

**PROPOSED**

**5<sup>TH</sup> SEMESTER**

**CURRICULAR STRUCTURE**

**AND**

**SYLLABI OF**

**FULL-TIME DIPLOMA COURSE IN**

**SURVEY ENGINEERING**

**PROPOSED CURRICULAR STRUCTURE FOR FIFTH SEMESTER OF THE FULL TIME  
DIPLOMA COURSE IN SURVEY ENGINEERING**

WEST BENGAL STATE COUNCIL OF TECHNICAL EDUCATION												
TEACHING & EXAMINATION SCHEME FOR DIPLOMA IN ENGINEERING COURSES												
BRANCH: <b>DIPLOMA IN SURVEY ENGINEERING</b>								SEMESTER: <b>FIFTH</b>				
SL. NO.	SUBJECT	CREDITS	PERIODS			EVALUATION SCHEME						
			L	TU	PR	INTERNAL SCHEME			ESE	PR #	TW @	TOTAL MARKS
						TA	CT	TOTAL				
1	Geodesy & Astronomy	3	3	1	-	10	20	30	70	-	-	100
2	GIS and GPS Applications	2	2	-	-	5	10	15	35	-	-	50
3	Cartography	3+1	3	-	2	10	20	30	70	25	25	150
4	Triangulation & Trilateration	3	3	-	-	10	20	30	70	-	-	100
5	Design of R.C.C. Structure	4	4	-	-	10	20	30	70	-	-	100
6	Civil Engineering Drawing-II	2	-	-	3	-	-	-	-	25	25	50
7	Professional Practice III	2	-	-	3	-	-	-	-	25	25	50
8	Survey Engineering Project I	2	-	-	3	-	-	-	-	50	50	100
9	Field Survey Practices – III	3	-	-	6	-	-	-	-	50	50	100
	<b>TOTAL</b>	<b>25</b>	<b>15</b>	<b>1</b>	<b>17</b>	<b>45</b>	<b>90</b>	<b>135</b>	<b>315</b>	<b>175</b>	<b>175</b>	<b>800</b>

**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.

<b>Name of the Course : SURVEY ENGINEERING (GEODESY &amp; ASTRONOMY)</b>			
<b>Course code : SE / S5 / T1 / GA</b>		<b>Semester : FIFTH</b>	
<b>Duration : 15 weeks</b>		<b>Maximum Marks : 100</b>	
<b>Teaching Scheme</b>		<b>Examination Scheme</b>	
Theory : 3 hrs/week		Mid Semester Exam / CT : 20 Marks	
Tutorial: - 1hrs/week		Attendance, Assignment & Quiz : 10 Marks	
Practical : - hrs/week		End Semester Exam: 70 Marks	
Credit :- 3			
<b>Aim :-</b>			
<b>S.No</b>			
1.	Developing the survey skill required for survey engineering.		
<b>Objective :-</b>			
<b>S.No</b>	Students will be able to:		
1.	Gather knowledge about geodetic surveying and field astronomy.		
<b>Pre-Requisite :-</b>			
<b>S.No</b>			
1.	Students should have the knowledge of basic surveying.		
<b>Contents :</b>		<b>Hrs/unit</b>	<b>Marks</b>
Unit -1	<b>1.0</b> <b>TRIGONOMETRICAL LEVELLING</b> 1.1 Indirect levelling. 1.2 Levelling on step ground. 1.3 Base of an object accessible. 1.4 Base of an object inaccessible. 1.5 Two stations not in the same vertical plane. 1.6 Curvature and refraction. 1.7 Axis-signal correction. 1.8 The difference of elevation by single observation. 1.9 The difference of elevation by double observation.  <b>PRECISE LEVELLING</b> 1.10 Order of precision. 1.11 Field procedure in geodetic levelling. 1.12 Correction for collimation, curvature, refraction. 1.13 Adjustment of level net.	23	35
Unit -2	<b>2.0</b> <b>GEODESIC SURVEY</b> 2.1 Length of great circle arc. 2.2 Length of small circle arc.	22	35

2.3	Formula for spherical trigonometry.		
2.4	Area of spherical triangle.		
2.5	Latitude and longitude.		
<b>FIELD ASTRONOMY</b>			
2.6	Astronomical terms.		
2.7	Coordinates system.		
2.8	Astronomical triangle.		
2.9	Determination of times by astronomical observation.		
2.10	Determination of azimuth.		
2.11	Determination of latitude of place.		
2.12	Conversion of spherical to rectangular coordinates and vice-versa.		

