MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(An Autonomous Institute Under RGPV, Bhopal)

SEMESTER :First Semester

Branch -ARCHITECTURE, Scheme Name - 2018

S. No.	Subject Code	Subject Name	Maximum Minimum Marks Alloted														MOOC						Credit Allot		Total Credit
			Theory								Practical														
			End Sem		Mid sem		Quiz Ass.		Proficiency in Subject/Course		End Sem		Lab Work		Quiz Ass.		End Sem		Lab Work		Quiz /Assignment		Theory	Practical	
			Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min	Max	Min	Max.	Min	Max.	Min	Max.	Min	Max.	Min			
1	210101	Architecture Design – I	100	40	30	-	20	-			50	20	50	-	-	-	-	-	-	-	-	-	5	3	8
2	210102	Architectural Materials	50	20	30	-	20	-			-	-	-	-	-	-	-	-	-	-	-	-	3	0	3
3	210103	Graphics – I	50	20	30	-	20	-			50	20	50	-	-	-	-	-	-	-	-	-	5	1	6
4	100103	Technical English	70	28	20	-	10	-			-	-	-	-	-	-	-	-	-	-	-	-	2	0	2
5	210105	History of Architecture- I	50	20	30	-	20	-			-	-	-	-	-	-	-	-	-	-	-	-	3	0	3
6	210107	Workshop – I	-	-	-	-	-	-			20	10	50	-	-	-	-	-	-	-	-	-	0	2	2
7	210108	Structure - I	50	20	30	-	20	-			-	-	-	-	-	-	-	-	-	-	-	-	3	0	3
			370	**148**	**170**	**-**	**110**	**-**			**120**	**50**	**150**	**-**	**0**	**-**	**0**	**0**	**0**	**0**	**0**	**0**	**21**	**6**	**27**

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(An Autonomous Institute Under RGPV, Bhopal)

SEMESTER :Second Semester

Branch -ARCHITECTURE, Scheme Name - 2018

S. No.	Subject Code	Subject Name	Maximum Minimum Marks Alloted														MOOC						Credit Allot		Total Credit
			Theory								Practical														
			End Sem		Mid sem		Quiz Ass.		Proficiency in Subject/Course		End Sem		Lab Work		Quiz Ass.		End Sem		Lab Work		Quiz /Assignment		Theory	Practical	
			Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min	Max	Min	Max.	Min	Max.	Min	Max.	Min	Max.	Min			
1	210201	Architectural Design - II	100	40	30	-	20	-			50	20	50	-	-	-	-	-	-	-	-	-	5	3	8
2	210202	Building Construction - I	50	20	30	-	20	-			20	10	30	-	-	-	-	-	-	-	-	-	3	3	6
3	210203	Graphics – II	50	20	30	-	20	-			20	10	30	-	-	-	-	-	-	-	-	-	2	1	3
4	210205	History Of Architecture- II	50	20	30	-	20	-			-	-	-	-	-	-	-	-	-	-	-	-	3	0	3
5	210206	Theory Of Design	50	20	30	-	20	-			-	-	-	-	-	-	-	-	-	-	-	-	2	0	2
6	210207	Workshop-II	-	-	-	-	-	-			20	10	30	-	-	-	-	-	-	-	-	-	0	2	2
7	210208	Structure - II	50	20	30	-	20	-			-	-	-	-	-	-	-	-	-	-	-	-	3	0	3
			350	**140**	**180**	**-**	**120**	**-**			**110**	**50**	**140**	**-**	**0**	**-**	**0**	**0**	**0**	**0**	**0**	**0**	**18**	**9**	**27**

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(An Autonomous Institute Under RGPV, Bhopal)

SEMESTER :Third Semester

Branch -ARCHITECTURE, Scheme Name - 2018

S. No.	Subject Code	Subject Name	Maximum Minimum Marks Alloted														MOOC						Credit Allot		Total Credit
			Theory								Practical														
			End Sem		Mid sem		Quiz Ass.		Proficiency in Subject/Course		End Sem		Lab Work		Quiz Ass.		End Sem		Lab Work		Quiz /Assignment		Theory	Practical	
			Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min	Max	Min	Max.	Min	Max.	Min	Max.	Min	Max.	Min			
1	210301	Architectural Design-II	100	40	30	-	20	-			50	20	50	-	-	-	-	-	-	-	-	-	5	3	8
2	210302	Building Construction-II	50	20	30	-	20	-			50	20	50	-	-	-	-	-	-	-	-	-	3	3	6
3	210303	Graphics-III	-	-	-	-	-	-			50	20	50	-	-	-	-	-	-	-	-	-	0	3	3
4	210304	Surveying & Levelling	50	20	30	-	20	-			-	-	-	-	-	-	-	-	-	-	-	-	3	0	3
5	210305	History of Architecture-III	50	20	30	-	20	-			-	-	-	-	-	-	-	-	-	-	-	-	3	0	3
6	210306	Structure-III	50	20	30	-	20	-			-	-	-	-	-	-	-	-	-	-	-	-	3	0	3
7	210307	Summer Internship Project-I	-	-	-	-	-	-			50	-	-	-	-	-	-	-	-	-	-	-	0	1	1
8	100002(O)	Biology for Engineers/Architects (Audit Course)	50	20	30	-	20	-			-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
			350	**140**	**180**	**-**	**120**	**-**			**200**	**60**	**150**	**-**	**0**	**-**	**0**	**0**	**0**	**0**	**0**	**0**	**17**	**10**	**27**

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(An Autonomous Institute Under RGPV, Bhopal)

SEMESTER :Fourth Semester

Branch -ARCHITECTURE, Scheme Name - 2018

S. No.	Subject Code	Subject Name	Maximum Minimum Marks Alloted														MOOC						Credit Allot		Total Credit
			Theory								Practical														
			End Sem		Mid sem		Quiz Ass.		Proficiency in Subject/Course		End Sem		Lab Work		Quiz Ass.		End Sem		Lab Work		Quiz /Assignment		Theory	Practical	
			Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min	Max	Min	Max.	Min	Max.	Min	Max.	Min	Max.	Min			
1	210401	Architectural Design - IV	100	40	30	-	20	-			50	20	50	-	-	-	-	-	-	-	-	-	5	3	8
2	210402	Building Construction - III	50	20	30	-	20	-			20	10	30	-	-	-	-	-	-	-	-	-	3	3	6
3	210403	Building Services - I	50	20	30	-	20	-			-	-	-	-	-	-	-	-	-	-	-	-	3	0	3
4	210404	History of Architecture - IV	50	20	30	-	20	-			-	-	-	-	-	-	-	-	-	-	-	-	3	0	3
5	210405	Structure - IV	50	20	30	-	20	-			-	-	-	-	-	-	-	-	-	-	-	-	3	0	3
6	210407	Tour/Seminar/Workshop/NASA Training During Winter Break	-	-	-	-	-	-			-	-	50	20	-	-	-	-	-	-	-	-	0	1	1
7	DE-1	Elective-I	50	20	30	-	20	-			-	-	50	-	-	-	-	-	-	-	-	-	2	1	3
			350	**140**	**180**	**-**	**120**	**-**			**70**	**30**	**180**	**20**	**0**	**-**	**0**	**0**	**0**	**0**	**0**	**0**	**19**	**8**	**27**

