GURUGRAM UNIVERSITY, GURUGRAM
SCHEME OF STUDIES & EXAMINATION FOR
BACHELOR OF ARCHITECTURE
(FIVE YEAR FULL TIME)
(Choice Based Credit scheme w.e.f. 2024-25)

Program Outcomes (POs):

After completion of the program graduates will be able to

PO 1: Graduates of this Programme will be equipped with requisite knowledge of a range of subjects encompassing sciences, humanities, social sciences and technology to be able to effectively meet their professional goals.

PO 2: Graduates of this Programme will possess the ability to design and build following critical observation, assimilation and analysis of pre-design data.

PO 3: Graduates of this Programme will be trained to perceive the built environment as more than the sum of its parts and therefore make a design intervention that responds to environmental, social, cultural, and economic contexts.

PO 4: Graduates of this Programme will be trained to work both as individuals in their own right, but also as part of a larger team environment.

PO 5: Graduates of this Programme will be equipped to critically observe, assimilate and analyse the given situation before recommending the appropriate architectural intervention for a given situation.

PO 6: Graduates of this Programme will be professionally responsible individuals with a strong ethical grounding and sensitivity towards environmental, social, cultural and economic sustainability.

PO 7: Graduates of this Programme will be effective communicators using a range of mediums from verbal and written skills to graphic and drawing communication tools to present their ideas.

PO 8: Graduates of this Programme will be able to appreciate the many contextual layers from the local to the global that are determinants of the built environment.

PO 9: Graduates of this Programme will be made aware of the importance of self-education and engaging in life-long learning.

PO 10: Graduates of this Programme will be well rounded individuals fully aware of contemporary issues in general and how they affect the profession of architecture in particular.

PO 11: Graduates of this Programme will be equipped to handle all relevant contemporary architecture software notably AutoCAD; Revit; Ecotect; M-Color; besides knowledge of other softwares like MS Office and Adobe Photoshop.

S. no.	Graduate Attributes	Program Outcomes (POs)										
		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
1	Engineering Knowledge (Architecture)	✓	✓	✓	✓	✓			✓		✓	
2	Problem Analysis		✓	✓		✓			✓			✓
3	Design/Development of Solutions		✓	✓		✓			✓			✓
4	Conduct Investigations of Complex Problems	✓	✓	✓		✓			✓		✓	✓
5	Modern Tool Usage		✓	✓		✓			✓			✓
6	The Engineer & Society (Architect)				✓		✓				✓	
7	Environment and Sustainability				✓		✓				✓	
8	Ethics				✓		✓				✓	
9	Individual & Team Work				✓		✓			✓	✓	
10	Communication							✓	✓			✓
11	Project Management & Finance	✓	✓	✓	✓	✓			✓		✓	
12	Lifelong Learning									✓	✓	

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BACHELOR OF ARCHITECTURE I SEMESTER
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S.No.	Course No.	Category	Course Title	Teaching Schedule		Marks of Class work	Exam Marks		Total marks	Credit	Duration of Exam
				L	Studio		Theory	Portfolio			
1	AR 101 C	PC	Architectural Design I	0	6	100		100	200	6	3
2	AR 103 C	PC	Architectural Drawing I	0	4	50	50	-	100	4	3
3	AR 105 C	PC	Graphics I	0	4	50	50	-	100	4	3
4	AR 107 C	PC	History of Architecture I	2	0	50	50	-	100	2	3
5	AR 109 C	PC	Principles of Architecture I	2	0	50	50	-	100	2	3
6	AR 111 C	PC	Workshop I	0	4	100	-	-	100	4	-
7	AR 113 C	BS & AE	Building Construction I	0	4	50	50	-	100	4	3
8	AR 115 C	BS & AE	Building Materials	2	0	50	50	-	100	2	3
9	AR117 C	BS & AE	Theory of Structures	2	0	50	50	-	100	2	3
			Total	**8**	**22**	**500**	**400**	**100**	**1000**	**30**	**-**

Note:

1. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
2. Electronics gadgets including Cellular phones are not allowed in the examination.
3. Theory exam shall be conducted for the studio subjects of Architectural Drawing-I (AR103C) and Building Construction I (AR113C) in the drawing hall having the provisions of drawing boards.
4. Following stationary shall be required for the conduct of above mentioned exams for each candidate:
    a. Cartridge sheet – 4 nos.
5. Portfolio examination (as Practical exam) shall be conducted through viva-voce in the subject of Architectural Design-I (AR101 C) by an external and internal examiner.
6. PC: Programme core, BS & AE: Building Science and Applied Engineering, SEC: Skill Enhancement Courses

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BACHELOR OF ARCHITECTURE II SEMESTER
(FIVE YEAR FULL TIME)

S.No.	Course No.	Category	Course Title	Teaching Schedule		Marks of Class work	Exam Marks		Total marks	Credit	Duration of Exam
				L	Studio/ P		Theory	Portfolio/Practical			
1	AR 102 C	PC	Architectural Design II	0	6	100	-	100	200	6	3
2	AR 104 C	PC	Architectural Drawing II	0	4	50	50	-	100	4	3
3	AR 106 C	PC	Graphics II	0	4	50	50	-	100	4	-
4	AR 108 C	PC	Principles of Architecture II	2	0	50	50	-	100	2	3
5	AR 110 C	BS & AE	Building Construction II	0	6	100	100	-	200	6	3
6	AR 112 C	BS & AE	Climate responsive architecture II	2	0	50	50	-	100	2	3
7	AR 114 C	BS & AE	Structural Design II	2	0	50	50	-	100	2	3
8	AR 116C		Educational Tour II	-		100	-	-	100	2	-
9	HUM101C	SEC	English language skills	2	0	25	75	-	100	2	3
10	HUM103C	SEC	English language lab	-	2	25	-	75	100	1	3
			Total	**8**	**20**	**600**	**425**	**175**	**1200**	**31**	**-**

Note:

1. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
2. Electronics gadgets including Cellular phones are not allowed in the examination.
3. Theory exam shall be conducted for the studio subjects of Architectural Drawing-I (AR104C) and Building Construction II (AR110C) in the drawing hall having the provisions of drawing boards.
4. Following stationary shall be required for the conduct of above mentioned exams for each candidate:
    a. Cartridge sheet – 4 nos.
5. Portfolio examination (as Practical exam) shall be conducted through viva-voce in the subject of Architectural Design-II (AR102 C) by an external and internal examiner.
6. PC: Programme Core, BS & AE: Building Science and Applied Engineering, SEC: Skill Enhancement Courses

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BACHELOR OF ARCHITECTURE III SEMESTER
(FIVE YEAR FULL TIME)

S.No.	Course No.	Category	Course Title	Teaching Schedule		Marks of Class work	Exam Marks		Total marks	Credit	Duration of Exam
				L	Studio		Theory	Portfolio			
1	AR –201 C	PC	Architectural Design III	0	6	100	-	100	200	6	3
2	AR – 203 C	PC	Architectural Drawing III	0	4	50	50	-	100	4	3
3	AR – 205 C	PC	Graphics III	0	4	50	50	-	100	4	-
4	AR – 207 C	PC	History of Architecture III	2	0	50	50	-	100	2	3
5	AR – 209 C	PC	Workshop III	0	4	100	-	-	100	4	-
6	AR – 211 C	BS & AE	Building Construction III	0	4	50	50		100	4	3
7	AR – 213 C	BS & AE	Advanced Building Materials III	2	0	50	50	-	100	2	3
8	AR – 215 C	BS & AE	Building Services III	2	0	50	50	-	100	2	3
9	AR – 217 C	BS & AE	Structural Design III	2	0	50	50	-	100	2	3
10		Mandatory	Environmental Sciences*	3	-	25	75		100	-	3
			Total	**11**	**22**	**575**	**425**	**100**	**1100**	**30**	

*** Course No. will be decided at University level**

Note:

1. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
2. Electronics gadgets including Cellular phones are not allowed in the examination.
3. Theory exam shall be conducted for the studio subjects of Architectural Drawing-III (AR203-C) and Building Construction III (AR211-C) in the drawing hall having the provisions of drawing boards.
4. Following stationary shall be required for the conduct of above mentioned exams for each candidate:
    a. Cartridge sheet – 4 nos.
5. Portfolio examination (as Practical exam) shall be conducted through viva-voce in the subject of Architectural Design-III (AR201 C) by an external and internal examiner.

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BACHELOR OF ARCHITECTURE IV SEMESTER
(FIVE YEAR FULL TIME)

S.No.	Course No.	Category	Course Title	Teaching Schedule		Marks of Class work	Exam Marks		Total marks	Credit	Duration of Exam
				L	Studio		Theory	Portfolio			
1	AR – 202 C	PC	Architectural Design IV	0	6	100	-	100	200	6	3
2	AR – 204 C	PC	Principles of Architecture IV	2	0	50	50	-	100	2	3
3	AR – 206 C	PC	Site Planning and theory of Landscape IV	2	0	50	50	-	100	2	3
4	AR – 208C	BS & AE	Building Construction IV	0	6	100	100	-	200	6	3
5	AR – 210 C	BS & AE	Building Services IV	2	0	50	50	-	100	2	3
6	AR – 212 C	BS & AE	Structural Design IV	2	0	50	50	-	100	2	3
7	AR – 214 C	BS & AE	Surveying Practice	2	0	50	50	-	100	2	3
8	AR – 216 C	SEC	Computer in Architecture IV		4	100	-	-	100	4	-
9	AR – 218 C		Educational Tour IV			100			100	2	-
			Total	**10**	**16**	**650**	**350**	**100**	**1100**	**28**	

Note:

1. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
2. Electronics gadgets including Cellular phones are not allowed in the examination.
3. Theory exam shall be conducted for the studio subjects of Building Construction II (AR 208-C) in the drawing hall having the provisions of drawing boards.
4. Following stationary shall be required for the conduct of Building Construction II (AR 208-C) exams for each candidate:
    b. Cartridge sheet – 4 nos.
5. Portfolio examination (as Practical exam) shall be conducted through viva-voce in the subject of Architectural Design-IV (AR202-C) by an external and internal examiner.

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BACHELOR OF ARCHITECTURE V SEMESTER
(FIVE YEAR FULL TIME)

S.No.	Course No.	Category	Course Title	Teaching Schedule		Marks of Class work	Exam Marks		Total marks	Credit	Duration of Exam
				L	Studio		Theory	Portfolio			
1	AR – 301 C	PC	Architectural Design V	0	9	150	-	150	300	9	3
2	AR – 303 C	PC	History of Architecture V	2	0	50	50	-	100	2	3
3	AR – 305 C	BS & AE	Building Construction V	0	6	100	100	-	200	6	3
4	AR – 307 C	BS & AE	Building Services V	2	0	50	50	-	100	2	3
5	AR – 309 C	BS & AE	Structural Design V	2	0	50	50	-	100	2	3
8	AR – 311 C	BS & AE	Specifications	2	0	50	50	-	100	2	3
9	AR – 313 C	PAEC	Building byelaws & Office management	2	0	50	50	-	100	2	3
10	AR – 315 C	SEC	Computer in Architecture V	0	4	100	-	-	100	4	-
			Total	**10**	**19**	**600**	**350**	**150**	**1100**	**29**	**-**

Note:

1. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
2. Electronics gadgets including Cellular phones are not allowed in the examination.
3. Theory exam shall be conducted for the studio subjects of Building Construction II (AR 305-C) in the drawing hall having the provisions of drawing boards.
4. Following stationary shall be required for the conduct of Building Construction II (AR 305-C) exams for each candidate:
    a. Cartridge sheet – 4 nos.
5. Portfolio examination (as Practical exam) shall be conducted through viva-voce in the subject of Architectural Design-V (AR301-C) by an external and internal examiner.

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BACHELOR OF ARCHITECTURE VI SEMESTER
(FIVE YEAR FULL TIME)

S.No.	Course No.	Category	Course Title	Teaching Schedule		Marks of Class work	Exam Marks		Total marks	Credit	Duration of Exam
				L	Studio		Theory	Portfolio			
1	AR – 302 C	PC	Architectural Design VI	0	9	150	-	150	300	6	3
2	AR – 304 C	PC	Modern & Contemporary Architecture VI	2	0	50	50	-	100	2	3
3	AR – 306C	BS & AE	Working Drawing VI	0	6	100	100	-	200	6	3
4	AR – 308 C	BS & AE	Building Services VI	2	0	50	50	-	100	2	3
5	AR – 310 C	BS & AE	Structural Design VI	2	0	50	50	-	100	2	3
6	AR – 312 C	BS & AE	Building Maintenance VI	2	0	50	50	-	100	2	3
7	AR – 314 C	SEC	Computer in Architecture VI		4	100	-	-	100	4	-
8	AR – 316 C	SEC	Educational Tour			100			100	2	-
9		Mandatory	Constitution of India/Essence of Indian Traditional Knowledge*	3		25	75		100	-	3
			Total	**11**	**19**	**675**	**375**	**150**	**1200**	**26**	**-**

* Course No. will be decided at University level

Note:

1. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
2. Electronics gadgets including Cellular phones are not allowed in the examination.
3. Theory exam shall be conducted for the studio subjects of Working Drawing VI (AR 306-C) in the drawing hall having the provisions of drawing boards.
4. Following stationery shall be required for the conduct of Working Drawing VI (AR 306-C) exams for each candidate:
    a. Cartridge sheet – 4 nos.
5. Portfolio examination (as Practical exam) shall be conducted through viva-voce in the subject of Architectural Design-VI (AR302-C) by an external and internal examiner.

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BACHELOR OF ARCHITECTURE VII SEMESTER
(FIVE YEAR FULL TIME)

S.No.	Course No.	Category	Course Title	Teaching Schedule		Marks of Class work	Exam Marks		Total marks	Credit	Duration of Exam
				L	Practical		Theory	Portfolio			
1	AR – 401 C	PAEC	Practical Training	-	32	150		150	300	16	3
			Total	-	32	150		150	300	16	3

Note:

Evaluation for AR-401-C shall be done through a viva voce/presentation conducted by Chairperson Architecture/Practical Training Coordinator and an External Examiner.

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BACHELOR OF ARCHITECTURE VIII SEMESTER
(FIVE YEAR FULL TIME)

S.No.	Course No.	Category	Course Title	Teaching Schedule		Marks of Class work	Exam Marks		Total marks	Credit	Duration of Exam
				L	Studio		Theory	Portfolio			
1	AR – 402 C	PC	Architectural Design VIII	0	9	150	-	150	300	9	3
2	AR – 404 C	PAEC	Research Techniques	3	0	50	50	-	100	3	3
3	AR – 406C	BS & AE	Building Construction VIII	0	6	100	100	-	200	6	3
4	AR -	PE	Programme Elective I	3	0	50	50	-	100	3	3
5	AR -	PE	Programme Elective II	3	0	50	50	-	100	3	3
6	AR -	PE	Programme Elective III	3	0	50	50	-	100	3	3
7		OE	Open Elective I*	3	0	25	75	-	100	3	3
			Total	15	15	475	375	150	1000	30	

*Course No. will be decided at University level

Programme Elective I
AR – 408 C Urban Design-VIII
AR – 410 C Housing-VIII
AR – 412 C Urban and Regional Planning-VIII

Programme Elective II
AR – 414 C Conservation of Built Heritage-VIII
AR – 416 C Energy Conscious Architecture-VIII
AR – 418 C Disaster Management in Architecture--VIII

Programme Elective III
AR - 420 C Interior Design-VIII
AR – 422 C Building Information Management System
AR – 424 C Advanced Structural Design VIII

Note:

1. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
2. Electronics gadgets including Cellular phones are not allowed in the examination.
3. Theory Exam shall be conducted for the studio subjects of Building Construction-VIII (AR406-C) in the drawing hall having the provision of drawing boards.
4. Following stationery shall be required for the conduct of Building Construction-VIII (AR406-C) exams for each candidate:
   a. Cartridge sheet – 4 nos.
5. Portfolio exam (as Practical exam) shall be conducted through viva-voce in the subject of Architectural Design-VIII (AR402-C) by an External and an Internal Examiner.
6. The choice of students for any elective shall not be binding on the department to offer, if the department does not have expertise. The minimum strength of the students should be 5 to run an elective.

