

3RD SEMESTER

CURRICULAR STRUCTURE

AND

SYLLABI OF

FULL-TIME DIPLOMA COURSE IN

GIS & GPS

**PROPOSED CURRICULAR STRUCTURE FOR PART-II (2ND YEAR) OF THE FULL TIME
DIPLOMA COURSE IN GIS & GPS**

WEST BENGAL STATE COUNCIL OF TECHNICAL EDUCATION													
TEACHING & EXAMINATION SCHEME FOR DIPLOMA IN ENGINEERING COURSES													
BRANCH: DIPLOMA IN GIS & GPS							SEMESTER: THIRD						
SL. NO.	SUBJECT	CREDITS	PERIODS			EVALUATION SCHEME							
			L	TU	PR	INTERNAL SCHEME			ESE	PR #	TW @	TOTAL MARKS	
						TA	CT	TOTAL					
1	Spatial Statistics-I	3	3	-		10	20	30	70	-	-	100	
2	Geography & Cartography	3	3	-	-	10	20	30	70	-	-	100	
3	Demography & Social Science	3	3	-	-	10	20	30	70	-	-	100	
4	Database Management System	4	3	-	-	10	20	30	70	-	-	100	
5	Applied Surveying	3	3	-	-	10	20	30	70	-	-	100	
6	Application of GIS-Case Studies	3	-	-	4	-	-	-	-	25	25	50	
7	Computer Aided Drafting	3	-	-	4	-	-	-	-	50	50	100	
8	Professional Practice I	2	-	-	3	-	-	-	-	25	25	50	
9	Field Survey Practice-I	3			6					50	50	100	
	TOTAL	27	15	-	17	TOTAL MARKS	150	350	150	150	800		

STUDENT CONTACT HOURS PER WEEK: 32 Hrs.
Theory and Practical Period of 60 Minutes each.
- External Assessment @ - Internal Assessment, **ESE** - End Semester Exam, **CT**- Class Test, **TA** - Teachers Assessment.
L – Lecturer, **TU** –Tutorial, **PR** – Practical, **TA** – Teachers' Assessment, **CT** – Class Test, **ESE** – End Semester Exam. **TW** – Term Work.

Name of the Course : Diploma in GIS & GPS (Spatial Statics-I)			
Course code :GIS & GPS / S3 /Th / SPSTA-I		Semester : THIRD	
Duration : 16 weeks		Maximum Marks : 100	
Teaching Scheme		Examination Scheme	
Theory : - 3 hrs/week		Continuous Intern al Assessment : 20 Marks	
Tutorial: - 1 hr/week		Attendance, Assignment & Quiz : - 10 Marks	
Practical : NIL		End Semester Examination : 70 Marks	
Credit :- 4			
Aim :-			
S.No			
1.	To study and understand the basic concepts of Spatial Statistics Applied in GIS.		
2.	To learn Statistical concepts in detail.		
3.	To learn how to apply concept of statistics in GIS.		
Objective :-			
S.No	Students will be able to:		
1.	Understand the concept of Basic Spatial Statistics.		
2.	Understand and develop the concepts of statistical analysis in GIS.		
3.	Understand the concept of Sampling methods ,Network analysis, overlaying data, organization of data, etc.		
4.	Understand the concept of measuring area, perimeter of a region.		
Pre-Requisite :-			
S.No			
1.	Basic knowledge of mathematics and statistics is required.		
Contents :			
Contents (Theory)		Hrs./Unit	Marks
Unit:1	Introduction 1.1 Introduction to statistics. 1.2 Univariate statistics 1.3 Multivariate statistics 1.4 Inferential statistics. 1.5 Set Theory.	10	8
Unit: 2	2.1 Spatial scale. 2.2 Spatial data collection. 2.3 Spatial sampling. 2.4 Secondary data sources.-Remote sensing; Ground survey 2.5 Sources of data error. 2.6 Uncertainty in spatial data analysis. 2.7 Visualizing spatial data. 2.8 Querying data. 2.9 Boolean logic	12	15
Unit: 3	3.1 Introduction to spatial data analysis. 3.2 Key Concepts-Distances, Measuring lengths and perimeters, Length of vector features, Measuring areas, Areas of polygons, Distances	16	20

