

Progressive Education Society's
Modern College of Arts, Science and Commerce (Autonomous), Shivajinagar, Pune 05
T.Y.B.A. Geography (Major)
(2024 course under NEP 2020)
Course Code: 24ArGeoU5101
Title of the Course: Geography of India-I

Credits: 04

Examination Scheme: CIA: 40 Marks

Total Lectures: 60

End-Sem: 60 Marks

Course Objectives:

- To acquaint the students with geographical extent of India and the dynamics of India's relations with the world.
- To help students understand the physiographic features of India.
- To make students familiar with the intricate network of drainage system in India.
- To help students understand the different types of soil and forests in India and its distribution.

	Semester – V	No. of Lectures
Unit 1	Introduction	07
	A. Location and Extent B. Space relations of India with the world C. Geopolitical significance of Indian Ocean	
Unit 2	Physiography	15
	A. The Northern mountainous region B. The Great Plain of North India C. The Peninsular Plateau D. Coastal lowlands E. Islands	
Unit 3	Drainage	14
	A. The Himalayan River System i. The Indus Drainage basin ii. The Ganga Drainage basin iii. The Brahmaputra Drainage basin B. The Peninsular River System i. East Flowing Rivers: Godavari, Krishna ii. West Flowing Rivers: Narmada, Tapi, Rivers of Sahyadri (Konkan) – Ulhas, Terekhol	
Unit 4	Climate	11
	A. Characteristics of Indian Climate B. Various Seasons and Weather associated with them C. Monsoon: Origin and Mechanism D. Distribution and Variability of Rainfall E. Agro-Climatic Zones of India	

Unit 5	Soil	07
	A. Types of Soil and its Distribution B. Soil Degradation and Conservation	
Unit 6	Natural Vegetation	06
	A. Types of Forest and its Distribution B. Deforestation and Forest Conservation	

Course Outcomes:

1. Students will understand the geographical extent of India.
2. Students will be able to analyze the relations of India with the world.
3. Students will be acquainted with the physiographic features of India.
4. On the completion of the course, student will be able to understand the intricate network of rivers in India and its significance for the society.
5. Students will be familiarized with the climate of India, the seasons and its associated weather.
6. Students will learn the mechanism of monsoon and agro-climatic regions of India.
7. Students will be able to analyze the problem of soil degradation deforestation and its conservation methods.

Reference Books:

1. Bandyopadhyaya, J. (2003). The making of India's foreign policy. Allied Publishers.
2. Kale, V. S. (Ed.). (2014). Landscapes and landforms of India. Springer.
2. Khullar D. R. (2011) India A Comprehensive Geography, Kalyani Publishers, Ludhiana
3. Sharma, H. S. and Kale, V. S. (2009): Geomorphology in India, Prayag Pustak Bhavan, Prayagraj.
4. Singh, S. (2013). Climatology. Pravalika Publications, Prayagraj.
5. Singh, S. (2023). Geomorphology. Pravalika Publications, Prayagraj.
6. Husain, M. (2014). Geography of India. Tata McGraw-Hill Education.
7. Lal, D. (2012). Climatology. Sharda Pustak Bhavan, Prayagraj.
8. Lutgens, F. K. and Tarbuck, E. J. & Tasa, D. (2012). The Atmosphere – An Introduction to Meteorology. Pearson Prentice Hall, New Jersey, U.S.A.
9. Spate, O. H. K. (1954): A General and Regional Geography, Methuen publisher, London

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Modern College of Arts, Science and Commerce (Autonomous), Shivajinagar, Pune 05
T.Y.B.A. Geography (Major)
(2024 course under NEP 2020)
Course Code: 24ArGeoU5102

Title of the Course: Introduction to Geomorphology

Credits: 02 Total

Lectures: 30

Examination Scheme: CIA: 20 Marks

End-Sem: 30 Marks

Course Objectives:

1. To introduce students to the basic concepts, nature, scope, and branches of geomorphology and to understand the evolution of the Earth through geological time.
2. To explain the role of Endogenetic and Exogenetic processes in shaping the Earth's surface and their contribution to denudational systems.
3. To develop an understanding of weathering processes and mass wasting, including their controlling factors and geomorphic significance.
4. To study Erosional and Depositional landforms formed by major geomorphic agents such as rivers, sea waves, and wind.

	Semester – V	Lectures
Unit 1	Introduction	06
	A. Definition, Nature and Scope B. Geological time scale and Evolution of Earth C. Applied Geomorphology D. Branches of Geomorphology	
Unit 2	Earth Movements and Geomorphic Processes	08
	A. Endogenetic processes: diastrophism, folding, faulting, volcanism. B. Exogenetic processes: weathering, erosion, transportation and deposition. C. Denudation and its components.	
Unit 3	Weathering and Mass Wasting	08
	A. Types of weathering: mechanical, chemical and biological B. Factors influencing weathering C. Mass wasting: soil creep, landslides, rock fall, slump	
Unit 4	Geomorphic Landforms	08
	Erosional and depositional landforms A. River B. Sea waves C. Wind	

Course Outcomes:

After successful completion of the course, the students will be able to:

1. Understand and explain the fundamental concepts, scope, branches, and applied aspects of geomorphology.
2. Describe and analyze earth movements and geomorphic processes responsible for landform development.
3. Identify different types of weathering and mass wasting and assess their impact on landscape evolution.
4. Recognize and classify Erosional and depositional landforms produced by fluvial, marine, and Aeolian processes.
5. Apply Geomorphologic knowledge to environmental management, hazard assessment, and land-use planning.

References:

1. Conserva, H. T. (2004). *Illustrated Dictionary of Physical Geography*, Author House, USA.
2. Gabler, R. E., Petersen, J. F. & Trapasso, L. M. (2006). *Essentials of Physical Geography* (8th Edition), Brooks/Cole Pub. Co., USA.
3. Husain, M. (2001). *Fundamentals of Physical Geography*, Rawat Publication, Jaipur.
4. Kale, V. S., & Gupta, A. (2010). *Introduction to Geomorphology*. Hyderabad: Universities Press.
5. Monkhouse, F.J. (1996). *Principles of Physical Geography*, Hodder and Stoughton, London.
6. Robinson, H. (1969). *Morphology and Landscape*, University Tutorial Press Ltd, London.
7. Siddhartha, K. (2001). *The Earth's Dynamic Surface*, Kishalaya Publications Pvt. Ltd, New Delhi.
8. Singh, S. (2002). *Geomorphology*, Allahabad: Prayag Pustak Bhawan.
9. Strahler, A. H., & Strahler, A. N. (1992). *Modern Physical Geography*, New Jersey: John Wiley and Sons.
10. Singh, Savindra (2010). *Physical Geography*. Allahabad: Prayag Pustak Bhawan.

