

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



Syllabus  
of

Diploma in Civil Engineering [CE]

Part-III (6<sup>th</sup> Semester)

2023

**CURRICULAR STRUCTURE FOR PART – III SECOND SEMESTER (SIXTH SEMESTER)  
OF THE FULL-TIME DIPLOMA COURSE IN CIVIL ENGINEERING**

SL. No.	SUBJECT CODE	SUBJECT OF STUDY	HOURS PER WEEK			CREDITS	Marks
			LECTURE	TUTORIAL	PRACTICAL		
1	CEPC601	Public Health Engineering	2	0	0	2	100
		LABORATORY/SESSIONAL PAPERS					
2	CEPC602S	Civil Engineering Lab-III: Module-VII: Public Health Engineering Lab	0	0	2	1	100
3	CEPC603S	Advanced Surveying Practices	0	0	2	1	100
		ELECTIVE, MANDATORY COURSES AND SEMINAR					
4	CEPE604	Elective IV: one subject out of Tendering and Accounts (CEPE604/I) / Advanced Construction Technology (CEPE604/II)	3	0	0	3	100
5		Entrepreneurship and Start-ups	3	0	0	3	100
6		Compulsory Open Elective: Open Elective I: Engineering Economics & Project Management	3	0	0	3	100
7		Open Elective II : one subject has to be taken from list of open elective subjects as provided by WBSCT&VE&SD*	3	0	0	3	100
8.	CEPR605S	Major Project-II	0	0	4	2	100
9.	CESE606S	Seminar and Viva -Voce	1	0	0	1	100
		<b>TOTAL</b>	<b>15</b>	<b>0</b>	<b>8</b>	<b>19</b>	<b>900</b>

**NOTE: -**

1. All subjects (theoretical as well as sessional/practical) are full paper with 100 marks in aggregate as per AICTE and WBSCT&VE&SD

2. Advanced Surveying Field Practices may also be conducted in 2-3 weeks field work continuously instead of having 2 practical classes per week for the entire semester.

\*Note: Civil students will be benefited if they choose Solid waste management/ Disaster Management/ Construction Management as the subject for Open Elective II from the list provided by WBSCT&VE&SD\*

Name of the Course	<b>Diploma in Civil Engineering</b>	Course duration	6 semester
Course Title	<b>Public Health Engineering</b>	Course Code	<b>CEPC601</b>
Subject offered in Semester	<b>Sixth</b>	Number of Credits	<b>2 (L:2, T: 0, P: 0)</b>
Prerequisites	NIL	Course Category	<b>PC</b>
Question distribution	As per standing norms of WBSCT&VE&SD	Marks distribution	As per standing norms of WBSCT&VE&SD

**Course Objectives: Following are the objectives of this course:**

- To learn the principles for identification of sources of surface and subsurface water
- To learn calculation of population and requirement of drinking water
- To understand the flow-diagram of water supply scheme highlighting different features
- To know evaluation of characteristics and treatment of sewage.

<b>Module /Group [as per directives from WBSCT&amp;VE&amp;SD in framing questions of end semester]</b>	<b>Distribution of unit</b>
Module A/Group A	Unit I and II
Module B/Group B	Unit III and V
Module C /Group C	Unit IV

**Course Content**

**Unit – I Sources, Demand and Quality of water**

- Water supply schemes - Objectives, components
- Sources of water: Surface and Subsurface sources of water,
- Intake Structures, Definition and types, Factors governing the location of an intake structure, Types of intakes.

- Demand of water: Domestic, Industrial, commercial & institutional, public use, losses & wastes, fire demand. Factors affecting rate of demand, Variations of water demands, Forecasting of population, Methods of forecasting of population, (Simple problems on forecasting of population), Design period, Estimation of quantity of water supply required for city or town.
- Quality of water: Need for analysis of water, Characteristics of water- Physical, Chemical and Biological, Meaning and importance of different parameters of water- Total solids, hardness, chlorides, dissolved Oxygen, pH, Fluoride, Arsenic, Nitrogen and its compounds, Bacteriological tests, Ecoli, Bcoli index, MPN, Sampling of water, Water quality standards as per IS:10500.

