

West Bengal State Council of Technical &
Vocational Education and Skill
Development
(Technical Education Division)



Reduced Draft Syllabus
of
Diploma in Survey Engineering
Part-III (6th Semester)

Only for Academic Session 2021 - 2022

CURTAILED SYLLABUS

PROPOSED 6TH

SEMESTER

CURRICULAR

STRUCTURE AND

SYLLABUS OF

FULL-TIME DIPLOMA COURSE

IN SURVEY ENGINEERING

PROPOSEDCURRICULARSTRUCTUREFORSIXTHSEMESTEROFTHEFULLTIMEDIPLOMACOURSE IN SURVEYENGINEERING

WESTBENGALSTATECOUNCILOFTECHNICALEDUCATION												
TEACHING&EXAMINATIONSCHEMEFORDIPLOMAINENGINEERINGCOURSES												
BRANCH:DIPLOMA IN SURVEY ENGINEERING										SEMESTER:SIXTH		
SL. NO.	SUBJECT	CREDITS	PERIODS			EVALUATIONSCHEME						
			L	TU	PR	INTERNALSCHEME			ESE	PR #	TW @	TOTAL MARKS
						TA	CT	TOTAL				
1	IndustrialManagement	3	4	-	-	10	20	30	70	-	-	100
2	EnvironmentalEngineering	4	4	1	-	10	20	30	70	-	-	100
3	Photogrammetry and RemoteSensing	3	4	-	-	10	20	30	70	-	-	100
4	Elective(anyone)	3	3	1	-	10	20	30	70	-	-	100
	MunicipalEngineering											
	MiningTechnology											
	Town&CountryPlanning											
	TransmissionLineSurvey											
5	SurveyTrainingCamp	3	-	-	3	-	-	-	-	75	75	150
6	GISandGPSApplications	2	-	-	3	-	-	-	-	25	25	50
7	SurveySoftware	2	-	-	3	-	-	-	-	25	25	50
8	ProfessionalPracticeIV	2	-	-	3	-	-	-	-	25	25	50
9	SurveyEngineeringProjectII	2	-	-	4	-	-	-	-	50	50	100
10	GeneralViva-Voce	1	-	-		-	-	-	-	-	100	100
	TOTAL	25	15	2	15	40	80	120	280	200	300	900

STUDENTCONTACT HOURS PER WEEK:32 Hrs.
TheoryandPracticalPeriodof60Minuteseach.
#-ExternalAssessment@ -InternalAssessment,**ESE**-EndSemesterExam,**CT**-ClassTest, **TA**- TeachersAssessment.
L-Lecturer,**TU**-Tutorial,**PR**-Practical,**TA**-Teachers'Assessment,**CT**-ClassTest,**ESE** -EndSemesterExam.**TW**-TermWork.

Note: Institute may complete the practical of **Survey Training Camp** within 10 days at the starting of session and then the classes of this particular subject may be adjusted with the Theory Class if necessary.

Name of the Course: SURVEY ENGINEERING (INDUSTRIAL MANAGEMENT)	
Course code: SE/S6 / T1 / IM	Semester: SIXTH
Duration: 15 weeks	Maximum Marks: 100
Teaching Scheme	Examination Scheme
Theory: 4hrs/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	
Detail syllabus as per common syllabus of all discipline	

Name of the Course: SURVEY ENGINEERING (ENVIRONMENTAL ENGINEERING)	
Course code: SE/S6 / T2 / EE	Semester: SIXTH
Duration: 15 weeks	Maximum Marks: 100
Teaching Scheme	Examination Scheme
Theory: 4hrs/week	Mid Semester Exam/CT: 20 Marks
Tutorial: -1 hrs/week	Attendance, Assignment & Quiz: 10 Marks
Practical: -hrs/week	End Semester Exam: 70 Marks
Credit: -4	
Detail syllabus as per common syllabus of all discipline	