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T.Y.B.A. Geography (Major)
(2024 course under NEP 2020)
Course Code: 24ArGeoU5103

Title of the Course: Lab Course on 24ArGeoU5102 (Introduction to Geomorphology)

Credits: 02 Total

Practicals: 15

Examination Scheme: CIA: 20 Marks

End-Sem: 30 Marks

Course Objectives:

1. To develop practical skills in constructing and interpreting Geomorphological profiles using topographical data.
2. To enhance understanding of surface relief and landform representation through cross-sectional profiles and block diagrams.
3. To train students in drainage network analysis using standard stream ordering methods.
4. To enable students to perform basic quantitative Geomorphological calculations, including bifurcation ratios, for drainage basin analysis.

	Semester – V	Practicals
Unit 1	Profile Analysis	08
	A. Cross-sectional Profile: 1. Longitudinal Profile. 2. Superimposed Profile. 3. Projected Profile. 4. Composite Profile. B. Block Diagram. 1. Mountains. 2. River Terrace & Flood Plain.	
Unit 2	Drainage Network	07
	A. Stream Ordering. 1. Strahler's Method. 2. Horton's method. B. Bifurcation Ratio (Rb). 1. Bifurcation Ratio. 2. Mean Bifurcation Ratio.	

Course Outcomes:

After successful completion of the course, students will be able to:

1. Draw and interpret longitudinal, superimposed, projected, and composite profiles accurately.
2. Prepare and explain block diagrams of mountains, river terraces, and flood plains.
3. Apply Strahler's and Horton's stream ordering methods to drainage networks.
4. Calculate and interpret bifurcation ratio and mean bifurcation ratio of a drainage basin.
5. Develop skills in topographical map interpretation, spatial analysis, and Geomorphological representation.

References:

1. Strahler A. N. & Strahler A. H. – *Modern Physical Geography*, John Wiley & Sons, India Edition.
2. Thornbury W. D. – *Principles of Geomorphology*, Wiley Eastern Ltd., New Delhi.
3. HusainMajid – *Systematic Physical Geography*, Rawat Publications, Jaipur.
4. Singh Savindra – *Geomorphology*, Prayag Pustak Bhawan, Allahabad.
5. DayalP. – *Practical Work in Physical Geography*, Shukla Book Depot, Patna.
6. Goh Cheng Leong – *Certificate Physical and Human Geography*, Oxford University Press, India.
7. RaoK. L. – *Morphometry of Drainage Basins*, Allied Publishers, New Delhi.
8. SharmaR. C. & VatalM. – *Geomorphology and Environmental Geography (Practical)*, Vishal Publications, Jalandhar.

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T.Y.B.A. Geography (Major)
(2024 Course under NEP 2020)
Course Code: 24ArGeoU5104

Title of the Course: Lab Course on Map Reading and Interpretation
Credits: 04 **Total Practicals: 30**
Exam scheme: CIE-40 Marks **ESE-60 Marks**

Course Objectives:

1. To Introduce the Students with SOI Toposheets and to acquire the Knowledge of Toposheet Reading/Interpretation.
2. To familiarize the students with the weather instruments and their applications in Geographical phenomena.
3. To acquaint the students with IMD weather maps and to gain the knowledge of weather Map Reading / interpretation.
4. To train the students in elementary statistics as an essential part of geography.
5. To awareness about GIS among the students.

	Semester – V	No. of Practicals
Unit 1	Toposheets	05
	A. Introduction to Survey of India (SOI) toposheets, Marginal Information, Grid reference, Conventional signs and symbols B. Types of toposheet/Indexing of toposheets i. 1:1000000/Million sheet ii. 1:250000/Degree sheet/Quarter inch sheet iii. 1:100000/Half inch sheet iv. 1:50000/One inch sheet v. 1:25000 vi. 1: 5000	
Unit 2	Methods of Relief Representation	07
	A. Methods of Relief Representation i. Qualitative :- Hachures, Hill shading, Layer Tint ii. Quantitative:- Contours, Form lines, Bench Marks, Spot Heights, Triangulation Mark, Relative Height (r) B. Representation of Relief features by Contours i. Concave Slope, Convex Slope, Steep Slope, Gentle Slope, Terraced / Uniform ii. Conical Hill, Spur, Plateau, Ridge, Saddle, Pass, Cliff & Waterfall C. Profile :Cross Profile and Longitudinal Profile	
Unit 3	Toposheet Reading and Interpretation	08
	A. Reading of SOI Toposheet i. Plain region ii. Plateau region iii. Mountainous/hilly region	
Unit 4	Weather Maps & Reading	08
	A. Introduction to Weather Maps B. Sign & Symbols in Daily Weather Report used by India Meteorological Department (IMD) C. Isobaric pattern: Cyclones, Anticyclones, Trough, Wedge &	

	Col, Secondary Depression D. Reading of Weather Map of three seasons: Summer, Monsoon & Winter	
Unit 5	Experiential learning	02
	A. One day field Excursion for orientation of Toposheet, observation and Identification of geographical features and preparation of a brief Report. Or one day visit to IMD and preparation of report.	

Course Outcomes:

Students will be able to:

1. Understand the structure, indexing, and classification of Survey of India (SOI) toposheets.
2. Identify and interpret marginal information, grid references, and conventional signs on toposheets.
3. Utilize different methods of relief representation, including qualitative (hachures, hill shading, and layer tinting) and quantitative (contours, benchmarks, and spot heights).
4. Construct and interpret contour-based landforms such as slopes, plateaus, ridges, saddles, cliffs, and waterfalls.
5. Read and analyze SOI toposheets for different regions, including plains, plateaus, and mountainous terrains.
6. Interpret weather maps, recognize meteorological symbols, and analyze isobaric patterns like cyclones, anticyclones, and troughs.
7. Apply theoretical knowledge through a one-day field excursion, identifying geographical features and preparing a detailed report.

References:

1. Aher, A. B., Chodhari, A. P. & Bharambe, S. N. (2015). *Techniques of Spatial Analysis*. Prashant Publication, Jalgaon.
2. Aronoff, S. (1989). *Geographic information systems: a management perspective*. DDL Publication, Ottawa.
3. Burrough, P. A. (1986). *Principles of geographical Information systems for land resource assessment*. Oxford University Press, New York.
4. Choudhar, A. P., Jadhav, S. & Choudhari, A. (2013). *Pratyakshik Bhugol (Practical Geography)*. Prashant Publication. (Marathi Edition).
5. Cole, J. P., & King, C. A. M. (1968). *Quantitative geography: Techniques and theories in geography* (No. 91: 51 COL), John Wiley, London.
6. Maguire, D. J., Goodchild, M. F. & Rhind, DW (eds.). (1991). *Geographical Information Systems: Principles and Applications*. Taylor & Francis, Washington.
7. Misra, R. P., & Ramesh, A. (1989). *Fundamentals of cartography*. Concept Publishing Company, New Delhi.
8. Monmonier, M. S. (1982). *Computer-assisted Cartography*. Prentice-Hall, Englewood Cliff, New Jersey.
9. Peuquet, D. J. and Marble, D. F. (1990). *Introductory Reading in Geographic Information Systems*. Taylor & Francis, Washington.

