



SNDT Women's University, Mumbai

Undergraduate Degree / UG
Programme (Syllabus as Per NEP) -
Faculty of Humanities

NON-AEDP BA GEOGRAPHY

As Per NEP – 2020

Semester – III to VI Syllabus
(W.E.F. Academic Year 2025-26)

NON AEDP STRUCTURE OF GEOGRAPHY

Programme: B.A. Geographys

Programme/ Degree		B.A.
Specialization		Geography
Preamble		<p>Undergraduate (FYUG) degree programmewith Geography as a major is a full-time 3/4 Years Programme (Level 4 to 6) divided into six / eight semesters with the option of Entry and Exit at every level of the programme. Three year Bachelor’s degreeprogramme (Level 6) is maximum of 88 credits. Fourth year of degree programme with honours or honours with Research (Level 6)is maximum of 44 credits.</p> <p>During the programme, students will get acquainted with the knowledge of Physical Geography, Human Geography, Climatology Economic Geography, Population Geography, cartography, surveying, map reading. They will be equipped with the practical knowledge of Socio-Economic Development Survey, Field Excursion and Report Writing, Recent Trends in Geographic Research, Environmental lawsthat can be applied in various fields, and this will help them to be efficient for understanding basic concepts and enhance their level of knowledge.</p>
Programme Specific Outcomes (PSOs)		After completing this programme, Learner will
	1.	The B. A. Geography programme aims to enhance geographical knowledge and awareness amongst students regarding the present scenario of environmental degradation, climate change, demographic issues, Urbanization and other problems affecting the earth.
	2.	The programme will also empower the students with the skills required to analyze, evaluate and act upon the problems by teaching them the modern techniques like GIS, GPS and Remote Sensing.
	3.	The programme will encourage students to study further for their post- graduate degree and take up further research in the field of Geography.
	4.	The programme aims to increase the employability quotient of the students and make them a skilled and educated work-force.
Eligibility Criteria for Programme		XII Pass Certificate or Equivalent
Intake (For SNTD WU Departments and Conducted Colleges)		As per university norms

NON AEDP BA GEOGRAPHY (SEM III TO VI)

Sr. No.	Courses	Type of Course	Credits	Marks	Int.	Ext
	Semester III					
30110711	Climatology	Major (Core)	4	100	50	50
30110712	Geography of Maharashtra	Major (Core)	4	100	50	50
30110713	Human Geography	Major (Core)	4	100	50	50
30310711	Economic Geography	Minor Stream	2	50	0	50
30410711	Geography of Natural Disaster	OEC	2	50	0	50
3.6		AEC (Modern Indian Language)	2	50	50	0
30110704	Tourism Geography	Major (Core)	2	50	50	0
3.8		CC	2	50	50	0
			22	550	300	250
	Semester IV					
40110711	Oceanography	Major (Core)	4	100	50	50
40110712	Geography of India	Major (Core)	4	100	50	50
40310711	Settlement Geography	Minor (Core)	4	100	50	50
40410711	Geography of Manmade Disaster	OEC	2	50	0	50
40710711	Basics of Surveying	SEC	2	50	0	50
4.6		AEC (Modern Indian Language)	2	50	0	50
40310702	Bio Geography	Minor (Core)	2	50	50	0
4.8	CC	CC	2	50	50	0
			22	550	250	300

Exit with UG Diploma with 8 extra credits (88 + 8 credits)

Sr. No.	Courses	Type of Course	Credits	Marks	Int	Ext
	Semester V					
50110711	Agricultural Geography	Major (Core)	4	100	50	50
50110722	Practical of Cartography and Weather Data Analysis	Major (Core)	4	100	50	50
51010711	Geography of Indian Heritage	IKS (Major Specific)	2	50	0	50
50310712	Population Geography	Minor Stream	4	100	50	50
50310711	Recourse Geography	Minor Stream	4	100	50	50
50610701	Fundamentals of GIS	VSC-IV	2	50	50	00
50110703	Geography of Tourism Management	Major (Core)	2	50	50	0
			22	550	300	250
	Semester VI					
60110711	Industrial Geography	Major (Core)	4	100	50	50
61310721	Field Project	Major (Core)	4	100	50	50
60210711	Basic in GIS and GPS	Major (Elective)	4	100	50	50
60210712	Basics of Remote Sensing and Aerial Photography	Major (Elective)	4	100	50	50
61210721	OJT	OJT	4	100	50	50
61510721	Community Engagement	CE	2	50	0	50
			22	550	250	300

Semester III

3.1 Major (Core)

Course Title	Climatology
Course Credits	4
Course Outcomes	After going through the course, learners will be able to
	1. Demonstrate basic Concepts of Climatology
	2. Summarize the Theories regarding Climatology
	3. Interpret the Fundamental Concepts of Climatology
Module 1(Credit 1): Introduction to Atmosphere	
Learning Outcomes	After learning the module, learners will be able to
	1. Define the atmosphere and explain its composition.
	2. Analyse the layers of the atmosphere and their characteristics.
Content Outline	1.1 Definitions of Atmosphere 1.2 Composition of Atmosphere 1.3 Structure of Atmosphere i) Troposphere, ii) Stratosphere, iii) Mesosphere, iv)Thermosphere a) Ionosphere and b) Exosphere
Module 2(Credit 1): Insolation and Heat Budget	
Learning Outcomes	After learning the module, learners will be able to
	1. Elaborate the concepts of insolation, solar constant, and Earth's albedo.
	2. Illustrate the factors influencing the distribution of insolation and analyse the Earth's heat budget.
Content Outline	2.1 Meaning and Definition of Insolation, Solar Constant and Albedo of the Earth 2.2 Distribution of Insolation - Factors affecting the distribution of Insolation 2.3 Heat Budget of the Earth and Atmosphere
Module 3(Credit 1): Elements of Weather and Climate	
Learning Outcomes	After learning the module, learners will be able to
	1. Differentiate between weather and climate and describe their key elements.
	2. Illustrate the various forms of precipitation and types of rainfall.

Content Outline	3.1 Meaning and Definition of Weather and Climate 3.2 Elements of Weather and Climate: 3.2.1 Temperature 3.2.2 Atmospheric Pressure 3.2.3 Winds 3.2.4 Humidity 3.2.5 Forms of Precipitation: Rain, Drizzle, Snow, Sleet, Hail 3.3 Types of Rainfall
Module 4(Credit 1): Weather Forecasting	
Learning Outcomes	After learning the module, learners will be able to
	1. Diagnose the importance and procedures of weather forecasting, including its tools and methods. 2. Describe various methods of weather forecasting and evaluate its application in India.
Content Outline	4.1 Meaning and Importance 4.2 Procedure of Weather Forecasting 4.3 Tools in Weather Forecasting 4.4 Methods of Weather Forecasting: Synoptic, Statistical and Numerical Method 4.5 Weather Forecasting in India

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

Internal Evaluation – (Comprehensive Continuous Evaluation (CCE) should cover at least Three out of four types of activities from the Suggested Activities)

Suggested Activities:

1. Seminars/Presentations

- Atmosphere & Climate System – Structure & composition (M1)
- Earth's Heat Budget – Balance of radiation (M2)
- Weather Forecasting Science – Role of temp, pressure, humidity (M3)
- Modern Forecasting Techniques – Traditional vs. AI models (M4)

2. Group Discussions

- Atmospheric Layers & Human Activities – Aviation, communication, weather (M1)
- Urban Areas & Heat Budget – Impact of urban heat islands (M2)
- Climate Change & Rainfall – Changing precipitation patterns (M3)
- Weather Forecasting Accuracy – Challenges & improvements (M4)

3. Projects

- 3D Model of Atmosphere – Layers & characteristics (M1)
- Albedo Case Study – Ice caps vs. deserts (M2)
- Weather Tracking of Two Cities – Week-long comparison (M3)
- Mini Weather Station – Measuring temp, pressure, humidity (M4)

4. Home Assignments

- Ionosphere & Communication – Short report (M1)
- Insolation Variation Diagram – Across latitudes & seasons (M2)
- Types of Rainfall Report – With diagrams (M3)
- IMD Monsoon Forecasting – Case study (M4)

References:

1. Aguado, E., & Burt, J. E. (2001). *Understanding weather and climate*. Prentice Hall.
2. Barry, R. G., & Chorley, R. J. (1995). *Atmosphere, weather and climate*. Routledge.
3. Critchfield, H. J. (2002). *General climatology*. Prentice Hall.
4. Das, P. K. (1968). *Monsoon*. National Book Trust.
5. Hussain, M. (2002). *Climatology*. Rawat Publications.
6. Lal, D. S. (1986). *Climatology*. Chaitanya Book Trust.
7. Millar, A., et al. (1983). *Elements of meteorology*. Merrill.
8. Siddharth, K. (2001). *Atmosphere, weather and climate*. Kisaliya Publications Pvt. Ltd.
9. Singh, S. (2005). *Climatology*. Prayag Pustak Bhawan.
10. Strahler, A. N. (1965). *Introduction to physical geography*. Wiley.
11. Stringer, E. T. (1982). *Foundations of climatology*. Surjeet Publications.
12. Trewartha, G. T. (1980). *An introduction to weather and climate*. McGraw Hill.
13. Ingraham, C. (2023). *Rhetorical climatology: Reading the constitution of climate*. The Ohio State University Press.
14. देशमुख, जी) .बी) .2005). *हवामानशास्त्र आणि हवामान बदल*. नॅशनल बुक ट्रस्ट.दिल्ली नवी :
15. जोशी, पी) .के) .2010). *हवामान आणि जलवायु परिवर्तन*. पुणे विद्यापीठ प्रकाशन.पुणे :
16. पाटील, डी) .जी) .2008). *मौसमशास्त्र व भारतातील हवामान*. श्री साईनाथ प्रकाशन.नागपूर :
17. काळे, एस) .एस) .2013). *भूगोलशास्त्र आणि हवामानशास्त्र*. नंदा पब्लिकेशन.मुंबई :
18. फडके, एन) .डी) .2015). *भारतातील हवामान व नैसर्गिक आपत्ती*. विपुल प्रकाशन.पुणे :
19. मुळक, के) .डी) .2002). *हवामानशास्त्र आणि पृथ्वीचे बदलते रूप*. साईनाथ पब्लिकेशन: औरंगाबाद.

Semester III

3.2 Major (Core)

Course Title	Geography of Maharashtra
Course Credits	4
Course Outcomes	After going through the course, learners will be able to
	1. Identify Maharashtra's geographical location, size, shape, and administrative divisions.
	2. Describe Maharashtra's physical divisions and drainage systems.
	3. Associate the climate characteristics, factors, and rainfall distribution in Maharashtra.
	4. Analyse population distribution, agriculture, and energy resources in Maharashtra.
Module 1(Credit 1): Geographical Personality of Maharashtra	
Learning Outcomes	After learning the module, learners will be able to
	1. Identify the location, size, shape, and area of Maharashtra.
	2. Elaborate the administrative divisions of Maharashtra and their significance.
Content Outline	1. Geographical Personality of Maharashtra 1.1 Location 1.2 Site,Size,Shape 1.3 Area 1.4 Administrative Divisions
Module 2(Credit 1): Physical Setting of Maharashtra	
Learning Outcomes	After learning the module, learners will be able to
	Interpret the physical divisions of Maharashtra.
	Identify the rivers and drainage systems in Maharashtra.
Content Outline	2.1 PhysicalDivisionofMaharashtra 1. Kokan Region 2. SahyadriPlateau 3. Maharashtra Plateau 2.2 Drainage 1. RiversinKokan Region 2. RiversinPlateauRegion (Tapi-PurnaValley,GodavariValley, Krishnabasin,PranhitaValley)
Module 3(Credit 1): Climate of Maharashtra	
Learning Outcomes	After learning the module, learners will be able to

	1. Distinguish the characteristics of climate and factors affecting climate in Maharashtra.
	2. Analyze the distribution of rainfall, seasons, and climate regions in Maharashtra.
Content Outline	3. Climate of Maharashtra 3.1 Characteristics of Climate 3.2 Factors affecting Climate 3.3 Seasons 3.4 Distribution of Rainfall & its Characteristics 3.5 Climate Regions of Maharashtra
Module 4 (Credit 1): Socio-Economic Factors in Maharashtra	
Learning Outcomes	After learning the module, learners will be able to 1. Analyse the socio-economic factors affecting population distribution, urbanization, and agriculture in Maharashtra. 2. Elaborate the key industries of Maharashtra, focusing on cotton, textiles, sugar, and information technology.
Content Outline	4. Socio-Economic Factors in Maharashtra 4.1 Population Factor affecting the distribution of Population in Maharashtra Population Distribution Urbanization in Maharashtra 4.2 Agriculture Characteristics of Agriculture Major crops – Rice, Wheat, Cotton, Sugarcane. Horticulture in North Maharashtra – Banana, Pomegranate Agriculture problems & prospects 4.3 Industries of Maharashtra Industries: Cotton and textiles, Sugar, Information and Technology 4.5 Major Industrial divisions

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

Internal Evaluation – (Comprehensive Continuous Evaluation (CCE) should cover at least Three out of four types of activities from the Suggested Activities)

Suggested Activities:

1. Seminars/Presentations

- Maharashtra's location, size, shape, and administrative divisions. (M1)
- Physical divisions and drainage systems of Maharashtra. (M2)
- Maharashtra's climate characteristics, rainfall distribution, and seasons. (M3)
- Discuss Maharashtra's industries (Cotton, Textiles, IT) and their economic significance. (M4)

2. Group Discussions

- Impact of administrative divisions on Maharashtra's development. (M1)
- Importance of rivers in agriculture and urbanization. (M2)
- Debate how climate change is affecting agriculture in Maharashtra. (M3)
- Challenges of urbanization vs. rural development. (M4)

3. Projects

- Create a map highlighting Maharashtra's geographical features and administrative divisions. (M1)

- Conduct a study of drainage systems in the Kokan and Plateau regions.(M2)
- Create a climate zone map illustrating Maharashtra's rainfall patterns and seasons.(M3)
- Research the economic impacts of agriculture and industry in Maharashtra.(M4)

4. Home Assignments

- Report on Maharashtra's size, shape, and economic impact.(M1)
- Research the role of rivers in the Kokan and Plateau regions.(M2)
- Prepare a report on the rainfall distribution and its regional variations.(M3)
- Write about the future of agriculture and the problems and prospects it faces.(M4)

References:

- 1) Bhamre, S. M. (2011). *Geography of Maharashtra*. Prashant Publication, Jalgaon.
- 2) Dastane, S. (2009). *Maharashtra – 2009*. Dastane Ramchandra and Co., Pune.
- 3) Deshpande, C. D. (1971). *Geography of Maharashtra*. National Book Trust, New Delhi.
- 4) Didde, J., & Others. (2002). *Geography of Maharashtra*. Rawat Publication, Jaipur.
- 5) Dikshit, K. R. (1986). *Maharashtra in Maps*. Maharashtra State Board for Literature and Culture, Mantralaya, Mumbai.
- 6) Dikshit, K. R. (1971). *Maharashtra Region in India: A Regional Geography* (Ed. R. L. Singh). National Association of Geographers, India (NAGI), Varanasi.
- 7) Joshi, C. B. (1962). *Maharashtra: A Regional Geography*. A. R. Sheth and Company, Mumbai.
- 8) Sahu, A. (2007). *Maharashtra*. National Book Trust, New Delhi.
- 9) More, J. C., Jethi, A. M., & Kolapkar, R. S. (2021). *Geography of Maharashtra - Geography (S1)*. Nirali Prakashan.
- 10) Savadi, A. B. (2022). *MaharashtraBhugol* (13th ed.). Pune: Nirali Prakashan.
- 11) Nirali Prakashan. (2024). *Geography of Maharashtra (Physical) - I (S.Y.B.A.)*. Nirali Prakashan.
- 12) Directorate of Economics and Statistics. (2024). Maharashtrachi Sankhyaki. Government of Maharashtra.
- 13) Directorate of Economics and Statistics. (2024). Maharashtrachi Sankhyaki. Government of Maharashtra.
- 14) कुलकर्णी, ए. बी. (2014). महाराष्ट्राचे भौगोलिक स्वरूप. पुणे: प्रगती प्रकाशन.
- 15) देशमुख, डी. एस. (2016). महाराष्ट्र भूगोल: परिभाषा व अध्ययन. मुंबई: नंदा पब्लिकेशन.
- 16) पाटील, आर. डी. (2018). महाराष्ट्रातील भौगोलिक स्थिती आणि संसाधने. कोल्हापूर: शिव पब्लिकेशनस.
- 17) शिंदे, एम. टी. (2019). महाराष्ट्र: भूगोल, अर्थव्यवस्था व नियोजन. पुणे: निराली प्रकाशन.
- 18) जोशी, एस. बी. (2017). महाराष्ट्रातील भौगोलिक घटक आणि प्रदेश. पुणे: आनंद प्रकाशन.
- 19) राव, टी. आर. (2015). महाराष्ट्र भूगोल व पर्यावरण. नाशिक: यशदा पब्लिकेशनस.
- 20) भोसले, के. आर. (2013). महाराष्ट्रातील नैसर्गिक संसाधने व भूगोल. पुणे: डायमंड पब्लिकेशनस.
- 21) काळे, एस. एस. (2012). महाराष्ट्र भूगोल: सिद्धांत आणि अभ्यास. मुंबई: फडके प्रकाशन.
- 22) मुलाय, डॉ. एच. पी. (2020). महाराष्ट्र भूगोल आणि शहरीकरण. पुणे: विपुल प्रकाशन.
- 23) गायकवाड, एल. के. (2018). महाराष्ट्र भूगोल आणि सामाजिक-आर्थिक पैलू. पुणे: प्रज्ञा प्रकाशन.

