**Shri Vile Parle Kelavani Mandal’s**

**Narsee Monjee College of Commerce and Economics**

 **(Autonomous)**

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| **Programme : Bachelor of Science Honours (Information Technology)**  | **Semester : II** |
| **Course : Geographic Information System**  | **Code :**   |
| **Suggested Lectures per week**  | **2**  |
| **Practical Session per week (per Batch)**  | **-**  |
| **Teaching Scheme**  | **Evaluation Scheme**  |
| **Lecture**  | **Practical**  | **Tutorial**  | **Credits**  | **Theory**  | **Practical**  |
| **Internal**  | **External**  |  |  |
| **30**  | **-**  | **Nil**  | **02**  |  20 Marks |  30 Marks | **Nil** | **Nil** |
|   |
| **Internal Component (Theory Break up )**  |
| **Class Test**   | **Assignments**  |
|  10 Marks |  10 Marks |
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| **Learning Objectives :**  |
| * To understand basic knowledge of GIS
* To examine the motive of Vector Data Model
* To summarize the design of Raster Data Model
* To apply knowledge of spatial interpolation and data exploration
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| **Learning Outcomes :**  |
| 1. Define key concepts of GIS
2. Examine various aspects of data inputs and exploration
3. Demonstrate understanding of vector and raster data model, spatial interpolation, etc
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| **Pedagogy :**  |
| * PPTs, Case studies, Group discussions, Classroom Activity, Videos, Research papers, News articles etc.
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 **Module 1 (10)**

**Spatial Data Concepts:**

Introduction to GIS, geographically referenced data, Geographic, projected and planer coordinate system, Map projections, Plane coordinate systems, Vector data model, Raster data model

**Data Input, Geospatial data:**

Geo Existing GIS data, Metadata, Conversion of existing data, Creating new data,

Geospatial data-types, benefits of using Geospatial data, Applications by industry

Datums and geodetic systems

 Introducing the Global Positioning System, GPS signals and data

**Module 2 (10)**

**Attribute data input and data display:**

Attribute data in GIS, Relational model, Data entry, Manipulation of fields and attribute data, cartographic symbolization, types of maps, typography, map design, map production

**Data exploration:**

Exploration, attribute data query, spatial data query, raster data query, geographic visualization

**Module 3 (10)**

**Vector data analysis:** Introduction, buffering, map overlay, Distance measurement and map manipulation.

**Raster data analysis:** Data analysis environment, local operations, neighbourhood operations, zonal operations, Distance measure operations.

**Spatial Interpolation:** Elements, Global methods, local methods, Kriging, Comparisons of different methods

References

1. Reddy, A. Textbook of Remote Sensing and Geographical Information Systems, B.S. Publication.

2. Demers, M. Fundamentals of GIS, John Wiley & Sons Inc.

3. Goodchild. M.F, et.al.:Environmental Modeling with GIS

4. Arnoff,S.:Geographic Information Systems: A Management Perspective

5. Burrough, P, and Frank, A. U., (1996): Geographic Objects with indeterminate Boundaries, Taylor and Francis, London, UK

6. Cromley, R. (1992):Digital Cartography, Prentice Hall, Englewood Cliffs, New Jersey

7. Iliffe,J, (2006): Datums and Map Projections for Remote Sensing , GIS and Surveying, Whittles Publishing, London.

8. Jones, Christopher B. (1997): Geographical Information Systems and Computer

Cartography, Addison Wesley Longman Limited, UK.

9. Kang Tsung Chang (2018),Introduction to Geographic Information Systems, Mcgraw Hill Education