### **UNIT II Purification of water**

- Purification of Water: Objectives of water treatment, Screening, Aeration- objects and methods of aeration, Plain sedimentation, Sedimentation with coagulation, principles of coagulation, types of coagulants, Jar Test, process of coagulation, types of sedimentation tanks, Clariflocculator.
- Filtration - mechanism of filtration, classification of filters: slow sand filter, rapid sand filter, pressure filter. Construction and working of slow sand filter and rapid sand filter, operational problems in filtration. Disinfection: Objects, methods of disinfection, Chlorination- Application of chlorine, forms of chlorination, types of chlorination practices, break-point chlorination, residual chlorine and its importance, Flow diagram of water treatment plants.
- Miscellaneous water Treatments: Removal of colour, taste and odour, Introduction to water softening and Defluoridation techniques.

### **UNIT III Conveyance and Distribution of water**

- Conveyance: Types of Pipes used for conveyance of water, choice of pipe material, Types of joints & Types of valves- their use, location and function on a pipeline.
- Distribution of water: 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.

### **UNIT IV Domestic sewage and System of Sewerages**

- Building Sanitation: Necessity of sanitation, Necessity to treat domestic sewage, Definitions-Sewage, sullage, types of sewage. Definition of the terms related to Building Sanitation-Water-pipe, Rainwater-pipe, Soil-pipe, Sullage-pipe, Vent-pipe. Building Sanitary fittings-Water closet – Indian and European type, flushing cistern, wash basin, sinks, Urinals. Traps- types (P, Q, S, intercepting trap, gully trap, floor trap), qualities of good trap. Systems of plumbing-one pipe, two pipe, single stack, choice of system. Principles regarding design of building drainage, inspection and junction chambers, their necessity, location, size and shape.
- Systems of Sewerage and Sewer Appurtenances: Types of Sewers, Systems of sewerage, self-cleansing velocity and non-scouring velocity, Laying, Testing and maintenance of sewers, Manholes and Drop Manhole-component parts, location, spacing, construction details, Sewer Inlets, Street Inlets.

#### **UNIT V Characteristics and treatment of Sewage**

- Analysis of sewage: Characteristics of sewage - Major parameters, B.O.D., C.O.D. and its significance, Central Pollution Control Board Norms for discharge of treated sewage.
- Treatment of Sewage: Objects of sewage treatment and flow diagram of conventional sewage treatment plant - Screening, Types of screens, Grit removal, Skimming, Sedimentation of sewage, Aerobic and anaerobic process, Sludge digestion, trickling filters, Activated sludge process, Disposal of sewage, Oxidation pond, Oxidation ditch. Septic tank, Recycling and Reuse of domestic waste.

#### **Suggested learning resources**

- Sharma S.C, Environmental Engineering, Khanna Publishing House, NewDelhi
- Garg, S.K., Environmental Engineering Vol. I and Vol. II, KhannaPublishers
- Birdie, G. S. and Birdie, J. S. Water Supply and Sanitary Engineering, Dhanpat Rai
- Gupta, O.P., Elements of Environmental Pollution Control, Khanna Publishing House, Delhi
- Rao, C.S., Environmental Pollution Control Engineering, New Age International

- Punmia, B C, Environmental Engineering, vol. I and II, LaxmiPublishers
- Peavy H S, Rowe D R, and Tchobanoglous G, Environmental Engineering, McGraw Hill
- Basak N N, Environmental Engineering, McGraw HillPublishers.

**Course outcomes: After completing this course, student will be able to:**

- Know the procedure to identify the sources of surface and subsurface water
- Estimate the quantity of drinking water required for a population
- Draw labelled layout for water supply scheme.
- Select suitable water treatment technique.
- Evaluate the characteristics and suggest treatment of sewage.

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Name of the Course	<b>Diploma in Civil Engineering</b>	Course duration	6 semester
Course Title	<b>Civil Engineering Lab-III: Module-VII: Public Health Engineering Lab</b>	Course Code	<b>CEPC602S</b>
Subject offered in Semester	<b>Sixth</b>	Number of Credits	<b>1 (L:0, T: 0, P: 2)</b>
Prerequisites	NIL	Course Category	<b>PC</b>
Question distribution		Marks distribution	As per standing norms of WBSCT&VE&SD

**Course Objectives: Following are the objectives of this course:**

- To learn the tests for measuring quality of drinking water.
- To learn the tests for measuring quality of Domestic waste water.
- To learn determination of BOD and COD requirement in sewage.