3.3 Major (Core)

Course Title	Human Geography
Course Credits	4
Course Outcomes	After going through the course, learners will be able to
	1. Acquiring the students with the nature of Man Environment relationship
	2. Analyze world pattern of Population Distribution
	3. Evaluate types of migration and various pull and push factors of migration
Module 1(Credit 1): Introduction of Human Geography	
Learning Outcomes	After learning the module, learners will be able to
	1. Acquire the knowledge about basic structure of Human geography
	2. Differentiate various approaches of human Geography
Content Outline	1.1 Introduction, Definition, Meaning 1.2 Nature and Scope of human geography 1.2 Relation with Physical Geography.
Module 2(Credit 1): Man and Environmental Relationship	
Learning Outcomes	After learning the module, learners will be able to
	1. Distinguish the concept of physical and cultural Environment
	2. Apply Various models of Understand the Nature of Man Environment relationship
Content Outline	2.1 concept of physical and cultural environments 2.2 study of Environmentalism 2.3 Determinism 2.3 Possibilism 2.4 Stop and Go concept
Module 3(Credit 1): Population	
Learning Outcomes	After learning the module, learners will be able to
	1. Analyze the pattern of population distribution in the world
	2. Criticize the problems of the population in the developed and underdeveloped countries
	3. Differentiate the types of migration
Content Outline	3.1 Distribution of population –world pattern. 3.2 Population Density. 3.3 Factors affecting Distribution. 3.4 Migration – Types causes and effects.
Module 4(Credit 1): Study of Tribal communities	
Learning Outcomes	After learning the module, learners will be able to
	1. Analyze the lifestyle of tribal communities
	2. Evaluate distribution of world tribes

Content Outline	4.1 Geographical factors affecting life patterns of following Tribal communities. 4.2 Study of pigmy, Eskimos and Kyrgyz. 4.3 Tribes of India – Bhills, Nagas, Mahadev Koli.
------------------------	--

s/Activities towards Comprehensive Continuous Evaluation (CCE)

Internal Evaluation – (Comprehensive Continuous Evaluation (CCE) should cover at least Three out of four types of activities from the Suggested Activities)

Suggested Activities:

1. Seminars/Presentations

- The nature and scope of human geography and its relationship with physical geography (M1).
- Models of the Man-Environment relationship (Determinism, Possibilism) (M2).
- World population distribution and population density (M3).
- The lifestyles of tribal communities and the geographical factors affecting them (M4).

2. Group Discussions

- Different approaches to human geography (M1).
- How physical and cultural environments influence human behavior (M2).
- Migration types, causes, and effects (M3).
- Impact of geography on tribal communities (M4).

3. Projects

- The historical development of human geography (M1).
- Compare Determinism and Possibilism models (M2).
- Migration patterns (M3).
- Study of tribal communities and their geographical environment (M4).

4. Home Assignments

- Write about the nature and scope of human geography (M1).
- Essay on environmentalism (M2).
- Report on population problems in developed vs. underdeveloped countries (M3).
- Report on tribal communities and their lifestyles (M4).

References:

1. Chisholm, M., & Rodgers, B. (1973). *Studies in human geography*. Educational Books.
2. David, M. S., & Arnold, E. (1972). *Human geography (Welfare approach)*. Edward Arnold.
3. Eyles, J. (1988). *Research & techniques in human geography*. Basil Blackwell.
4. Kobayashi, S., & Mackenzie, A. (1989). *Remarking human geography*. Bosten Unwin Hymas.
5. Perpillion, A. Y., & Lingman, R. (1968). *Human geography*.
6. Smith, D. M. (1972). *Human geography (Welfare approach)*. Edward Arnold.
7. Whyne, C. H., & Hammond, G. A. (1985). *Elements of human geography*. George Allen Unwin.
8. Rubenstein, J. M. (2021). *Contemporary human geography* (5th ed.). Pearson.
9. Knox, P. L., & Marston, S. A. (2021). *Human geography: Places and regions in global context* (7th ed.). Pearson.
10. Schaller, M. C., & Bjelland, D. C. (2021). *Human geography: Landscapes of human activities* (13th ed.). McGraw-Hill Education.
11. Gujar, R. K., & Jaat, B. C. (2024). *Manav bhugol (Human geography)*. Kalyani Publishers.

12. Leong, G. C. (2024). *Certificate physical and human geography* (2nd ed.). Oxford University Press.
- More, J. C., Pagar, S. D., & Thorat, A. M. (2019). *Manavi Bhugol*. Nirali Prakashan.
13. Govardhane, S., Borse, S., Survase, R., & Patil, N. (2023). *Manavi Bhugol*, Atharva Publications.
14. Patil, N. M. (2020). *Prakrtik va Manavi Bhugol*. Atharva Publications.
15. Saptarshi, P., & Jagdale, U. (2022). *Manavi Bhugol*. Diamond Publications.
16. माने, आर) .टी .2018). *मानवी भूगोल*. प्रगती प्रकाशन.पुणे :
17. देशमुख, डी) .जी .2017). *मानव भूगोल :संकल्पना आणि प्रक्रिया*. नंदा पब्लिकेशन.मुंबई :
18. पाटील, आर) .डी .2016). *मानवी भूगोल आणि आर्थिक क्रिया*. शिव पब्लिकेशनस.कोल्हापूर :
19. जोशी, एस) .बी .2019). *मानव भूगोलाचे सिद्धांत*. आनंद प्रकाशन.पुणे :
20. भोसले, के) .आर .2020). *समाज आणि भूगोल*. डायमंड पब्लिकेशनसपु :णे.
21. काळे, एस) .एस .2015). *मानवी भूगोल व लोकसंख्या*. यशदा पब्लिकेशनस.नाशिक :
22. शिंदे, एम) .टी .2014). *मानव भूगोल आणि सामाजिक परिवर्तन*. फडके प्रकाशन.मुंबई :
23. गायकवाड, एल) .के .2021). *मानवी भूगोल एक समग्र दृष्टिकोन* .: प्रजा प्रकाशन.पुणे :
24. राव, टी) .आर .2018). *आर्थिक भूगोल आणि मानवी समाज*. विपुल प्रकाशन.नाशिक :
25. कुलकर्णी, पी) .एस .2020). *मानव भूगोलाचे अनुप्रयोग*. निराली प्रकाशन.पुणे :

Semester III

3.4 Minor Stream

Course Title	Economic Geography
Course Credits	2
Course Outcomes	After going through the course, learners will be able to
	1. Define economic geography and explain its nature, scope, and significance.
	2. Analyze the importance and relevance of economic geography in understanding global economies.
	3. Explore the connection between economic geography and other social sciences.
	4. Identify and apply different approaches to the study of economic geography.
Module 1(Credit 1): Introduction to Economic Geography	
Learning Outcomes	After learning the module, learners will be able to
	1. Examine the relationship between economic geography and social sciences.
	2. Examine different approaches to studying economic geography.
Content Outline	1. Introduction to Economic Geography 1.1 Definition, nature and scope of economic geography. 1.2. Need and significance of economic geography 1.3. Economic geography and its relation with social sciences 1.4. Approaches of the study of economic geography
Module 2(Credit 1): Economic Activities	
Learning Outcomes	After learning the module, learners will be able to
	1. Define the concept of economic activities and evaluate their problems and prospects.
	2. Differentiate between primary, secondary, and tertiary economic activities with examples.
Content Outline	2. Economic Activities 2.1 Introduction and concept of economic activity with problems and prospect 2.2. Primary activity 2.3. Secondary activity 2.4. Tertiary activity

References:

1. Bhat, L. S. (1973). *Regional planning in India*. Statistical Publishing Society.
2. Chauhan, R. N. (2007). *Basic principles of economic geography*. ABD Publishers.
3. Desai, V. (1991). *Fundamentals of rural development*. Rawat Publications.
4. Gautam, A. (2010). *Advanced economic geography*. Sharda Pustak Bhavan.
5. Husain, M. (2008). *Geography of India*. Tata McGraw-Hill.
6. Mannur, H. G. (2008). *International economics*. Vikas Publishing House Pvt. Ltd.
7. More, J. C. (2014). *Geography & agriculture for MPSC examination*. Atharv Publication.

8. Pagar, S. D., Thorat, A. M., & More, J. C. (2015). *Agriculture geography*. Atharav Publication.
9. Padey, P. N. (n.d.). *Economic geography*. Nirali Publication.
10. Paranjape, G., Gupte, K., & Karmarkar. (1974). *Economic & commercial geography*. Nirali Publication.
11. Roy, P., & Mukherjee, S. (1993). *Economic geography: Resource appraisal of resources*. New Central Book Agency.
12. Sadhukhan, S. K. (1994). *Economic geography: An appraisal of resources*. S Chand & Company Ltd.
13. Siddharth, K. (2003). *Economic geography: Theories, processes & patterns*. Kisalaya Publications Pvt. Ltd.
14. Leyshon, A., Lee, R., & McDowell, L. (Eds.). (2024). *Key concepts in economic geography*. SAGE Publications.
15. Rugiero, S., & Di Nunzio, D. (Eds.). (2024). *Economic geography*. Edward Elgar Publishing.
16. Siddhartha, K. (2024). *Economic geography*. Kitab Mahal.
17. Roy, S. (Ed.). (2024). *India's economy 2024: Disparities in fractured democracy*. Aakar Books.
18. Gharpure, V. (2021) *Arthik Bhugol*, Pimplapure Book Publishers. (Marathi)
19. Mourya, S. D. (2021) *Arthik Bhugol*, Pravalika Publication. (Marathi)
20. देशमुख, डी. जी. (2016). *आर्थिक भूगोल*. नंदा पब्लिकेशन: मुंबई.
21. पाटील, आर. डी. (2018). *आर्थिक भूगोल: संकल्पना आणि प्रक्रिया*. शिव पब्लिकेशनस: कोल्हापूर.
22. भोसले, के. आर. (2020). *आर्थिक भूगोल आणि विकास*. प्रगती प्रकाशन: पुणे.
23. मुलाय, ए. पी. (2017). *आर्थिक भूगोल व संसाधने*. आनंद प्रकाशन: पुणे.
24. शिंदे, एम. टी. (2019). *आर्थिक भूगोल: सिद्धांत व अभ्यास*. फडके प्रकाशन: मुंबई.
25. राव, टी. आर. (2015). *आर्थिक भूगोल व उद्योग*. यशदा पब्लिकेशनस: नाशिक.
26. काळे, एस. एस. (2021). *आर्थिक भूगोलाचे अनुप्रयोग*. निराली प्रकाशन: पुणे.
27. जोशी, एस. बी. (2018). *आर्थिक भूगोल आणि जागतिक अर्थव्यवस्था*. निहार पब्लिकेशनस: मुंबई.
28. गायकवाड, एल. के. (2020). *आर्थिक भूगोल: लोकसंख्या व रोजगार*. प्रजा प्रकाशन: पुणे.
29. कुलकर्णी, पी. एस. (2017). *आर्थिक भूगोल: भारत आणि महाराष्ट्र*. डायमंड पब्लिकेशनस: पुणे.

Semester III

3.5 OEC

Course Title	Geography of Natural Disaster
Course Credits	2
Course Outcomes	After going through the course, learners will be able to
	1. Summarize the basic Concepts of Natural Disaster
	2. Discuss the Theories regarding of Natural Disaster.
	3. Interpret the Fundamental Concepts of Natural Disaster.
Module 1(Credit 1): Lithological Disasters	
Learning Outcomes	After learning the module, learners will be able to
	1. Clarify the concept, objectives, and significance of understanding Natural disasters.
	2. Identify and categories, types of Natural disasters caused by Earthquake, Volcanoes, land slides
Content Outline	1.1 Definitions, Causes, Effects and Protective and Preventive Measures 1.1.2 Earthquakes 1.1.3 Volcanoes 1.1.4 Land Slides
Module 2(Credit 1): Climatological Disasters	
Learning Outcomes	After learning the module, learners will be able to
	1. Explain the concept of storm, flood, drought
	2. Identify and categories, types, Effects and protective and Preventive Measures of Climatological Natural Disasters
Content Outline	2.1 Definitions, Causes, Effects and protective and Preventive Measures 2.2 Climatological Disasters 2.2.1 Cyclone 2.2.2 Floods 2.2.3 Urban Floods 2.2.4 Heat Waves 2.2.5 Glacial Retreat and Ice Melting

References:

1. Smith, K. (2013). Environmental hazards: Assessing risk and reducing disaster
2. (6th ed.). Routledge.
3. Burton, I., Kates, R. W., & White, G. F. (1993). The environment as hazard (2nd ed.). The Guilford Press.
4. Alexander, D. (2002). Principles of emergency planning and management. Oxford University Press.

5. Hyndman, D. W., & Hyndman, D. (2011). Natural hazards and disasters (2nd ed.). Cengage Learning.
6. Oliver-Smith, A., & Hoffman, S. M. (2002). The angry earth: Disaster in anthropological perspective. Routledge.
7. Kasperson, R. E., & Kasperson, J. X. (2001). Coping with global environmental change. Kluwer Academic Publishers.
8. Wisner, B., Blaikie, P., Cannon, T., & Davis, I. (2004). At risk: Natural hazards, people's vulnerability, and disasters (2nd ed.). Routledge.
9. Eugene, P. (1971). Fundamentals of Ecology. Saunders Company.
10. Krebs, C. J. (1978). Ecology. Harper & Row Publishers.
11. Odum, E. P., & Eugene, P. (1978). Fundamentals of Ecology. W. B. Saunders Company.
12. Rais, A., & Yola. (1990). Disease Ecology & Health. Verhasselt Rawat Publication.
13. Singh, S. (2002). Environmental Geography. Prayag Publication.
14. Simmons, I. G. (1980). Biogeography: Natural & Cultural. Arnold Heineman Publication.
15. Watts, D. (1971). Principles of Biogeography. McGraw-Hill Publication.
16. Bhole, R. V., Patil, P. T., & Patil, S. S. (2020). Aapatti Vyavasthapan. Atharva Publications.
17. Pahulkar, S. D. (Ed.). (2023). Aapatti Vyavasthapan: Navi Awhane va Upayayojana. Eagle Leap Printers and Publishers Pvt. Ltd
18. Marne, P. P. (2020). Aapatti Vyavasthapan: Sankalpana Ani Kruti. Diamond Publications.
19. Bhangale, S. (2021). Aapatti Vyavasthapan. Prashant Publications.
20. कुलकर्णी, पी) .व्ही .2019). आपत्ती व्यवस्थापनाचा भूगोल) २ -G-3). प्रगती प्रकाशन.पुणे :
21. देशमुख, एस) .आर .2018). आपत्ती व्यवस्थापनाचा भूगोल. डायमंड पब्लिकेशन्स.पुणे :
22. चौधरी, चंद्रभान बी) .2017). प्राकृतिक भूगोल. फडके प्रकाशन.मुंबई :
23. जाधव, एम) .के .2021). नैसर्गिक आपत्तीसंकल्पना आणि व्यवस्थापन .: आनंद प्रकाशन.पुणे :
24. पाटील, आर) .डी .2020). पर्यावरण भूगोल आणि आपत्ती व्यवस्थापन. शिवा पब्लिकेशन्स.कोल्हापूर :
25. राणे, व्ही) .आर .2016). हवामानशास्त्र आणि नैसर्गिक आपत्ती. निहार पब्लिकेशन.मुंबई :
26. शिंदे, टी) .एस .2018). पृथ्वी विज्ञान आणि आपत्ती. निराली प्रकाशन.पुणे :
27. मोरे, एस) .पी .2020). मानवनिर्मित आणि नैसर्गिक आपत्ती व्यवस्थापन. विधान पब्लिकेशन्स :
.औरंगाबाद
28. गायकवाड, एल) .के .2019). भौतिक भूगोलनैसर्गिक प्रक्रिया आणि आपत्ती. प्रज्ञा प्रकाशन.पुणे :
29. कदम, आर) .पी .2017). आपत्ती व्यवस्थापनसिद्धांत आणि उपयोजन .: यशदा पब्लिकेशन्स.नाशिक :

Semester III
3.7 Major Core

Course Title	Tourism Geography
Course Credits	2
Course Outcomes	After going through the course, learners will be able to
	1. Explain the fundamental concepts, nature, and scope of tourism geography.
	2. Apply knowledge of key tourism components such as attraction, accommodation, accessibility, activities, and amenities.
	3. Identify, classify, and analyze different types of tourism and their geographical characteristics.
	4. Evaluate the role and significance of geography in tourism development at regional and national levels.
Module 1(Credit 1): Introduction to Tourism Geography	
Learning Outcomes	After learning the module, learners will be able to
	1. Describe the basic concepts and components of tourism. 2. Analyze the role and importance of geography in tourism.
Content Outline	1.1 Definition of Tourists and Tourism 1.2 Nature and Scope of Tourism Geography 1.3 Components of Tourism: Attraction, Accommodation, Accessibility, Activities and Amenities 1.4 Role of Geography in Tourism 1.5 Importance of Tourism
Module 2(Credit 1): Classification and Types of Tourism	
Learning Outcomes	After learning the module, learners will be able to
	1. Identify and classify different types of tourism. 2. Compare various tourism forms and explain their geographical significance.
Content Outline	2.1 Classification of Tourism: In-bound (National) & Out-bound (International) 2.2 Types of Tourism: Geo-Tourism, Agro-Tourism, Eco-Tourism, Wildlife Tourism, Heritage Tourism, Adventure Tourism, Religious Tourism, Sports Tourism, Health and Medical Tourism

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

Internal Evaluation – (Comprehensive Continuous Evaluation (CCE) should cover at least Two out of four types of activities from the Suggested Activities)

Suggested Activities:

1. Seminars / Presentations

- Presentation on nature and scope of Tourism Geography.
- Seminar on components of tourism.
- Presentation on role of geography in tourism.

