JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

M. Tech in GEO-INFORMATICS AND SURVEYING TECHNOLOGY)

.

Effective from Academic Year 2017- 18 admitted batch
COURSE STRUCTURE AND SYLLABUS

I Semester

Category	Course Title	Int. marks	Ext. marks	L	T	P	C
PC-1	Remote Sensing	25	75	4	0	0	4
PC-2	Geographical Information System	25	75	4	0	0	4
PC-3	Elements of Photogrammetry	25	75	4	0	0	4
PE-1	Digital Image Processing-I Object Oriented Programming Statistical Methods	25	75	**3**	0	0	3
PE-2	Advanced Surveying and Cartography Environmental Impact Assessment Database Management Systems	25	75	**3**	0	0	3
OE-1	***Open Elective – I**	25	75	3	0	0	3
Laboratory I	RS and GIS	25	75	0	0	3	2
Seminar I	Seminar-I	100	0	0	0	3	2
Total		**275**	**525**	**21**	**0**	**6**	**25**

II Semester

Category	Course Title	Int. marks	Ext. marks	L	T	P	C
PC-4	Global Positioning System	25	75	4	0	0	4
PC-5	Advanced GIS	25	75	4	0	0	4
PC-6	Digital Photogrammetry.	25	75	4	0	0	4
PE-3	Digital Image Processing – II Soft Computing Techniques Internet GIS	25	75	**3**	0	0	3
PE4	Geospatial Techniques for Rural Development Geospatial Techniques for Disaster Management Geospatial Techniques for Water and Environmental Engg	25	75	**3**	0	0	3
OE-2	***Open Elective – II**	25	75	3	0	0	3
Laboratory II	DIP and GPS	25	75	0	0	3	2
Seminar II	Seminar-II	100	0	0	0	3	2
Total		**275**	**525**	**21**	**0**	**6**	**25**

III Semester

Course Title	Int. marks	Ext. marks	L	T	P	C
Technical Paper Writing	100	0	0	3	0	2
Comprehensive Viva-Voce	0	100	0	0	0	4
Project work Review II	100	0	0	0	22	8
Total	**200**	**100**	0	**3**	22	**14**

IV Semester

Course Title	Int. marks	Ext. marks	L	T	P	C
Project work Review III	100	0	0	0	24	8
Project Evaluation (Viva-Voce)	0	100	0	0	0	16
Total	**100**	**100**	**0**	**0**	**24**	**24**

***Open Elective subjects must be chosen from the list of open electives offered by OTHER departments.**

 # For Project review I, please refer 7.10 in R17 Academic Regulations.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

M. Tech – I Year – I Sem. (GIST)

REMOTE SENSING
(PC-1)

Course Objectives: introduction to the physics of remote sensing and its platforms, how to sensing energy interaction with earth surface features, how the data will acquire and explaining the process of acquired data.

Course Outcomes: at the end of the course the student will able to learn to Select the type of remote sensing technique / data for required purpose, Identify the earth surface features from satellite images, Analyze the energy interactions in the atmosphere and earth surface features and Perform corrections and process digital satellite data.

Unit-I:
Physics of Remote Sensing: Sources of Energy, Active and Passive Radiation, Electromagnetic Radiation - Reflectance, Transmission, Absorption, Thermal Emissions, Interaction with Atmosphere, Atmospheric windows, Spectral reflectance of Earth's surface features, Multi concept of Remote Sensing.

Unit-II:
Platforms: Various types of platforms, different types of aircraft, manned and unmanned spacecrafts used for data acquisition - characteristics of different types of platforms - airborne and spaceborne.
Data Acquisition Systems: Optical, Thermal and Microwave; Resolutions - spatial, spectral, radiometric and temporal, signal to noise ratio.

Unit-III:
Image Processing: Data Products and Their Characteristics, Digital image formation, digital image display mechanism, image histograms, look up table data, Pre-processing – Atmospheric, Radiometric, Geometric Corrections - Basic Principles of Visual Interpretation, Equipment for Visual Interpretation, Ground Truth, Ground Truth Equipment.

Unit-IV:
Image enhancements: Linear and non-linear Contrast enhancement techniques, density slicing, pseudo colour images, spatial enhancement techniques (convolution filtering), spectral enhancement techniques, Image algebra.

Unit-V:
Applications of Remote sensing in various Engineering and Science domains such as Agriculture, Forest, Soil, Geology, LU/LC, Water Resources, Urban etc.