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(An Autonomous Institute Under RGPV, Bhopal)

SEMESTER :Fifth Semester

Branch -ARCHITECTURE, Scheme Name - 2018

S. No.	Subject Code	Subject Name	Maximum Minimum Marks Alloted														MOOC						Credit Allot		Total Credit
			Theory								Practical														
			End Sem		Mid sem		Quiz Ass.		Proficiency in Subject/Course		End Sem		Lab Work		Quiz Ass.		End Sem		Lab Work		Quiz /Assignment		Theory	Practical	
			Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min	Max	Min	Max.	Min	Max.	Min	Max.	Min	Max.	Min			
1	210501	Architectural Design - V	100	40	30	-	20	-			50	20	50	-	-	-	-	-	-	-	-	-	5	3	8
2	210502	Building Construction - IV	50	20	30	-	20	-			20	8	30	-	-	-	-	-	-	-	-	-	3	3	6
3	210504	Building Science & Energy Conservation	50	20	30	-	20	-			-	-	-	-	-	-	-	-	-	-	-	-	3	0	3
4	210507	Summer Internship Project - II	-	-	-	-	-	-			50	20	-	-	-	-	-	-	-	-	-	-	0	1	1
5	210508	Self Study, Seminar (SWAYAM/ NPTEL & mooc)	-	-	-	-	-	-			-	-	100	-	-	-	-	-	-	-	-	-	0	2	2
6	210510	Building Services II (Electrical & Mechanical)	50	20	30	-	20	-			-	-	-	-	-	-	-	-	-	-	-	-	3	0	3
7	Elective-2	Department Elevtive	50	20	30	-	20	-			-	-	-	-	-	-	-	-	-	-	-	-	3	0	3
			300	**120**	**150**	**-**	**100**	**-**			**120**	**48**	**180**	**-**	**0**	**-**	**0**	**0**	**0**	**0**	**0**	**0**	**17**	**9**	**26**

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(An Autonomous Institute Under RGPV, Bhopal)

SEMESTER :Sixth Semester

Branch -ARCHITECTURE, Scheme Name - 2018

S. No.	Subject Code	Subject Name	Maximum Minimum Marks Alloted												MOOC						Credit Allot		Total Credit
			Theory						Practical														
			End Sem		Mid sem		Quiz Ass.		End Sem		Lab Work		Quiz Ass.		End Sem		Lab Work		Quiz /Assignment		Theory	Practical	
			Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min	Max	Min	Max.	Min	Max.	Min	Max.	Min	Max.	Min			
1	210601	Architectural Design - VI	100	40	30	-	20	-	50	20	100	-	-	-	-	-	-	-	-	-	4	6	10
2	210602	Building Services -III (Acoustic & Fire Fighting)	50	20	30	-	20	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	4
3	210604	Working Drawing	-	-	-	-	-	-	20	8	30	-	-	-	-	-	-	-	-	-	0	2	2
4	210607	Tour/ Seminar/ Workshop/ Training During Winter Break	-	-	-	-	-	-	50	20	-	-	-	-	-	-	-	-	-	-	0	1	1
5	210608	Site Planning and Landscaping Architecture	50	20	30	-	20	-	-	-	-	-	-	-	-	-	-	-	-	-	3	0	3
6	DE-3	Elective-III	50	20	30	-	20	-	-	-	-	-	-	-	-	-	-	-	-	-	3	0	3
7	DE-4	Elective-IV	-	-	-	-	-	-	-	-	-	-	-	-	75	30	25	10	-	-	3	0	3
			250	**100**	**120**	**-**	**80**	**-**	**120**	**48**	**130**	**-**	**0**	**-**	**75**	**30**	**25**	**10**	**0**	**0**	**17**	**9**	**26**

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(An Autonomous Institute Under RGPV, Bhopal)

SEMESTER :Seventh Semester

Branch -ARCHITECTURE, Scheme Name - 2018

S. No.	Subject Code	Subject Name	Maximum Minimum Marks Alloted												MOOC						Credit Allot		Total Credit
			Theory						Practical														
			End Sem		Mid sem		Quiz Ass.		End Sem		Lab Work		Quiz Ass.		End Sem		Lab Work		Quiz /Assignment		Theory	Practical	
			Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min	Max	Min	Max.	Min	Max.	Min	Max.	Min	Max.	Min			
1	210701	Architectural Design -VII	-	-	-	-	-	-	100	40	100	-	-	-	-	-	-	-	-	-	0	9	9
2	210702	Advance Building Construction	50	20	30	-	20	-	20	8	30	-	-	-	-	-	-	-	-	-	2	3	5
3	210703	Project Management & Building Economics	50	20	30	-	20	-	-	-	-	-	-	-	-	-	-	-	-	-	3	0	3
4	210704	Estimating and Costing & Specifications	50	20	30	-	20	-	-	-	-	-	-	-	-	-	-	-	-	-	3	0	3
5	210706	Summer Internship Project -III	-	-	-	-	-	-	50	20	-	-	-	-	-	-	-	-	-	-	0	1	1
6	210707	Intellectual Property Rights	50	20	30	-	20	-	-	-	-	-	-	-	-	-	-	-	-	-	3	0	3
7	DE-5	Department Elective	-	-	-	-	-	-	-	-	-	-	-	-	75	30	-	-	25	10	3	0	3
			200	**80**	**120**	**-**	**80**	**-**	**170**	**68**	**130**	**-**	**0**	**-**	**75**	**30**	**0**	**0**	**25**	**10**	**14**	**13**	**27**

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(An Autonomous Institute Under RGPV, Bhopal)

SEMESTER :Eight Semester

Branch -ARCHITECTURE, Scheme Name - 2018

S. No.	Subject Code	Subject Name	Maximum Minimum Marks Alloted												MOOC						Credit Allot		Total Credit
			Theory						Practical														
			End Sem		Mid sem		Quiz Ass.		End Sem		Lab Work		Quiz Ass.		End Sem		Lab Work		Quiz /Assignment		Theory	Practical	
			Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min	Max	Min	Max.	Min	Max.	Min	Max.	Min	Max.	Min			
1	100007	Disaster Management	70	28	20	-	10	-	-	-	-	-	-	-	-	-	-	-	-	-	3	0	3
2	210801	Architectural Design - VIII	-	-	-	-	-	-	150	60	100	-	-	-	-	-	-	-	-	-	0	12	12
3	210802	Urban Design	50	20	30	-	20	-	20	8	30	-	-	-	-	-	-	-	-	-	3	1	4
4	210803	Professional Practice & Ethics	50	20	30	-	20	-	-	-	-	-	-	-	-	-	-	-	-	-	3	0	3
5	210804	Dissertation	-	-	-	-	-	-	20	8	30	-	-	-	-	-	-	-	-	-	0	2	2
6	210806	Tour/ Seminar/ NASA/ Workshop/ Training During Winter Break	-	-	-	-	-	-	50	20	-	-	-	-	-	-	-	-	-	-	0	1	1
7	de-6	Elective - VI	50	20	30	-	20	-	-	-	-	-	-	-	-	-	-	-	-	-	3	0	3
			220	**88**	**110**	**-**	**70**	**-**	**240**	**96**	**160**	**-**	**0**	**-**	**0**	**0**	**0**	**0**	**0**	**0**	**12**	**16**	**28**