	<p>from objects: buffers- Vector buffers and Raster proximity</p> <p>3.3 Moving windows: basic statistics in sub regions</p> <p>3.4 Geographical weights</p> <p>3.5 Spatial dependence and spatial autocorrelation</p> <p>3.6 The ecological fallacy and the modifiable areal unit problem.</p> <p>3.7 Merging polygons.</p>		
Unit: 4	<p>4.1 Combining data layers</p> <p>4.2 Multiple features: overlays.</p> <p>4.3 Point in polygon.</p> <p>4.4 Overlay operators.</p> <p>4.5 'Cookie cutter' operations: erase and clip.</p> <p>4.6 Applications and problems.</p> <p>4.7 Multi-criteria decision analysis</p> <p>4.8 Case study</p>	14	15
Unit: 5	<p>5.1 Network analysis-introduction</p> <p>5.2 Networks</p> <p>5.3 Network connectivity</p> <p>5.4 Summaries of network characteristics</p> <p>5.5 Identifying shortest paths</p> <p>5.6 The travelling salesperson problem</p> <p>5.7 Location-allocation problems</p> <p>5.8 Case study</p>	12	12
Total		64	70

Name of the Course : Diploma in GIS & GPS (Cartography & Geography)			
Course code :GIS & GPS / S3 /Th / CARTO		Semester : THIRD	
Duration : 16 weeks		Maximum Marks : 100	
Teaching Scheme		Examination Scheme	
Theory : - 3 hrs/week		Continuous Intern al Assessment : 20 Marks	
Tutorial: - NIL		Attendance, Assignment & Quiz : - 10 Marks	
Practical : NIL		End Semester Examination : 70 Marks	
Credit :- 3			
Aim :-			
S.No			
1.	To study and understand the basic concepts of Cartography and geography..		
2.	To acquire knowledge on projection systems and co-ordinate system.		
3.	To learn how to apply concept of Cartography and geography in GIS.		
Objective :-			
S.No	Students will be able to:		
1.	Understand the concept of Cartography and geography.		
Pre-Requisite :-			
S.No			
1.	Basic knowledge of geography is required.		
Contents :			
Contents (Theory)		Hrs./Unit	Marks
Unit:1	1.1 History and Principle of cartography, definitions. 1.2 Elements of map. 1.3 Utility of map. 1.4 Study of topo-map. 1.5 Map numbering. 1.6 Difference between map & photo.	8	10
Unit: 2	2.1 Map Projection. 2.2 Principles; Developable and Non developable surfaces; 2.3 Properties of map projections; Map projection classification, choice systems; Polyconic, UTM, UPS, Lamberts Conformal projection,Grids etc. 2.4 Computation in Grid – Geographical to UTM and vice versa.	14	25
Unit: 3	3.1 Conventional Cartographic Technique. 3.2 SCRIBING- Scribing processes, Advances of scribing techniques, base materials, instruments. 3.3 Advantage of scribing over conventional system. 3.4 Developments in Cartography - Development of cartography and analytical cartography since World War II.	12	15

	<p>4.1 MAP REPRODUCTION- Computerized Map Reproduction Technique.</p> <p>4.2 Role of remote sensing, GPS & GIS in map production, reproduction and map analysis.</p> <p>4.3 Cartographic Visualization- Cartography and digital cartography and visualisation; Geo-visualisation.</p> <p>4.4 Analytical cartography; web cartography; Cartographic communication – virtual, cognitive, temporal and permanent maps,</p> <p>4.5 Digital cartography and World Wide Web.</p> <p>4.6 Over view of Web map design, Web maps and multimedia Mapping cyberspace.</p>	14	20
Total		48	70

Name of the Course : Diploma in GIS & GPS (Demography & Social Science)			
Course code :GIS & GPS / S3 /Th / SPSTA-I		Semester : THIRD	
Duration : 16 weeks		Maximum Marks : 100	
Teaching Scheme		Examination Scheme	
Theory : - 3 hrs/week		Continuous Intern al Assessment : 20 Marks	
Tutorial: - NIL		Attendance, Assignment & Quiz : - 10 Marks	
Practical : NIL		End Semester Examination : 70 Marks	
Credit :- 3			
Aim :-			
S.No			
1.	To study and understand the basic concepts of Social science.		
2.	To acquire knowledge on demography.		
3.	To learn how to apply concept of Social science & demography in GIS.		
Objective :-			
S.No	Students will be able to:		
1.	Understand the concept of Social science.		
2.	Understand the demographic features of a country.		
3.	Understand the concept of gender, politics etc.		
4.	Understand the concept of population, features of society,etc.		
Pre-Requisite :-			
S.No			
1.	Basic knowledge of social science and geography is required.		
Contents :			
Contents (Theory)		Hrs./Unit	Marks
Unit:1	Society & Culture in India 1.1 Caste and its Interpretations 1.2 Family, Marriage and Kinship in India 1.3 Tradition and Modernity in India; Modernization of Indian Tradition 1.4 Secularism, Pluralism and Nation Building 1.5 Religion, Community and Development 1.6 Ill fare & Social Issues in India: Poverty, Illiteracy, Inequality & Demographic Changes 1.7 Dalit Identity & Dalit Movement 1.8 Regionalism, Ethnicity and Communalism. 1.9 Scheduled Caste and Other Backward Classes; Backward Class Movement in India 1.10Issues of Tribal Development	12	15