Name of the Course : SURVEY ENGINEERING (PHOTOGRAMMETRY AND REMOTE SENSING)			
Course code : SE / S6 / T3 / PRS		Semester : SIXTH	
Duration :		Maximum Marks : 100	
Teaching Scheme		Examination Scheme	
Theory : 4 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			
Aim :-			
1.	Developing the survey skill required for survey engineering.		
Objective :-			
S.No	Students will be able to:		
1.	Gather knowledge of photogrammetry and remote sensing.		
Pre-Requisite :-			
1.	Students should have the basic knowledge of surveying.		
Contents :		Hrs/unit	Marks
Unit -1	<p>1.0 PHOTOGRAMMETRY</p> <p>1.1. Scope & importance of photogrammetry surveying. Different types of Photogrammetry. Map versus Aerial Photograph.</p> <p>1.2. Terrestrial photogrammetry: Principle, Graphical method, Analytical method, Stereo photogrammetry & field work; Elementary idea about photogrammetry surveying, Numerical problems</p> <p>1.3. Aerial photogrammetry: Aerial Camera, Terminology used in Aerial photogrammetry: i) Exposure Station, ii) Flying Height, iii) Altitude, iv) Tilt, v) Tip, vi) Perspective centre, vii) Plumb points, viii) Principal points, viii) Isocentres, ix) principal plane, x) Horizontal Trace, xi) plate parallels, Scales of the vertical photograph, Distortion of the vertical photograph, Distortion due to height or, relief, Scale & Distortion of the oblique photograph, Numerical problems.</p> <p>1.4. Application of Photogrammetry in Advanced Survey Field. Advantages, Errors & Mistakes in Photogrammetry.</p>		35
Unit -2	<p>2.1 REMOTE SENSING</p> <p>2.2 Definition & importance of Remote Sensing.</p> <p>2.3 Electro Magnetic Energy and its characteristics, Electromagnetic Spectrum, Transmission Path, Effect of atmosphere on electromagnetic radiation, Atmospheric Windows, Interaction of Electro Magnetic Energy with matter and Earth surface features. Idealised Remote Sensing System.</p> <p>2.4 Types of Remote-Sensing Sensor Systems iii) Active System, iv) Passive system. Platforms of Remote Sensing.</p> <p>2.5 Application of Remote Sensing in i) Resource Exploration, ii) Environmental Applications, iii) Land use and Land cover analysis, iv) Studying Natural Hazards, v) Geographic Information System.</p>		35

Text Books:-			
Sl. No.	Titles of the Book	Name of Authors	Name of the Publisher
1	Surveying and Levelling (Vol. 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
4	Surveying (Vol. 3)	Dr. K. R. Arora	STANDARD BOOK HOUSE
Reference books :- Nil			
Suggested List of Laboratory Experiments :- Nil			
Suggested List of Assignments/Tutorial :- Nil			

NameoftheCourse: SURVEYENGINEERING (MUNICIPALENGINEERING[ELECTIVE])			
Course code: SE/S6 / T4(E1)/ME		Semester: SIXTH	
Duration: 15weeks		MaximumMarks: 100	
TeachingScheme		ExaminationScheme	
Theory: 3hrs/week		MidSemester Exam/CT: 20Marks	
Tutorial: -1hrs/week		Attendance, Assignment&Quiz: 10Marks	
Practical: -hrs/week		EndSemesterExam: 70Marks	
Credit: -3			
Aim:-			
S.No			
Objective:-			
S.No	Studentswillbeableto:		
Pre-Requisite:-			
S.No			
Contents:		Hrs/unit	Marks
Unit-1	1.0 ENVIRONMENTALSTUDY Water supply from wells, tubewells, surface intake, determination of yield, per capita demand. Quality of water: Water analysis, physical test, chemical test, living organism in water, Biological tests.		20
Unit-2	2.0 PURIFICATIONOFWATER Plain sedimentation., Sedimentation with coagulation, Filtration, Disinfections, softening and other miscellaneous methods Water distributionsystemsandNetworks.		20
Unit-3	3.0SYSTEM OFSANITATION Methods of collection, conservancy system, water carriage systems, merits and demerits of conservancy and water carriage systems. Sewer appurtenances Microbiology of sewerage Sewage treatment methods: Preliminary process, Biological process. Solid waste collection and disposal methods. Air pollution: sample survey and analysis.		30
TextBooks:-			
Sl.No.	TitlesoftheBook	NameofAuthors	NameofthePublisher
Referencebooks:- Nil			
SuggestedListofLaboratoryExperiments:- Nil			
SuggestedListofAssignments/Tutorial:- Nil			