TEXT BOOKS:
1. James B. Campbell & Randolph H. Wynne. Introduction to Remote Sensing, The Guilford Press, 2011.
2. Lillesand T.M & Kiefer R.W., Remote Sensing and Image Interpretation, John Wiley and Sons, 2008.

REFERENCES:
1. Charles Elach & Jakob van Zyl., Introduction to the physics and techniques of Remote Sensing, John Wiley & Sons publications, 2006.

2. Christian Matzler., Thermal microwave radiation: Applications for remote sensing, The institution of Engineering and Technology, London, 2006.
3. Rees, W. G., Physical principles of Remote Sensing, Cambridge University Press, 2001Paul Curran P.J., Principles of Remote Sensing, ELBS Publications, 1985.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

M. Tech – I Year – I Sem. (GIST)

GEOGRAPHICAL INFORMATION SYSTEM
(PC-2)

Course Objectives: knowing the principles to extract, managing and design the spatial elements from the acquired remote sensing data.

Course Outcomes: at the end of the course the student will able to learn to Analyse the basic components of GIS, Classify the maps, coordinate systems and projections, process spatial and attribute data and prepare thematic maps, Identify and rectify mapping inaccuracies and to formulate and solve geospatial problems

Unit-I:
Introduction to GIS, Spatial Analysis – Spatial Elements, Spatial Measurement Level, Spatial Location and Reference, Spatial Patterns, Geographic Data Collection, Populations and Sampling Schemes, Making Inferences from Samples. The Language of Spatial Thinking, Map Scale, Map Characteristics, Map Projections, Grid Systems for Mapping, The Cartographic Process, Map Symbolism, Map Abstraction and Cartographic Databases, Thematic maps and associated common problems

Unit-II
Cartographic and GIS Data Structures – Review of the Maps an Abstraction of space, Computer Database Structures for Managing Data, Hierarchical Data Structures, Network Systems, Relational Database Management Systems, Graphic Representation of Entitle and Attributes, GIS Data Models for Multiple Coverage, Raster Models, Compact Storing of Raster Data, Vector Models, A Vector Model to Represent Surfaces, Hybrid and Integrated Systems.

Unit-III
GIS Data Input – The Input Subsystem, Input Devices, Raster, Vector, Reference Frameworks and Transformations, Map Preparation and the Digitizing Process, Methods of Vector Input, Method of Raster Input, Remote Seeing as a Special Case of Raster Data Input, External Databases.

Unit IV:
Data Storage and Editing – Storage of GIS Databases, Editing the GIS Database, Detecting and Editing Errors of Different Types, Entity Errors: Vector, Attribute Errors: Raster and Vector, Dealing with Projection Change, Joining Adjacent Coverage : Edge Matching, Conflation and Rubber Sheeting, Templating.

Unit V:
GIS Design and Implementation – GIS Design, Internal and External GIS Design Questions, The Software Engineering Approach, System Design Principles, System Development Waterfall Model, A Structured Designed Model, Technical Design Methodology, The Spiral Model. Rapid Prototyping Database Design Study Area, Scale, Resolution, and Level of Detail, Classification, Coordinate System and Projection, Selecting a System, Verification and Validation.

TEXT BOOKS:

1. Fundamental of GIS by MICHAEL N DEMERS – MN DEMERS, Published by John Wiley & Sons Inc
2. Introduction to GIS by Kang-tsung Chang-, published by McGraw Hill Education

REFERENCES:

1. Geographic Information System- An Introductory – Jeffrey Star and John Estates
2. Basic Readings in Geographic Information System – Marble, D.F and Calkins, H.W – Spad Systems Ltd
3. Anji Reddy, M., (2001) Remote Sensing and Geographical Information Systems, 2nd edition, BS Publications, Hyderabad
4. George Joseph,(2005) Fundamentals of Remote sensing 2nd edition , University press, Pvt, Ltd, Hyderabad
5. Principles of GIS by P.A. Burrough, Rachael Mc Donnell
6. Principles of Geographical Information Systems for Land Resources Assessment by P.A. Burrough

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

M. Tech – I Year – I Sem. (GIST)

ELEMENTS OF PHOTOGRAMMETRY
(PC-3)

Course Objectives: to know the photogrammetric principles, types and its instrumentation methods for applications

Course Outcomes: at the end of the course the student will able to learn Classify the photogrammetry methods and their applications, Determine the scale, ground coordinates and the aerial extent of aerial photographs, Demonstrate interior and exterior orientation on two overlapping aerial photograph, Measure parallax and compute elevations from parallax measurements and Prepare mosaics, orthophotos and photomaps for mapping of resources.