Unit: 2	<p>Matrices. Gender and Politics</p> <p>2.1 Sex-Gender system, Theorizing Patriarchy, Levels of Misogyny, Theories of Gender</p> <p>2.2 Relations: Black, Liberal, Radical, Socialist, Post-Modernist.</p> <p>2.3 Sexual politics in family & household.</p> <p>2.4 Gender, Work, Economy & Development.</p> <p>2.5 Women in Politics: Participation and Governance, Women's Movement.</p> <p>2.6 Gender, State & Sexual politics; Body Politics: Sexuality & Reproductive Technologies.</p> <p>2.7 Gender & Health: Issues & Challenges.</p> <p>2.8 Violence against Women: Issues, Resistance and Legal Framework.</p> <p>2.9 Empowerment of Women; Changing Status of Women in India.</p>	16	25
Unit: 3	<p>Population & Society</p> <p>3.1 Demography: Nature & Scope, Basic Concepts, Sources of Population Data.</p> <p>3.2 Determinants & Consequences of Fertility, Mortality.</p> <p>3.3 Population Structure & Characteristics: Age-Sex Composition & Its Consequences, resources, environment & food.</p> <p>3.4 Theories of Population Growth: Pre-Malthusian, Malthusian, Classical & Neo-classical Schools of Thought, Optimum Population Theory Biological & Socio-cultural theories, Demographic Transition.</p> <p>3.5 World Population Growth: Pattern, Trends, Projections, Causes & Consequences.</p> <p>3.6 Migration, Modernity & Social Transformation.</p> <p>3.7 Population, Socio- Economic Development and its impact on Environment.</p> <p>3.8 Population Growth & Distribution, Control and Population Policy in India.</p> <p>3.9 Population Growth & Its Impact on Health: Indian Context, The Problem of Ageing.</p> <p>3.10 Urbanization Trends, Processes & Patterns in India, Impact of Urbanization</p>	20	30
Total		48	70

Name of the Course : Diploma in GIS & GPS (Database Management System)			
Course code : GIS & GPS / S3 / Th / DBMS		Semester : THIRD	
Duration : 16 weeks		Maximum Marks : 100	
Teaching Scheme		Examination Scheme	
Theory : - 3 hrs/week		Continuous Internal Assessment : 20 Marks	
Tutorial: - 1 hr/week		Attendance, Assignment & Quiz : - 10 Marks	
Practical : NIL		End Semester Examination : 70 Marks	
Credit :- 4			
Aim :-			
S.No			
1.	To study and understand the basic concepts of DBMS.		
2.	To learn SQL and PL/SQL in detail.		
3.	To learn how to work with any database.		
Objective :-			
S.No	Students will be able to:		
1.	Understand the concept of Database system and Client Server Architecture		
2.	Understand and develop the concepts of Data Modelling, Security and Integrity.		
3.	Understand and execute different SQL queries and PL / SQL programs.		
4.	Normalize the database using normal forms.		
5.	Understand the concept of query processing and Transaction processing.		
Pre-Requisite :-			
S.No			
1.	Basic knowledge of computer is required.		
Contents :			
Contents (Theory)		Hrs./Unit	Marks
Unit:1	Database System Concept & Data Modeling 1.1 Basic concepts, Advantages of a DBMS over file processing system, Data Abstraction, Database Languages, Data Independence (Logical & Physical), application of database, various DBMS & RDBMS Softwares. 1.2 Components of a DBMS and overall structure of a DBMS. Database users, functions of database administrator. 1.3 Data Models: Network Model Hierarchical Model E-R Model 1.4 Client Server Architecture: Two/Three tier	8	7