10. Robinson, A. H., Morrison, J. L., Muehrcke, P. C., Kimerling, A. J., & Guptill, S. C. (1995). *Elements of cartography*. John Wiley & sons. Inc., New York, USA.
11. Sarkar, A. (1997). *Practical Geography: A systematic approach*. Oriental Longman, Calcutta.
12. Singh, R. L. & Dutt, P. B. (1979). *Elements of Practical Geography*. Kalyani Publishers, New Delhi.
13. Star, J., & Estes, J. (1990). *Geographic information systems: An introduction*. Prentice- Hall, Englewood Cliff, New Jersey.
14. Taylor, D. F. (1991). *Geographic information system*. Pergamon Press, Oxford.
15. Unwin, D. J. (1981). *Introductory spatial analysis* (Vol. 748). Taylor & Francis.

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T. Y. B. A. Geography (Major Elective)
(2024 course under NEP 2020)
Course Code:24ArGeoU5201
Title of the Course: Settlement Geography-I

Credits: 02

Exam scheme: CIE-20 Marks

Total Lectures: 30

ESE – 30 Marks

Objectives:

1. To introduce students to the concept, nature and scope of rural settlement geography.
2. To develop understanding about the origin, growth and distribution of rural settlements.
3. To study the classification, patterns and functions of rural settlements.
4. To analyse problems of rural settlements and measures for rural development.
5. To develop analytical skills for interpreting rural settlement patterns using maps.

	Semester V	No. of Lectures
Unit 1	Introduction	06
	A. Meaning and Definition of rural and urban Settlement B. Nature and Scope of Rural Settlement Geography C. Difference between Rural and Urban Settlements	
Unit 2	Origin, Growth and Distribution of Rural Settlements	08
	A. Origin and Evolution of Rural Settlements B. Factor influencing location and growth of Rural Settlements (Physical, economical, socio-cultural)	
Unit 3	Classification and Patterns of Rural Settlements	08
	A. Classification of Rural Settlements on the Basis of: Location and functions. B. Types and patterns of Rural Settlements	
Unit 4	Rural Settlement Problems	08
	A. Problems of Rural Settlements in India - Housing, Water Supply and Sanitation etc.	

Course outcome

The students will able to

1. Understand the concept, nature and scope of rural settlement geography.
2. Explain the factors responsible for the origin and growth of rural settlements.
3. Identify and classify different types and patterns of rural settlements.
4. Analyse the major problems of rural settlements in India.
5. Develop awareness about rural development programmes and planning.
6. Evaluate the significance of rural settlement planning for balanced regional development.

Reference books

1. Chandana, R. C. (2005). *Geography of population*. Kalyani Publishers.
2. Hussain, M. (2014). *Human geography*. Rawat Publications.
3. Mandal, R. B. (2010). *Settlement geography*. Concept Publishing Company.
4. Singh, K. N. (2009). *Rural development in India*. Deep & Deep Publications.
5. Singh, R. L. (1998). *Rural settlement geography*. Rawat Publications.
6. Singh, R. Y. (2012). *Geography of settlements*. S. Chand & Company.
7. Smailes, A. E. (1967). *The geography of towns*. Hutchinson University Library.
8. Tiwari, R. C. (2011). *Human geography*. Prayag Pustak Bhawan.
9. Unwin, T. (2007). *A European geography*. Pearson Education.
10. Wadhwa, C. D. (2016). *Rural development in India*. Kalyani Publishers.

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T. Y. B. A. Geography (Major Elective)
(2024 course under NEP 2020)
Course Code:24ArGeoU5202
Title of the Course: Lab course on 24ArGeoU5201

Credits: 02
Exam scheme: CIE-20 Marks

Total Practicals: 15
ESE-30 Marks

Objectives:

1. To introduce students to quantitative techniques and indices used in the study of rural settlements.
2. To develop skills in calculating and interpreting settlement indices such as Centrality Index, Nearest Neighbour Analysis, and Gini's Coefficient.
3. To familiarize students with the application of geographical models like the Gravity Model and Lorenz Curve using real data.
4. To provide hands-on field experience in rural areas for population data collection and report preparation.
5. To develop analytical and interpretative skills for understanding rural settlement patterns in relation to socio-economic and environmental factors using quantitative and field-based methods.

	Semester V	No. of lectures
Unit 1	Settlement Indices	07
	A. Calculation of Centrality B. Nearest Neighbour Analysis C. Gini's Coefficient concentration Index	
Unit 2	Application of models using Data	06
	A. Gravity Model B. Lorenz Curve	
Unit 3	Field Study/ Excursion	02
	A. Field visit to any rural area for collection of population data and preparation of report.	

Course outcome:

The students will able to

1. Calculate and interpret various settlement indices related to rural settlement patterns.
2. Apply quantitative models such as the Gravity Model and Lorenz Curve for spatial analysis of settlements.
3. Analyze spatial distribution, concentration, and interaction of rural settlements using statistical tools.
4. Collect, tabulate, and analyze primary data from rural field visits.
5. Prepare systematic field reports based on rural population and settlement characteristics.
6. Evaluate rural settlement patterns and processes using quantitative analysis, field observations, and theoretical models.

Reference books

1. Chorley, R. J. and Haggett, P. (1967): *Models in Geography*, Methuen, London.
2. Clarke, J. I. (1977). *Population geography*. Oxford, UK: Pergamon Press.
3. Gregory, D., Johnston, R., Pratt, G., Watts, M., & Whatmore, S. (2009). *The dictionary of human geography* (5th ed.). Oxford, UK: Wiley-Blackwell.
4. Haggett, P. (1965): *Locational Analysis in Human Geography*, Edward Arnold, London.
5. Husain, M. (2011). *Models in geography*. Jaipur, India: Rawat Publications.
6. Johnson, J. H. (1970): *Urban Geography: An Introductory Analysis*, Pergamon Press.
7. Knox, P. L., & McCarthy, L. M. (2012). *Urbanization: An introduction to urban geography*: Pearson Education.
8. Mahmood, A. (2014): *Statistical Methods in Geographical Studies*, Rajesh Publications, New Delhi.
9. Majid Husain. (2014). *Human geography*. New Delhi, India: McGraw Hill Education.
10. Singh, R. L. (1972): *Rural Settlement in Monsoon Asia*, National Geographical Society of India, Varanasi.

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T. Y. B. A. Geography (Major Elective)
(2024 Course under NEP 2020)
Course Code: 24ArGeoU5203
Title of the Course: Cultural Geography

Credits: 04

Exam Scheme: CIE-40 Marks

Total Lectures: 60

ESE-60 Marks

Course Objectives:

1. Introduce students to the fundamental concepts, nature, and scope of Cultural Geography.
2. Explore the elements and components of culture, along with convergence and divergence processes.
3. Develop an understanding of cultural perception, behavioralism, and cultural relativism.
4. Analyze cultural diversity based on race, ethnicity, religion, and language.
5. Examine cultural regions, cultural hearths, and their role in shaping global cultural landscapes.
6. Study the relationship between cultural landscapes and cultural ecology, including the diffusion of cultural traits.
7. Understand the significance of cultural space in political and social contexts.