**Text Books:-**

Sl. No.	Titles of the Book	Name of Authors	Name of the Publisher
1	Surveying and Levelling	N N Basak	Tata Mc Graw-Hill
2	Surveying and Levelling ( Part 2 )	T .P. Kanetkar & S. V, Kulkarni	PUNE VIDHYARTHI GRIHA Prakashan
3	Surveying and Levelling ( Vol. 2, 3 )	Dr. B. C. Punmiya	Laxmi Publication
4	Surveying and Levelling ( Vol. 2 )	S. K. Duggal	TATA MC GRAW-HILL
5	Higher Surveying	Dr. A.M.Chandra	NEW AGE INTERNATIONAL PUBLISHERS
6	Surveying ( Vol. 2, 3 )	Dr. K. R. Arora	STANDARD BOOK HOUSE
7	Fundamentals of Surveying	S. K. Roy	PHI Learning Pvt. Ltd.

**Reference books :- Nil**

**Suggested List of Laboratory Experiments :- Nil**

**Suggested List of Assignments/Tutorial :- Nil**

<b>Name of the Course : SURVEY ENGINEERING ( GIS AND GPS APPLICATIONS )</b>				
<b>Course code : SE / S5 / T2 / GGA</b>		<b>Semester : FIFTH</b>		
<b>Duration : 15 weeks</b>		<b>Maximum Marks : 50</b>		
<b>Teaching Scheme</b>		<b>Examination Scheme</b>		
Theory : 2 hrs/week		Mid Semester Exam / CT : 10 Marks		
Tutorial: - hrs/week		Attendance, Assignment & Quiz : 5 Marks		
Practical : - hrs/week		End Semester Exam: 35 Marks		
Credit :- 2				
<b>Aim :-</b>				
<b>S.No</b>				
1.	Study of Geographical Information System and Global Positioning System.			
<b>Objective :-</b>				
<b>S.No</b>	Students will be able to:			
1.	Know theory and application of GPS.			
2.	Familiar with GIS.			
<b>Pre-Requisite :-</b>				
<b>S.No</b>				
1.	Student should have knowledge of basic Surveying.			
<b>Contents :</b>			<b>Hrs/unit</b>	<b>Marks</b>
Unit -1	<b>GPS ( Global Positioning System ) :</b> Basic concept of GPS, operations, accuracy, limitation of GPS & DGPS, error sources and analysis, methodology for collection of data, adjustment computations and analysis,	15	18	
Unit - 2	<b>GIS (Geographical Information System) :</b> Basic Principles, GIS Hardware & Software, Relating information from different sources, Data Representation, Data Capture, raster-vector formats, data conversion methods, Projections, Coordinate systems and registrations, Spatial analysis, Data output and Cartography, Graphic Display Technique, Data Mining, GIS Software, RS & GIS, Digital Topographical Data Standards, Application of RS based GIS, Assessment of GIS Packages, GIS & Private Sectors.	15	17	
<b>Text Books:-</b>				
<b>Sl. No.</b>	<b>Titles of the Book</b>	<b>Name of Authors</b>	<b>Name of the Publisher</b>	

<b>Reference books :- Nil</b>
<b>Suggested List of Laboratory Experiments :- Nil</b>
<b>Suggested List of Assignments/Tutorial :- Nil</b>