**List of Practical to be performed: (Items 1 & 2 compulsory and at least six experiments from the rest)**

1	Draw sketches of various valves used in water supply pipe line
2	Draw a sketch of one pipe and two pipe system of plumbing
3	Determine pH value of given sample of water/sewage.
4	Determine the turbidity of the given sample of water.
5	Determine residual chlorine in a given sample of water.
6	Determine suspended, dissolved solids and total solids of given sample of water/sewage.
7	Determine the dissolved oxygen in a sample of water/sewage.
8	Determine Fluoride concentration in given water sample.
9	Determine Arsenic concentration (semi-quantative) in given water sample.
10	Determine the optimum dose of coagulant in a given raw water sample by jar test.
11	Determine B.O.D. & C.O.D. of given sample of sewage.
12	Prepare a report of a field visit to water treatment plant and/or sewage treatment plant if possible

**Note: Item no. 12 may be included in internship.**

**Suggested learning resources:**

- Sharma S.C, Environmental Engineering, Khanna Publishing House, New Delhi
- Basak N N, Environmental Engineering, McGraw Hill Publishers.
- Garg, S.K., Environmental Engineering Vol. I and Vol. II, Khanna Publishers

- Birdie, G. S. and Birdie, J. S. Water Supply and Sanitary Engineering, Dhanpat Rai
- Gupta, O.P., Elements of Environmental Pollution Control, Khanna Publishing House, Delhi
- Rao, C.S., Environmental Pollution Control Engineering, New Age International
- Punmia, B C, Environmental Engineering, vol. I and II, LaxmiPublishers
- Peavy H S, Rowe D R, and Tchobanoglous G, Environmental Engineering, McGraw Hill Publishers.
- BIS: 10500 - DRINKING WATER — SPECIFICATION, BIS, New Delhi.
- CPCB: GENERAL STANDARDS FOR DISCHARGE OF ENVIRONMENTAL POLLUTANTS, CPCB, New Delhi

**Course outcomes:** After completing this course, student will be able to:

- Perform various tests to assess quality of drinking water
- Perform various tests to assess quality of domestic sewage
- Understand the function of various components of water treatment and sewage treatment plants.



Name of the Course	<b>Diploma in Civil Engineering</b>	Course duration	6 semester
Course Title	<b>Advanced Surveying Practices</b>	Course Code	<b>CEPC603S</b>
Subject offered in Semester	<b>Sixth</b>	Number of Credits	<b>1 (L:0, T: 0, P: 2) *</b>
Prerequisites	NIL	Course Category	<b>PC</b>
Question distribution		Marks distribution	As per standing norms of WBSCT&VE&SD

**\* Advanced Surveying Field Practices may also be conducted in 2 - 3 weeks field work continuously instead of having 2 practical class per week for the entire semester.**

**Course Objectives:** Following are the objectives of this course:

- To know methods of Theodolite surveying and their uses.
- To learn tacheometric surveying and curve setting.
- To understand the principles of Electronic Distance Measurement and Total station and their uses.
- To know the concept of GPS

**List of Practical to be performed: [item number 3 and 5 are desirable]**

1. Theodolite traverse Survey: A simple closed traverse of at least 5 sides for any suitable site. Preparation of Gale's traverse table. Plotting the traverse with details on A1 size imperial drawing sheet and calculation of area of the closed traverse. Interior details will have to be filled up by theodolite or by plane table which is found to be more suitable.
2. Simple circular curve setting: Setting out a simple circular curve by Rankine's method of Deflection angles (both one theodolite and two theodolite methods) for a given problem and plotting the curve showing the necessary supporting calculations in a tabular form mentioning suitable scale on A-1 size imperial drawing sheet.
3. Surveying with Total Station: Introduction, description of different parts of total station and reflector prism with stand, set up and orientation,

measurement of distances, measurement of horizontal and vertical angles, methods of measuring remote height and area, etc., Construction of a closed traverse of minimum 5 sides for any suitable site- collection and saving of field data in total station, downloading and transfer of raw data from total station to computer, processing of raw data with the help of any suitable software for preparation of drawing.

4. Use Theodolite as a Tacheometer to compute reduced levels and horizontal distances.
5. GPS Surveying: Working with hand held GPS instrument. Collection coordinates of different objects. Downloading raw data from GPS instrument and prepare a report sheet (excel or doc or pdf format).

