PROPOSED

4TH 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 & VOCATIONAL EDUCATION AND SKILL DEVELOPMENT

TEACHING & EXAMINATION SCHEME FOR DIPLOMA IN ENGINEERING COURSES

BRANCH: **DIPLOMA IN GIS & GPS** SEMESTER: **FOURTH**

SL. NO.		SUBJECT	CREDITS	PERIODS			EVALUATION SCHEME						
				L	TU	PR	INTERNAL SCHEME			ESE	PR #	TW @	TOTAL MARKS
							TA	CT	TOTAL				
1	THEORETICAL	Spatial Statistics-II	3	3	-	-	10	20	30	70	-	-	100
2		Advance Surveying	3	3	-	-	10	20	30	70	-	-	100
3		Remote Sensing and Satellite Image Processing	3	3	-	-	10	20	30	70	-	-	100
4		Elements of Geographic Information System	3	3	-	-	10	20	30	70	-	-	100
5		Fundamentals of Global positioning System	2	2	-	-	5	10	15	35	-	-	50
6	SESSIONAL/PR	Digital Image Processing-I	3	-	-	4	-	-	-	-	50	100	150
7		GIS Practice-I	4	-	-	4	-	-	-	-	50	100	150
8		Professional Practice II	2	-	-	3	-	-	-	-	25	25	50
9		Development of Life Skill II	1	-	-	2	-	-	-	-	25	25	50
10		Field Survey Practices – II	3	-	-	6	-	-	-	-	50	50	100
	TOTAL		**27**	**14**	**-**	**19**	TOTAL MARKS		**135**	**315**	**200**	**300**	**950**

STUDENT CONTACT HOURS PER WEEK: 33 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 Statistics-II)	
Course code :GIS & GPS/ S4 /Th / SPSTA-II	**Semester : FOURTH**
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 advanced concepts of Statistics, Applied in GIS.
2.	To learn Statistics 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 advanced topics of Spatial Statistics.
2.	Understand and develop the concepts of statistical analysis in GIS.
3.	Understand the concept of Auto Correlation, Point patterns , spatial interpolation etc.
4.	Understand the concept of Map Algebra.

Pre-Requisite :-.

S.No	
1.	Knowledge of Spatial Statistics-I is required.

Contents :

Contents (Theory)		Hrs./Unit	Marks
Unit:1	Introduction 1.1 Recapitulation of Spatial Statistics I (previous concepts) 1.2 Data and data models - Raster data - Vector data- Topology-Rasters and vectors in GIS soft ware	6	10
Unit: 2	Spatial point patterns. 2.1 Introduction 2.2 Basic measures 2.3 Exploring spatial variations in point intensity 2.4 Quadrats 2.5 Kernel estimation 2.6 Measures based on distances between events 2.7 Nearest-neighbour methods 2.8 *K* function 2.9 Applications and other issues 2.10 Case study	10	10

Unit: 3	Spatial patterning in data values 3.1 Introduction 3.2 Spatial autocorrelation 3.3 Local statistics 3.4 Local univariate measures 3.5 Local spatial autocorrelation 3.6 Regression and correlation 3.7 Spatial regression 3.8 Geographically weighted regression 3.9 Case studies: Spatial autocorrelation analysis- Geographically weighted regression	12	20
Unit:4	Spatial interpolation 4.1 Introduction 4.2 Interpolation 4.3 Triangulated irregular networks 4.4 Trend surface analysis 4.5 Inverse distance weighting 4.6 Ordinary kriging 4.7 Variogram 4.8 Kriging 4.9 Cokriging 4.10 Other approaches and issues 4.11 Areal interpolation **4.12** Case studies : Variogram estimation - Interpolation	12	20
Unit:5	Analysis of grids and surfaces 5.1 Introduction 5.2 Map algebra 5.3 Spatial filters. 5.4 Derivatives of altitude. 5.5 Other products derived from surfaces. 5.6 Case study	8	10
Total		48	70

Name of the Course : Diploma in GIS & GPS (Advance Surveying)	
Course code : GIS & GPS / S4 / TH / ADVS	**Semester : FOURTH**
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 advanced surveying skill required for application in Geographical Information System.

Objective :-

Students will be able

1. to study and understand the advanced survey concepts.
2. to `apply the advanced survey concepts in GIS & GPS.