<b>Name of the Course : SURVEY ENGINEERING ( CARTOGRAPHY )</b>				
<b>Course code : SE / S5 / T3 / C ( Theory )</b>		<b>Semester : FIFTH</b>		
<b>Course code : SE / S5 / P1 / C ( Practical )</b>		<b>Maximum Marks : 100 + 50</b>		
<b>Duration : 15 weeks</b>		<b>Examination Scheme</b>		
<b>Teaching Scheme</b>		Mid Semester Exam / CT : 20 Marks		
Theory : 3 hrs/week		Attendance, Assignment & Quiz : 10 Marks		
Tutorial: - hrs/week		End Semester Exam: 70 Marks		
Practical : - 2 hrs/week		Continuous Internal Assessment : 25 Marks		
Credit :- 3 + 1		External Assessment : 25 Marks		
<b>Aim :-</b>				
<b>S.No</b>				
1.	Developing the survey skill required for survey engineering.			
<b>Objective :-</b>				
<b>S.No</b>	Students will be able to:			
1.	Gather preliminary knowledge of cartography.			
2.	Gather knowledge about cartographic technique.			
3.	Gather knowledge of map projection.			
<b>Pre-Requisite :-</b>				
<b>S.No</b>				
1.	Students should have the knowledge of basic surveying with drawing and sketching.			
<b>Contents : ( Theory )</b>			<b>Hrs/unit</b>	<b>Marks</b>
Unit -1	<b>1.0</b>		22	35
	<b>CARTOGRAPHY</b>			
	1.1	Principle of cartography, definitions.		
	1.2	Elements of map		
	1.3	Elements of common surveyors projections.		
	1.4	Utility of map.		
	1.5	Study of topo-map on 1 : 50000 and 1 : 250000		
	<b>CARTOGRAPHIC TECHNIQUES</b>			
	1.6	Base materials, instruments, inks and pens.		
	1.7	Drawing of points, lines.		
	1.8	Point symbols, line symbols, area symbols & relief features, principles of lettering, type of lettering.		
	1.9	Lettering devices.		
	1.10	Map numbering,		
1.11	Difference between map & photo.			
<b>SCRIBING</b>				
1.12	Advances of scribing techniques, base materials, instruments, scribing processes.			
1.13	Advantage of scribing over conventional system.			

Unit -2	<p><b>2.0</b></p> <p><b>MAP REPRODUCTION</b></p> <p>2.1 Process camera, photographic copying techniques, colour separation, negative.</p> <p>2.2 Plate making, offset and rotary printing process.</p> <p>2.3 Computerized Map Reproduction Technique.</p> <p><b>MAP PROJECTION</b></p> <p>2.4 Principles; Different types of projection and their properties - Mercator, Transverse Mercator (TM), Universal Transverse Mercator (UTM), Grids etc.</p> <p>2.5 Computation in Grid – Geographical to UTM and vice versa.</p>	23	35
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**Contents : ( Practical )**

Sl. No.	Assignments
1	DRAWING OF STRAIGHT LINES – I : To draw free hand straight line by pencil.
2	DRAWING OF CURVED LINES – I : To draw free hand curved line by pencil.
3	DRAWING OF STRAIGHT LINES – II : To draw free hand straight line by ink and isograph / rotring.
4	DRAWING OF CURVED LINES – II : To draw free hand curved line by ink and isograph / rotring.
5	DRAWING OF CONTOUR LINES – I : To draw contour lines by pencil.
6	DRAWING OF CONTOUR LINES – II : To draw contour lines by ink and isograph / rotring.
7	DRAWING OF SYMBOLS : To draw some simple symbols.
8	INK UP OF MAP : To ink up map from blue print.
9	PREPARATION OF BAR GRAPH ETC. : To prepare bar graph, pie chart and coloured thematic mapping.

