

Geospatial Techniques in Practice

Program Description

Course Name	Geospatial Techniques in Practice
Course Name as on Certificate	Certification in Geospatial Techniques in Practice
Certificate Type	Certificate of Completion by IITM Pravartak and L&T EduTech
Certificate Issued by	IIT MADRAS and L&T EduTech
Course Description	This course covers the surveying methodologies and mapping of geographical features. It also gives an insight into the latest technology and tools that are used in the industry. This course on new-age technologies is key for every engineer who is keen to understand the geospatial industry. The course captures the fundamentals of location technology and gives a glimpse of the various geospatial components that are used for solving real-world problems. Also, the learners would get insights into the tools & techniques that are applied across various projects. Objectives: • Comprehend different geospatial techniques in the construction industry • Carry out survey/process geospatial data for determining the accurate geographic coordinates, distances, establish location and alignments in construction projects. • Comprehend the application of geospatial instruments like LIDAR, drones, etc. • Carry out basic conversions from non-spatial to spatial formats • Create a map layout with all essential cartographic elements in GIS environment
Educational Qualification	• Students pursuing Diploma / UG / PG Programs in Civil, Mechanical, Electrical and other allied branches • Faculties in the field of Civil, Mechanical, Electrical and other allied branches • Working professionals in the above domains
Pre Requisites	Basics of Surveying
Course Content	See Enclosed Programme details – as Annexure 1
Pedagogy	Online Self-paced E-Learning Content
Assessment	One Final Assessment

Programme Faculty	Dr. Pari Y Associate Vice President & Head, GeoSpatial Technologies, Mindtree (A Larsen & Toubro Group Company) Dr. Pari Y is an Associate Vice President & Head of GeoSpatial Technologies at Mindtree (A Larsen & Toubro Group Company). He has been practicing GeoSpatial Technologies for the past 23+ years with rich blend of both research and industrial experience. He has vast expertise in Advanced 3D Scanning Technologies, Global Navigation Satellite System, Digital Photogrammetry, Drone Applications, Spatial Analytics, Enterprise GIS, GeoSpatial Products & Platforms. He has received many national and international Awards for his extensive contribution in geospatial domain across AEC Industries. He is a well-known Key-note speaker in the Geospatial fraternity and has delivered more than 75 invited lectures in various conferences, corporate training programs, IITs, NITs, Universities & Colleges, State and Central Government departments.		
Duration	Weeks: 14; Hours : 28		
Class Schedule	Self-Paced		
Programme Highlights/USPs	• Geospatial technology • Survey & mapping • Sensors & scanners • Platforms • Satellite positioning • Stockpile quantity estimation • Subsurface investigation & bathymetry survey • Spatial analysis & GIS database • Decision support systems • Future trends		
Total Fees		Total Fees (Rs.)	
	Total Programme Fee	Rs. 5,100/- inclusive of Tax	

ANNEXURE 1

Proposed Course outline / programme / plan - Unit wise syllabus details.

Unit – I: Introduction to Geospatial technology

Geospatial in Day-to-Day Life, Spatial thinking, Evolution of location technology and importance of geography and maps. Need for spatial information, Terminologies, logic, language and formats of spatial technology. Location perspective of construction industry, Overview of Geospatial technology in tenders, Design and execution and Construction lifecycle management. Fundamentals and components of Geospatial Engineering, Surveying and Conventional survey equipment Vs Modern surveying equipment Components.

Unit – II: Global Navigation Satellite System (GNSS)

Advanced geospatial solutions, Overview of components, working and signal structure of Global navigation System. Codes, Phase and Phase modulation, Pseudo range and carrier phase measurements. Error sources, methods, and benefits of GNSS, Single and double differencing, Applications and Processing of GNSS data.

Unit – III: Geospatial Engineering and technology

Scanning and Remote Sensing Technologies, 3D scanning, Sensors and its types, Principles and the science behind photogrammetry, LiDAR, RADAR and SONAR. Overview and working of various platforms. Demo of Terrestrial Lidar Equipment, Demo of Bathymetry, Demo of Ground Penetrating RADAR. Application of sensors & platforms

Unit - IV: GIS

Basics of GIS, vector & raster data models, Types and components of a Map. Hardware for GIS, DEM and TIN Data products and attributes, Basic GIS data conversions, conversions from non-spatial formats to spatial formats. Demo of Conversion of Excel to GIS, Demo of Conversion of CAD TO GIS, Demo of Downloading and Georeferencing Toposheets. GIS database management – RDBMS, SQL, Creation, configuration, and enterprise Geodatabase. Application of GIS - Spatial Analysis, Catchment Area delineation, Overlay Analysis, Cluster Analysis, Hotspot Analysis, Viewshed Analysis

Unit – V: Future trends of Geospatial Technologies

Future Trends of Geospatial Technologies. Case Study 1 -Benefit Realization - Case Study 2

Advancements in Modern Survey & Mapping Technologies, Advancements in Spatial Analytics – Geo Intelligence, Future Trends, Geospatial Technology - Way Forward.