**Suggested learning resources:**

- Kanetkar, T. P.; Kulkarni, S. V., Surveying and Levelling Part I and II, Pune Vidyarthi ruh prakashan, Pune.
- Basak, N. N., Surveying and Levelling, McGraw Hill Education (India) Pvt. Ltd., Noida.
- Duggal, S. K., Survey I and Survey II, Tata McGraw Hill Education Pvt. Ltd., Noida.
- Saikia, M D.; Das. B.M.; Das. M.M., Surveying PHI Learning Pvt. Ltd., New Delhi.
- Subramanian, R., Surveying and Levelling, Oxford University Press. New Delhi.
- Punmia, B.C.; Jain, Ashok Kumar; Jain, Arun Kumar, Surveying Vol. I and Surveying vol II, Laxmi Publications Pvt. Ltd., New Delhi.
- Rao, P. Venugopala Akella, Vijayalakshmi, Textbook of Surveying, PHI Learning Pvt. Ltd., New Delhi.
- Venkatramaiah, C, Textbook of Surveying, Universities Press, Hyderabad.
- Anderson, James M and Mikhail, Edward M, Surveying theory and practice, Mc Graw Hill Education, Noida.
- De, Alak, Plane Surveying, S.Chand Publications, New Delhi

**Course outcomes:** After completing this course, student will be able to:

- Prepare plans using Theodolite surveys.
- Find distances and elevations using Tachometer.
- Make measurements using Total Station.
- Locate coordinates of survey stations using GPS

Name of the Course	<b>Diploma in Civil Engineering</b>	Course duration	6 semester
Course Title	<b>Elective IV: Tendering and Accounts</b>	Course Code	<b>CEPE604/I</b>
Subject offered in Semester	<b>Sixth</b>	Number of Credits	<b>3 (L: 3, T: 0, P:0)</b>
Prerequisites	NIL	Course Category	<b>PE</b>
Question distribution	As per standing norms of WBSCT&VE&SD	Marks distribution	As per standing norms of WBSCT&VE&SD

**Objective:-** Following are the objectives of this course:

- To understand terminologies in contract and tender document and their significance.
- To know different types of contracts and their uses.
- To learn preparation of typical Tender documents for civil engineering work.
- To get acquainted with rent fixation and valuation of civil structures.

<b>Module /Group [as per directives from WBSCT&amp;VE&amp;SD in framing questions of end semester]</b>	<b>Distribution of unit</b>
Module A/Group A	Unit I and II
Module B/Group B	Unit III
Module C /Group C	Unit IV and V

**Contents:**

**Unit – I Procedure to execute the work**

Administrative approval, Technical sanction, budget provision, expenditure sanction.

Methods for carrying out works- contract method, departmental method -rate list method, piece work method, day’s work method, employing labours on daily wages basis.

**Unit- II Contracts**

- Definition of contract, objects of contract, requirements of contract, overview of Indian Contract Act.

- Types of engineering contract with advantages, disadvantages and their suitability - Lump sum contract, item rate contract, percentage rate contract, cost plus percentage, cost plus fixed fee, cost plus variable percentage and cost plus variable fee contract, labour contract, demolition contract, target contract, negotiated contract, Engineering Procurement Construction Contract (EPC), Annuity Contract.
- Introduction of FIDIC Conditions of contract.
- Classification of contractor on basis of financial limits, Requirement of documents for registration of contractor.
- Build Operate Transfer (BOT) Project, BOT Toll contract, BOT (Annuity) contract, Design, Build, Finance, Operate and Transfer (DBFOT) contract, Hybrid Annuity contract, Operate Maintain and Transfer (OMT) contract, Operation & Maintenance contract (Introduction only).

### **Unit- III Tender and Tender Documents**

- Definition of tender, necessity of tender, types of tender- Local, Global, Limited.
- E -Tendering System – Online procedure of submission and opening of bids (Technical and Financial).
- Notice to invite tender (NIT)- Points to be included while drafting tender notice, Drafting of tender notice.
- Procedure of submitting filled tender Documents (Two envelope system), procedure of opening tender, comparative statement, scrutiny of tenders, award of contract, letter of award.
- Meaning of terms - Earnest Money Deposit (EMD), Performance Security Deposit, Validity period, corrigendum to tender notice and its necessity, Unbalanced bid.
- Tender documents – Index, tender notice, general instructions, special instructions, Schedule A, Schedule B, Schedule C etc.
- Terms related to tender documents – contract conditions- time limit, time extension, penalty, defective material and workmanship, termination of contract, suspension of work, subletting of contract, extra items, price variation clause(escalation), defect liability Period, liquidated Damages.
- Arbitration- Meaning, Qualification of an arbitrator, Appointment, Dispute and Settlement of disputes, Arbitration and Conciliation Act, Arbitration award.