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BACHELOR OF ARCHITECTURE IX SEMESTER
(FIVE YEAR FULL TIME)

S.No.	Course No.	Category	Course Title	Teaching Schedule		Marks of Class work	Exam Marks		Total marks	Credit	Duration of Exam
				L	Studio		Theory	Portfolio			
1	AR – 501 C	PC	Architectural Design IX	0	9	150	-	150	300	9	3
2	AR – 503 C	PAEC	Project Management IX	3	0	50	50	-	100	3	3
3	AR – 505 C	PAEC	Dissertation IX	3	0	50	50	-	100	3	3
4	AR – 507C	BS & AE	Building Construction IX	0	6	100	100	-	200	6	3
	AR -	PE	Programme Elective IV	3	0	50	50	-	100	3	3
	AR -	PE	Programme Elective V	3	0	50	50	-	100	3	3
		OE	Open Elective II*	3	0	25	75	-	100	3	3
			Total	15	16	475	375	150	1000	30	

* Course No. will be decided at University level

Programme Elective IV
AR – 509 C Landscape Design –IX
AR – 511 C Traffic & Transportation –IX
AR – 513 C Tall Building & Façade Architecture – IX

Programme Elective IV
AR – 515 C Appropriate Building Technology-IX
AR – 517 C Sustainable Architecture-IX
AR – 519 C Architectural photography and Journalism-IX

Note:

1. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
2. Electronics gadgets including Cellular phones are not allowed in the examination.
3. Theory Exam shall be conducted for the studio subjects of Building Construction-IX (AR507-C) in the drawing Hall having the provision of Drawing boards.
4. Following stationery shall be required for the conduct of Building Construction-IX (AR507-C) exams for each candidate:
    a. Cartridge sheet – 4 nos.
5. Portfolio exam (as Practical exam) shall be conducted through viva-voce in the subject of Architectural Design-IX (AR501-C) by an External and an Internal Examiner.
6. The choice of students for any elective shall not be binding on the department to offer, if the department does not have expertise. The minimum strength of the students should be **five** to run an elective.
7. For Dissertation, B. Arch. coordinator will be assigned a load of **three**periods per week excluding his/ her own guiding load. Dissertation supervisor (guiding teacher) will be assigned a load of maximum one contactperiod per week for a group of four students.Work load allocated for the joint supervision within the department will be treated as half for each supervisor.

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BACHELOR OF ARCHITECTURE X SEMESTER
(FIVE YEAR FULL TIME)

S.No.	Course No.	Category	Course Title	Teaching Schedule		Marks of Class work	Exam Marks		Total marks	Credit	Duration of Exam
				L	Studio		Theory	Portfolio			
1	AR – 502 C	PC	Architectural Thesis	0	32	300	-	300	600	32	3
2	AR – 504 C	PAEC	Professional Practice	3	0	50	50	-	100	3	3
			Total	**3**	**32**	**350**	**35**	**300**	**700**	**35**	

NOTE

1. For Thesis, B. Arch. coordinator will be assigned a load of 6periods per week excluding his/ her own guiding load. Thesis supervisor (guiding teacher) will be assigned a load of maximum one contact period per week for a group of four tudents.Work load allocated for the joint supervision within the department will be treated as half for each supervisor.

BACHELOR OF ARCHITECTURE

AR 101C **ARCHITECTURAL DESIGN–I**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
-	6	100	-	100	200	6	3

INTENT:

To introduce the various facets of art and architecture and the formal vocabulary of design.

To understand the elements and principles of Basic Design as the building blocks of creative design and visual composition.

To nurture creativity and sensitize the students from the science stream to various design aspects and aesthetic line of thinking.

CONTENTS:

Introduction to Architectural Design through Basic Design terminology and concepts
Elements of Design: Properties, qualities and characteristics of point, line, direction, plane, shape, form, colour and texture.
Volumetric study of Platonic solids like Cube, Cuboids, Cylinder, Pyramid, Sphere etc. and Archimedean solids.

Exercises of 2D composition of simple geometric shapes (triangles, rectangles, circles) as lines and as cut and paste in monochromatic schemes and in color schemes.

Elementary design exercises,2D and 3D compositions, for study and exploration using elements and principles of design: Scale, Proportion, Balance, Harmony, Rhythm Contrast, etc

Application of form and color in designing real life 2D objects like design of a carpet, a sari border, a necktie, a rangoli, a pavement pattern, curtain fabric, logo design, poster making, 3D objects like planter, sculpture etc. using commonly available materialslike paper, matchsticks, clay, P.O.P etc.

Exercises of composition of 3D spaces and their representation in 2D

Exercise of 3D compositionof solids increased complexity (multiple solids in various positions like tilted, overlapping, superimposed, interpenetrating, etc.)and their representation in 2D

NOTE:

Detailed teaching programme to be made before the commencement of the semester and circulated to the students at the commencement of the semester.
At least **ten**problems are to be completed in the entire semester, covering the entire syllabus uniformly.
SevenProblems can be included in the sessionals &**three** problems can be left for external portfolio exams.

I	Sessional evaluation	Weightage
	Minor Test – I	10 %
	Minor Test – II	10 %
	Design Exercises (seven)	60%
	Portfolio exercises (part evaluation)	20 %
II	**Portfolio evaluation**	
	Portfolio exercises (three)	100%

READING LIST: (to be amplified by the subject teacher)

1. Baskinger, Mark and Bardel, William (2013) Drawing Ideas: A Hand-Drawn Approach for Better Design, Watson-Guptill.
2. Broomer, F. Gerald (1974) Elements of Design: Space, Davis Publications Inc., Worcester, Massachusetts.
3. Charles Wallschlacgerm and Cynthia Busic-Snyder (1992) Basic Visual Concepts and Principles for Artists, Architects and Designers, Mc Graw Hill, New York.
4. Ching, Francis D. K. (1979) Architecture: Form, Space and Order, Van Nostrand Reinhold Co.
5. Exner V. and Pressel D. (2009) Basics Spatial Design, Birkhanser.
6. Gordon, Bob and Gordon Maggic (2002) Complete Guide to Digital Graphic Design, Thames and Hudson, London.
7. Grillo, Paul Jacques (1960) Form, function and design, Dover Publications, Inc. New York.
8. Hillyer, V M and Huey, E G (1996) Story of Sculpture, Nelson, Meredith Publishing Company, NY.
9. Item, Johanes (1973) The Art of Colour, Van Nostrand Reinhold, NY.
10. Jackson, Paul (2011) Folding Techniques for Designers: From sheet to form, Laurence King Publishing

11. Joshua C. Taylor (1981) Learning to Look: A Handbook for the Visual Arts, (Phoenix Books), University of Chicago Press.
12. Maier, Manfired (1977) Basic Principles of Design, Vol.1, 2, 3 & 4, Van Nostrand Reinhold, NY.
13. Nathan Knobler (1980) Visual Dialogue, Harcourt School; 3 Sub edition
14. Owen Cappleman and Michael Jack Jordon (1993) Foundations in Architecture: An Annotated Anthology of Beginning Design Project, Van Nostrand Reinhold New York.
15. Paul J. Zelanski and Mary Pat Fisher (2010) The Art of Seeing, Pearson.
16. Pramar V.S. (1973) Design fundamentals in Architecture, Somaiya Publications Pvt. Ltd., New Delhi.
17. Rochon, Richard and Linton, Herald (1991) Colour in Architectural Illustration, Van Nostrand Reinhold, NY.
18. Sausmarez, Maurice De (1987) Basic Design – The dynamics of Visual Design, Herbert Press, London.
19. Wong, Wucius (1977) Principles of three dimensional Design, Van Nostrand Reinhold, New York.

BACHELOR OF ARCHITECTURE

AR103C **ARCHITECTURAL DRAWING-I**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	Studio		Theory	Portfolio			
	4	50	50	-	100	4	3

INTENT:

To develop the drawing skillsas tools for creative thinking, visualization, perception, imagination, representation and to understand fundamentals of architectural drawing

To understand the graphic treatment of two and three dimensional drawings including perception and presentation of simple architectural shapes, forms and basic elements of building /structure.

To familiarize for preparing and developing architectural presentation techniques including lettering and symbols etc.

CONTENT:

UNIT I:Basics of Architectural Drawing

Use of different drawing instruments,Types of lines-elevation lines, construction lines, section lines, hidden lines, centre lines

Drawing of different types of Architectural Letterings, dimensions

Understanding concept of scale, their construction including plain and diagonal scales.

Application of architectural scale - drawing of interesting 2 dimensional images in reduced and enlarge scales.

UNIT II:Introduction to Orthographic Projections

Principles of Orthographic Projections-conventions,Types of Orthographic projections, First angle projection

Orthographic projections of basic elements like point, lines and planes with reference to HP and VP.

Projection of line parallel to both reference planes, parallel to one and inclined to other reference plane, inclined to both the reference planes followed by illustrative examples in each case.

Projection of plane parallel to VP, parallel to HP, perpendicular to VP and inclined to HP, perpendicular to HP and inclined to VP, inclined to both HP and VP followed by illustrative examples in each case.

UNIT III:Projections of Right Regular Solids

Orthographic projections of regular Solids- - solids bounded by planes such as Prism and pyramids and solids of revolution such as Cylinder and Cone.

Projection of solids having axis perpendicular to one of the reference planes, axis parallel to either of the reference plane and inclined to other reference plane, axis inclined to both the reference planes followed by illustrative examples in each case.

Drawing of relevant simple compositions of solids in plan and all elevations.

UNIT IV: Application of architectural drawing

Architectural Graphic codes/ Symbols presentations (in plans, sections and elevations) of basic building materials and constructional elements, furniture, services like water supply, sanitation and electrical etc., Preparation of measured drawings (plan and elevations) of minor innovative built form, furniture, building components etc.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester. Minimum 12 sheets covering the entire syllabus uniformlymust be prepared in the studio under supervision of the teacher.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignments /class tests (12)	60%
II	Theory examination	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
2. Exam shall be conducted in the drawing hall/studio having provision of drawing boards.
3. Following Stationery shall be provided to each of the student
   a) Four cartridge sheet (white)

4. Total FIVE questions are to be set, out of which FIRST question shall be compulsory (from the entire syllabus) of theory of 20 marks and rest of the FOUR QUESTIONS shall be from four units (one question from each of the unit, candidate have to attempt any TWO questions (drawing based) out of four of 15 marks each.

READING LIST: (to be amplified by the subject teacher)

1. Bhat, N D (1995) Engineering Drawing, Charotar Publishing House, Bangalore, India
2. Gopalakrishna, K R (2001) Engineering Graphics, Subhas Publications, Bangalore, India

BACHELOR OF ARCHITECTURE

AR105C **GRAPHICS-I**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	Studio		Theory	Portfolio			
	4	50	50	-	100	4	3

INTENT

To develop the skill of using the pencil in free hand drawing and rendering to support Architectural Design and Drawing

CONTENT

UNIT I:

Lines, Planes, Simple Solids

Composition in simple solids with shading / shadows

UNIT II:

Outdoor sketching

Scaled freehand sketching of Foliage, Human Figures, Automobiles

UNIT III:

Quick sketching of simple objects like apple, telephone, bottle, chair, table etc. in black pencil.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester. Minimum10-12 sheets must be prepared in the studio under supervision of the teacher. The medium includesuse of Black / Color pencils.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignments/class tests	60%
II	**Theory examination**	**100%**

INSTRUCTION TO QUESTION PAPER SETTER:

1. Exam shall be of 3 hours duration and of maximum marks: 50 (minimum passing marks:20)
2. Exam shall be conducted in the drawing hall/studio having provision of drawing boards.
3. Following Stationery shall be provided to each of the student
   a) Four cartridge sheet (white)
4. Total THREE questions are to be set, one from each unit out of which candidate has to attempt any TWO questions each of 25 marks.

READING LIST: (to be amplified by the subject teacher)

1. Bruce D. Kurty (1987) Visual imagination – An introduction of Art, Prentice Hall, New Jersey.
2. Gowing, L. (1990) The Encyclopedia of Visual Arts Vol.1 to Vol.5, The Encyclopedia Britannica, London.
3. Rochan, Richard & Linton, Herald (1989) Colour in Architectural Illustration, Van Nostrand Reinhold.
4. Walker, Theodore D. (1989) Perspective Sketches, Van Nostrand Reinhold, New York.

BACHELOR OF ARCHITECTURE

AR107C **HISTORY OF ARCHITECTURE-I**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
2	-	50	50	-	100	2	3

INTENT:

To inculcate the appreciation of 'History of Built Environment' in the larger context of Time, Space, Man and Architecture; to develop a curiosity of a past era; to appreciate the glory of a past era through its Architecture.

CONTENT

UNIT I: Eastern World (Indian Subcontinent)

Indus valley civilization
Aryan/Vedic civilization
Buddhist and Jain civilization

UNIT II:

Indian Aryan Temple Architecture
Early and late Chalukyan architecture
Dravidian Temple Architecture

UNIT III: Western World

Ancient civilizations - Mesopotamian, Sumerian, Babylonian, Persian, Assyrian
Egyptian civilization
Classical Greek architecture
Roman architecture

UNIT IV:

Early Christian architecture
Romanesque architecture
Early Gothic architecture

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester. Student shall be encouraged to take up exercises of free hand sketching of exemplar historical edifices.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class (stress on sketches)	60%
II	**Theory examination**	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
3. The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST:

1. Brown, P. (1976) Indian Architecture (Buddhist) 7th reprint, Taraporevala Sons & Co. Pvt. Ltd. Mumbai.
2. Brown, P. (1976) Indian Architecture (Islamic), 7th reprint, Taraporevala Sons & Co. Pvt. Ltd. Mumbai.
3. Copplestone, Trewin (ed) (1979) World Architecture, The Hamlyn Publishing Group Limited, Toronto.
4. Fletcher, Sir Bannister (1999) History of Architecture – 20th edition, edited by Dan Cruickshank, CBS Publishers & Distributors, New Delhi.
5. Gympel, Jan (1996) The story of architecture, Könemann Verlagsgessellschaft mbH, Köln, Germany.
6. Marian, Moffett et al (2003) World history of architecture, Laurence King Publishing, London.
7. Stierlin, Henri (1997)Greece from Mycenae to the Parthenon, Benedikt Taschen Verlag GmbH, Köln.

BACHELOR OF ARCHITECTURE

AR109C **PRINCIPLES OF ARCHITECTUREI**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
2	-	50	50	-	100	2	3

INTENT:

To introduce evolution of design thinking, process and methodology.
To understand basic principles of architecture.
To appreciate 'design', the background thinking in the design of art forms: the design of natural objects.

CONTENT

UNIT I: Basic design

Concept of design in everyday life
Objectives of Design
Nature and design-appreciation of beautiful objects in nature, principles of organization in nature
Introduction to theory of colour

UNIT II:Introduction to Architecture

Definition of Architecture – Origin of Architecture – architecture as a discipline– context for architecture as satisfying human needs: functional, aesthetic, and psychological-outline of components and aspects of architectural form-site, structure, skin, materials, services, use, circulation, expression, character, experience.

UNIT III:Elements of architecture

Basic Design and Architectural Design-Elemental Differentiation
Geometry in Architecture- point, line, plane and volume-linear elements, planar elements and volumetric elements with respect to the evolution of architectural form and space.
Form in architecture- pattern, shape, size, color, texture, position, orientation, visual inertia, light, surface

UNIT IV: Principles of composition

Principles of architectural composition- axis, symmetry and asymmetry, hierarchy, datum, rhythm, repetition, unity, variety, harmony, focus, emphasis, climax, contrast, transformation, measure and balance, spaces on human scale and proportionGolden Section, Le modular, Fibonacci series

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester. Student shall be encouraged to apply principals of design in real life objects or nature and prepare collage/ portfolio of graphic interpretation of principles of design in every day object.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class	60%
II	Theory examination	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
3. The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST

1. Ching, Francis D. K. (1979) Architecture-Form, Space and Order, Litton Educational Publishing Inc., Van Nostrand Reinhold Company, London.
2. Norberg - Schulz, Christian (1971) Existence, Space and Architecture, Studio Vista Limited, London.
3. Pandya, Yatin (2007) Elements of Space Making, Mapin Publications, Ahmedabad.
4. Pandya, Yatin, (2005) Concepts of Space in Traditional Indian Architecture, Mapin Publications, Ahmedabad.
5. Parmar, V.S. (1990) Design Fundamentals, Somaiya Publications Private Limited, New Delhi.
6. Walsh, Margaret (1971) The colour Source Book, Thames and Hudson, London.

BACHELOR OF ARCHITECTURE

AR111C **WORKSHOP - I**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	Studio		Theory	Portfolio			
	4	100	-		100	4	-

INTENT:

To hone skills ofconstructing three dimensional forms using different model making materials and equipment in different scale.

CONTENT:

UNIT I: Introduction

Introduction to different materials like paper, thermocol, mud, wood, foam sheet, sun board, cork sheet, metal sheets, wires, plaster of Paris (PoP), etc. for making models

Introduction to various tools and joining techniques required for model making.

UNIT II:Model making techniques

Making basic shapes out of different materials to explore the nature and texture of the material.

Model making techniques for quick study models

UNIT III: Study model

Preparation of study models of simple objects, contour models

Models in appropriate scale for interior and exterior spaces

UNIT IV:Different types of Models

Introduction to various types of models at appropriate scales- site model, study model, block model, finished presentation models, etc

Model making techniques for rendered models

Introduction to digital medium to explore models digitally, 3D printing

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester. The classes to be conducted in the workshop and construction yard.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignment / Projects/Tests/Performance in class	60%

READING LIST: (to be amplified by the subject teacher)

1. Burbank, Nelson, (1986) House Carpentry Simplified, McGraw Hill Publications, NY.
2. Hajra Choudhury (1998) Workshop Technology, Vol 1, Media Promoters & Publishers P. Ltd, Bombay.
3. Krendlise L.N. (1984) Wood working, MIR Publications, Moscow.
4. Sharma, S. K. & Kaul B. K. (1988) A Text Book of Building Construction, S. Chand & Co., New Delhi.
5. Sheldon, Roger (1993) Opportunities in carpentry career, UBA. VGM Career horizon, NY.
6. Sushil Kumar (2006) Building Construction, Standard Publishers Distributors, New Delhi.
7. Williams, J.J. (1981) Basic Carpentry Techniques, Ortho Books.

