

AFFILIATED INSTITUTIONS
ANNA UNIVERSITY , CHENNAI
REGULATIONS - 2009
CURRICULUM I TO IV SEMESTERS (FULL TIME)
M.TECH. REMOTE SENSING

SEMESTER I

SL. No	COURSE CODE	COURSE TITLE	L	T	P	C
THEORY						
1	MA9316	Probability and Statistical Methods	3	1	0	4
2	RS9311	Principles of Remote Sensing	3	0	0	3
3	RS9312	Photogrammetry	3	0	0	3
4	RS9313	Cartography	3	0	0	3
5	RS9314	Geographic Information System	3	0	0	3
PRACTICAL						
6	RS9317	GIS Lab	0	0	3	2
7	RS9318	Remote Sensing and Photogrammetry Lab	0	0	4	2
TOTAL			15	1	7	20

OBJECTIVE:

- To teach about the probability and Random variable of the various functions. It also helps to understand the various statistical methods including the Design of experiments.

UNIT I ONE DIMENSIONAL RANDOM VARIABLES 9+3

Random variables - Probability function – moments – moment generating functions and their properties – Binomial, Poisson, Geometric, Uniform, Exponential, Gamma and Normal distributions – Functions of a Random Variable.

UNIT II TWO DIMENSIONAL RANDOM VARIABLES 9+3

Joint distributions – Marginal and Conditional distributions – Functions of two dimensional random variables – Regression Curve – Correlation.

UNIT III ESTIMATION THEORY 9+3

Unbiased Estimators – Method of Moments – Maximum Likelihood Estimation - Curve fitting by Principle of least squares – Regression Lines.

UNIT IV TESTING OF HYPOTHESES 9+3

Sampling distributions - Type I and Type II errors - Tests based on Normal, t, Chi-square and F distributions for testing of mean, variance and proportions – Tests for Independence of attributes and Goodness of fit.

UNIT V MULTIVARIATE ANALYSIS 9+3

Covariance matrix – Correlation Matrix – Multivariate Normal density function – Principal components – Sample variation by principal components – Principal components by graphing.

TOTAL (L:45 + T:15) : 60 PERIODS

REFERENCES :

- Richard Johnson. "Miller & Freund's Probability and Statistics for Engineers", Prentice – Hall of India, Private Ltd., New Delhi, 7th Edition, 2007.
- Richard A. Johnson and Dean W. Wichern, "Applied Multivariate Statistical Analysis", Pearson Education, Asia, 5th Edition, 2002.
- Gupta, S.C. and Kapoor, V.K. "Fundamentals of Mathematical Statistics", Sultan and Sons, New Delhi, 2001.
- Jay L. Devore, "Probability and statistics for Engineering and the Sciences", Thomson and Duxbbury, Singapore, 2002.
- Dallas E Johnson et al., "Applied multivariate methods for data analysis", Thomson and Duxbbury press, Singapore, 1998.

UNITV DATA QUALITY AND MISCELLANEOUS TOPICS 9

Data quality analysis – Sources of Error – Components of Data Quality – Meta Data – Open GIS consortium – Customisation in GIS – Object Oriented GIS – WebGIS-GIS system evaluation and bench marking.

TOTAL: 45 PERIODS

REFERENCES:

1. Lo. C P and Yeung, Albert K W, "Concepts and Techniques of Geographic Information Systems", Prentice Hall of India, 2002.
2. Robert Laurini and Derek Thompson, "Fundamentals of Spatial Information Systems", Academic Press, 1996.
3. Peter A Burrough, Rachael A Mc.Donnell, "Principles of GIS", Oxford University Press, 2000.
4. Allan Brimicombe, GIS Environmental Modeling and Engineering, Taylor & Francis, 2003.

RS 9317

GIS LAB

L T P C
0 0 3 2

OBJECTIVE:

- The exercises are designed to give practical exposure to the students to data input, data storage, data analyses and data output capabilities of a standard GIS software.

1. Digitization - Point, Line, Polygon and Surface Data **6**
2. Building topology – measuring distance and area **3**
3. Adding attribute data – querying on attribute data **3**
4. Onscreen digitization - Data Conversion – Vector to Raster, Raster to Vector **6**
5. Generation of DEM: from contours, spot heights **3**
6. Vector Analysis – Buffering, Overlay and Network analysis **9**
7. Raster Analysis – Measurement - Arithmetic overlaying, Logical overlaying **9**
8. Data Output: Bar charts, Map compilation **3**
9. Customisation and scripting **3**

TOTAL: 45 PERIODS

OBJECTIVE:

- To provide exposure in handling equipment like stereoscope, parallax bar, analog stereo plotter, analytical stereo plotter and semi analytical stereo plotter.

PHOTOGRAMMETRY EXERCISES

1. Testing stereovision with test card
2. Finding stereoscopic acuity.
3. Mirror stereoscope- base lining and orientation of aerial photographs.
4. Use of parallax bar to find the height of point.
5. Orientations in Double projector
6. Orientations in Planicart
7. Orientation and mapping in semi analytical stereo plotter.
8. Demonstration of stereo metric camera, orthocomp, and analytical plotter.

REMOTE SENSING EXERCISES

1. Spectral reflectance observation of the following using handheld spectro radiometer.
i) Vegetation. ii) Soil iii) Water
2. Map reading of Survey of India topo sheets.
Visual interpretation of different satellite data and aerial photographs for the preparation of following;
3. Land use/land cover map.
4. Soil map.
5. Geology and geomorphology maps.
6. Slope maps.
7. Watershed delineation.

TOTAL: 60 PERIODS