Progressive Education Society's

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

F.Y.B.Sc. Geography NEP 2024 Pattern

Syllabus

To be implemented from Academic Year 2024-25

Semester	Paper	Subject code	Title of Paper	No. of credits
Semester I				
F.Y.B.Sc. Sem I	Major Mandatory (Theory)	24ScGeoU1101	Introduction to Physical Geography I	2
	Major Mandatory (Practical)	24ScGeoU1102	Lab Course on 24ScGeoU1101	2
	OE	24ScGeoU1401	Geography of Disaster Management I	2
	SEC	24ScGeoU1601	Lab Course on Cartographic Techniques- I	2
Semester II				
F.Y.B.Sc. Sem II	Major Mandatory (Theory)	24ScGeoU2101	Introduction to Human Geography I	2
	Major Mandatory (Practical)	24ScGeoU2102	Lab Course on 24ScGeoU2101	2
	OE	24ScGeoU2401	Geography of Disaster Management II	2

	SEC	24ScGeoU2601	Lab Course on Cartographic Techniques- II	2

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

F. Y. B. Sc. Geography

(2024 Course under NEP)

Course Code: 24ScGeoU1101

Title of the Course: Introduction to Physical Geography

Credits: 02 **Total Lectures: 30**

Objectives:

1. To introduce the students with the subject matter of physical geography.
2. To orient the students with the processes and patterns in the atmosphere, hydrosphere and lithosphere.
3. To develop scientific insights into dynamics of the earth system.

	Semester –I	Lectures
Unit 1	**Introduction**	**08**
	A. Geography: meaning, definition and branches B. Physical Geography: definition, nature, scope, branches and significance	
Unit 2	**Lithosphere**	**06**
	A. Interior of the earth: Structure and composition B. Wegner's Continental drift theory	
Unit 3	**Atmosphere**	**06**
	A. Concepts of Weather and Climate B. Structure and composition of the atmosphere C. The factor affecting horizontal distribution of temperature	
Unit 4	**Hydrosphere**	**10**
	A. Hydrological cycle B. General structure of ocean floor C. Movement of Ocean water i. Waves: meaning, causes and types ii. Tides: meaning, causes and types	

Learning Outcomes:

The students will able to

1. Learn the subject matter related to geography
2. Understand fundamental concepts, theories and approaches of physical geography
3. Understand various geographical phenomenon, their origin, distribution and effect.
4. Gain knowledge of earth's interior and theory related to drifting of continents
5. Sensitize with scientific knowledge of earth's dynamic phenomena related to ocean circulation and its general structure
6. Develop the ability to recognize the functions of complex interactive earth systems

Reference Books:

1. Bloom, A.L. (2003). *Geomorphology: A Systematic Analysis of Late Cenozoic Landforms.* Prentice-Hall of India, New Delhi.

2. Chavhan, G. K. (2019). *Physical and Human Geography (Marathi).* Prashant Publication, Jalgaon.
3. Christopherson, R. W. (2000). *Geo-systems.* Prentice Hall, INC.USA.
4. Dayal, P. (1996). *Textbook of Geomorphology.* Shukla Book Depot, Patna.
5. Hamblin, W. K. (1989). *The Earth's Dynamic Systems*. Macmillan Publishing Company, New York.
6. Haywood, Sarah Cornelius, & Carver, Steve. (1998). *An Introduction to Geographical Information Systems.*
7. Husain, M. (2001). *Fundamentals of Physical Geography.* Rawat Publication, Jaipur.
8. Husain, M. (2001). *Fundamentals of Physical Geography.* Rawat Publication, Jaipur.
9. Kale, V. S., & Gupta, A. (2001). *Elements of Geomorphology.* Oxford University Press.
10. Kale, V. S., & Gupta, A. (2015). *Introduction to Geomorphology.* University Press, Kolkata.
11. Lal, D. S. (1998). *Climatology.* Chaitanya Publishing House, Allahabad.
12. Monkhouse, F. J. (1951). *Principles of Physical Geography.* McGraw Hill Pub, New York.
13. Siddhartha, K. (2001). *The Earth's Dynamic Surface*. Kisalaya Publications Pvt. Ltd, New Delhi.
14. Singh, Savindra. (2000). *Physical Geography*. Prayag Pustak Bhavan, Allahabad.
15. प्रा. दाते, & सौ. दाते. *प्राकृतिक भूगोल.*
16. डॉ. श्रीकांत, कार्लेकर. *प्राकृतिक भूगोलाची मुलतत्वे*

