GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Diploma in Architecture

Level: Diploma

Branch: Architecture

Course / Subject Code: DA03063021

Course / Subject Name: Building Construction

w. e. f. Academic Year:	2026-27
Semester:	Third
Category of the Course:	Building Sciences and Applied Engineering (BS&AE)

Prerequisite:	Zeal to learn the subject.
Rationale:	This course essentially imparts the knowledge of construction of buildings and its components; at an introductory level. This course further introduces the learners to interpret the drawings and get familiar with the functions and requirements of various building components. The learners will get an exposure to the general construction practices by undertaking site visits. The purpose of this course is to help the learner to attain to apply building construction concepts and techniques for architectural design through various teaching learning experiences.

Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes
01	Comprehend basics of building components and explain various types of building foundations.
02	Describe general principles of masonry construction.
03	Select suitable type of openings and staircase for a given building as per the requirements.
04	Describe the R.C.C. construction.
05	Classify various sloping roofs as per requirement.

Teaching and Examination Scheme:

Teaching Scheme (in Hours)			Total Credits L+T+ P	Assessment Pattern and Marks				Total Marks
				Theory		Tutorial / Practical		
L	T	P	C	ESE (E)	PA / CA (M)	PA/CA (I)	ESE (V)	
3	0	2	5	70	30	20	0	120

Legends: L-Lecture; T – Tutorial/Teacher Guided Theory Practice; P -Practical; C – Credit, CA – Continuous Assessment; ESE -End Semester Examination

Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1.	**Introduction:** 1.1 Principles of Load bearing, Framed & Composite structures; their merits and demerits 1.2 Components of Building: Section of a typical wall showing all major components of a building	04	9
2.	**Foundation:** 2.1. Definition of foundation 2.2. Purpose of foundation 2.3. Bearing capacity of soil and its relevance to foundation 2.4. Types of foundation: Shallow, Deep 2.5. Various types of Shallow Foundation with sketches: Spread footing, stepped footing, Isolated and Combined footing, Raft foundation, Grillage foundation 2.6. Pile foundation: Types of piles based on functions only 2.7. Causes of failure of foundation	06	13.5
3.	**Masonry Construction:** 3.1 Definition of the terms related to Brick Masonry: Header, Stretcher, Bond, Closer, Frog, Quoins, Course, Face, Back, Hearting, Joint, Bat, etc. 3.2 General principles to be followed in construction of Brick Masonry 3.3 Different Types of Bonds: English Bond, Flemish Bond, Stretcher Bond, Header Bond, Racking Bond, Zigzag Bond, Garden Wall Bond 3.4 Plan and Elevation of above Bonds 3.5 Comparison between English bond and Flemish bond 3.6 Terms related to stone masonry: through stone, bonder, spell, natural bed, weathering, corbel 3.7 Types of Stone Masonry: Rubble masonry, Coursed rubble, Uncoursed rubble, Random rubble, Dry rubble, Ashlar masonry 3.8 General principles to be followed in construction of stone Masonry. 3.9 Joints in Stone Masonry: Butt joint, Rebated joint, Rusticated joint, Dowel joint, tonged & grooved joint, cramped joint, etc.	10	22

	3.10 Comparison between Brick Masonry and Stone Masonry		
4.	**Openings:** 4.1 Lintels & arches: Lintels – functions, types, construction. 4.2 Arches – technical terms, types – brick arches, rough, axed, stone arches, flat – semicircular. 4.3 Doors: Function and Types of Doors: Hinged Doors, Dutch Doors, Roller Doors, Sliding Doors, Pivot Doors, French Doors, Panel Doors, Flush Door, Battened & Ledged Doors, Glass Door, Louvered Doors, Swing Doors, Collapsible Doors, Rolling Shutters, Glazed/Slash Door, Revolving Doors 4.4 Windows: Functions and Types of Windows: Picture Windows, Casement Windows, Bay Windows, Single-Hung Windows, Double-Hung Windows, Awning Windows, Horizontal Sliding Windows, Casement Window 4.5 Ventilators: Functions and Types of Ventilators	10	22
5.	**Staircase:** 5.1 Definition of Staircase 5.2 Technical terms related to Stairs 5.3 Various materials used for Stairs 5.4 Classification of types of Stairs based on: shape, material etc.	06	13.5
6.	**R.C.C. Construction:** 6.1 Definition of R.C.C. 6.2 Properties of R.C.C. 6.3 Advantages of R.C.C. 6.4 Causes of failure of R.C.C. 6.5 Basic sketches of Scaffolding 6.6 Basic sketches of Formwork for column, beam and slab	05	11
7.	**Sloping Roof:** 7.1 Technical terms related to sloping roof 7.2 Classification of roof 7.3 Composite roof truss 7.4 Steel sloping roof truss 7.5 Advantages of Steel truss over timber sloping roof	04	9
	Total	**45**	**100**