Unit: 2	<p>Relational Data Model and Security and Integrity Specification</p> <p>2.1 Relational Model: Basic concepts, attributes and domains, Keys concept : Candidate and primary key, Integrity constraints: Domain ,Entity Integrity constraints and On delete cascade.</p> <p>2.2 Security and Authorization.</p> <p>2.3 Query Languages: Relational Algebra , Relational Calculus, Views.</p>	10	15
Unit: 3	<p>SQL and PL/SQL</p> <p>3.1 Introduction to SQL queries, Creating ,Inserting ,Updating and deleting tables and using constraints, Set operations & operators, Aggregate functions ,string functions, date and time functions, Null values, Nested sub queries, Complex queries, Join concepts.</p> <p>3.2 PL/SQL : Introduction, PL/SQL block structure ,variables, SQL statements in PL/SQL, PL/SQL control Structures ,Cursors , Triggers , Functions ,Packages, procedures. Error handling in PL/ SQL</p>	12	25
Unit: 4	<p>Relational Database Design, Storage and File systems.</p> <p>4.1 Purpose of Normalization, Data redundancy and updating anomalies, Functional Dependencies and Decomposition,</p> <p>4.2 Process of Normalization using 1NF, 2NF, 3NF, multivalued dependencies and BCNF.</p> <p>4.3 E-R Model details.</p> <p>4.4 File Organization, Organization of records in files, Storage of Object Oriented databases, Basic concept of Indexing and Hashing.</p>	10	15
Unit: 5	<p>Query Processing and Transaction Processing</p> <p>5.1 General strategies for query processing, Equivalence expressions, Selection & join operation.</p> <p>5.2 Concept of transaction, States of transactions, Concurrent Executions, Serializability Recoverability, Transaction Definition in SQL.</p>	8	8
Total		48	70

Name of the Course : Diploma in GIS & GPS (Applied Surveying)			
Course code : GIS & GPS / S3 / TH / AS		Semester : THIRD	
Duration : 16 weeks		Maximum Marks : 100	
Teaching Scheme		Examination Scheme	
Theory : - 3 hrs/week		Continuous Intern al Assessment : 20 Marks	
Tutorial: - NIL		Attendance, Assignment & Quiz : - 10 Marks	
Practical : NIL		End Semester Examination : 70 Marks	
Credit :- 3			
Aim :-			
Developing the surveying skill required for application in Geographical Information System.			
Objective :-			
Students will be able			
<ol style="list-style-type: none"> 1. to study and understatnd the basic survey instruments. 2. to `apply the concept of survey in GIS & GPS. 3. Take linear and angular measurements. 4. to calculate the area of land. 5. to prepare layouts and maps. 6. to Set out alignments for roads, railways, canals, pipelines, tunnels etc. 7. to Prepare contour map. 8. to Compute area and volume from given contour map. 			
Pre-Requisite :-			
S.No			
1.	Basic knowledge of mathematics, Geometry and drawing skill is required.		
Contents :			
Contents (Theory)		Hrs./Unit	Marks
Unit:1	Types of Survey Definition, objects of surveying, principles of surveying, uses of survey, classification of surveying – plain, geodetic, secondary – based on instruments, method, object, nature of field.	4	6
Unit: 2	Measurement of horizontal distance 2.1 Introduction 2.2 Methods of measuring horizontal distance – pacing, odometer reading, tacheometry, electronic distance measurement, chaining and taping 2.3 Principles of chain surveying and accessories for chaining and taping - chain, tape, ranging rod,arrows, pegs, cross staff, optical square, ranging rod, plumb bob, object rod 2.4 Measurement by chain – on level ground and on sloping ground, reduction to measurement in slope, ranging – direct and indirect ranging Systematic errors in linear measurement by chain or tape – incorrect length, tape or chain not horizontal, fluctuation in temperature, incorrect tension or pull, sag and incorrect alignments and chain or tape not straight, necessary corrections, numerical problems	10	12