UNIT - I:
Introduction to Photogrammetry & Vertical Photographs: Aerial Camera, Film and Filter combination: film processing, Printing of Aerial Photos.
Cartography: terms & definition, Map Projection, Map numbering systems, Map legend symbols-Design and layout of map.
Definition of Photogrammetry - types of photographs, vertical aerial photographs, Geometry of vertical photographs, Scale of a vertical photograph over flat terrain, Scale of a Vertical photograph over variable terrain - average photo scale, methods of determining scale of vertical photographs, Ground coordinates from a vertical photograph, Relief Displacement, Flying height of a vertical photograph, Error evaluation.

UNIT - II:
Stereoscopic Parallax: Principle of the Floating Mark – Stereoscopic methods of Parallax Measurement – Parallax equation – Elevations by parallax Differences – Approximate Equation for elevations from Parallax Differences – Measurement of Parallax Differences with Stereoscope& Parallax Bar- Parallax Correction Graph – Computing Flying Height and Air Base – Error Evaluation.

UNIT - III:
Elementary Methods of Planimetric Mapping for GIS, Photomaps & Mosaics:
Planimetric Mapping by Direct Tracing – Planimetric Mapping with Reflection and Projection Instruments – Georeferencing of Digital Imagery – Planimetric Mapping Using a Tablet Digitizer – Heads-up Digitizing – Photomaps and mosaics, Kinds of mosaics, uncontrolled digital mosaics, semi controlled Digital mosaics and Controlled Digital Mosaics

Unit - IV:
Tilted Photographs: Introduction, Angular Orientation in Tilt, Swing, and Azimuth, Auxiliary Tilted Photo coordinate system, Scale of a Tilted Photograph, Relief Displacement on a Tilted Photograph, Tilt Displacement, Angular Orientation in Omega, Phi and Kappa, Determining the elements of Exterior Orientation, Rectification of Tilted photographs, Geometry of Rectification, Analytical Rectification, Optical-Mechanical Rectification, Digital Rectification, Atmospheric Refraction in tilted aerial photographs.

Unit - V:
Stereoscopic Plotting Instruments: Classification of stereoscopic Plotters **-** Direct optical projection Stereo plotters: components, Projection systems, Viewing systems, Measuring and tracing systems, Interior Orientation, Relative Orientation, Absolute Orientation, Analytical plotter: Introduction, System

components and Methods of operations and its advantages. Project planning: Flight planning: Introduction, Photographic end lap and side lap, Purpose of the Photography, Photo Scale, Flying Height, Stereoscopic Plotter Considerations, Ground coverage, Weather conditions, Season of year, Flight Map, Specifications, Cost estimating and Scheduling

TEXT BOOKS:

1. Elements of Photogrammetry by PAUL R. WOLF, 3rd edition, ISBN 007-123689-9
2. Introduction to Modern Photogrammetry (Paperback) by Edward M. Mikhail, James S. Bethel

REFERENCES:

1. Manual of Photogrammetry – American Society of Photogrammetry By ALBERT.D
2. Aerial Photographic Interpretation by D. R. Lueder, McGraw-Hill Companies
3. Photogrammetry- Vol I by Krauss, J., - Springler – Verlag Publications
4. Photogrammetry 3rd Edition by Moffitt, Francis H. & Mikhail, Edward M., - Harper and Row Publishers.
5. Principles and Applications of Photo Geology By SHIV PANDEY

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

M. Tech – I Year – I Sem. (GIST)

DIGITAL IMAGE PROCESSING-I
(PE-1)

Course Objectives: To understand different types of data models, processing of digital images, extraction of information analysis of digital images

Course Outcomes: at the end of the course the student will able to learn processing of digital data, its enhancement and analyzing it for required object fulfillment

Unit-I:
Sensor, Satellite Data, and Data Model: Satellite systems, Data acquisition & storage - Data formats - Data products.-Image display system. Sensor model-Resolutions - Pixel characters - Image formation.The histogram and its significance- ENTROPY and its significance -Univariate& multivariate Image statistics – Spatial Statistics.

