SUBJECT CODE	SUBJECT NAME	PERIOD PER WEEK		CREDIT
26434	Basic Construction Process	T	P	C
		2	3	3

Rationale	Basic Construction process is the related subject for survey diploma holder. Survey diploma graduates have to supervise construction of various project works involving use of various construction work based on quality. It does have physical parts with which we can make an appropriate shelter, service for the client to use it. So, to know how to build a construction project, one must know about Concrete, its types, properties, use of concrete, brick masonry, block masonry, different type of partition wall, drywall, damp proof chemical, plastering and pointing, painting and varnishing, door and window etc. This set of knowledge and skill to gives confidence to understand and construct a project. The students should have requisite knowledge regarding characteristics, uses and availability of various building item of work for construction purposes. In addition, specifications of various materials should also be known (BNBC/PWD) for effective quality control. To perform above task, it is essential that students should have knowledge of various item of work like concrete, masonry, block masonry, partition wall, plastering and pointing, painting and varnishing etc , and their constructional details. Therefore, the subject of Basic construction Processes is very important for Civil Engineering diploma Graduates.
Learning Outcome (Theoretical)	**After undergoing the subject, students will be able to** 1. Explain construction Health and safety. 2. Explain different types of Hand tools, power tools and Equipment's. 3. Explain Features and Properties of Concrete 4. Explain the Concrete Construction and Form Work 5. List the building Component and their function 6. Explain the Brick Masonry. Block Masonry and Composite Masonry. 7. Describe the different types of partition wall and drywall. 8. State Plastering and Pointing**.** 9**.** Explain the procedure of painting and varnishing**.** 10. Explain damp proofness.
Learning Outcome (Practical)	**After undergoing the subject, students will be able to** 1. Identify the various types of personal protective equipment's. 2. Identify hand tools and power tools. 3. Perform slump test. 4. Perform compressive strength test of concrete. 5. Observe field visit. 6. Perform brick masonry wall. 7. Perform hollow and solid block wall. 8. Perform aluminum and dry partition wall. 9. Perform plastering work. 10. Perform pointing work. 11. Perform painting and varnishing work.

DETAILED SYLLABUS (THEORY)

Unit	Topics with Contents	Class (1 Period)	Final Marks
1.	**CONSTRUCTION HEALTH AND SAFETY** 1.1 Define personal health and safety. 1.2 Define Personal Protective Equipment (PPE). 1.3 List the PPE for Construction Work. 1.4 List the color code practice of Helmet in construction Project. 1.5 List the color code practice of High visible vest in construction Project. 1.6 State the safety procedure in work place.	1	2
2	**CONSTRUCTION TOOLS AND EQUIPMENT'S** 2.1 Define tools and Equipment. 2.2 List the hand tools used in construction work. 2.3 List the Equipment for Construction work. 2.4 State the procedure to use hand tools and Power tools. 2.5 Mention the procedure to use Equipment. 2.6 Describe the maintaining procedure of Tools and Equipment. 2.7 Explain the Re-store procedure of Tools and Equipment.	1	3
3	**FEATURES AND PROPERTIES OF CONCRETE** 3.1 Define concrete. 3.2 Mention the different Types of concrete. 3.3 List the function of ingredients for concrete. 3.4 Define strength, durability, workability, laitance and segregation. 3.5 List the affecting factors on strength, durability and workability of concrete. 3.6 Define water-cement ratio, mixing, curing of concrete 3.8 Describe the ready-mix concrete. 3.9 Mention the methods of curing.	4	8
4	**CONCRETE CONSTRUCTION AND FORM WORK.** 4.1 Mention the precaution and supervision process of concrete construction. 4.2 List the special precautions for under water Concrete. 4.3 List the factors to be considered while supervising good quality concrete production. 4.4 Explain the function of fare face Concrete, pre-stressed concrete and Ferro-cement concrete. 4.5 State form works. 4.6 Define centering and shuttering. 4.7 Mention the essential requirements of a good form work.	5	8
5	**BRICK MASONRY. BLOCK MASONRY AND COMPOSITE MASONRY** 5.1 Define brick, hollow block and composite masonry. 5.2 Define header, stretcher, course, closer and bond. 5.3 Mention the functions of good bonding. 5.4 Explain the procedure of brick laying. 5.5 Mention the advantages and limitations of hollow and sloid block. 5.6 Describe the construction procedure of hollow and sloid block. 5.7 List the defects in brick masonry.	4	8
6	**BUILDING COMPONENT** 6.1 Define building component. 6.2 List the main component of a building.	6	8