	<p>2.5 Chain and tape survey of a field - survey lines, check lines, tie lines, base line. taking offsets – perpendicular and oblique offset, long and short offset, degree of offset, error in offset, limiting length of offset, points to be considered in selecting station</p> <p>2.6 Setting out right angles – a. by instruments (cross staff, optical square, their working methodology and specific use in field) b. by chain or tape</p> <p>2.7 Obstacles in chaining – obstacles to ranging but not chaining, obstacles to chaining but not ranging, obstacles to both chaining and ranging, numerical problems</p> <p>2.8 chain & cross staff survey for finding area of a field (numerical problems)</p> <p>2.9 Field work for chain survey, booking the field work, conventional signs related to survey, degree of accuracy of chaining.</p>		
Unit: 3	<p>Compass Survey</p> <p>3.1 Brief introduction to different types of horizontal angles and directions, Principle of compass survey, bearing of lines – meridian – true, magnetic, and arbitrary bearing, fore bearing, back bearing, whole circle bearing, quadrantal bearing system and reduced bearing, conversion of bearings, finding included angles from bearings, declinations, dip of the magnetic needle. (Numerical problems)</p> <p>3.2 Prismatic compass, and trough compass – component, construction and use.</p> <p>3.3 Local attraction, causes, precautions to be taken to avoid local attraction and correction of bearings affected due to local attraction, calculation of included angles.</p> <p>3.4 Traversing – open traverse, closed traverse, check on open and closed traverse, Graphical adjustment for closing error.</p> <p>3.5 Numerical problems on calculation of bearings, angles and local attraction.</p> <p>3.6 Error in compass surveying – instrumental error, personal error and natural error, permissible value of error</p>	8	14
Unit: 4	<p>Levelling</p> <p>4.1 Definitions – level surface, level line, horizontal line, vertical line, datum surface, mean sea level, reduced level, bench mark and its types.</p> <p>4.2 Study and use Engineers' level – a. dumpy level – components, construction b. tilting level and c. automatic level or self levelling level</p> <p>4.3 Terms used in levelling - line of sight, line of collimation, bubble tube axis, leveling staff – telescopic and folding type, foresight, back sight, intermediate sight, change point, height of collimation, fundamental axes and their relationship, recording in level book, temporary adjustments of dumpy level, procedure for permanent adjustment</p> <p>4.4 Method of reduction of levels – height of instrument method and rise and fall method- relativemerit and demerits, arithmetical checks, numerical problems, computation of missing readings.</p> <p>4.5 Classifications of leveling - simple, differential, profile, cross sectional, fly and check levelling (numerical problems)</p>	12	14

	4.6 Sources of errors in levelling – instrumental error, personal error and natural error, precautions and reducing errors and eliminating mistakes in levelling, error adjustment, permissible error in levelling, difficulties faced in levelling.		
Unit: 5	<p>Contouring</p> <p>5.1 Definitions – contour, contour interval, horizontal equivalent.</p> <p>5.2 Characteristics of contours (e.g. pond, cliff, overhanging cliff, etc) method of locating contours – indirect method of contouring (interpolation of contours), direct contouring methods, establishing grade contours.</p> <p>5.3 Uses of contour maps, interpretation of typical contour sheets.</p>	4	8
Unit: 6	<p>Area measurements</p> <p>6.1 Introduction.</p> <p>6.2 Methods of measuring areas .Area of a tract with irregular boundaries – graphical method, mid ordinate rule, average ordinate rule, trapezoidal rule, Simpson's rule (only formula and their applications) – numerical problems</p> <p>6.3 Use of planimeter for measurement of area</p>	4	10
Unit: 7	<p>Plane Table Surveying</p> <p>7.1 Introduction – principle of plane table surveying.</p> <p>7.2 Equipment and accessories in plane table surveying, their use.</p> <p>7.3 Working with plane table – fixing, levelling, centering, and orientation – by trough compass and by back sighting.</p> <p>7.4 Different methods of plane tabling work: a. radiation, b. intersection, c. traversing and d. resection – three point problem.</p> <p>7.5 Advantage and disadvantage of plane table survey, errors in plane table survey – instrumental, in plotting and due to manipulation and sighting.</p>	6.	6.
Total		48	70

