School of Planning and Architecture, Vijayawada
(An institute of National Importance under the Ministry of Education, Govt. of India)
S.No. 4/4, ITI Road, Vijayawada – 520008, Andhra Pradesh, India

Course: **ARC212 - Building Materials and Construction III** Class: **II Year III Sem. B.Arch, 2025-26 A.Y.** Section: **A**
Instructors: **Dr. Amitava Sarkar, Ar. Dheeraj** Contact Periods/week: **05 (55 min. each)**
Timetable: **Tuesday**, 11**:45 AM – 12.40 PM & 1.30 PM – 5.10 PM**
Internal Assessment Marks: **50** External Theory Exam: **50** Total Marks: **100**
Attendance: **75% Min.** Min. Passing Marks: **50% each in Internal & External Assessment, 50% in Aggregate**

Objective

1. Focus on various building materials and construction techniques would be emphasized based on the performing standards and codes, wherein application of each material would be discussed in detail, both in the context of historical and contemporary methodology. With time, each topic can also focus on latest trends in practice and usage of new technology/materials.
2. To impart subject on application of each material in detail, both in the context of historical and contemporary methodology. It shall also on latest trends in practice and usage of new technology/materials.

Outcomes

Students completing this course will be able to:
1. Explain the construction details and techniques used in construction of doors, ventilators, RCC structures, Vault, domes and excavation for both in the context of historical and contemporary scenario.
2. Compare the older construction method for the respective topics with the latest trends.
3. Identify the standard codes for Building construction techniques.
4. Apply the construction details and techniques in their design studio projects.
5. Identify and analyze the trend of construction practices available in the market.

S.No.	Week No.	TOPIC OF CLASS LECTURE & DISCUSSION	CLASS ACTIVITY & ASSIGNMENTS
1	**22.07.2025** ***Week 1***	**Unit I Doors** ✓ Types of doors based on the make (battened, ledged, braced, flush, panelled, framed and etc.) ✓ Usage types- pivoted, single leaf, double leaf	Lecture and Studio work - Drawing preparation
2	**29.07.2025** ***Week 2***	**Unit I Doors** ✓ Usage types - revolving, swing, rolling shutter, safety doors, collapsible, etc. ✓ Types of timber and metal doors (joinery and fixing details), fire-rated doors, precast doors, etc.	Lecture and Studio work - Drawing preparation
3	**05.08.2025** ***Week 3***	**Unit I Doors** ✓ hardware fixtures, joinery, door-fixing details, and types of materials used in doors (wood, metal, glass, aluminium, & PVC).	Lecture and Studio work - Drawing preparation
4	**12.08.2025** ***Week 4***	**Unit II Windows and Ventilators** ✓ Types of windows and ventilators based on the design (sliding, pivot, casement, louvered, fixed, bay window etc.)	Lecture and Studio work - Drawing preparation
5	**19.08.2025** ***Week 5***	**Unit II Windows and Ventilators** ✓ Types of windows and ventilators based on the design (sliding, pivot, casement, louvered, fixed, bay window etc.) ✓ Types of timber and metal doors (joinery and fixing details).	Lecture and Studio work - Drawing preparation
6	**26.08.2025** ***Week 6***	***Field Work / Case Study visits***	
7	**02.09.2025** ***Week 7***	***Field Work / Case Study visits***	**Site visit**
8	**09.09.2025** ***Week 8***	**Unit II Windows and Ventilators** ✓ Types of windows and ventilators based on the	Lecture and Studio work - Drawing preparation