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(An Autonomous Institute Under RGPV, Bhopal)

SEMESTER :Ninth Semester

Branch -ARCHITECTURE, Scheme Name - 2018

S. No.	Subject Code	Subject Name	Maximum Minimum Marks Alloted												MOOC						Credit Allot		Total Credit
			Theory						Practical														
			End Sem		Mid sem		Quiz Ass.		End Sem		Lab Work		Quiz Ass.		End Sem		Lab Work		Quiz /Assignment		Theory	Practical	
			Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min	Max	Min	Max.	Min	Max.	Min	Max.	Min	Max.	Min			
1	210903	Professional Training	-	-	-	-	-	-	400	160	300	-	-	-	-	-	-	-	-	-	0	18	18
2	DE-7(N)	MOOC Course	-	-	-	-	-	-	-	-	-	-	-	-	75	30	-	-	25	10	2	0	2
			0	**-**	**0**	**-**	**0**	**-**	**400**	**160**	**300**	**-**	**0**	**-**	**75**	**30**	**0**	**0**	**25**	**10**	**2**	**18**	**20**

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR
(A Govt. Aided UGC Autonomous NACC Accredited Institute Affiliated to RGPV, Bhopal)
SCHEME OF EXAMINATION - **BACHELOR OF ARCHITECTURE**

First Year First Semester

1. Architecture Design – I (Code - 210101)

Objectives –

The course aims to obtain the fundamentals of design – elements and principles that govern the aesthetic aspects of design, experimental understanding on graphic elements and compositions in 2D / 3D, experimental understanding of colours, textures and compositions. Experimental understanding of form building, experimental understanding of design.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot				L	T	P	
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional						
1.	210101	Architecture Design – I	DC-1	100	30	20	50	50	250	7	2	3	2*(1.5)	**8**

UNIT-1 GRAPHIC ELEMENTS, COMPOSITIONS & COLOURS – 2D

Impart elements and principles of design theory with sample exercises supported by illustrative PowerPoint presentations.

Exercises:

1. Dots, lines, shapes & forms
2. Hatching patterns
3. 2D compositions with geometric & organic shapes
4. Impart colour theory with sample exercises supported by illustrative ppt presentations.
5. Colour compositions on 2d compositions.
6. Textures replacing colours.

UNIT-2 3DCOMPOSITIONS / COLOUR & TEXTURE APPLICATIONS

1. Texture portfolio
2. 3D compositions with geometric & organic forms (model)
3. Color compositions on 3D compositions (model)
4. Texture applications& material compositions (model)

UNIT-3 2D & 3D ABSTRACTIONS

1. 2D image abstraction (colour, black/white, grey tone/mono colour, textures)
2. 3D image abstraction (colour, black/white, grey tone/mono colour, textures)
3. 3D model abstraction (colour)

UNIT-4 FORM BUILDING(MODELS)

Make a vivid PowerPoint presentation / video presentation on form building models with ample samples

Exercises:

1. 3D sculpture exercises (additive& subtractive forms – solids & voids)
2. Space frame model using a linear module (space creation)
3. Origami models (space creation + solids & voids)
4. Life scale models (group)

UNIT-5 PRODUCT DESIGN

Make a vivid PowerPoint presentation on product design with emphasis on user, purpose, material & form.

Exercises:

- Small scale product design
- Life scale furniture design (group)
- 3D model abstraction (colour)

COURSE OUTCOME: After completion of this course student will be able to-

CO1	**Identify** the elements and principle of design theory
CO2	**Associate** various graphical elements
CO3	**Apply** principle of design/additive & subtractive form (using 2d/ 3d compositions)
CO4	**Illustrate** the color theory principles using color compositions & texture
CO5	**Evaluate** the geometric & organic forms (2D & 3D in building)
CO6	**Develop** analytical thinking towards spatial analyses of visual culture

REFERENCES:

1. Charles Wallschlacgerm& Cynthia Busic-Snyder, Basic Visual Concepts and Principles for Artists, Architects and Designers, McGraw Hill, New York 1992.
2. V.S. Pramar, Design fundamentals in Architecture, Somaiya Publications Pvt. Ltd., New Delhi, 1973.
3. Francis D. K. Ching - Architecture - Form Space and Order Van Nostrand Reinhold, Co., (Canada), 1979.
4. Elda Fezei, Henry Moore, Hamlyn, London, New York, Sydney, Toronto, 1972.
5. Exner. V, Pressel. D, Basics Spatial Design, Birkhanser, 2009

Note: Five questions shall be asked. All questions may have equal or varied weightage in end semester exams.

2. Building Materials (Code - 210110)

Objectives –

The course aims to obtain various materials and systems, their properties and applications, develop a fundamental understanding of the relationship of materiality to construction systems and techniques, the intrinsic relationship of building materials to structural systems and environmental performance.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
2	210110	Building Materials	BSAE-1	50	30	20	-	-	100	3	2	1	-	**3**

UNIT-1

- Clay and clay products (bricks, tiles), stones.
- Composition of cement, properties & various types of cement and their uses.
- Lime, sand, aggregate & mortar.

UNIT-2

- Timber types, qualities, and defects in timber seasoning.
- Processed materials- plywood, laminates, fiberboards, lightweight boards, panels & clay products.

UNIT-3

- Special functional need and category of building materials abrasives, adhesives, asbestos, asphalt, bitumen, cork, electrical insulators, fuels, gypsum, heat insulation materials, lubricants, rubber sheets, roof coverings, solders, sound absorb materials, tar, turpentine.
- Proprietary building materials: - Paints, Varnishes, distempers wallpaper, floor coverings, tiles, vinyl's, polyesters, fittings, furnishing materials for interiors& exteriors polymers, plastics resins and advanced surface finishes for interior and exterior.

UNIT-4

- Classification of glass, types of glass, physical properties and uses of glass in building industries, a special variety of glass and architectural glass.

UNIT-5

- Bamboo as plant classification, species, geographical distribution, Anatomy of Bamboo, Properties, strength, processing, harvesting, working of Bamboo tools – Treatment and preservation of Bamboo and uses of Bamboo. Termite protection, sewage protection, fire protection materials of special needs.
- Industrial, agricultural and mineral wastes and their utilization as building materials: Fly ash, blast furnace slag, calcium carbonate, lime kiln rejects, by-product, gypsum, red mud, throw-away packages, rice husk, sawdust, wooden chips, choir waste, wood wool, tailings etc. their application in components of different types of buildings.

Note: Assignments should be in the form of small reports, market surveys, seminars and notes on above-mentioned topics. The works of CBRI, NBO, HUDCO, and other related institutions be referred to and discussed.

