaster management, and urban planning.
6. To gain hands-on experience in data collection, processing, and interpretation using DGPS and drones.
7. To understand the legal, ethical, and safety considerations in DGPS and drone operations.

Course Outcomes:

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

CO1. Explain the concepts and working principles of DGPS and drone surveying techniques.

CO2. Operate DGPS and drone equipment for geospatial data collection.

CO3. Conduct land surveys and mapping projects using DGPS with high accuracy.

CO4. Utilize drone technology for applications such as topographic mapping.

CO5. Process and analyze DGPS and drone data using relevant software tools.

CO6. Apply DGPS and drone survey techniques to real-world case studies in agriculture, infrastructure, and environmental monitoring.

CO7. Demonstrate awareness of regulations, ethical considerations, and best practices in DGPS and drone surveys.

Topics and Learning Points

UNIT 1: Introduction to DGPS and Drone Survey **Teaching Hours**

1.1 Overview of Global Navigation Satellite System (GNSS) **10**

1.2 Fundamentals of Differential Global Positioning System (DGPS)

1.3 Components and working principles of DGPS

1.4 Introduction to drone technology and its types

1.5 Principles of remote sensing and aerial surveying with drones

1.6 Accuracy, limitations, and challenges of DGPS and drone surveys

UNIT 2: Applications of DGPS Survey **10**

2.1 DGPS applications in cadastral and land surveying

2.2 Role of DGPS in infrastructure development and urban planning

2.3 DGPS-based environmental monitoring and resource management

2.4 Applications in precision agriculture and irrigation planning

2.5 Case studies on DGPS applications

UNIT 3: Applications of Drone Survey **10**

3.1 Drone-based topographic mapping and 3D modelling

3.2 Applications in agriculture (crop health monitoring, yield estimation)

3.3 Role of drones in disaster management and emergency response

3.4 Drone surveys in forestry, wildlife conservation, and environmental studies

3.5 Infrastructure monitoring and smart city development using drones

3.6 Legal and ethical considerations in drone operations

References:

1. **Hoffmann-Wellenhof, B., Lichtenegger, H., & Collins, J. (2008)** – *Global Positioning System: Theory and Practice* (Springer-Verlag).
2. **Misra, P., & Enge, P. (2011)** – *Global Positioning System: Signals, Measurements, and Performance* (Ganga-Jamuna Press).
3. **Leick, A., Rapoport, L., & Tatarnikov, D. (2015)** – *GPS Satellite Surveying* (John Wiley & Sons).
4. **Colomina, I., & Molina, P. (2014)** – *Unmanned Aerial Systems for Photogrammetry and Remote Sensing: A Review* (ISPRS Journal of Photogrammetry and Remote Sensing).
5. **Anderson, J., & Gaston, K. J. (2013)** – *Lightweight UAVs for Environmental Applications: A Review of Current Research and Future Trends* (Remote Sensing).
6. **Chandra, A. M., & Ghosh, S. K. (2006)** – *Remote Sensing and Geographical Information System* (Narosa Publishing House).

Online Resources

1. **Survey of India (SOI) Guidelines** – DGPS Survey Standards and Specifications https://surveyofindia.gov.in
2. **Federal Aviation Administration (FAA) Regulations** – Drone Surveying Guidelines https://www.faa.gov/uas
3. **National Remote Sensing Centre (NRSC), ISRO** – UAV Mapping and Remote Sensing Applications https://www.nrsc.gov.in
4. **Trimble Navigation** – DGPS and GNSS Survey Techniques https://www.trimble.com
5. **ESRI GIS Resources** – DGPS & Drone Data Integration in GIS https://www.esri.com/en-us/home

Mapping of Program Outcomes with Course Outcomes

Weightage: 0= No relation, 1= Weak relation , 2= Moderate relation, 3= Strong relation

COs \ POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	1	2	1	0	0	1	2	0
CO2	2	2	1	1	1	1	1	1	3	1
CO3	3	2	1	2	1	1	1	1	3	1
CO4	3	2	1	3	2	2	1	1	3	2
CO5	2	2	1	2	3	2	1	1	3	1
CO6	2	2	1	2	3	3	2	1	3	2
CO7	2	2	2	1	2	2	3	2	2	2

Justification for Ratings:

PO1 (Critical and Creative Thinking): CO1, CO3, and CO4 are rated 3 as they require analytical and critical thinking in applying DGPS and drone surveying concepts. CO2, CO5, CO6, and CO7 are rated 2 as they involve practical applications that require some level of critical thinking.

PO2 (Communication Skills): CO1, CO2, CO3, CO4, CO5, CO6, and CO7 are rated 2 as they require clear communication of technical concepts, documentation, and reporting.

PO3 (Multicultural Competence): CO7 is rated 2 as it involves understanding ethical considerations, regulations, and best practices in DGPS and drone applications, which may vary across cultures. Other COs are rated 1 as they involve teamwork and collaboration, but do not directly address multicultural aspects.

