

PROPOSED

6TH SEMESTER

CURRICULAR STRUCTURE

AND

SYLLABI OF

FULL-TIME DIPLOMA COURSE IN

GIS & GPS

**PROPOSED CURRICULAR STRUCTURE FOR 6TH SEMESTER OF PART-III (3RD 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: SIXTH						
SL. NO.	SUBJECT	CREDITS	PERIODS			EVALUATION SCHEME							
			L	TU	PR	INTERNAL SCHEME			ESE	PR #	TW @	TOTAL MARKS	
						TA	CT	TOTAL					
1	THEORETICAL	Entrepreneurship Development	2	2	-	-	5	10	15	35	-	-	50
2		Elective-II ##	3	3	1	-	10	20	30	70	-	-	100
3		Environmental Engineering	2	2			5	10	15	35			50
4		Application of GIS In Urban, Rural Development & Regional Planning.	3	3	-	-	10	20	30	70	-	-	100
5	SESS / PRACTICAL	Project Part-II	4	-	-	12	-	-	-	-	100	100	200
6		Seminar on Project	2			3					25	25	50
7		Professional Practice IV	2	-	-	3	-	-	-	-	25	25	50
8		General Viva-Voce	1	-	-	-	-	-	-	-	50	50	100
9		Environmental Engineering Lab	2			3					50	50	100
	TOTAL		21	10	1	21	TOTAL MARKS		90	210	250	250	800

STUDENT CONTACT HOURS PER WEEK: 32 Hrs.

Theory and Practical Period of 60 Minutes each

Any one of the followings.

1. Application of GIS In Environmental Science & Management, 2. Application of GIS In Disaster Management,
- External Assessment @ - Internal Assessment, **ESE** - End Semester Exam, **CT**- Class Test, **TA** – Teachers Assessment. **L** – Lecture, **TU** –Tutorial, **PR** – Practical, **TW** – Term Work

Name of the Course : Diploma in GIS & GPS (Entrepreneurship Development)			
Course code :GIS & GPS/ S6 /Th / ED		Semester : SIXTH	
Duration : 16 weeks		Maximum Marks : 50	
Teaching Scheme		Examination Scheme	
Theory : - 2 hrs/week		Continuous Internal Assessment : 10 Marks	
Tutorial: - NIL		Attendance, Assignment & Quiz : - 5 Marks	
Practical : NIL		End Semester Examination : 35 Marks	
Credit :- 2			
Objective :-			
S.No	Students will be able to:		
1.	Socio-Economic study and identify entrepreneurship opportunity.		
2.	Acquire entrepreneurial values and attitude.		
3.	Use the information to prepare project report for business venture.		
4.	Develop awareness about enterprise management.		
5.	Explore new areas where concept of GIS can be applied.		
Pre-Requisite :-			
S.No			
1.	Good aptitude and Overall knowledge of GIS as a subject.		
Contents :			
Contents (Theory)		Hrs./Unit	Marks
Unit:1	1.1 Introduction 1.2 Entrepreneurship, Creativity & Opportunities 1.3 Concept, Classification & Characteristics of Entrepreneur. 1.3.1 Creativity and Risk taking. 1.3.2 Concept of Creativity & Qualities of Creative person. 1.3.3 Risk Situation, Types of risk & risk takers. 1.4 Business Reforms. 1.4.1 Process of Liberalization. 1.4.2 Reform Policies. 1.4.3 Impact of Liberalization. 1.4.4 Emerging high growth areas. 1.5 Business Idea Methods and techniques to generate business idea. 1.6 Transforming Ideas in to opportunities transformation involves Assessment of idea & Feasibility of opportunity 1.7 SWOT Analysis	10	15
Unit: 2	2.1 Information and Support Systems 2.2 Information needed and their Sources Information related to project, Information related to support system, Information related to procedures and formalities 2.3 Support Systems	6	5