COURSE OUTCOME: After completion of this course student will be able to-

CO1	**Classify** different types of building materials used primarily in building construction work
CO2	**Analyze** building materials and its influence on prevailing architectural styles
CO3	**Illustrate** specific use of materials and ascertain their application
CO4	**finalize** specific building materials for different types of buildings
CO5	**Consider** local material and its application techniques for low cost construction
CO6	**Integrate** the market survey of different types of material

TEXT BOOKS:

1. S.C. RANGWALA, " Engineering Materials" Published 2012
2. S.P. ARORA & BINDRA, "Building Construction" Published Dec 2010

REFERENCE BOOKS:

1. Advances in Building Materials and Construction, CBRI.
2. Specification Year Book

3. Graphics – I (Code – 210103)

Objectives –

The course aims to obtain presentation skills, visual expression and representation, imaginative thinking and creativity through a hands on working with various mediums and materials, grammar of art by involving them in a series of free hand exercises both indoor and outdoor to understand form, proportion, scale, etc., exercises that look at graphic and abstract representations of art, concepts and fundamentals of Architectural Drawing, language of architecture & buildings as two dimensional and three dimensional representations.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
3	210103	Graphics – I	DC- 2	50	30	20	50	50	200	7	2	3	2	**6**

UNIT-1 INTRODUCTION TO DRAWING

- Introduction to drawing instruments and their use
- **Lettering and Dimensioning:** Introduction to architectural lettering, styles, proportion and scale, Methods of dimensioning
- **Lines:** different types of lines, their thickness and applications in architectural drawing.
- **Scale:** Architectural Metric scale, necessity of scaled drawing, selection of scale while preparing architectural drawing.

UNIT-2 GEOMETRICAL DRAWING

- **Introduction to plane geometry:** Construction and development of planar surface–square, rectangle, polygon etc.
- **Construction of conic sections:** Ellipse, parabola and hyperbola
- **Introduction to orthographic projection:** Representation of geometric solids in terms of plan, elevation and side elevation in first angle projection – exercise on simple solids.

UNIT-3 ISOMETRIC VIEW / AXONOMETRIC VIEW

- **Isometric view:** Isometric view of solids, Isometric application in building–buildings with different shape and different types of roofs to include pitched roof, hipped roof, flat roof, vault, cone, dome etc. Conversion of solids to orthographic projection and vice versa.

UNIT-4 BUILDING ELEMENTS AND BUILDING COMPONENTS

- **Building Elements:** Techniques of representing building elements such as doors, windows, steps, chajja, porch, canopy, balcony, parapet, foundation, walls, roofs, column, staircase, difference of levels, furniture fittings such as hand wash basins, WC pans, traps etc. on drawings in plan, elevation and section.
- **Material Indications:** Symbolic representation of building materials as specified by Indian Standard Code of practice.
- **Building components:** Components of a simple residential building through plan, elevation and section.

UNIT-5 ISOMETRIC VIEW / AXONOMETRIC VIEW OF BUILDINGS

- **Isometric view:** Exterior view of a simple residential building showing all building components.
- **Axonometric view:** Axonometric view of a room interior showing all interior components.

COURSE OUTCOME: After completion of this course student will be able to-

CO1	**Visualize** the language of architecture & buildings through as two dimensional and three dimensional representations
CO2	**Interpret** architectural geometry by applying fundamental principles of drawing
CO3	**Develop** the capability of ideation and 3D modeling using drafting tools
CO4	**Describe** spatial relationship using sequential thinking
CO5	**Solve** basic problems involving graphics and spatial manipulations for architectural

	applications to represent the future forms of her/his projects
CO6	**Express** her/his ideas by drawing usingrepresentation techniques and tools in the spatial concept and

REFERENCES:

1. K. Venugopalet al., “Engineering Drawing + AutoCAD”, New Age International Publishers, 2010.
2. Francis D.K Ching, “Architectural Graphics- Fifth Edition”, John Wiley and Sons, New Jersey,2009.
3. N.D. Bhatt et al., “Engineering Drawing” (53rd Edition), Charotar Publishing House, Anand, India,2014.
4. Morris et al., “Geometrical Drawing for Art Students”, Universities press, 2012.
5. Leslie Martin C., “Architectural Graphics”, The Macmillan Company, New York, 1978.

Note: Four questions shall be asked. First question will contain 20marks & will be compulsory. Other three questions will be of equal marks and one question may have option.

4. Structure –I (Code – 210108)

Objectives –

The course aims to obtain understanding the basic knowledge & overview of structural systems used in buildings, historical development of structural form and the evolution of structural design knowledge, from Gothic cathedrals to long span structural systems, principles of structural mechanics & how bending moment and shear force diagrams are used to analyze simple structural behavior.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
6	210108	Structure -I	BSAE- 2	50	30	20	-	-	100	3	2	1	-	**3**

UNIT-1

Statics of a particle, composition and resolution of forces, moment of a force, parallel forces, couples, general conditions of equilibrium.

UNIT-2

Center of gravity and moment of inertia of composition and cut out sections, parallel and Perpendicular axes theorem, stability of equilibrium.

UNIT-3

Simple stresses and strains, direct stresses, compound stresses.

UNIT-4

Shear force and bending moments for strained beams subjected to concentrated load and Distributed loadings (Simply supported and cantilever only) support reactions.

UNIT-5

Stress in beams: Direct, bending and shearing stress in beams.

Note: Assignments work should include design and analysis of simple elements as stated above with drawings.

COURSE OUTCOME:-After completion of this course student will be able to-

CO1	**Elaborate** various principles of strength of materials and behavior of forces
CO2	**Establish** relationship between the bending to the material property and geometry
CO3	**Apply** pure bending and shear equation
CO4	**Analysis** the stress and strain conditions due to bi-axial stress system
CO5	**Compute** stresses at various level of beam
CO6	**Compute** support reactions in simply supported, cantilever and over-hang beams for a given set of loading

TEXT BOOKS:

1. S.B. JUNNARKAR, “Applied Mechanics”2015
2. RAMAMURTHAM, “Applied Mechanics”2010
3. S.B. JUNNARKAR/H.J. SHAH, “Mechanics of Structure Vol.1” : 32nd Edition : 2016
4. DR. B.C. PUNAMIA, “Strength of Materials” 2018

REFERENCE BOOKS:

IS Codes

1. IS 465: 2000
2. SP-16 3
3. SP-34

5. History of Architecture- I (Code – 210105)

Objectives –

The course aims to obtain knowledge of evolution with regarding to Indian architecture, in India as this is an integrated expression of art, culture, vernacular material and techniques of the place, designs that are rooted in this country and suitable to the lifestyle of its people, varied culture and the resulting architectural productions which are unique in time and place.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot				L	T	P	
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	lab work & Sessional						
5	210105	History of Architecture- I	DC- 3	50	30	20	-	-	100	3	2	1	-	**3**

UNIT-1RIVER VALLEY CIVILIZATIONS OF INDIA

Pre historic civilization, Neolithic & Paleolithic.Indus Valley Civilization: culture and pattern of settlement. Vedic culture - Vedic village and rudimentary forms of bamboo and wooden construction - Aryan civilization - origins of early Hinduism.

UNIT-2 BUDDHIST ARCHITECTURE

Origins of Buddhism and Jainism, Evolution of Buddhist Architecture and its salient features- Examples – Ashokan Pillar at Sarnath and Sanchi stupa. Chaitya hall and Vihara - Buddhist rock cut architecture Examples - Chaitya hall at Karli, Viharas at Nasik.