BACHELOR OF ARCHITECTURE

AR113C **BUILDING CONSTRUCTION - I**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
-	4	50	50		100	4	3

INTENT:

To introduce the students to the basic principles of construction and methods/techniques of construction through various elements/components of building

To understand the relationship between architectural design, building materials, construction, services etc. as an integral component of the conversion of Architectural Concepts into tangible reality.

CONTENT:

UNIT I: Introduction

Basic components/elements of a 'building' from foundation to roof.

Basic tools and equipment used in construction.

Typical section through a load bearing wall showing foundation, plinth, window or door sill, lintel with chajja, roof slab, cornice and parapet details etc.

UNIT II:Substructure

Introduction to types of soil and foundations with emphasis on simple foundation for load bearing walls, plinth filling, steps, etc.

Typical section through foundation.

UNIT III: Masonry

Types of bricks and their dimensions, Types of bond – English, Flemish, Rat trap etc. and L, T, cross joints in different thickness of brick walls

Classification of stone masonry: rubble work, ashlar work, masonry joints

Composite masonry: cement concrete (hollow and solid); hollow clay tile masonry; glass block masonry.

Typical section through a load bearing wall showing elements from foundation to parapet.

UNIT IV:Lintels and Arches

General idea of load transmission in load bearing & frame structures, their advantages, disadvantages and suitability.

Construction details of brick and stone arches including lintels. Brick Jallies.

NOTE:

Detailed teaching programme to be made before the commencement of the semester and circulated to the students at the commencement of the semester.

In each class teacher will deliver lecture on the subject to be followed by drawing.

Market survey/ site visits to nearby construction site are to be conducted

Hands on exercises in the workshop or construction yard such as simple walls, pavement, Brick Jallies etc.

Minimum 10-12 sheets must be prepared in the studio under supervision of the teacher.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignments/Projects	60%
II	Theory examination	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be conducted in the drawing hall/studio having provision of drawing boards.
2. Following Stationery shall be provided to each of the student
   a. Four Cartridge Sheet (White)
3. Total FIVE questions are to be set, out of which FIRST question shall be compulsory (from the entire syllabus) of theory of 20 marks and rest of the FOUR QUESTIONS shall be from four units (one question from each of the unit,candidate have to attempt any TWO questions (drawing based) out of four of 15 marks each.
4. Exam shall be of 3 hours duration and of Maximum marks: 50. (minimum passing marks20)

READING LIST: (to be amplified by the subject teacher)

1. Barry, R (1986) Construction of Buildings, London, vol. 1 to 5.
2. BIS (2016) National Building Code, SP 7, Bureau of Indian Standards.
3. Foster, Stroud (1963) Mitchell's Advanced Building Construction, Allied Publishers Private Limited, Bombay.
4. McKay, W.B. (1972) Building Construction (Metric), Longman, London, vol. 1 to 5.
5. Prabhu, Balagopal T. S. (1987) Building Drawing and Detailing, Spades Publishers Pvt. Ltd., Calicut.
6. Punmia, B. C. (1993) Building Construction, Delhi.
7. Singh, Gurucharan (1981) Building Construction Engineering, Standard Book House, New Delhi.
8. Relevant IS codes

BACHELOR OF ARCHITECTURE

AR115C **BUILDING MATERIALS - I**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
-	2	50	50		100	2	3

INTENT:

To make the students aware of natural and manmade building materials used in construction industries and to understand their relationship with architectural design and building construction.

CONTENT:

UNIT I: Timber and its products

Study of various materials used commonly for building construction in rural & urban areas, with their properties, various types, market forms available and application in buildings

Timber: classification and structure of tree, defects in timber, storage of timber, uses of timber, conversion and seasoning, Market Forms & Industrial Timber, their suitability, limitations, precautions, treatment of timber etc.

Bamboo as building material

Plywood and Board: types and qualities, Substitute wood products like Medium Density Fibreboard (MDF) etc, Veneers, Laminates etc.

UNIT II: Masonry materials

Classification of bricks, Fire Brick, Fly Ash Bricks, Tiles, Terra-cotta

Stones: Classification of rocks, application of Stones, Qualities of Good Building Stones, Dressing, Common Building Stones of India.

UNIT III:Cement mortar and concrete

Cement: Properties, Different Types and Uses in Building construction

Cement Mortar: Composition, Classification and Uses of Mortar

Concrete: Proportioning Concrete, compacting, Curing, and Types of Concrete.

UNIT IV:Metal and glass

Metals: Ferrous & Nonferrous Metals and Alloys, Commercial Forms, their Suitability, limitations, precautions, etc.

Glass: Classification with Commercial Forms, their Suitability, limitations, precautions, etc.

Paints and Varnishes: Different types of paints, preparation, primer method of application on different surface, their Suitability, limitations, precautions, etc. Types of varnishes, low VOC paints

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester. Market survey and industry visits may be organized to introduce materials in market, sizes available in market, product types, prices. Visit to RMC plant/ Brick kiln/artificial timber seasoning kiln/ plywood plant etc.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class	60%
II	**Theory examination**	**100%**

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
3. The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

1. Varghese, P.G. (2007) A Text Book of Building Materials, Prentice-Hall of India Pvt. Ltd., Publication.
2. Rai, Mohan and Jain, M.P. Advances in Building Materials and Construction Singh publication by CBRI, Roorkee.
3. Zhang, H. (2011)Building Materials in Civil Engineering ,Woodhead Publishing

4. Jha, Janardan (1976) Engineering Materials, Khanna Publishers.
5. Rangawala P.C. (1989)Engineering Materials, Charter Publishing House, Anand, India.
6. Sushil Kumar (2003), Building construction, Standard Publication and Distributors, New Delhi.
7. BIS (2016) National Building Code, Bureau of Indian Standards.

BACHELOR OF ARCHITECTURE

AR117C **THEORY OF STRUCTURES**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
2	-	50	50	-	100	2	3

INTENT:

To inculcate the understanding of the basic principles of structural mechanics for understanding of Structural Systems and basic analysis of structures.

CONTENT:

BASIC STRUCTURAL MECHANICS & ANALYSIS OF STRUCTURES

UNIT I: Force and its units, Laws of forces, Resultant of a Force System, Law of Inertia, Law of action and reaction, Free body diagram, Static equilibrium & conditions of equilibrium, conditions of statical determinacy, Degree of Indeterminacy.

Types of supports and support reactions, Determination of support reactions for statically determinate structures, Analysis of forces, moments and couples in structures.

UNIT II: Analysis of a perfect truss by method of joints and method of sections.

Simple stress and strains, elastic constants, stress strain curves, relationship among elastic constants. Study of beams with different types of support conditions and different types of loadings. BIS 875 code for estimation of design loads in a building.

UNIT III: Shear force and shear force diagrams, Bending moment & Bending moment diagrams for determinate beams, Sagging and Hogging Bending Moments, Sign Convention, Point of contra-flexure and determination of its location. Flexural and shear stresses under bending, Determination of deflection in the beams (only formulae to be told, no derivation) Deflected shapes of the beams.

UNIT IV: Centre of Gravity and Centroid and its determination for a plane lamina.

Moment of Inertia and its determination for a plane lamina, Parallel Axis theorem and Perpendicular Axis theorem.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.
Visit to Testing lab of building materials

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class	60%
II	Theory examination	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
3. The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

1. Beer, F. P. & Johnston, R. E. Jr (1962) Mechanics for Engineers, Statics and dynamics, McGraw Hill, International Student Edition.
2. BIS (1987) Code for the Estimation of Design Loads in a Building, I.S. 875.
3. Punmia, B.C. & Jain, A. K. (2002) Mechanics of Materials, Laxmi Publications (P) Ltd., New Delhi.
4. Ramamrutham, S. & Narayan, R. (2008) Strength of Materials, Dhanpat Rai & Sons, New Delhi.
5. Singh, Harbhajan (2010) Structure Mechanics for Architects, Abhishek Publications, Chandigarh.

BACHELOR OF ARCHITECTURE

AR 102C **ARCHITECTURAL DESIGN–II**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
-	6	100	-	100	200	6	3

INTENT:

Conceptualization of Form, Space andStructure through creative thinking

To appreciate the process of design and the complexities involved in architectural design.

CONTENT:

Basic anthropometrics-average measurements of human body (adult and children) in different postures-its proportion and graphic representation.

Basic human functions and their implications for spatial planning. Minimum and optimum areas for various functions.

Activity space analysis related to form, function and expression of individual spaces like Bed room, Drawing room, Kitchen, Bath room etc. including, the furniture layout, circulation, clearances, lighting and ventilation, etc. of existing house and re-design of these spaces.Understanding relationship of horizontal and vertical spaces. Preparing user profile, bubble and circulation diagrams.

Application of Basic design in mono-cellular activity through the manipulation of elements and principle of design,Integration of form and function in the design of mono cellular structure like florist kiosk, gift/souvenir shop, pavilions, bus shelter, milk booth, PCO, Guard cabin, cycle stand, entrance gate, traffic police kiosk, ATM centre etc.

Portfolio design exercise: Single building for 4-6 users involving multiple activities and spaces, residence for single family etc.

NOTE:

Detailed teaching programme to be made before the commencement of the semester and circulated to the students at the commencement of the semester.

Minimum**five**design exercises are to be completed in the entire semester, covering the entire syllabus uniformly. Total four exercises to be included in the sessionals and**one**design can be left for external portfolio exams.

Site visits and proto type study visits to be conducted.

I	Sessional evaluation	Weightage
	Minor Test – I	10 %
	Minor Test – II	10 %
	Design Exercises(four)	60%
	Portfolio exercises (part evaluation)	20 %
II	Portfolio evaluation	
	Portfolio exercise (one)	100%

READING LIST: (to be amplified by the subject teacher)

1. Baker, Geoffrey H. (1996) Design Strategies in Architecture- An Approach to the Analysis of Form, Taylor & Francis.
2. Burden, Ernest (1987) Design Communication, McGraw Hill.
3. Chiara, Joseph De and Crosbie, Michael J (2001) Time Saver Standards for Building Types, McGraw Hill Professional.
4. Chiara, Joseph De, Panero, Julius and Zelnik, Martin (2001) Time Saver Standards for Interior Design and Space Planning, McGraw Hill.
5. Ching, Francis D.K. (1996)Architecture: Form, Space, and Order, Van Nostrand Reinhold, New York, 2nd edn.
6. Habraken, N. John, Mignucci, Andrés and Teicher, Jonathan (2014) Conversations With Form: A Workbook for Students of Architecture, Routledge.
7. Wagenknecht, Kay and Herte (1989) Site + Sculpture – A collaborated design Process, Van Nostrand Reinhold, NY.

BACHELOR OF ARCHITECTURE

AR104C **ARCHITECTURAL DRAWING II**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
-	4	50	50		100	4	3

INTENT:

To develop the capability of understanding and drawing three dimensional solids and their various complex sections as a basis of representing architectural design.

CONTENT

UNIT I: Orthographic projects of Regular solids in inclined position

Orthographic Projections of right regular solids - Prism, Cylinder, Pyramid, Conewith axes inclined to one of the reference planes and parallel to the other followed by illustrative examples in each case

Orthographic Projections of right regular solids - Prism, Cylinder, Pyramid, Cone with axes inclined to both the H.P. and V.P. followed by illustrative examples in each case

Projection of relevant simple compositions of group of solids in inclined positions

UNIT II:Sections of Right regular Solids

Sections and true sections of all types of right regular solids - Prism, Cylinder, Pyramid, Conewith section plane parallel to the V.P., section plane parallel to the H.P., section plane perpendicular to the H.P. and inclined to the V.P., section plane perpendicular to the V.P. and inclined to the H.P. followed by illustrative examples in each case

Section of relevant simple compositions of group of solids

UNIT III: Development of surface

Development of lateral surface of all types of right regular solids- Prism, Cylinder, Pyramid, Cone

Inter penetration of right regular solids - Prism, Cylinder, Pyramid, Cone using line method and cutting plane methodfollowed by illustrative examples in each case

Intersection of two prisms, intersection of cylinder and cylinder, intersection of cylinder and prism, intersection of cone and cylinder, intersection of cone and prism, intersection of cone and conefollowed by illustrative examples in each case

UNIT IV:3D projections/views

Concept of Isometric &Axonometric projections / views.Understanding concept of Isometric scale

Drawing of Isometric views of all right regular solids Prism, Cylinder, Pyramid, Coneincluding few of interesting compositions of building elements (foundation to slab) like column, beam and slabs etc.

Drawing of Axonometric and exploded axonometric views of simple built form and building spaces.

Draw simple annotation, dimensioning and scale

NOTE:

Detailed teaching program to be made before the commencement of the semester and circulated to the students at the commencement of the semester.

Minimum12exercises are to be completed in the entire semester covering the entire syllabus uniformly in the studio under supervision of the teacher.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignments/class tests	60%
II	Theory examination	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
2. Exam shall be conducted in the drawing hall/studio having provision of drawing boards.
3. Following Stationery shall be provided to each of the student
   a) Four cartridge sheet (white)
4. Total FIVE questions are to be set, out of which FIRST question shall be compulsory (from the entire syllabus) of theory of 20 marks and rest of the FOUR QUESTIONS shall be from four units (one question

from each of the unit, candidate have to attempt any TWO questions (drawing based) out of four of 15 marks each.

READING LIST: (to be amplified by the subject teacher)

1. Bhat, N D (1995) Engineering Drawing, Charotar Publishing House, Bangalore, India
2. Gopalakrishna, K R (2001) Engineering Graphics, Subhas Publications, Bangalore, India

BACHELOR OF ARCHITECTURE

AR106C **GRAPHICS-II**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	Studio		Theory	Portfolio			
	4	50	50	-	100	4	3

INTENT

To make students experiment in different color mediums for the final application of rendering architectural drawings.

CONTENT

UNIT I:

Introduction to Architectural Rendering
Color wheel
Representing building material in color
Representing Architectural elements like Foliage, Automobile, Human Figures, Landscape etc.

UNIT II:

Use of ink for rendering
Rendering on different kinds of paper like Cartridge, Handmade, Ivory etc.

UNIT III:

Quick sketches of buildings in 3 dimension like kiosks, bus shelters, traffic booths, entrance gate, cycle stand etc.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.
Minimum10-12 sheets must be prepared in the studio under supervision of the teacher.
The medium includes use of water colours, poster colour, crayons, markers and ink.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignments/Projects	60%
II	**Theory examination**	**100%**

INSTRUCTION TO QUESTION PAPER SETTER:

5. Exam shall be of 3 hours duration and of maximum marks: 50 (minimum passing marks:20)
6. Exam shall be conducted in the drawing hall/studio having provision of drawing boards.
7. Following Stationery shall be provided to each of the student
   a) Four cartridge sheet (white)
8. Total THREE questions are to be set, one from each unit out of which candidate has to attempt any TWO questions each of 25 marks.

READING LIST: (to be amplified by the subject teacher)

1. Bruce D. Kurty (1987) Visual imagination – An introduction of Art, Prentice Hall, New Jersey.
2. Gill, Robert W. (1984) Manual of Rendering in pen and ink, Thames and Hudson, London
3. Gowing, L. (1990) The Encyclopedia of Visual Arts Vol.1 to Vol.5, The Encyclopedia Britannica, London.
4. Hartt, Fredrick (1993) Art:A History Painting, Sculpture and Architecture, Prentice Hall, Inc., 4th edn.
5. Hayashi Studio (1994) Water Colour Rendering, Graphic-Sha Publishing Co., Ltd.
6. Rochan, Richard & Linton, Herald (1989) Colour in Architectural Illustration, Van Nostrand Reinhold.
7. Smith, Ray (1995) Water Colour Landscape, Dorling Kindersley, London.
8. Walker, Theodore D. (1989) Perspective Sketches, Van Nostrand Reinhold, New York.

BACHELOR OF ARCHITECTURE

AR108C **PRINCIPLES OF ARCHITECTURE - II**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
2	-	50	50	-	100	2	3

INTENT

To generate and appreciation of background aspects of thinking required in architectural design.
The objectives of the course is to understand the principles and percepts of issues as related to architectural design in theory and practice.

CONTENT

UNIT I: Organization of Form and Space

Elements of spatial definition – form defining space - elevated base plane, depressed base plane, vertical and horizontal elements defining space -depth and density of space - spatial juxtaposition and interpenetration – spatial characteristics of elementary shapes - qualities of architectural space -degree of enclosure.
Spatial organisation: Centralized, Linear, Radial Clustered, Grid – built form and open space relationships.

