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BANGLADESHSWEDENPOLYTECHNIC INSTITUTE, KAPTAI
SEMESTER PLAN FOR THEORETICAL CONTENT

TECHNOLOGY: CONSTRUCTION TECHNOLOGY

Subject Name: CONSTRUCTION METHODOLOGY-I (Subject Code: 8841)

Teacher Name: Engr. Md. Jahedul Islam (Instructor)

Week No.	Content No.	Lesson No.	Class/ Quiz Test	Brief Description of Content
01	1.1-1.8	01-03		State the meaning of concrete, Mention the uses of concrete in the construction industry, Mention different kinds of concrete, List the ingredients of different kinds of concrete, Describe the functions of the ingredients of concrete, Mention the advantages and limitations of concrete, Describe suitable methods of storing concrete materials on site, Describe the properties of the materials used in concrete.
02	2.1-2.8	04-06		Define the terms: strength, durability, workability, laitance and segregation, State the meaning of water cement ratio, Mention the factors affecting the strength of concrete, List the factors affecting the durability of concrete, List the factors affecting the workability of concrete, Describe the effect of water cement ratio on the strength of concrete, Discusses factors influencing choice between site mix and ready-mixed concrete, Mention the comparison of properties of polymer concrete and super plasticized concrete.
03	3.1-3.4	07-09	Quiz-01	Explain the significance of proportioning the ingredients of concrete, Describe the methods of concrete mix design, Calculate different proportion of concrete mixes using simple nominal standard mix design method, Describe how beaching of concrete mix is achieved by volume and <i>weight</i> .
04	3.4-3.8	10-12		Mention the comparison of various processes used to mix concrete, Mention the various methods of transporting concrete, Mention the sequence of placing concrete in different situations, Describe the processes of compaction of concrete.
05	4.1-4.4	13-15		State the meaning of curing, Describe how the curing process effects the hardening of concrete, Describe different methods of curing, Mention the advantages and limitations of various methods of curing.
06	5.1-5.4	16-18	Class Test-01	Describe standard test information to establish the properties of various types of aggregates, Express how to draw the grading curve for various samples of aggregate, Describe how to determine the FM value from the grading curve, Mention the necessity of the following tests on concrete (slump test, Compressive test on hardened cylinder, Compressive test on hardened cube.)
07	6.1-6.6	19-21		Explain the term prestressed concrete, Describe different methods of Pre-stressing, Mention the advantages of Pre-stressing concrete, Mention the application of pre-stressed concrete, Mention the classification of pre-stressed concrete, List the essential Materials & Equipment for pre-stressed concrete
08	7.1-7.6	22-24		Mention the special precautions to be observed for concreting under water, List the special precautions to be observed for concreting in cold weather, List the special precautions to be observed for concreting in hot weather, Describe the factors to be considered while supervising good quality concrete production, Describe the factors to be considered while supervising good quality RCC construction, Explain the factors to be considered while supervising good quality pre-stressed concrete construction.
09	8.1-8.6	25-27	Quiz-02	Define the term foundation, Mention the functions of foundation, List the essential requirements of a good foundations, Describe the common causes of failure of foundations, Mention the remedial measure necessary to overcome the failure of foundations, Explain the precautions necessary to prevent uneven settlement of foundations.
10	9.1-9.8	28-30		Define the term shallow foundation, Draw the sketches of the following types of shallow foundation: i) strip footing ii) wide strip footing iii) eccentrically loaded footing iv) raft foundation v) combined footing vi) stepped strip foundation vii) grillage foundation viii) Isolated column footing Mention the advantages of shallow foundation, Mention the limitations of shallow foundation, Mention the suitability of various types of shallow foundation, Find out the depth of foundation using standard tables and data from the soil classification, Find out the depth of foundation by Rankine's formula, Design a strip footing for shallow foundation.
11	10.1-10.12	31-33		Define the term deep foundation, Mention the classification of deep foundation, Describe the situations most suited to using pile foundations. Mention the classification of pile foundation according to i) materials and composition ii) method of construction Describe the group action of pile, Mention the uses of sand piles, Mention the functions of sheet pile, Describe a simple cofferdam, List various types of cofferdam, Describe caissons foundation (well foundation), List various types and shapes of caissons foundation,