UNIT-3 EGPYTIAN ARCHITECTURE

Study of the influences & architectural character of ancient Egypt with relevant examples of Tomb & Temple structures (Cult and Mortuary temples), Mastaba – development and typical components of Pyramids – Complex of Zoser, Pyramid of Cheops and Cephren.

UNIT-4 WEST ASIATIC ARCHITECTURE

Study of Mesopotamian architecture, Urbanization in the Fertile Crescent – Sumerian, Babylonian, Assyrian and Persian (with examples of Ziggurat, Sargon palace & Palace of Persepolis).
Mayan Civilization- Ceremonial platforms, palaces, pyramids and temples.

UNIT-5 INTRODUCTION TO SOUTH EAST ASIAN AND EAST ASIAN ARCHITECTURE

Study of prominent architectural character of south Asian countries. Study of relevant examples like Angkor wat Cambodia. Introduction to Chinese architecture and typical examples of Pagoda, Pylons, Great Wall of China, temples etc.
Introduction to Japanese architecture, its characteristic features and typical examples Pagoda, temples, monasteries, tea house etc.

COURSE OUTCOME: After completion of this course student will be able to-

CO1	**Visualize** basic concepts regarding the historical and architectural development in ancient civilization as an integrated expression of art, culture, vernacular material and techniques of the place
CO2	**Observe** diverse artistic and architectural expressions with regard to the historical context in which they are developed
CO3	**Illustrate** visual and verbal vocabularies of Indian, Egyptian, west Asiatic and Eastern Architecture
CO4	**Evaluate** architectural forms and space with reference to technology, style and character
CO5	**Reproduce** with sketches, audio and visuals various architectural forms and styles
CO6	**Develop** an appreciation of varied cultures and the resulting architectural productions which are unique in time and place & suitable to the lifestyle of its people

TEXT BOOKS:

1. SATISH GROVER, “The Architecture of Indian (Buddhist & Hindu)”
2. A VOLWANSEN, “Living Architecture (Indian)”, Oxford & IBH London
3. Pier LuigiNervi, General Editor, “History of World Architecture – Series”

REFERENCE BOOKS:

1. PERCY BROWN, “Indian Architecture (Buddhist & Hindu), Taraporewala& Sons, Bombay. 2nd Edition
2. CHRISTOPHERTADGILL, “History of Architecture in India”, Phaidon Press.
3. History Of Architecture by Sir Bannister Fletcher 20th edition
4. The Story Of Architecture by Patrick Nuttgens 2nd Edition
5. Space, Time And Architecture by Siegfried Gideon 5th Edition

6. Workshop – I (Code – 210107)

Objectives –

The course aims to obtain the ability to appreciate the three dimensional implications of design and to introduce the students to the techniques of model making, basics of rendering, presentation skills &model making with various materials.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
6	210107	Workshop – I	SEC -1	-	-	-	20	30	50	4	-	-	4	**2**

UNIT-1 VISUAL ART

General characteristics of visual art/Fundamentals of visual art: Space, Form, size, Shape, Line, Color, Tone values, Perspective, Design and aesthetic organization of Visual elements in art object (Composition).The use of two and three dimensions in visual art. Tactile quality in art.Environment and art.Perceptual and conceptual aspects in art. Use of various kinds of papers in art making.

UNIT-2 CARPENTRY

Introduction to the carpentry tools, processes, joints and wood working machines. Preparation of various carpentry joints, fixing of plywood,Blackboards, commercial boards and their application in furniture. Models in appropriate materials for understanding of joinery in wooden construction.

UNIT-3 FOUNDRY

Introduction, type of patterns, pattern making, preparation of moulds and moulding equipment details

UNIT-4 FABRICATION

Introduction to welding equipments, processes and its applications.

UNIT-5 PAINTING & POLISHING

Classification of paints, varnishes ingredients of paints, painting methods-brush, spray, hot spray etc.

COURSE OUTCOME: After completion of this course student will be able to-

CO1	**Review** various tools and techniques in visual communication and model making
CO2	**Incorporate** basics of rendering, presentation skills &model making with various materials
CO3	**Associate** properties of different materials and products for designing and model making
CO4	**Apply** two dimension and three dimension compositions to designing and model making
CO5	**Produce** art works from various materials individually and in team
CO6	**Integrate** these materials in creating their design models in further studies

REFERENCES:

1. BENN, the book of the house ,Errnest Benn limited London
2.Jannsen, Constructional Drawings & Architectural models, Kari Kramer Verlag Stuttgart, 1973.
3. Harry W.Smith, The art of making furniture in miniature, E.P.Duttor Inc., New York, 1982.
4. Thames and Hudson Manual of Rendering with Pen and Ink-Robert W Gill.

7. Professional Communication (Code – 210111)

Objectives –

The course aims to obtain communication skills in English by developing their listening, speaking, reading and writing skills, speaking skills with specific reference to prospective/actual clients, suppliers, business partners and colleagues, reading ability of journals, research articles etc& develop their writing skills especially writing project proposals and reports.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
7	210111	Professional Communication	SEC -2	50	30	20	-	-	100	2	1	1	-	**2**

Unit -1 Introduction to Language & Linguistics

An Introduction to Linguistics, IPA, English Phonetic Symbols/Sign & Sounds, Place & Manner of Articulation.

Unit -2 Communication

Communication: Approaches, Elements, Types, Process, Models; Management Communication (Levels of Communication) and Grapevine Communication, Verbal and Nonverbal Communication; Barriers to Communication; Johari Communication Window.

Unit-3 Application of Linguistic Ability

1. Listening: Factors Affecting Listening and Improving Listening.
2. Speaking: Making Speeches, Presentation, Group Discussion, Meeting, Interview, Debate.

Unit-4 Grammar & Vocabulary:

Grammar: Parts of Speech, Subject-verb Agreement, Active and Passive Voice, conditional sentences.
Vocabulary: Using the dictionary and thesaurus, word formation, prefix & suffix, idioms, phrasal verbs.

Unit-5 Report Writing:

Reading Comprehension: Stories, Passages, Poetry and Scientific Text

Writing: Essentials of good writing, Technical Descriptions of Simple Engineering Objects; Formal (Application, Email, CV, Résumé, Memo, Report writing)

*****Material for story and prose is to be selected by concerned teacher in class.

COURSE OUTCOME: After completion of this course student will be able to-

CO1	**Speak** clearly effectively and appropriately in a public forum to a variety of audiences and purposes (LOTS1)
CO2	**Prepare and deliver** oral presentations and arguments acceptable within the Engineering Profession effectively (LOTS3)
CO3	**Demonstrate** knowledge and comprehension of major text and traditions in language as well as its social, cultural and historic context (LOTS3)
CO4	**Read** a variety of text critically and analytically so as to demonstrate in writing and / or speech the interpretations of those texts (HOTS4)
CO5	**Interpret** text written in English assessing the result in written and oral arguments using appropriate material for support (HOTS3)
CO6	**Implement** professional work habits, including those necessary for effective collaboration and corporation with others (HOTS4)