## **Unit- IV Accounts**

- Various account forms and their uses – Measurement Books, E- Measurement book (E-MB), Nominal Muster Roll(NMR), Imprest Cash, Indent, Invoice, Bill, Vouchers, Hand receipt Cash Book, Temporary Advance. Heads of Accounts.
- Mode of Payment to the contractor and its necessity -Interim Payment, Advance Payment Secured Advance, Petty advance, Mobilization advance, Running account bill, Final bill, Retention money, E - payment.

## **Unit- V Introduction to Valuation**

- Definition and purpose of Valuation, role of valuer. Definition - Cost, Price and Value, Characteristics of Value, Factors Affecting Value.
- Types of Value - Book Value, Scrap Value, Salvage Value, Speculative Value, Distress Value, Market Value, monopoly Value, Sentimental Value. Factors affecting value.
- Depreciation, Obsolescence, Sinking Fund, Methods of Calculation of Depreciation – Straight Line Method, Sinking Fund Method, Constant Percentage Method.
- Fixation of rent, Lease – types of lease, lease hold property and free hold property. Mortgage– Mortgage deed, precautions to be taken while making mortgage.

## **Suggested learning resources:**

- Datta, B. N., Estimating and Costing in Civil engineering, UBS Publishers Pvt. Ltd., New Delhi
- Raina, V. K., Construction Management and Contract Practices, Shroff Publishers & Distrib- uters Pvt. Ltd.
- Rangawala, S. C., Estimating and Costing, Charotar Publishing House PVT. LTD., Gujrat
- Birdie, G. S., Estimating and Costing, Dhanpat Rai Publishing Company(P) Ltd., New Delhi
- Patil, B. S., Civil Engineering Contracts and Estimates, Orient Longman, Mumbai
- Chakraborti, M., Estimating and Costing, Specification and Valuation in Civil Engineering, Monojit Chakraborti, Kolkata.

**Course outcomes:** After completing this course, student will be able to:

- Understand various types of contract and when they are used
- Suggest the relevant type of contract for the given civil engineering work.

- Prepare the typical Tender document for the given civil engineering work.
- Decide type of payment for the executed work.
- Justify the rent fixation and valuation of given civil structure.

Name of the Course	<b>Diploma in Civil Engineering</b>	Course duration	6 semester
Course Title	<b>Elective IV: Advanced Construction Technology</b>	Course Code	<b>CEPE604/II</b>
Subject offered in Semester	<b>Sixth</b>	Number of Credits	<b>3 (L: 3, T: 0, P:0)</b>
Prerequisites	NIL	Course Category	<b>PE</b>
Question distribution	As per standing norms of WBSCT&VE&SD	Marks distribution	As per standing norms of WBSCT&VE&SD

**Course Objectives:** Following are the objectives of this course:

- To gain knowledge on different materials in advanced construction
- To know different methods in concreting.
- To know the relevance of advanced construction methods for particular site condition.
- To identify the requisite hoisting and conveying machinery for the given situation.

<b>Module /Group [as per directives from WBSCT&amp;VE&amp;SD in framing questions of end semester]</b>	<b>Distribution of unit</b>
Module A/Group A	Unit I and II
Module B/Group B	Unit III
Module C /Group C	Unit IV and V

**Course Content:**

### **Unit – I Advanced Construction Materials**

- Fibres: Use and properties of steel, polypropylene, carbon and glass fibres.
- Plastics: Use and properties of PVC, RPVC, HDPE, GFRP, CFRP.
- Miscellaneous Materials: Properties and uses of acoustics materials, wall claddings, plasterboards, micro-silica, waterproofing materials, adhesives, PMC (Polymer modified concrete)

- Use of waste products and industrial by products in bricks, blocks, concrete and mortar.

### **Unit- II Advanced Concreting Methods and equipment**

- Ready Mix Concrete: Necessity and use of ready mix concrete. Products and equipment for ready mix concrete plant. Conveying of ready mix concrete, transit mixers.
- Vibrators for concrete consolidation: Internal, needle, surface, platform and form vibrators.
- Underwater Concreting: Procedure and equipment required for Tremie method, Drop bucket method. Properties, workability and water cement ratio of the concrete.
- Special concrete: procedure and uses of special concretes: High Strength Concrete, High Performance Concrete, Roller compacted concrete, Self-compacting concrete (SCC), Steel fibre reinforced concrete, Foam concrete, Guniting, shotcreting.