UNIT II: Movement in architecture

Detailed study of building circulation that affects perception of architectural form and space
Types of circulation- circulation within spatial units, horizontal and vertical circulation – Building approach and entrance, path configuration and form, path space relationship, orientation.
Circulation and Spaces between Buildings

UNIT III: Fundamentals of Architectural Design

Function, Structure and Form -expression of design like, expression of climate and topography, expression of culture and regional characters, expression of circulation and function of building, expression of structure and technology in design.
Appreciation of architecture with respect to man and his behavior-Anthromorphism and architecture
Programming in Architectural Design, Relationship of Plan, Section and Elevation, Architectural Scale

UNIT IV:Concepts in Architectural Design

Principles of perception – proximity, similarity, etc., experience of space,Gestalt ideas of visual perception,Figure and ground, Positive and negative spaces, Tangible and Intangible in Architecture
Ideas and Intent in design - Intuitive, contextual, Iconic, Experiential, Environmental-Energy based design, Symbolic, Modular; Ideologies/ philosophies from the practice of architecture through contemporary history; design communication through graphics.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.
Organization of space and evolution of concept in architecture design to be integrated with design studio.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class	60%
II	Theory examination	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
3. The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

1. Ching, Francis D. K. (1979) Architecture-Form, Space and Order, Litton Educational Publishing Inc., Van Nostrand Reinhold Company, London.
2. Norberg - Schulz, Christian (1971) Existence, Space and Architecture, Studio Vista Limited, London.
3. Pandya, Yatin (2007) Elements of Space Making, Mapin Publications, Ahmedabad.
4. Pandya, Yatin, (2005) Concepts of Space in Traditional Indian Architecture, Mapin Publications, Ahmedabad.
5. Parmar, V.S. (1990) Design Fundamentals, Somaiya Publications Private Limited, New Delhi.

6. Walsh, Margaret (1971) The colour Source Book, Thames and Hudson, London.

BACHELOR OF ARCHITECTURE

AR110C **BUILDING CONSTRUCTION - II**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
-	6	100	100		200	6	3

INTENT:

To familiarize the student with the various aspects of building construction with the basic material as wood.

CONTENT:

UNIT I:Doors

Doors:Definition of terms, types of wooden doors: ledged, ledged and braced, paneled, flush door. Hinged, single and double shutters, sliding, folding, sliding and folding, revolving, pivoted.

Fixing details of frame, style, rail, panel, glazing including fixtures and fastenings.

UNIT II:Windows

Windows:types of wooden windows,casement, top and bottom hung, pivoted and sliding sash.Ventilators and their details

Hardware:fixtures, locks, hinges, fastenings for doors and windows; moldings, architrave

UNIT III: Flooring and staircase

Types of wooden floorings (ground and first floor), Wooden Staircase and their details

UNIT IV: Roof

Roof Trusses: Timber trusses, types; fixing details showing purlin, rafter, tie, strut, cleat etc. Different types of roof coverings: tiles, asbestos and metal sheets etc. with fixing details.

NOTE:

Detailed teaching programme to be made before the commencement of the semester and circulated to the students at the commencement of the semester.

In each class teacher will deliver lecture on the subject to be followed by drawing.

Market survey/ site visits to different construction sites and industry for different types of doors/ windows are to be conducted

Hands on exercises of doors/ windows and construction joints in workshop

Case study of typology of doors and windows as design element

Minimum10-12 sheets must be prepared in the studio under supervision of the teacher covering entire syllabus uniformly.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignments/Projects	60%
II	Theory examination	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam. shall be conducted in the drawing hall/studio having provision of drawing boards.
2. Following Stationery shall be provided to each of the student
   a. Four Cartridge Sheet (White)
3. Total FIVE questions are to be set, out of which FIRST question shall be compulsory (from the entire syllabus) of theory of 20 marks, (due consideration has to be given to building materials) and rest of the FOUR QUESTIONS shall be from four units (one question from each of the unit, candidate have to attempt any TWO questions (drawing based) out of four of 15 marks each.
4. Exam. shall be of 3 hours duration and of Maximum marks: 50. (minimum passing marks 20)

READING LIST: (to be amplified by the subject teacher)

1. Foster, Stroud (1963) Mitchell's Advanced Building Construction, Allied Publishers Private Limited, Bombay.
2. Singh, Gurucharan (1981) Building Construction Engineering, Standard Book House, New Delhi.
3. McKay, W.B. (1972) Building Construction (Metric), Longman, London, vol. 1 to 5.
4. Barry, R (1986) Construction of Buildings, London, vol. 1 to 5.
5. Punmia, B. C. (1993) Building Construction, Delhi.
6. BIS (2011) National Building Code, SP 7, Bureau of Indian Standards.Relevant IS codes

BACHELOR OF ARCHITECTURE

AR112C **CLIMATE RESPONSIVE ARCHITECTURE II**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
2	-	50	50	-	100	2	3

INTENT:

To understand fundamentals of architectural science, climate on global and site levels, factors of thermal comfort, solar geometry, natural ventilation and climate responsive building design and site planning.
To apply the IS codes for climate responsive architecture

CONTENT:

UNIT I: Climate and thermal comfort

Climatologyas a science for the study of weather conditions averaged over a period of time
Global climatic factors, the elements of climate- temperature, humidity, solar radiation, wind, rainfall; measurements and representations of climatic data
Classifications of climates: tropical climate classification, climatic zones of India
Micro climate effects of local factors and landscape elements on site climatic elements
Thermal balance of human body, physiological and environmental factors of thermal comfort
Bioclimatic chart, comfort zone, overheated and under heated periods

UNIT II: Principles of thermal design in buildings

Thermal quantities: temperature, heat, specific heat, sensible heat, latent heat, thermal capacity.
Heat flow through building envelope: conduction, convection, radiation; thermal balance equation
Thermo-physical properties of building materials and elements: conductivity (k), density, surface conductance, air-to-air thermal transmittance (U value), effects of cavities

UNIT III: Sun and wind in architecture

Apparent movement of the sun, Sun path diagrams and its application, green house effect
Solar control-orientation, internal blinds and curtains, high performance glasses, taxonomy of shading devices
Design of fixed external solar shading devices:solar angles, shadow angles, solar shading masks etc.
Functions of natural ventilation; supply of fresh air, stack effect due to the thermal forces, convective cooling, physiological cooling, wind simulators, air movement due to natural and built form-factors affecting the indoor air flow, air flow around buildings, wind shadow etc. wind tower, wind scoop.

UNIT IV: Design tools and strategies

Design strategies in five climatic zonesof India
Climate responsive traditional architecture in five climatic zones of India
Contemporary responses to climate through published exemplarstudies
Design tools: Mahoney tables, Computeranalysis of climate and comfort using appropriate software, analog models of shading devices (use of sun dials), models of wind turbines
Assessment of appropriateness of various Renewable Energy Systems based on climatic conditions

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.
A visit to the University weather station/environmental lab and hands on experience with the various instruments for measuring climatic elements should be conducted.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class	60%
II	Theory examination	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)

2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
3. The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

1. BIS (1987) Handbook of Functional Requirements of Buildings (other than industrial buildings) SP:41 (S&T), Bureau of Indian Standard, New Delhi.
2. Kabre, Chitrarekha (2018) Sustainable building design: applications using climatic data in India, Springer.
3. Koeningsberger, et. al. (1975) Manual of Tropical Housing and Building (Part-II), Climate Design, Orient Longman Ltd.
4. Szokolay, S. V. (2008) Introduction to Architectural Science, Architectural Press.
5. Watson, Donald et al (ed) (1997) Time saver standards for architectural design data, 7th edn, McGraw-Hill, Inc, ch 3-6.

BACHELOR OF ARCHITECTURE

AR114C **STRUCTURAL DESIGN - II**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
2	-	50	50	-	100	2	3

INTENT:

To inculcate the understanding of the basis for the analysis and design of a structural component subjected to bending & Design of basic structural elements using timber & Brick Masonry.

CONTENT:

DESIGN OF TIMBER STRUCTURES & BRICK MASONRY

UNIT I: Stress, Strain and Modulus of elasticity; Stress diagram, Strain diagram, Bending Stresses and Shear Stresses.

Study of a section subjected to pure bending; Neutral Axis, Moment of Resistance and Section Modulus.

UNIT II: Properties of Structural Timber, Defects of timber and their impact on structural properties of timber, permissible stresses in timbers and modification factors.Classification of timber, Introduction to IS Code of Timber Construction – IS: 883. Introduction to Bamboo as structural material

UNIT III: Analysis and Design of flexural members of timber.

Built up beams and flitched beams.

Analysis and Design of timber columns; Solid columns and Built up columns.

Design of members of a simple truss.

Unit IV: Brick as a structural material, Design of a load bearing brick wall and wall footing.

Types of masonry used as structural system for building structures. Structural properties of brick masonry and analysis and design of low rise masonry buildings including masonry foundation.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester. Appropriate Standards must be explained and used

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class	60%
II	Theory examination	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
3. The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

1. BIS (1984, reaffirmed 2005) Code of Practice for Design of Structural Timber in Buildings, IS: 883.
2. BIS (1987, reaffirmed 2002), Code of Practice for Structural Use of Un-reinforced Masonry.
3. BIS (1991) Handbook on Masonry Design and Construction**,** SP 20(S & T): Bureau of Indian Standards, New Delhi
4. Kazimi, M. A., Jindal, R. S. (1985) Design of Steel Structures, Prentice Hall of India Private Ltd., New Delhi.
5. Newman, M. (1995) Design and Construction of Wood Framed Buildings, McGraw Hill Inc., New York.
6. Punmia, B. C., Jain, A. K. (1998) Comprehensive Design of Steel Structures, Laxmi Publications (P) Ltd., New Delhi.
7. Singh, H. (2007) Design of Masonry and Timber Structures, Abhishek Publications, Chandigarh.

BACHELOR OF ARCHITECTURE

AR116C **EDUCATIONAL TOUR -II**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
-	-	100	-	-	100	2	-

INTENT:

To expose students to Historical, traditional and Contemporary Architecture

CONTENT:

Vacation Assignment/ Study tour is to be undertaken in II semester and before the commencement of III semester classes.

This assignment could be an appreciation of a noted building or a study tour for visiting places of architectural interest both traditional and contemporary. The choice of the building to be documented and the places to be visited will be decided by the department. The assignment may be given as group work (4 to 6 students per group). The students have to submit/present a photo-documentation report on the architectural appreciation or the study tour within 15 days from the beginning of the III Semester.

BACHELOR OF ARCHITECTURE

HUM101C **ENGLISH LANGUAGE SKILLS**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
2	-	25	75	-	100	2	3

INTENT:

Course objectives:

1. To equip students with English Language skills needed in academic and professional world
2. To make students technically proficient in handling language skills required for competitive exams.
3. To inculcate human/ethical values in the students to ensure their holistic development
4. To develop ability to critically read the literary texts

Course outcomes: The students will be able to

1. Acquire basic proficiency in English
2. Develop their verbal ability
3. Enhance their writing, reading and analytical skills
4. Develop proficiency in reading along with sensitivity to the impact literary texts can have on their minds/lives

Course Contents:

Unit I: Basic Writing skills (a) Subject Verb Agreement (b) Noun Pronoun Agreement (c) Governance of Nouns Through Prepositions (d) Basic Verb Patterns (V, SV, SVO, SVOO,SVC,SVOC,SVOA)

Unit II: Vocabulary Building (a) One word substitution*(List attached) (b) Phrasal Verbs* (List attached) (b) Commonly used Idioms * (List attached) (d) Words/Phrases/Idioms from the texts prescribed in Unit IV-- their meaning and use in sentences

Unit III: Creating Grammatical Cohesion (a) Referring Time in Language(Tenses) (b) Use of Conditional Sentences (c) Use of Active and Passive Voice (d) Synthesis of Sentences using Coordinating and Subordinating Conjunctions

Unit IV: Reading and Writing Practices (a) Literary Texts: i. "The Secret of Work" by Swami Vivekananda** ii. " Public Transport in London and Delhi" by Nirad C. Chaudhuri # iii. "An Outline of Intellectual Rubbish" by Bertrand Russell # iv. "Mother Teresa" by Khushwant Singh # (b) Writing official Letters- Issues Concerning Students' academic and social life (c) Essay Writing (d) Paragraph Writing

Note: Eight hour time on an average to each unit is recommended for class room teaching purposes.

Scheme of End Semester Examination (Major Test): 1. The duration of examination will be three hours. 2. Nine questions of 15 marks each will be set, out of which the examinees will have to attempt five questions. 3. First question of 15 marks will be compulsory. It will cover all the four units of the syllabus. The question will have sub-parts with marks assigned against each. 4. Question No 02 to 09 will be set from the four units of the syllabus - two from each unit of 15 marks each. The nature of the questions in each unit will depend upon the nature of content therein. Examinees will have to attempt four more questions, selecting one from each unit. The questions may have parts.

Instruction for paper setter: Recommended pattern of questions in each unit will be as follows: Unit I Two questions of 15 marks each will be set from this unit. Examinees will attempt either of the two questions. Questions will be in the form of correcting the errors in the sentences, picking up the right alternative, filling in the blanks or completing the sentences. Examinees can also be asked to frame sentences on the patterns given or vice versa. Unit II Two questions of 15 marks each will be set from this unit out of which one is to be attempted. Questions will be in the form of giving the meaning of phrasal verbs, idioms and proverbs and using them in sentences/contexts of one's own or in the form of matching exercises, or choosing the correct alternative. The phrases/idioms/proverbs may be given from the texts prescribed in Unit IV. Examinees may also be asked to pick up the odd ones from the given series. Unit III Two questions of 15 marks each will be set from this unit also out of which one is to be attempted. Questions will be set on testing examinees' knowledge of the components

prescribed preferably in the style deemed fit for the component by the examiner. Unit IV Two questions of 15 marks each will be set from this unit out of which one needs to be attempted. The questions may have parts if required. One question will be set on the literary texts prescribed. This question may be in the form of comprehension passage, long/short answer question, explanation of lines/passage from the text with reference to the context. The second Question will be in the form of writing formal letter / essay / paragraph. Recommended Readings: 1. *Bhatnagar, Nitin and Mamta Bhatnagar. Communicative English for Engineers and Professionals. Pearson Education, 2013.(The soft copy of the book is available in the university library) 2 . # Bhatnagar, k. Manmohan.Ed. The Spectrum of Life: An Anthology of Modern Prose. Delhi: Macmillan India Ltd., 2006. 3. Sinha, R.P.Current English Grammar and Usage. OUP, 2017. 4. Rizvi, M. Ashraf. Effective Technical Communication. McGraw Hill Education (India) Pvt. Ltd., 2014. 5. Eastwood, John. Oxford Guide to English Grammar. OUP, 2010. 6. Kumar, Sanjay and Pushp Lata. Communication Skills. OUP, 2011. 7. Raman, Meenakshi and Sangeeta Sharma.Communication Skills.New Delhi:OUP,2011. 8. Hill, L. A. A Guide to Correct English. London:OUP,1965. 9. Oxford Dictionary of English Idioms. New Delhi: OUP, 2009 10.**Vivekananda, Swami. Karma Yoga. New Delhi: Sahityashila Prakashan, 2015. 11.**
http://yousigma.com/religionandphilosophy/swamivivekananda/thescecretofwork.pdf

BACHELOR OF ARCHITECTURE

HUM103C **ENGLISH LANGUAGE LABCATEGORY: HUMANITIES**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio/ Practical			
-	2	25	-	75	100	1	3

Course Objectives:

1. To develop English language skills especially speaking and listening of thestudents
2. To make the students excel in their professional lives through proficiency incommunication
3. To enhance the students linguistic and communicative competence
4. To enable them to face the challenges of professional and social life

Course Outcomes:

The Students will be able to
1. Acquire basic proficiency in Spoken English
2. Enhance their listening skills with listening comprehension exercises
3. Polish their speaking skills in English both at social and professional platforms
4. Present themselves confidently and meaningfully in professional and social circles.

Course Contents:

(i) Listening comprehension
(ii) Recognition of phonemes in International Phonetic Alphabet
(iii) Self introduction and introduction of another person
(iv) Conversation and dialogues in common everyday situations
(iv) Communication at work place (Standard phrases and sentences in varioussituations)
(vi) Telephonic communication
(vii) Speeches for special occasions (Welcome speeches, Introduction speeches,Felicitationspeeches and Farewell speeches)
(viii) Tag Questions
(ix) Formal Presentations on literary texts prescribed in theory paper

Note: Three hour time to each segment is recommended for instruction and practice.
Approved by Board of UG Studies, Department of Humanities on 19 March 2018

Scheme of End Semester Practical Exam:

1. A small passage may be read out to the examinees and they will have to write the answersto the questions asked at the end of the passage. Questions will be short answer type.
2. Examinees may be asked to identify the sounds of phonemes in given words.
3. Examinees may be asked to introduce themselves or others, participate in role playactivities in mock situations, give short responses, engage in hypothetical telephonicconversation or supply the tag questions to statements etc.
4. Examinees may also be asked to deliver speeches on given situations or make presentationon the literary texts prescribed in Unit IV of theory paper.

Recommended Readings:

1. Bhatnagar, Nitin and Mamta Bhatnagar. *Communicative English for Engineers andProfessionals*. Pearson Education, 2013.
2. Swan, Michael. *Practical English Usage*. OUP, 1995.
3. Gangal, J.K. *Practical Course in Spoken English*. New Delhi: PHI Learning, 2015.
4. Konar, Nira. *Communication Skills for Professionals*. New Delhi: PHI Learning Pvt.Ltd., 2009.
5. Bansal, R.K. and J.B. Harrison. *Spoken English*. Orient Longman, 1983.
6. Sharma, Sangeeta and Binod Mishra. *Communication Skills for Engineers andScientists*. Delhi: PHI Learning Pvt. Ltd., 2015.

BACHELOR OF ARCHITECTURE

AR 201C **ARCHITECTURAL DESIGN–III**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
-	6	100	-	100	200	6	3

INTENT:

Appreciation of the complexities and contradictions in the architectural design process.

To train student in design development of moderate complexity through understanding and appreciation of space and functional requirements such as circulation, facilitation and area analysis, with particular stress on techniques of graphic representation as an integrated process in architectural design.

