



# GEOGRAPHIC INFORMATION SYSTEM

**PROF. BHARATH H AITHAL**

Department of Design Engineering  
IIT Kharagpur

**PRE-REQUISITES** : Set theory basics, Remote Sensing basics [Not Mandatory]

**INTENDED AUDIENCE** : Geoinformatics, Urban planning, Civil, Electronics

**INDUSTRIES APPLICABLE TO** : ESRI, Hexagon Geospatial, SkyMap Global, GISDATA, Digicollect GIS, GIS Maps,

**COURSE OUTLINE :**

This course targets to introduce and teach students basics of GIS using free and open software. Starting with basics, it would discuss analyzing various issues and criticalities in producing accurate data. The concepts are illustrated with appropriate examples.

**ABOUT INSTRUCTOR :**

Prof. Bharath H. Aithal is currently a faculty at Indian Institute of Technology Kharagpur. He has been working in geospatial domain for last 10 years. He has published 50 Journal papers, 8 Book chapters, 1 Book, 80 Conference proceedings, and 40 Technical reports. He has delivered 18 invited guest lectures in various Indian academic Institutions, Universities, and R&D Organizations. More details can be found at <https://sites.google.com/view/bharathhaithal/home>

**COURSE PLAN :**

**Week 1:** Introduction to GIS

**Week 2:** Representing a real world in digitalscape

**Week 3:** Data types and data models

**Week 4:** Advanced data models in GIS and Data Generation/Collection/Surveys

**Week 5:** GIS data quality

**Week 6:** Global positioning system

**Week 7:** Database and Database Management System– Introduction

**Week 8:** Database query and Spatial analysis

**Week 9:** Basic and Advanced Spatial analysis of data

**Week 10:** Quantum GIS introduction, Hands on working with maps, data integration, collection, digitization and extraction

**Week 11:** Hands on data generation and analysis using various sources

**Week 12:** Data standards and Interoperability WEBGIS through GEOSERVER hands-on tutorials