	<ul style="list-style-type: none"> a. Small Scale Business Planning, Requirements. b. Govt. & Institutional Agencies, Formalities. c. Statutory Requirements and Agencies. 		
Unit:3	<ul style="list-style-type: none"> 3.1 Business Plan & Project Report 3.2 Business plan steps involved from concept to commissioning: Activity Recourses, Time, cost 3.3 Project Report <ul style="list-style-type: none"> a. Meaning and Importance b. Components of project report/profile (Give list) 3.4 Project Appraisal <ul style="list-style-type: none"> a. Meaning and definition b. Technical, Economic feasibility c. Cost benefit Analysis 	8	10
Unit:4	<ul style="list-style-type: none"> 4.1 Introduction to Enterprise Management and Modern Trends. 4.2 Enterprise 4.3 Enterprise Management: - <ul style="list-style-type: none"> a. Essential roles of Entrepreneur in managing enterprise. b. Product Cycle: Concept And Importance c. Probable Causes Of Sickness d. Quality Assurance - Importance of Quality, Importance of testing. 4.4 E-Commerce Concept and process. 4.5 Global Entrepreneur. 	8	5
Total		32	35

Text Books

Author	Name of the Book	Publisher	Edition
Rajeev Roy	Entrepreneurship	Oxford University Press	NA
Michael Schaper and others	Entrepreneurship and small Business	Wiley-India	NA
J.B.Patel D.G.Allampally	A Manual on How to Prepare a Project Report	EDI STUDY MATERIAL Ahmadabad (Near Village Bhat , Via Ahmadabad Airport & Indira Bridge), P.O. Bhat 382428	NA

Name of the Course : Diploma in GIS & GPS (Environmental Engineering)				
Course code :GIS & GPS/ S6 /Th / ENV		Semester : SIXTH		
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				
Objective :-				
S.No	Students will be able to:			
1.	Acquire knowledge on different environment related topics.			
2.	Get basic idea on pollution control and EIA.			
4.	Develop theoretical knowledge for practical classes.			
5.	Explore new areas in environmental Engineering where concept of GIS can be applied.			
Pre-Requisite :-				
S.No				
1.	Basic chemistry and social science.			
Contents :				
Contents (Theory)			Hrs./ Unit	Marks
Unit:1	ENVIRONMENTAL POLLUTION AND CONTROL 1.1 Introduction- Environment, Ecosystem, Environmental Pollution and its Types and sources, Causes of Pollution, Effects of Pollution - control of water pollution - soil pollution -sources of soil pollution - effects of soil pollution - control of soil pollution -noise pollution - sources of noise pollution -effects of noise pollution -control of noise pollution – air pollution - sources of air pollution - effects of air pollution on human beings, plants, animals, materials - air pollution control equipment - control devices for particulate contaminants 1.2 Environmental degradation - ozone layer depletion - green house effect - acid rain.	10	10	
Unit: 2	PUBLIC WATER SUPPLY 2.1 Quantity of Water Demands of water - Domestic, Industrial, Commercial & Institutional, Public use, Losses and wastes, Fire demand; Factors affecting rate of Demand, Variations of water demands, Forecasting of population, Methods of forecasting of population, Design period for water supply scheme. Estimation of quantity of water supply required for a town or city. 2.2 Sources of Water Surface and Subsurface sources of water, Water conservation, Ground water recharging – Necessity Importance and advantages. 2.3 Intake Structures and Conveyance of water-Definition and types, Factors governing the location of An intake structure. Type of pipes used for conveyance of water, laying of pipes and pipe joints. 2.4 Quality of Water	12	15	

	<p>Need for analysis of water, Characteristics of water- Physical, Chemical and Biological. Meaning and importance of parameters – Total solids, hardness, chlorides, dissolved Oxygen, pH, Fluoride, Nitrogen and its compounds, Bacteriological tests, E coli index, MPN. Water quality Standards as per B.I.S. code.</p> <p>2.5 Methods of distribution of water- Gravity, pumping and combined system Service reservoirs – functions and types, Layouts of distribution of water- Dead end system, grid Iron system, circular system, radial system - their suitability, advantages and disadvantages.</p>		
Unit:3	<p>SOLID WASTES FROM THE SOCIETY</p> <p>3.1 Solid Waste Management Definitions – Refuse, Rubbish, Garbage, Ashes, Constituents of solid wastes Sources of solid wastes, Collection of Solid Wastes. Methods of collection of solid wastes Methods of treatment and disposal of solid waste.</p> <p>3.2 Hazardous Wastes- Introduction, Types of hazardous wastes. Characteristics of hazardous wastes. Treatment and disposal of hazardous wastes.</p>	5	5
Unit:4	<p>ENVIRONMENTAL IMPACT ASSESSMENT</p> <p>Environmental impact assessment (EIA) - methodology of EIA – organizing the job - performing the assessment – preparation of environmental impact statement (EIS) - review of EIS environmental risk assessment – limitation of EIA.</p>	5	5
Total		32	35

