

Course Code: 464VAC6	Course – VI- GEOSTATISTICS & GEOINFORMATICS	Credits: -	Hours: 10
Objectives	<ul style="list-style-type: none"> ➤ To learn the geostatistical parameters. ➤ To learn Matrix theory and numerical mathematics. ➤ To understand Map projection. 		
Unit: I	Arithmetic Mean, Geometric Mean, Harmonic Mean, Median, Mode, Quartiles. Measures of dispersions: absolute and relative measures, Range, Mean Deviation, Standard Deviation, Variance, Coefficient of Variation, Skewness and Kurtosis. Statistical surveys: Important methods of sampling--simple, random, systematic, hierarchical and stratified samplingLeast squares analysis. Multiple and partial correlations.		
Unit: II	Elements of Probability theory: random experiments, sample space, events, probability of events, addition and multiplication theorems. Basic distributions: Binomial, Poisson and Normal. Sampling distributions.Basic concepts of statistical inference and standard error. Large sample tests and small sample tests: test for population mean(s), variance(s) (one and two samples) F-test. Analysis of variance: One way and two-way classification.		
Unit: III	Operation on matrices--addition, multiplication, transposition and inversion. Determinants. Eigen values and Eigen vectors. Elementary ideas of interpolation and numerical integration. Multivariable Data Analysis – I: Curve fitting by method of Least Squares, Multiple Correlation and Multiple Regression Analysis, Time Series Analysis, Multivariate Data Analysis.		
Unit: IV	Map projection: Basic geodesy - Geoid/Datum/Ellipsoid - Coordinate systems - Scale factor - Distortion on map – projections - Classification of map projections - Map projection transformation – Surveying – Total Station – EDM – LIDAR. GPS: Satellite constellation - Single point positioning - Measuring distance and timing - GPS accuracy - Error corrections - Differential GPS -Applications of GPS - Carrying out a GPS survey.		
Unit: V	Geographic data: Spatial and non-spatial data Vector and raster data structures - Data compression - Data transformations - Data sources & data input - Linking spatial and non-spatial data - Errors and quality control - Data storage - Data formats - Database concepts - Database management in GIS- Web GIS - 3DGIS - Object Oriented GIS - Mobile GIS.		
Reference and Textbooks: <ol style="list-style-type: none"> 1. Burrough, P.A., McDonnell, R., Lloyd, C. D. (2015). Principles of geographical information systems (3rd ed.). New York: Oxford University Press. 2. Jain, A.K. (2015). Fundamentals of digital image processing. Noida: Pearson India Education Services Pvt. 3. Chun, Y., Griffith, D. A. (2013). Spatial Statistics and Geostatistics: Theory and applications for geographic information science and technology. New Delhi: Publications India Pvt. 4. Elangovan, K. (2006). GIS; Fundamentals Application and Implementations. New Delhi: New India Publishing Agency. 			
Outcomes	<ul style="list-style-type: none"> ➤ To understand the geostatistical and geoinformatics. ➤ Realized the Elements of Probability theory. ➤ To gain knowledge about the Geographic data. 		