To adhere to basics of technical drawings.

CONTENTS:

Introduction of exercises interconnecting basic design and architectural design, understanding the arrangement of solids for aesthetic consideration to foster basic architectural qualities in design like composition and other human considerations like, privacy, convenience, comfort, etc.; understanding the significance of the factors in creating ideal environment; learning the design process;

Design of simple multi cellular structure like Artists Studio, Architect's office, Refectory, Departmental store, Small Club, Clinic/ Dispensary, Bank branch, Small Guest House, Primary Health Centre , Restaurant, Post office, police station etc.

The students shall have scientific knowledge required to design climate responsive buildings, a clear understanding of the various climate elements - radiation, air temperature, humidity and wind speed as tools of design. Due emphasis shall be given to sustainable building materials with appropriate building construction technique in design solution.

NOTE:

Detailed teaching programme to be made before the commencement of the semester and circulated to the students at the commencement of the semester.
Site visits and proto type study visits to be conducted.
The design shall be sensitive to the needs of disabled, aged people and children.
These shall be minimum of 2 exercises as a part of sessionals out of which, one will be a time problem. One exercise will be meant for portfolio evaluation.

I	Sessional evaluation	Weightage
	Minor Test – I	10 %
	Minor Test – II	10 %
	Design Exercises	60%
	Portfolio exercises (part evaluation)	20 %
II	**Portfolio evaluation**	
	Portfolio exercises (three)	100%

READING LIST: (to be amplified by the subject teacher)

1. Chiara, J. D. (1984) Time Saver Standard for Site Planning, McGraw Hill Book Co., NY.
2. Chiara, J. D. & Crosbie, M. J., (2001) Time-Saver Standards for Building Types 4th Edition, McGraw Hill Book Co.
3. Ching, F. D. K. (1996) Architecture: Form, Space, and Order, Van Nostrand Reinhold, New York, 2nd edn.
4. Cohen, U. and McMurtry, R. (1985) Museum and Children, Design Guide, The School of Urban Planning and Architecture, University of Wisconsin, Milwaukee.
5. Helper, D. and Wallach, P. (1987) Architecture Drafting and Design, Mc-Graw Hill Company, NY.
6. Juliet, M. (1984) Designing room for children, Little Brown and Company, London.
7. Neufert, E. (2000) Neufert – Architect's Data, Crosby Lockwood and Sons, London.

BACHELOR OF ARCHITECTURE

AR203C **ARCHITECTURAL DRAWING-III**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	Studio		Theory	Portfolio			
	4	50	50	-	100	4	3

INTENT:

To understand the concept of shade and shadows and its application in architecture and develop the skill of perspective drawing.

CONTENT:

UNIT I: Perspective drawing, its concepts and various elements and methods Two-point Perspective drawings of 3 D solids like cube, cone pyramid etc. with changes in different parameters.

UNIT II: Two-point perspective drawings of small structures with changes in different parameters.

UNIT III: One-point perspective drawing of interior of a room like drawing room, class room, bed room etc.

UNIT IV: Shade and shadow of object of different shape at different levels and planes Shade and shadows of building facades.

Shade and shadow of simple building in perspective.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester. Minimum 12 sheets covering the entire syllabus uniformly must be prepared in the studio under supervision of the teacher.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignments /class tests (12)	60%
II	Theory examination	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
2. Exam shall be conducted in the drawing hall/studio having provision of drawing boards.
3. Following Stationery shall be provided to each of the student
   Four cartridge sheet (white)
4. Total FIVE questions are to be set, out of which FIRST question shall be compulsory (from the entire syllabus) of theory of 20 marks and rest of the FOUR QUESTIONS shall be from four units (one question from each of the unit, candidate have to attempt any TWO questions (drawing based) out of four of 15 marks each.

READING LIST: (to be amplified by the subject teacher)

1. Bhat, N D (1995) Engineering Drawing, Charotar Publishing House, Bangalore, India
2. Gopalakrishna, K R (2001) Engineering Graphics, Subhas Publications, Bangalore, India

BACHELOR OF ARCHITECTURE

AR205C **GRAPHICS-III**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	Studio		Theory	Portfolio			
	4	50	50	-	100	4	3

INTENT

To augment and enhance the skill and techniques in architectural rendering using different mediums.

CONTENT

UNIT I:

Introduction to rendering of architectural drawing

Quick sketches of site plan, plan, elevation, section with professional markers

UNIT II:

Techniques for rendering drawings in black, color pencil, water color and ink

Rendering of plan, section and elevation in different mediums

UNIT III:

Rendering of two point perspective of a building in different mediums

Rendering of one point perspective of an interior space in ink/colour

Internal spaces like bedroom, drawing room, kitchen, bathroom in markers.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester. Minimum 12 sheets must be prepared in the studio under supervision of the teacher.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignments/class tests	60%
II	**Theory examination**	**100%**

INSTRUCTION TO QUESTION PAPER SETTER:

1. Exam shall be of 3 hours duration and of maximum marks: 50 (minimum passing marks: 20)
2. Exam shall be conducted in the drawing hall/studio having provision of drawing boards.
3. Following Stationery shall be provided to each of the student

   Four cartridge sheet (white)
4. Total THREE questions are to be set, one from each unit out of which candidate has to attempt any TWO questions each of 25 marks.

READING LIST: (to be amplified by the subject teacher)

1. Haft, P. S. (1991) Architectural Illustration in Water Colour, Whitney Library, NY.
2. Hartt, F. (1976) Art: A History Painting and Sculpture and Architecture, Harry N. Abrams, NY
3. Hayashi, S. (1994) Water Colour Rendering, Graphic-Sha Publishing Co., Ltd.
4. Item, J. (1973) The Art of Colour, Van Nostrand Reinhold, NY.
5. Maier, M. (1977) Basic Principles of Design, Vol.1, 2, 3 & 4, Van Nostrand Reinhold, NY.
6. Theodore, D. W. (1989) Perspective Sketches, Van Nonstrand Reinhold, New York

BACHELOR OF ARCHITECTURE

AR207C **HISTORY OF ARCHITECTURE-III**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
2	-	50	50	-	100	2	3

INTENT:

To appreciate the growth and development of architecture from 12th to the 18th century in the Indian sub-continent and Europe.

CONTENT

UNIT I: Indo-Islamic Architecture

The coming of Islam to the region and its Architectural Implications
Architecture of the Sultans in the Delhi Region
Development of Architecture in the important provinces

UNIT II: Indo-Islamic Architecture

Architecture of the Early Rulers of the Mughal Dynasty
Architecture of the Later Rulers of the Mughal Dynasty

UNIT III: Architecture in Europe

The birth of Renaissance in Florence in 15th century
Renaissance in Italy in 16th century
Renaissance and the Cult of personality in 16th century

UNIT IV: Architecture in Europe

Baroque and Rocco
Influences of Italian Renaissance on Architecture in rest of Europe

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester. Student shall be encouraged to take up exercises of free hand sketching of exemplar historical edifices.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class (stress on sketches)	60%
II	**Theory examination**	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
3. The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST:

1. Asher, C. B. (1992) Architecture of Mughal India, Cambridge.
2. Brown, P. (1976) Indian Architecture (Islamic period), 7th reprint, Taraporevala Sons & Co. Pvt. Ltd. Mumbai.
3. Fergusson, J. (1998) History of Indian and Eastern Architecture, 2 Vols. Delhi. Reprint
4. Fletcher, Sir B. (1999) History of Architecture–20th edn, Dan Cruickshank ed, CBS Publishers & Distributors, New Delhi.
5. Grover, S. (1980) The Architecture of India: Islamic, Sahibabad.
6. Hitchcock H. R. et al (1963) World Architecture: An Illustrated History, London.
7. Koch, E. (1991) Mughal Architecture: An outline of its History & Development (1526-1856), Munich.
8. Murray, P. (1969) Architecture of the Italian Renaissance, London.
9. Pevsnar, N. (1945) An Outline of European Architecture, London.
10. Pothorn, H. (1971) Styles of Architecture, London.
11. Risebero, B. (1979) The Story of Western Architecture, London.
12. Summerson, Sir J. (1963) The Classical Language of Architecture, London.
13. Tadgell, C. (1990) The History of Architecture in India: from the dawn of civilization to the end of the Raj, Delhi.
14. Volwahsen, A. (1970) Living Architecture: Islamic Indian, London.

BACHELOR OF ARCHITECTURE

AR209C **WORKSHOP - III**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	Studio		Theory	Portfolio			
	4	100	-		100	4	-

INTENT:

To appreciate the application of wood as a construction material in building design.

To get hands on experience in basic carpentry and enhance the skill of architectural model making.

CONTENT:

UNIT I:

Use of carpentry tools and machines and latest tools
Characteristics of wood, ply, boards

UNIT II:

Exercises in making of carpentry joints
Exercises using commercial boards and MDF boards

UNIT III:

Model making in mount board, thermocol and wood
Making of one detailed model of a building

UNIT IV:

Making of detailed site model of a contouring site

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester. The classes to be conducted in the workshop and construction yard.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignment / Projects/Tests/Performance in class	60%

READING LIST: (to be amplified by the subject teacher)

1. Burbank, N., (1986) House Carpentry Simplified, McGraw Hill Publications, NY.
2. Choudhury, H. (1998) Workshop Technology, Vol 1, Media Promoters & Publishers P. Ltd, Bombay.
3. Krendlise L. N. (1984) Wood working, MIR Publications, Moscow.
4. Sharma, S. K. & Kaul B. K. (1988) A Text Book of Building Construction, S. Chand & Co., New Delhi.
5. Sheldon, R. (1993) Opportunities in carpentry career, UBA. VGM Career horizon, NY.
6. Sushil Kumar (2006) Building Construction, Standard Publishers Distributors, New Delhi.
7. Williams, J. J. (1981) Basic Carpentry Techniques, Ortho Books
8. Punmia, B. C. (2005) Building Construction, Fire Well Media.
9. Jain, A. K. and Jain, A. K. (2008) Building Construction, Laxmi Publications (P) Ltd., New Delhi.

BACHELOR OF ARCHITECTURE

AR211C **BUILDING CONSTRUCTION - III**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
-	4	50	50		100	4	3

INTENT:

To understand the construction details used in 3-4 storied RC buildings

CONTENT:

UNIT I:

Principles of RC foundation, types of RC foundations, RC footings and shallow foundation- isolated and combined, raft, piles

UNIT II:

Introduction to RC frame structures

Details of beams and columns of RC frame structure with in-fills

UNIT III:

RC stairs - types and construction details of RC cast-in situ stairs, pre-cast steps, fixing of handrails.

Detailed section through a multi-storey RC frame structure

UNIT IV:

Types of Cladding systems – stone, timber, weatherboard, fiber cement, brick tiles, vinyl, metal (Aluminum Composite Panels (ACP), precast concrete cladding panel.

Various types of flooring (brick, IPC, terrazzo, stone, wood, ceramic tiles others), skirting, dadoing with various finishes.

Roof finishes (over concrete slabs) with weather proofing and thermal insulation over RC roof.

NOTE:

Detailed teaching programme to be made before the commencement of the semester and circulated to the students at the commencement of the semester.

In each class teacher will deliver lecture on the subject to be followed by drawing.

Market survey/ site visits to nearby construction site are to be conducted

Hands on exercises in the workshop or construction yard such as concrete casting, etc.

Minimum 12 sheets must be prepared in the studio under supervision of the teacher.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignments/Projects	60%
II	Theory examination	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be conducted in the drawing hall/studio having provision of drawing boards.
2. Following Stationery shall be provided to each of the student
   Four Cartridge Sheet (White)
3. Total FIVE questions are to be set, out of which FIRST question shall be compulsory (from the entire syllabus) of theory of 20 marks and rest of the FOUR QUESTIONS shall be from four units (one question from each of the unit, candidate have to attempt any TWO questions (drawing based) out of four of 15 marks each.
4. Exam shall be of 3 hours duration and of Maximum marks: 50. (minimum passing marks20)

READING LIST: (to be amplified by the subject teacher)

1. Barry, R (1986) Construction of Buildings, London, vol. 1 to 5.
2. BIS (2016) National Building Code, SP 7, Bureau of Indian Standards.
3. Foster, Stroud (1963) Mitchell's Advanced Building Construction, Allied Publishers Private Limited, Bombay.
4. McKay, W.B. (1972) Building Construction (Metric), Longman, London, vol. 1 to 5.
5. Punmia, B. C. (2005) Building Construction, Firewell Media, Delhi.
6. Singh, G. N. (1981) Building Construction Engineering, Standard Book House, New Delhi.
7. Relevant IS codes.

BACHELOR OF ARCHITECTURE

AR213C **ADVANCED BUILDING MATERIALS-III**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
-	2	50	50		100	2	3

INTENT:

To make the students aware of advanced building materials used in construction industry and to understand their relationship with architectural design and building construction.

CONTENT:

UNIT I: ADVANCED CONCRETE

Reinforced Cement Concrete (RCC), Ready Mixed Concrete (RMC), Lightweight concrete, Aerated concrete, Fibre Reinforced Concrete, High Performance Concrete, Polymer Concrete, Ferro Cement, Precast and Prestressed concrete

UNIT II: ADVANCED GLASS

Types of glass- float glass, cast glass, glass blocks, foamed glass. Decorative glass, solarcontrol, toughened glass, wired glass, laminated glass, fire-resistant glass, glass blocks,structural glass - properties and application in building

UNIT III: PLASTICS

Components and classification of plastic, Property and types of plastic, application of plastic in buildings
Plastic as finishing materials (walling, flooring etc)

UNIT IV: DAMP PROOFING AND WATER PROOFING

Damp proofing: Hot applied and cold applied – Emulsified asphalt, Bentonite clay. Butyl rubber, silicones, Vinyls, Epoxy resins and metallic water proofing materials, their properties and uses.

Water proofing: water proofing membranes such as rag, asbestos, glass felt, plastic and synthetic rubber vinyl, butyl rubber, neoprene, polyvinyl chilnide – prefabricated membranes sheet lead, asphalt their properties and uses. Adhesives, Sealants and joint fillers

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester. Market survey and industry visits may be organized to introduce materials in market, sizes available in market, product types, prices. Visit to Industry and or site for material applications.

I	**Sessional evaluation**	**Weightage**
	Minor Test – I	20%
	Minor Test – II	20%
	Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class	60%
II	**Theory examination**	**100%**

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
3. The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

1. Varghese, P. G. (2007) A Text Book of Building Materials, Prentice-Hall of India Pvt. Ltd., Publication.
2. Rai, Mohan and Jain, M. P. Advances in Building Materials and Construction Singh publication by CBRI, Roorkee.
3. Zhang, H. (2011) Building Materials in Civil Engineering,Woodhead Publishing
4. Jha, Janardan (1976) Engineering Materials, Khanna Publishers.
5. Rangawala P. C. (1989) Engineering Materials, Charter Publishing House, Anand, India.
6. Sushil Kumar (2003), Building construction, Standard Publication and Distributors, New Delhi.
7. BIS (2016) National Building Code, Bureau of Indian Standards

BACHELOR OF ARCHITECTURE

AR215C **BUILDING SERVICES III**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
2	-	50	50	-	100	2	3

INTENT:

Appreciating designing and layout of water supply, plumbing, drainage and sanitation of simple buildings.

CONTENT

UNIT I:

Introduction to water supply and sanitation. Traditional sources of water supply, treatment of water, transportation and distribution at town level. Classification of water based on its usage. Rain water harvesting

UNIT II:

Water supply system: fittings, direct and indirect supply, layout and sizes of pipes, hot water supply, storage

UNIT III:

Sewerage system: systems, fittings and fixtures, sizes and layout, sewage collection, sewage treatment and disposal at town level.

UNIT IV:

Solid waste management, environment oriented waste water treatment

Rainwater (storm water) drainage

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class	60%
II	**Theory examination**	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
3. The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

1. Birdie J.S. and Birdie G.S. (1998) Water Supply and Sanitary Engineering, Dhanpathray Publishing Company, New Delhi.
2. Burke, Ken (1982) Basic Plumbing Techniques, Ortho Books, Chevron Chemical Company, San Ramon, Canada.
3. Hussain, S.K. (1982) Water Supply and Sanitary Engineering, Dhanpatray and Sons, New Delhi.
4. Rangwala, S.C. (1969) Fundamentals of Water Supply and Sanitary Engineering, Charotar Publishing Company, Anand.
5. Wise, Alan Frederick Edward & Swaffield, J.A. (2002) Water, Sanitary & waste Services for Building, 5th edn, Butterworth-Heinemann, Oxford.

BACHELOR OF ARCHITECTURE

AR217C **STRUCTURE DESIGN-III**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
2	-	50	50	-	100	2	3

INTENT:

To inculcate the understanding of properties of concrete and steel and the basis for the design of RCC structural elements.

CONTENT:

CONCRETE TECHNOLOGY AND PRINCIPLES OF DESIGN OF RCC STRUCTURES

Section A: Structural Properties of the constituent materials of RCC:

UNIT I: Structural Properties and tests for cement; Initial and final setting times of cement, properties of fine and coarse aggregates, requirements of water, Abram's water-cement ratio law, Stress-strain curves and characteristic strengths of structural steel.