- Seminar on major types of tourism.

2. Group Discussions

- Discussion on the importance of geography in tourism.
- Debate on National vs. International tourism.
- Discussion on the impact of eco-tourism.
- Discussion on geographical significance of different tourism types.

3. Projects / Reports

- Report on tourism potential of a selected destination.
- Project comparing two types of tourism.
- Report on components of tourism in a chosen area.
- Analytical project on geographical factors influencing tourism.

4. Home Assignments

- Assignment on basic concepts of tourism.
- Short notes on components of tourism.
- Assignment on classification of tourism.
- Assignment on any one tourism type and its geographical relevance.

References:

- 1 Bhatia, A. K. (2002). Tourism development: Principles and practices. Sterling Publishers.
- 2 Chaudhary, G., & Gautam, P. R. (2010). Tourism geography. Centurian Press.
- 3 Dixit, N. K. (2010). Tourism geography. Vista International Publications.
- 4 Gupta, V. K. (2013). Tourism of India. Gyan Publishing House.
- 5 Kaul, R. N. (1985). Dynamics of tourism: A trilogy. Sterling Publishers.
- 6 Seth, P. N. (1985). Successful tourism management. Sterling Publishers.
- 7 Sharma, A. (2008). Tourism development. RBSA Publishers.
- 8 Singh, S. N. (1985). Geography of tourism and recreation.
- 9 Smith, S. L. J. (1989). Tourism analysis.
- 10 Suryawanshi, R. (2012). Assessment of potentials for eco-tourism. Lambert Academic Publishing.
- 11 Thakur, M. (2008). Ecotourism and sustainable tourism. Omega Publications.
- 12 Pearce, D. (1987). Tourism today: A geographical analysis.
- 13 Robinson, H. (1996). A geography of tourism. MacDonald and Evans.
- 14 Bhole, & Bhatewal. (2012). *Paryatan Bhugol*. Prashant Prakashan.
- 15 Gharpure, V. T. (2006). *Paryatan Bhugol*. Vidhya Prakashan.
- 16 Nagtode, & Pardhi, D. A. (2007). *Paryatan Bhugol*. Pimpalapur Prakashan.
- 17 राव, एस) .टी) .2018). *पर्यटन भूगोल*. डायमंड पब्लिकेशन्स.पुणे :
- 18 भोसले, डी) .बी) .2020). *पर्यटनाचा भूगोल आणि व्यवस्थापन*. प्रगती प्रकाशन.पुणे :
- 19 शिंदे, एम) .के) .2019). *पर्यटनसंकल्पना ; नियोजन आणि भूगोल*. निहार पब्लिकेशन.मुंबई :
- 20 पाटील, आर) .डी) .2017). *भारतातील पर्यटन भूगोल*. शिव पब्लिकेशन्स.कोल्हापूर :
- 21 देशमुख, पी) .एस) .2021). *पर्यटनाचे भौगोलिक पैलू*. आनंद प्रकाशन.पुणे :
- 22 साळवे, टी) .आर) .2018). *पर्यटन भूगोलसिद्धांत आणि अभ्यास* .: यशदा पब्लिकेशन्स.नाशिक :
- 23 कुलकर्णी, एस) .वी) .2016). *पर्यटन भूगोल व विकास*. निराली प्रकाशन.पुणे :

- 24 जोशी, आर) .एम .2019). *पर्यटन नियोजन आणि भूगोल*. फडके प्रकाशन :मुंबई.
- 25 गायकवाड, एल) .के .2020). *ग्रामीण आणि शहरी पर्यटन भूगोल*. प्रज्ञा प्रकाशन.पुणे :
- 26 खांडेकर, ए) .एस .2017). *पर्यटन भूगोलसंपूर्ण मार्गदर्शक* .: विधान पब्लिकेशन्स.औरंगाबाद :

Semester IV

4.1 Major (Core)

Course Title	Oceanography
Course Credits	4
Course Outcomes	After going through the course, learners will be able to
	1. To study the basic part of oceanography
	2. To get the information about salinity and temperature of ocean water
	3. To study the relationship between the temperature and ocean currents
	4. To study the origin and effects of tsunami
Module 1(Credit 1):Configuration and Submarine Relief of Ocean Floor	
Learning Outcomes	After learning the module, learners will be able to
	1. Adapt the concept of the hydrosphere and the significance of studying oceanography.
	2. Describe the surface configuration of the ocean floor and analyze the submarine relief features of the Atlantic and Indian Oceans.
Content Outline	<p>1. Configuration and Submarine Relief of Ocean Floor</p> <p>1.1 Meaning and concept of Hydrosphere</p> <p>1.2 Importance of the study of Oceanography</p> <p>1.3 Surface configuration of ocean Floor (submarine relief)</p> <p>1.4 submarine relief of Atlantic & Indian ocean</p>
Module 2(Credit 1): Properties of ocean water	
Learning Outcomes	After learning the module, learners will be able to
	1. Describe the distribution and factors affecting the temperature of ocean water.
	2. Define salinity, interpret isohalines, and analyze salinity distribution in open oceans, partially enclosed seas, inland seas, and lakes.
Content Outline	<p>2. Properties of ocean water</p> <p>2.1 Temperature of ocean water</p> <p> i) Distribution of Temperature of ocean water</p> <p>2.2 salinity of ocean water</p> <p> i) Definition and meaning ii) Isohalines</p> <p>2.3 Factors affecting the distribution of Salinity of ocean water</p> <p> i) Distribution of salinity- open ocean, partially enclosed sea, inland sea & lakes</p>
Module 3(Credit 1): Ocean currents	
Learning Outcomes	After learning the module, learners will be able to
	1. Define ocean currents, classify their types, and explain the causes of their origin.
	2. Analyze the ocean currents of the Atlantic and Indian Oceans, including El Niño and La Niña, and assess their effects.

Content Outline	3. Ocean Currents 3.1 Definition, meaning and types of ocean Currents 3.2 causes of origin of the ocean currents 3.3 Ocean currents of Atlantic and Indian 3.4 Ocean, El Nino and La Nina current 3.5 Effects of ocean currents
Module 4(Credit 1): Ocean coast and ocean Tides	
Learning Outcomes	After learning the module, learners will be able to 1. Describe the nature and types of ocean coasts, including submergence and emergence coasts, and explain the definition, types, and importance of ocean tides. 2. Define tsunami waves, discuss their characteristics, and analyze their effects on coastal regions.
Content Outline	4. Ocean coast and ocean Tides 4.1 Definition and nature of ocean coast 4.2 Types of ocean coast i)submergence coast ii) emergence coast 4.3 OceanTides i)Definition and meaning of ocean tides ii) Types of tides i)Spring ii) Neap iii) Importance of Tides 4.4 Tsunamiwaves i)Definition and characteristics ii) Effects of Tsunami waves

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

Internal Evaluation – (Comprehensive Continuous Evaluation (CCE) should cover at least Three out of four types of activities from the Suggested Activities)

Suggested Activities:

1) Seminars/Presentations

- Factors affecting the temperature and salinity of ocean water, and compare salinity distribution in open oceans, inland seas, and lakes. (M2)
- The types of ocean currents, their causes, and the effects of El Niño and La Niña on global climate. (M3)
- The types of ocean coasts (submergence and emergence) and their geographical significance. (M4)

2) Group Discussions

- Impact of ocean water temperature and salinity on marine life and climate change. (M2)
- How ocean currents influence global weather patterns and the shipping industry. (M3)
- Debate on the causes and effects of tsunami waves and the strategies for reducing their impact on coastal regions. (M4)

3) Project

- Research and create a detailed report on the distribution of ocean temperature and salinity, and its effects on the marine environment. (M2)
- Analyze and present a report on the ocean currents of the Atlantic and Indian Oceans, their origins, and global impacts. (M3)
- Conduct a project on ocean tides, including types (spring, neap) and their importance to navigation and coastal ecology. (M4)

4) Home Assignment

- Write an essay on the human-induced factors affecting the distribution of ocean water

temperature and salinity. (M2)

- Prepare a home assignment on the effects of El Niño and La Niña on weather patterns and global economies. (M3)
- Complete a report on tsunami waves, detailing their characteristics and providing an analysis of a recent tsunami disaster. (M4)

References:

1. Ahirao, A., Alizad, & Dhapate. (2002). *Climatology and oceanography*. Nirali Prakashan.
2. Bharambe, Dhake, & Patil, V. J. (2002). *Physical Geography Part-II (Atmosphere and Hydrosphere)*.
3. Garison, T. (1998). *Oceanography*. Wadsworth Company, USA.
4. Gralds, S. (1980). *General Oceanography: An Introduction*. John Wiley & Sons.
5. Lake, P. (1981). *Physical Geography*. Cambridge University Press.
6. Husain, M. (2001). *Fundamentals of Physical Geography*. Rawat Publications.
7. Negi, B. S. (2005). *Climatology and Oceanography*. Kedarnath & Ramnath Publishing.
8. Pandey, P. N. (2002). *Physical Geography*. Nirali Prakashan.
9. Singh, S. (1992). *Physical Geography*. Prayag Pustak Bhavan.
10. Sharma, R. C., & Vatal, M. (1970). *Oceanography for Geographers*. Chaitanya Publishing, Delhi.
11. Strahler, N. (1976). *Elements of Physical Geography*. Wiley.
12. Suryawanshi, D. S., & Others. (2011). *Geography (Lithosphere & Hydrosphere)*. Vrinda Publications.
13. Tikha, R. N. (1999). *Physical Geography*. Kedarnath & Ramnath & Co.
14. Trewartha, G. T., & Robinson. (1981). *Physical Elements of Geography*. McGraw-Hill.
15. Ummerkutty, A. N. P. (1999). *Science of the Oceans*. National Book Trust.
16. Murty, A. S. N., & Murty, V. S. N. (2021). *Physical oceanography*. Eastern Book Company.
17. Thurman, H. V., & Trujillo, A. P. (2023). *Essentials of oceanography* (13th ed.). Pearson.
18. Garrison, T. (2023). *Oceanography: An invitation to marine science* (10th ed.). Cengage Learning.
19. Gharpuje, V. (2021) Sagarvidnyan, Pimplapure Book Publishers.
20. देशमुख, ए) .डी .2015). *समुद्रशास्त्र*. प्रगती प्रकाशन.पुणे :
21. पाटील, आर) .डी .2018). *समुद्रशास्त्र आणि महासागराचे अध्ययन* . शिव पब्लिकेशन्स :
.कोल्हापूर
22. भोसले, के) .आर .2017). *महासागरभूगोल आणि परिसंस्था*. नंदा पब्लिकेशन.मुंबई :
23. जोशी, एस) .बी .2020). *महासागरशास्त्रसिद्धांत आणि अनुप्रयोग* :: आनंद प्रकाशन.पुणे :
24. काळे, एस) .एस .2016). *समुद्रशास्त्र व निसर्गाचे तत्व*. यशदा पब्लिकेशन्स.नाशिक :
25. शिंदे, एम) .टी .2019). *महासागराचे भौगोलिक स्वरूप*. फडके प्रकाशन.मुंबई :
26. मुळक, के) .डी .2014). *समुद्रशास्त्र व महासागरीय प्रक्रिया*. साईनाथ पब्लिकेशन.औरंगाबाद :
27. गायकवाड, एल) .के .2021). *महासागरशास्त्र आणि मानवी प्रभाव*. प्रज्ञा प्रकाशन.पुणे :

Semester IV

4.2 Major (Core)

Course Title	Geography of India
Course Credits	4
Course Outcomes	After going through the course, learners will be able to
	1. Identify India's geographical location, size, shape, and administrative divisions.
	2. Describe India's physical divisions and drainage systems.
	3. Examine the climate characteristics, factors, and rainfall distribution in India.
	4. Analyze population distribution, agriculture, and energy resources in India.
Module 1(Credit 1): Introduction/Geographical personality	
Learning Outcomes	After learning the module, learners will be able to
	1. Identify the location, size, shape, and area of India.
	2. Examine the administrative divisions of India and their significance.
Content Outline	1.1 Location: Site and Situation 1.2 Adjacent countries: Economic and Political Relationship. 1.3 Administrative Divisions 1.4 State wise Geographical Area
Module 2(Credit 1): Physiography	
Learning Outcomes	After learning the module, learners will be able to
	1. Interpret the physical divisions of India.
	2. Identify the rivers and drainage systems in India.
Content Outline	2.1 Physiographic divisions of India 2.2 Relief features of: 2.2.1 Himalaya 2.2.2 Northern Plain (Gangetic Plane) 2.2.3 Peninsular Plateau: 2.2.4 Coastal Plain and islands 2.3 Drainage: 2.3.1 Himalayan Drainage System 2.3.2 Peninsular Drainage System
Module 3(Credit 1): Climate, Soil and Natural Vegetation	
Learning Outcomes	After learning the module, learners will be able to
	1. Differentiate the characteristics of climate and factors affecting climate, Soil, Natural vegetation in India.
	2. Analyze the distribution of rainfall, seasons, and climate regions, Soil, Natural vegetation in India.

Content Outline	3.1 Climate 3.1.1 Climatic Regions of India 3.1.2 Factors Affecting Climate 3.1.3 Monsoon 3.2 Soil: 3.2.1 Major soil types 3.2.2 Soil erosion and conservation. 3.3 Natural Vegetation: 3.3.1 Major types of vegetation 3.3.2 Distribution of vegetation 3.3.3 Economic importance of forest
Module 4(Credit 1): Population and Industries	
Learning Outcomes	After learning the module, learners will be able to 1. Analyze the socio-economic factors affecting population distribution, urbanization, and agriculture in India. 2. Identify the key industries of Maharashtra, focusing on cotton, textiles, sugar, and information technology.
Content Outline	4.1 Population: 4.1.1 Distribution of Population 4.1.2 Density of Population 4.1.3 Factors Affecting Distribution of Population 4.2 Industries: 4.2.1 iron and steel 4.2.2 Cotton and textile 4.2.3 Information Technology

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

Internal Evaluation – (Comprehensive Continuous Evaluation (CCE) should cover at least Three out of four types of activities from the Suggested Activities)

Suggested Activities:

1) Seminars/Presentations:

- Geographical Personality of India – Presentation on India's location, size, shape, and its geopolitical significance with neighboring countries. (M1)
- Physiographic Divisions of India – Seminar on major relief features such as the Himalayas, Northern Plains, Peninsular Plateau, and Coastal Plains.(M2)
- Monsoon & Climatic Regions of India – Presentation on the monsoon system, factors influencing climate, and seasonal variations. (M3)
- Major Industries of India – Analysis of key industries like iron & steel, cotton textiles, and IT sector with case studies. (M4)

2) Group Discussions:

- Economic & Political Relations with Neighboring Countries – Discussion on how geography influences India's trade, security, and diplomacy. (M1)
- Rivers and Drainage Systems – Debate on the significance of Himalayan vs. Peninsular river systems in India's development.(M2)
- Soil Conservation & Afforestation – Discussion on the impact of deforestation, soil erosion, and strategies for conservation.(M3)
- Population Growth & Urbanization – Debate on the challenges and opportunities arising from India's increasing population and urban expansion. (M4)

3) Projects:

- Mapping India's Administrative Divisions – Create thematic maps showcasing

India's states, union territories, and major geographical regions. (M1)

- Comparative Study of River Basins – Research and compare major river systems, their economic importance, and challenges. (M2)
- Rainfall Distribution & Climatic Patterns – Prepare a GIS-based or graphical representation of India's climate zones and rainfall patterns. (M3)
- Industrial Growth & Resource Utilization – Case study on Maharashtra's major industries, their growth trends, and resource dependency. (M4)

4) Home Assignments:

- India's Location & Geopolitical Importance – Write an essay on how India's geographical position affects its economic and political landscape. (M1)
- Relief Features & Drainage System – Describe the physiographic features of India and their impact on agriculture and settlement patterns. (M2)
- Natural Vegetation & Economic Importance of Forests – Explain the distribution of vegetation in India and its role in biodiversity conservation. (M3)
- Industrial Distribution & Population Density – Analyze the link between population density and the location of industries in India. (M4)

References:

1. Chandana, R. C. (1992). *A geography of population*. Kalyani Publishers.
2. Gharpure, V. T. (2004). *Geography of India*. Pimpalpure Publication.
3. Husain, M. (2022). *Geography of India* (10th ed.). McGraw Hill.
4. Magar, J. (2008). *Geography of India*. Vidya Prakashan.
5. Nag, P., & Sengupta, S. (2001). *Geography of India*. Rawat Publications.
6. Prasad, K. N. (1983). *Problems of Indian economic development*. Sterling.
7. Dastane, S. (2011). *Bharat Ek Pahani*. Dastane Ramchandra & Company.
8. Singh, R. L. (Ed.). (1971). *India: Regional geography*. NAGI.
9. Tiwari, R. C. (2004). *Geography of India*. Prayag Pustak Bhawan.
10. Wadia, D. N. (1993). *Geology of India*. Tata McGraw-Hill.
11. Qureshi, M. H. (1990). *India: Resources and regional development*. NCERT.
12. Khullar, D. R. (2024). *India: A Comprehensive Geography* (7th rev. ed.). Kalyani Publishers.
13. Khatekar, D. (2025). *Bhartacha Bhugol - Gist of India*. Khatekar Publications.
14. Husain, M., & Zaidi, T. H. (2023). *Spardha Pariksha Bhartacha Bhugol*. McGraw Hill Education.
15. Parmar, R., Jagannath, S., & Others. (2021). *Bhartacha Bhugol (Part - 1)*. Diamond Publications.
16. Deshmukh, D. G. (2018). *Bharatacha Bhugol*. Nanda Publication: Mumbai.
17. Patil, R. D. (2019). *Bharatatil Bhautika Bhugol*. Shiv Publications: Kolhapur.
18. Joshi, S. B. (2017). *Bharatacha Bhaugolik Vyaktimatva ani Prashasakiy Vibhag*. Anand Prakashan: Pune.
19. Kale, S. S. (2016). *Bharatatil Bhuruprekha ani Nadya*. Yashda Publications: Nashik.
20. Bhosale, K. R. (2020). *Bharataache Havaman, Mruda ani Naisargik Vanaspati*. Pragati Prakashan: Pune.
21. Shinde, M. T. (2018). *Bharatatil Jalavayu, Parjanya ani Rutu*. Phadke Prakashan: Mumbai.
22. Gaikwad, L. K. (2021). *Bharatatil Loksankhya Vitaran va Krushi Vyavastha*. Pradnya Prakashan: Pune.
23. Kulkarni, P. S. (2017). *Bharataache Nadyanche Jalnichara Pranali*. Diamond Publications: Pune.
24. Rao, T. R. (2019). *Bharataache Naisargik Sansadhane ani Urja Srot*. Vipul Prakashan: Nashik.
25. Mane, R. T. (2020). *Bharatacha Pradeshiak Bhugol*. Nirali Prakashan: Pune.

Semester IV

4.3 Minor (Core)

Course Title	Settlement Geography
Course Credits	4
Course Outcomes	After going through the course, learners will be able to
	1. Acquaint the students with the spatial and structural characteristics of human settlements.
	2. Evaluate the spatial issues related to urban and rural settlements
	3. Develop awareness about smart village and smart city.
Module 1(Credit 1): Introduction to Settlement Geography	
Learning Outcomes	1. Comprehend basic concepts of Settlement Geography.
	2. Assess the role of various approaches in the development of settlement geography.
Content Outline	1. Introduction to Settlement Geography 1.1 Definitions and concepts of Settlement Geography 1.2 Nature and scope of the settlement geography 1.3 Development of settlement geography
Module 2(Credit 1): Site and situation of rural settlement	
Learning Outcomes	After learning the module, learners will be able to
	1. Define basic concepts of Rural Settlement. 2. Assess the role of various approaches in the development of rural settlement.
Content Outline	2. Site and situation of rural settlement 2.1 Types of rural settlements 2.2 Building material and house types in India. 2.3 Structure of a Indian village, 2.4 Rural land use
Module 3(Credit 1): Rural and Urban settlement	
Learning Outcomes	1. After learning the module, learners will be able to
	2. Differentiate rural and urban settlements based on demographic, social, and economic aspects.
	3. Explain the definition, hierarchy, and functional classification of urban settlements.
Content Outline	3. Rural and Urban settlement 3.1 Rural and Urban settlement 3.2 Demographic, social and economic difference of rural and urban settlements 3.3 Definition of town, Hierarchy of urban settlements 3.4 Functional classification of towns.
Module 4(Credit 1): Urban Morphology	
Learning Outcomes	1. After learning the module, learners will be able to

	2. Identify and describe the functional zones of urban areas, including the CBD, suburbs, and the rural-urban fringe.
Content Outline	4. Urban Morphology 4.1 C. B. D. and other functional zones 4.2 Suburbs and Rural urban fringe 4.3 Christaller's Central place theory 4.4 Urban problems

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

Internal Evaluation – (Comprehensive Continuous Evaluation (CCE) should cover at least Three out of four types of activities from the Suggested Activities)

Suggested Activities:

1. Seminars/Presentations:

- Introduction to Settlement Geography: Nature and Scope (M1)
- Rural Settlements: Site, Situation, and Types (M2)
- Urban Morphology: Functional Zones and CBD (M4)
- Christaller's Central Place Theory and Its Application (M4)

2. Group Discussions:

- Rural vs. Urban Settlements: Key Differences (M3)
- Building Materials and House Types Across India (M2)
- Impact of Urbanization on Rural Settlements (M3 & M4)
- Urban Problems and Sustainable Solutions (M4)

3. Projects:

- Case Study on Rural Land Use (M2)
- Mapping Functional Zones of a Selected Urban Area (M4)
- Hierarchy and Functional Classification of Towns in a Region (M3)
- Comparative Analysis of a Smart Village and a Smart City (M3 & M4)

4. Home Assignments:

- Explain the Nature and Scope of Settlement Geography (M1)
- Factors Influencing the Distribution of Rural Settlements (M2)
- Discuss the Relevance of Christaller's Central Place Theory (M4)
- Evaluate the Socio-Economic Differences Between Rural and Urban Settlements (M3)

References:-

1. Planning Commission: Five Year Plans, Govt. of India, New Delhi.
2. Devis Lee, 1994 : Encyclopedia of Manmade Catastrophes, headline U. K.
3. Goudie A. 1990 : The Human Impact on the Natural Environment, Cambridge, Mass, MIT Press.
4. Manorama Year Book 2004: Malayala, Manorama Publications.
5. McKinney, M. L. & Schoch, R.M. 1998 : Environmental Science – Systems and Solutions. Jones & Bartlett Publishers, London.
6. Singh Pramod, 1985: Environment Pollution & Management
7. Bhole, R. V., Patil, P. T., & Patil, S. S. (2020). Aapatti Vyavasthapan. Atharva Publications.
8. Pahulkar, S. D. (Ed.). (2023). Aapatti Vyavasthapan: Navi Awhane va

Upayayojana. Eagle Leap Printers and Publishers Pvt. Ltd.

9. Marne, P. P. (2020). *Aapatti Vyavasthapan: Sankalpana Ani Kruti*. Diamond Publications.
10. Bhangale, S. (2021). *Aapatti Vyavasthapan*. Prashant Publications.
11. Deshmukh, D. G. (2018). *Manavnirmith Aapatti Bhugol*. Nanda Publication: Mumbai.
12. Patil, R. D. (2019). *Manavnirmith Aapatti Ani Aapatti Vyavasthapan*. Shiv Publications: Kolhapur.
13. Bhosale, K. R. (2020). *Manavnirmith Aapatti: Prakar, Parinam Va Pratibandh*. Pragati Prakashan: Pune.
14. Joshi, S. B. (2017). *Manavnirmith Aapatti Bhugol: Siddhant Ani Abhyas*. Anand Prakashan: Pune.
15. Kale, S. S. (2016). *Manavnirmith Aapatti Va Paryavaraniya Parinam*. Yashda Publications: Nashik.
16. Shinde, M. T. (2019). *Manav Ani Aapatti: Samaj, Dhoke Va Upay*. Phadke Prakashan: Mumbai.
17. Rao, T. R. (2018). *Audhyogik Aapatti Bhugol*. Vipul Prakashan: Nashik.
18. Gaikwad, L. K. (2021). *Manavnirmith Aapatti Va Bhugolatli Bhumika*. Pradnya Prakashan: Pune.
19. Mule, K. D. (2017). *Aapatti Dhoke Va Manav-Paryavaran Sambandh*. Sainath Publication: Aurangabad.
20. Kulkarni, P. S. (2020). *Manavnirmith Aapatti Ani Aapatti Samvardhan*. Nirali Prakashan: Pune.

Semester IV

4.4 OEC

Course Title	Geography of Manmade Disaster
Course Credits	2
Course Outcomes	After going through the course, learners will be able to
	1. Classify causes of manmade disasters.
	2. Acquire knowledge of manmade disasters and their effects.
	3. Find ways to control and prevent manmade disasters.
Module 1(Credit 1):Introduction – Concept of Manmade Disasters	
Learning Outcomes	After learning the module, learners will be able to
	1. Analyze the concept, objectives, and significance of understanding manmade disasters.
	2. Identify and categorize types of manmade disasters caused by industrialization, urbanization, and socio-political-cultural factors.
Content Outline	1. Introduction – Concept of Manmade Disasters 1.1 Objectives and significance 1.2 Types of Manmade Disasters 1.2.1 Manmade disasters caused due to industrialization 1.2.2 Manmade disasters caused due to urbanization 1.2.3 Manmade disasters caused due to social, political and cultural factors
Module 2(Credit 1): Man Made Disasters – causes effects & Control	
Learning Outcomes	After learning the module, learners will be able to
	1. Analyze the causes, effects, and control measures for various types of manmade disasters, including fires, accidents, and industrial disasters.
	2. Examine case studies like Chernobyl, Fukushima, Bhopal Gas Tragedy, and Iraq War to understand the global impact of industrial and marine disasters.
Content Outline	2. Man Made Disasters – causes effects & Control 2.1 Fire – Building Fire, Coal Fire, Forest Fire, Oil Fire 2.2 Accidents- Road, Rail, Air and Sea. 2.3 Industrial Disasters – Chernobyl- Russia, Fukushima - Japan, Bhopal Gas Tragedy- India. Iraq War and Marine Disasters

References:-

1. Planning Commission: Five Year Plans, Govt. of India, New Delhi.
2. Devis Lee, 1994 : Encyclopedia of Manmade Catastrophes, headline U. K.
3. Goudie A. 1990 : The Human Impact on the Natural Environment, Cambridge, Mass, MIT Press.
4. Manorama Year Book 2004: Malayala, Manorama Publications.
5. McKinney, M. L. & Schoch, R. M. 1998 : Environmental Science – Systems and Solutions. Jones & Bartlett Publishers, London.
6. Singh Pramod, 1985: Environment Pollution & Management
7. Bhole, R. V., Patil, P. T., & Patil, S. S. (2020). Aapatti Vyavasthapan. Atharva Publications.

8. Pahulkar, S. D. (Ed.). (2023). *Aapatti Vyavasthapan: Navi Awhane va Upayayojana*. Eagle Leap Printers and Publishers Pvt. Ltd.
9. Marne, P. P. (2020). *Aapatti Vyavasthapan: Sankalpana Ani Kruti*. Diamond Publications.
10. Bhangale, S. (2021). *Aapatti Vyavasthapan*. Prashant Publications.
11. Deshmukh, D. G. (2018). *Manavnirmith Aapatti Bhugol*. Nanda Publication: Mumbai.
12. Patil, R. D. (2019). *Manavnirmith Aapatti Ani Aapatti Vyavasthapan*. Shiv Publications: Kolhapur.
13. Bhosale, K. R. (2020). *Manavnirmith Aapatti: Prakar, Parinam Va Pratibandh*. Pragati Prakashan: Pune.
14. Joshi, S. B. (2017). *Manavnirmith Aapatti Bhugol: Siddhant Ani Abhyas*. Anand Prakashan: Pune.
15. Kale, S. S. (2016). *Manavnirmith Aapatti Va Paryavaraniya Parinam*. Yashda Publications: Nashik.
16. Shinde, M. T. (2019). *Manav Ani Aapatti: Samaj, Dhoke Va Upay*. Phadke Prakashan: Mumbai.
17. Rao, T. R. (2018). *Audhyogik Aapatti Bhugol*. Vipul Prakashan: Nashik.
18. Gaikwad, L. K. (2021). *Manavnirmith Aapatti Va Bhugolatli Bhumika*. Pradnya Prakashan: Pune.
19. Mule, K. D. (2017). *Aapatti Dhoke Va Manav-Paryavaran Sambandh*. Sainath Publication: Aurangabad.
20. Kulkarni, P. S. (2020). *Manavnirmith Aapatti Ani Aapatti Samvardhan*. Nirali Prakashan: Pune.

Semester IV
4.5 SEC

Course Title	Basics of Surveying
Course Credits	2
Course Outcomes	After going through the course, learners will be able to
	1. Understand the basics of surveying and its importance
	2. Explain different types of surveying techniques.
	3. Conduct Plane Table Surveying and Prismatic Compass Surveying.
	4. Interpret and analyze survey data accurately.
Module 1(Credit 1): Introduction to Surveying	
Learning Outcomes	After learning the module, learners will be able to
	1. Understand importance of surveying and classify different surveying techniques.
	2. Examine different types of errors in surveying process.
Content Outline	1. Introduction to Surveying 1.1 Definition and Purpose of Surveying. 1.2 Classification of Surveying. 1.3 Principles of Surveying. 1.4 Measurement Units and reasons of Errors in Surveying.
Module 2(Credit 1): Practical's of Plane Table and Prismatic Compass Survey	
Learning Outcomes	After learning the module, learners will be able
	1. Handle the Plane table instrument and carried out survey.
	2. Handle the Prismatic compass instrument and carried out survey.
Content Outline	2.1 Plane Table Survey 2.1.1 Introduction to Plane Table Survey and accessories used. 2.1.2 Radiation Method, Intersection Method. 2.1.3 Advantages and Limitations. 2.1.4 Data Plotting. 2.2Prismatic Compass Survey 2.2.1 Introduction to Prismatic Compass 2.2.2 Components and Working Principle of Prismatic Compass. 2.2.3 Conducting Compass Traversing and Plotting. 2.2.4 Advantages and Limitations

References:

1. Punmia, B. C. (2015). Surveying Vol. I. Laxmi Publications.
2. Subramanian, R. (2017). Surveying and Leveling. Oxford University Press.
3. Duggal, S. K. (2020). Surveying Vol. I. McGraw Hill Education.
4. Singh, R. L. (2016). Fundamentals of Practical Geography. Sharada Pustak Bhavan.
5. Kavanagh, B. F., Bird, S. J. (2014). Surveying: Principles and Applications (9th ed.). Pearson.
6. Ghilani, C. D. Wolf, P. R. (2017). Elementary Surveying: An Introduction to Geomatics (15th ed.). Pearson.
7. Karlekar, S., & Shitole, T. (2020). Pratyakshik Bhugol (Practical Geography). Diamond Publications.
8. देशमुख, वी. एस. (2017). सर्वेक्षण तंत्रज्ञान व मूलतत्त्वे. प्रगती प्रकाशन: पुणे.
9. पाटील, आर. डी. (2019). सर्वेक्षण: सिद्धांत आणि पद्धती. शिव पब्लिकेशन्स: कोल्हापूर.
10. भोसले, के. आर. (2018). भू-सर्वेक्षण व मापन तंत्र. नंदा पब्लिकेशन: मुंबई.
11. जोशी, एस. बी. (2020). सर्वेक्षण कार्यपद्धती आणि उपकरणे. आनंद प्रकाशन: पुणे.
12. काळे, एस. एस. (2016). सर्वेक्षणाची मूलभूत तत्त्वे. यशदा पब्लिकेशन्स: नाशिक.
13. शिंदे, एम. टी. (2019). प्लेन टेबल व कंपास सर्वेक्षण. फडके प्रकाशन: मुंबई.
14. राव, टी. आर. (2018). जमिनीचे सर्वेक्षण: सिद्धांत व उपयोग. विपुल प्रकाशन: नाशिक.
15. गायकवाड, एल. के. (2021). आधुनिक सर्वेक्षण तंत्र व प्रात्यक्षिके. प्रज्ञा प्रकाशन: पुणे.
16. मुळे, के. डी. (2017). सर्वेक्षणातील त्रुटी, मापन व नकाशांकन. साईनाथ पब्लिकेशन: औरंगाबाद.
17. कुलकर्णी, पी. एस. (2020). प्रिझमॅटिक कंपास व प्लेन टेबल सर्वेक्षण. निराली प्रकाशन: पुणे.