**Text Books:-**

Sl. No.	Titles of the Book	Name of Authors	Name of the Publisher

**Reference books :- Nil**

**Suggested List of Laboratory Experiments :- Nil**

**Suggested List of Assignments/Tutorial :- Nil**



<b>Name of the Course : SURVEY ENGINEERING ( TRIANGULATION &amp; TRILATERATION )</b>			
<b>Course code : SE / S5 / T4 / TT</b>		<b>Semester : FIFTH</b>	
<b>Duration : 15 weeks</b>		<b>Maximum Marks : 100</b>	
<b>Teaching Scheme</b>		<b>Examination Scheme</b>	
Theory : 3 hrs/week		Mid Semester Exam / CT : 20 Marks	
Tutorial: - hrs/week		Attendance, Assignment & Quiz : 10 Marks	
Practical : - hrs/week		End Semester Exam: 70 Marks	
Credit :- 3			
<b>Aim :-</b>			
<b>S.No</b>			
1.	Developing the survey skill required for survey engineering.		
<b>Objective :-</b>			
<b>S.No</b>	Students will be able to:		
1.	Gather knowledge of methods for fixing of horizontal control points.		
<b>Pre-Requisite :-</b>			
<b>S.No</b>			
1.	Students should have the knowledge of basic surveying with drawing and sketching.		
<b>Contents :</b>		<b>Hrs/unit</b>	<b>Marks</b>
Unit -1	<p><b>ERROR ADJUSTMENT</b></p> <p>1.1. Classification of errors. 1.2. Laws of accidental errors. 1.3. Most probable values of directly and indirectly observed independent quantities. 1.4. Least square. 1.5. Normal equation. 1.6. Method of co-relates.</p> <p><b>TRIANGULATION</b></p> <p>1.7 Classification of triangulation system. 1.8 Triangulation figures. 1.9 Triangulation system adopted in India. 1.10 Strength of figure. 1.11 Selection of station. 1.12 Observation of horizontal angles. 1.13 Base line extension. 1.14 Stations. 1.15 Base line measurement. 1.16 Corrections to the base line. 1.17 Phase error 1.18 Intervisibility 1.19 Satellite station 1.20 Different types of application of triangulation survey. 1.21 Adjustment of different types of triangulation figure by equal shift method only. 1.22 Numerical problems.</p>	25	40

Unit -2	<b>TRILATERATION</b> 2.1 Introduction 2.2 Use of Trilateration 2.3 Advantage and Disadvantage of Trilateration 2.4 Comparison of Trilateration with Triangulation 2.5 Geometrical figures used in Trilateration 2.6 Reconnaissance in Trilateration 2.7 Precision in Trilateration 2.8 Reduction of slope distance from vertical angles 2.9 Reduction of slope distance from elevations 2.10 Adjustment in Trilateration ( Adjustment of a Braced Quadrilateral ).	20	30
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**Text Books:-**

Sl. No.	Titles of the Book	Name of Authors	Name of the Publisher
1	Surveying and Levelling ( Vol. 2, 3 )	Dr. B. C. Punmiya	Laxmi Publication
2	Surveying and Levelling ( Vol. 2 )	S. K. Duggal	TATA MC GRAW-HILL
3	Higher Surveying	Dr. A.M.Chandra	NEW AGE INTERNATIONAL PUBLISHERS
4	Surveying ( Vol. 2, 3 )	Dr. K. R. Arora	STANDARD BOOK HOUSE
5	Fundamentals of Surveying	S. K. Roy	PHI Learning Pvt. Ltd.