Reference Books: -

- Technical Communication —- By Meenakshi Raman, OUP. 2015
- Understanding Human Communication — By Ronald Alderman by OUP2016
- Communication Skills for Engineers – Pearson Education.
- Effective Business communication – Tata McGraw Hill 2008
- Business Communication – OUP, Tata McGraw. 2005
- Practical English Grammar by Thomson Martinet – Oxford University Press 1986
- A Handbook of Language laboratory by Cambridge University Press.2009

FIRST YEAR SECOND SEMESTER

1. Architecture Design – II (Code – 210201)

Objective –
The course aims to obtain o learn the basic principles of space making, the forms of building through intensive designstudio practice.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
1	210201	Architecture Design – II	DC- 4	100	30	20	50	50	250	7	2	3	2*(1.5)	**8**

PROCESS:

- Fragment the pre design process and help students build formats/templates for analysis. Guide to derive architectural design data through various studies
- Guide to program and to understand the causes for architectural spaces Guide to understand context & its influences
- Guide to learn and experiment the design process
- Guide to conceptualize the design/evolution of architecture Guide to document the design project

Note: minimum four design problem s shall be introduces in the semester out of which, one major problem one small problem and two shall be time bound problem**.**Learning the basic principles of space making and form building through intensive design studio practice.

PROJECT 1(Prototype): SINGLE SPACE DESIGN
Enlighten the student on the design project overview & the design process to be followed through relevant presentations.
Present an analytical discourse on an identical architectural design project covering
a) Architectural elements & relevant architectural terms
b) Space planning (response to user & purpose with logic & application of standards)
c) Material, form & structure
d) Aesthetics & visual perceptions

PROJECT 2(Prototype): SMALL SCALE MULTI-SPACE DESIGN
Enlighten the student on the design project overview & the design process to be followed through relevant presentations.
Present an analytical discourse on an identical architectural design project covering
a) Architectural, elements, spaces & terms
b) Noted projects & architects
c) Space planning (response to user & purpose with logic & application of standards)
d) Site planning (contextual response, response to the natural environment, response to views + general site planning guidelines)
e) Material, form & structure
f) Aesthetics & visual perceptions.

PROJECT 3 & 4(Prototype): Time bound Problems of 6 hours to 48 hours.

COURSE OUTCOME: After completion of this course student will be able to-

CO1	**Interpret** architectural design fundamentals (Relationship between people to built forms & built forms to environment)
CO2	**Summarize** different functional spaces and their space requirements
CO3	**Identify** human standards of design based on ergonomics
CO4	**Analyze** pre-design process, design process & conceptualization stages in design
CO5	**Design** objects based on the concept of space and form bymodifying and evaluating an existing space
CO6	**Express** their designs through communication skills – verbal, script & graphics

REFERENCES:

1. Mike W.Lin, Drawing & Designing with confidence – A step by step guide, John Wiley&sons,USA,1998
2. Criss B.Mills, Designing with models : A Studio guide to making & using architectural models, Thomson & Wadsworth, USA,2000. 1st Edition
3. DeChiara and Callender, Time saver standards for building types, McGraw hill company 1990
4. Bousmaha Baiche& Nicholas Walliman, Neufert Architect's data, Blackwell science ltd. 3rd Revised editio
5. Ramsey / Sleeper, National Architectural graphic standards, The American Institute of Architects 12th Edition (AGS 12e) , 2016
6. Space Planning Basics - Mark Karlen2016

Note: Two small design problems shall be given in End Semester Examination.
6 hours examination.

2. Building Construction – I (Code – 210202)

Objective –

The course aims to obtain knowledge basic building components and doors, windows, different types of materials and their use in construction, the different materials& technology available & their application, the various types of roofing and its materials.

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
2	210202	Building Construction - I	BSAE- 3	50	30	20	20	30	150	5	2	1	2*(1.5)	**6**

UNIT-1 LOW-COST CONSTRUCTION

- Introduction toLow-cost construction techniques and materials with combinations of mud and terra – cotta.
- Foundation and wallsin stabilized mud-rammed earth and compact earth blocks

UNIT-2 INTRODUCTION OF BASIC BUILDING COMPONENTS

- Cross-section of a G+1 building to understand foundation, plinth beam, flooring, sill, lintel, slabs, parapet & weathering course
- Foundation: typical types of foundation in stone, brick & RCC. Timbering of trenches, tools, plants, and equipment for excavation.

UNIT-3 WALL

- **Walls:** Types of bricks and stone and their uses.
- **Brick:** definition, and types of bond: English, Flemish & rat trap bond for one brick and half thick wall for corners and T- Junctions, Garden wall bond & ornamental bond.
- **Stone:** Types of stone masonry (random rubble and ashlar).
- **Piers and Quoins**.

UNIT -4 INTRODUCTION TO OPENINGS

- **Doors:**Braced, panel, flush doors, carved entrance doors, and partially glassed doors.
- **Windows:**casement window, bay window, and French window.
- **Ventilators:**Louvered& Top hung ventilator.
- **Arches in brick and stone**: flat, segmental, semi-circular and pointed, plastering and pointing.
- **Lintels and sills**:In brick and stone

UNIT-5 ROOFS

- **Simple configurations and details of various forms of roofs**: Flat, sloped, pyramids and dome.

COURSE OUTCOME- After completion of this course student will be able to-

CO1	**Elaborate** materials and systems, their properties and applications, and their intrinsic relationship to structural systems and environmental performance
CO2	**Compare** the material and construction techniques through site visit and market surveys
CO3	**Develop** a fundamental understanding of the relationship of materiality to construction systems and techniques
CO4	**Illustrate** basic components of a building with its construction details such as Foundation Footing, Wall section, Roofs, and Interior details
CO5	**Produce** detail construction drawings sets of building components and construction techniques
CO6	**Demonstrate** the Studio work using communication skills

REFERENCES:

1. W.B. Mckay – Building construction Vol. 1 (5th edition), Vol. 2 (4th edition) and Vol. 3 (5th edition). ***Fifth edition*** (2013)
2. S.C.Rangwala – Engineering materials (Fortieth edition, 2013) – Charotar Publishing pvt.ltd. ***40th*** Revised and Enlarged : ***2013***
3. Harold B.Olin, John L. Schmidt – Construction principles, Materials and Methods – John Wiley & Sons, Inc. 1995
4. Dr. B.C Punmia – Building construction (10th edition) - Laxmi Publications.
5. Roy Chudley (Author), Roger Greeno (Author) -construction Technology, 4th Edition. 1995
6. S.K. Duggal- Building materials (4th edition) – New age international publishers. 4th revised edition 2012
7. Bureau of Indian standards - Handbook on Masonry Design and Construction (First Revision). 1991
8. Hans Bans –Building construction details practical drawing, 2001.

Note: Total five questions shall be asked. Each question will consist of two parts, one of which will be of 7 marks (which shall be compulsory) and another with 3 marks(which shall be optional).