Pre-Requisite :-

S.No	
1.	Basic knowledge of surveying is required.

Contents :

Contents (Theory)		Hrs./Unit	Marks
Unit:1	Theodolite Survey 1.1 Components of Transit Theodolite and Their functions. Technical terms used. Temporary adjustments of Transit Theodolite Swinging the telescope, Transiting, Changing the face. 1.2 Measurement of Horizontal angle, method of Repetition, errors eliminated by method of repetition. 1.3 Measurement of Deflection angle. Measurement of Vertical angle. Measurement of magnetic bearing of a line by Theodolite. 1.4 Prolonging a Straight line. 1.5 Sources of errors in Theodolite Surveying. Permanent adjustment of transit Theodolite (only relationship of different axes of theodolite. 1.6 Traversing with Theodolite – Method of included angles, locating details, checks in closed traverse, Calculation of bearings from angles. 1.7 Traverse Computation - Latitude, Departure, Consecutive Co-ordinates, error of Closure, Distribution of an angular error, balancing the traverse by Bowdwitch rule and Transit Rule, Gale's traverse table (simple problems on above topic.). 1.8 Area of a closed traverse – meridian distance method, double meridian distance method, double parallel distance method, departure and total latitude method, independent coordinate methodology (simple numerical problems).	10	16
Unit: 2	Tacheometric Survey a. Principle of Tacheometry. Instruments in tacheometry.Essential requirements of Tacheorneter.	8	10

	b. Different types of tacheometric measurement – a. stadia system (fixed hair method and movable hair method) b. tangential system c. subtense bar system. c. Determination of tacheometric constants- additive constant and multiplying constant, simple numerical problems on above topics. d. Distance and elevation formula : Fixed hair method: Use of Theodolite as a Tacheometer i. Inclined sight and staff vertical for both angle of elevation and angle of depression ii. Inclined sight with staff normal to the line of sight (for both angle of elevation and angle of depression) (No derivation). [numerical problem based on above conditions]		
Unit: 3	Curves 3.1 Types of curves used in road and railway alignments, Notations of simple circular curve, Designation of curve by radius and degree of curves.\ 3.2 Method of Setting out curve- offset from Long chord method, chord produced method, Two theodolite method, Rankine's method of deflection angles. Simple Numerical problems on above topics. 3.3 Setting out a compound curve, reverse curve and a transition curve (spiral), a summit curve and a valley curve.	6	12
Unit: 4	Volume measurement 4.1 Introduction, different method of volume computation – cross section method, unit area or borrow pit method and contour method. 4.2 Cross section method – level section, two level section, side hill two level section, three level section and multilevel section; formula for volume computation -volume average end areas, trapezoidal rule, prismoidal rule (simple numerical problems). 4.3 Volume through transitions – in highway/railway construction, volume from spot level for foundation of underground reservoir, volume from contour plan. 4.4 Salient features of Mass Haul diagram and its applications.	8	12
Unit: 5	Electronic distance measurement (EDM) 5.1 Introduction. 5.2 Basic concept. 5.3 Classification of electromagnetic radiation, Basic principles of electronic distance measurement, computing the distance from phase difference. 5.4 Basic description of TOTAL STATION instruments. 5.5 Effect of atmospheric condition on wave velocity, instrumental error in EDM.	8	8
Unit: 6	Area measurements 6.1 Introduction. 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 6.3 Use of planimeter for measurement of area	8	12
Total		48	70

Name of the Course : Diploma in GIS & GPS (Remote Sensing and Satellite Image Processing)	
Course code :GIS & GPS / S4 /Th / RSSIP	**Semester : FOURTH**
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 Remote Sensing & Satellite Image Processing.
2.	To learn Remote Sensing in detail.
3.	To learn how to apply concept of Remote Sensing and Satellite Image Processing in GIS.

Objective :-

S.No	Students will be able to:
1.	Understand the concept of Remote Sensing.
2.	Understand and develop the concepts of Satellite Image Processing.

Pre-Requisite :-

S.No	
1.	Basic knowledge of Surveying, Geography, Cartography and Statistics is required.