**Reference books :- Nil**

**Suggested List of Laboratory Experiments :- Nil**

**Suggested List of Assignments/Tutorial :- Nil**

<b>Name of the Course : SURVEY ENGINEERING ( DESIGN OF R.C.C. STRUCTURE )</b>			
<b>Course code : SE / S5 / T5 / DRCCS</b>		<b>Semester : FIFTH</b>	
<b>Duration : 15 weeks</b>		<b>Maximum Marks : 50</b>	
<b>Teaching Scheme</b>		<b>Examination Scheme</b>	
Theory : 3 hrs/week		Mid Semester Exam / CT : 20 Marks	
Tutorial: - 1hrs/week		Attendance, Assignment & Quiz : 10 Marks	
Practical : - hrs/week		End Semester Exam: 70 Marks	
Credit :- 3			
<b>Aim :-</b>			
<b>S.No</b>			
1.	Study of design of structure.		
<b>Objective :-</b>			
<b>S.No</b>	Students will be able to:		
1.	Understand the basic principles of design of R.C.C. structure.		
<b>Pre-Requisite :-</b>			
<b>S.No</b>			
1.	Student should be perfect in engineering mechanics		
2.	Student should know the properties of materials being used.		
<b>Contents :</b>		<b>Hrs/unit</b>	<b>Marks</b>
Unit -1	<b>INTRODUCTION</b> 1.0 Introduction to BIS: 875 1.1. General concept of loads on structures. 1.2. Different types of loads, dead load, super imposed load (live load), wind load seismic load, hydrostatic pressure , earth pressure, moving load . 1.3. Load on different types pf structures like buildings, workshops , water tanks and lowers. 1.4. Methods of design : working stress, limit state method.  <b>RCC DESIGN OF BEAMS</b> 1.5 REINFORCED CEMENT CONCRETE 1.6 Element of R.C.C. Design. 1.7 Complete design of a simply supported singly reinforced R.C.C. rectangular beams, double reinforced rectangular and 'T' beams, shear force and bond in RCC members.  <b>RCC DESIGN OF SLABS</b> 1.8 Complete design with detailing of one-way simple supported and cantilever slab. 1.9 Design of two- way slabs and details of reinforcement.	25	40
	<b>RCC DESIGN OF COLUMNS</b> 2.1 Difference between short and long columns. Design of a axially loaded short column by IS code formula and details and details of reinforcement. 2.2 Design of isolated RCC footing and reinforcement details.	20	30

Unit -2	<b>RCC DESIGN OF STAIRCASE</b> 2.3 General concept of continuous beams and slabs, combined footing , strip foundation, mat & raft foundation, RCC pile foundation .( not involving structural details. ) 2.4 Design & detailing of RCC staircases of simple slab type. 2.5 Concept of continuous beams, slabs, combined footing, PCC pile (not involving structural design ).		
<b>Text Books:-</b>			
<b>Sl. No.</b>	<b>Titles of the Book</b>	<b>Name of Authors</b>	<b>Name of the Publisher</b>
1.	Design of Reinforced Concrete Structure	N. Subramanian	Oxford University Press
2.	Reinforced Concrete	Punmia Jain Jain	
<b>Reference books :- Nil</b>			
<b>Suggested List of Laboratory Experiments :- Nil</b>			
<b>Suggested List of Assignments/Tutorial :- Nil</b>			

<b>Name of the Course : SURVEY ENGINEERING ( CIVIL ENGINEERING DRAWING - II )</b>			
<b>Course code : SE / S5 / P1 / CED2</b>		<b>Semester : FIFTH</b>	
<b>Duration : 15 weeks</b>		<b>Maximum Marks : 50</b>	
<b>Teaching Scheme</b>		<b>Examination Scheme</b>	
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			
<b>Aim :-</b>			
<b>S.No</b>			
1.	To develop the ideas, vision and its practical reality through engineering graphics.		
2.	Developing the approach of visualization, drafting, modeling and analysis.		
<b>Objective :-</b>			
<b>S.No</b>	Students will be able to:		
1.	Read, interpret and draw the building drawings.		
2.	Prepare working drawings for the building.		
3.	Apply the building rules, regulations and byelaws		
<b>Pre-Requisite :-</b>			
<b>S.No</b>			
1.	Perfection in geometry and sketching.		
2.	The students should be perfect in plotting the geometrical shapes and skill of reading the geometrical designs.		
<b>Contents : ( Practical )</b>			
<b>Sl. No.</b>	<b>Assignments : Following exercises should be drawn on full imperial size drawing sheets.</b>		
1.	<b>PLATE-1</b> <b>1.0 RCC DETAILS OF COLUMN &amp; COLUMN FOOTING, ROOF SLAB, BEAMS</b> RCC Detail for : i) Column with footing –Plan , Sectional elevation. ii) A continuous beam over columns –Half long section/two cross sections / One mid section, One support section. iii) One way slab reinforcement : plan /sectional elevations <b>2.0 RCC DETAIL INCLUDING BAR BENDING SCHEDULE AS IS CODE-2502 FOR SLABS</b> RCC Detail inclusive of bar bending schedule ( as per IS code-2502 )for: i) A two way slab reinforcement plan with corner reinforcement and sectional Elevation.		
2.	<b>PLATE-2 : DOORS AND WINDOWS</b> i) Front elevation, sectional side elevation showing details of joints of the following. ii) $\frac{1}{3}$ paneled and $\frac{2}{3}$ glazed door iii) Fully paneled door		
<b>Text Books:-</b>			
<b>Sl. No.</b>	<b>Titles of the Book</b>	<b>Name of Authors</b>	<b>Name of the Publisher</b>