	Semester – V	Lectures
Unit 1	Introduction	12
	A. Definition, nature and scope of Cultural Geography B. Elements and components C. Convergence and divergence processes D. Cultural perception, Behaviouralism and cultural relativism	
Unit 2	Concepts and Regions	17
	A. Bases of cultural diversity – i. Race ii. Ethnicity iii. Religion iv. Language B. Cultural hearth, realms and cultural regions of the world C. Cultural diversity	
Unit 3	Cultural Landscape and Ecology	17
	A. Cultural landscape and cultural ecology B. Diffusion of cultural traits in the world	
Unit 4	Cultural Space and Politics	14

	A. Creation of Cultural Spaces: i. Body ii. Home iii. City iv. Nation v. Globe B. Politics of Difference: i. Caste ii. Class iii. Gender	
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Course Outcomes:

Students will be able to:

1. Define and explain the scope and significance of Cultural Geography.
2. Identify and analyze the key elements and components of culture.
3. Evaluate the processes of cultural convergence, divergence, and diffusion.
4. Understand cultural diversity and its bases, including race, ethnicity, religion, and language.
5. Interpret the concept of cultural hearths, realms, and regions on a global scale.
6. Analyze cultural landscapes and their interaction with ecological and geographical factors.
7. Assess the role of cultural space in political, social, and economic contexts.

References:

1. Blunt, A. (2005). *Cultural geography: Cultural geographies of home*. Progress in Human Geography, 29(4), 505–515.
2. Cavallaro, D. (2001). *Critical and cultural theory: Thematic variations*. Athlone Press.
3. Cosgrove, D. (1984). *Social formation and symbolic landscape*. Croom Helm.
4. Cosgrove, D., & Daniels, S. (Eds.). (1988). *The iconography of landscape: Essays on the symbolic representation, design and use of past environments*. Cambridge University Press.
5. Duncan, J. S. (2005). *The city as text: The politics of landscape interpretation in the Kandy Kingdom*. Cambridge University Press.
6. Hirsch, E., & Hanlon, M. (2003). *The anthropology of landscape: Perspectives on space and place*. Clarendon Press.
7. Jackson, P. (1989). *Maps of meaning: An introduction to cultural geography*. Unwin Hyman.
8. Mitchell, D. (2000). *Cultural geography: A critical introduction*. Blackwell Publishers.
9. Norton, W. (2006). *Cultural geography: Themes, concepts, analyses* (2nd ed.). Oxford University Press.
10. Sauer, C. O. (1925). *The morphology of landscape*. University of California Publications in Geography, 2(2), 19–54.

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T. Y. B. A. Geography (Minor)
Course Code: 24ArGeoU5302

Title of the Course: Environmental Geography

Credits: 02

Total Lectures: 30

Exam scheme: CIE-20 Marks

ESE - 30marks

Objectives:

1. To create the Environmental awareness amongst students.
2. To acquaint the students with fundamentals concepts of Environmental Geography.
3. To acquaint the students to past, present, and future utility and potentials of resources at regional, national, and global levels.
4. To make aware the students about problems of utilization and conservation in the view of Sustainable development.
5. To develop analytical skills among students to understand human–environment interactions and contemporary environmental issues at local, regional, and global levels.

	Semester - V	Lectures
Chapter 1	Introduction: Environmental Geography	08
	A. Meaning and Definition of Environmental Geography B. Nature and Scope of Environmental Geography C. Importance of Environmental Geography	
Chapter 2	Ecosystem	14
	A. Meaning, definition and concept of the ecosystem. B. Structure of Ecosystem (Biotic and Abiotic factors), Food Chain and Energy flow C. Types of ecosystem D. Terrestrial Ecosystem: Equatorial Evergreen Forest, Desert, Tundra E. Aquatic Ecosystem: Pond Ecosystem	
Chapter 3	Biodiversity and its conservation	08
	A. Meaning and concepts of biodiversity B. Loss of biodiversity C. Hotspots in India D. Conservation of biodiversity	

Learning Outcomes:

1. Students will understand the basic concepts in Environmental geography.
2. Students will understand the concepts of sustainability.
3. To gain knowledge about biodiversity and its importance.
4. To obtained and create ability to develop awareness and responsibility for the environment.

5. Students will be able to analyze environmental problems and assess human impacts on ecosystems for sustainable environmental management.

Reference Books:

1. Chandana, R. C. (2002). *Environmental geography*. Kalyani Publishers.
2. Choudhar, A. H., et al. (2014). *Disaster management* (Marathi ed.). Atharva Publications.
3. Gholap, T. N. (2000). *Environmental science* (Marathi ed.). Nishikant Publications.
4. Goudie, A. (2001). *The nature of the environment*. Blackwell.
5. Kormondy, E. J. (2012). *Concepts of ecology*. PHI Learning Pvt. Ltd.
6. Miller, G. T. (2004). *Environmental science: Working with the Earth*. Thomson Brooks/Cole.
7. Musmade, A. H., & More, J. C. (2014). *Geography of disaster management* (Marathi ed.). Diamond Publications.
8. Odum, E. P., et al. (2005). *Fundamentals of ecology*. Cengage Learning.
9. Saptarshi, P. G., More, J. C., & Ugale, V. R. (2009). *Geography and natural hazards* (Marathi ed.). Diamond Publications.
10. Saxena, H. M. (2017). *Environmental geography* (3rd ed.). Rawat Publications.
11. Singh, R. B. (Ed.). (2009). *Biogeography and biodiversity*. Rawat Publications.
12. Singh, S. (1997). *Environmental geography*. Pustak Bhawan.
13. Sharma, P. D. (2015). *Ecology and environment*. Rastogi Publications.

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T.Y.B.A. Geography (VSC)
(2024 Course under NEP 2020)
Course Code: 24ArGeoU5501

Title of the Course -Lab Course on Cartographic Techniques

Credits: 02

Total Practicals: 15

Exam scheme: CIE-20 Marks

ESE-30 Marks

Course Objectives:

1. Introduce students to the fundamentals of cartography, including traditional and modern mapping techniques.
2. Provide an understanding of map scales, including comparative and diagonal scales.
3. Develop skills in creating two-dimensional and three-dimensional cartographic diagrams.
4. Teach students the construction and interpretation of flow maps and isoline maps.
5. Enhance practical skills in visualizing spatial data using cartographic methods.