NameoftheCourse: SURVEYENGINEERING (MININGTECHNOLOGY[ELECTIVE])			
Coursecode: SE/S6 / T4(E2)/MT		Semester: SIXTH	
Duration:		MaximumMarks: 100	
TeachingScheme		ExaminationScheme	
Theory: 3hrs/week		MidSemester Exam/CT: 20Marks	
Tutorial: -1hrs/week		Attendance, Assignment&Quiz: 10Marks	
Practical: -hrs/week		EndSemesterExam: 70Marks	
Credit: -3			
Aim:-			
S.No			
1.	Developing theminingskillrequiredforsurveyengineering.		
Objective:-			
S.No	Studentswillbeableto:		
1.	Gatherknowledgeaboutmethodof worksinunderground.		
2.	Gatherknowledgeaboutmethodof worksinsurface.		
3.	Gatherknowledgeaboutmineventilation.		
Pre-Requisite:-			
S.No			
1.			
Contents:		Hrs/unit	Marks
Unit-1	1.0 WINING & WORKING 1.1. Modes of entry by Adits, inclines & shafts –their applicability & comparison. 1.2. Board & Pillar method – Applicability, merits & demerits, development work, percentage of extraction, determination of panel size, depillaring by caving & stowing. 1.3. Long wall Workings – Applicability, merits & demerits and Advancing& retreating longwall.		20
Unit-2	2.0 OPENCAST MINING 2.1. Applicability, Advantages & disadvantages. 2.2. Mineral: OB ratio, stripping ratio, break-even stripping ratio. 2.3. Opencast layout with all combination.		15
Unit-3	3.0 VENTILATION 4.1. Natural ventilation & motive column, laws of mineairfriction. 4.2. Construction & uses of ventilation stopping, air-crossing, V-door, regulator & brattice partitions. 4.3. Homotropical&Antitropical ventilation, splitting of air current.		15

TextBooks:-

Sl. No.	TitlesoftheBook	NameofAuthors	NameofthePublisher
1.	Elements ofMiningTechnology(V ol.1,2)	D.J. Deshmukh	VidyasewaPrakashan
2.	Mine Environment andVentilation	G.B.Mishra	

Referencebooks:-Nil**SuggestedList of LaboratoryExperiments:-Nil****SuggestedListofAssignments/Tutorial:- Nil**

NameoftheCourse: SURVEYENGINEERING (TOWN&COUNTRYPLANNING[ELECTIVE])			
Coursecode: SE/S6 /T4(E3)/TCP		Semester: SIXTH	
Duration:		MaximumMarks:100	
TeachingScheme		ExaminationScheme	
Theory:3hrs/week		MidSemester Exam/CT:20Marks	
Tutorial:-1hrs/week		Attendance, Assignment&Quiz:10Marks	
Practical:-hrs/week		EndSemesterExam:70Marks	
Credit:-3			
Aim:-			
S.No			
1.			
Objective:-			
S.No	Studentswillbeableto:		
1.			
Pre-Requisite:-			
S.No			
1.			
Contents:		Hrs/unit	Marks
Unit-1	TOWNPLANNING Historicalback ground Classiccity&medievaltowns Indiantowns Townandenvironment Physicalplanningofresidentialareas Land usemaps Trafficnetworks Landscaping Siteleveling Sanitaryrequirements		35
Unit-2	COUNTRYPLANNING Conceptsofregion. Contourmaps Zoning Ruralandurbansociology Industrial,commercialandagriculturalregions Metropolitanddevelopment.		35
TextBooks:-			
Sl.No.	TitlesoftheBook	Nameof Authors	NameofthePublisher
Referencebooks:- Nil			
SuggestedListofLaboratoryExperiments:- Nil			
SuggestedListofAssignments/Tutorial:-Nil			

