

**DISCIPLINE SPECIFIC CORE COURSE– 3 (DSC-3): DIGITAL  
CARTOGRAPHY (PRACTICAL)**

**Credit distribution, Eligibility and Pre-requisites of the Course**

| Course title & Code                    | Credits | Credit distribution of the course |          |                     | Eligibility criteria  | Pre-requisite of the course(if any) |
|----------------------------------------|---------|-----------------------------------|----------|---------------------|-----------------------|-------------------------------------|
|                                        |         | Lecture                           | Tutorial | Practical/ Practice |                       |                                     |
| <b>DIGITAL CARTOGRAPHY (PRACTICAL)</b> | 4       | -                                 | -        | 4                   | 12 <sup>th</sup> Pass | NIL                                 |

**Learning Objectives**

The Learning Objectives of this course are as follows:

- Create professional and aesthetically pleasing maps through thoughtful application of cartographic conventions digitally.
- Develop an understanding of the concepts regarding scale, map projections to suit map purposes digitally.
- Better understand the techniques of interpretation of topographical and weather maps through digital cartographic techniques.

**Learning outcomes**

The Learning Outcomes of this course are as follows:

This is a practical hands-on course, when the students have completed this course, they are able:

- To explain how maps work, conceptually and technically and also will be able to understand the science and art of cartography through digital techniques.
- To recognize the benefits and limitations of some common map projections and their use.
- To understand and perform interpretation of topographical maps and weather maps.

**SYLLABUS OF DSC-3**

**UNIT – I (12 Hours)**

- 1.1. Maps: Concepts and classification, Coordinate system, Nature and Scope-Analogue and Digital cartography)
- 1.2. History and evolution of Cartography: Western and Indian perspectives
- 1.3. Digital Cartography: Basics of Raster and Vector Data

**UNIT – II (12 Hours)**

Scale: Plain, Comparative and Diagonal: Construction and Applications

**UNIT – III (16 Hours)**

Map Projections: Concept of Datum and Spheroid, Fundamentals of Projections- Classification, Properties, Uses and limitations of Polar Zenithal-Stereographic, Conical projection with two standard parallel and Mercator's Projections. Concept and Use of UTM.

**UNIT – IV (12 Hours)**

Interpretation of Topographic Maps, Conventional symbols, Cross and Longitudinal Profiles, Identification and Inter-relationships between physical and cultural features in the mountain regions.

**UNIT – V (8 Hours)**

Concept of Map elements in Digital Cartography

**Practical components – Lab Exercises (30 Hours)**

- 1.1. Using online maps for place look-ups, latitude and longitudes, time zones
- 1.2. Refer to the text for the history and evolution of cartography as listed in the reference list
- 1.3. Introduction to available GIS software, raster and vector data presentation
- 2.1. Construction and applications
- 3.1. Construction of Polar Zenithal Stereographic, Conical projection with two standard parallel and Mercator's Projections (manual)
- 3.2. Digital demonstration of projections
- 5.1. Map layout preparation with the provided data

**Essential/recommended readings**

1. Cuff J. D. and Mattson M. T. (1982). Thematic Maps: Their Design and Production. Methuen Young Books.
2. Dent B. D., Torguson J. S., and Holder T. W. (2008). Cartography: Thematic Map Design (6th Edition). Mcgraw-Hill Higher Education
3. Gupta K. K. and Tyagi V. C. (1992). Working with Maps. Survey of India, DST, New Delhi.
4. Kraak, M.J. (2010). Cartography: Visualization of Geospatial Data (3rd edition). Pearson Education Ltd., London. UK.
5. Mishra R. P. and Ramesh A. (1989). Fundamentals of Cartography. Concept Publication, New
6. Sharma J. P., 2010: Prayogic Bhugol. Rastogi Publishers, Meerut.
7. Misra, R.P. (2014). Fundamentals of Cartography (Second Revised and Enlarged Edition). Concept Publishing, New Delhi. India.
8. Monkhouse, F. J. and Wilkinson, H. R. (1973). Maps and Diagrams. Methuen.
9. Singh, R.L. and Dutta, P.K. (2012). Prayogatmak Bhugol (Hindi), Central Book Depot, Allahabad.
10. Sharma, J. P. (2010). Prayogic Bhugol (Hindi), Rastogi Publishers, Meerut.

**Suggestive readings**