	6.3 Define foundation, lintel, arch, column, beam, stair, floor, roof, parapet, sun shed, Cornish. 6.4 Describe the classification of foundation. 6.5 Define the technical terms used in stairs. 6.6 Mention the components of a floor and roof. 6.7 Name the suitable materials used for the construction of floor and roof. 6.8 Describe the construction procedures of floor tile. 6.9 Describe the construction procedures of RCC roof.		
7	**PARTITION WALL**. 7.1 Define partition wall. 7.2 Mention the common requirement of partition walls. 7.3 Mention the functions of partition wall. 7.4 List different types of partition walls. 7.5 Mention the functions of Brick partition, Drywall partition, Glass partition, Aluminum partition and Light weight partition (timber stud work, board) wall.	**2**	**4**
8	**DAMPNESS OF BUILDING.** 8.1 Mention the causes of dampness in building. 8.2 Mention the ill effects of dampness in building. 8.3 Describe remedial measures against efflorescence. 8.4 Identify different type of termites. 8.5 Name the chemicals used for anti-termite treatment.	**1**	**3**
9	**PLASTERING AND POINTING.** 9.1 Define plastering and pointing. 9.2 Mention the various types of plastering and pointing . 9.3 Mention the common tools used for plastering and pointing works. 9.4 Describe the process of applying plaster on a wall surface. 9.5 Mention the common defects in plastering and pointing.	**3**	**7**
10	**PAINTING & VARNISHING.** 10.1 State the purpose of painting & varnishing. 10.2 Describe the characteristics of good paints & varnishes. 10.3 State the various defects in painting & varnishing. 10.4 Describe the application procedure of specific surfaces: distemper, weather coat, snowcem (Cement-based paint), plastic emulsion paint, Synthetic enamel paint, Polish .	**3**	**7**
11	**CONCEPT OF DOORS AND WINDOWS.** 11.1 List different type of doors. 11.2 Identify the technical terms used in doors. 11.3 List the aluminum section to required for aluminum sliding windows. 11.4 Mention the aluminum section required for aluminum fixed windows.	**2**	**2**
	Total	**32**	**60**

DETAILED SYLLABUS (PRACTICAL)

Unit	Experiment name with procedure	Class (3 Period)	Final Marks
1.	**PERFORM CONSTRUCTION HEALTH AND SAFETY** 1.1 Perform color code practice of Helmet and High visible vest in construction Project. 1.2 Follow procedure to maintain safety in work place. 1.3 Maintain the record of performed job.	1	1
2	**IDENTIFY CONSTRUCTION TOOLS AND EQUIPMENT** 2.1 Identify hand tools, Power tools and Equipment in construction Project. 2.2 Perform Re-store procedure of Tools and Equipment. 2.3 Maintain the record of performed job.	1	1
3	**PERFORM AGGREGATE GRADING OF CONCRETE** 3.1 Collet various size of aggregate. 3.2 Mix different aggregate. 3.3 Perform aggregate grading. 3.3 Perform to draw the grading curves for various samples of aggregates and find out the FM value. 3.4 Maintain the record of performed job.	1	2
4	**PERFORM SLUMP TEST OF CONCRETE** 4.1 Collet required tools, equipment and materials. 4.2 Mixing concrete for required Proportion. 4.3 Perform slump test of different concrete works. 4.4 Maintain the record of performed job.	1	3
5	**PERFORM STRENGTH TEST OF CONCRETE** 4.1 Collet required tools, equipment and materials. 4.2 Mixing concrete for required Proportion. 4.3 Perform compressive strength test for concrete (cube and cylinder). 4.5 Perform compressive strength test for concrete using different type curing. 4.5 Maintain the record of performed job.	1	2
6	**OBSERVE CONCRETE CONSTRUCTION AND SUPERVISION** 6.1 Field visit. 6.2 Maintain the record of field visit.	1	1
7	**PERFORM BRICK MASONRY.** 7.1 Select and collect required tools and materials. 7.2 Conduct brick masonry work to erect pillars of sizes 25 cm x 25 cm to 50 cm x 50 cm with English bond up to 5 layers. 7.3 Construct sample corner (L) joints of 25 cm width English bond brick wall up to 5 layers. 7.4 Observe curing. 7.5 Checked quality 7.6 Maintain the record of performed job.	1	2
8	**CONSTRUCT HOLLOW AND SOLID BLOCK MASONRY** 8.1 Select and collect required tools and materials. 8.2 Prepare hollow and sloid block wall up to 3 layers. 8.3 Perform precautions to be taken while construction of hollow and solid block. 8.4 Observe proper curing. 8.5 Checked quality 8.6 Maintain the record of performed job.	1	2
9	**MAKE A MODEL FOR COLUMN FOOTING** 9.1 Select and collect the required tools and materials.	1	1