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

F.Y.B.Sc. Geography Syllabus

(2024 Course under NEP)

Course Code: 24ScGeoU1102

Title of the Course: Lab Course on Physical Geography

Credits: 02 **Total Practicals: 15**

Objectives:

1. To introduce the students to the basic concepts and applications in Physical Geography.
2. To ascertain the students with the various methods of relief representations
3. To acquaint the students with the skill of handling weather instruments

Semester - I		Practicals
Unit 1	**Methods of Relief Representation**	**04**
	A. Qualitative Methods of Relief Representation i. Hachures, ii. Hill Shading, iii. Colour Shading or Layer Tint B. Quantitative Methods of Relief Representation i. Spot Height ii. Bench Mark iii. Triangulation Point iv. Contours v. Form Lines	
Unit 2	**Representation of Slope and Landforms by contours**	**05**
	A. Representation of slope by contours: i. Steep and Gentle Slope, ii. Even and Uneven Slope iii. Concave and Convex Slope B. Representation of Landforms by contours: i. Conical Hill, ii. Cliff iii. Valley iv. Ridges v. Plateau vi. Spur Visit may conduct to any places for orientation of contours pattern and identification of slope and landforms.	
Unit 3	**Weather Instruments**	**06**
	Functions and uses A. Simple and Dry-Wet Thermometer B. Rain Gauge C. Hygrometer D. Aneroid Barometer E. Wind Vane Visit may conduct to nearby weather station.	

Learning Outcomes:

The students will able to

1. Learn the various techniques and its application in the field of Physical Geography.
2. Acquire the skills of representation and interpretation of relief data related to slope and landforms
3. Handle the instruments related to various elements of weather such as temperature, atmospheric pressure, wind, rainfall etc
4. Learn how to get prepared for the field survey, collect data from field, complied them and make a field report
5. Secure employment in the sectors of geospatial analysis, mapping and planning

Reference Books:

1. Dent, B. D. (1999). *Cartography: Thematic Map Design, Vol. 1*. McGraw Hill.
2. Gupta, K. K., & Tyagi, V. C. (1992). *Working with Maps*. Survey of India, DST, New Delhi.
3. Mishra, R. P., & Ramesh, A. (1989). *Fundamentals of Cartography.* Concept Publishing.
4. Monkhouse, F. J., & Wilkinson, H. R. (1971). *Maps and Diagrams.* Methuen and Co. Ltd., London.
5. Robinson, A. (1953). *Elements of Cartography. John Wiley.*
6. Siddhartha, K. (2006). *Geography through Maps.* Kisalaya Publications Pvt. Ltd, Delhi.
7. Singh, G. (2005). *Map Work and Practical Geography*. Vikas Publishing House Pvt. Ltd., New Delhi.
8. Singh, L. R., & Singh, R. (1973). *Map Work and Practical Geography.* Central Book Allahabad.
9. Singh, R. L. (2005). *Elements of Practical Geography*. Kalyani Publishers, New Delhi, India.
10. Singh, R. L., & Dutt, P. K. (1968). *Elements of Practical Geography.* Students' Friends, Allahabad.
11. Singh, R. L., & Singh, R. P. B. (1999). *Elements of Practical Geography*. Kalyani Publishers.
12. Steers, J. A. (1970). *An Introduction to the Study of Map Projections*. University of London Press Ltd., London.