	Semester – V	No. of Practicals
Unit 1	Cartographic Techniques 1 : Map scale	05
	A. Cartography: Definition, traditional and modern cartography, uses B. Map scale : Comparative and Diagonal Scale	
Unit 2	Cartographic Techniques 2 : Diagrams and map	10
	A. Two Dimensional Diagram : i. Circle Diagram ii. Square Diagram B. Three Dimensional Diagram : i. Cube Diagram ii. Sphere Diagram C. Maps : i. Flow map ii. Isoline map	

Course Outcomes:

Students will be able to: -

1. Define and explain cartography, its evolution, and its applications in modern geography.
2. Utilize different types of map scales, including comparative and diagonal scales, in geographical representations.
3. Construct two-dimensional diagrams such as circle and square diagrams for spatial data visualization.
4. Develop three-dimensional diagrams, including cube and sphere diagrams, for cartographic representation.
5. Create and interpret flow maps and isoline maps for representing spatial patterns and geographic trends.

References:

1. Sharma, J. P. (2010). *Prayogic Bhugol*. Rastogi Publishers.
2. Singh, R. L., & Singh, R. P. B. (1999). *Elements of Practical Geography*. Kalyani Publishers.

3. Slocum, T. A., McMaster, R. B., & Kessler, F. C. (2008). *Thematic Cartography and Geovisualization* (3rd ed.). Prentice Hall.
4. Tyner, J. A. (2010). *Principles of Map Design*. The Guilford Press.
5. Sarkar, A. (2015). *Practical Geography: A Systematic Approach*. Orient Black Swan Private Ltd.
6. Singh, R. L., & Dutta, P. K. (2012). *Prayogatama Bhugol*. Central Book Depot.
7. Ahirrao, Y., & Karanjhele, E. K. (2002). *Practical Geography*. Sudarshan Publication.
8. Saptarshi, P. G., & Jog, S. R. (n.d.). *Statistical Methods*.
9. Karlekar, S. N. (2008). *Statistical Methods*. Diamond Publication.
10. Kanetkar, T. P., & Kulkarni, S. V. (1986). *Surveying and Leveling*. Pune Vidyarthi Griha Publication.
11. Kumbhare, A. (n.d.). *Practical Geography*.
12. Saha, P., & Basu, P. (2007). *Advanced Practical Geography*. Books and Allied (P) Ltd.

Progressive Education Society's
Modern College of Arts, Science and Commerce (Autonomous), Shivajinagar, Pune 05
T.Y.B.A. Geography (Major)
(2024 course under NEP 2020)
Course Code: 24ArGeoU6101
Title of the Course: Geography of India-II

Credits: 04

Examination Scheme: CIA: 40 Marks

Total Lectures: 60

End-Sem: 60 Marks

Course Objectives:

- To acquaint the students with geographical extent of India and the dynamics of India's relations with the world.
- To help students understand the physiographic features of India.
- To make students familiar with the intricate network of drainage system in India.
- To help students understand the different types of soil and forests in India and its distribution.

	Semester – VI	No. of Lectures
Unit 1	Agriculture	10
	A. Significance of Agriculture in Indian Economy B. Types of Farming C. Major Crops D. Green Revolution, White Revolution and Blue Revolution	
Unit 2	Mineral and Energy Resources	11
	A. Mineral Resources & its distribution: Iron ore, Manganese, Bauxite, Copper B. Energy Resources: i. Major conventional resources & its distribution – Coal, Mineral Oil and Natural Gas ii. Non-conventional – Hydroelectricity, Solar energy, Wind energy, Biogas, Nuclear energy C. Role of Non-conventional energy in sustainable development of India	
Unit 3	Industries	10
	A. Iron & Steel Industry B. Agro-based Industry C. Industrial Regions of India: Major and Minor	
Unit 4	Distribution of Population	07
	A. Ethnic composition B. Religious composition	

	C. Caste composition D. Linguistic composition	
Unit 5	Experimental Learning	2
	A. Discussion on Field Work/ Self Study Study Tour: 3-15 days across India	

Learning Outcomes:

Students will be able to:

1. Understand the significance of agriculture in India economy.
2. Get acquainted with the major of India and different agricultural revolutions.
3. Analyze the distribution of different mineral and energy resource deposits in India.
4. Assess the role of of non-conventional energy in sustainable development.
5. Familiarized with the major and minor industrial regions of India.
6. Understand the ethnic, religious, caste and linguistic composition of the country.

Reference Books:

1. Bandhopadhyaya, J. 1991. The Making of India's Foreign Policy, Allied Pub, Delhi
2. Dutta, R. and Sundaram, K. P. M. (2002). Indian Economy, S. Chand Publications, New Delhi.
3. Khullar D. R. (2011) India A Comprehensive Geography, Kalyani Publishers, Ludhiana
4. Hussain, M. (2013): Geography of India, Tata McGraw Hill, New Delhi
5. Sharma, T.C. & Coutinho, O. (1998). Economic and Commercial Geography of India, Vikash Publication, New Delhi.
6. Singh, G. (2010). A Geography of India. Atmaram and Sons, New Delhi.
7. Singh, R. L. (1971). India- A Regional Geography. N. G. S. India, Varanasi.
8. Spate, O. H. K. (1954): A General and Regional Geography, Methuen publisher, London
9. Tiwari, R.C. (2016). Geography of India. Allahabad: Pravalika Publication. Prayagraj.

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T.Y.B.A. Geography (Major)
(2024 course under NEP 2020)
Course Code: 24ArGeoU6102

Title of the Course: Introduction to Climatology

Credits: 02 Total

Lectures: 30

Examination Scheme: CIA: 20 Marks

End-Sem: 30 Marks

Course Objectives:

1. To introduce students to the basic concepts, nature, scope, branches, and applied aspects of climatology.
2. To develop an understanding of the structure, composition, and elements of Earth's atmosphere and their role in weather and climate.
3. To explain the mechanisms of heat transfer, Insolation, heat budget, and the horizontal and vertical distribution of temperature.
4. To study the distribution of atmospheric pressure and wind systems, including factors affecting winds and their types.

	Semester – VI	Lectures
Unit 1	Introduction	06
	A. Definition, Nature and Scope. B. Concept of Weather and Climate. C. Branches of Climatology. D. Applied Climatology.	
Unit 2	Earth's Atmosphere	06
	A. Elements of Climate. B. Structure and composition of the atmosphere.	
Unit 3	Insolation	10
	A. Mechanisms of Heat transfer – Conduction, Convection and Radiation. B. Heat Budget of the Earth. C. Factors affecting on horizontal distribution of temperature D. Vertical distribution of temperature – Lapse Rate and Inversion of Temperature.	
Unit 4	Atmospheric Pressure and Wind System	08
	A. Pressure measurement and distribution. B. Pressure Belts: Vertical and horizontal distribution of air pressure C. Factors affecting on Wind.	