Name of the Course : Diploma in GIS & GPS (Application of GIS- Case Studies)			
Course code : GIS & GPS / S3 / P1 / CS		Semester : THIRD	
Duration : 16 weeks		Maximum Marks : 50	
Teaching Scheme		Examination Scheme	
Theory : - NIL		Continuous Intern al Assessment : 25 Marks	
Tutorial: - NIL		Attendance, Assignment & Quiz : - Marks	
Practical : 4 hrs/week		End Semester Examination : 25 Marks	
Credit :- 3			
Aim :-			
S.No			
1.	To give an idea on Application of GIS in different practical fields.		
Objective :-			
S.No	Students will be able to:		
1.	Understand the concept of GIS in respective areas.		
2.	Understand the basic requirements for implementing GIS in different areas.		
3.	Analyse the data in GIS		
4.	Design and Planning for carrying out GIS in a specific field.		
Pre-Requisite :-			
S.No			
1.	Knowledge of Demography, Social Science, Geography, Cartography, Land use pattern, Environmental science and Computer is required.		
Contents :			
Contents (Theory)		Hrs./Unit	Marks
Unit:1	Agricultural development options review in India or any other country- Land Cover Mapping	15	7
Unit: 2	A systems analysis of the India or any other country's forest	15	7
Unit: 3	Mountain environment and natural resource information service of any particular part of india..	10	7
Unit: 4	Diversity of any agricultural crop species in India or sub continents.	15	7
Unit: 5	Environmental and sustainability indicator for India or any other country.	9	7
Total		64	35

Name of the Course : Diploma In GIS and GPS (COMPUTER AIDED DRAFTING)	
Course code : GIS&GPS / S3 / P2/ CAD	Semester : THIRD
Duration : 16 weeks	Maximum Marks : 100
Teaching Scheme	Examination Scheme
Theory : - hrs/week	Continuous Internal Assessment : 50 Marks
Tutorial: - hrs/week	Attendance, Assignment & Quiz : - Marks
Practical : 3 hrs/week	External Assessment : 50 Marks
Credit :- 2	
Aim :-	
S.No	
1.	Developing the computerized drawing skill required for GIS & GPS.
Objective :-	
S.No	Students will be able to:
1.	Work with drawing software.
2.	Make a drawing, create text, dimension a drawing, hatch patterns and make & insert symbols.
3.	Draw and plot a drawing with the help of computer, software and plotter / printer.
4.	Prepare a set of orthographic projections of a building.
Pre-Requisite :-	
S.No	
1.	Perfection in drawing and sketching.
2.	Students should be familiarized with Computer environment.
Contents : (Practical)	
Sl. No.	Assignments
1.	<p>GETTING STARTED</p> <p>A.Starting CAD –CAD screen components – Starting a drawing: Open drawings, Create drawings (Start from scratch, Use a template & Use a wizard) – Invoking commands in CAD – Drawing lines in CAD – Co-ordinate systems: Absolute co-ordinate system, Relative co-ordinate system – Direct distance method – Saving a drawing: Save & Save As – Closing a drawing – Quitting CAD</p> <p>B. Opening an existing file – Concept of Object – Object selection methods: Pick by box, Window selection, Crossing Selection, All, Fence, Last, Previous, Add, Remove – Erasing objects: OOPS command, UNDO / REDO commands – ZOOM command – PAN command, Panning in real time – Setting units – Object snap, running object snap mode – Drawing circles</p>
2.	<p>USE OF DIFFERENT TYPES OF COMMANDS</p> <p>A DRAWING COMMANDS. ARC command – RECTANG command – ELLIPSE command, elliptical arc – POLYGON command (regular polygon) – PLINE command – DONUT command – POINT command– Construction Line: XLINE command, RAY command – MULTILINE command</p> <p>B EDITING COMMANDS . MOVE command – COPY command – OFFSET command – ROTATE command – SCALE command – STRETCH command – LENGTHEN command – TRIM command – EXTEND command – BREAK command – CHAMFER command – FILLET command – ARRAY command – MIRROR command –MEASURE command – DIVIDE command – EXPLODE command – MATCHPROP command – Editing with grips: PEDIT</p> <p>C INQUIRY COMMANDS</p>