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F. Y. B. Sc. Geography

(2024 Course under NEP)

Open Elective

Course Code: 24ScGeoU1401

Title of the Course: Geography of Disaster Management-I

No. of Credits: 02 **Total Lectures: 30**

Objectives:

1) To introduce students with the concept of disaster & its relation with Geography.
2) To acquaint the students with the structure and process of disaster management.
3) To make the students aware of causes and effects of various disasters.
4) To lay emphasis on the need & significance of disaster management.

	Semester – I	Lectures
Unit 1	**Introduction to Hazards and Disasters**	**06**
	A. Meaning and definitions of hazard and disaster B. Geographical conditions and disasters C. Classification of disasters	
Unit 2	**Disaster Management: Structure & Process**	**12**
	A. Concept of disaster management B. Aims and objectives C. **Pre-disaster management**: Preparedness, Mitigation, prevention D. **Post-disaster management**: Response, Recovery Rehabilitation E. Standard operating procedure of management on government level: NDRF & SDRF F. Role of media	
Unit 3	**Geological and Geomorphic disasters**	**12**
	Causes, effects, areas and management A. Earthquakes as disasters B. Landslides as disasters	

Learning Outcomes:

Students will able to:

1. Understand the concepts of hazard and disaster, disaster management, Standard operating procedure of management on government level
2. Classify various disaster and learn the associated Geographical conditions.
3. Develop ability in the field of disaster planning and management by learning the process and structure of pre and post management.
4. Analyze the role of media in disaster management
5. Evaluate the causes, effects and management of various geological disaster like earthquake and landslide
6. Develop the skills of disaster prevention, formulate rehabilitation plans for disaster affected communities.

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Reference Books:

1. Alexander, D. (1993). *Natural Disasters.* UCL Press Ltd., London.
2. Alexander, D. (2000). *Introduction in Confronting Catastrophe.* Oxford University Press.
3. Andharia, J. (2008). *Vulnerability in Disaster Discourse.* JTCDM, Tata Institute of Social Sciences Working Paper no. 8.
4. Blakie, P., Cannon, T., Davis, I., & Wisner, B. (1997). *At Risk: Natural Hazards, People Vulnerability and Disasters.* Routledge.
5. Bloom, A. L. (1998). *Geomorphology: A Systematic Analysis of Late Cenozoic Landforms.* Pearson Education (Singapore) Pte. Ltd.
6. Chandna, R. C. (2000). *A Geography of Population: Concepts, Determinants and Patterns.* Kalyani Publishers, New Delhi.
7. Choudhar, A. H., Salve, P. N., Kadam, S. M., Choudhar, R. H., & Ithape, V. C. (2010). *Contemporary Issues and Geography.* Atharva, Pune.
8. Copola, P., & Damon, D. (2007). *Introduction to International Disaster Management.*
9. Cuny, F. (1983). *Development and Disaster.* Oxford University Press.
10. Government of India. (2005). *Disaster Management Act.* Government of India, New Delhi.
11. Hamblin, W. K. (1989). *The Earth's Dynamic Systems*. Macmillan Publishing Company, New York.
12. Huggett, D. A. (2004). *Fundamentals of Biogeography.* Routledge.
13. Kale, V. S., & Gupta, A. (2001). *Introduction to Geomorphology.* Orient Longman, Calcutta.
14. Knox, P., & Agnew, J. (1998). *The Geography of the World Economy.* Arnold, London.
15. Lutgens, F. K., & Tarbuck, E. J. (2007). *The Atmosphere*. Prentice Hall, Englewood Cliffs, New Jersey, USA.
16. Ross, D. A. (1988). *Introduction to Oceanography.* Prentice Hall, New Jersey.
17. Saptarshi, P. G., More, J. C., & Ugale, V. R. (2009). *Geography and Natural Hazard.* Diamond, Pune.
18. Savindra Singh. (2000). *Environmental Geography.* Prayag Pustak Bhavan, Allahabad.
19. Singh, S. (1998). *Geomorphology.* Prayag Pustak Bhavan, Allahabad.
20. Strahler, A. A., & Strahler, A. N. (2002). *Physical Geography: Science and Systems of the Human Environment.* John Wiley and Sons, INC.