Course Outcomes:

After successful completion of the course, the students will be able to:

1. Explain the fundamental concepts of climatology, including weather–climate relationships and applied climatology.
2. Describe the structure and composition of the atmosphere and identify the elements of climate.
3. Analyze Insolation, heat transfer mechanisms, and Earth’s heat budget in relation to temperature distribution.
4. Interpret the distribution of atmospheric pressure belts and explain the origin and types of wind systems.
5. Apply climatological knowledge to understand weather phenomena, climate variability, and environmental planning.

References:

1. Critchfield, H. J. (2004). General climatology. Prentice Hall, New Delhi.
2. Lal, D. S. (2014). Climatology. Sharda Pustak Bhawan, Prayagraj.
3. Lutgens, F. K. and Tarbuck, E. J. & Tasa, D. (2012). The Atmosphere – An Introduction to Meteorology. Pearson Prentice Hall, New Jersey, U.S.A.
4. Oliver, J. E. and Hidore, John J. (2003). Climatology: An Atmospheric Science. Pearson Education, Delhi.
5. Uitto, J. I., Puri, J., & Van den Berg, R. D. (2017). Evaluating climate change action for sustainable development. Springer Nature.
6. Singh, S. (2013). Climatology. Pravalika Publications, Prayagraj.
7. Sivaperuman, C., Velmurugan, A., Singh, A. K., & Jaisankar, I. (Eds.). (2018). Biodiversity and climate change adaptation in tropical islands. Academic Press.
8. Trewartha G. T., 1980. An Introduction to Climate, McGraw Hill Company, New York.

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T.Y.B.A. Geography (Major)
(2024 course under NEP 2020)
Course Code: 24ArGeoU6103

Title of the Course: Lab Course on 24ArGeoU6102 (Introduction of Climatology)

Credits: 02 Total

Practicals: 15

Examination Scheme: CIA: 20 Marks

End-Sem: 30 Marks

Note:

1. Each practical batch should not have more than 12 students.
2. A separate question paper should be set for each batch.
3. Four hours of one practical should be allotted.

Course objectives:

1. To develop practical skills in the measurement, calculation, and interpretation of weather elements using standard scientific units and methods.
2. To familiarize students with the mechanism, functions, and use of basic meteorological instruments.
3. To train students in data handling, numerical calculations, and graphical representation of climatic data.
4. To enhance the ability to analyze climatic conditions through the preparation and interpretation of climatic diagrams.

	Semester – VI	Practicals
Unit 1	Measurements of Weather Elements	08
	A. Scientific notation & the metric system of unit B. Calculation of temperature conversions in Fahrenheit, Celsius, and Kelvin scales. C. Calculation of Relative Humidity. D. Calculation of temperature lapse rate and drawing of temperature profile.	
Unit 2	Weather Instruments	04
	(Mechanism, Functions and Usages) A. Maximum and Minimum Thermometer. B. Aneroid Barometer. C. Rain Gauge. D. Wind Vane and Cup Anemometer.	

Unit 3	Climatic Diagrams	03
	A. Preparation of climatic diagrams. i. Climatograph. ii. Simple Windrose. iii. Hythergraph	

Learning outcomes:

After successful completion of the practical course, students will be able to:

1. Perform accurate calculations of temperature conversions, relative humidity, and lapse rate using scientific notation and metric units.
2. Measure and record weather elements using thermometers, barometers, rain gauges, wind vane, and anemometer.
3. Understand the working principles and applications of meteorological instruments.
4. Prepare and interpret Climatograph, wind roses, and Hythergraph using given climatic data.
5. Apply practical climatological skills in weather observation, data analysis, and basic climate-related studies.

Reference Books:

1. Singh, G., 2005. Map work and practical geography. Vikas Publishing House Pvt. Ltd., New Delhi.
2. Monkhouse, F.J. and Wilkinson, H.R., 1971. Maps and Diagrams. Methuen and Co. Ltd., London, UK.
3. Singh, L.R. and Singh, R., 1973. Map Work and Practical Geography, Central Book Depot, Allahabad.
4. Singh, R.L., 2005. Elements of Practical Geography. Kalyani Publishers, New Delhi.
5. Singh, R.L., and Dutt, P.K., 1968. Elements of Practical Geography, Students' Friends, Allahabad.
6. Various websites of internet.

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T.Y.B.A. Geography (Major)
(2024 Course under NEP 2020)
Course Code: 24ArGeoU6104

Title of the Course: Lab Course on Techniques of Spatial Analysis

Credits: 04

Exam scheme: CIE-40 Marks

Total Practicals: 30

ESE-60 Marks

Course Objectives:

1. Introduce students to different types of geographical data, including spatial and temporal variations.
2. Develop a strong understanding of measures of central tendency and dispersion for both grouped and ungrouped data.
3. Equip students with the knowledge of correlation and regression analysis, including Pearson's and Spearman's methods.
4. Provide an understanding of hypothesis testing, including null and alternative hypotheses, significance levels, and degrees of freedom.
5. Introduce students to parametric and non-parametric tests, including the Chi-square and Student's t-test.
6. Enhance practical knowledge through field excursions and the preparation of a tour report.

	Semester – VI	No. of Practicals
Unit 1	Introduction and Types of Geographical Data:	02
	A. Spatial and Temporal data B. Discrete and Continuous series C. Ungrouped and Grouped data	
Unit 2	Measures of Central Tendency and Dispersion	12
	A. Measures of Central Tendency :Mean, Mode, Median (two examples each from ungrouped and grouped data) B. Measures of Dispersion: Mean Deviation and Standard Deviation and variance (two examples each from ungrouped and grouped data)	
Unit 3	Correlation and Regression	14
	A. Meaning of Correlation and Regression B. Meaning of bivariate correlation and Regression, C. Meaning of coefficient of correlation i. Calculation of Pearson's Product-Method Correlation Co-efficient (Two examples) ii. Calculation of Spearman Rank order (Two examples) D. Hypothesis :-Meaning, Definition , Types of Hypothesis: Null and Alternative hypothesis, Level of significance, Degrees of freedom in Hypothesis E. Parametric and Non parametric test: i. Chi-square test (one sample case only) ii. Student-'s test (Comparison of sample means)	
Unit 4	Field Excursion	02
	A. One Short/One Long study tour anywhere in country (for 3 to 15 days) and preparation of tour report	

Course Outcomes:

Students will be able to:

1. Classify and analyze different types of geographical data, distinguishing between spatial and temporal, discrete and continuous, and grouped and ungrouped data.
2. Calculate and interpret measures of central tendency (mean, median, and mode) and dispersion (mean deviation, standard deviation, and variance).
3. Understand and apply correlation and regression techniques to analyze relationships between variables.
4. Compute Pearson's Product-Moment Correlation Coefficient and Spearman Rank Order Coefficient.
5. Formulate and test hypotheses using statistical methods, including the Chi-square and Student's t-test.
6. Apply field study techniques through excursions and prepare comprehensive reports based on observations and data collection.

