**Bachelor of Arts (B.A.) in Geography**

**Semester IV**

| No. | Code | Name | Credit |
|---|---|---|---|
| 1 | GEO-C-241 / GEO-MI-244 | OCEANOGRAPHY | 4 |
| 2 | GEO-C-242 | GEOGRAPHY OF INDIA – II (ECONOMIC ACTIVITIES, POPULATION) | 4 |
| 3 | GEO-C-243 | CARTOGRAPHIC METHODS PRACTICAL – II | 4 |
| 4 | SEC-GEO-246A | GEOGRAPHY OF EARTHQUAKE AND VOLCANO | 2 |
| 5 | SEC-GEO-246B | GEOGRAPHY OF DISASTER MANAGEMENT | 2 |

**Bachelor of Arts (B.A.) in Geography**

**Semester IV**

**Course Code**: GEO-C-241 / GEO-MI-244

**Course Name**: **Oceanography**

**Credits**: 4

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## Course Objectives

The learning objectives of this course are:

1. To enable the learner to understand the basics of Oceanography.
2. To comprehend the geographical aspects of oceans.
3. To gain knowledge about the physical, chemical, and biological properties of oceans.
4. To understand the dynamic nature of oceans.
5. To recognize the significance of oceans.
6. To discuss ocean water and its unique ecosystem.

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## Course Outcomes

After completing this course, students will:

1. Appreciate Oceanography as an essential discipline of Physical Geography.
2. Gain a comparative understanding of the relief of major oceans.
3. Comprehend the dynamic nature of ocean waters.
4. Understand the environmental aspects of the marine environment.
5. Establish relationships between human activities and global oceanic conditions.
6. Explain the role of oceans as regulators of global climate.

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## Course Syllabus

### Unit I: Introduction to Oceanography

Nature, Scope, and Significance of Oceanography. Distribution of Oceans and Continents. Relief of the ocean floor, including the bottom reliefs of the Indian, Atlantic, and Pacific Oceans. Brief overview of the origin of Earth's Ocean basins.

### Unit II: Physical and Chemical Properties of Ocean Water

Composition of sea water, Temperature and Salinity: Geographical factors affecting them, horizontal and vertical distribution.Role of sea surface temperature in regulating global climate.

**Unit III: Ocean Water Circulation**

Waves, Tides, and Currents: Causes, types, and distribution. Theories of the origin of tides. Characteristics and geographical influences of ocean currents in the Indian, Atlantic, and Pacific Oceans.

**Unit IV: Marine Environment**

Coral Reefs and Atolls: Types, origin, and coral bleaching, .Ocean Deposits: Sources and types, Human Actions and the Oceans: Marine pollution, ocean warming, ocean acidification, Oceans as a storehouse of resources, Geography of the Southern Ocean.

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## References


1. Garrison, T. S. (2015). *Oceanography: An Invitation to Marine Science* (9th Edition). Cengage Learning.
2. Trujillo, A. P. (2016). *Essentials of Oceanography* (12th Edition). Pearson.
3. Sverdrup, K. (2016). *Investigating Oceanography* (2nd Edition). McGraw Hill.
4. Knauss, J. A. (2016). *Introduction to Physical Oceanography* (3rd Edition). Waveland Press Inc.
5. Browers, T. & George. (2012). *Introducing Oceanography*. Dunedin Academic Press.
6. Moran, J. M. (2024). *Ocean Studies: Introduction to Oceanography*. American Meteorological Society, Boston.
7. Pinet, P. R. (2014). *Invitation to Oceanography* (7th Edition). Jones & Bartlett Learning.
8. Singh, S. (2022). *Physical Geography*. Pravalika Publications, Prayagraj.
9. Singh, S. (2022). *Oceanography*. Pravalika Publications, Prayagraj.
10. Vatal, M. & Sharma, R. C. (2018). *Oceanography for Geographers*. Surjeet Publications.
11. Basu, S. K. (2003). *Handbook of Oceanography*. Global Vision, Delhi.
12. Davis, R. J. A. (1996). *Oceanography: An Introduction to the Marine Environment*. Brown Co., Lowa.
13. Lal, D. S. (2003). *Oceanography*. Sharda Pustak Bhavan, Allahabad.
14. Sverdrup, K. A. & Armrest, E. V. (2008). *An Introduction to the World Ocean*. McGraw Hill, Boston.
15. Jasani, K. N. (2015). *Samudrashastra*. University Granthnirman Board, Gujarat.

**Bachelor of Arts (B.A.) in Geography**

**Semester IV**

**Paper Code**: GEO-C-242

**Paper Name**: **GEOGRAPHY OF INDIA – II (ECONOMIC ACTIVITIES, POPULATION)**

**Credits**: 4

**Course Objective**

1. This course is aimed at introducing students to the socio-economic aspects of India with objective to impart knowledge of economic activities and demographic structure of India; agriculture, industry, transportation, communication and population.

**Course Outcome**

After completion of the course:

- Students will be able to understand the role of economic and social activities in shaping of India.
- Students will develop ability to analyse problems and prospects of developmental process.

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**Course Content**

**UNIT 1: Agriculture**

Infrastructure: Irrigation, Seeds, Fertilizers, Power, and Land availability. Green Revolution: Socio-economic and ecological implications. Cropping Pattern and Classification: Distribution, ideal soil, and climatic conditions. Livestock Resources: White Revolution. Aquaculture and Sericulture.

**UNIT 2: Industry**

Industrial Development in India: Locational factors,.Major industries: Iron and Steel, Engineering, Automobile, Chemical, Pharmaceutical, Textile, Sugar, Paper, and Cement..Industrial Regions: Problems and Prospects. Industrial Policy: Multinationals, liberalization, and Special Economic Zones (SEZs).