### **Unit- III Advanced Technology in Constructions**

- Construction of bridges and flyovers: equipment and machineries required for foundation and super structure.
- Construction of multi-storeyed Building: equipment and machinery required for construction of multi-storeyed building such as use of lifts, belt conveyors, slip-form, pumping of concrete.
- Prefabricated construction: Methods of prefabrication, Plant fabrication and site fabrication, All prefabricated building elements such as wall panels, slab panels, beams, columns, door and window frames etc. equipment and machineries used for placing and Jointing of prefabricated elements.
- Strengthening of embankments by soil reinforcing techniques using geo-synthetics

### **Unit- IV Hoisting and Conveying Equipment**

- Hoisting equipment: Principles and working of Derrick-Pole, Gin Pole, Crane, Power driven scotch derrick crane, Hand operated crane, Locomotive crane, Tower crane,



Lattice Girder, Winches, Elevators, ladders. Crawler cranes, Truck mounted cranes, Gantry cranes, Mast cranes.

- Conveying equipment: Working of belt conveyors, types of belts and conveying mechanism. Capacity and use of dumpers, tractors and trucks.

### **Unit- V Miscellaneous Machinery and Equipment**

- Excavation Equipment: Use, working and output of following machinery – bull dozers, scrapers, graders, Clam Shell, trenching equipment, Tunnel boring machine, Wheel mounted belt loaders, power shovels, JCB, and drag lines.
- Compacting Equipment: Output of different types of rollers such as plain rollers, ship footed rollers, vibratory, pneumatic rollers rammers.
- Miscellaneous Equipment: Working and selection of equipment: Pile driving equipment, Pile hammers, Hot mix bitumen plant, bitumen paver, grouting equipment, gunting equipment, floor polishing and cutting machine selection of drilling pattern for blasting, Bentonite/mud slurry in drilling, Explosives for blasting, Dynamite, process of using explosives.

### **Suggested learning resources:**

- Sharma S C and Deodhar S V, Construction Engineering and Management, Khanna Book Publishing, New Delhi
- Chudly, R., Construction Technology Vol. I to II, ELBS-Longman Group.
- Peurifoy, R. L., Construction Planning Equipment and Methods, McGraw Hill Co. Ltd. New York.
- Seetharaman, S., Construction Engineering and Management, Umesh Publication, New Delhi.
- Sengupta, B. and Guha., Construction Management and Planning, McGraw Hill Education, New Delhi.
- Smith, R. C., Materials of Construction, McGraw Hill Co. Ltd.
- Satyanarayana, R Saxena, S. C., Construction Planning and Equipment, Standard Publication, New Delhi.

- Rangawala,S. C., Construction of Structures and Management of works, Charotar Publication, Anand.
- Ghose,D. N., Materials of Construction, McGraw Hill Publishing Co, New Delhi.

**Course outcomes:** After competing this course, student will be able to:

- Use relevant materials in advanced construction of structures.
- Use relevant method of concreting and equipment according to type of construction.
- Apply advanced construction methods for given site condition.
- Select suitable hoisting and conveying equipment for a given situation.
- Select advanced equipment required for a particular site condition

Name of the Course	<b>Diploma in Civil Engineering</b>	Course duration	6 semester
Course Title	<b>Entrepreneurship and Start-ups</b>	Course Code	
Subject offered in Semester	<b>Sixth</b>	Number of Credits	<b>3 (L: 3, T: 0, P: 0)</b>
Prerequisites	NIL	Course Category	<b>HS</b>
Question distribution	As per standing norms of WBSCT&VE&SD	Marks distribution	As per standing norms of WBSCT&VE&SD

**Detailed course content will be provided by the council separately**

Name of the Course	<b>Diploma in Civil Engineering</b>	Course duration	6 semester
Course Title	<b>Compulsory Open Elective: Open Elective I: Engineering Economics &amp; Project Management</b>	Course Code	
Subject offered in Semester	<b>Sixth</b>	Number of Credits	<b>3 (L: 3, T: 0, P: 0)</b>
Prerequisites	NIL	Course Category	<b>OE</b>
Question distribution	As per standing norms of WBSCT&VE&SD	Marks distribution	As per standing norms of WBSCT&VE&SD