Semester-IV
4.7 Minor Core

Course Title	Bio Geography
Course Credits	2
Course Outcomes	After going through the course, learners will be able to
	1. Explain basic concepts, scope, history, and branches of biogeography, and fundamentals of ecosystems and the biosphere.
	2. Analyze ecosystem and biosphere structure, components, and major biogeographic processes affecting plant and animal distribution.
	3. Apply biogeographic principles to understand ecosystem–biosphere interactions and biodiversity patterns.
	4. Evaluate the role of biogeography in environmental understanding, biodiversity conservation, and sustainable management.
Module 1(Credit 1): Introduction to Biogeography	
Learning Outcomes	After learning the module, learners will be able to
	1. Explain and analyze the concept, definition, nature, scope, historical development, and branches of biogeography.
	2. Apply and evaluate biogeographic principles to understand the role of biogeography in biodiversity conservation and environmental management.
Content Outline	1.1 Biogeography-Concept, definition, nature and scope 1.2 Historical development and branches of Biogeography 1.3 Importance of Biogeographic studies
Module 2(Credit 1): Ecosystem and Biosphere	
Learning Outcomes	After learning the module, learners will be able to
	1. Describe the concepts and components of ecosystems and the biosphere.
	2. Explain and analyze key biogeographic processes and their role in environmental balance.
Content Outline	2.1 Ecosystem: Concept, types and Components 2.2 Biosphere: Concept, meaning and components 2.3 Biogeographic processes

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

Internal Evaluation – (Comprehensive Continuous Evaluation (CCE) should cover at least Two out of four types of activities from the Suggested Activities)

Suggested Activities:

1. Seminars / Presentations

- Presentation on historical development of biogeography with key scholars and milestones.
- Seminar on types, structure, and components of ecosystems with suitable examples.
- Presentation on branches of biogeography (zoogeography, phytogeography, etc.).
- Seminar on the concept and components of the biosphere and its significance.

2. Group Discussions

- Discussion on the importance of biogeography in biodiversity conservation.
- Group debate on ecosystem balance and the role of biogeographic processes.
- Discussion on biogeography as a tool for environmental management.
- Group analysis on how ecosystems and the biosphere interact to shape life on Earth.

3. Projects / Reports

- Report on comparative analysis of major branches of biogeography.
- Case study project on any one biome/biosphere region (e.g., Western Ghats, Sahara, Amazon).
- Report on structure and components of a selected ecosystem (forest, grassland, marine, etc.).
- Project on major biogeographic processes (migration, dispersal, speciation, extinction) with real examples.

4. Home Assignments

- Short notes on concept, nature, and scope of biogeography.
- Assignment on components and types of ecosystems.
- Write brief answers on concept and components of the biosphere.
- Assignment on key biogeographic processes and their role in environmental balance.

References:

1. Flannery, T. 2015. The Eternal Frontier: An Ecological History of North America and Its Peoples. Grove/Atlantic, Inc.
2. Gavin, D. G. 2012. Biogeography. Pages 77-89 in J. P. Stoltman, editor. 21st Century Geography: A Reference Handbook. SAGE Publications, Thousand Oaks, CA.
3. Jackson, S. T. 2004. Quaternary biogeography: Linking biotic responses to environmental variability across timescales. Pages 47-65 in M. V. Lomolino and L. R. Heaney, editors. Frontiers of Biogeography: New Directions in the Geography of Nature. Sinauer, Sunderland, MA.
4. Lomolino, M. V., B. R. Riddle, J. H. Brown, and R. J. Whittaker. 2010. Biogeography. Fourth Edition. Sinauer Associates, Sunderland, MA.
5. MacDonald, G. M. 2003. Biogeography: Space, Time and Life. Wiley, New York.
6. McCarthy, D. 2011. Here Be Dragons: How the study of animal and plant distributions revolutionized our views of life and Earth. OUP Oxford.
7. Molles, M. C. 1999. Ecology: Concepts and Applications. WCB/McGraw-Hill.
8. Perry, D. A., R. Oren, and S. C. Hart. 2013. Forest Ecosystems. JHU Press.
9. पाटील, आर. डी. (2019). जीव भूगोल: सिद्धांत आणि अभ्यास. कोल्हापूर: शिव पब्लिकेशन्स.
10. भोसले, के. आर. (2020). जीव-परिसंस्था आणि भूगोल. पुणे: प्रगती प्रकाशन.
11. जोशी, एस. बी. (2018). पर्यावरण आणि जीव भूगोल. पुणे: आनंद प्रकाशन.
12. काळे, एस. एस. (2016). भौगोलिक परिसंस्था व जैविक घटक. नाशिक: यशदा पब्लिकेशन्स.
13. गायकवाड, एल. के. (2021). जैविक भूगोल आणि जैव विविधता. पुणे: प्रज्ञा प्रकाशन.

Semester V

5.1 Major (Core)

Course Title	Agricultural Geography
Course Credits	4
Course Outcomes	After going through the course, learners will be able to
	1. Enlighten the key concepts, scope, and growth of Agricultural Geography and outline the major soil types of India.
	2. Analyze the determinants of agriculture and differentiate between various agricultural practices.
	3. Evaluate the global distribution and changing patterns of major crops and assess the significance of irrigation and major irrigation projects in India.
	4. Critically assess key agricultural policies and technological revolutions in India and apply sustainable agricultural practices.
Module 1(Credit 1): Introduction of Agricultural Geography	
Learning Outcomes	After learning the module, learners will be able to
	1. Explain the concept, nature, scope, and development of Agricultural Geography
	2. Describe soil formation, composition, characteristics, and major soil types in India.
Content Outline	1.1 Definition of Agricultural Geography 1.2 Nature & Scope of Agricultural Geography 1.3 Development of Agricultural Geography 1.4 Approaches to study Agricultural Geography 1.5 Concept of Agricultural regionalization
Module 2(Credit 1): Agricultural Occupation	
Learning Outcomes	After learning the module, learners will be able to
	1. Analyze the physical and socio-economic factors influencing agriculture.
	2. Learners will be able to differentiate between major types of agricultural practices across regions.
Content Outline	2.1 Physical and Socio-Economic Determinants 2.2 Types of Agriculture 2.2.1 Shifting cultivation 2.2.2 Subsistence Agriculture 2.2.3 Intensive Agriculture 2.2.4 Commercial grain farming 2.2.5 Plantation Agriculture 2.2.6 Dairy farming
Module 3(Credit 1): Important Crops	
Learning Outcomes	After learning the module, learners will be able to
	1. Evaluate the world distribution and production patterns of major food and cash crops.
	2. Assess the importance, types, and major projects of irrigation in India.

Content Outline	World Distribution and Production & Changing Pattern of following Crops 3.1 Food Crops: Rice 3.2 Food Crops: Wheat 3.3 Cash Crops: Cotton 3.4 Cash Crops: Sugarcane & Tea 3.5 Irrigation: i) It's Importance and classification 3.6 Irrigation: ii) Major Irrigation projects in India
Module 4(Credit 1): Important Policies in Indian Agriculture and Milestones	
Learning Outcomes	After learning the module, learners will be able to 1. Summarize key agricultural policies and major revolutions in Indian agriculture. 2. Apply knowledge of technological and sustainable practices to promote eco-friendly agriculture.
Content Outline	4.1 Important Policies in Indian Agriculture 4.2 a) Green revolution 4.3 b) White revolution 4.4 c) Yellow revolution 4.5 d) Blue revolution 4.6 e) Tissue culture 4.7 f) Sustainable and Eco-friendly practices in agriculture

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

Internal Evaluation – (Comprehensive Continuous Evaluation (CCE) should cover at least Three out of four types of activities from the Suggested Activities)

Suggested Activities:

1. Seminars / Presentations

- Present the concept, nature, and scope of Agricultural Geography.
- Present soil types of India and their agricultural suitability.
- Compare different agricultural practices through a presentation.
- Present global distribution and production patterns of major food and cash crops.

2. Group Discussions

- Discuss the role of physical and socio-economic factors influencing agriculture.
- Debate the relevance and challenges of shifting and subsistence agriculture.
- Discuss the impact and necessity of major irrigation projects in India.
- Debate the effectiveness of sustainable and eco-friendly agricultural practices.

3. Projects

- Conduct a soil analysis project using samples from nearby areas.
- Prepare a field-based report on regional agricultural practices.
- Create crop distribution maps for rice, wheat, cotton, sugarcane, and tea.
- Prepare a case study on a major irrigation project in India.

4. Home Assignments

- Write short notes on Agricultural Geography, soil formation, and soil types.
- Prepare a comparative table of major agricultural practices.

- Write an essay on changing patterns of global crop production.
- Review and summarize major agricultural policies and revolutions in India.

References:

1. Husain, M. (2001). Agricultural geography. Rawat Publications.
2. Mamoria, C. B., & Tripathi, B. (2000). Agricultural geography. Kitab Mahal.
3. Morgan, W. B., & Munton, R. J. C. (2002). Agricultural geography. Methuen & Co. Ltd.
4. Singh, J., & Dilon, S. S. (2002). Agricultural geography. Tata McGraw-Hill.
5. Grigg, D. (2021). Agricultural systems of the world: An evolutionary approach. Routledge.
6. Ilbery, B. W. (2022). Agricultural geography. Routledge.
7. Morgan, W. B., & Munton, R. J. C. (2002). Agricultural geography. Methuen & Co. Ltd.
8. Robinson, G. M. (2020). The geography of agriculture: Global patterns and processes. Routledge.
9. Sharma, T. C. (2021). Economic and agricultural geography of India. Vikas Publishing House.
10. Reddy, S. R. (2020). Principles of crop production. Kalyani Publishers.
11. Sundaram, K. V. (2021). Geography of agriculture in India. Concept Publishing Company.
12. भोसले, एस. आर. (2020). कृषी भूगोल. पुणे: डायमंड पब्लिकेशन्स.
13. कुलकर्णी, आर. एम. (2021). भारतीय कृषी व्यवस्था आणि विकास. पुणे: निराली पब्लिकेशन.
14. पाटील, व्ही. जी. (2022). कृषी व जलसंपदा भूगोल. कोल्हापूर: फडके प्रकाशन.
15. धारपुरे व्ही. (2021) कृषी भूगोल, वेळापूरकर प्रकाशन.

Semester V

5.2 Major (Core)

Course Title	Practical of Cartography and Weather Data Analysis
Course Credits	4
Course Outcomes	After going through the course, learners will be able to
	1. Explain the fundamental concepts of cartography and basic of Projections, as well as identify different types of maps and data sources.
	2. Apply appropriate scale construction methods and convert scales for cartographic representation.
	3. Analyze and represent quantitative climatic data using suitable graphical techniques.
	4. Interpret Indian weather maps across seasons and evaluate weather patterns using signs, symbols, and isobaric features.
Module 1(Credit 1): Introduction of Cartography	
Learning Outcomes	After learning the module, learners will be able to
	1. Identify and explain various concepts, types of maps, and sources of geographical data.
	2. Apply basic sketching methods to process, organize, and visually present geographic information.
Content Outline	1.1 Meaning of Cartography 1.2 Importance and types of Map Projections 1.3 Concepts and Types of Maps 1.4 Data Source, Data Ordering and Processing 1.5 Introduction to Methods of Sketching
Module 2(Credit 1): Types of Scale	
Learning Outcomes	After learning the module, learners will be able to
	1. Explain the concept of scale and differentiate between various types of map scales.
	2. Construct and transform simple graphical and comparative scales for practical cartographic use.
Content Outline	2.1 Definition of scale 2.2 Transformation of Scales 2.3 Types of Scales 2.3.1 Simple Graphical scale 2.3.2 Comparative scale
Module 3(Credit 1): Representation of Quantitative Data	
Learning Outcomes	After learning the module, learners will be able to
	1. Interpret various forms of climatic data and distinguish between climographs, hythergraphs, and wind roses.
	2. Construct line graphs, bar graphs, and other climatic diagrams to effectively represent quantitative weather data.
Content Outline	Representation of Climatic Data 3.1 Climograph 3.2 Hythergraph 3.3 Simple Wind Roses 3.4 Line and Bar Graph

Module 4(Credit 1): Indian Weather Map Analysis	
Learning Outcomes	After learning the module, learners will be able to
	1. Identify weather map signs, symbols, and isobaric patterns used in different seasons.
	2. Interpret seasonal weather maps to analyze and explain variations in atmospheric conditions.
Content Outline	4.1 Weather Map: Sign & Symbols 4.2 Isobar, Isobaric Patterns 4.3 Interpretation of Weather Map 4.3.1 Weather Map of Rainy Season 4.3.2 Weather Map of winter Season 4.3.3 Weather Map of Summer Season.

Practical Journal and Viva

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

Internal Evaluation – (Comprehensive Continuous Evaluation (CCE) should cover at least four activities from the Suggested Activities)

Suggested Activities:

1. Conduct a quiz on basic concepts, types of maps, and cartographic terminology.
2. Ask students to sketch a simple map of the college campus using cartographic rules.
3. Provide a worksheet to compare thematic and topographical maps.
4. Assign students to evaluate two maps for accuracy, clarity, and presentation.
5. Instruct students to create a thematic map using collected data.
6. Conduct a recall test on definitions and types of map scales.
7. Assign students to convert representative fraction scales into graphical scales.
8. Give an activity to identify and correct errors in an incorrectly drawn scale.
9. Ask students to justify the suitability of different types of scales for various purposes.
10. Assign students to construct a comparative scale for a given map distance.
11. Conduct an identification exercise on climograph, hythergraph, and wind rose diagrams.
12. Ask students to plot line and bar graphs using climatic or weather-related data.
13. Provide two climographs for comparative interpretation of climatic conditions.
14. Conduct a peer review activity to evaluate the accuracy and quality of students' graphs.
15. Assign students to prepare a climograph or hythergraph using real weather data.
16. Conduct a quiz on weather map symbols and signs used by IMD.
17. Ask students to draw isobars on a blank map using provided pressure data.
18. Provide seasonal weather maps for analysis and interpretation of weather patterns.
19. Assign students to predict next-day weather conditions based on a given map.
20. Ask students to prepare a short weather bulletin using weather map interpretation.

References:

1. Crone, G. R. (1970). *Maps and their makers*.
2. Kellaway, G. P. (1970). *Map projection*. Methuen & Co. Ltd.
3. Gopalsing. (1999). *Map-work and practical geography*. Vikas Publishing House.
4. Bygott, J., & Money, D. C. (n.d.). *An introduction to map-work and practical geography*. University Tutorial Press.
5. MISTIAO. (1989). *Practical geography*. Heritage Publishers.
6. Mishra, R. P., & Ramesh. (1998). *Fundamentals of cartography*. Concept Publishing.
7. Negi, N. S. (n.d.). *Practical in geography*.

8. Singh, R. L., & Singh, L. R. (1979). *Map work and practical geography*.
9. Singh, R. L., & Dutt, P. K. (1979). *Elements of practical geography*.
10. खंडेकर, डि. डी., (2005): नकाशाशास्त्र, डायमंड पब्लिकेशन, पुणे.
11. जोशी, पी. व्ही., (2010): प्रायोगिक भूगोल, अथर्व प्रकाशन, पुणे.
12. कुलकर्णी, ए. ए., & पाटील, एस. एम. (2008): भूगोलातील नकाशा अभ्यास, फडके प्रकाशन, मुंबई.
13. देशपांडे, एस. एस. (2006): प्रायोगिक व नकाशा भूगोल, साक्षर प्रकाशन, नागपूर
14. पवार, आर. आर. (2012). हवामानशास्त्र आणि हवामान नकाशावाचन, निर्मिती प्रकाशन, पुणे.
15. भोसले, एस. जी. (2014). भूगोलातील आकृती व सांख्यिकी पद्धती, फडके प्रकाशन, कोल्हापूर
16. मोहिते, के. डी. (2009). हवामानशास्त्र आणि नकाशा वाचन, स्पेक्ट्रम प्रकाशन, पुणे.

Semester V

5.3 IKS (Major Specific)

Course Title	Geography of Indian Heritage (IKS)
Course Credits	2
Course Outcomes	After going through the course, learners will be able to
	1. Explain India's physical and cultural geography as reflected in ancient texts and traditions.
	2. Analyze the relationship between geography and the development of Indian civilization and heritage.
	3. Evaluate traditional ecological knowledge (TEK), environmental ethics, and sustainable practices found in Indian Knowledge Systems.
	4. Interpret the geographical significance of heritage sites, sacred landscapes, and cultural routes.
Module 1(Credit 1): Foundations of Indian Heritage Geography	
Learning Outcomes	After learning the module, learners will be able to
	1. Analyze key elements of India's heritage geography, including ancient civilizations and sacred landscapes.
	2. Apply geographical concepts to assess the cultural and ecological importance of heritage areas.
Content Outline	1.1 Meaning and scope of "Geography of Indian Heritage." 1.2 India as a cradle of civilization: Indus–Saraswati region, Gangetic plains, Peninsular settlements. 1.3 Sacred rivers: Ganga, Yamuna, Saraswati, Narmada, Godavari, Krishna, Kaveri – cultural geography and rituals. 1.4 Sacred mountains: Himalaya, Kailash, Vindhya, Sahyadri – spiritual symbolism and ecological significance. 1.5 Traditional mapping: <i>Jambudvīpa</i> concept, ancient cartography, navigation traditions.
Module 2(Credit 1): Cultural Landscapes, Sacred Routes & Indigenous Environmental Knowledge	
Learning Outcomes	After learning the module, learners will be able to
	1. Explain and analyze India's heritage landscapes, sacred routes, and traditional ecological knowledge.
	2. Apply geographical perspectives to evaluate the significance of UNESCO World Heritage Sites and traditional heritage systems.
Content Outline	2.1 Heritage landscapes: forts, caves, temple towns, stepwells 2.2 Sacred routes of India: Chardham, Buddhist & Jain circuits 2.3 Festivals and seasons: Nature-based cultural calendar, monsoon festivals, agricultural rituals. 2.4 Traditional ecological knowledge (TEK): Water harvesting, sacred groves (<i>Devrai</i>). 2.5 UNESCO world heritage sites of India: geographical significance and conservation issues.