**UNIT 3: Transportation, Communication, and Trade**

Transportation: Roads, Railways, Airlines, and Waterways in India—their complementary roles in regional development, problems, and prospects. Ports and Trade: The significance of ports, foreign trade composition, and direction. Communication and Information Technology: Impact on the economy and society. Indian Space Programme: Developments and contributions.

**UNIT 4: Population**

Demographics: Composition, growth, and density of the population. Challenges: Overpopulation and problem regions in India. Population Policies: Implementation and programs. Migration: Types, causes, and impacts on regional development.

**Suggested Readings**


1. Farmer, B.H. (1983). *An Introduction to South Asia*. Methuen, London.
2. Government of India (2011). *India Yearbook*. New Delhi.
3. Government of India (1999). *National School Atlas*. NATMO, Kolkata.
4. Singh, Gopal. *A Geography of India*. Atmaram & Sons, Delhi.
5. Tiwari, R.C. (2009). *Geography of India*. Prayag Pustak Bhavan, Prayagraj.
6. Gautam, Alka. *Advanced Geography of India*. Sharda Pustak Bhavan, Prayagraj.
7. Singh, Savindra (2023). *Geography of India*. Prayag Pustak Bhavan, Prayagraj.
8. Khullar, D.R. (2023). *India: A Comprehensive Geography*. Kalyani Publishers, New Delhi.
9. Hussain, Majid (2020). *Geography of India*. McGraw Hill Education (India).
10. Singh, R.L. (Ed.). *India – A Regional Geography*. Varanasi.
11. Chandna, R.C. *Geography of Population: Concepts, Determinants, and Patterns*. Kalyani Publishers, New Delhi.

**Bachelor of Arts (B.A.) in Geography**

**Semester IV**

**Paper Name**: **Cartographic Methods Practical – II**

**Paper Code**: GEO-C-243

**Credits**: 4

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## Course Objectives

1. To understand cartography, its nature, scope, and development.
2. To gain knowledge about maps and their functions.
3. To use maps as tools for communication, analysis, and synthesis.

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## Course Outcomes

1. Develop a clear understanding of map concepts and the process of map-making.
2. Learn to interpret weather maps effectively.
3. Gain skills in interpreting various types of scales.
4. Acquire practical knowledge of cartographic methods essential for geographical studies.

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## Course Curriculum

### Unit I: Relief Representation on Maps

Methods of showing relief: *Pictorial Methods*: Hachures, Shading, and Layer Tinting
*Quantitative Methods*: Benchmark, Spot-height, Trig-point, and Contours.

### Unit II: Contour Representation of Landforms

Representation of landforms using Profiles from Contours- Gentle Slope, Steep Slope, Concave Slope, Convex Slope, and Terrace Slope. Waterfall and Water Rapids, U-shaped Valley, V-shaped Valley, Gorge, Spur, Saddle, Pass, Volcanic Crater Hill, Plateau and Cliff (total 16 landforms).

**Unit III: Map Enlargement and Reduction**

Graphical Methods: Practical exercises on map enlargement and reduction (one exercise each).

**Unit IV: Cartograms**

Representation of socio-economic data using the following: Bar Graphs (Simple and Compound).Line Graph, Square Graph, Sphere Diagram, Block Diagram, and Pie Diagram. Exercises to be drawn on graph paper for all graphical methods.

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## Important Instructions

1. **Examination Details**:
    - This paper includes both theory and practical components.
    - The total marks are divided as **50 for internal assessment** and **50 for external assessment**.
2. **Unit Structure**:
    - Each unit comprises theoretical and practical sections.
3. **Teaching Schedule**:
    - Practical sessions will be conducted for 4 periods per week, each lasting 120 minutes.
4. **Batch Size**:
    - Each batch for practical examinations should not exceed 15 students under normal circumstances.
5. **Journal Maintenance**:
    - Students must maintain a journal of practical work, signed by the teacher-in-charge, and certified by the Head of Department and Principal.
    - Students without completed journals will not be allowed to appear for the practical examination.
6. **Examination Conduct**:
    - Theory and practical exams will be conducted jointly on the same day at the college.
    - Practical exams will require the presence of a subject expert, lab assistant, lab supervisor, support staff (Hamal), and a waterboy for 5 hours.

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## Suggested References


1. Bygott, B. (1969). *Map Work and Practical Geography*. University Tutorial Press, London.
2. Ishtiaq, M.C. (1989). *A Textbook of Practical Geography*. Heritage Publishers, New Delhi.
3. Raisz, E. (1982). *Principles of Cartography*. McGraw-Hill Book Co., New York.
4. Singh, R.L. (1989). *Elements of Practical Geography*. Kalyani Publishers, New Delhi.
5. Dikshit, N.G. *Naksha Shatra*. University Granth Nirman Board, Ahmedabad.
6. Dalal, V.G. *Prayogik Bhoogol – 1 & 2*. University Granth Nirman Board, Ahmedabad.
7. Sharma, J.P. *PrayogikBhugol*. Rastogi Publications, Meerut.
8. Shrivastav, Lokesh (2023). *Prayogatmak Geography*. Sharda Pustak Bhavan, Prayagraj.
9. Misra, R.P. (2021). *Fundamentals of Cartography*. Concept Publishing Company, New Delhi.
10. Robinson, A.H. et al. (2019). *Elements of Cartography (6th Edition)*. Wiley India Pvt. Ltd., New Delhi.
11. Monmonier, M. (1996). *How to Lie with Maps (2nd Edition)*. University of Chicago Press.
12. Dent, B.D., Torguson, J.S., &Hodler, T.W. (2010). *Cartography: Thematic Map Design (6th Edition)*. McGraw-Hill.
13. Arora, K. (2020). *Practical Geography*. Kalyani Publishers, New Delhi.