Name of the Course: SURVEY ENGINEERING (SURVEY TRAINING CAMP)	
Course code: SE/S6 / P1 / STC	Semester: SIXTH
Duration:	Maximum Marks: 150
Teaching Scheme	Examination Scheme
Theory: -hrs/week	Continuous Internal Assessment: 75 Marks
Tutorial: -hrs/week	Attendance, Assignment & Quiz: -Marks
Practical :	External Assessment: 75 Marks
Credit: -3	
Aim:-	
S.No	
1.	Developing the survey skill required for survey engineering.
Objective:-	
S.No	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.
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.
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 knowledge of Surveying.
Contents: (Practical)	
Sl. No.	Assignments
1.	Preparation of Topo-Map (1 Sq.Km.)
2.	Indirect contouring by square method
3.	Indirect contouring by Total Station/Tacheometer.
4.	Minor triangulation with single chain of triangle
5.	Trilateration with Braced Quadrilaterals covering an Area of 1.5 Sq.Km.)
Text Books:-	

Sl. No.	TitlesoftheBook	NameofAuthors	NameofthePublisher
1	SurveyingandLevelling	NNBasak	TataMcGraw-Hill
2	Surveying and Levelling (Part 1,2)	T .P. Kanetkar& S. V,Kulkarni	PUNEVIDHYARTHI GRIHAPrakashan
3	Surveying and Levelling (Vol.1,2,3)	Dr.B.C.Punmiya	LaxmiPublication
4	Textbookof Surveying	S.K.Husain,M.S.Nagaraj	S.Chand andcompany
5	Surveying and Levelling(Vol.1,2)	S.K.Duggal	TATAMCGRAW-HILL
6	PlaneSurveying	Dr.A.M.Chandra	NEWAGEINTER NATIONAL
7	Surveying (Vol.1,2,3)	Dr.K. R. Arora	STANDARD BOOKHOUSE
8	Fundamentals ofSurveying	S.K.Roy	PHILearning Pvt.Ltd.
Referencebooks:-Nil			
SuggestedList of LaboratoryExperiments:-Nil			
SuggestedListofAssignments/Tutorial:- Nil			

NameoftheCourse: SURVEYENGINEERING (GISANDGPS APPLICATIONS)			
Course code: SE/S6/ P2/GGA		Semester: SIXTH	
Duration:		MaximumMarks: 50	
TeachingScheme		ExaminationScheme	
Theory: -hrs/week		Continuous InternalAssessment: 25Marks	
Tutorial: -hrs/week		Attendance, Assignment&Quiz: -Marks	
Practical: 3hrs/week		ExternalAssessment: 25 Marks	
Credit: -2			
Aim:-			
S.No			
1.	Developing the survey skill required for survey engineering.		
Objective:-			
S.No	Students will be able to:		
1.	Work with GPS		
2.	Work with GIS		
Pre-Requisite:-			
S.No			
1.	Students should have basic knowledge of Computer.		
2.	Students should have basic knowledge of Surveying.		
Contents:(Practical)			
Sl. No.	Assignments		
1.	Survey with GPS		
2.	GIS Applications.		
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			