3. Graphics – II (Code – 210203)

Objectives –

The course aims to obtain the skill of representation in advance drawing techniques, perspective, sciography and Measured Drawing.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CTHRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
3	210203	Graphics – II	DC- 5	50	30	20	20	30	150	4	1	1	2	**3**

UNIT-1 ELEMENTS AND PRINCIPLES OF PERSPECTIVE DRAWING

Principles of perspective drawings and understanding of all relevant terms like Picture Plane, Centre line of vision, Eye Level, Height Line, Vanishing Points, Cone of Vision, Station Point, Horizon line, Ground line etc. Basic principles of perspective drawing , Various types of perspectives - One point perspective, Two point perspective and three point perspective

Exercise on two point exterior perspectives of simple objects and their combination by changing positions of picture plane and stand point in form of Worm's eye view, Normal eye view and Birds eye view.

UNIT-2 TWO POINT PERSPECTIVE VIEW OF BUILDINGS

Construction of Two point perspective grid.

Exercise on Two point Perspective of building Interior by Direct projection Method / Approximate Method. Exercise on Two point Perspective of building exterior by Direct projection Method / Approximate Method. Exercise on Sectional perspective

UNIT-3 ONE POINT INTERIOR PERSPECTIVE

Construction of One point perspective grid

Exercise on One point Interior view of any room viz Bed Room, Kitchen, Drawing room etc. by Direct projection Method / Approximate Method

UNIT-4 SCIOGRAPHY

(a) Principles of Shades and shadows - Techniques of drawing shades and shadows of lines, planes, solids and Architectural Building Elements.

(b) Exercise on Shade and shadow of typical building on Elevation and Site Plan

(c) Exercise on Shades and Shadows in perspective.

UNIT-5 MEASURED DRAWING

Measured drawing of single storied building(s) : To measure and draw the Ground Floor Plan along with plot boundaries, four side elevations, two sections, block plan, site plan of existing single storied building (maximum of 100.0 sq. m. Plinth area). In addition to this drawings shall be prepared based on examples of buildings by giving a sketch design (maximum of 100.0 sq. m Plinth area).

Exercises to include application of shade and shadow in site plan, elevation and exterior perspective.

COURSE OUTCOME: After completion of this course student will be able to-

CO1	**Communicate** their ideas through various drawings
CO2	**Visualize** the design ideas from various angles
CO3	**Represent** advance drawing techniques involving perspective, sciography
CO4	**Produce** architectural drawings using perspective, sciography
CO5	**Prepare** Measured Drawing of any historical building
CO6	**Integrate** these techniques in creating their design drawings in further studies

REFERENCES:

Robert W.Gill, “Perspective From Basic To Creative”, Thames and Hudson, London, 2006

1. Francis D.K Ching, “Architectural Graphics- Fifth Edition”, John Wiley and Sons, New Jersey,2009.
2. John Montague, “Basic perspective Drawing A Visual Approach”, John Wiley and Sons, New Jersey, 2009.
3. Milind Mulick, “Perspective”, Jyotsna prakashan, 2006
4. Ernest Norling, “Perspective Made Easy”, Dover publications, 1999
5. M.G. Shah & C.M. Kale, “Principles of Perspective Drawing”, Asia publishing House, 1965

Note: Four questions shall be asked. First question will contain 20marks & will be compulsory. Other three questions will be of equal marks and one question may have option.

4. Structure –II (Code – 210208)

Objectives –

The course aims to obtain basic knowledge & overview of structural systems used in buildings, the structural form and the evolution of structural design knowledge, from Gothic cathedrals to long span structural systems, simple structural behavior.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
6	210208	Structure -II	BSAE- 4	50	30	20	-	-	100	3	2	1	-	**3**

UNIT-1 OVERVIEW OF VARIOUS TYPES OF STRUCTURAL SYSTEMS IN ARCHITECTURE

Simple RCC frame system used for small span buildings –vaults & domes of various spans – types of trusses & their application for industrial buildings – various configurations in rcc roof slab – RCC folded plate roofing systems – Various types of shell structures – Space frames in steel used for large spans – Tensile structural systems – Suitable examples for all these structural systems.

UNIT-2 BASIC STRUCTURAL CONCEPTS

Various types of loads in buildings – compression and tension in structures – Effect of temperature & settlement on buildings – properties of structural materials such as steel, concrete, RCC, wood, brick & stone – Evolution of the concept of span from architectural history: Temples in Egypt, Greece, South India, Indo- Aryanetc – Vaults & domes in historical buildings: Domes in Pantheon&Hagia Sophia, Vaults during Romanesque, Gothic & Mughal period .

UNIT-3 REINFORCED CEMENT CONCRETE STRUCTURES

Simply spanned RCC slabs & load bearing walls – one way &two way RCC slabs – coffer slab, grid beam slab in RCC – vault, dome, pitched roof, hipped roof in RCC -simple RCC frame structural system up to 5 floors – their application with suitable examples. Concept &various configurations of the folded slab roof – Concept of thin shells – simply curved & doubly curved shells, interpenetrating cylindrical shells, hyperbolic paraboloids, HyPars etc.

UNIT-4 STEEL STRUCTURAL SYSTEMS

Simple steel truss - members in tension & compression – various types of trusses – Warren, Pratt, Fink, Howe, Bowstring, mansard etc – girders & trusses in saw tooth roof configuration, Steel frame domes – Fuller, Geodesic, schwedler dome configurations - Concept of Space frames: various types, single, double & triple layered tubular steel space frames & their use as long span structural system – Concept of tensile roofing system – saddle roof, mast supported, Arch supported, Point supported & their combinations – tensegrity roof structures.

UNIT-5 STRUCTURAL MECHANICS

Composition and Resolution of Forces – concept of stress / strain, young's modulus, typical stress strain curve for ductile & rigid materials, Hooke; law – Theory of Bending Moment & Shear force – their application in buildings for various loads & support conditions (Simply supported, Cantilevered, continuous etc). Simple problems on the above mentioned.

COURSE OUTCOME: After completion of this course student will be able to-

CO1	**Identify** the concept of various structural elements and system
CO2	**Illustrate** the use of different structural systems in building industry
CO3	**Analyze** the structural geometry based on strength and stability criteria
CO4	**Appraise** the built environment based on specific structural system
CO5	**Analyze** simple structural behavior using bending moment and shear force diagrams
CO6	**Apply**basic principles of structural mechanics

REFERENCES:

1. Henry .J.Cowan, Forrest Wilson, *Structural Systems*, Van Nostrand Reinhold Company, New York. 1981
2. Bjorn N Sandekar et al, The structural basics of Architecture – 2nd edition, Routledge, Newyork, 2011.
3. Mario Salvadori, Robert Heller, *Structure in Architecture*, Prentice International Series in Architecture, New Jersey, 15th Printing edition (***1963***)
4. Wayne Place, Architectural structures, John wiley& sons, Canada, 2007.
5. Curt Siegel, Structure and Form in Modern architecture, Reinhold publishing corporation, Newyork,. (1966)
6. Rowland J. Mainstone, Developments in Structural form, Architectural press, Oxford, 1975.1999

5. History of Architecture- II (Code – 210205)

Objectives –

The course aims to obtain knowledge of evolution with regarding to Indian architecture, in India as this is an integrated expression of art, culture, vernacular material and techniques of the place, designs those are rooted in this country and suitable to the lifestyle of its people, varied culture and the resulting architectural productions which are unique in time and place.