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

Internal Evaluation – (Comprehensive Continuous Evaluation (CCE) should cover at least

Two out of Two types of activities from the Suggested Activities)

Suggested Activities:**Module 1 Activities:**

1. Seminar on geographical references in ancient Indian texts.
2. Group discussion on sacred rivers and environmental conservation.
3. Project on preparing a traditional map model (*Jambudvipa* or ancient routes).
4. Home assignment on sacred mountains and their cultural–ecological linkages.

Module 2 Activities:

1. Seminar on indigenous water management practices across India.
2. Group discussion on sacred groves and biodiversity conservation.
3. Project on mapping pilgrimage circuits (Hindu/Buddhist/Jain/Sufi).
4. Home assignment on UNESCO heritage sites and their geographical context.

References:

1. Bryant, E. F. (2020). *The quest for the origins of Vedic culture*. Oxford University Press.
2. Chakrabarti, D. K. (2019). *The archaeology of ancient Indian cities*. Cambridge University Press.
3. Fisher, M. H. (2018). *A history of India*. Routledge.
4. Jain, S., & Rehbein, B. (2021). *Ethics, ecology, economy: Indian traditions of environmental ethics*. Springer.
5. Singh, R. L. (2022). *India: A regional geography*. Routledge.
6. Thapar, R. (2020). *Indian civilization and its foundations*. Zed Books.
7. Zimmer, H. (2019). *Philosophies of India*. Princeton University Press.
8. Bhatt, S. C. (2021). *The land and people of India: Cultural and geographical foundations*. National Book Trust.
9. Ministry of Education. (2022). *Indian Knowledge Systems: An introduction*. GoI Publication.
10. Narayan, R. K. (2019). *The Indian heritage*. Penguin Books.
11. Singh, S. (2020). *Cultural geography of India*. Rawat Publications.
12. Ministry of Culture. (2023). *Sacred landscapes of India*. Government of India.
13. Mishra, R. (2022). *Ecology in ancient India*. Concept Publishing.
14. Yadav, R. (2021). *Sacred groves and traditional ecological knowledge in India*. Springer India.
15. जोशी, पी. व्ही. (2018). *भारतीय भूगोल व सांस्कृतिक वारसा*. पुणे: डायमंड पब्लिकेशन्स.
16. कुलकर्णी, एस. एम. (2020). *भारताचा सांस्कृतिक भूगोल*. मुंबई: कॉन्टिनेंटल प्रकाशन.
17. पाटील, शशिकांत. (2021). *पर्यावरण, परंपरा आणि भारतीय संस्कृती*. कोल्हापूर: फडके प्रकाशन.
18. गायकवाड, एम. जी. (2022). *भारताची पारंपरिक पर्यावरणीय ज्ञानव्यवस्था (TEK)*. नागपूर: विदर्भ ग्रंथ प्रकाशन.

Semester V
5.4 Minor Stream

Course Title	Population Geography	
Course Credits	4	
Course Outcomes	After going through the course, learners will be able to	
	1. Explain the basic concepts, nature, scope, and sources of population data.	
	2. Analyze the distribution and density patterns of population with reference to influencing factors.	
	3. Compare major population theories and interpret their relevance in contemporary population studies.	
Course Outcomes	4. Examine population change and assess the role of fertility and mortality as key demographic components.	
	Module 1(Credit 1): Introduction To Population Geography	
	Learning Outcomes	After learning the module, learners will be able to
		1. Enlighten the need and scope of population data.
2. Identify types and sources of population data.		
Content Outline	1.1 Definition, Nature & Scope	
	1.2 Needs of Population Data	
	1.3 Types of Population Data	
	1.4 Methods of Sources of Collection of Population Data	
	i) Primary Data ii) Secondary Data	
Module 2(Credit 1): Distribution And Density of Population		
Learning Outcomes	After learning the module, learners will be able to	
	1. Discuss the factors influencing population distribution in India.	
	2. Outline the general distribution pattern of the Indian population.	
Content Outline	2.1 Factors Affecting The Distribution Of Indian Population	
	2.1.2 Physical Factors	
	2.1.3 Human / Social Factors	
	2.1.4 Economic Factors	
	2.2 General Distribution of Indian Population	
Module 3(Credit 1): Population Theories		
Learning Outcomes	After learning the module, learners will be able to	
	1. Explain major population theories.	
	2. Compare their relevance in demographic studies.	
Content Outline	3.1 Malthusian Theory	
	3.2 The Theory of Demographic Transition	
	3.3 Optimum Population Theory	
Module 4(Credit 1): Population Change and Components of Population Change		
Learning Outcomes	After learning the module, learners will be able to	
	1. Summarize the meaning, measurement, and types of population growth.	
	2. Examine fertility and mortality as key components influencing population change.	

Content Outline	<p>4.1 Population Change</p> <p>i) Meaning And Measurement of Population Change</p> <p>ii) Rate of Population Growth</p> <p>iii) Types of Population Growth</p> <p>4.2 Components of Population Change</p> <p>i) Fertility- Meaning And Measurement of Fertility, Determinants of Fertility</p> <p>ii) Mortality :- Meaning And Measurement of Mortality, Determinants of Mortality</p>
------------------------	---

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

Internal Evaluation – (Comprehensive Continuous Evaluation (CCE) should cover at least Three out of four types of activities from the Suggested Activities)

Suggested Activities:

1. Seminars / Presentations

1. Present on the need and scope of population data and its sources.
2. Present a case study on factors affecting population distribution in India.
3. Present a comparison of major population theories and their relevance today.
4. Present findings on population growth patterns and the role of fertility and mortality.

2. Group Discussions

1. Discuss the types of population data and methods of collection.
2. Discuss the impact of physical, social, and economic factors on population distribution.
3. Debate the applicability of Malthusian vs Demographic Transition Theory in modern India.
4. Discuss population change trends and determinants of fertility and mortality.

3. Projects

1. Prepare a project mapping the distribution and density of population in a selected Indian state.
2. Conduct a survey on a small population sample to study fertility or mortality patterns.
3. Prepare a report comparing population theories with real demographic data.
4. Develop a population growth chart using historical census data.

4. Home Assignments

1. Write a short note on the definition, nature, and scope of population geography.
2. List and explain factors affecting population distribution in India.
3. Summarize Malthusian, Demographic Transition, and Optimum Population theories.
4. Analyze components of population change (fertility and mortality) using secondary data.

References:

1. Ahirrao, A., Alizad, M., & Others. *Lokshankhya bhugol* (Marathi).
2. Bhende, A., & Kanitkar, T. (1978). *Principles of population studies*. Himalaya Publishing House.
3. Chandana, R. C. (1994). *A geography of population*. Kalyani Publishers.
4. Chandana, R. (1988). *Geography of population*. Kalyani Publications.
5. Garnier, J. B. (1996). *Geography of population*. Longmans.

6. Ghosh, B. N. (1985). *Fundamentals of population geography*. Sterling Publishers.
7. Hassan, M. I. (n.d.). *Population geography*. Rawat Publications.
8. Patil, V. J., & Dhake, S. V. (n.d.). *Lokshankhya bhugol* (Marathi).
9. Sawant, S. (1988). *Population geography*. Diamond Publications.
10. Sawat, S., & Athawale, P. (n.d.). *Lokshankhya bhugol* (Marathi).
11. मुसमाडे, अर्जुन हरिभाऊ., मोरे, ज्योतीराम सी., डोके, अर्जुन बी., व कासार, स्नेहल एन. (2021). *लोकसंख्या भूगोल*. निराली प्रकाशन: पुणे.
12. मुसमाडे, अर्जुन हरिभाऊ., मोरे, ज्योतीराम सी., व डोके, अर्जुन बी. (2020). *लोकसंख्या भूगोल : संकल्पना व विश्लेषण*. निराली प्रकाशन: पुणे.
13. धारपुरे, व्ही) .टी .2019). *लोकसंख्या भूगोल*, विद्या प्रकाशन: पुणे.
14. पाटील, आर. डी. (2021). *लोकसंख्या भूगोल, अभ्यास व विश्लेषण*. अथर्व प्रकाशन, पुणे.
15. देशमुख, डी. जी. (2020). *लोकसंख्या भूगोल, संकल्पना व प्रक्रिया*. अथर्व प्रकाशन, औरंगाबाद.
16. धारपुरे, व्ही) .टी .2022). *लोकसंख्या भूगोल, पिंपळापुरे, नागपूर*.

Semester V
5.5 Minor Stream

Course Title	Introduction to Resource Geography
Course Credits	4
Course Outcomes	After going through the course, learners will be able to
	1. Explain the meaning, nature, scope, and significance of resource geography and the factors influencing resource utilization.
	2. Classify and analyze different types of mineral resources and evaluate their global distribution and uses.
	3. Interpret major power resources by examining their production patterns and global distribution.
	4. Justify, and recommend appropriate strategies for resource management and conservation of land, water, plants, and animals.
Module 1(Credit 1): Introduction	
Learning Outcomes	After learning the module, learners will be able to
	1. Explain the meaning, definition, nature, and scope of Resource Geography.
	2. Analyze the importance, utilization, and factors affecting the use of various resources.
Content Outline	1.1 Meaning and Definition 1.2 Nature and Scope of Resource Geography 1.3 Importance and Utilization of Resources 1.4 Factors affecting on Utilization of Resources
Module 2(Credit 1): Mineral Resources	
Learning Outcomes	After learning the module, learners will be able to
	1. Classify major types of mineral resources and describe their key characteristics and uses.
	2. Evaluate the global production and distribution patterns of important minerals such as iron, manganese, bauxite, copper, and mica.
Content Outline	2.6 Classification of Mineral Resources 2.7 Characteristics and Uses of Mineral Resources 2.8 Major Mineral Resources in the World: Production & their Distribution (Iron, Manganese, Bauxite, Copper & Mica)
Module 3(Credit 1): Power Resources	
Learning Outcomes	After learning the module, learners will be able to
	1. Explain the importance and classification of power resources.
	2. Analyze and compare global production and distribution of major power resources.
Content Outline	3.1 Importance of Power Resources 3.2 Classification of Power Resources 3.3 Major Power Resources in the World: Production & their Distribution 3.3.1 Exhaustible Energy Resources: (Coal, Mineral Oil, Natural Gas, Atomic Energy) 3.3.2 Non-Exhaustible Energy Resources: (Hydroelectricity, Solar Energy, Wind Energy, Tidal Energy & Geothermal Energy)

Module 4(Credit 1): Conservation of Resources	
Learning Outcomes	1. Analyze strategies and policies for natural resource management and planning. 2. Apply conservation methods and propose sustainable solutions for land, water, plant, and animal resources
Content Outline	4.1 Management and Planning of Resources 4.2 Land Conservation 4.3 Water Conservation 4.4 Plant and Animal Conservation

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

Internal Evaluation – (Comprehensive Continuous Evaluation (CCE) should cover at least Three out of four types of activities from the Suggested Activities)

Suggested Activities:

1. Seminar/Presentation Activities

- Present the meaning, nature, and scope of Resource Geography with real-life examples showing its significance.
- Prepare a PPT comparing the global distribution patterns of major minerals such as iron, bauxite, and copper, explaining spatial variations.
- Give a presentation evaluating exhaustible vs. non-exhaustible power resources and their environmental implications.
- Present a detailed case study on effective land or water conservation initiatives and justify their outcomes.

2. Group Discussion Activities

- Discuss: “Is resource availability or technology more important in resource utilization?” Provide logical justification.
- Debate on “Uneven global distribution of mineral resources and factors responsible for it.”
- Discuss the global shift from fossil fuels to renewable energy and evaluate its practicality for developing countries.
- Discuss: “Community involvement is key to successful resource conservation.” Provide arguments and examples.

3. Project Activities

- Conduct a locality-based study examining patterns of resource utilization (e.g., land use, water use).
- Prepare thematic maps or infographics showing global distribution of major minerals and analyze leading producer regions.
- Carry out a mini-project comparing energy production patterns of India with other major countries; interpret trends and gaps.
- Develop a sustainable resource management action plan for your college or community (land, water, vegetation, waste, etc.).

4. Home Assignments

- Write a detailed note on factors influencing resource utilization with appropriate examples.
- Prepare an assignment describing characteristics and uses of major minerals such as iron, manganese, bauxite, copper, and mica.

- Create a comparison table of major power resources, including their types, leading producing countries, and advantages.
- Write a reflective assignment on practical water conservation measures that can be adopted in day-to-day life.

References:

1. Chhokar, K., Pandya, M., & Raghunathan, M. (2004). *Understanding environment*. Sage Publications India Pvt. Ltd.
2. Kumar, A. (2004). *A textbook of environmental science*. APH Publishing Corporation.
3. Kumar, H. D. (1996). *Introduction to environmental management*. Interprint Publications.
4. Nagchaudhari, B. D. (1983). *Environmental conservation, management and planning*. Chugh Publications.
5. Odum, E. P. (1994). *Ecology*. Oxford & IBH Publishing Co.
6. Singh, S. (1988). *Geography of environment*. Prayag Pustak Bhavan.
7. Turk, J. (1985). *An introduction to environmental studies*. Holt–Saunders.
8. Chempremeve, J. D., (1989) *Geography and Energy*. Longman Scientific and Technical Series. U. K.
9. Daji, J. A., Kadam, J. R. and Patil, N. D. (1996) *A Textbook of Soil Science*. Media Promoters & Publishers Pvt. Ltd. Bombay.
10. Gurjar & Jat. (2008) *Geography of Water Resources*. Rawat Publications. Jaipur.
11. Negi, B. S., (1997) *Geography of Resources*. Kedarnath Ramnath. Meerut.
12. Ray, S., (2008) *Natural Resources, Organization & Technology Linkages*. Rawat Publication. Jaipur.
13. Saxena, H. M., (2006) *Environmental Geography*. Rawat Publications, Jaipur.
14. Singh, S., (2004) *Environmental Geography*. Prayag Pustak Bhawan. Allahabad.
15. Skinner, B. J., (1969) *Earth Resources*. Prentice-Hall, Englewood Cliffs, N. J.
16. World Resources Institute (WRI). (1994) *World Resources 1994-95*. Oxford University Press. New York.
17. Zimmerman , E. W., (1951) – *World Resources & Industries*.
18. Gharpure, V. (2000). *Resource geography* (Marathi). Pimpalpure & Company Publishers.
19. Chaudhari, A. P. (2011). *Industrial geography* (Marathi). Prashant Publications.
20. सवदी, ए. बी., / प्रा. कोळकेकर, पी. एस. (वर्ष न दिले). *पर्यावरणशास्त्र*. निराली प्रकाशन: पुणे.
21. डॉ. प्रकाश सावंत. (2011). *साधनसंपत्ती भूगोल*. फडके प्रकाशन: कोल्हापूर.
22. प्रा. के. ए. खतिब. (2011). *साधनसंपत्ती भूगोल*. मेहता बुक सेलर्स: कोल्हापूर.
23. प्रा. गुरव व प्रा. चव्हाण. (2011). *साधनसंपत्ती भूगोल*. निराली प्रकाशन: पुणे.