Name of the Course: SURVEY ENGINEERING (SURVEY SOFTWARE)	
Course code: SE/S6 / P3 / SS	Semester: SIXTH
Duration:	Maximum Marks: 50
Teaching Scheme	Examination Scheme
Theory: -hrs/week	Continuous Internal Assessment: 25 Marks
Tutorial: -hrs/week	Attendance, Assignment & Quiz: -Marks
Practical: 3hrs/week	External Assessment: 25 Marks
Credit: -2	
Aim:-	
S.No	
1.	Developing the computerized survey technique required for survey engineering.
Objective:-	
S.No	Students will be able to:
1.	Work with survey software.
Pre-Requisite:-	
S.No	
1.	Students should be conversant with Computer environment.
2.	Students should be conversant with CAD software.
3.	Students should have basic knowledge of Surveying.
Contents: (Practical)	
Sl. No.	Assignments
1.	Spreadsheet: Practice with Survey related calculation like computation of independent coordinates from length and bearing, computation of R.L. of target points from BS, IS and FS etc.
2.	Downloading the Total Station data to the PC.
3.	Plotting the contour lines with the help of AutoCIVIL/Civil3D software/any other Software.
Text Books:- NIL	
Reference books:- Nil	
Suggested List of Laboratory Experiments:- Nil	
Suggested List of Assignments/Tutorial:- Nil	

Name of the Course: SURVEY ENGINEERING (PROFESSIONAL PRACTICE IV)	
Course code: SE/S4 / P4 / PP4	Semester: SIXTH
Duration:	Maximum Marks: 50
Teaching Scheme	Examination Scheme
Theory: -hrs/week	Continuous Internal Assessment: 25 Marks
Tutorial: -hrs/week	Attendance, Assignment & Quiz: -Marks
Practical: 3hrs/week	External Assessment: 25 Marks
Credit: -2	
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.	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.	Industrial Visits 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.	Lectures by Professional / Industrial Expert be organized from different types of Survey instruments/software.
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: SURVEY ENGINEERING (SURVEY ENGINEERING PROJECT II)	
Course code: SE/S4 / P5 / SEP2	Semester: SIXTH
Duration:	Maximum Marks: 100
Teaching Scheme	Examination Scheme
Theory: -hrs/week	Continuous Internal Assessment: 50 Marks
Tutorial: -hrs/week	Attendance, Assignment & Quiz: -Marks
Practical: 4hrs/week	External Assessment: 50 Marks
Credit: -2	
Aim:-	
S.No	
1.	
Objective:-	
S.No	Students will be able to:
1.	Acquire knowledge on road construction.
Pre-Requisite:-	
S.No	
1.	Students should have basic knowledge of Surveying.
Contents: (Practical)	
Sl. No.	Assignments
1.	ROAD PROJECT (Survey work should be not less than 2kms) 1.1. Necessity and purpose of road. 1.2. socio-economic survey of the village/town/city Making the tentative alignment Reconnaissance survey Preliminary location survey Formation line construction. Final location survey Longitudinal section of the road Cross sections of the road 2.0 Economic cutting-filling calculation Rough cost estimation of the proposed road Mass haul diagram Correction of road curvature

2.	<p>AREPORTONROADPROJECT (Reportpreparedshouldinclude informationrelatedtothefollowing):-</p> <ul style="list-style-type: none"> i) Introductiontotheproject ii) Necessityandbackgroundofproject iii) Socio-economicsurveyandrainfalldata/recordofHFL iv) Justificationfor selectionofthefinalalignment v) Estimate:Earthwork,Roadsurface,Drainageetc. vi) Briefspecificationwithroughcostestimateoftheproject vii) Overallbenefitoftheproject viii) Conclusionandrecommendation
3.	<p>MAPSSHOULDBESUBMITTEDALONGWITHTHEPROJECT</p> <ul style="list-style-type: none"> i) Generalmapoftheareathough which proposedroadwill pass. ii) Routemap/keyplan iii) Longitudinalandcross sectionsoftheproposedroad iv) Sketchplanofcurvedetail.
TextBooks:-Nil.	
Referencebooks:-Nil	
SuggestedList of LaboratoryExperiments:-Nil	
SuggestedListofAssignments/Tutorial:- Nil	