	9.2 Sketch a column footing. 9.3 Perform to make a model for column footing. 9.4 Observe proper process. 9.5 Checked quality 9.6 Maintain the record of performed job.		
10	**PERFORM TILES WORK ON FLOOR CONSTRUCTION.** 10.1 Select and collect required tools and materials. 10.2 Perform tiles on floor. 10.3 Filled the tiles joint. 10.4 Checked quality 10.5 Maintain the record of performed job.	**1**	**1**
11	**PERFORM PARTITION WALL.** 11.1 Select and collect required tools and materials. 11.2 Perform Aluminum partition wall 11.3 Perform Drywall partition in a Model Room. 11.4 Checked quality 11.5 Maintain the record of performed job.	**1**	**2**
12	**PERFORM DAMP PROOF COURSE (DPC).** 12.1 Select and collect required tools and materials. 12.2 Perform damp proof chemical select and mix with mortar. 12.4 Perform laying of DPC. 12.5 Checked quality 12.5 Maintain the record of performed job.	**1**	**2**
13	**PERFORM PLASTERING AND POINTING.** 13.1 Select and collect required tools and materials. 13.2 Perform plaster on suitable wall 13.3 Perform pointing on masonry wall joint. 13.4 Observe proper procedure. 13.5 Checked quality 13.6 Maintain the record of performed job.	**2**	**2**
14	**PERFORM PAINTING & VARNISHING.** 14.1 Select and collect required tools and materials. 14.2 Perform surface preparation. 14.3 Perform proper mixing procedure of paint. 14.4 Perform distemper on interior wall 14.5 Perform snow cem / weather coat on exterior wall 14.6 Perform plastic emulsion on interior wall 14.7 Perform enamel paint on steel surface 14.8 Perform varnish on wooden surface. 14.9 Checked quality 14.10 Maintain the record of performed job.	**2**	**3**
	Total	**16**	**25**

NECESSARY RESOURCES (TOOLS, EQUIPMENT'S AND MACHINERY):

Sl	Item Name	Quantity
	HAND TOOLS:	
1	Chisel (Bolster, Cold)	05 Nos
2	Boning rods	05 Nos
3	Hammer (Brick, Lump, Double-end Comb, Sledge)	05 Set
4	Bricklayers Line Pins	05 Nos
5	Trowel	05 Nos

6	Notch Trowel	05 Nos
7	Water Level	05 Nos
8	Plumb Bob	05 Nos
9	Spirit Level	05 Nos
10	Jointers	05 Nos
11	Mixing Tools	05 Nos
12	Straight Edge	05 Nos
13	Hand Saw	05 Nos
14	Masonry Square	05 Nos
15	Bump cutter/screed	05 Nos
16	Crowbar	05 Nos
17	End frames	05 Nos
18	Hoe	05 Nos
19	Masonry Pan	05 Nos
20	Ladder	05 Nos
21	Measuring box	05 Nos
22	Measuring tape	05 Nos
23	Measuring wheel	05 Nos
24	Pick axe	05 Nos
25	Polishers	05 Nos
26	Putty knife	05 Nos
27	Rammer	05 Nos
28	Scratchers	05 Nos
29	Spade	05 Nos
30	Straight edge brushes	05 Nos
31	Paint Brushes	05 Nos
32	Rollers	05 Nos
33	Plastic Bucket	05 Nos
34	Plastic Roller Tray	05 Nos
35	Putty Knife	05 Nos
36	Sanding Sponges	05 Nos
37	Wheel barrow	
	POWER TOOLS:	
38	Circular saw	05 Nos
39	Cordless drill	05 Nos
40	Brick Cutter Machine	05 Nos
41	Vibrator	05 Nos
	SAFETY TOOLS	
42	Gloves	05 Nos
43	Safety Boots	05 Nos
44	Safety glasses	05 Nos
45	Safety helmet	05 Nos
46	Safety belt	05 Nos
47	Ear plug	05 Nos

	EQUIPMENT:	
1	Sand screen machine	01 Nos
2	Mini Concrete Mixer Machine	01 Nos
3	Compressive Strength Test Machine	01 Nos
4	Slump Test set	05 Nos
5	Cylinder Mold (3nos = 01set)	05 Set
6	Cube Mold (3nos = 01set)	05 Set
7	Sander	05 Set
8	Multipurpose Paint Mixer	05 Set

RECOMMENDED BOOKS:

Sl	Book Name	Writer Name	Publisher Name & Edition
01	Building Construction	B C Punmia	Laxmi Publishers, 5th 2004
02	Building Construction	**Varghese P C**	Prentice-Hall of India Pvt.Ltd; 1st edition (April 8, 2010)
03	Building Construction and materials	**Sushil Kumar**	STD, INDIA. 20th Edition, 2010
04	A Text Book of Construction	S P Aurora & S P Bindra	Dhanpat Rai Publishers
05	Building Construction	G J Kulkarni	Mittal Publishers
06	Building Construction	S C Rangwala	Charotar Publishers, 27th 2009
07	Construction and Foundation Engineering	Dr. J Jha, S K Sinha	Khanna Publishers

WEBSITE REFERENCES:

Sl	Web Link	Remarks
01	https://youtu.be/iSrmfGtlG3A	Search here with topics
02	https://youtu.be/NPwVl2YLTto	Search here with topics
03	www.kopykitab.com	Search here with topics
04	www.theconstructor.org/construction/construction-tools-list-images-building/20238/	Search here with topics
05	www.civiljungle.com/civil-engineering-tools-and-equipment/	Search here with topics