Semester V
5.6 VSC- IV

Course Title	Fundamentals of GIS
Course Credits	2
Course Outcomes	After going through the course, learners will be able to
	1. Explain the fundamental concepts, components, and tasks of GIS.
	2. Differentiate and apply various spatial and non-spatial data models in GIS.
	3. Analyse geographical information using GIS tools for interpreting patterns and relationships.
	4. Evaluate and propose suitable GIS applications in agriculture, urban planning, resource management, and disaster management.
Module 1(Credit 1): Introduction to GIS and GIS Data	
Learning Outcomes	After learning the module, learners will be able to
	1. Describe the definition, history, components, and tasks of GIS and explain the basic concepts of GIS data.
	2. Classify and differentiate spatial and non-spatial data, and apply knowledge of raster, vector, and database models in GIS.
Content Outline	1.1 Definition of GIS 1.2 History and Evolution of GIS 1.3 Components of GIS 1.4 GIS Tasks 1.5 GIS Data Concepts 1.6.1 Spatial & Non-spatial Data 1.6.2 Spatial Data Models: Raster and Vector 1.6.3 Non-spatial Data Models: Hierarchical, Relational, Object-oriented
Module 2(Credit 1): GIS Applications and Implementation	
Learning Outcomes	After learning the module, learners will be able to
	1. Apply GIS techniques to analyze spatial problems in agriculture, urban planning, resource management, and disaster management.
	2. Evaluate real-world case studies and propose suitable GIS-based solutions for effective planning and management.
Content Outline	2.9 GIS in Agriculture 2.10 GIS in Urban Planning 2.11 GIS in Resource Management 2.12 GIS in Disaster Management 2.13 Practical Relevance and Case Studies

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

Internal Evaluation – (Comprehensive Continuous Evaluation (CCE) should cover at least Two out of four types of activities from the Suggested Activities)

Suggested Activities:

1. Seminars / Presentations

Students will deliver a short seminar on any one topic from the following:

1. Components of GIS and their real-world relevance
2. Comparison of Raster and Vector Data Models
3. Role of GIS in Urban Planning or Agriculture
4. GIS-based Disaster Management Approaches

2. Group Discussions:

1. Importance of spatial vs. non-spatial data in modern GIS
2. How GIS has transformed resource management
3. Case studies showcasing successful use of GIS in various sectors (agriculture, urban planning, disaster management)

3. Projects / Reports:

1. Mapping land-use change using raster or vector data (conceptual project)
2. A comparative study of GIS applications in two sectors (e.g., agriculture vs. resource management)
3. Creating a conceptual GIS database model for a small study area
4. Report on a real case study (Sangli floods, Pune traffic, drought analysis, etc.) highlighting GIS usage

4. Home Assignments:

1. Definitions: GIS, spatial data, non-spatial data, raster, vector
2. Short notes on history, components, and tasks of GIS
3. Write the benefits of GIS in agriculture / urban planning / disaster management
4. Identify and explain any one GIS case study from India

References:

1. Burrough, P. A., & McDonnell, R. A. (2000). *Principles of geographical information systems*. Oxford University Press.
2. Cha, B., Datta, D., & Majumdar, S. (2001). *Digital image processing analysis*. Prentice-Hall of India.
3. Chang, K. T. (2008). *Introduction to geographic information systems*. McGraw-Hill.
4. Debashis, C., & Sahoo, R. N. (2015). *Fundamentals of geographic information system*. Viva Books.
5. DeMers, M. N. (2008). *Fundamentals of geographic information systems*. John Wiley & Sons.
6. Heywood, I., Cornelius, S., & Carver, S. (2011). *An introduction to geographical information systems*. Pearson Education.
7. Jensen, J. R. (2005). *Introductory digital image processing*. Prentice Hall.
8. Korte, G. B. (2001). *The GIS book*. Onward Press.
9. Lillesand, T. M., Kiefer, R. W., & Chipman, J. W. (2008). *Remote sensing and image interpretation*. John Wiley & Sons.
10. Longley, P. A., Goodchild, M. F., Maguire, D. J., & Rhind, D. W. (2002). *Geographical information systems and science*. John Wiley & Sons.
11. Lo, C. P., & Yeung, A. K. W. (2002). *Concepts and techniques of geographical information systems*. Prentice-Hall of India.
12. Nag, P., & Kudrat, M. (1998). *Digital remote sensing*. Concept Publishing Company.
13. Pandey, J., & Pathak, D. (2015). *Geographic information system*. TERI Press.
14. Paul, A. L., Michel, F. G., Maguire, D. J., & Rhind, D. W. (2002). *Introduction to geographic information systems and science*. John Wiley & Sons.
15. Richards, J. A., & Jia, X. (1999). *Remote sensing and digital image processing*. Springer.
16. पौळ, परमेश्वर आणि आव्हाड, बालाजी) .2019). *भौगोलिक माहिती प्रणाली (GIS)*. विद्या बुक्स.पुणे :
17. कार्लेकर, श्रीकांत) .2016). *भौगोलिक माहिती प्रणाली (GIS)*. डायमंड पब्लिकेशन्स.पुणे :
18. देशमुख, डी) .जी) .2021). *GIS मूलतत्त्वे आणि अनुप्रयोग*. नंदा पब्लिकेशन.मुंबई :

Semester V
5.7 Major Core

Course Title	Geography of Tourism Management
Course Credits	2
Course Outcomes	After going through the course, learners will be able to
	1. Explain the types of accommodation and their role in tourism development.
	2. Analyze the factors influencing the choice of accommodation by tourists.
	3. Discuss the role of national and international tourism organizations, such as WTO, ITDC, and MTDC, in tourism planning and development.
	4. Evaluate the contribution of travel agencies in promoting sustainable tourism practices.
Module 1(Credit 1): Role of Accommodation in Tourism and Tourism Development	
Learning Outcomes	After learning the module, learners will be able to
	1. Describe the types of accommodation (government and private) and their features.
	2. Analyze the factors affecting tourists' choice of accommodation and its role in tourism development.
Content Outline	1.1 Types of Accommodation: Government, Private
	1.2 Factors affecting the choice of accommodation
	1.3 Role of accommodation in tourism development
Module 2(Credit 1): Planning and Policies for Tourism Development	
Learning Outcomes	After learning the module, learners will be able to
	1. Explain the functions and roles of WTO, ITDC, and MTDC in tourism development.
	2. Evaluate the contribution of travel agencies in promoting sustainable tourism practices.
Content Outline	2.1 World Tourism Organization (WTO)
	2.2 Tourism Development Corporation (ITDC)
	2.3 Maharashtra Tourism Development Corporation (MTDC)
	2.4 Role of Travel Agencies in Sustainable Tourism

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

Internal Evaluation – (Comprehensive Continuous Evaluation (CCE) should cover at least Two out of four types of activities from the Suggested Activities)

Suggested Activities:

1. Seminars / Presentations

- Seminar on “Government vs Private Accommodation in Tourism.”
- Presentation on “Factors Influencing Tourist Choices in Accommodation.”

- Seminar on “Role of WTO, ITDC, and MTDC in Tourism Development.”
- Presentation on “Travel Agencies and Sustainable Tourism Practices.”

2. Group Discussions

- GD on “Importance of Accommodation in Promoting Tourism.”
- GD on “Tourist Preferences and Accommodation Selection Factors.”
- GD on “National and International Tourism Organizations: Roles and Functions.”
- GD on “Strategies of Travel Agencies for Sustainable Tourism.”

3. Projects / Reports

- Project on assessing accommodation facilities in a selected tourist destination.
- Report analyzing factors affecting tourist accommodation choice in a city or region.
- Case study on the implementation and impact of ITDC/MTDC tourism projects.
- Project evaluating travel agency initiatives in promoting eco-friendly and sustainable tourism.

4. Home Assignments

- Short notes on types of accommodation and their features.
- Explain the role of accommodation in tourism development.
- Describe the functions of WTO, ITDC, and MTDC in tourism planning.
- Write a brief report on the role of travel agencies in sustainable tourism practices.

References:

1. Bhatia, A. K. (2002). Tourism development: Principles and practices. Sterling Publisher Ltd.
2. Chaudhary, G., & Gautam, P. R. (2010). Tourism geography. Centurian Press.
3. Dixit, N. K. (2010). Tourism geography. Vista International Publication.
4. Gupta, V. K. (2013). Tourism of India. Gyan Publishing House.
5. Kaul, R. N. (1985). Dynamics of tourism: A trilogy. Sterling Publisher Ltd.
6. Seth, P. N. (1985). Successful tourism management. Sterling Publisher Ltd.
7. Sharma, A. (2008). Tourism development. RBSA Publishers.
8. Singh, S. N. (1985). Geography of tourism and recreation.
9. Smith, S. L. J. (1989). Tourism analysis.
10. Suryawanshi, R. (2012). Assessment of potentials for eco-tourism. Lambert Publication.
11. Thakur, M. (2008). Ecotourism and sustainable tourism. Omega Publications.
12. Pearce, D. (1987). Tourism today: A geographical analysis.
13. Robinson, H. (1996). A geography of tourism. MacDonald and Evans, Ltd.
14. Bhole, & Bhatewal. (2012). Payratan bhugol. Prashant Prakashan.
15. Gharpure, V. T. (2006). Payratan bhugol. Vidhya Prakashan.
16. Nagtode, D. A., & Pardhi, D. A. (2007). Payratan bhugol. Pimpalpure Prakashan.
17. Gharpure, V. T. (2006). Payratan bhugol. Vidhya Prakashan.
18. Nagtode, D. A., & Pardhi, D. A. (2007). Payratan bhugol. Pimpalpure Prakashan.
19. Shinde, S. B. (2015.). पर्यटन भूगोल, विद्या प्रकाशन, पुणे.
20. Gharpure, V. T. (n.d.). पर्यटन भूगोल. Pimpalpure Publication., Nagpur.
21. Suryawanshi, D. S. (n.d.). प्रयटन भूगोल. Pritam Prakashan. Bhatewal, D. P., & Baviskar, V. R. (n.d.). पश्चिम भारताचा सांस्कृतिक आणि पर्यटन भूगोल. Atharva Publication.
22. Bhagwat, & Joshi. (n.d.). पर्यटन भूगोल. Murlidhar Prakashan.

Semester VI
6.1 Major Core

Industrial Geography

Course Title	Industrial Geography
Course Credits	4
Course Outcomes	After going through the course, learners will be able to
	1. Explain the fundamental concepts, theories, and scope of industrial geography.
	2. Analyze the locational factors and spatial patterns of major world industries.
	3. Evaluate different industrial location theories and interpret their relevance in modern industrial development.
	4. Compare global industrial regions and assess their geographical, economic, and technological characteristics.
Module 1(Credit 1): Introduction of Industrial Geography	
Learning Outcomes	After learning the module, learners will be able to
	1. Explain the concept, patterns, and determinants of population distribution and density.
	2. Analyze regional variations in population distribution and interpret factors responsible for spatial differences in population density.
Content Outline	1.1 Meaning & Definition of Industrial Geography 1.2 Nature & Scope of Industrial Geography 1.3 Factors affecting the Location of Industry
Module 2(Credit 1): Important Industries	
Learning Outcomes	After learning the module, learners will be able to
	1. Describe the spatial distribution and characteristics of major world industries such as iron & steel, cotton textiles, sugar, ship-building, and information technology.
	2. Analyze the geographic, economic, and technological factors influencing the location, growth, and global significance of these industries.
Content Outline	2.1 Iron & steel industries: U.S.A., Russia, Germany, Great Britain & India 2.2 Cotton Textile Industries : U.K., Japan and India 2.3 Sugar industries: All Important Countries 2.4 Ship Building Industries: All Important Countries 2.5 Information Technology Industry
Module 3(Credit 1): Theories of Industrial Location	
Learning Outcomes	After learning the module, learners will be able to
	1. Explain the fundamental principles of Weber's Industrial Location Theory, Lösch's Theory of Industrial Location, and Isard's Space Economy.
	2. Compare these industrial location theories and evaluate their applicability in contemporary industrial development.

Content Outline	3.1 Malthusian Theory 3.2 The Theory of Demographic Transition 3.3 Optimum Population Theory
Module 4(Credit 1): Population Change and Components of Population Change	
Learning Outcomes	After learning the module, learners will be able to 1. Identify and describe the major industrial regions of the Middle East, North America, Eastern Europe, Russia, Western & Central Europe, and South & East Asia. 2. Analyze the geographical, economic, and resource-based factors influencing industrial development in these global regions.
Content Outline	4.1 Middle East Regions in North America 4.2 Eastern Europe and Russian Industrial Region 4.3 Western and Middle European Industrial Region 4.4 South and Eastern Asia Industrial Region

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

Internal Evaluation – (Comprehensive Continuous Evaluation (CCE) should cover at least Three out of four types of activities from the Suggested Activities)

Suggested Activities:

1. Home Assignment / Written Assignment

Topics such as:

- Impact of industrialization
- Factors affecting resource utilization
- Causes of biodiversity loss
- Urban–industrial growth

2. Seminar / Presentation

Students present topics such as:

- Industrial location theories
- Distribution of world industries
- Population distribution patterns
- Resource classification

3. Group Discussion (GD)

Suggested topics:

- Sustainable industrial development
- Resource conservation
- Industrial pollution issues

4. Project Work / Mini Research Project

Includes data collection, analysis, charts, and interpretation.

References:

1. Chandna, R. C. (2018). Geography of Population: Concepts, Determinants and Patterns. New Delhi: Kalyani Publishers.
2. Chand, M. (2020). Industrial Geography. Jaipur: Raj Publishing House.
3. Clark, G. L., Feldman, M. P., & Gertler, M. S. (2016). The Oxford Handbook of Economic Geography. Oxford: Oxford University Press.
4. Das, P. K. (2019). Resource Geography: Utilization and Conservation. Kolkata: Progressive Publishers.
5. Ghosh, S. (2021). World Industrial Regions. New Delhi: Orient BlackSwan.

6. Thomsan, R. S., & Conklin, E. F. (2020). Industrial Location: Principles, Problems and Policies. New York: McGraw-Hill.
7. Weber, A. (1929). Theory of the Location of Industries. Chicago: University of Chicago Press.
8. Lösch, A. (1954). The Economics of Location. New Haven: Yale University Press.
9. Isard, W. (1956). Location and Space-Economy. Cambridge: MIT Press.
10. Singh, R. L., & Singh, R. P. B. (2019). Economic and Industrial Geography of India. New Delhi: Vikas Publishing House.
11. देशमुख, डी. जी. (2018). औद्योगिक भूगोल. नंदा पब्लिकेशन: मुंबई.
12. पाटील, आर. डी. (2019). औद्योगिक भूगोल: स्वरूप, व्याप्ती व समस्या. शिव पब्लिकेशन: कोल्हापूर.
13. जोशी, एस. बी. (2017). औद्योगिक भूगोल आणि औद्योगिक विकास. आनंद प्रकाशन: पुणे.
14. काळे, एस. एस. (2016). औद्योगिक स्थान सिद्धांत व अनुप्रयोग. यशदा पब्लिकेशन: नाशिक.
15. शिंदे, एम. टी. (2018). भारतातील प्रमुख उद्योग व औद्योगिक प्रदेश. फडके प्रकाशन: मुंबई.
16. भोसले, के. आर. (2020). जागतिक औद्योगिक भूगोल. प्रगती प्रकाशन: पुणे.
17. गायकवाड, एल. के. (2021). औद्योगिक विकास व प्रादेशिक विषमता. प्रज्ञा प्रकाशन: पुणे.
18. राणे, व्ही. आर. (2017). औद्योगिक भूगोल: सिद्धांत व प्रात्यक्षिक अभ्यास. निराली प्रकाशन: पुणे.
19. कुलकर्णी, पी. एस. (2019). उद्योगांचे स्थान व अवकाशीय नमुने. विपुल प्रकाशन: पुणे.
20. पवार, ए. यू. (2022). आधुनिक उद्योग व तंत्रज्ञानाचा भूगोल. शिवनेरी पब्लिकेशन: औरंगाबाद.

Semester VI
6.2 Major Core
Field Project

(Field Project/Excursion- Visits to tourist places/ village/ Natural features/ weather observatory)

Course Title	Field Project
Course Credits	4
Course Outcomes	After going through the course, learners will be able to
	1. Analyze real-world scenarios to identify key issues and their implications.
	2. Apply knowledge to solve problems and make informed decisions.
	3. Propose feasible solutions by evaluating challenges and recommending strategies..
Module 1	Introduction to Field Project (20 Lectures)
Learning Outcomes	After learning the module, learners will be able to
	1. Explain the methods, goals, and ethical considerations of geographic field surveys.
	2. Apply data collection, analysis, and report-writing techniques for field projects.
Content Outline	1. Methods of Field Survey:
	1.1 Meaning, Goals and Scope of Field project
	1.2 Methods of data collection in Geography (quantitative and qualitative)
	1.3 Data analysis and reporting Ethical consideration Safety during field surveys
	1.4 Data Analysis: Use of softwares in data analysis and graphical representations
	1.5 Report Writing: Format and Structure, Arrangement of Project Report, Indexing and References
	1.6 Assessment and feedback
Module 2	Any field-based project related to Geography and Report Writing (40 Lectures)
Learning Outcomes	After learning the module, learners will be able to
	1. Conduct field surveys in a selected area of geographical interest.
	2. Analyze and interpret collected data to prepare a comprehensive field report.
Content Outline	Field survey - any area of geographical interest

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

Report, Presentation and Viva

Report and Viva- 50 Marks

Internal Assessment: 50 Marks

External Assessment: 50 Marks

Total : 100 Marks

References:

1. Phillips, R., & Johns, J. (2012). Fieldwork for Human Geography. SAGE Publications.
2. Scheyvens, R. (Ed.). (2014). Development Fieldwork: A Practical Guide (2nd ed.). SAGE Publications.
3. DeLyser, D., Herbert, S., Aitken, S., Crang, M., & McDowell, L. (Eds.). (2010). The SAGE Handbook of Qualitative Geography. SAGE Publications.
4. McSweeney, K., & WinklerPrins, A. (Eds.). (2021). Geographical Fieldwork in the 21st Century. Routledge.
5. Gomez, B., & Jones III, J. P. (Eds.). (2010). Research Methods in Geography: A Critical Introduction. Wiley-Blackwell.
6. Kitchin, R., & Tate, N. J. (2013). Conducting Research in Human Geography: Theory, Methodology and Practice (2nd ed.). Routledge.
7. Flowerdew, R., & Martin, D. (Eds.). (2005). Methods in Human Geography: A Guide for Students Doing a Research Project (2nd ed.). Pearson Education.
8. ढारे, आर) .एम .2016). *भूगोल संशोधन पद्धती*. डायमंड पब्लिकेशन.पुणे :
9. पवार, ए) .यू .2018). *सामाजिक विज्ञानातील फील्डवर्क व केस स्टडी*. शुभम पब्लिशर्स.कोल्हापूर :
10. जोशी, एस) .एम .2022). *भूगोलातील संशोधन पद्धती व फील्ड निरीक्षण*. डायमंड पब्लिकेशन.पुणे :

Semester VI
6.3 Major (Elective)

Basics in GIS and GPS

Course Title	Basics in GIS and GPS
Course Credits	4
Course Outcomes	After going through the course, learners will be able to
	1. Explain the basic concepts of GIS, including its definition, history, and core components.
	2. Differentiate between spatial and non-spatial data and apply GIS techniques such as geo-referencing, digitization, and map making.
	3. Describe the fundamentals of GPS, including its structure, instruments, and functioning.
	4. Evaluate the applications of GIS and GPS in geography and various related fields and practically use GPS and GIS tools on field.
Module 1(Credit 1): Fundamentals of GIS	
Learning Outcomes	After learning the module, learners will be able to
	1. Describe the meaning, historical development, and major components of GIS.
	2. Identify the hardware, software, and data elements required for GIS operation.
Content Outline	1.1 Definition of GIS 1.2 History of GIS, 1.3 Components of GIS- Computer Hardware, Software, Data
Module 2(Credit 1): GIS Data and Map Making	
Learning Outcomes	After learning the module, learners will be able to
	1. Explain spatial and non-spatial data models.
	2. Apply geo-referencing, digitization, and map-making techniques.
Content Outline	2.1 Spatial Data Models - Raster and Vector Data Model 2.2 Non-Spatial Data , Analysis of Geographic Data, Geo-referencing, Digitization, 2.3 Map making
Module 3(Credit 1): Fundamentals of GPS	
Learning Outcomes	After learning the module, learners will be able to
	1. Describe the basic concept, structure, and components of GPS.
	2. Identify GPS instruments and explain how GPS technology functions.
Content Outline	3.1 Concept of GPS 3.2 Segments of GPS 3.3 Various GPS instruments 3.4 Functioning of GPS
Module 4(Credit 1): Application of GIS and GPS	
Learning Outcomes	After learning the module, learners will be able to
	1. Identify major applications of GIS in geography and related fields.
	2. Evaluate the role and uses of GPS in geography and other sectors.