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F. Y. B. Sc. (Geography) (SEC)

(2024 Course under NEP2020)

Course Code:24ScGeoU1601

Title of the Course: Lab Course on Cartographic Techniques- I

No of Credits: 2 **No of Practicals: 15**

Exam scheme: CIE-20 Marks **ESE-30 Marks**

Course Objectives:

1. To introduce students to the basics of cartography and its applications.
2. To explain various elements and types of maps.
3. To develop understanding of map scales and their conversions.
4. To enhance skills in graphical scale construction.
5. To promote practical map reading and interpretation abilities.

	Semester – I	Practicals
Unit 1	**Cartographic Techniques**	**2**
	A. Cartography: Definition, Traditional and Modern Cartography, Uses	
Unit 2	**Types of Maps**	**2**
	A. Definition of a map B. Elements of a map- Scale, Direction, Projection, Conventional signs and symbols, Legends C. **Types of Maps** D. Significance of Map	
Unit 3	**Map Scale**	**11**
	A. Definition B. Types- Verbal Scale (VS), Representative Fraction (RF), Graphical Scale C. Conversion of Scale- VS into RF and RF into VS (Minimum 4 examples each) D. Exercise on simple comparative graphical scale (Minimum 2 exercises) E. Reading distance on a map	

Course Outcome:

1. Understand the concept and uses of traditional and modern cartography.
2. Identify map elements like scale, direction, and symbols.
3. Classify and explain different types of maps.
4. Perform scale conversions and construct graphical scales.
5. Accurately measure and interpret distances on maps.

Reference books:

- *Singh, G., 2005. Map work and practical geography. Vikas Publishing House Pvt. Ltd., New Delhi.*

- *Singh, R.L., 2005. Elements of Practical Geography. Kalyani Publishers, New Delhi. India.*
- *Singh, L.R. and Singh, R., 1973. Map work and practical geography, Central Book Allahabad.*
- *Monkhouse, F.J. and Wilkinson, H.R., 1971. Maps and Diagrams. Methuen and Co. Ltd., London. K.*
- *Singh, R.L., and Dutt, P.K.,1968. Elements of practical geography, Students' Friends, Allahabad.*

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F. Y. B. Sc. Geography

(2024 Course under NEP)

Course Code: 24ScGeoU2101

Title of the course: Introduction to Human Geography

Credits: 02 **Total Lectures: 30**

Objectives:

1. To acquaint the students with the subject of human geography.
2. To familiarise the student with the human evolution and human races
3. To introduce the students with the characteristics and distribution primitives in the world.
4. To acquaint the students with the global human culture in terms of languages and religions

	Semester - II	Lectures
Unit 1	**Introduction to Human Geography**	**05**
	A. Meaning and Definitions of Human Geography B. Nature and Scope of Human Geography C. Branches of Human Geography D. Concepts of Determinism, Possibilism, Stop and Go Determinism	
Unit 2	**Human Evolution and Races**	**07**
	A. Stages of Human Evolution B. Concept of race, Bases of racial classification C. Principal Human Races of the World (Negroid, Caucasoid, Mongoloid)	
Unit 3	**Human Adaptation and Environment**	**10**
	Location, geographical environment, physical traits, food, clothing, shelter and economic activities A. Human life in Cold Region: ESKIMOS B. Human life in Desert Region: BUSHMEN C. Human life in Equatorial Region: PYGMY	
Unit 4	**Human Culture**	**08**
	A. World's major Languages and its distribution: B. World's major Religion and its distribution: Christianity, Islam, Hinduism, Buddhism and Others	