	<p>AREA – DIST – ID – LIST – DBLIST – STATUS – DWGPROPS</p> <p>D. HATCHING COMMANDS BHATCH, HATCH commands – Boundary Hatch Options: Quick tab, Advance tab – Hatching around Text, Traces, Attributes, Shapes and Solids – Editing Hatch Boundary – BOUNDARY command</p>
3.	<p>DRAWING AIDS Layers – Layer Properties Manager dialog box – Object Properties: Object property toolbar, Properties Window – LTSCALE Factor – Auto Tracking – REDRAW command, REGEN command</p>
4.	<p>CREATING TEXT Creating single line text – Drawing special characters – Creating multiline text – Editing text – Text style</p>
5.	<p>A. BASIC DIMENSIONING Fundamental dimensioning terms: Dimension lines, dimension text, arrowheads, extension lines, leaders, centre marks and centrelines, alternate units – Associative dimensions – Dimensioning methods – Drawing leader.</p> <p>B. EDITING DIMENSIONS Editing dimensions by stretching – Editing dimensions by trimming & extending – Editing dimensions: DIMEDIT command – Editing dimension text: DIMTEDIT command – Updating dimensions – Editing dimensions using the properties window – Creating and restoring Dimension styles: DIMSTYLE</p>
6.	<p>BLOCKS The concept of Blocks – Converting objects into a Block: BLOCK, _BLOCK commands – Nesting of Blocks – Inserting Blocks: INSERT, MININSERT commands – Creating drawing files: WBLOCK command – Defining Block Attributes – Inserting Blocks with Attributes – Editing Attributes</p>
7.	<p>A. PLOTTING DRAWINGS IN CAD PLOT command – Plot Configuration – Pen Assignments – Paper Size & Orientation Area – Plot Rotation & Origin – Plotting Area – Scale</p> <p>B. PRACTICE WITH COMPLETE DRAWING Each student is required to prepare a set of orthographic projections of a building. The drawing of the building will be supplied by the teacher-in-charge.</p>
8.	<p>ADVANCED TOPICS IN CAD Importing data from other format to CAD environment- Exporting data into other format from CAD Environment. Introduction to MAP 3D.</p>
9.	<p>BASIC CONCEPT OF JAVA PROGRAMMING</p> <ol style="list-style-type: none"> I. Simple programs based on basic syntactical constructs of Java like: <ol style="list-style-type: none"> a) Operators and expressions. b) Looping statements. c) Decision making statements. d) Type casting. II. Simple Java program to demonstrate use of command line arguments in Java, Define a class, describe its constructor, overload the constructors and instantiate its object III. Simple Java program to define a class, define instance methods for setting and retrieving values of instance variables and instantiate its object IV. Simple Java program to define a class, define instance methods and overload them and use them for dynamic method invocation. V. Simple Java Program to demonstrate use of sub class, use of nested class, use of single Dimensional array, use of multidimensional array. VI. Simple java Program to implement array of objects VII. Simple Java program - using String class and its methods- using String Buffer class and its methods. VIII. Simple Java Program to implement Vector class and its methods, Wrapper classes and their methods, single inheritance by applying various access controls to its data members and methods.

	IX. Simple Java Program to implement multilevel inheritance by applying various access controls to its data members and methods, inheritance and demonstrate use of method overriding.		
	X. Simple Java program to demonstrate- Use of implementing interfaces-Use of extending interfaces.		
	XI. Simple Java program to implement the concept of importing classes from user defined package and creating packages. Concept of threading.		
	XII. Simple Java program to implement the concept of Exception Handling, - using predefined exception, by creating user defined exceptions.		
Text Books:-			
Sl. No.	Titles of the Book	Name of Authors	Name of the Publisher
1	Hand Book or Manual	-	Respective Package Developer
Reference books :- BALAGURUSWAMI,WROX			
Suggested List of Laboratory Experiments :- Nil			
Suggested List of Assignments/Tutorial :- Nil			

Name of the Course : GIS & GPS (FIELD SURVEY PRACTICES – I)	
Course code : GIS & GPS / S3 / P4/ FSP1	Semester : THIRD
Duration : 16 weeks	Maximum Marks : 100
Teaching Scheme	Examination Scheme
Theory : - hrs/week	Continuous Internal Assessment : 50 Marks
Tutorial: - hrs/week	Attendance, Assignment & Quiz : -
Practical : 6 hrs/week	External Assessment : 50 Marks
Credit :- 3	
Aim :-	
S.No	
1.	Developing the survey skill required for the areas related to Geographic Information system.
Objective :-	
S.No	Students will be able to:
1.	Identify and use different survey instruments.
2.	Record and observe necessary observation with the survey instruments.
3.	Compute necessary survey data from field observation for preparation of drawing etc.
4.	Prepare report including drawing using survey data collected in the field.
INSTRUCTIONS:	
S.No	

1.	Group size for survey practical work should be maximum 6 students.
2.	Each student from a group should handle the instrument independently to understand the function of different components and use of the instrument.
3.	Drawing and plotting should be considered as part of practical. A total number of 5 sheet (as per syllabus) must be prepared individually.
4.	Term work shall consist of record of all practical and projects in field book and drawing of Project work on full / half imperial size drawing sheets.

Pre-Requisite :-

S.No	
1.	Perfection in drawing and sketching.
2.	Students should have basic knowledge of Surveying.