Contents :

Contents (Theory)		Hrs./Unit	Marks
Unit:1	Photogrammetry 1.1 Introduction: History and Development of Photogrammetry. 1.2 Aerial photographs- Types, Characteristics, Determination of photo scale and Geometry; Basic information on aerial photographs; Overlapping, Photo mosaics. 1.3 Flight planning and Execution of aerial photography, Availability and acquisition of aerial photographs in India. 1.4 Types of photogrammetry: Analytical and Digital photogrammetry. Digital photogrammetry – Meaning, Concepts and Uses of photogrammetry.	4	8
Unit: 2	Remote sensing 2.1 Introduction 2.2 Remote sensing system. 2.3 Historical development of remote sensing. 2.4 Multi concept of remote sensing. 2.5 Advantages and disadvantages of remote sensing. 2.6 Some application of remote sensing	6	8

Unit: 3	Electromagnetic Radiation 3.1 Introduction. 3.2 Electromagnetic energy. 3.3 Energy interaction in the atmosphere. 3.4 Energy interaction with the earth's surface. 3.5 Resolution in remote sensing. 3.6 Pixel and mixed pixel.	6	10
Unit: 4	Sensors and platforms 4.1 Introduction 4.2 Broad classifications of sensors and platforms 4.3 Land observation satellites and sensors 4.4 High resolution sensors. 4.5 Earth observing -1(EO-1). 4.6 Weather satellites/sensors. 4.7 Other weather satellites. 4.8 Marine observation satellites and sensors	6	8
Unit: 5	Thermal & Microwave Remote Sensing. 5.1 Introduction. 5.2 Thermal Remote Sensing. 5.3 Thermal properties of materials. 5.4 Emissivity of materials. 5.5 Thermal inertia of Earth surface features. 5.6 Thermal data sets: LANDSAT and ASTER. 5.7 Concept and Principles of microwave remote sensing. 5.8 Microwave data sets SLAR. LIDAR and SAR. 5.9 Application of Thermal and Microwave data.	8	10
Unit: 6	Satellite Data Product 6.1 Introduction 6.2 Data reception, transmission and processing. 6.3 Remote sensing data. 6.4 Data products. 6.5 Referencing scheme. 6.6 Standard products. 6.7 Digital data products	6	8
Unit: 7	Image Interpretation 7.1 Introduction 7.2 Interpretation procedure 7.3 Elements of photo interpretation 7.4 Image interpretation strategies. 7.5 Photomorphic analysis. 7.6 Image interpretation keys. 7.7 Equipment for image interpretation. 7.8 Automated approach to image classification 7.9 Introduction to Digital Image Processing. 7.10 Application of Remote Sensing.	8	10
Unit: 8	Application of Remote Sensing 9.1 Introduction 9.2 Land use and land cover mapping. 9.3 Crop inventory studies. 9.4 Urban growth studies. 9.5 Flood plain mapping. 9.6 Hydro morphological studies. 9.7 Wasteland mapping. 9.8 Disaster management. 9.9 Application in Other Areas	4	8
Total		48	70

Name of the Course : Diploma in GIS & GPS (Elements of Geographic Information System)	
Course code :GIS & GPS / S4 /Th /EGIS	**Semester : FOURTH**
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 Remote Sensing & Satellite Image Processing.
2.	To learn Remote Sensing in detail.
3.	To learn how to apply concept of Remote Sensing and Satellite Image Processing in GIS.

Objective :-

S.No	Students will be able to:
1.	Understand the concept of Remote Sensing.
2.	Understand and develop the concepts of Satellite Image Processing.

Pre-Requisite :-

S.No	
1.	Basic knowledge of Geography and mathematics is required.

Contents :

Contents (Theory)		Hrs./Unit	Marks
Unit:1	Geographic Information System 1.1 Introduction 1.2 Definition of GIS 1.3 Components of GIS 1.4 Geographical concepts 1.5 Input data for GIS 1.6 Types of output products 1.7 Application of GIS	10	15
Unit: 2	GIS Data 2.1 Introduction 2.2 GIS data types 2.3 Data representation 2.4 Data sources 2.5 Typical GIS data sets 2.6 Data acquisition 2.7 Data verification and editing 2.8 Georeferencing of GIS data 2.9 Spatial data errors	20	30