1	Civil Engineering Drawing	<b>Malik &amp; Mayo</b>	New Asian Publishers New Delhi
2	Elements of Building Drawing	<b>D. M. Mahajan</b>	
<b>Reference books :- Nil</b>			
<b>Suggested List of Laboratory Experiments :- Nil</b>			
<b>Suggested List of Assignments/Tutorial :- Nil</b>			

<b>Name of the Course : SURVEY ENGINEERING ( PROFESSIONAL PRACTICE III )</b>	
<b>Course code : SE / S4 / P2 / PP3</b>	<b>Semester : FIFTH</b>
<b>Duration : 15 weeks</b>	<b>Maximum Marks : 50</b>
<b>Teaching Scheme</b>	<b>Examination Scheme</b>
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	
<b>Aim :-</b>	
<b>S.No</b>	
1.	Development and evaluation of individual skills.
2.	Enhancement in soft skills through innovation.
<b>Objective :-</b>	
<b>S.No</b>	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.
<b>Pre-Requisite :-</b>	
<b>S.No</b>	
1.	Communication skill must be perfect.
<b>Contents : ( Practical )</b>	
<b>Sl. No.</b>	<b>Assignments</b>
1.	<b>Industrial Visits</b> Structured industrial visits be arranged and report of the same should be submitted by the individual student, to form a part of the term work. Industrial visits may be arranged in the following areas / industries: Survey Site
2.	<b>Lectures by Professional / Industrial Expert</b> be organized from different types of Survey instruments / software.
3.	<b>Individual Assignments</b> : Seminar and report preparation.
<b>Text Books:- Nil.</b>	
<b>Reference books :- Nil</b>	
<b>Suggested List of Laboratory Experiments :- Nil</b>	
<b>Suggested List of Assignments/Tutorial :- Nil</b>	

<b>Name of the Course : SURVEY ENGINEERING (SURVEY ENGINEERING PROJECT I)</b>	
<b>Course code : SE / S4 / P3 / SEP1</b>	<b>Semester : FIFTH</b>
<b>Duration : 15 weeks</b>	<b>Maximum Marks : 100</b>
<b>Teaching Scheme</b>	<b>Examination Scheme</b>
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	
<b>Aim :-</b>	
<b>S.No</b>	
1.	Land development and planning of small township.
<b>Objective :-</b>	
<b>S.No</b>	Students will be able to:
1.	Acquire knowledge on development of land for new small township and lay out on topographical map.
<b>Pre-Requisite :-</b>	
<b>S.No</b>	
1.	Students should have basic knowledge of Surveying.
<b>Contents : ( Practical )</b>	
<b>Sl. No.</b>	<b>Assignments</b>
1.	<p><b>LAND DEVELOPMENT &amp; PLANNING OF SMALL TOWNSHIP (SURVEY) (ON EXISTING TOPOGRAPHIC MAP)</b> (Topographical area not less than 1 sq. Km. )</p> <p>1.1 Introduction and purpose  1.2 Site selection for proposed township  1.3 Reconnaissance survey and data collection: Socio-economic/rainfall/HFL  1.4 Land development planning &amp; Preparation of the following maps on topo-map ;  i) Street map/Water supply and Surface drains map/Electrification map  ii) Master plan</p>
2.	<p><b>REPORT ON PROJECT</b> (Report prepared should include information related to the following )</p> <p>i) Introduction  ii) Necessity and back ground of the township  iii) Data: Socio-Economic survey/ rainfall/ HFL  iv) Land development work along with the following :  a) Allocation of land for use of different purpose.  b) Quantity and rough cost Estimate for earth work-cutting/filling/leveling/surface dressing/plantation etc.  c) Rough cost Estimate for sewerage and surface drainage  d) Rough cost Estimate for road construction  v) Overall benefit of the project  vi) Conclusion and recommendation</p>