Learning outcomes:

1. Define the field of human geography, the Man-environment relationship in the light of Determinism, Possibilism and Stop & Go Determinism.
2. Gain the knowledge of branches, nature, and scope of Human Geography
3. Understand the basic concepts of human race and stages of human evolution.
4. Learn the bases of racial classification and principal human races of the world
5. Distinguish and illustrates the activities of man in different environment of various societies. Also get familiar with the human adaptation in changing environment
6. Examine the patterns of distribution of religions and languages in the world

Reference Books:

1. Aher, A. B., & Pail, V. J. (2015). *Human Geography*. Jalgaon: Prashant Publication.
2. Carr, M. (1987). *Patterns, Process and Change in Human Geography.* London: Mac Millan Education.
3. De Blij, H. (1996). *Human Geography: Culture, Society and Space*. New York: John Wiley.
4. Edward, E. (1995). *Human Geography: Culture, Connections and Landscape*. New Jersey: Prentice-Hall.
5. Fellman, J. (1997). *Human Geography - Landscapes of Human Activities*. U.S.A: Brown and Benchman Publication.
6. Husain, M. (2011). *Human Geography*. New Delhi: Rawat Publication.
7. Jagdale, U., & Saptarshi, P. (2007). *Human Geography.* (Marathi) Diamond Publication.
8. Johnson, R., & Pratt, G. (2008). *The Dictionary of Human Geography.* Oxford: Blackwell.
9. Johnston, R. (Ed.). (1994). *Dictionary of Human Geography*. Oxford: Blackwell.
10. McBride, P. (1996). *Human Geography: Systems, Patterns and Change.* U.K. and Canada: Nelson.
11. Michael, C. (1997). *New Patterns: Process and Change in Human Geography*. U.K: Nelson.
12. Rubenstein, J., & Bacon, R. (1990). *The Cultural Landscape — An Introduction to Human Geography.* New Delhi, India: Prentice Hall.
13. Singh, K. (1992). *People of India: An Introduction*. Seagull Books.
14. Spate, O. H. K., & Learmonth, A. T. A. (1968). *India and Pakistan*. London: Methuen.

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F. Y. B. Sc. Geography

(2024 Course under NEP)

Course Code: 24ScGeoU2102

Title of the Course: Lab Course on Human Geography

Credits: 02 **Total Practicals: 15**

Objectives:

4. To introduce the students to the basic concepts and applications in Human Geography.
5. To ascertain the students to the basic characteristics of map and techniques of constructing various types of cartograms and thematic maps.

	Semester – II	Practicals
Unit 1	**Population Indices**	**07**
	A. Crude birth rate B. Crude death rate C. Density of population D. Population concentration index E. Population growth rate F. Age sex ratio	
Unit 2	**Methods representation of population Data**	**06**
	A. Diagrammatic representation of population data: i. **Pie Diagram** (Using population data of occupational structure, population composition) B. Graphical representation of population data: - i. **Age-Sex pyramids**. (Drawing of age sex pyramid of developed, developing and under developed countries) C. Representation of population data by thematic maps: **i. Dot Map**	
Unit 3	**Field Study/Excursion**	**02**
	One Short Study Tour: -Collection of population data and preparation of report (Village Survey)	

Learning Outcomes:

Students will be able to: -

1. Learn the calculations of different population Indices and its application in the field of Human Geography.
2. Acquire the skills or techniques of constructing thematic mapping and cartogram by representing population data
3. Learn how to get prepared for the field survey, collect data from field, complied them and make a field report
4. Understand the different stages and time allocation of report writing
5. Secure employment in the sectors of geospatial analysis, mapping, development and planning.