References:

1. Aher, A. B., Chodhari, A. P. & Bharambe, S. N. (2015). *Techniques of Spatial Analysis*. Prashant Publication, Jalgaon.
2. Aronoff, S. (1989). *Geographic information systems: a management perspective*. DDL Publication, Ottawa.
3. Burrough, P. A. (1986). *Principles of geographical Information systems for land resource assessment*. Oxford University Press, New York.
4. Choudhar, A. P., Jadhav, S. & Choudhari, A. (2013). *Pratyakshik Bhugol (Practical Geography)*. Prashant Publication. (Marathi Edition).
5. Cole, J. P., & King, C. A. M. (1968). *Quantitative geography: Techniques and theories in geography* (No. 91: 51 COL), John Wiley, London.
6. Maguire, D. J., Goodchild, M. F. & Rhind, DW (eds.). (1991). *Geographical Information Systems: Principles and Applications*. Taylor & Francis, Washington.
7. Misra, R. P., & Ramesh, A. (1989). *Fundamentals of cartography*. Concept Publishing Company, New Delhi.
8. Monmonier, M. S. (1982). *Computer-assisted Cartography*. Prentice-Hall, Englewood Cliff, New Jersey.
9. Peuquet, D. J. and Marble, D. F. (1990). *Introductory Reading in Geographic Information Systems*. Taylor & Francis, Washington.
10. Robinson, A. H., Morrison, J. L., Muehrcke, P. C., Kimerling, A. J., & Guphill, S. C. (1995). *Elements of cartography*. John Wiley & sons. Inc., New York, USA.
11. Sarkar, A. (1997). *Practical Geography: A systematic approach*. Oriental Longman, Calcutta.
12. Singh, R. L. & Dutt, P. B. (1979). *Elements of Practical Geography*. Kalyani Publishers, New Delhi.
13. Star, J., & Estes, J. (1990). *Geographic information systems: An introduction*. Prentice- Hall, Englewood Cliff, New Jersey.
14. Taylor, D. F. (1991). *Geographic information system*. Pergamon Press, Oxford.
15. Unwin, D. J. (1981). *Introductory spatial analysis* (Vol. 748). Taylor & Francis.

Progressive Education Society's
Modern College of Arts, Science and Commerce (Autonomous), Shivajinagar, Pune 05
T. Y. B. A Geography (Major Elective)
(2024 course under NEP 2020)
Course Code: 24ArGeoU6201
Title of the Course: Settlement Geography-II

Credits: 02

Exam scheme: CIE-20 Marks

Total Lectures: 30

ESE-30marks

Objectives:

1. To introduce students to the concept, nature and scope of Urban Settlement Geography.
2. To understand the process and patterns of urbanization.
3. To study the structure, functions and classification of urban settlements.
4. To analyze urban problems and planning measures.
5. To develop an understanding of sustainable and inclusive urban development in the contemporary world.

	Semester VI	No. of Lectures
Unit 1	Introduction	06
	A. Meaning and Definition of Urban Settlement B. Nature and Scope of Urban Settlement Geography C. Evolution of Urban Settlements	
Unit 2	Urbanization	08
	A. Concept and Process of Urbanization in India and world. B. Factors influencing on Urbanization (Physical, Economic, Social) C. Recent trends of Urbanization in India	
Unit 3	Classification and Structure of Urban Settlements	08
	A. Characteristics of Urban settlement B. Types of Urban settlement on the basis of population and function	
Unit 4	Urban Problems and Planning	08
	A. Problems of Urban Areas: Slums, Transport and Pollution B. Concept of Urban Planning C. Sustainable Urban Development	

Course outcome

The students will able to

1. Understand the basic concepts and scope of Urban Settlement Geography.
2. Explain the process and trends of urbanization.

3. Identify different types and structures of urban settlements.
4. Analyze urban problems and appreciate the importance of urban planning.
5. Evaluate the role of sustainable urban planning in addressing present and future urban challenges.

Reference books

1. Carter, H. (1995). *The study of urban geography*. London: Edward Arnold.
2. Chandana, R. C. (2009). *Urban geography*. Ludhiana: Kalyani Publishers.
3. Davis, K. (1955). *The origin and growth of urbanization*. Chicago: University of Chicago Press.
4. Hall, P. (2002). *Cities of tomorrow: An intellectual history of urban planning and design in the twentieth century* (3rd ed.). Oxford: Blackwell Publishing.
5. Knox, P. L., & McCarthy, L. M. (2012). *Urbanization: An introduction to urban geography*. Boston: Pearson Education.
6. Pacione, M. (2001). *Urban geography: A global perspective*. London: Routledge.
7. Ramachandran, R. (1989). *Urbanization and urban systems in India*. New Delhi: Oxford University Press.
8. Singh, R. L. (2007). *Urban geography*. New Delhi: Concept Publishing Company.
9. Sivaramakrishnan, K. C., Kundu, A., & Singh, B. N. (2005). *Handbook of urbanization in India*. New Delhi: Oxford University Press.
10. UN-Habitat. (2016). *World cities report 2016: Urbanization and development – Emerging futures*. Nairobi: United Nations Human Settlements Programme.

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T. Y. B. A Geography (Major Elective)
(2024 course under NEP 2020)
Course Code: 24ArGeoU6202
Title of the Course: Lab course on 24ArGeoU6201

Credits: 02
Exam scheme: CIE-20 Marks

Total Practicals: 30
ESE-30marks

Objectives:

1. To introduce students to the structure and functioning of urban settlement systems.
2. To develop understanding of urban hierarchy through concepts like the Rank Size and CBD.
3. To provide practical exposure to urban population data collection and analysis.
4. To enhance skills in fieldwork, data interpretation, and report preparation related to urban geography.
5. To develop analytical skills for understanding urban land use patterns and contemporary urban issues using theoretical models and field-based data.

	Semester VI	No. of lectures
Unit 1	Models of Urban Land Use	07
	A. Rank Size Rule B. CBD	
Unit 2	Urban Morphology	06
	A. Concentric Zone Model B. Wedge or Sectoral Model C. Multiple Nuclei Model	
Unit 3	Field Study/ Excursion	02
	A. Field visit to any urban area for collection of population data and preparation of report.	

Course outcome

The students will able to

1. Explain the concept of urban systems and analyze urban hierarchy using the Rank Size Rule and CBD.
2. Apply urban models such as the Concentric Zone Model, Sector Model, and Multiple Nuclei Model.
3. Interpret spatial patterns of urban growth and land use structure.
4. Collect, analyze, and present urban population data through field surveys.
5. Evaluate urban land use dynamics and settlement patterns using models, statistical techniques, and field observations.