Unit-II:
Geometric Preprocessing: Over view of Image Processing, Geometric distortion, Image registration, resampling, orthorectification – Image Mosaic.

Unit-III:
Image Enhancements: Image characteristics- Spectral signatures .contrast enhancements- Image domain filtering. first order, second order ,directional filters , linear and non linear filters, Spatial enhancement, Multiband enhancements, ratioing, indices and Principal component analysis , Point, local and regional operators - Fourier transform-Fourier domain filtering, Ideal, Butterworth and Gaussian filters; scale-space transform, wavelet transform.

Unit-IV:
Information Extraction: Classification algorithms**:** Non- parametric, parametric, Feature extraction, Un Supervised, training sets-Supervised methods and algorithms. Accuracy Assessment: Sources of Classification Error, Interpretation of the Error Matrix. Measurement of Classification Accuracy

Unit-V:
Image Analyses: Pattern recognition, boundary detection and representation, textural and contextual Analysis.

TEXT BOOKS:

1. John R. Jenson, .Introductory Digital Image Processing., Prentice Hall Series, 1996.
2. John A. Richards, Springer-Verlag, .Remote Sensing Digital Image Analysis. 1999.
3. Lillisand T.M and R.W. Kiefer (2004) 4th edition. Remote sensing and image interpretation, John Wiley & Sons, New York.
4. Rafael C. Gonzalez, .Digital Image Processing (2nd Edition)., Prentice Hall, 2002.
5. Remote sensing models and methods for Image processing. Schowengerdt 2nd edition
6. Remote Sensing: The Quantitative Approach edited by Swain, P.H. and Davis, S.M. McGraw Hills.

REFERENCES:

1. David L. Verbyla .Satellite remote sensing of Natural Resource Management., Lewis publishers, Florida

2. Anil K. Jain .Fundamentals of Digital Image Processing. Prentice Hall Publications, USA.
3. Image Analysis, Classification, and change Detection in Remote Sensing. Mortan J. Century Taylor and Francis, 2007.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

M. Tech – I Year – I Sem. (GIST)

OBJECT ORIENTED PROGRAMMING
(PE-1)

Course Objectives: to understand the object oriented approach in dealing with the vast digital data acquired through remote sensing

Course Outcomes: at the end of the course the student will able to learn to prepare the algorithms and programming syntax using OOP concepts, Apply the concepts of data encapsulation, inheritance, and polymorphism for developing a program and to Design and develop programs with Graphical User Interfaces capabilities

UNIT-I:
Oops concepts – Classes, Objects, Polymorphism, Inheritance, Encapsulation, Overloading.
Basic elements of C++,

UNIT-II:
Input and output statements, decision making, functions, iterations and loops.Objects and Classes.The Big Picture.Arrays and Strings.Operator Overloading.

UNIT-III:
Inheritance.Pointers. Virtual Functions and Other Subtleties; Streams and Files;
Multi file Programs, Templates and Exceptions, Object-Oriented Software Development.

UNIT-IV:
Java Programming: data types, variables and arrays, operators, control statements, classes, objects, methods – Inheritance;

UNIT-V:
Packages and Interfaces, Exception handling, Multithreaded programming, Strings, Input /Output.

TEXTBOOKS:

1. E. Balagurusamy - Object Oriented Programming with C++ - TMH, fourth edition, 2008.
2. H.M. Deitel, P.J. Deitel - Java: How to program - Fifth edition, Prentice Hall of India private limited, 2003.

REFERENCES:

1. Herbert Schildt - C++ The complete Reference,1999.
2. Herbert Schildt - The Java 2: Complete Reference - Fourth edition, TMH, 2002.
3. Robert Lafore, Object Oriented Programming in C++, 4th Edition, Pearson Pub., 2002.

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M. Tech – I Year – I Sem. (GIST)

STATISTICAL METHODS
(PE-1)

Course Objectives: to understand the role of statistic and probability in the spatial data analysis and design

Course Outcomes: at the end of the course the student will able to learn to Understand/(Solve the problems using) the advanced statistical approaches, Identify the statistical methods for solving geospatial problems, apply the advanced statistical methods for image processing and to use geo-statistics for studying spatially varying phenomena

UNIT-I:
Basic Statistics: Sources of Data, Organization of Data, The Histogram, Measures of central tendency, Mean Deviation, Standard Deviation, Correlation, Coefficient of correlation, Rank correlation, Regression.