PO4 (Research Skills): CO4 is rated 3 as it involves advanced research-oriented skills in applying drone technology to mapping. CO1, CO3, CO5, and CO6 are rated 2 as they require research-related activities such as data collection, analysis, and interpretation. CO2 and CO7 are rated 1 as they indirectly support research through data acquisition and ethical considerations.

PO5 (Environmental Awareness): CO5 and CO6 are rated 3 as they directly involve environmental applications of DGPS and drones in monitoring and sustainability. CO4 and CO7 are rated 2 as they have an indirect role in environmental awareness. CO1, CO2, and CO3 are rated 1 as they may contribute but are not primarily focused on environmental concerns.

PO6 (Problem-Solving Abilities): CO6 is rated 3 as it involves applying DGPS and drones to solve real-world problems in agriculture, infrastructure, and environmental monitoring. CO4, CO5, and CO7 are rated 2 as they involve problem-solving in data analysis, ethical challenges, and technical operations. CO2 and CO3 are rated 1 as they focus more on operational aspects rather than direct problem-solving.

PO7 (Collaboration and Teamwork): CO7 is rated 3 as it requires teamwork in implementing ethical practices and regulatory compliance. CO6 is rated 2 as case studies often involve collaboration among professionals. CO2, CO3, CO4, and CO5 are rated 1 as they involve some teamwork in data collection and analysis.

PO8 (Value Inculcation): CO7 is rated 2 as it includes ethical considerations in the use of DGPS and drones. CO1, CO2, CO3, CO4, CO5, and CO6 are rated 1 as they involve responsible and ethical applications of technology.

PO9 (Digital & Technological Skills): CO2, CO3, CO4, CO5, and CO6 are rated 3 as they directly involve the use of DGPS, drones, and related software tools. CO1 and CO7 are rated 2 as they include theoretical knowledge and regulations related to digital tools.

PO10 (Community Engagement & Service): CO4, CO6, and CO7 are rated 2 as they involve applications in agriculture, infrastructure, and policy-based drone surveys, which can serve the community. CO2, CO3, and CO5 are rated 1 as they contribute indirectly to community services through data collection and analysis.

CBCS Syllabus as per NEP 2020 for T.Y.B.A. Semester-V (2023 Pattern)

Name of the Programme	: B.A. Geography
Programme Code	: UAGEO
Class	: TYBA
Semester	: V
Course Type	: Project (Practical)
Course Code	: GEO-335-FP
Course Title	: Field Project
No. of Credits	: 02
No. of Teaching Hours	**:** 60

Course Objectives:

1. To develop students' ability to design and implement effective research questionnaires for community-based studies.
2. To enhance students' skills in collecting and analyzing socio-economic and environmental data.
3. To foster critical thinking and problem-solving through real-world geographical research.
4. To deepen understanding of the relationship between human activities and geographical factors.
5. To promote active engagement with local communities to address geographical issues.
6. To build students' competence in synthesizing and presenting research findings.
7. To prepare students for advanced academic research or professional roles in geography-related fields.

Course Outcomes:

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

CO1: Demonstrate the ability to design and implement effective research questionnaires for community-based studies.

CO2: Exhibit enhanced skills in collecting and analyzing socio-economic and environmental data.

CO3: Apply critical thinking and problem-solving skills in conducting real-world geographical research.

CO4: Display a deeper understanding of the relationship between human activities and geographical factors.

CO5: Actively engage with local communities to address and resolve geographical issues.

CO6: Demonstrate competence in synthesizing and presenting research findings clearly and effectively.

CO7: Prepare for advanced academic research or professional roles in geography-related fields.

SOP for the Filed Project

As per the NEP-2020 credit and course structure, students in UG programs are required to complete a two-credit Field Project in TYBA Semester V to be eligible for the award of a B.A. degree. To meet this requirement, our Board of Studies has prepared a Standard Operating Procedure (SOP) and format for conducting the Field Project. The detailed SOPs are provided below.

1. **Preparation of SOP and Course Material:**
   The Board of Studies (BOS) will prepare the SOP, project format, and curriculum for the Field Project coursework.
2. **Notification to Students:**
   The department will issue a notice instructing students to attend the coursework for the Field Project.
3. **Conducting Coursework:**
   The department will conduct the necessary coursework to prepare students for undertaking the Field Project.
4. **Application for Guide Allocation:**

Groups of three students will submit an application in the prescribed format to the HOD for the allocation of a Field Project guide.

5. **Guide Allocation:**

   A departmental committee will allocate guides to students in accordance with the department's rules and policies.

6. **Publication of list of students and guide:**

   The list of student groups and their allotted guides will be published.

7. **Topic Finalization:**

   Students will meet with their assigned guide to finalize the topic of their Field Project.

8. **Questionnaire Development:**

   Students will prepare a questionnaire under the guidance of their Field Project guide.

9. **Fieldwork and Data Collection:**

   Students will conduct fieldwork/field surveys to collect relevant data and information.

10. **Data Analysis and Presentation:**

    Students will analyze and present the collected data.

11. **Project Preparation:**

    Students will prepare the Field Project report in the prescribed format provided by the department, under the guidance of their assigned guide.

12. **Assessment and Evaluation:**

    The Field Project will be assessed and evaluated according to the guidelines provided by the exam department.