Reference books

1. Bourne, L. S. (1982). *Internal structure of the city: Readings on urban form, growth, and policy*. Oxford University Press.
2. Carter, H. (1995). *The study of urban geography* (4th ed.). Edward Arnold.
3. Gregory, D., Johnston, R., Pratt, G., Watts, M., & Whatmore, S. (2009). *The dictionary of human geography* (5th ed.). Wiley-Blackwell.
4. Haggett, P. (2001). *Geography: A global synthesis*. Pearson Education.
5. Hall, P. (2002). *Cities of tomorrow: An intellectual history of urban planning and design in the twentieth century* (3rd ed.). Blackwell.
6. Husain, M. (2012). *Urban geography*. Rawat Publications.
7. Knox, P. L., & McCarthy, L. M. (2012). *Urbanization: An introduction to urban geography* (3rd ed.). Pearson.
8. Pacione, M. (2009). *Urban geography: A global perspective* (3rd ed.). Routledge.
9. Singh, R. L. (2007). *Urban geography*. Concept Publishing Company.
10. Sivaramakrishnan, K. C. (2011). *Re-visioning Indian cities*. Sage Publications.

Modern College of Arts, Science and Commerce (Autonomous), Shivajinagar, Pune 05

T.Y.B.A. Geography (Major Elective)

(2024 course under NEP 2020)

Course Code: 24ArGeoU6203

Title of the Course: Geography of Thought

Credits: 04

Examination Scheme: CIA: 40 Marks

Total Lectures: 60

End-Sem: 60 Marks

Course Objectives:

1. This course aims to provide knowledge of disciplinary developments post 1970.
2. It aims to enable students to contextualize the conceptual traditions within geography along with the major philosophical influences.
3. It promotes an understanding of the fluidity, expansion and inclusivity of Modern Geographical Thought as against imperial underpinnings and latent Eurocentricity.

	Semester – VI	No. of Lectures
Unit 1	Historical Development of Geographical Thought	20
	A. Ancient period i. Schools of thought: Greek, Roman, Arab and Indian ii. Contributions of Herodotus, Eratosthenes, Strabo, Ptolemy B. Medieval period: i. Dark age and contribution of Arab geographer ii. Age of discovery C. Modern period: i. Schools of thought: German, British, French and American ii. Contributions of Kant, Humboldt, Ritter, and W. M. Davis	
Unit 2	Dualism in Geography	10
	A. Determinism and Possibilism B. Systematic versus Regional Geography C. Physical versus Human Geography	
Unit 3	Recent Trends in Geography	15
	A. Field survey and experimental studies B. Quantification and application of statistical techniques in Geography. C. Computer based Cartography, Remote Sensing, GIS and Geoinformatics.	
Unit 4	Modern themes in Geography	15
	A. Positivism, Functionalism, Existentialism, Idealism, Realism, Marxism. B. Applied geography, Sustainable Development and Globalization	

Course Outcomes:

Students will be able to:

1. Understand the geographical thinking in different regions of world.
2. Distinguish paradigms and modern concepts in geography.
3. A thorough knowledge of the growth, development, philosophical influences and relevance of geography from 1970 to the present time.
4. Knowledge of emerging areas and new theorizations within the discipline.
5. An appreciation of the discipline's dynamic and inclusive nature.

References:

1. Arild, H. J. (1999). *Geography: History and concepts*. SAGE Publications.
2. Dubey, B. (1967). *Geographical concept in ancient India*. NGSI.
3. Dickinson, R. G. (1969). *The makers of modern geography*. Routledge & Kegan Paul.
4. Hartshorne, R. (1939). *The nature of geography*. Association of American Geographers.
5. Hussain, M. (n.d.). *Evolution of geographical thought*. Rawat Publications.
6. Misra, R. P. (Ed.). (1983). *Contributions to Indian geography: Concepts and approaches*. Heritage Publications.
7. Taylor, G. (Ed.). (1953). *Geography in the 20th century*. Methuen.
8. Tripathi, M. P. (n.d.). *Development of geographic knowledge in ancient India*. Bharatiya Vidya Prakashan.
9. Wooldridge, S. W. (1960). *Geographer as a scientist*. Methuen.

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T.Y.B.A. Geography (Major)
(2024 course under NEP 2020)
Course Code: 24ArGeoU6501

Title of the Course: Lab Course on Advance Surveying

Credits: 02

Total Practicals: 15

Examination Scheme: CIA: 20 Marks

End-Sem: 30 Marks

Note:

1. Use of graph, calculator, computer, are allowed at the time of examination.
2. Students must check the practical regularly and Journal should be certified by practical in-charge and Head of the Department before the examination.
3. Students without a certified journal should not be allowed for the practical examination.
4. Each of the practical batches should get a separate question paper.

Objectives:

1. To understand the field surveying methods.
2. To study and understand the methodology of advanced surveying.
3. To acquaint the students with the principles of surveying, its importance and utility in the regional planning.
4. To get familiar with the basic aspects of linear, vertical and angular measurements of surveying.
5. To identify sources and types of errors occurs during surveying.

	Semester – VI	No. of Practicals
Unit 1	Transit and Digital Theodolite Survey	07
	A. Components and common terms A. Methods and plotting (Two examples each) : i. Tachometric Method ii. Intersection Methods	
Unit 2	Total station survey	08
	A. Principle and Functions B. Field work: Point data collection (Easting, Northing and Height), Angle and Distance Measurement Survey, Area Measurement Survey, Height Measurement Survey, C. Field Measurement by Total Station and its plotting D. Survey data post processing: Download the Point Data, Import the File into GIS, Creation of Shapefile and Generation of Digital Elevation Model (Field survey of river/beach, Preparation of map)	

Course Outcomes:

Students will be able to:

1. Acquire the knowledge of different techniques of advanced surveying.
2. Acquaint with the various plotting methods.
3. Obtain skill about measurements of field, farm, land-use/land-cover and preparation of proper maps with the help of advanced instruments.
4. Understand topographic undulations and mapping skills.
5. Design appropriate village/town developmental plan with the help of course knowledge.

Reference Books:

- 1) Davis, R. E., & Foote F. S. (1940). *Surveying-theory and practice*. McGraw-Hill Book Co., New York.
- 2) Deshpande, G. B. (1991). *Surveying*. Everest publishing house, Pune.
- 3) Kanetkar, T.P. & Kukarni S.V. 1986. *Surveying & leveling*, Pune Vidyarthi Griha Prakshan, Pune
- 4) Kanetkar, T. P., & Kulkarni S. V. (2010). *Surveying and Levelling (Part I and II)*, Pune Vidyarthi Gruha Prakashan, Pune.
- 5) Khan, M. Z. A. (1998). *Textbook of Practical Geography*. Concept publishing company, New Delhi.
- 6) Robinson, A. H., & Sleep, R. D. (1969). *Elements of Practical Geography*. New York, John Wiley.
- 7) Singh Gopal (2009). *Map Work and Practical Geography*. Vikas Publishing House Pvt. Ltd., New Delhi.
- 8) Singh, R. L., & Dutt P. K. (1979). *Elements of Practical Geography*. Kalyani Publications, New Delhi.
- 9) V. Natarajan, P., Adler Ron K. *Advanced Surveying*, B.1 Publ. Bombay.