UNIT II: Introduction to Nominal mix concrete and Design Mix Concrete. Characteristic compressive strength of concrete and its determination, Workability of concrete, Slump test, compacting factor test; Compaction and Curing of concrete, Durability of concrete, Gain of strength of concrete with time, Age factor.

Section B: Basics of RCC design:

UNIT III: Concept of RC, Modular ratio and derivation of its formula, Permissible stresses in concrete and steel, Fundamental assumptions for the analysis and design of a singly reinforced RC beam, stress diagram & strain diagram for a singly reinforced rectangular section under flexure (design for simply supported beam and for cantilever beam). IS: 456-2000 recommendations in regard of singly reinforced beams**.** Under-Reinforced, Balanced and Over-Reinforced sections: Formulation, Analysis of a given section and determination of moment of resistance/load carrying capacity

UNIT IV: Design under shear, bond and development length, Analysis & Design of a doubly reinforced RC beam, Continuous and Cantilever Beams

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester. Visit to Testing lab of building materials

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class	60%
II	**Theory examination**	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
3. The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

1. BIS (2000) Indian Standard Code of Practice for Plain and Reinforced Concrete I.S: 456, Bureau of Indian Standards.
2. Punmia, B. C., Jain, A. K., and Jain, A. K. (1992) Reinforced concrete structures, Vol. I, Firewall Media, New Delhi.
3. Singh, H. (2008) Design of Reinforced concrete structures for Architects, Abhishek Publications, Chandigarh.
4. Mallick, S. K. and Gupta, A. P. (1980) Reinforced Concrete, Oxford & IBH publishing company Pvt. Ltd. New Delhi.
5. Shetty, M. S. (2008) Concrete Technology, S. Chand Limited.
6. Neville A. M. (2012) Properties of Concrete, Prentice Hall
7. Mehta, P. K. and Moterio, P. J. M. (2005) Concrete: Microstructure and properties, McGraw-Hill Professional
8. Dayaratnam P. (1983) Reinforced Concrete Design, M. Primlani.

BACHELOR OF ARCHITECTURE

AR 202C **ARCHITECTURAL DESIGN–IV**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
-	6	100	-	100	200	6	3

INTENT:

To understand the nuances of traditional architecture both in rural and semi urban/urban context of a settlement.

CONTENTS:

Appreciation of traditional settlement patterns and building typologies in both rural and semi-urban/urban contexts in terms of material, technology, form, user, space, climate responsiveness etc.

Building types for rural context could include Aganwadi, Kisan Kendra, Community health center, Kalyan Kendra, Co-operative Societies, Vocational Training Centers, Veterinary Centre, primary school etc

Building types for semi urban/urban context could include Community health centre, reading room cum public library, poly clinic, gymnasium, community centre cum club, Vocational Training Centers, primary school etc.

Formulation of design criteria- application of climatic data, socio-cultural factors, behavioral aspects and structural considerations; Site analysis and design concepts, application of building services

The students would be familiarized with indigenous terminology.

The emphasis will be construction details as applicable to Indian climatic conditions.

The design problem would induce students to experiment with built and open spaces. All portfolio to include one drawing showing construction system and materials, services.

NOTE:

Detailed teaching programme to be made before the commencement of the semester and circulated to the students at the commencement of the semester.

Site visits and proto type study visits to be conducted.

The design shall be sensitive to the needs of disabled, aged people and children.

There shall be minimum of 2 exercises as a part of sessionals out of which, one is design in the rural context and other is a time problem. One exercise design in semi urban/urban context will form part of portfolio evaluation.

I	**Sessional evaluation**	**Weightage**
	Minor Test	20 %
	Design Exercises	60%
	Portfolio exercises (part evaluation)	20 %
II	**Portfolio evaluation**	
	Portfolio exercises (three)	100%

READING LIST: (to be amplified by the subject teacher)

1. Chiara, J. D. (1984) Time Saver Standard for Site Planning, McGraw Hill Book Co., NY.
2. Chiara, J. D. & Crosbie, M. J., (2001) Time-Saver Standards for Building Types 4th Edition, McGraw Hill Book Co.
3. Ching, F. D. K. (1996) Architecture: Form, Space, and Order, Van Nostrand Reinhold, New York, 2nd edn.
4. Cohen, U. and McMurtry, R. (1985) Museum and Children, Design Guide, The School of Urban Planning and Architecture, University of Wisconsin, Milwaukee.
5. Helper, D. and Wallach, P. (1987) Architecture Drafting and Design, Mc-Graw Hill Company, NY.
6. Juliet, M. (1984) Designing room for children, Little Brown and Company, London.
7. Neufert, E. (2000) Neufert – Architect's Data, Crosby Lockwood and Sons, London.

BACHELOR OF ARCHITECTURE

AR204C **PRINCIPLES OF ARCHITECTURE - IV**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
2	-	50	50	-	100	2	3

INTENT:

To provide an insight into the ideas of influential theorists from antiquity to the present time.

CONTENT:

UNIT I:

Theory in Antiquity and Renaissance – Concepts of Vitruvius, Leone Battista Alberti, Andrea Palladio

UNIT II:

18th Century Theory – Ideas of Laugier, Boullee, Ledoux, Durand

19th Century Theory – Concepts of Viollet Le Duc, Choisy, John Ruskin, William Morris, Pugin, John Ruskin, Karl Friedrich Schinkel, Henri O Labrouste, Louis Sullivan

UNIT III:

Modern Movement Theory – Ideas of Adolf Loos, Antoni Gaudi, Eero Sarinen, Erich Mendelsohn, Richard Neutra, Alvar Alto, Frank Lloyd Wright, Le Corbusier, Mies van der Rohe, Walter Gropius, Otto Wagner, Louis Kahn, Kenzo Tange.

Post Modern Theory – Ideas on Post-Modern Classicism by Robert Venturi, Charles Jencks, Philip Johnson Deconstruction – Fundamental beliefs and philosophy. Ideas of Peter Eisenman, Bernard Tschumi, Frank O. Gehry, Zaha Hadid, Rem Koolhaas, Norman Foster, Ken Yeang et al

UNIT IV:

Theory of Indian architecture: antiquity to modern times

Impact of Architectural design theories and ideas on architects in India, pre-independence and post independent Claude Batley, Habib Rahman, Charles Correa, Achute P. Kanvinde, B. V. Doshi, Joseph Allen Stein, Anant Raje, Raj Rewal, Uttam C. Jain, Kulbhushan and Meenakshi Jain, Hasmukh Patel, Dulal Mukherjee, Chandavarkar and Thacker et al

Search for appropriate architecture in the 21st century: Rahul Mehrotra, Vasant and Rewathi Kamath, Nimish Patel and Parul Jhaveri, Sanjay Mohe, Sanjay Prakash, Vinod Gupta, Karan Grover et al

INTENT

To generate and appreciation of background aspects of thinking required in architectural design.

The objectives of the course are to understand the principles and percepts of issues as related to architectural design in theory and practice.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class	60%
II	Theory examination	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
3. The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

1. Broadbent, G. (1990) Design in Architecture, Spon Press.
2. Frampton, K. (1985) Modern Architecture: A Critical History, New York.
3. Jencks, C (1986) Modern Movements in Architecture, New York.
4. Lang, J., Desai, M. and Desai, M. (1997) Architecture and Independence-The Search for Identity- India 1880 to 1980, Delhi.
5. Lang, Jon T. (2002) A Concise history of modern architecture in India, Orient Blackswan.
6. Morgan M. H. (1960) Vitruvius: The Ten Books on Architecture, Dover Publications.
7. Venturi, R. (1977) Complexity and Contradiction in Architecture, New York.

BACHELOR OF ARCHITECTURE

AR206C **SITE PLANNING &THEORY OF LANDSCAPE-IV**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
2	-	50	50	-	100	2	3

INTENT

To develop a conceptual understanding of landscape design and site planning principles.
To develop skills in integrating landscape design with built environments

CONTENT

UNIT I: Introduction and History of Landscape Design

Introduction to landscape design and its role in built environment. Changing perception of man's relationship with nature in various phases of history and its influence on environment.
A brief review of landscape design and garden design in history: Persian, Spanish, Italian, French, Renaissance, Mughal, English, Japanese garden styles. Evolution of concepts in landscape design after the industrial revolution leading to new theories in integrating built spaces to open spaces.
Increasing awareness of ecological variables in landscape design.

UNIT II: Site Studies and Site Planning

Principles of site planning and land use; review of definition applied in typical landscape development situations.
Site survey and appraisal – understanding different site characteristics –topography, vegetation, hydrology, access, surroundings etc. Site characteristics and establishing relationship with design / Architecture Programme
Philosophical and design issues related to site development – siting of buildings, spatial and contextual relationships of built and outdoor space and circulation, site and its relationship to surroundings.
Importance of climate and social factors in development of site. Process of design development. Identifying functional requirements of site. Development of site by mutual exploitation of forms, grading principles, drainage

UNIT III: Plants and Design

Introduction to study of plants in relation to landscape design and architecture. An overview of use of plants in history. Study of Plant material – Botanical nomenclature, anatomy and physiology of plant growth study of trees, shrubs, ground cover, indoor plants in Indian context.
Design with plants – Basic principles of designs. The physical attribute of plants and relation to design.
Appearance, functional and visual effects of plants in landscape design and built environment.
Selection and management of plant material in relation to built environment.

UNIT IV: Elements in Landscape Design

Use of landform, water and vegetation in landscape design.
Hard landscapes: design of paths, roadways streets, terraces etc and use of land form effectively.
Soft landscapes: design of lawns, shrubs, hedges, trees – in relation to buildings and other landscape elements.
Design concepts related to use of sculpture, outdoor lightings
Architectural features, street furniture and grouping them into meaningful compositions for visual and functional effects. Examples and application of Landscape design principles in small projects such as small gardens, courtyards, residential outdoor, urban spaces etc.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class	60%
II	Theory examination	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
3. The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

1. Birlested, J. (1998) Relating Architecture to Landscape, E and F N Spon, London.
2. Booth, N. K. and Hiss, J. E. (1991) Residential Landscape Architecture, Prentice Hall, New Jersey.
3. Cerver, F A (1997) International landscape architecture, F A Cerver, Spain.
4. Laurie, M. (1986) Introduction to Landscape Architecture, Elsevier, New York.
5. Lynch, K. and Hack, G. (1988) Site planning, MIT Press, Cambridge.
6. Santapau. H. (1981) Common Trees. National Book Trust, New Delhi.
7. Simonds, J. O. (1983) Landscape Architecture: A manual of site planning and design, McGraw Hill, New York.
8. Toye, S. S. (2003) Introduction to landscape design, Central Techno Publications, Nagpur.
9. Trivedi, P. Pratibha (1990). Beautiful Shrubs. Indian Council of Agricultural Research, New Delhi.
10. Ward, H. C. & Dines, N. T. (1995) Time Savers Standards for Landscape Architecture design and construction data, McGraw Hill, New York.

BACHELOR OF ARCHITECTURE

AR208C **BUILDING CONSTRUCTION - IV**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
-	6	100	100		200	6	3

INTENT:

To understand the design and drawing of interior building elements in different materials.

CONTENT:

UNIT I:

Timbering of trenches, shoring, underpinning, scaffolding, strutting and waling
Form-work for RC columns, beams, slabs, walls and stairs, types of formwork
Reinforcement detail

UNIT II:

Expansion joints and construction joints
Water proofing construction details
Basement construction: internal and external tanking details

UNIT III:

Conventions for doors and windows, types and their uses, swing, sliding and folding, revolving
Aluminum doors and windows
Steel doors and windows
PVC doors and windows

UNIT IV:

Vertical surfaces, external cladding materials and construction (stone, metal, wood and other materials)
Composite materials
Market survey of different sections, industrial field visits to manufacturing units.

NOTE:

Detailed teaching programme to be made before the commencement of the semester and circulated to the students at the commencement of the semester.
In each class teacher will deliver lecture on the subject to be followed by drawing.
Market survey/ site visits to nearby construction site are to be conducted
Minimum 12 sheets must be prepared in the studio under supervision of the teacher.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignments/Projects	60%
II	Theory examination	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be conducted in the drawing hall/studio having provision of drawing boards.
2. Following Stationery shall be provided to each of the student
   Four Cartridge Sheet (White)
3. Total FIVE questions are to be set, out of which FIRST question shall be compulsory (from the entire syllabus) of theory of 40 marks and rest of the FOUR QUESTIONS shall be from four units (one question from each of the unit, candidate have to attempt any TWO questions (drawing based) out of four of 30 marks each.
4. Exam shall be of 3 hours duration and of Maximum marks: 100. (minimum passing marks40)

READING LIST: (to be amplified by the subject teacher)

1. Barry, R(1986) Construction of Buildings, London, vol. 1 to 5.
2. BIS (2011) National Building Code, SP 7, Bureau of Indian Standards.
3. Foster, S. (1963) Mitchell's Advanced Building Construction, Allied Publishers Private Limited, Bombay.
4. McKay, W. B. (1972) Building Construction (Metric), Longman, London, vol. 1 to 5.
5. Prabhu, B. T. S. (1987) Building Drawing and Detailing, Spades Publishers Pvt. Ltd., Calicut.
6. Punmia, B. C. (2005) Building Construction, Firewell Media, Delhi.
7. Singh, Gurucharan (1981) Building Construction Engineering, Standard Book House, New Delhi.
8. Relevant IS codes

BACHELOR OF ARCHITECTURE

AR210C **BUILDING SERVICES - IV**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
-	2	50	50		100	2	3

INTENT: To understand the electrical system in domestic and multistoried buildings including lighting, fixtures and fittings, and cabling.

CONTENT:

UNIT I:

Introduction to engineering services for buildings
Electrical Services: sources of electrical energy supplied to buildings
Electricity generation, transmission and distribution.
Instruments for measurement, metering
Electricity Authority Act, rules and regulations

UNIT II:

Rules and regulations regarding electrification of buildings as appropriate with relevant standards
Types of electrical wiring system, earthing, scope and requirements
Requirements of electrical materials such as conductors, insulators
Types and requirements of electrical cables
Control equipment such as switch gear, safety devices to be used in electrical layouts

UNIT III:

Electrical lighting
Integration of Electrical lighting with day lighting, sensors
Instruments for measurement lux meters
Type of lamps and luminaries, lighting density and efficiency
Outdoor lighting, Specialized lighting like art galleries etc.

UNIT IV:

Graphical symbols of electrical systems
Plug load calculation of a small building
Electrical drawing of a small building

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.
Appropriate Standards must be explained and used

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class	60%
II	**Theory examination**	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
3. The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

1. Raina K. B. & Bhattacharya S. K. (2007) Electrical Design, Estimating & Costing, New Age International Publishers, ND
2. Dagostino, F. R. (1978) Mechanical and Electrical Systems in Construction in Architecture, Reston Publishing Company, Prentice Hill Co., Virgenia.
3. Egan, D. M. (1983) Concepts in Architectural Lighting, McGraw Hill Book Company.
4. Flynn, J. E. et. al (1992) Architectural Interior Systems: Lighting, Acoustics and Air conditioning, Van Nostrand Reinhold
5. NBO (1966) Hand book for Building Engineers, National Buildings Organisation, New Delhi.
6. Grondzik, W. T., Kwok, A.G., Stein, B, Reynolds, J. S. (2009) Mechanical and Electrical Equipment for Buildings, Wiley

BACHELOR OF ARCHITECTURE

AR212C **STRUCTURAL DESIGN - IV**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
-	2	50	50		100	2	3

INTENT:

To inculcate the understanding of shear failure, design for shear reinforcement, requirement of development length, effect of Torsion on the reinforcement design and design of some basic components of a building by Limit State Method.

CONTENT:

DESIGN REQUIREMENTS OF REINFORCED CONCRETE STRUCTURES

UNIT I: Concept of Limit State Design, Characteristic strength of steel and concrete, Loads and Loading conditions, Limit State of Collapse and Serviceability

UNIT II: Analysis and Design of reinforcement for a section subjected to torsion, Side face reinforcement. Design and Detailing of a lintel beam & lintel with sun shade. Analysis & Design of Flanged Beams

UNIT III: Analysis of slabs spanning in one direction and spanning in two directions. Design & Detailing of a one way slab, Design & Detailing of a cantilever chajja. Design & detailing of a two way slab.

UNIT IV: Design of isolated footing including wall footing, square, rectangular, trapezoidal, circular footings including one way and two way shears, flexure and checks.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

Appropriate Standards must be explained and used

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class	60%
II	**Theory examination**	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
3. The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING:

1. Ramamrutham (2003) Theory of Structures, Dhanpat Rai and Sons, Delhi.
2. Jain, O. P. and Krishna, Jai (1963) Plain and Reinforced Concrete, Nem Chand.
3. N Krishna Raju (2003) Reinforced Concrete Design: Principles and Practice, New Age International (P) Ltd.

BACHELOR OF ARCHITECTURE

AR214C **SURVEYING PRACTICE - IV**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
-	2	50	50		100	2	3

INTENT:

Introduction of basic concepts of surveying, Photogrammetry, Remote sensing and Geographical Information System.

CONTENT:

UNIT I:

Introduction to surveying and its principles. Types of surveying, Map and Plan, its Scale and uses. Sources of errors in survey-linear measurement: accurate and approximate methods.
Chain Surveying.