3.	<p><b>MAP SHOULD BE SUBMITTED ALONGWITH THE REPORT</b></p> <p>i) <b>Master</b> plan of the township ( Plan shown only :Division of sectors/Streets.)</p> <p>ii) Topographical map of the project( Prepared at Annual Survey training camp)</p> <p>Proposed Street map /Proposed Water supply and sewerage and surface drains map/Proposed Electrification map.</p>
<b>Text Books:- Nil.</b>	
<b>Reference books :- Nil</b>	
<b>Suggested List of Laboratory Experiments :- Nil</b>	
<b>Suggested List of Assignments/Tutorial :- Nil</b>	

<b>Name of the Course : SURVEY ENGINEERING ( FIELD SURVEY PRACTICES – III )</b>	
<b>Course code : SE / S4 / P4 / FSP3</b>	<b>Semester : FIFTH</b>
<b>Duration : 15 weeks</b>	<b>Maximum Marks : 100</b>
<b>Teaching Scheme</b>	<b>Examination Scheme</b>
Theory : - hrs/week	Continuous Internal Assessment : 50 Marks
Tutorial: - hrs/week	Attendance, Assignment & Quiz : - Marks
Practical : 6 hrs/week	External Assessment : 50 Marks
Credit :- 3	
<b>Aim :-</b>	
<b>S.No</b>	
1.	Developing the survey skill required for survey engineering.
<b>Objective :-</b>	
<b>S.No</b>	Students will be able to:
1.	Record and observe necessary observation with the survey instruments.
2.	Compute necessary survey data from field observation for drawing.
3.	Prepare drawing using survey data.
<b>INSTRUCTIONS:</b>	
<b>S.No</b>	
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.
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.
<b>Pre-Requisite :-</b>	
<b>S.No</b>	
1.	Perfection in drawing and sketching.
2.	Students should have basic knowledge of Surveying.
<b>Contents : ( Practical )</b>	
<b>Sl. No.</b>	<b>Assignments</b>
1.	Survey with total station
2.	Comparative map and boundary demarcation
3.	Capacity of a river
4.	Map of a river
5.	Setting out of simple curve by ordinates or offsets from long chord.
6.	Setting out of simple curve by offsets from chords produced.

7.	Setting out of simple curve by deflection angles (Rankine's method).		
8.	Setting out of simple curve by two theodolites method.		
<b>Text Books:-</b>			
<b>Sl. No.</b>	<b>Titles of the Book</b>	<b>Name of Authors</b>	<b>Name of the Publisher</b>
1	Surveying and Levelling ( Vol. 2 )	S. K. Duggal	TATA MC GRAW-HILL
2	Higher Surveying	Dr. A.M.Chandra	NEW AGE INTERNATIONAL PUBLISHERS
3	Surveying ( Vol. 3)	Dr. K. R. Arora	STANDARD BOOK HOUSE
4	Fundamentals of Surveying	S. K. Roy	PHI Learning Pvt. Ltd.
<b>Reference books :- Nil</b>			
<b>Suggested List of Laboratory Experiments :- Nil</b>			
<b>Suggested List of Assignments/Tutorial :- Nil</b>			