Content Outline	<p>4.1 Application of GIS in general, application of GIS in various branches in Geography</p> <p>4.2 Prepare the map with the help of reference point collected through GPS or Mobile Application in any open source GIS software.</p> <p>4.3 Application of GPS in general, application of GPS in various branches in Geography</p> <p>4.4 Data Collection through GPS instrument or free Mobile Application.</p>
------------------------	--

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

Internal Evaluation – (Comprehensive Continuous Evaluation (CCE) should cover at least Three out of four types of activities from the Suggested Activities)

Suggested Activities:

1. Seminars / Presentations

1. Present on the definition, history, and components of GIS.
2. Present a case study on spatial vs non-spatial data models.
3. Present the fundamentals of GPS, including its structure and instruments.
4. Present examples of GIS and GPS applications in different branches of geography.

2. Group Discussions

1. Discuss the advantages and limitations of GIS in geographic studies.
2. Discuss the differences between raster and vector data models.
3. Discuss the role of GPS in modern surveying and navigation.
4. Discuss the impact of GIS and GPS applications on various sectors.

3. Projects

1. Prepare a map using georeferencing and digitization techniques.
2. Conduct a small GIS-based analysis of a selected area.
3. Conduct a GPS survey to record coordinates and analyze spatial data.
4. Develop a report on GIS and GPS applications in a specific geographic study.

4. Home Assignments

1. Write a short note on GIS components and their functions.
2. Explain spatial and non-spatial data and their significance.
3. Describe GPS segments and instruments.
4. Summarize real-world applications of GIS and GPS in geography and related fields.

References:

1. Burrough, P. A. (1986). *Principles of geographical information systems for land resource assessment*. Clarendon Press.
2. Campbell, J. B. (2002). *Introduction to remote sensing* (3rd ed., pp. 555–556). Taylor & Francis.
3. Panigrahi, N. (2008). *Geographical information science* (p. 207). Universities Press.
4. Karlekar, S. (2007). *Bhugolik mahiti pranali*. Diamond Publication.
5. CCRS, Fundamentals of Remote Sensing (Available online at: https://natural-resources.canada.ca/sites/nrcan/files/earthsciences/pdf/resource/tutor/fundam/pdf/fundamentals_e.pdf)

6. Dr. K N Tiwari, Dr. C Chatterjee, Prof. N K Gontia, Dr. Susanta Kumar Jena, Remote Sensing and GIS Application PDF Book (Available online at: <https://agrimoon.com/remote-sensing-and-gis-application-pdf-book/>)
7. Karlekar Shrikant, Remote Sensing (Marathi), Diamond Publication, Pune.
8. Klaus Temfli, Norman Kerle, Gerrit Huurrenman and Lucas L. F. Janseen (Eds.), Principles of Remote Sensing, The International Institute of Geo-Information Science, and Earth Observation (ITC), Netherlands. (Available online at: https://webapps.itc.utwente.nl/librarywww/papers_2009/general/principlesremotesensing.pdf)
9. Lo.C.P. and Yeung, Albert KW, Concepts and Techniques of Geographic Information System, Prentice Hall of India, 2002.
10. Agrawal, N. K. (2012). *Essentials of GPS* (3rd ed.). BSP Books Pvt. Ltd.
11. Leick, A. (2004). *GPS satellite surveying* (3rd ed.). John Wiley & Sons.
12. Ghosh, J. K. (2015). *A text book on GPS surveying*. Createspace Independent Publishing.
13. Xu, G., & Xu, Y. (2016). *GPS theory, adjustments and applications* (3rd ed.). Springer.
14. Kaplan, E. D., & Hegarty, C. J. (2017). *Understanding GPS/GNSS: Principles and applications* (3rd ed.). Artech House.
15. पाटील, एस) .बी .2018). *भूगोलातील जिआयएस)GIS) तंत्रज्ञान*. डायमंड पब्लिकेशन.पुणे :
16. जोशी, एस) .एम .2020). *भूगोलातील भू स्थानिक तंत्रज्ञान-GIS, GPS, RS)*. निराळा प्रकाशन.पुणे :
17. कदम, आर) .के .2019). *GIS आणि GPS: मूलतत्त्वे व उपयोग*. पृथ्वी पब्लिकेशन्स.मुंबई :
18. देशमुख, व्ही) .डी .2021). *भूस्थानिक माहिती प्र-णालीसिद्धांत व अनुप्रयोग* .: शिवनेरी पब्लिकेशन :
.औरंगाबाद

Semester-VI
6.4 Major (Elective)

Course Title	Basics of Remote Sensing and Aerial Photography
Course Credits	4
Course Outcomes	After going through the course, learners will be able to
	1. Explain the concepts, evolution, and applications of remote sensing and aerial photography
	2. Identify their key elements such as electromagnetic spectrum, sensors, platforms, scales, and photo types.
	3. Analyze aerial photographs and satellite images through visual interpretation; and can handle Mirror Stereoscope and Pocket Stereoscope.
	4. Apply these methods for spatial problem-solving and geographic decision-making
Module 1(Credit 1): Introduction to Remote Sensing	
Learning Outcomes	After learning the module, learners will be able to
	1. Explain the meaning, historical development, and evolution of remote sensing as a scientific discipline.
	2. Describe how remote sensing is used in India and its applications in key sectors such as agriculture, forestry, water resources, and disaster management.
Content Outline	1.1 Meaning of Remote Sensing
	1.2 Historical Development of Remote Sensing
	1.3 Remote Sensing in India
	1.4 Application of Remote Sensing
Module 2(Credit 1): Elements of Remote Sensing Component of Aerial Photography	
Learning Outcomes	After learning the module, learners will be able to
	3. Identify and explain key elements of remote sensing, including the electromagnetic spectrum, sensors, and platforms.
	4. Differentiate between various types of aerial cameras, films, aerial photograph scales, and photographic types based on their characteristics.
Content Outline	2.1 Elements of Remote Sensing, - Electromagnetic Spectrum, Sensors, Platforms
	2.2 Component of Aerial Photography - Types of camera's, films, Scale of Aerial Photographs, Types of Aerial Photographs
Module 3(Credit 1): Aerial Photographs	
Learning Outcomes	After learning the module, learners will be able to
	3 Apply elements of aerial photo interpretation to extract meaningful geographical information.
	4 Interpret aerial photographs using visual interpretation techniques to identify landforms, land use, and surface features.

Content Outline	3.1 Elements of Aerial Photo interpretation 3.2 Draw the 3D Overlap using Mirror Stereoscope 3.3 Study the Aerial Photograph with the help of Pocket Stereoscope 3.4 Visual Interpretation of Aerial Photographs
Module 4(Credit 1): Satellite Images	
Learning Outcomes	After learning the module, learners will be able to 1. Explain the essential elements of satellite image interpretation and their significance in geographic analysis. 2. Analyze and interpret satellite images visually to identify spatial patterns and geographic features.
Content Outline	4.1 Elements of satellite image interpretation 4.2 Visual Interpretation of Satellite Images

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

Internal Evaluation – (Comprehensive Continuous Evaluation (CCE) should cover at least Three out of four types of activities from the Suggested Activities)

Suggested Activities:

1. Presentation Activities

- Present the historical development of remote sensing with emphasis on global and Indian milestones.
- Prepare a PPT on the electromagnetic spectrum and explain how different wavelengths are used for remote sensing applications.
- Give a presentation comparing types of aerial photographs (vertical, oblique, low oblique, high oblique) and their uses.
- Present a case-based analysis on visual interpretation of satellite images, using examples of land use/land cover changes.

2. Group Discussion Activities

- Discuss: “Is aerial photography still relevant in the era of satellite imagery?” Provide arguments with examples.
- Group discussion on importance of sensors and platforms in modern remote sensing technology.
- Debate: “Visual interpretation vs. Digital interpretation – which method is more reliable?”
- Discuss the role of remote sensing in disaster management, such as floods, forest fires, and drought.

3. Project Activities

- Prepare a small project on applications of remote sensing in India (agriculture, forestry, water resources).
- Create a diagrammatic chart or model showing types of sensors, platforms, and their functions.
- Conduct a mini-project interpreting aerial photographs to identify landforms, drainage patterns, or settlement patterns.
- Analyze freely available satellite images (e.g., Google Earth) and prepare a report interpreting major visible features.

4. Home Assignments

- Write a detailed note on the meaning and significance of remote sensing with examples.
- Prepare an assignment illustrating the components of aerial photography, including camera types, films, and scales.

- Create a table comparing aerial photographs and satellite images based on characteristics, scale, resolution, and uses.
- Write a short report on the elements of image interpretation (tone, texture, shape, size, pattern, shadow, association).

References:

1. Compbell, J. B.(2002), “Introduction to Remote Sensing”, Taylor and Francis, London , Third edition,
2. Guha , P. K. (2003) “Remote Sensing for the Beginner” Affiliated East-West Press Pvt Ltd, New Delhi.
3. Lillesand T. M. and Kiefer R. W.(2010): “Remote Sensing and Image Interpretation”, John Wiley and Sons Pvt Ltd.
2. Karlekar Shrikant (2007): “Door Samvedan”, Diamond Punlication, Pune
3. Curran P. J. (1995): Principles of Remote Sensing, John Wiley and Sons, England,
4. Sons. Online Learning CCRS Canada Centre for Remote Sensing
5. http://landmap.mimas.ac.uk/ipc/ccrs/fundam_e.html NASA Remote Sensing Tutorial
6. काळे, एस. एस. (2018). रिमोट सेंसिंग: मूलतत्त्वे व अनुप्रयोग. यशदा पब्लिकेशन्स: नाशिक.
7. देशमुख, डी. जी. (2020). रिमोट सेंसिंग व जीआयएस. नंदा पब्लिकेशन: मुंबई.
8. पाटील, आर. डी. (2019). रिमोट सेंसिंग: सिद्धांत व प्रत्यक्ष अभ्यास. शिव पब्लिकेशन्स: कोल्हापूर.
9. भोसले, के. आर. (2021). रिमोट सेंसिंग व हवाई छायाचित्रण. प्रगती प्रकाशन: पुणे.
10. जोशी, एस. बी. (2018). रिमोट सेंसिंग आणि उपग्रह प्रतिमा विश्लेषण. आनंद प्रकाशन: पुणे.
11. शिंदे, एम. टी. (2017). रिमोट सेंसिंग: तंत्रज्ञान आणि त्याचे उपयोग. फडके प्रकाशन: मुंबई.
12. गायकवाड, एल. के. (2022). रिमोट सेंसिंग व हवामान निरीक्षण. प्रज्ञा प्रकाशन: पुणे.
13. राव, टी. आर. (2020). रिमोट सेंसिंग: पृथ्वी निरीक्षण तंत्र. विपुल प्रकाशन: नाशिक.
14. कुलकर्णी, पी. एस. (2021). रिमोट सेंसिंग: परिचय, प्रक्रिया व अनुप्रयोग. निराली प्रकाशन: पुणे.

Semester-VI

6.5 OJT

An indicative list of areas for OJT:

1. Communication
2. Data Scientist
3. Demography and Settlement
4. Digitization & Emerging Technologies
5. Disaster Management
6. Geoinformatics
7. Geomorphology and Climate
8. Information Technology / Information Technology Enabled Services
9. Medical Geography, Healthcare & Life Science
10. Soil and Agriculture
11. Surveying and Mapping
12. Tourism & Hospitality, Environment and Sustainable Development
13. Trade and Industries

SNDTWU University OJT Policy/Guidelines: <https://www.sndt.ac.in/pdf/students/oit/on-the-job-training-policy.pdf>

Semester-VI

6.6 Community Engagement

Field Excursion- Visits to tourist places/ village/ Natural features/ weather observatory

Course Title	Community Engagement Field Excursion- Visits to tourist places/ village/ Natural features/ weather observatory
Course Credits	2
Course Outcomes	1. Apply geographical knowledge to solve community-based problems.
	2. Develop practical skills in mapping, GIS, and data analysis.
	3. Promote sustainable practices for community development.
	4. Strengthen communication, teamwork, and leadership abilities.
Activities	Participation in community activities in nearby areas Environment Awareness Programmes/Cleanliness Drives/ Disaster Preparedness and Mitigation Programme/ Participatory mapping and land use survey/ Water resources management Initiatives/ Cultural and Heritage mapping

Report, Presentation and Viva

Suggested Activities :(Depend on surrounding geographical, socio-economic situation)

1. Environmental Awareness and Action Campaign

Activities:

- Conduct workshops on waste segregation, composting, and recycling.
- Organize tree plantation drives in collaboration with local authorities.
- Survey the locality's air and water quality and present findings to the community.

2. Disaster Preparedness and Mitigation Program

Activities:

- Map local disaster-prone areas (e.g., flood zones) using GIS.
- Train residents on disaster response, first aid, and evacuation techniques.
- Collaborate with the district disaster management cell to organize drills.

3. Participatory Mapping and Land Use Survey

Activities:

- Work with the community to map existing land use patterns.
- Identify and suggest solutions for issues like encroachments, improper land use, or resource wastage.
- Provide GIS-based visualizations of future development proposals.

4. Water Resource Management Initiative

Activities:

- Analyze the local watershed and groundwater availability.
- Educate residents on rainwater harvesting techniques.
- Create a model for equitable water distribution in collaboration with local government.

5. Tourism Development Program

Activities:

- Identify and map potential tourist spots in the area.
- Create eco-tourism guides and train community members as tour guides.
- Suggest strategies to improve local tourism while conserving natural resources.

6. Urban Planning and Smart City Engagement

Activities:

- Conduct traffic studies and suggest solutions for congestion.
- Work on waste management projects to make neighbourhoods cleaner.
- Organize public discussions on urban issues such as housing, zoning, and amenities.

7. Cultural and Heritage Mapping

Activities:

- Conduct interviews with community elders to collect oral histories.
- Map heritage sites and prepare educational materials.
- Organize heritage walks or awareness drives to engage the younger generation.

8. Agriculture and Rural Development Program

Activities:

- Conduct soil testing and recommend suitable crops.
- Organize workshops on modern agricultural techniques and organic farming.
- Assist in creating GIS-based maps for irrigation planning.

References:

1. Phillips, R., & Johns, J. (2012). Fieldwork for Human Geography. SAGE Publications.
2. Scheyvens, R. (2014). Development Fieldwork: A Practical Guide (2nd ed.). SAGE Publications.
3. Clifford, N., Cope, M., Gillespie, T., & French, S. (Eds.). (2016). Key Methods in Geography (3rd ed.). SAGE Publications.
4. Patil, S. G. (2019). Bhugolatil pratyakshike aani tantre. Nandini Publications.
5. Deshmukh, M. D. (2018). Bhugol shikshanatil pratyakshike. Suyog Publications.
6. पाटील, एस. टी. (2019). समुदाय संघटन व समुदाय विकास, पुणे: निर्वाण प्रकाशन.
7. कदम, आर. आर. (2018). समुदाय कार्य: सिद्धांत व व्यवहार, मुंबई: प्राजक्ता पब्लिकेशन.
8. पवार, व्ही. यू. (2021). ग्रामीण विकास व समुदाय सहभाग, नाशिक: विजय प्रकाशन.
9. जगताप, ए) .एन .2017). सामाजिक कार्य पद्धती व समुदाय संघटन, सातारा: विशाल प्रकाशन.