UNIT II:

Compass Surveying, Leveling

UNIT III

Plane Table surveying, Contouring

UNIT IV

Basic concepts of Photogrammetry, Automated Surveying – Introduction to use of Digital Surveying –Instruments such as distomat – total station, Electronic Theodolite, G.P.S. Remote sensing. Geographical Information systems and their applications.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

Advance Survey instruments to be demonstrated. Lectures to be supported with field exercises.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class	60%
II	Theory examination	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
3. The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING:

1. Arora, K.R. (200)) Surveying Vol. I, 6th edn. Standard Book House, Delhi.
2. Kevin (1962) Site Planning. MIT Press, Massachusetts.
3. Punmia, B.C. (1996) Surveying Vol. 1, 13th edn. Laxmi Publications Pvt. Ltd., New Delhi.

BACHELOR OF ARCHITECTURE

AR216C **COMPUTER IN ARCHITECTURE - IV**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
-	4	100			100	4	-

INTENT:

To help students to get accustomed to Drafting & Sketching at the initial stage.

CONTENT:

AutoCAD 2D (Basic & Advanced), Sketch book designer.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester. Each student must produce individual work for evaluation.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignments/Quizzes/Tutorial Tests/ Project/Presentations/Performance in the class	60%

READING:

Relevant software manuals

BACHELOR OF ARCHITECTURE

AR218C **EDUCATIONAL TOUR -IV**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
-	-	100	-	-	100	2	-

INTENT:

To expose students to Historical, traditional and Contemporary Architecture

CONTENT:

Vacation Assignment/ Study tour is to be undertaken in 4th semester and before the commencement of 5th semester classes.

This assignment could be an appreciation of a noted building or a study tour for visiting places of architectural interest both traditional and contemporary. The choice of the building to be documented and the places to be visited will be decided by the department. The assignment may be given as group work (4 to 6 students per group). The students have to submit/present a photo-documentation and measured drawing report on the architectural appreciation of building studied during the study tour within 15 days from the beginning of the 5thSemester.

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AR 301C **ARCHITECTURAL DESIGN–V**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
-	9	150	-	150	300	9	3

INTENT:

To inculcate the appreciation of the design process and an understanding of the design complexities and contradictions to resolve architectural design problems for Institutional Infrastructure.

CONTENT:

The following issues relating to institutional design will be addressed to:
Nature of contemporary institutions, correlation to urban structure.
Development control and urban infrastructure affecting design.
Various approaches to building in urban context.
Integration of function: movement, climate, acoustics, structure and services into the group of buildings.
Landscaping and site planning
Institutional character from abstract to detail.
User behavior and requirement pertaining to the physically handicapped.
Necessary theoretical inputs to be given highlighting the norms and design issues. The topics not covered as design problems may be covered by the studio faculty members through lecture/slide shows.
The topics to be covered as design problems may include:
Design of Institutional buildings: Senior Secondary Schools, colleges with its various learning departments such as medical, engineering, law, business, music and dance colleges, vocational training institutions,
Socio-cultural Centres, Museums, Library, Art galleries, Cultural center, Performing Arts Centre, Industrial Buildings Adaptive reuse of buildings of a documented building
All portfolio to include two drawings showing construction system and building services.
In both the design projects the provisions of National Building Code 2016, Energy Conservation Building Code 2017 and other relevant codes should be incorporated.

NOTE:

Detailed teaching programme to be made before the commencement of the semester and circulated to the students at the commencement of the semester.
Site visits and proto type study visits to be conducted.
The design shall be sensitive to the needs of disabled, aged people and children.
These shall be minimum of 2 exercises as a part of sessionals out of which, one will be a time problem. One exercise will be meant for portfolio evaluation.

I	**Sessional evaluation**	**Weightage**
	Minor Test – I	10 %
	Minor Test – II	10 %
	Design Exercises	60%
	Portfolio exercises (part evaluation)	20 %
II	**Portfolio evaluation**	
	Portfolio exercises (three)	100%

READING LIST: (to be amplified by the subject teacher)

1. ChiaraJoseph de et al (1990) Time Savers Standards of Building Types. McGraw – Hill.
2. Kirk, P. H. and Sternberg, D. E. (1960) Doctors Offices and Clinics, 2nd ed. Reinhold Pub., USA.
3. Konya, A. (1986) Libraries: A Briefing and Design Guide. The Architectural Press, London.
4. Neufert, E. (2000) Neufert Architects Data. Granada Pub. Ltd., London.
5. Pevsner, N. (1976) A History of Building Types. Thames and Hudson, London.
6. Rosenfield, I. (1969) Hospital Architecture and Beyond. Van Nostrand Reinhold, New York.
7. Stone, G. L. Institutional Buildings Architecture of Controlled Environment.
8. Tergsone, W. R. Practical Laboratory Planning.
9. Wild, F. (1972) Libraries for Schools and Universities. Van Nostrand Reinhold, New York.

BACHELOR OF ARCHITECTURE

AR303C **HISTORY OF ARCHITECTURE-V**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
2	-	50	50	-	100	2	3

INTENT:

To understand the growth and development of architecture and appreciation of the role of the intangibles that brought this growth and development from the 18th Century to the advent of European Modernism.

CONTENT

UNIT I: Architecture in Europe – (Late 18th to early 20th century)

Industrial Revolution and its architectural Implications
19th Century Neo Classicism
Development of Architecture in Victorian England
Technology of Iron and Steel

UNIT II: Architecture in Europe – (Late 18th to early 20th century)

Town Planning Trends in Europe
Rise of the Idea of Expositions
Birth of the American Skyscraper
Alternate Trends in late 19th and early 20th century in Europe.

UNIT III: Architecture in Colonial India (Late 18th to early 20th century)

Culture of colonialism
British Response to Indian Context
Early British Architecture

UNIT IV: Architecture in Colonial India (Late 18th to early 20th century)

Birth of Indo Saracenic Architecture
Princely India's Architectural response
Public Works Department (PWD)
Classical Revival
Building of New Delhi

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class	60%
II	**Theory examination**	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
3. The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING:

1. Archer, M. (1968) Indian Architecture and the British, Middlesex.
2. Curl, J. S. (1990) Victorian Architecture, London.
3. Davies, P. (1985) Splendours of the Raj, London.
4. Fletcher, Sir B. (1999) History of Architecture–20th edn, Dan Cruickshank ed, CBS Publishers & Distributors, New Delhi.
5. Hitchcock, H. R. et al (1963) World Architecture: An Illustrated History, London.
6. Irving, R. G. (1981) Indian Summer: Lutyens, Baker, and Imperial Delhi, London.
7. Metcalfe, T. R. (1989) An Imperial Vision Indian Architecture and Britain's Raj, London.
8. Morris, J. and Winchester, S. (1983) Stones of Empire - The Buildings of the Raj, Oxford.
9. Nilsson, S. (1968) European Architecture in India 1750-1850, London.
10. Risebero, B. (1979) The Story of Western Architecture, London.

11. Volwahsen, A. (2002) Imperial Delhi: The British Capital of the Indian Empire, London.

BACHELOR OF ARCHITECTURE

AR305C **BUILDING CONSTRUCTION - V**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
-	6	100	100		200	6	3

INTENT:

To understand the design and drawing of interior building elements in different materials.

CONTENT:

UNIT I:

Introduction to structural steel, types of steel used in buildings
Joining details of various steel members
Market survey of available steel sections

UNIT II:

Steel foundations
Structural steel frame

UNIT III:

Steel support system for roofing
Steel trusses
Collapsible and rolling shutters, Case studies and construction yard exercises

UNIT IV:

Steel staircase, Metal stairs - types and construction details of steel stairs.
Steel Mezzanine floor
Steel cladding

NOTE:

Detailed teaching programme to be made before the commencement of the semester and circulated to the students at the commencement of the semester.
In each class teacher will deliver lecture on the subject to be followed by drawing.
Market survey/ site visits to nearby construction site are to be conducted
Minimum 10-12 sheets must be prepared in the studio under supervision of the teacher.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignments/Projects	60%
II	Theory examination	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be conducted in the drawing hall/studio having provision of drawing boards.
2. Following Stationery shall be provided to each of the student
    a. Four Cartridge Sheet (White)
3. Total FIVE questions are to be set, out of which FIRST question shall be compulsory (from the entire syllabus) of theory of 40 marks and rest of the FOUR QUESTIONS shall be from four units (one question from each of the unit,candidate have to attempt any TWO questions (drawing based) out of four of 30 marks each.
4. Exam shall be of 3 hours duration and of Maximum marks: 100. (Minimum passing marks40)

READING LIST: (to be amplified by the subject teacher)

1. Barry, R (1986) Construction of Buildings, London, vol. 1 to 5.
2. BIS (2013) National Building Code, SP 7, Bureau of Indian Standards.
3. Foster, Stroud (1963) Mitchell's Advanced Building Construction, Allied Publishers Private Limited, Bombay.
4. McKay, W. B. (1972) Building Construction (Metric), Longman, London, vol. 1 to 5.
5. Prabhu, Balagopal T. S. (1987) Building Drawing and Detailing, Spades Publishers Pvt. Ltd., Calicut.
6. Punmia, B. C. (2005) Building Construction, Firewell Media, Delhi.
7. Singh, Gurucharan (1981) Building Construction Engineering, Standard Book House, New Delhi.
8. Relevant IS codes

BACHELOR OF ARCHITECTURE

AR307C **BUILDING SERVICES - V**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
2	-	50	50	-	100	2	3

INTENT:

To appreciate the role of acoustics and fire protection in buildings.

CONTENT:

UNIT I:

Introduction to the study of acoustics, basic terminology, sound and distance – inverse square law; absorption of sound, sound absorption co-efficient. Reverberation time, Sabines' formula, various sound absorbing materials. Behavior of sound in enclosed spaces. Acoustical defects

UNIT II:

Acoustical design for halls used for drama, music, speech, cinema theatres and open air theatres.
Noise and its types – outdoor and indoor noise, air born noise, structure borne noise, impact noise.
Acoustical materials and constructional measures of noise control, insulation of machinery, sound insulation.
Noise control at neighbourhood and city level.

UNIT III:

Causes of fire, reasons for loss of life due to fire, development of fire, fire load, fire hazards
National Building Code: grading of structural elements due to fire, classification of building types, norms for fire-exit ways and building materials, concept of fire zoning, doorways, stairways, passages and corridors, fire escapes etc. Rules for fire protection and firefighting requirements for high-rise buildings in India

UNIT IV:

Brief description of characteristics of combustible and noncombustible materials in case of fire
Fire resisting materials, fire resistant rating
Concepts in passive fire protection and control – including design of escape routes, pressurization and compartmentation, etc.
Active fire control using portable extinguishers. Basic concepts in fixed firefighting installations.
Automatic fire detection and alarm systems
Fire preventive techniques, fire protection equipment

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.
Appropriate Standards must be explained and used; site visits to be organized.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class	60%
II	**Theory examination**	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
3. The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

1. Egan, D. (1988) Architectural Acoustics, McGraw Hill Book Co., NY.
2. Kinsleter, L. E. and Frey, A. R. (1989) Fundamentals of Acoustics (ed.2), Wiley Eastern Ltd., New Delhi.
3. Knudson, V. (1950) Acoustical Designing in Architecture, John Wiley, N.Y.
4. Narasimhan, V. (1974) Introduction to Building Physics, Central Building Research Institute, Roorkee.
5. Parich, P. (1979) Acoustics: Noise and Buildings, Faber and Faber, London.
6. Templeton and Saunders (1987) Acoustic Design, Architectural Press, London.
7. BIS (2016) National Building Code, SP 7, Bureau of Indian Standards.

BACHELOR OF ARCHITECTURE

AR309C **STRUCTURAL DESIGN - V**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
2	-	50	50		100	2	3

INTENT:

Tounderstand the principles and design of simple steel structures.

CONTENT:

PRINCIPLES OF DESIGN OF STEEL STRUCTURES:

UNIT I:

Structural Properties of steel and use of steel as a structural material.

Classification of rolled steel sections and their properties.

UNIT II:

Riveted, Bolted & Pinned connection.

Welded connections.

UNIT III:

Design of Tension members.

Design of compression members, lacing & bracing

UNIT IV:

Analysis and Design of simple Beams & Plated Beams.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

Appropriate Standards must be explained and used.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class	60%
II	**Theory examination**	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
3. The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING:

1. BIS (1984) Indian Standard Code of Practice for General Construction in Steel IS : 800.
2. Duggal, S. K. (2009) Design of Steel Structures, Tata McGraw Hill Publishing Company Ltd., New Delhi.
3. Singh, H. (2008) Analysis & Design of Steel Structures for Architects, Abhishek Publications, Chandigarh.
4. Punmia, B. C., Jain, A. K. & Jain, A. K., (1998) Comprehensive Design of Steel Structures, Laxmi Publications (P) Ltd., New Delhi.
5. Arya, A. S. & Ajmani, J. L. (1974) Design of Steel Structures, Nem Chand & Bros., Roorkee.

BACHELOR OF ARCHITECTURE

AR311C **SPECIFICATIONS - V**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
2	-	50	50		100	2	3

INTENT:

To appreciate the technique and role of this subject in Architecture

CONTENT:

UNIT I: SPECIFICATION AND SPECIFICATION WRITING

Necessity of specification, importance of specification. How to write specification. Types ofSpecification. Principles of Specification writing. Important aspects of the design of specification.

Sources of information. Classification of Specification. Brief Specification for1st class, 2nd class, 3rd class building. Detailed specification for earthwork excavation, plain cement concrete, reinforcedconcrete, first class and second class brickwork, damp proof course, ceramic tiles/marble flooring anddado, woodwork for doors, windows frames and shutters, cement plastering, painting & weatheringcourse in terrace. HSR and CSR (CPWD) to be refered.

UNIT II: ESTIMATION

Types & purpose. Approximate estimate of buildings. Bill of quality, factors to be considered.

Principles of measurement and billing. Contingencies. Measurement of basic materials like brick,wood, concrete and unit of measurement for various items of work. Abstract of an estimate. Costsassociated with constructed facilities. Approaches to cost estimation. Type of construction costestimates. Cost Indices. Applications of cost indices to estimating. Estimate based on engineer's list of quantities. Estimation of operating costs.

HSR and CSR (CPWD) to be refered.

UNIT III: DETAILED ESTIMATE

Deriving detailed quantity estimates for various items of work for a single storied building. To includeearthwork excavation, brick work, plain cement concrete, reinforced cement concrete works, woodwork, iron works, plastering, painting, flooring, weathering course.

UNIT IV: VALUATION AND BUDGETING

Valuation. Explanation of terms. Types of values. Sinking fund. Years of purchase. Depreciation.

Types of depreciation. Valuation of real properties. Types, methods and purpose of valuation.

Elements of cash flow. Time value of money. Capital investment decision. Types of business firms.

Budget and Budgetary Control. Types of Budgets. Preparation of financial budget.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class	60%
II	**Theory examination**	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
3. The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING:

1. Rangwala. S.C, 'Estimating, Costing and Valuation (Professional practice)', Charotar PublishingHouse,1984
2. M.Chakraborthi, 'Estimating, Costing, Specification and Valuation in Civil Engineering. 2010
3. B.N. Dutta, 'Estimating and Costing' UBS Publishers and Distributors. 2000.
4. S.Sanga Reddi and P.L.Meiyappan, 'Construction Management', Kumaran Publication,Coimbatore.
5. Gurcharan Singh and Jagdish Singh, 'Estimating Costing and Valuation', Standard PublishersDistributors, 2012.
6. Latest schedule of rates of P.W.D.
7. PWD Standard Specifications. Govt Publication.

BACHELOR OF ARCHITECTURE

AR313C **BUILDING BYELAWS & OFFICE MANAGEMENT - V**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
2	-	50	50		100	2	3

INTENT:

To acquaint the students with building legislation and basis office procedure and management techniques in architecture

CONTENT:

UNIT I: Introduction to building codes and norms

Introduction to Building codes, bye laws and regulations, their need and relevance.

Overview of basic terminologies, nature of building codes in special regions like heritage zones, air funnels, environmentally sensitive zones, disaster prone regions, coastal zones, hilly areas, etc.

Unit II: Study of building regulations

Study of structure of Building bye laws, National Building Code etc.

General building requirements, building classifications and permissible uses.

Norms for exterior and interior open spaces, setbacks and margins, norms for building projections in open spaces, considerations in FAR, guidelines for open green areas.

Plinth, habitable rooms, kitchen, wet areas, mezzanine, store rooms, elevated parts like chimneys, parapets etc.

Means of access, norms for access widths for various types of buildings, requirements of parking spaces, Equivalent Car Space (ECS), standards for turning radius, access to service areas.

Unit III: Norms for Local bye laws

Study of local planning bodies such as corporation, municipal board's and panchayats

Building bye laws framed by local bodies of Chandigarh, Delhi, Haryana

Procedural method for use of bye laws for submission drawings, obtaining building permits, architectural control and provision of building services, regulations for super structures, building height regulations, regulations for multi-storied buildings etc.