UNIT-II:
Probability: equally likely, mutually exclusive events, definitions of probability, additions & multiplication theorems of probability and problems based on them. Bayesian approach, distributions; Poisson, normal, Erlang, Gamma and Weibull probability distributions

UNIT-III:
Multivariate Data: Random Vectors and Matrices, sample estimate of centroid, standard deviation, SSCP, dispersion, variance, covariance, correlation matrices.

UNIT-IV:
Multivariate Regression Models, Multiple linear Regression: Multiple parameter estimation by method of least squares, tests of significance use of dummy variables, problems associated with multi co-linearity, heteroscadasticity.

UNIT-V:
Geostatistics- Pattern Analysis, Measures of Arrangements & dispersion, Auto Correlation, Semiveriogram, Kriging;

TEXT BOOKS:

1. Gupta, S.C. and Kapoor, V.K., “Fundamentals of Mathematics Statistics”, Sultan Chand and Sons, 2001.
2. Johnson, R.J., “Miller and Freund’s Probability and Statistics for Engineers” 6th Edition, Prentice Hall of India, 2002.

REFERENCES:

1. Jay L. Devore, “Probability and statistics for Engineering and the Sciences”, Thomson and Duxbbury, 2002.
2. Sarma, D.D. “Geostatistics with Applications in Earth Sciences”, Capital Publishing Company, 2002.
3. Cooley W. W and Lohnes P.R .- Multivariate Data Analysis, John Wiley and Sons,1971.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

M. Tech – I Year – I Sem. (GIST)

ADVANCED SURVEYING AND CARTOGRAPHY
(PE-2)

Course Objectives: reviewing about topographic survey and its allied electronic equipment, geodesy and cartographic principles.

Course Outcomes: at the end of the course the student will able to learn to Identify the principles of topographical map preparation and electronic surveying, Carry out astronomical observations for accurate surveying Apply projection and datum parameters for a map ,Map the features with GPS

UNIT-I:
Topographical Surveying: Introduction to topographical mapping, scale of topographical maps, Indian topographical series and their numbering system, topographical survey methods. Precise level and Precise levelling

UNIT-II:
Electronic Surveying: Basic principles, classifications, applications, comparison with conventional surveying. electromagnetic wave theory - electromagnetic distance measuring system - principle of working and EDM instruments, application of Lasers in distance measurement

UNIT-III:
Geodesy and Astronomy: Introduction to Geodesy, Earth and its size and shape, coordinate systems, earth and its motions-annual, spin, precession, nutation, polar motion. Earth and its gravity field – anomaly, gravity potential, geoid and deflection to vertical. Celestial sphere, meridians and vertical circles, astronomical coordinate systems, astronomical triangle, determination of azimuth

UNIT-IV:
Cartography: Definition, scope and content the spheroid, map scale, co-ordinate system, methods of mapping, relief maps, thematic maps, map projections, classification, principles of construction of common projections, cylindrical, conical, azimutal, and globular projections, properties and uses and choice of projections, plane co-ordinates, UTM system, projection used in Survey of India topographical sheets, map reproduction.

UNIT-V:
Global Positioning System: Components of GPS – space segment, control segment and user segment, reference systems, satellite orbits, GPS observations. Applications of GPS: Surveying and mapping, remote sensing, GIS.

TEXT BOOKS:

1. Gopi, “Advanced surveying: Total station, GIS and Remote Sensing”, Pearson Education India, 2007.
2. Borden D. Dent, Jeffrey Troguson, Thomas W. Hodler, “Cartography: Thematic map Design”, McGraw-Hill Higher Education, 2008.

REFERENCES:

1. Hoffman. B, H. Lichtenegga and J. Collins, "Global Positioning System - Theory and Practice", Springer - Verlag Publishers, 2001.
2. Wolfgang Torge, “Geodesy”, Berlin: de Gruyter, 2001.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

M. Tech – I Year – I Sem. (GIST)

ENVIRONMENTAL IMPACT ASSESSMENT
(PE-2)

Course Objectives: To develop a methodical approach on assessment of environmental impacts due to developmental activities and a conceptual outlook on sustainable development.

Course Outcomes: at the end of the course the student will able to get Knowledge on prediction and assessment of environmental impacts due to developmental activities. Concepts on various environmental impact assessment methodologies and will get an outlook on legislations to safeguard environment.