**Detailed course content will be provided by the council separately**

Name of the Course	<b>Diploma in Civil Engineering</b>	Course duration	6 semester
Course Title	<b>Open Elective II : one subject has to be taken from list of open elective subjects as provided by WBSCT&amp;VE&amp;SD</b>	Course Code	
Subject offered in Semester	<b>Sixth</b>	Number of Credits	<b>3 (L: 3, T: 0, P:0)</b>
Prerequisites	NIL	Course Category	<b>OE</b>
Question distribution	<b>As per standing norms of WBSCT&amp;VE&amp;SD</b>	Marks distribution	<b>As per standing norms of WBSCT&amp;VE&amp;SD</b>

**Detailed course content of all subjects under open elective II will be provided by the council separately**

Name of the Course	<b>Diploma in Civil Engineering</b>	Course duration	6 semester
Course Title	<b>Major Project II</b>	Course Code	<b>CEPR605S</b>
Subject offered in Semester	<b>SIXTH</b>	Number of Credits	<b>2 (L:0, T: 0, P: 4)</b>
Prerequisites	NIL	Course Category	<b>PR</b>
Question distribution		Marks distribution	As per standing norms of WBSCT&VE&SD

**Objective:** - Following are the objectives of this course:

- To prepare detailed cost estimate of building and various ancillary items of the project.
- To develop professional abilities such as preparation of tender documents and scheduling of the project.
- To develop presentation skill.
- To enhance creative thinking and combination of a complete civil engineering project.

**The project report shall be in the following format:**

(The project shall be undertaken by a group of 4 to 6 students)

- Topic and objectives
- Collection of data, required survey work,
- Management and construction procedure
- Resources scheduling and networking
- Design details
- Required drawing set
- Utility to society if any
- Conclusion

**NOTE: Same Planning, Drawings and detailings of the problem given in the semester 4 will have be used in Major Project I and Major Project II in semester 5 and 6. All drawing will be done by using CAD**

**Contents:-**

- Title of the Project:-Planning and designing of (G+2) Residential Complex for Middle Income Group.
- The details of the Project are given below:

- Each building (RCC framed structure) shall comprise of two symmetrical flat per floor each containing two rooms, bath, WC, kitchen, front verandah with a provision of common staircase and mummy for utilization of roof space and overhead water tank (around 210 sq m. covered area for each building unit and total 100 Nos of flat in the Complex of around 10000 sq m. of total land area) Ground floor to be used for parking spaces.
- The following provisions are to be considered during the project planning:- a) Security room(Single room with WC, Load bearing wall structure), b) Central Park, c) Play Ground, d) Hume Pipe Culvert in between the complex and the 12m wide main road, e) Boundary Wall with main gate, f) Submersible Pump, g) Pump House (Load bearing wall structure), h) Surface Drainage System, i) Bituminous road over WBM inside the complex etc.

1) The project report shall include detailed Estimate and costing of:-

- (i) (G+2) Building Unit.
- (ii) Security Room.
- (iii) Pump House.
- (iv) Boundary Wall with main gate.
- (v) Submersible Pump.
- (vi) Hume Pipe Culvert.
- (vii) Bituminous road over WBM.
- (viii) Surface Drainage System.

2) The detailed report shall contain total Cost of the Project, Bar Chart, Project completion time using CPM/PERT & Preparation of tender documents for NIT (Notice inviting tender).

(Rate should be taken as per West Bengal PWD Schedule w.e.f 01.11.2017 with latest Corrigendum.)

3) PPT Presentation of the whole projects group wise

**Course outcomes:** After completing this course, student will be able to:

- Solve the problem by working in a group.
- Estimate the total cost of the project.
- Prepare tender documents and NIT.
- Know about project scheduling.

Name of the Course	<b>Diploma in Civil Engineering</b>	Course duration	6 semester
Course Title	Seminar and Viva-voce	Course Code	<b>CESE606S</b>
Subject offered in Semester	Sixth	Number of Credits	1 (L: 1, T: 0, P:0)
Prerequisites	NIL	Course Category	<b>SE</b>
Question distribution		Marks distribution	As per standing norms of WBSCT&VE&SD

**NOTE:** Seminar will cover any topic(s) related to the subjects taught from semester 1 to semester 6. Viva-voce will cover any subject covered from semester 1 to semester 6.