Suggested Specification Table with Marks (Theory):

Distribution of Theory Marks in %					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
20	**31**	**49**	**0**	**0**	**0**

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom's Taxonomy)

References/Suggested Learning Resources:

(a) Books:

Sr. No.	Title of Book	Author	Publication with place, year and ISBN
1	The text book of Building Construction	S. P. Arora, S. P. Bindra	Dhanpat Rai Publications (P) Limited ISBN: 978-81-89928-80-3
2	The Construction of Buildings (Vol. 1 to 5)	R. Barry	Wiley Publications, ISBN: 978-1-118-97721-7
3	Building Construction	Dr. B. C. Punmia, Er. Ashok K. Jain, Dr. Arun K. Jain	Laxmi Publication (P) Limited, Eleventh Edition (2016), ISBN: 978-81-318-0428-5
4	Building Construction (Vol. 1 to 4)	W. B. McKay	Orient Longman Limited
5	Building Construction	Sushil Kumar	Standard Publishers Distributors, ISBN 13: 9788180141683
6	Building Construction	Dr. Janardan Jha, Prof. S. K. Sinha	Kanna Publisher, ISBN-10: 978817409263 2
7	Building Construction	Rangwala	Charotar Publishing House (P) Limited ISBN: 978-93-85039-04-1
8	Building Construction and Materials	Gurcharan Singh	Standard Book House, ISBN-13: 9788189401214

(b) Open-source software and website:

1. http://www.nptel.iitm.ac.in/
2. http://www.constructionknowledge.net/
3. http://houseconstructiontips.com/

Suggested Course Practical List:

S. No.	Practical Outcomes (PrOs)	Unit No.	Approx. Hrs. required
1	Sketches on building wall section	1	2
2	Sketches on types of Foundations	2	4
3	Sketches on Masonry Construction	3	4
4	Sketches on Openings	4	6
5	Sketches on Staircase	5	4
6	Sketches of Scaffolding and Formwork	6	2
7	Sketches of Sloping roofs	7	2
8	Prepare one model of any of the given building components	--	2
9	Carry out one site visit pertaining to the topics covered in curriculum	--	2
10	Introduction to long-span structures: Graphical representation of structures with spans larger than 20 meters. Draw neat sketches and explain in brief the following structures: • folded plates • shell structures • tensile structures • portal frames	--	2
	Total		**30**

List of Laboratory/Learning Resources Required:

S. No.	Equipment Name with Broad Specifications	Pr.No.
1	Drawing Board with other drawing Instruments	1-10
2	Interactive board with LCD overhead projector	1-10

Suggested Project List:

Prepare sheets for PrO numbers 1 to 10 in A2 size cartridge sheets (with complete data and dimensions) after practicing in sketch book.

Suggested Activities for Students:

Other than the classroom and laboratory learning, following are the suggested student-related **co-curricular** activities which can be undertaken to accelerate the attainment of the various outcomes in this course: Students should perform following activities in group and prepare reports of about 5 pages for each activity. They should also collect/record physical evidences for their (student's) portfolio which may be useful for their placement interviews:

a) Visit construction sites to observe the current construction practices and prepare a comprehensive report with photographs, sketches, descriptions, etc.

b) In a group of 4-5 learners prepare an internet/library-based presentation for each of above topics considering recent practices prevailing across the globe.

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