	2.10 Spatial data models 2.11 Spatial data structures 2.12 Modelling surfaces 2.13 Modelling networks 2.14 GIS database and database management system		
Unit: 3	Spatial Data Analysis 3.1 Introduction. 3.2 Data analysis terminology. 3.3 Measurement of length, perimeter and area. 3.4 Queries. 3.5 Reclassification. 3.6 Buffering and neighbourhood functions. 3.7 Data integration-map overlay. 3.8 Spatial interpolation. 3.9 Surface analysis. 3.10 Network analysis. 3.11 Digital terrain visualization	18	25
Total		48	70

Name of the Course : Diploma in GIS & GPS (Fundamentals of Global positioning System)	
Course code :GIS & GPS / S4 /Th /FGPS	**Semester : FOURTH**
Duration : 16 weeks	**Maximum Marks : 50**
Teaching Scheme	**Examination Scheme**
Theory : - 2 hrs/week	Continuous Intern al Assessment : 10 Marks
Tutorial: - NIL	Attendance, Assignment & Quiz : - 5 Marks
Practical : NIL	End Semester Examination : 35 Marks
Credit :- 2	

Aim :-

S.No	
1.	To study and understand the concepts of Global positioning System
2.	To acquire knowledge on the Satellite system required for GPS in detail.
3.	To learn application field of GPS .

Objective :-

S.No	Students will be able to:
1.	Understand the concept of Global Positioning System.

Pre-Requisite :-

S.No	
1.	Basic knowledge of Surveying, Geography and Cartography is required.

Contents :

	Contents (Theory)	Hrs./Unit	Marks
Unit:1	Introduction of Global Positioning System, Satellite constellation, GPS signals and data, Geo-positioning-Basic Concepts. Discussion on NAVSTAR, GLONASS,GALLILEO,COMPASS etc.	8	6
Unit: 2	2.1 Basic geodesy, Geoid /datum/ Ellipsoid- definition and basic concepts, Coordinate Systems, Special Referencing system, Map Scale, Scale factors, Indian geodetic System 2.2 Segments of GPS: Control Segment, Space Segments, User Segment -operations of GPS, accuracy, error sources and analysis, methodology for collection of data, adjustment computations and analysis. 2.3 Selection of datum, units and scale; GPS measurement. 2.4 GPS Positioning Types- Absolute Positioning, Differential positioning Methods-Static & Rapid static, Kinematic-Real time kinematic Survey.	10	15

Unit: 3	3.1 DGPS-GPS data processing and Accuracy. 3.2 Selection of Reference Station, Reference Station Equipment: GPS receiver, GPS antenna. Radio and its types, Radio Antenna GPS.	8	10
Unit: 4	4.1 Application of GPS in Surveying and Mapping, Navigation, Military, Location Based Services, Vehicle tracking, etc. 4.2 Limitation of GPS & DGPS.	6	4
Total		32	35

Name of the Course : GIS & GPS (DIGITAL IMAGE PROCESSING – I)	
Course code : GIS & GPS / S4 / P/ DIP-I	**Semester : FOURTH**
Duration : 15 weeks	**Maximum Marks : 150**
Teaching Scheme	**Examination Scheme**
Theory : - hrs/week	Continuous Intern al Assessment : 150 Marks
Tutorial: - hrs/week	Attendance, Assignment & Quiz : -
Practical : 4 hrs/week	External Assessment : 50 Marks
Credit :- 3	

Aim :-	
S.No	
1.	Developing the skill required for image processing related to Geographic Information system.

Objective :-	
S.No	Students will be able to:
1.	Learn and use different steps required for image processing.
2.	Perform analysis of digital images required for analysis in GIS.
3.	Process raw survey data obtained in the form of image for GIS..
4.	Perform interpretation of satellite imageries.

INSTRUCTIONS:	
S.No	
1.	Group size for Sessional work should be maximum 6 students.
2.	Each student from a group should handle the software required for Image Processing.
3.	Processing raw satellite images.
4.	**A total number of 4 assignments (as per syllabus) must be prepared individually.**

Pre-Requisite :-	
S.No	
1.	Preliminary concept of using computer.
2.	Students should have basic knowledge of Surveying.