UNIT-I:
Basic concept of EIA and Methodologies : Initial environmental Examination, Elements of EIA, - factors affecting E I A Impact evaluation and analysis, preparation of Environmental Base map, Classification of environmental parameters.

UNIT-II:
E I A Methodologies: Introduction, Criteria for the selection of EIA Methodology, E I A methods, Ad-hoc methods, matrix methods, Network method Environmental Media Quality Index method, overlay methods, cost/Benefit Analysis.

UNIT-III:
Impact of Developmental Activities and Land use. Introduction, Methodology for the assessment of soil and ground water, Delineation of study area, Identification of activities.Assessment of Impact of development Activities on Vegetation and wildlife, environmental Impact of Deforestation – Causes and effects of deforestation.

UNIT-IV:
Prediction and Assessment of Impact: Quality, Impact prediction, Assessment of Impact significance, Identification and Incorporation of mitigation measures. E I A in surface water, Air and Biological environment: Methodology for the assessment of Impacts on surface water environment, Air pollution sources, generalized approach for assessment of Air pollution Impact.

UNIT-V:
Environmental Audit & Environmental legislation: Objectives of Environmental Audit, Types of environmental Audit, Audit protocol, stages of Environmental Audit, on-site activities, evaluation of Audit data and preparation of Audit report. Post Audit activities **:** The Environmental pollution Act, The water ;Act, The Air (Prevention & Control of pollution Act.), Mota Act. Wild life Act.Case studies and preparation: of Environmental Impact assessment statement for various Industries.

TEXT BOOKS:

1. Environmental Impact Assessment Methodologies, by Y. Anjaneyulu, B.S. Publication, Sultan Bazar, Hyderabad.
2. Environmental Science and Engineering, by J. Glynn and Gary W. Hein Ke – Prentice Hall Publishers

REFERENCE BOOKS:

1. Environmental Science and Engineering, by Suresh K. Dhaneja – S.K. Kataria & Sons Publication., New Delhi
2. Environmental Pollution and Control, by Dr H.S. Bhatia – Galgotia Publication (P) Ltd, Delhi

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

M. Tech – I Year – I Sem. (GIST)

DATABASE MANAGEMENT SYSTEMS
(PE-2)

Course Objectives: to understand the role of Database Management to prepare spatial data base.

Course Outcomes: at the end of the course the student will able to Understand the components of Database management system and file management methods, Apply the concepts of SQL and its use to manage the databases, Carry out the Query, update a databases using SQL and Design and build a simple database system using DBMS software.

UNIT-I:
Need for Data Base Management Systems (DBMS) Components of DBMS, Records and files, Data Models, Data Associations, Entities, Attributes and Associations, Relationships among entities, Data models classification

UNIT-II:
File Organization, Constituents of file, Operations on files, Sequential files, Index- Sequential files, Direct files

UNIT-III:
Relational Database, Attributes and domains, Tuples, Relations and their schemes, Relation Representation, Relational operations, Relational algebra, Relational calculus, Implementation

UNIT-IV:
Relational Database Manipulation, Structured Query Language (SQL), Query Language (QUEL) Query-by-Example (QBE), Data Manipulation and retrieval using SQL.

UNIT-V:
QUEL and QBE, Concepts of Relational database design, Introduction to Big Data Management

TEXT BOOKS:
1. Arun K. Majundar and P. Bhattacharya, Database Management Systems, 2001.
2. Bipin C. Desai, An Introduction to Database Systems, 1990.

REFERENCES:
1. C J Date, An Introduction to Database Systems Vol-1, 1994.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

M. Tech – I Year – I Sem. (GIST)

RS AND GIS

Course Objectives: to understand the different map features and its preparation for supporting digital data analysis using GIS software.

Course Outcomes: at the end of the course the student will able to learn to prepare the different geospatial layers, Compute geometric measurements and perform spatial analysis and Create high-quality maps and associated graphics

1. Preparation of Thematic Maps using SOI Topo Sheets and Satellite Imageries.
2. Study of different types of satellite data products
3. Visual interpretation of satellite images of different resolutions
4. Preparation of Base Map.
5. Preparation of Contour Map.
6. Preparation of Drainage Map.
7. Preparation of Slope Map.
8. Preparation of Land Use and Land Cover Maps.
9. Digitization of Various Thematic Maps.
10. Overlay, Integration and Application of GIS software's.