Name of the Course : Diploma in GIS & GPS				
1. Application of GIS In Environmental Science & Management (Elective-II)				
Course code :GIS & GPS/ S6 /Th / ELEC-II		Semester : SIXTH		
Duration : 16 weeks		Maximum Marks : 100		
Teaching Scheme		Examination Scheme		
Theory : - 3 hrs/week		Continuous Intern al Assessment : 20 Marks		
Tutorial: - 1		Attendance, Assignment & Quiz : - 10 Marks		
Practical : NIL		End Semester Examination : 70 Marks		
Credit :- 3				
Objective :-				
S.No				
1.	To study analyse and acquire in depth knowledge of different practical problems in the field of Environmental Engineering.			
2.	To learn how to apply concept of GIS in different areas/ practical problems.			
Pre-Requisite :-.				
S.No				
1.	Knowledge of Remote Sensing, GIS, and Digital Image Processing is required.			
Contents :				
Contents (Theory)			Hrs./Unit	Marks
Unit:1	1.1 Water and the environment, water quality-water pollution-sources of water pollution-water runoff, 1.2 Remote Sensing of fluorescence- Remote Sensing and Water quality management-snow surface cover-flood prediction		16	20
Unit: 2	2.1 Soils and land forms-soil erosion-salinity-flood damage-assessment of soil degradation using Remote Sensing and GIS. 2.2 Ecology and ecosystem, Conservation and resource management- spectral reflectance from vegetated surface -Stress monitoring-forest conservation-wild life studies- GIS for monitoring non-point source and point source pollution.		16	25
Unit: 3	3.1 Air pollution- sources of air pollution-Environmental degradation. 3.2 Urban environment, General consideration rural structure-urban areas-Impact of industrial pollution-chemical effluents. Remote Sensing technique for Air quality monitoring-case studies-weather forecasting and climatology-emissivity characteristics.		16	25
Total			48	70

Name of the Course : Diploma in GIS & GPS			
2. Application of GIS In Disaster Management (Elective-II)			
Course code :GIS & GPS/ S6 /Th / ELEC-II		Semester : SIXTH	
Duration : 16 weeks		Maximum Marks : 100	
Teaching Scheme		Examination Scheme	
Theory : - 3 hrs/week		Continuous Intern al Assessment : 20 Marks	
Tutorial: - 1		Attendance, Assignment & Quiz : - 10 Marks	
Practical : NIL		End Semester Examination : 70 Marks	
Credit :- 3			
Objective :-			
S.No			
1.	To study analyse and acquire in depth knowledge of different disaster related to natural calamity.		
2.	To learn how to apply concept of GIS in different areas/ practical problems in disaster management.		
Pre-Requisite :-			
S.No			
1.	Knowledge of Remote Sensing, GIS, and Digital Image Processing is required.		
Contents :			
Contents (Theory)		Hrs./Unit	Marks
Unit:1	1.1 Introduction to Fundamental concepts of hazards and disasters.-Types of hazards and disasters, characterization, zonation of hazards, natural and manmade disasters. 1.2 Disaster and National losses, history of disasters in India. 1.3 Fundamental concept of Disaster Management, Government, NGOs and peoples participation disaster management. Existing organization structure for managing disasters in State Government and Central Government. 1.4 Geoinformatics in disaster mitigation.	16	20
Unit: 2	2.1 Application of Geo-informatics in Hazards and Disasters Management. 2.2 Geological Hazards: Landslide, Earthquake, Mining hazards (subsidence, flooding etc.), Volcanic hazards, Groundwater hazards, Glacial hazards. 2.3 Hydro meteorological Hazards: Flash floods, River floods, Dam burst, Cloud burst, Cyclones, Coastal hazards and Drought. 2.4 Environmental hazards: Forest hazards-Deforestation, Degradation and Forest fire.	16	25
Unit: 3	3.1 Land, soil degradation, desertification and Pollution (Water, air and soil) 3.2 Geoinformatics Applications: Geoinformatics models in managing forest fires, floods, landslides, cyclone and earthquake, multiple hazard mapping. 3.3 Case Studies: Earthquakes in India, Floods in Indo Gangetic plains, Landslides in Himalayan region, Drought in Indian plateau regions.	16	25
Total		48	70