Contents : (Practical)	
Sl. No.	**Assignments**

1.	**1.0** Aerial Photography 1.7. Introduction to aerial photographs; 1.8. Numerical problems on the aerial photographs. 1.9. Determination of photo scale. 1.10. Determination of number of Strips and total number of aerial photographs. 1.11. Preparation of photo index
2.	2. Interpretation of Aerial Photographs. 2.7. Detection of defined objects. 2.8. Use of auxiliary information in object identification; 2.9. Preparation of image interpretation keys; 2.10. Interpretation of stereo pair for physical and cultural features; 2.11. Preparation of land use/land cover classification system based on aerial photographs; 2.12. Interpretation, delineation, and mapping of general land use.
3.	3. Urban Growth Monitoring 3.1 Detection and identification of urban objects on aerial photographs at different scales; 3.2 Urban area interpretation and analysis using multi - scale imageries; 3.3 Urban growth monitoring. 3.4 Residential area interpretation using vertical aerial photographs and satellite imageries; 3.5 Urban population estimation
4	4. Interpretation of Satellite Imageries 4.7. Introduction to Image Processing Softwares, System Configuration; User interface with RS software; Familiarization with ERDAS Imagine/Geomatica/ Open Source Software. 4.8. Study of thermal image and interpretation of various features. 4.9. Study of Radar image and interpretation of various features. 4.10. Study of hyper spectral image and interpretation of various features. 4.11. Acquisition of open source satellite data from USGS / GLOVIS. 4.12. Acquisition of open source satellite data from BHUVAN (ISRO). 4.13. Identification of objects/features on panchromatic, multi-band imageries and FCC. 4.14. Referencing and lay out of satellite images; 4.15. Creating subset of Satellite Image; 4.16. Mosaic of Satellite Images Resolution merge; 4.17. Interpretation of physical and cultural features from IRS imagery; 4.18. Preparation of image interpretation keys using FCC; 4.19. delineation and mapping of land use/land cover using FCCs.

Name of the Course : GIS & GPS **(GIS Practice-I)**	
Course code :GIS & GPS /S4 /P / GISP-I	**Semester : FOURTH**
Duration : 15 weeks	**Maximum Marks : 150**
Teaching Scheme	**Examination Scheme**
Theory : - hrs/week	Continuous Intern al Assessment : 100 Marks
Tutorial: - hrs/week	Attendance, Assignment & Quiz : -
Practical : 4 hrs/week	External Assessment : 50 Marks
Credit :- 4	

Aim :-	
S.No	
1.	Developing the skill required for image processing related to Geographic Information system.

Objective :-	
S.No	Students will be able to:
1.	Learn and use different steps required for GIS related activities.
2.	Perform analysis related with Geo-informatics.
3.	Application of GIS in Water Resources Management..

INSTRUCTIONS:	
S.No	
1.	Group size for Sessional work should be maximum 3 students.
2.	Each student from a group should handle the software required for Image Processing.
3.	Processing raw satellite images.
4.	**A total number of 4 assignments (as per syllabus) must be prepared individually.**

Pre-Requisite :-	
S.No	
1.	Preliminary concept of using computer.
2.	Students should have basic knowledge of Surveying.

Contents : (Practical)	
Sl. No.	**Assignments**
1.	1.1. Analogue to Digital Conversion – Scanning methods 1.2. Introduction to software 1.3. Digital database creation – Point features, Line features, Polygon features 1.4. Data Editing-Removal of errors – Overshoot & Undershoot, Snapping 1.5. Data Collection and Integration, Non-spatial data attachment working with tables 1.6. Dissolving and Merging 1.7. Clipping, Intersection and Union 1.8. Buffering techniques

	1.9. Spatial and Attribute query and Analysis 1.10. Contouring and DEM 1.11. Advanced Analyses – Network analyses 1.12. Layout Generation and report 1.13. Creation of flow direction, flow length, flow accumulation in a watershed based on contours using Arc-View GIS 1.14. Rainfall run-off modelling using geoinformatics approach. 1.15. Soil erosion modelling using geoinformatics approach
2.	2.1 Application of GIS in Water resources Management System. 2.2 Delineation of river catchments on satellite image- topographical sheets and their codification as per Watershed Atlas of India. 2.3 Evaluation of various drainage morphometric parameters for watershed characterization. 2.4 Hydro-geomorphological mapping for ground water exploration in alluvial terrain. 2.5 Hydro-geomorphological mapping for ground water exploration in hard rock terrain. 2.6 Flood inundation mapping in alluvial plain areas using satellite images. 2.7 Locating surface water harvesting structures like check dams, de-siltation tanks, and nullah bunds etc. using satellite image. 2.8 Location of high dams and tunnels in hard rock terrain for large irrigation projects. 2.9 Study of snow covered areas for evaluation of its water resources using satellite images. 2.10 Natural resource mapping and change detection study using temporal satellite data.