S.No.	Week No.	TOPIC OF CLASS LECTURE & DISCUSSION	CLASS ACTIVITY & ASSIGNMENTS
		design (sliding, pivot, casement, louvered, fixed, bay window etc.) ✓ Types of timber and metal doors (joinery and fixing details).	
9	**16.09.2025** ***Week 9***	**Mid Semester Assessment**	**Class Test**
10	**23.09.2025** ***Week 10***	**Unit III RCC** ✓ Introduction - Application of RCC in building components (foundation, columns, beams, slabs and walls). ✓ Typical details for RCC footing, pile foundation - precast pile, cast in situ piles, types of piles, method of driving piles, ✓ RCC footing.	Lecture and Studio work - Drawing preparation
11	**30.09.2025** ***Week 11***	**Unit III RCC** ✓ Types of piles, method of driving piles. ✓ Walls, column, beams, lintels, sunshades, floor and roof slabs (1 & 2 way slabs) cantilever. ✓ Column, beam, slab.	Lecture and Studio work - Drawing preparation; **Site-visit report submission**
12	**07.10.2025** ***Week 12***	**Unit III RCC** ✓ RCC filler slab and waffle slab. ✓ Column, beam, slab.	Lecture and Studio work - Drawing preparation
13	**14.10.2025** ***Week 13***	**Unit IV Vaults and Domes** ✓ Principles and methods of construction including techniques and details of form-work. ✓ Methods of construction of vaults and domes with details.	Lecture and Studio work - Drawing preparation
14	**21.10.2025** ***Week 14***	**Unit IV Vaults and Domes** ✓ Construction of Masonry Vaults and Domes – Concepts of Reinforced Concrete Domes and Vaults with formwork design. ✓ Methods of construction of vaults and domes with details.	Lecture and Studio work - Drawing preparation
15	**28.10.2025** ***Week 15***	**Unit V Deep Excavation, Scaffolding & Formwork, Shoring, and Underpinning** ✓ Definition, problems in deep excavation, terms of timbering, methods of timbering, precautions to be taken in deep excavation, de-watering. ✓ Drawings on various supporting structures with materials.	Lecture and Studio work - Drawing preparation; **Market survey report submission**
16	**04.11.2025** ***Week 16***	**Unit V Deep Excavation, Scaffolding & Formwork, Shoring, and Underpinning** ✓ Types of scaffolding, formwork (slab, arches, vaults and domes) shoring and underpinning, precautions to be taken and methods adopted. ✓ Drawings on various supporting structures with materials.	Lecture and Studio work - Drawing preparation
17	**11.11.2025** ***Week 17***	**Unit V Deep Excavation, Scaffolding & Formwork, Shoring, and Underpinning** ✓ Types of scaffolding, formwork (slab, arches, vaults and domes) shoring and underpinning, precautions to be taken and methods adopted. ✓ Drawings on various supporting structures with materials.	Internal Evaluation of Studio work – Drawings, Market survey reports, etc.

Tentative break-up of Internal Assessment Marks:

S.No.	Categories of Evaluation*	Marks
1	Continuous Assignments, Drawing sheets, Market Survey, Site visit data, etc.	40

2	Mid Semester Test	10
	Total	**50**

***** *The Marks allotted against each category are tentative. Categories of evaluation are only indicative and may increase or decrease.*

Reference Books:

1. Barry, R. (1999). The Construction of Buildings Vol.II. 5th Ed. New Delhi : East-West Press.
2. Bindra, S. P. and Arora, S. P. (2000). Building Construction: Planning Techniques and Methods of Construction, 19th Ed. New Delhi : Dhanpat Rai Publications.
3. BIS and relevant IS codes.
4. Ching, F. D. K. (2000). Building Construction Illustrated. 3rd Ed. Wiley.
5. Chudley, R. (2008). Building Construction Handbook. Elsevier.
6. McKay, W. B. (2005). Building Construction Metric Vol. 1–IV, 4th Ed. Mumbai :Orient Longman.
7. Meghashyam, K. K. (2005). Reinforced Concrete Constructions for 21st C. New Delhi :J.M. Jaina.
8. Rangwala, S. (2004). Building Construction. 22nd Ed. Anand : Charotar Publishing.
9. *Rangwala, S. C. (1963). Building Construction: Materials and types of Construction, 3rd Ed. New York : John Wiley and Sons, Inc.*
10. *Sushil-Kumar, T. B. (2003). Building Construction. 19th Ed. Delhi : Standard Publications.*

Sd/-
Signature of Subject Teacher

Sd/-
Signature of Head of the Department