Name of the Course : Diploma in GIS & GPS			
Application of GIS In Urban, Rural Development & Regional Planning.			
Course code :GIS & GPS/ S6 /Th / URDP		Semester : SIXTH	
Duration : 16 weeks		Maximum Marks : 100	
Teaching Scheme		Examination Scheme	
Theory : - 3 hrs/week		Continuous Internal Assessment : 20 Marks	
Tutorial: - NIL		Attendance, Assignment & Quiz : - 10 Marks	
Practical : NIL		End Semester Examination : 70 Marks	
Credit :- 3			
Objective :-			
S.No			
1.	To study analyse and acquire in depth knowledge of demography and social science, Industrialisation and Urbanization.		
2.	To learn how to apply concept of GIS in different areas/ practical problems in urban and rural development and regional planning.		
Pre-Requisite :-			
S.No			
1.	Knowledge of demography and social science, Remote Sensing, GIS, and Digital Image Processing is required.		
Contents :			
Contents (Theory)		Hrs./Unit	Marks
Unit:1	1.1 Introduction 1.2 Concepts and definitions: urban, urbanization and urbanism 1.3 Origin & growth of urban settlements; bases & process of urbanisation 1.4 Urbanization in India: a historical perspective.	12	15
Unit: 2	2.1 Features of metropolitan development (with special reference to India) Urban Environmental Problems in West Bengal. 2.2 Rural economy under different production systems –experiences of developed and developing world with examples. 2.3 Growth Pole theories and the developing world, Regional Environmental Issues.	16	20
Unit: 3	3.1 Introduction to Application areas of Remote Sensing / GIS. 3.2 Analysis of rural settlement: Cause and effect associations, distribution of rural settlement with special reference to size and spacing; Rural service centres. 3.3 Nodal settlement of market centres and growth centres 3.4 Studies on rural urban continuum. 3.5 Population estimates, housing quality studies, site selection processes, traffic and parking studies. 3.6 Urban & rural change detection studies, Remote sensing & GIS applications in Biological systems.	20	35
Total		48	70

Name of the Course : GIS & GPS	
(Project-II)	
Course code :GIS & GPS / S6 / P /PR-II	Semester : SIXTH
Duration : 15 weeks	Maximum Marks : 200
Teaching Scheme	Examination Scheme
Theory : - hrs/week	Continuous Internal Assessment : 100
Tutorial: - hrs/week	Attendance, Assignment & Quiz : -
Practical : 12 hrs/week	External Assessment : 100
Credit :- 4	
Aim :-	
S.No	
1.	Learning outcome of the syllabus up to Sixth Semester.
Objective :-	
S.No	Students will be able to:
1.	Identify different application areas related to a GIS.
2.	Analysis of Problems.
3.	Finding solution of the problems.
4.	Preparation of project flow chart and mathematical model.
5.	Preparation of Detailed Project Report.
INSTRUCTIONS:	
S.No	
1.	Group size for Project work should be maximum 6 students.
2.	Collection of raw data, processing, analysing and interpretation of result in GIS environment.
Pre-Requisite :-	
S.No	
1.	Experience of handling Remote Sensing and GIS related Software.
2.	Students should have knowledge of Surveying, Computer, DBMS, Social Science, etc.
Contents : (Practical)	
Sl. No.	Assignments
1.	<p>Topic of the Project may be selected by Subject Teacher concerned. As example-</p> <p>1. Application of GIS in Land Use and Land Cover Mapping of a municipality in West Bengal.</p> <p>The Project must include the following: Research--Identification of a research problem--Review of literature--Observation--Analysis--Modelling--Validation--Result--Interpretation --Conclusion.etc.</p>