Name of the Course : GIS & GPS (PROFESSIONAL PRACTICE II)	
Course code :GIS & GPS /S4 /P / GISP-I	**Semester : FOURTH**
Duration : 15 weeks	**Maximum Marks : 50**
Teaching Scheme	**Examination Scheme**
Theory : - hrs/week	Continuous Internal Assessment : 25 Marks
Tutorial: - hrs/week	Attendance, Assignment & Quiz : - Marks
Practical : 3 hrs/week	External Assessment : 25 Marks
Credit :- 2	

Aim :-

S.No	
1.	Development and evaluation of individual skills.
2.	Enhancement in soft skills through innovation.
3.	Development of professional approach

Objective :-

S.No	Students will be able to:
1.	Acquire information from different sources.
2.	Prepare notes for given topic.
3.	Present given topic in a seminar.
4.	Interact with peers to share thoughts.
5.	Prepare a report on industrial visit, expert lecture.

Pre-Requisite :-

S.No	
1.	Communication skill must be perfect.

Contents : (Practical)

Sl. No.	Assignments
1.	**Link up with Industries** A proper and closed link with industries working on different GIS related projects may be may be maintained. Students may get recent technological / software developments from industry experts. A project report must be submitted after visit to the industry.
2.	**Lectures by Professional / Industrial Expert** be organized on any GIS related topic.
3.	**Individual Assignments :** Seminar and report preparation**.**

Text Books:- Nil.

Reference books :- Nil

Suggested List of Laboratory Experiments :- Nil

Suggested List of Assignments/Tutorial :- Nil

Name of the Course : GIS & GPS (Development of Life Skill-II)	
Course code :GIS & GPS /S4 /P / DLS-II	**Semester : FOURTH**
Duration : 15 weeks	**Maximum Marks : 50**
Teaching Scheme	**Examination Scheme**
Theory : - hrs/week	Continuous Intern al Assessment : 25 Marks
Tutorial: - hrs/week	Attendance, Assignment & Quiz : -
Practical : 2 hrs/week	External Assessment : 25 Marks
Credit :- 1	
Details syllabus as per common syllabus of all discipline	

Name of the Course : GIS & GPS **(FIELD SURVEY PRACTICES – II)**	
Course code :GIS & GPS / S4 / P / FSP2	**Semester : FOURTH**
Duration : 15 weeks	**Maximum Marks : 100**
Teaching Scheme	**Examination Scheme**
Theory : - hrs/week	Continuous Intern al 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 advanced survey skill required for the areas related to Geographic Information system.

Objective :-

S.No	Students will be able to:
1.	Identify and use different modern survey instruments.
2.	Record and observe necessary observation with the advanced survey instruments.
3.	Process raw survey data obtained from field observation for preparation of drawing etc.
4.	Process raw survey data obtained from field observation which can be used in GIS related software.

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.	Downloading raw data from advanced survey instruments and process these data Drawing and plotting should be considered as part of practical. **A total number of 4 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.	Preliminary concept of using computer.
2.	Students should have basic knowledge of Surveying.

Contents : (Practical)

Sl. No.	**Assignments**

1.	**1.0 THEODOLITE SURVEY (No of Drawing Sheet-2)** 1.1 Temporary adjustment of Theodolite (Vernier). 1.2 Measurement of horizontal angle by repetition method and reiteration method. 1.3 Traversing by the method of included angles (using Vernier Theodolite). 1.4 Computation and plotting. 1.5 Traversing by the method of included angles (using Digital Theodolite). 1.6 Computation and plotting.
2.	**2.0 Total Station SURVEY (No of Drawing Sheet-1)** 2.1 Setting up Total Station. 2.2 Measuring Angle and distance by Total Station. 2.3 Use of In built Function of Total Station like, Area, Volume, Remote Height, Stake Out etc. 2.4 A project of Field Survey using Total Station. The project must include, Collection of field data, Downloading field data, Processing of raw data, prepare drawing and report.
3.	3.0 GPS Survey. **(No of Drawing Sheet-1)** 3.1 Survey with Hand held GPS. 3.2 Survey with DGPS.