13. **Inclusion of Geo-tagged Photographs:**

    The Field Project must include geo-tagged photographs of the fieldwork/survey.

14. **Inclusion of Study Area Map:**

    The Field Project should contain a map of the study area.

15. **Project Length:**

    The Field Project report should be between 20 to 25 pages

Topics and Learning Points	
Unit 1: Planning and Preparation for Field Work	**Teaching Hours**
1.1 Defining the Fieldwork Topic	**15**
1.2 Scope of the Study Area	
1.3 Identifying Key Research Questions for Field Study	
1.4 Understanding the Fieldwork Objectives	
1.5 Ethical Considerations in Field Work	
1.6 Creating a Fieldwork Plan	
Unit 2: Fieldwork Data Collection	**25**
2.1 Selecting the Fieldwork Methods (Surveys, Interviews, Observations)	
2.2 Collecting Primary Data from the Field	
2.3 Recording and Organizing Field Data (Photographs, Maps, Notes)	
2.4 Handling Challenges in Data Collection	
2.5 Post-Fieldwork Data Compilation and Preliminary Analysis	
Unit 3: Fieldwork Report Preparation and Presentation	**20**
3.1 Analyzing Field Data (Quantitative and Qualitative Methods)	
3.2 Structuring the Fieldwork Report	
3.3 Writing the Introduction and Study Area Description	
3.4 Formulating Objectives and Hypothesis	
3.5 Writing the Methodology and Data Analysis Sections	
3.6 Discussing Results and Significance of Findings	
3.7 Conclusion and Recommendations	
3.8 Bibliography and References	
3.9 Preparing for Oral Presentation of the Report	
3.10 Submission of the Final Fieldwork Report	

References:

1. Mukherjee, Neela (2002). Participatory Learning and Action with 100 Field Methods. Concept Publishing, New Delhi.
2. Rao, P. S. (2006). Research Methodology for Social Sciences. Anmol Publications, New Delhi.
3. Kothari, C. R. (2004). Research Methodology: Methods and Techniques. New Age International Publishers, New Delhi.
4. Sundaram, K. V. (2007). Geography Fieldwork and Techniques. Concept Publishing, New Delhi.
5. Singh, R. L. (1994). Elements of Practical Geography. Kalyani Publishers, New Delhi.

Mapping of Program Outcomes with Course Outcomes

Weightage: 0= No relation, 1= Weak relation, 2= Moderate relation, 3= Strong relation

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	2	3	2	2	3	2	3	2
CO2	3	2	2	3	3	3	2	2	3	2
CO3	3	2	2	3	2	3	2	2	3	2
CO4	3	2	2	2	3	3	2	2	2	3
CO5	2	3	3	2	3	2	3	2	2	3
CO6	3	3	2	3	2	3	2	2	3	2
CO7	3	2	2	3	2	3	2	2	3	2

Justification

PO1: Critical and Creative Thinking

All COs demonstrate a strong alignment with critical thinking (CO1, CO2, CO3, CO4). The design of questionnaires (CO1), analysis of socio-economic data (CO2), and application of problem-solving skills in research (CO3) require analytical and creative thought processes to assess real-world problems.

PO2: Communication Skills

Communication is integral to most COs, especially CO1 (designing questionnaires) and CO6 (presentation of research findings), where clear expression of complex data and ideas is essential. Engaging with communities (CO5) also requires strong verbal and written communication.

PO3: Multicultural Competence

CO5 (community engagement) and CO3 (understanding diverse socio-cultural impacts) directly engage with the values of multicultural competence, allowing students to work with and understand diverse groups and geographical contexts.

PO4: Research Skills

All COs, especially CO1, CO2, and CO6, focus on research skills. Designing questionnaires, collecting and analyzing data, and synthesizing findings require rigorous research methodologies, in line with PO4's focus on hypothesis testing, data interpretation, and project design.

PO5: Environmental Awareness

Environmental awareness is strongly linked to CO2 (collecting and analyzing environmental data) and CO4 (understanding human-geography relationships), where students study the impact of human activities on the environment and work towards sustainability.

PO6: Problem-solving Abilities

CO3 (critical thinking) and CO5 (engaging with communities to resolve issues) contribute to problem-solving abilities, as students identify geographical issues and propose solutions through innovative methods.

PO7: Collaboration and Teamwork

CO5 emphasizes teamwork through community engagement, where students collaborate with local populations to address geographical issues. CO1 (questionnaire design) and CO2 (data collection) also involve working in teams for effective outcomes.

PO8: Value Inculcation

Many COs, particularly CO5 (community engagement), focus on ethical engagement with communities and understanding the broader implications of geographical research on human well-being and environmental sustainability.

PO9: Digital and Technological Skills

CO1 (questionnaire design), CO6 (data presentation), and CO2 (data analysis) align with digital skills, as students utilize tools like GIS, data processing software, and digital platforms to conduct and present their research effectively.

PO10: Community Engagement and Service

CO5 directly engages with this PO by focusing on community-based studies and working with

local populations to address geographical and environmental issues, fostering a sense of responsibility and service.