Name of the Course : GIS & GPS (PROFESSIONAL PRACTICE IV)	
Course code :GIS & GPS /S6 /P/GISPP-IV	Semester : SIXTH
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 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 (SEMINAR ON PROJECT)	
Course code :GIS & GPS /S6 /P / SMNR	Semester : SIXTH
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 of presentation 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 presentation for given topic or project.
3.	Present given topic in a seminar using different audio visual method.
4.	Interact with audience to share thoughts.
5.	Defend their projects by answering queries from audience.
Pre-Requisite :-	
S.No	
1.	Communication skill must be perfect.
Contents : (Practical)	
Sl. No.	Assignments
1.	Seminar on Project Work is intended to provide opportunity for students to present the Project Work on any given topic in front of a technical gathering with the help of different oral, aural and visual communication aids. In the Seminar, students have to present their project related work or any other topic given by respective lecturers. Students are expected to defend the project or topic while answering questions arising out of their presentation.
3.	Seminar should be presented by Group. Group size may be decided by respective lecturer.
Text Books:- Nil.	
Reference books :- Nil	
Suggested List of Laboratory Experiments :- Nil	
Suggested List of Assignments/Tutorial :- Nil	

Name of the Course : GIS & GPS (GENERAL VIVA VOCE)	
Course code :GIS & GPS /S6 /P / VIVA	Semester : SIXTH
Duration : 15 weeks	Maximum Marks : 100
Teaching Scheme	Examination Scheme
Theory : - NIL	Internal Assessment : 50
Tutorial: - NIL	Attendance, Assignment & Quiz : NIL
Practical : NIL	External Assessment : 50 Marks
Credit :- 1	
Aim :-	
S.No	
1.	Prepare Students industry ready.
2.	Examine the students about their overall fundamental ideas related to GIS & GPS.
3.	Interactive skills.
Pre-Requisite :-	
S.No	
1.	Clear fundamental knowledge about the GIS & GPS as a subject.
Contents : (Practical)	
Sl. No.	Assignments
1.	The Final Viva-Voce Examination shall take place at the end of the 6th Semester. It is to be taken by one External and one Internal Examiner. The External Examiner is to be from Industry / Engineering College / University / Government Organisation and he / she should give credit out of 50 marks; whereas, the Internal Examiner should normally be the Head of the Department (or any one deputed by Head of the Institute) and he / she should give credit of 50 marks.
Text Books:- Nil.	
Reference books :- Nil	
Suggested List of Laboratory Experiments :- Nil	
Suggested List of Assignments/Tutorial :- Nil	

Name of the Course : GIS & GPS (ENVIRONMENTAL ENGINEERING LAB)	
Course code :GIS & GPS /S6 /P / ENVL	Semester : SIXTH
Duration : 15 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.	Hands on training on different environmental engineering testing.
2.	Over all idea related to Environmental engineering which can be applied in GIS.
Objective :-	
S.No	Students will be able to:
1.	Examine the qualities of water parameter for application in GIS projects.
2.	Implement concept of Environmental Engineering in GIS.
Pre-Requisite :-	
S.No	
1.	Theoretical Concepts of Environmental Engineering.
Content : (Practical)	
Sl. No. / Topic	Assignments
1. Water Supply Engineering:	1) To determine fluoride concentration in given water sample 2) To determine the turbidity of the given sample of water. 3) To determine residual chlorine in a given sample of water. 4) To determine suspended solids, dissolved solids, and total solids of water sample 5) To determine the dissolved oxygen in a sample of water. 6) To determine the optimum dose of coagulant in the given sample by jar test. 7) To determine arsenic concentration (semi-quantitative) in given water sample. 8) To determine hardness of water.
2. Sanitary Engineering:	1) To determine the dissolved Oxygen in a sample of waste water. 2) To determine B.O.D. of given sample of waste water. 3) To determine C.O.D. of given sample of waste water. 4) To determine suspended solids, dissolved solids and total solids of waste water sample. 5) To determine various pollutant levels in the atmosphere using Digital Air Volume Sampler. 6) Energy generation plants from Cow dung.
Text Books:- Nil.	
Reference books :- Nil	
Suggested List of Laboratory Experiments :- Nil	
Suggested List of Assignments/Tutorial :- Nil	