				<p>Mention the advantages and limitations in each case of deep foundation. Describe the following methods of casting and placing concrete pile foundation</p> <p>i) cased cast in situ concrete pile ii) uncased cast in situ concrete pile iii) pre-cast concrete pile.</p> <p>Identify different types of hammer used for pile driving, Describe the method for driving concrete pile groups and placing pile caps, State the method of pile load test.</p> <p>i) Types of load test for pre- cast and cast-in- situ pile ii) Pile load test Description (ASTM) iii) Pile load test Criteria and requirements (ASTM) iv) Conduct of pile load test (ASTM) iv) Evaluation of test result (ASTM)</p>
12	12.1-12.4	34-36	Class Test-02	<p>Differentiate between the terms shoring and underpinning, Explain the advantages and limitations of each of the following shoring:</p> <p>i) Raking shore ii) Flying shore iii) Dead shore</p> <p>Describe the common methods of underpinning, Describe safety requirements that should be taken while shoring and underpinning work.</p>
13	13.1-13.7	37-39		<p>Mention the meaning of brick masonry, Identify different tools required for brick masonry, Mention the specific uses of different brick masonry tools, Distinguish among different types of masonry structures, Identify the following terms of brick masonry: Stretcher, Header, Lap, Course, Bed, Joint, Closer, Queen Closer, King closer, Beveled closer, Mitered closer.</p> <p>Identify the defects in brick masonry, List the factors to be considered while supervision brick masonry work.</p> <p>Describe the following methods of casting and placing concrete pile foundation</p> <p>i) cased cast in situ concrete pile ii) uncased cast in situ concrete pile iii) pre -cast concrete pile.</p> <p>Identify different types of hammer used for pile driving, Describe the method for driving concrete pile groups and placing pile caps.</p> <p>State the method of pile load test.</p> <p>i) Types of load test for pre- cast and cast-in- situ pile ii) Pile load test Description (ASTM) iii) Pile load test Criteria and requirements (ASTM) iv) Conduct of pile load test (ASTM) v) Evaluation of test result (ASTM)</p>
14	15.1-15.6	40-42		<p>State the meaning of composite masonry, Mention different types of composite masonry, Sketch detail of brick backed stone slab masonry, Describe Aluminum panel cladding and tile fixing masonry, Mention the advantages and limitations of using reinforced brick masonry, Mention the advantages and limitations of hollow clay block masonry.</p> <p>&</p> <p>Mention the need of cavity wall construction, Mention the advantages and limitations of cavity wall over solid brick walls, Sketch the general features of cavity walls, Describe with sketch the cavity walls at opening and lintels, Identify different types of wall tie used in cavity wall, Determine the spacing of wall ties used in cavity wall, Describe the construction procedure of cavity walls, Mention the precautions to be taken for the construction of cavity wall.</p>
15	17.1-17.6	43-45	Class Test-03	<p>Mention the meaning of load bearing walls, Describe different types of load bearing wall, Describe design considerations of load bearing walls, Mention lateral support on load bearing wall, Mention effective length of load bearing, Differentiate among the load bearing walls or non-load bearing walls.</p> <p>History of earthquake in the world describing their fatality, History of earthquake in Bangladesh, Accurate suggestions which should be taken during an earthquake, Causes of earthquake, Description of Richter scale (magnitude) and Modified Mercalli Scale (intensity), Function and operation of earthquake measuring devices, Description of probable fatality with respect to different Richter scale or Modified Mercalli scale, Description of ACI code on seismic design, Description of Bangladesh National Building Code (BNBC93) on seismic design, Description of Seismic Zoning map of Bangladesh Earthquake effects on soils (such as liquefaction, landslide, amplification etc.), Earthquake effects on foundation.</p>
16	19.1-19.7	46-48		<p>Define shear wall, Define couple shear wall, Mention the causes of using shear wall in a building, Mention different shape of shear wall, Describe the design procedure of shear wall, Describe the advantages of shear wall, Explain the repair and maintenance procedure of shear wall</p>

REFERENCE BOOK

1. Building Construction by Dr. BC Punmia
2. A Text Book of Construction by SP Aurora & SP Bindra
3. Building Construction by GJ Kulkarni