Contents : (Practical)

Sl. No.	Assignments
1.	<p>1.0 CHAIN SURVEY</p> <p>1.1 Direct Ranging : Ranging by Eye – Ranging by Line Ranger – Chaining on Level Ground</p> <p>1.2 Indirect Ranging: Chaining on Sloping Ground</p> <p>1.3 Laying of angle with chain and tape: 30°, 60°, 45° & 90°</p> <p>1.4 Obstacle in Chaining: i) Chaining free but Vision obstructed. ii) Chaining obstructed but vision free iii) Chaining and vision both obstructed</p> <p>1.5 Surveying an area with Chain and Tape: Reconnaissance the area to be surveyed – Preparation of Key Plan and Reference Sketch – Selection of Base Line, Station Points and Marking of Stations – Booking Field Notes – Plotting of Field Data with conventional signs.</p>
2.	<p>2.0 COMPASS SURVEY</p> <p>2.1 Traversing an area with prismatic compass.</p> <p>2.2 Traversing in presence of local attraction.</p> <p>2.3 Surveying an area with prismatic compass- Field Work: noting the field data-calculate the correct bearings. Post Field Work: plotting the traverse by bearing and distance. Graphical adjustment of closing error of the traverse.</p>
3.	<p>3.0 PLANE TABLE SURVEY</p> <p>3.1 Introduction to different part and accessories of a Plane Table.</p> <p>3.2 Setting up and Orientation of plane table with Trough Compass and Back Ray Method</p> <p>3.3 Plane Tabling by Radiation Method</p> <p>3.4 Plane Tabling by Intersection Method</p> <p>3.5 Plane Tabling by Traversing Method</p> <p>3.6 Plane Tabling by Resection Method</p> <p>3.7 Fixing inaccessible objects in a plane table survey</p> <p>3.8 Relaying a missing traverse station with plane table and sight vane</p> <p>3.9 Surveying a small area by plane table and determination of area by graphical method</p>
4	<p>4.0 LEVELLING</p> <p>1.1 Temporary Adjustment of Levels.</p> <p>1.2 B.M. connection from G.T.S.B.M. or local B.M.</p> <p>1.3 Fly levelling with dumpy level and check levelling and recording level book</p> <p>1.4 Profile levelling and recording</p> <p>1.5 Plotting longitudinal section in suitable scales from field notes.</p>

5

5.0 PREPARATION OF CONTOUR

5.1 Preparation of Contour by Indirect Method using Square method. Size of the grid should not be greater than 5 meter. Contour interval should not be more than 0.5 meter. Preparation of drawing in a suitable scale using interpolation method.

Name of the Course : GIS & GPS	
(PROFESSIONAL PRACTICE – I)	
Course code : GIS & GPS / S3 / P4/ FSP1	Semester : THIRD
Duration : 16 weeks	Maximum Marks : 50
Teaching Scheme	Examination Scheme
Theory : - hrs/week	Continuous Internal Assessment : 25 Marks
Tutorial: - hrs/week	Attendance, Assignment & Quiz : -
Practical : 6 hrs/week	External Assessment : 25 Marks
Credit :- 3	
Aim :-	
S.No	
1.	Development and evaluation of individual skills.
2	Enhancement in soft skills through innovation.
Objective :-	
S.No	Students will be able to:
1.	Acquire information from different sources.
2.	Record and observe necessary notes for given topic.
3.	Interact with peers to share thoughts.
4.	Prepare a report on industrial visit, expert lecture.
INSTRUCTIONS:	
S.No	
1.	Group size for survey practical work should be maximum 6 students.
2.	Each student from a group should handle the instrument independently to understand the function of different components and use of the instrument.
3.	Drawing and plotting should be considered as part of practical. A total number of 5 sheet (as per syllabus) must be prepared individually.
4.	Term work shall consist of record of all practical and projects in field book and drawing of Project work on full / half imperial size drawing sheets.
Pre-Requisite :-	
S.No	
1.	Communication skill must be perfect.
Contents : (Practical)	
Sl. No.	Assignments
1.	Industrial Interaction A close interaction with industry is required to develop the skill necessary for different types of GIS related work.
2.	Individual Assignments: Any topic related to GIS & GPS selected by the Subject teacher. Such as. 1. Project on Application of Database Management System using the following skills- ability to Develop the fields of data base, ability to decide proper specifications, ability to Query Processing and transaction processing Motor skills, ability to Prepare appropriate data tables , ability to Sequential writing of steps .