Unit IV: Office management

Architectural office, architect, contractor, client relationships

Office correspondence, filing and record keeping

Human resource management.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignments/Quizzes/Tutorial Tests/ Project/Presentations/Performance in the class	60%
II	Theory examination	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
3. The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING:

1. Durga Prasad, M. V. (1997) Law of Flats, Apartments and Buildings, 4th edn Asia Law House, Hyderabad.
2. Scott, G. J. (1997) Architectural Building Codes, Van Nostrand Reinhold, NY.
3. BIS (2016) National Building Code, SP 7, Bureau of Indian Standards.
4. Energy Conservation Building Code 2017

BACHELOR OF ARCHITECTURE

AR315C **COMPUTER IN ARCHITECTURE - V**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
-	4	100	-		100	4	-

INTENT:

To appreciate the potential of the computer as a drafting aid for an architect.

CONTENT:

Advanced 2D commands of AutoCAD – latest version

Basic 3D commands of AutoCAD – latest version

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

Each student must produce individual work for evaluation.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignments/Quizzes/Tutorial Tests/ Project/Presentations/Performance in the class	60%

READING:

Relevant software manuals

BACHELOR OF ARCHITECTURE

AR 302C **ARCHITECTURAL DESIGN–VI**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
-	9	150	-	150	300	9	3

INTENT: To inculcate the appreciation of the design process and an understanding of the design complexities and contradictions to resolve architectural design problems for Housing of different typologies and public buildings.

CONTENT:

Design of Midrise apartments:

Issues to be addressed for the design project pertaining to apartment design:

Density, mixed land use, ground coverage, development controls.
Type of occupancy, social strata, social status and prevalent social strata, urban systems, services and their integration with the project.
User requirements (derived from surveys)
Issues in appropriate technology and costs.
Issues of hierarchy, identity of space, public and private scales of space. Integration of community institutions etc.
Detailing for the disabled and the elderly.
Indian / local architectural responses to climate, culture, traditional values, building elements, symbols motifs and special character.

Details from the dwelling cell to immediate shared space to communal space shall be emphasized and worked out. Socio cultural layer of the occupants shall form a strong fabric in the ultimate weave of the design. Projects shall aim at developing a very sensitive attitude towards micro level human habitation and role of architecture in enhancing or curbing the quality of living.

Examples of projects: Apartments for IT employees, Govt. servants, teaching faculty, Textile weavers, etc. luxury flats in the center of the city, group housing in the suburbs.

Design of public buildings:

The role of urban space as a public realm and the need to create such spaces as extension of private domain in a public building shall be investigated and shall become one of the architectural goals of the project. Some of the prerequisites of the project shall be; 1. Multiple functions, 2. Public access to majority of the spaces, 3. Large gathering areas which are open and extendable to the immediate urban context.

Examples of projects: Large scale exhibition spaces, Auditorium, Cinema halls, Sports stadium, etc.

Detailing of architectural features of the major project like entrance lobby, skylights and staircases has to be attempted.

All portfolio to include two drawings showing construction system, materials and building services.

In both the design projects the provisions of National Building Code 2016, Energy Conservation Building Code 2017 and other relevant codes should be incorporated.

NOTE:

Detailed teaching programme to be made before the commencement of the semester and circulated to the students at the commencement of the semester.

Site visits and proto type study visits to be conducted.

These shall be minimum of 2 exercises as a part of sessionals out of which, one will be a time problem.

One exercise will be meant for portfolio evaluation.

I	**Sessional evaluation**	**Weightage**
	Minor Test	20 %
	Design Exercises	60%
	Portfolio exercises (part evaluation)	20 %
II	**Portfolio evaluation**	
	Portfolio exercises	100%

READING LIST: (to be amplified by the subject teacher)

1. Alexander, C. (1977) Pattern language: Towns, Buildings, Construction. Oxford University Press, New York.

2. Chiara, De Joseph et al (1995) Timesavers standard for Housing and Residential development, McGraw Hill Inc, NY

BACHELOR OF ARCHITECTURE

AR304C **MODERN & CONTEMPORARY ARCHITECTURE - VI**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
2	-	50	50		100	2	3

INTENT:

To understand the growth and development of architecture and the ideas that propelled this development from the advent of the Modern Movement in the early decades of the 20th Century to contemporary trends across the world and in India.

CONTENT:

UNIT I: (The Western World: Early 20th century to the contemporary era)

Early Modernism
Post War Decades: The International Style
Alternatives to the International Styles

UNIT II: (The Western World: Early 20th century to the contemporary era)

Late Modernism
Slick Tech Architecture
Post Modernism
Neo Modernism

UNIT III: (The Indian Scenario: Early 20th century to the contemporary era)

Post Independence Architecture
The Arrival of Modernism in India
Foreign Architects and their influence on Indian Architects
Rediscovering India's Indigenous Architectural Tradition

UNIT IV: (The Indian Scenario: Early 20th century to the contemporary era)

Current trends in Indian Architecture
Exploring Regionalism in Indian Architecture

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class	60%
II	**Theory examination**	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
3. The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING:

1. Bill Risebero, The Story of Western Architecture, (London, 1979)
2. Charles Jencks, Modern Movements in Architecture, (New York, 1986)
3. Harry N. Abrams Inc., Architecture: From Pre-history to Post-Modernism / The Western Tradition, (New York, 1980)
4. H. R. Hitchcock et al, World Architecture: An Illustrated History, (London, 1963)
5. John Musgrove ed., Sir Bannister Fletcher's - A History of Architecture, (London, 1987)
6. Kenneth Frampton, Modern Architecture: A Critical History, (New York, 1985)
7. Le Corbusier, Towards a New Architecture, (New York, 1960)
8. Nikolaus Pevsnar, An Outline of European Architecture, (London, 1945)
9. Robert Venturi, Complexity and Contradiction in Architecture, (New York, 1977)
10. Vincent Scully Jr., Modern Architecture, (New York, 1977)
11. Charles Correa and Kenneth Frampton, Charles Correa, (London, 1997)
12. G.H.R. Tillotson, The Tradition of Indian Architecture: Continuity, Controversy and Change since 1850, (Delhi, 1989)
13. Bhatia, Gautam (2003) Laurie Baker: Life, Work and Writings, Delhi.

14. James Steele, The Complete Architecture of Bal Krishna Doshi: Rethinking Modernism for the Developing World, (Delhi, 1998)

BACHELOR OF ARCHITECTURE

AR306C **WORKING DRAWING - VI**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
-	6	100	100		200	6	3

INTENT:

To enable students to prepare working drawings; which are used for construction of buildings.

CONTENT:

Architectural Drafting - lettering, dimensioning lines, drafting conventions, title blocks, office standards, representation of different materials in section, graphic symbols. Complete working drawings of the project handled in an earlier Architectural design studio comprising of:

UNIT I:

Intent of working drawing and standard practices, Demonstration of professional working drawings of architects
All floor plans, schedules of doors, windows, finishes, levels,
Roof plans
Grid plan, demarcation plan, foundation plan

UNIT II:

All exterior elevations
Interior elevations
Relevant sections
Joinery details

UNIT III:

Kitchen detail
Toilet detail
Staircase detail

UNIT IV:

Wardrobe detail
Electrical drawings, water supply and sanitary drawings, rain water disposal drawings
Site plan and its detailing

NOTE:

Detailed teaching programme to be made before the commencement of the semester and circulated to the students at the commencement of the semester.
In each class teacher will deliver lecture on the subject to be followed by drawing.
Market survey/ site visits to nearby construction site are to be conducted
Minimum 10-12 sheets must be prepared in the studio under supervision of the teacher.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignments/Projects	60%
II	Theory examination	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be conducted in the drawing hall/studio having provision of drawing boards.
2. Following Stationery shall be provided to each of the student
    a. Four Cartridge Sheet (White)
3. Total FIVE questions are to be set, out of which FIRST question shall be compulsory (from the entire syllabus) of theory of 40 marks and rest of the FOUR QUESTIONS shall be from four units (one question from each of the unit,candidate have to attempt any TWO questions (drawing based) out of four of 30 marks each.
4. Exam shall be of 3 hours duration and of Maximum marks: 100. (minimum passing marks40)

READING LIST: (to be amplified by the subject teacher)

1. Barry, R. (1986) Construction of Buildings, London, vol. 1 to 5.
2. Foster, S. (1963) Mitchell's Advanced Building Construction, Allied Publishers Private Limited, Bombay.
3. McKay, W. B. (1972) Building Construction (Metric), Longman, London, vol. 1 to 5.

BACHELOR OF ARCHITECTURE

AR308C **BUILDING SERVICES - VI**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
2	-	50	50	-	100	2	3

INTENT:

To appreciate how buildings can be made more comfortable by adding mechanical systems like artificial ventilation,air conditioning, horizontal and vertical mechanical transportation systems.

CONTENT:

UNIT I:

Human Comfort conditions

Need for mechanical ventilation in buildings. Rate of ventilation for different occupancies.

Methods and equipment employed for mechanical ventilation in buildings.

UNIT II: Air Conditioning

Principles of Air-conditioning, Indoor Air Quality, Carnot cycles, gas laws, refrigeration, cycles and refrigerants.

Architectural considerations for air conditioned buildings

Definition, advantages and disadvantages, brief introduction to psychrometric process, air-cycle and refrigeration cycle. Summer and winter air-conditioning, calculation of air-conditioning loads

Zoning: purpose and advantages. Air-distribution systems: Ducts and duct systems. Air-outlets

Compressors, condensers, evaporators, heat exchangers, etc.

UNIT III: Air-conditioning methods and equipment:

Window units, split units, ductable air conditioners and package system.

Central air-conditioning systems: AC plant and room, all air systems and chilled water systems, AHU and FC units, Building ducting, diffusers and grills.

Location of air-conditioning equipment in buildings. Architectural requirement of various equipment.

Residential and commercial air-conditioning, energy conservation techniques.

Introduction to the concept of 'Clean Room' and their architectural requirements

UNIT IV: Elevators (Lifts) and escalators

Brief history-types of Elevators like traction, hydraulic etc. Doubledecker, sky lobby, lift lobby, lift interiors etc., Definition and components

Elevatoring a building: environmental considerations i.e., location in building, serving floors, grouping, size, shape of passenger car, door arrangement etc.

Types of lifts, passenger, capsule, hospital bed- lift; goods-lift etc.

Working and operation of lifts, parts of lifts; industry standards and capacity calculations.

Provision to be made in buildings for installation: location, systems, sizes, equipment, spatial requirement

Introduction to working of escalator and design, escalators location, equipment.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

Appropriate Standards must be explained and used; site visits to be organized.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class	60%
II	**Theory examination**	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
3. The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

1. Grondzik, WT, Kwok, AG, Stein, B, Reynolds, JS (2009) Mechanical and Electrical Equipment for Buildings, Wiley.

BACHELOR OF ARCHITECTURE

AR310C **STRUCTURAL DESIGN - VI**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
2	-	50	50		100	2	3

INTENT:

To inculcate the understanding of design of some basic components of a building by Working Stress Method.

CONTENT:

DESIGN OF RCC STRUCTURAL COMPONENTS OF A BUILDING:

UNIT I: Design and detailing of a two way slab with corners held down.
Slab with edges fixed or continuous.

UNIT II: Design and Detailing of stair with stair slab spanning horizontally and stair slab spanning longitudinally. Distribution of loading on stairs, Design of Dog-legged stairs and stairs with quarter space landing

UNIT III: Compression Members: Analysis and design of axially loaded short and long (square & circular) columns. Columns with lateral ties and helical reinforcement. I.S. Code recommendations for longitudinal reinforcement, transverse reinforcement, cover to reinforcement, effective length of columns, Permissible loads in short and long columns. Composite column, Reinforced concrete walls.

UNIT IV: Properties of soil as load bearing strata for building structures Soil classification as BIS standard and field investigation of soils. Concept of safe bearing capacity/allowable bearing pressure of soils. Different types of building foundation based soil conditions and building characteristics. Design of continuous and isolated footings. Introduction to various types of shallow foundations pressure distribution beneath footings, bearing capacity of soil. I.S. code recommendations for design of footings. Analysis and design of continuous footings under masonry wall and under concrete wall. Analysis and design of an isolated square footing of uniform depth.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

Appropriate Standards must be explained and used.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class	60%
II	Theory examination	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
3. The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING:

1. Sinha, S. N. (2002) Reinforced Concrete Design, Tata Mc-Graw Hill publishing company Ltd. New Delhi.
2. Punmia, B. C., Jain, A. K. & Jain, A. K., (2005) Soil Mechanics and Foundations, Firewall Media.
3. Singh, H. (2008) Design of Reinforced concrete structures for Architects, Abhishek Publications, Chandigarh.
4. Krishnamurthy, D. (1985) Elementary Structural Design & Drawing, Volume 2, CBS Publishers & Distributors, Delhi.

BACHELOR OF ARCHITECTURE

AR312C **BUILDING MAINTENANCE - VI**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
2	-	50	50		100	2	3

INTENT:

To familiarize the students with common defects arising in the buildings with age, with preventive measures and system of maintenance.

CONTENT:

UNIT I:

Principles of maintenance of buildings- definition, objectives, classification of building maintenance
Building deterioration and design considerations
Economic considerations in building maintenance

UNIT II:

Foundation and substructures defects
Foundation rehabilitation methods: shoring and underpinning
Dampness in buildings and its maintenance.
Cracks in building and repairing structural and non-structural cracks, bulging and leaning of walls
Surface protection

UNIT III:

Maintenance of water supply systems at unit level and city
Standards of World Health Organization, Central Public Health Engineering and Environment Organization (CPHEEO), Public Health Engineering Department (PHED) at State level, Municipal Corporation level
Maintenance of sewerage system at unit level and city.

UNIT IV:

Maintenance of mechanical and electrical systems in buildings.
Repair and Rehabilitation of distressed structures (Repair and Retrofitting)
Computerized Maintenance Management
Exemplars study

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.
Appropriate Standards must be explained and used, site visits to be organized.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class	60%
II	**Theory examination**	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
3. The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING:

1 BRE (1991) Housing Defects reference Manual, The Building Research Establishment, Chapman and Hall.
2 Chudley, R (1981) The maintenance and adaption of buildings, Longman, New York.
3 CPWD (2001) Maintenance Manual, Central Public Works Department, New Delhi.
4 CPWD (2002) Handbook of RCC, Central Public Work Department, New Delhi.
5 Eldridge, H. J. (1976) Common Defects in Buildings, Her Majesty's Stationery Office, London.
6 NBA (1983) Common Building Defects - Diagnosis & Remedy, National Building Agency, UK.
7 Panchdhari, A. C. (1998) Maintenance of Buildings, New Age International (P) Limited Publishers, New Delhi.
8 Ransom, W H (1981) Building Failures: Diagnosis and Avoidance, Spon Press.

9 Richardson, B., (1995). Remedial Treatment of Buildings. 2nd Edition, London: Architectural Press.

BACHELOR OF ARCHITECTURE

AR314C **COMPUTER IN ARCHITECTURE - VI**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
-	4	100	-		100	4	-

INTENT:

To appreciate the potential of the computer as an aid to the architect in both drawing and design. **CONTENT:**
Navisworks, 3D Studio Max
(Helps students to do coordination between multi disciplines, preparing construction drawings, visualization.)

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.
Each student must produce individual work for evaluation.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignments/Quizzes/Tutorial Tests/ Project/Presentations/Performance in the class	60%

READING:

Relevant software manuals

BACHELOR OF ARCHITECTURE

AR316C **EDUCATIONAL TOUR -VI**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
-	-	100	-	-	100	2	-

INTENT:

To expose students to Historical, traditional and Contemporary Architecture

CONTENT:

Vacation Assignment/ Study tour is to be undertaken in 6th Semester.

This assignment could be an appreciation of a noted building or a study tour for visiting places of architectural interest both traditional and contemporary. The choice of the building to be documented and the places to be visited will be decided by the department. The assignment may be given as group work (4 to 6 students per group). The students have to submit/present a photo-documentation report on the architectural appreciation or the study tour within 15 days from the beginning of the 6thSemester.

BACHELOR OF ARCHITECTURE

AR401C **PRACTICAL TRAINING-VII**

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
-	-	150	-	150	300	32	3

INTENT:

To offer students an opportunity to work in an architect's office/ organizations and get acquainted with the demands of the profession

CONTENT:

The professional training shall be for duration of minimum twenty four (24) working weeks (SIX MONTHS) in various aspects of architectural practice. During this period, the candidate shall produce a report comprising of four section viz., Training Report, Building Study, Building Material Study and Detailing study.

The Training Report shall consist of the various drawings, observations, technical graphic data, design, structure, construction methods, services, use of material etc. obtained during the process of training. The building study shall be a critical appraisal of one of the noted buildings designed and supervised by the firm in which the candidate has taken the training. The Building Material Study shall include pertinent data, characteristics and applications of a contemporary building material. The detailing study shall deal with the various aspects of an interesting detail done by the firm, where the candidate has done the training or any other project of interest Professional training will be carried out as per the professional training rules as prescribed in training manual.

NOTE:

This entire semester will be used for Practical Training which is to be undertaken with an architect registered with the Council of Architecture and should have a minimum professional experience of ten years.

Trainees are required to submit monthly progress reports of the work done by them in the office. These reports will be monitored by a faculty member designated as the Practical Training Coordinator.

A Practical Training Examination will be conducted at the end of the training period, in which the work done by the trainee will be assessed through a viva voce.

	Evaluation	Weightage
I	**Sessional evaluation**	
	Training Report	50%
II	**Portfolio evaluation**	
	Viva-voce	50%