Reference Books:

1. Dent, B. D. (1999). *Cartography: Thematic Map Design (Vol. 1).* McGraw Hill.

2. Dent, B. D., Torguson, J. S., & Holder, T. W. (2008). *Cartography: Thematic Map Design (6th Edition).* McGraw-Hill Higher Education.
3. Dikshit, R. D. (2003). *The Art and Science of Geography: Integrated Readings*. Prentice-Hall of India.
4. Gupta, K. K., & Tyagi, V. C. (1992). *Working with Maps.* Survey of India, DST, New Delhi.
5. Kraak, M.-J., & Ormeling, F. (2003). *Cartography: Visualization of Geo-Spatial Data*. Prentice-Hall.
6. Mishra, R. P., & Ramesh, A. (1989). *Fundamentals of Cartography*. Concept, New Delhi.
7. Monkhouse, F. J., & Wilkinson, H. R. (1971). *Maps and Diagrams*. Methuen and Co. Ltd., London.
8. Phillips, R., & Johns, J. (2012). *Fieldwork for Human Geography*. Sage Publication.
9. Sarkar, A. (2015). *Practical Geography: A Systematic Approach*. Orient Black Swan.
10. Singh, G. (1996). *Map Work and Practical Geography*. Vikas Publications, New Delhi.
11. Singh, R. L. (1979). *Elements of Practical Geography*. Kalyani Publications, New Delhi.
12. Stoddard, R. H. (1982). *Field Techniques and Research Methods in Geography.* Kendall/Hunt.
13. uff, J. D., & Mattson, M. T. (1982). *Thematic Maps: Their Design and Production*. Methuen Young Books.
14. Wolcott, H. (1995). *The Art of Fieldwork*. Alta Mira Press, Walnut Creek, CA.
15. Yeats, M. H. (1974). *An Introduction to Quantitative Analysis in Human Geography.* McGraw Hill, New York.

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F. Y. B. Sc. Geography

(2024 Course under NEP)

Open Elective

Course Code: 24ScGeoU2401

Title of the Course: Geography of Disaster Management-II

No. of Credits: 02 **Total Lectures: 30**

Objectives:

1) To introduce students the concept of disaster & its relation with Geography.
2) To acquaint the students with the causes and effects of various disaster in different areas & its management.
3) To make the students aware of the need and significance of disaster management.

	Semester – II	Lectures
Unit 1	**Climatic Disasters and Management**	**12**
	Causes, effects, areas and management A. Cyclones B. Droughts C. Floods	
Unit 2	**Anthropogenic Disasters and Management**	**12**
	Types, causes, effects and remedies A. Deforestation B. Forest fire C. Soil degradation	
Unit 3	**Global Issues and Measures**	**06**
	Causes, effects and measures A. Global warming B. Ozone depletion	

Learning Outcomes:

Students will able to

1. Learn the causes and effects of various natural disaster such as cyclone, drought, floods in different areas & its management.
2. Evaluate the types, causes, effects of various anthropogenic disaster like deforestation, forest fire, soil degradation etc.
3. Suggest the remedies of anthropogenic disaster and analyze its applicability as per the geographical conditions.
4. Develop ability to understand global hazards such as global warming, ozone depletion and suggests its reducing measures
5. Understand their socio-economic responsibilities, may give their personal opinion in the process of disaster management.
6. Develop the skills of disaster prevention, formulate rehabilitation plans for disaster affected communities.

Reference Books:

1. Alexander, D. (1993). *Natural Disasters.* UCL Press Ltd., London.
2. Alexander, D. (2000). *Introduction in Confronting Catastrophe.* Oxford University Press.
3. Andharia, J. (2008). *Vulnerability in Disaster Discourse.* JTCDM, Tata Institute of Social Sciences Working Paper no. 8.
4. Blakie, P., Cannon, T., Davis, I., & Wisner, B. (1997). *At Risk: Natural Hazards, People Vulnerability and Disasters.* Routledge.
5. Bloom, A. L. (1998). *Geomorphology: A Systematic Analysis of Late Cenozoic Landforms.* Pearson Education (Singapore) Pte. Ltd.
6. Chandna, R. C. (2000). *A Geography of Population: Concepts, Determinants and Patterns.* Kalyani Publishers, New Delhi.
7. Choudhar, A. H., Salve, P. N., Kadam, S. M., Choudhar, R. H., & Ithape, V. C. (2010). *Contemporary Issues and Geography.* Atharva, Pune.
8. Copola, P., & Damon, D. (2007). *Introduction to International Disaster Management.*
9. Cuny, F. (1983). *Development and Disaster.* Oxford University Press.
10. Government of India. (2005). *Disaster Management Act.* Government of India, New Delhi.
11. Hamblin, W. K. (1989). *The Earth's Dynamic Systems*. Macmillan Publishing Company, New York.
12. Huggett, D. A. (2004). *Fundamentals of Biogeography.* Routledge.
13. Kale, V. S., & Gupta, A. (2001). *Introduction to Geomorphology.* Orient Longman, Calcutta.
14. Knox, P., & Agnew, J. (1998). *The Geography of the World Economy.* Arnold, London.
15. Lutgens, F. K., & Tarbuck, E. J. (2007). *The Atmosphere*. Prentice Hall, Englewood Cliffs, New Jersey, USA.
16. Ross, D. A. (1988). *Introduction to Oceanography.* Prentice Hall, New Jersey.
17. Saptarshi, P. G., More, J. C., & Ugale, V. R. (2009). *Geography and Natural Hazard.* Diamond, Pune.
18. Savindra Singh. (2000). *Environmental Geography.* Prayag Pustak Bhavan, Allahabad.
19. Singh, S. (1998). *Geomorphology.* Prayag Pustak Bhavan, Allahabad.
20. Strahler, A. A., & Strahler, A. N. (2002). *Physical Geography: Science and Systems of the Human Environment.* John Wiley and Sons, INC.

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F. Y. B. Sc. (Geography) (SEC)

(2024 Course under NEP2020)

Course Code:24ScGeoU2601

Title of the Course: Lab Course on Cartographic Techniques- II

No of Credits: 2 **No of Practicals: 15**

Exam scheme: CIE-20 Marks **ESE-30 Marks**

Course Objectives:

1. To introduce graphical methods of representing geographical data.
2. To teach construction of line, bar, pie, and contour diagrams.
3. To develop interpretation skills for graphical and diagrammatic data.
4. To explain two- and three-dimensional diagram techniques.
5. To train students in preparing thematic maps like flow and isoline maps.

	Semester – II	Practicals
Unit 1	**Graphical and Diagrammatic Representation of Data**	**5**
	A. Simple Line Graph B. Polyline Graph C. Simple Bar graph D. Compound Bar graph E. Pie Diagram	
Unit 2	**Cartographic Techniques- 2: Diagrams and Maps**	**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 Outcome:

1. Construct and interpret various types of statistical graphs and diagrams.
2. Represent data using bar, pie, line, and polyline graphs.
3. Draw and explain 2D and 3D diagrams such as circle, square, cube, and sphere.
4. Develop thematic maps including flow maps and isoline maps.
5. Apply graphical and cartographic techniques in geographical analysis.

Reference books:

- *Singh, G., 2005. Map work and practical geography. Vikas Publishing House Pvt. Ltd., New Delhi.*
- *Singh, R.L., 2005. Elements of Practical Geography. Kalyani Publishers, New Delhi. India.*
- *Singh, L.R. and Singh, R., 1973. Map work and practical geography, Central Book Allahabad.*

- *Monkhouse, F.J. and Wilkinson, H.R., 1971. Maps and Diagrams. Methuen and Co. Ltd., London. K.*
- *Singh, R.L., and Dutt, P.K.,1968. Elements of practical geography, Students' Friends, Allahabad.*