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot				L	T	P	
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional						
5	210205	History of Architecture- II	DC- 6	50	30	20	-	-	100	3	2	1	-	**3**

UNIT-1 EVOLUTION OF HINDU TEMPLE ARCHITECTURE:

Hindu forms of worship – Origin and evolution of temple form (Nagar, Dravida&Vesara) - meaning, symbolism, ritual and social importance of temple, categories of temple, and elements of temple architecture.

UNIT-2 NORTHERN INDIAN TEMPLES:

Early shrines of the Gupta Period. Their salient features. Salient features of Nagara Style Temple Architecture. Examples of Orissa style - Lingaraja temple at Bhubaneswar& Sun temple at Konark - Example of Madhya style – KandariyaMahadev temple at Khajuraho - Example of Gujarat style - Surya Temple at Modhera.- Example of Maru-gurjara style – Ambaji Mata Temple, Udaipur, Example of Jain style temple- Dilwara temple, Mt. Abu. Examples of North & North East (Kashmir, Uttarakhand, etc.)

UNIT-3 DRAVIDIAN STYLE TEMPLES:

Brief history of South India - relation between Bhakti period and temple architecture - Temple Complexes & Towns (Madurai, Srirangam), Dravidian Order (evolution of Dravidian orders under pallavas, chola's and pandya's), Gopurams and Rock cut productions.

Examples: Early shrines of the Chalukyan periods, Tigawa temple - Ladh Khan and Durga temple, Aihole - Papanatha, Virupaksha temples, Pattadakal- Rock cut productions under Pallavas, Shore temple and five rathas at Mahabalipuram,Kailasanatha temple, Ellora. Example of Chola style - Brihadeeswara temple at Tanjore - Example of Pandyan style - Meenakshiamman temple, Hoysala architecture: Belur and Halebid. and Kailasanathar temple at Kanchipuram.

UNIT – 4 INDO - ISLAMIC ARCHITECTURE

Introduction to Islamic culture worldwide, Classification of Islamic architecture in India, Mughal Architecture in India. Religious (Maqbara, Masjid, Idgah, etc.) and Secular typologies (Sarai, Rauza, etc.) of Islamic architecture. Features of an Indian mosque, concept of squinch arches, and its variations. Imperial style. Provincial styles. Characteristics of Mughal architecture, planning, dome construction, materials. Development of the Mughal style under different rulers

Examples under imperial style - Qutub Complex, Qutubminar and Alai Darwaza at Delhi - Tomb of GhiasuddinTughlaq, Lodi garden at Delhi. Characteristics of the provincial styles in different regions through examples - Punjab style - Tomb of shah RukniAlam, Bengal style - Chotasona masjid at Gaur, Gujarat style - Jami masjid at Ahmedabad, Deccan style –Golgumbaz at Bijapur and Charminar at Hyderabad.
Examples of Mughul architecture under different rulers - Humayun- Humayuns Tomb at Delhi, Akbar- FatehpurSikhri. Shahjahan - The Taj Mahal, Agra - Red Fort at Delhi, etc.

UNIT – 5 FORTIFICATIONS AND PALATIAL ARCHITECTURE

Introduction to Fortifications, forts, Palaces across country.
Examples of Forts – Salient features of forts like Gwalior Fort, Daulatabad Fort, Golconda Fort, etc.
Examples of palaces – Salient features of palaces like Mysore Palace, Padmanabha Palace, Umaid Bhawan, etc.

COURSE OUTCOME: After completion of this course student will be able to-

CO1	**Summarize** basic concepts regarding the historical and architectural development in ancient India
CO2	**Observe** the diverse artistic and architectural expressions with regard to the historical context
CO3	**Illustrate** visual and verbal vocabularies of Indian Architecture
CO4	**Analyze** the diversity of imperial Indian Temple Architecture, Indian Mosques, Tombs, Forts, Cities, etc. including the buildings viewed as architectural masterpieces, and their urban settings
CO5	**Appreciate** varied culture resulting in architectural productions which are unique in time and place & suitable to the lifestyle of its people
CO6	**Reproduce** with sketches, audio and visuals various architectural forms and styles

REFERENCES:

1. Percy Brown, Indian Architecture (Islamic Period) - Taraporevala and Sons, Bombay, 1983 revised edition 1995
2. Satish Grover, The Architecture of India (Buddhist and Hindu period), Vikas Publishing House, New Delhi, 1981
3. Satish Grover, The Architecture of India (Islamic)Vikas Publishing House Pvt. Ltd., New Delhi, 1981. revised edition 2009
4. Christopher Tadgell, The History of Architecture in India, Longman Group, U.K. Ltd., London, 1990
5. A.Volwahsen, Living Architecture - India (Buddhist and Hindu), Oxford and IBM, London, 1969.
6. George Mitchell, Monuments of India, Vol I, Buddhist, Jain, Hindu; Penguin books, 1990
7. Gateway to Indian Architecture, Guruswamy Vaidyanathan, Edifice Publication, 2003
8. Architecture of the Islamic World - George Michell - (its history and social meaning), Thames and Hudson, London, 1978.
9. Islamic Architecture, Form, Function and Meaning, Robert Hillenbrand, Edinburgh University Press, 1994

6. Theory Of Design (Code – 210206)

Objectives –

The course aims to obtain the theoretical aspects of design and understand how it could be manifested in architectural design, the ideologies from works of architects and planners, the design communication skills to enable to put forth the design ideas in graphics and literature.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
6.	210206	Theory Of Design	DC- 7	50	30	20	-	-	100	2	2	-	-	**2**

UNIT-1 PRIMARY ELEMENTS IN ARCHITECTURE

Geometry in Architecture - points, lines and shapes.-Linear elements -planar elements and volumetric elements. Patterns in nature and building design.Order to chaos. Regularity and irregularity.

UNIT-2 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. Analysis of works of F.L Wright and Le Corbusier.

UNIT-3 ORDERING PRINCIPLES AND MEANING IN ARCHITECTURE

Ordering Principles-Axis -Symmetry -Hierarchy - Datum -Rhythm -Repetition -Transformation - Measure and balance – spaces on human scale - proportion -- Golden Section, Le modular, Fibonacci series – Renaissance Theories - anthromorphism and architecture - Figure and ground, positive and negative spaces.

UNIT-4 CONCEPTS IN ARCHITECTURAL DESIGN

Concept – types- Ideas and Intent in design - Intuitive, contextual, Iconic, Experiential, Symbolic, Modular. Ideologies and philosophies of architects'. Case Studies. Importance of graphics in architectural design. Study of site plans, city plans, conceptual drawings. Interpretation of architects' conceptual sketches and the respective buildings. Vernacular Architecture. Western & Indian Philosopher.

UNIT-5 RESPONSIVE AND RESPONSIBLE ARCHITECTURE

Phenomena of perception – looking, listening, feeling and moving through architecture –light and shade – Architecture as Making Frames -, Environmental-Energy based

COURSE OUTCOME: After completion of this course student will be able to-

CO1	**Integrate** the design communication skills to enable to put forth the design ideas in graphics and literature
CO2	**Interpret** the ideologies from works of architects and planners
CO3	**Develop** awareness of the natural and built environments (past and present) through critical observation
CO4	**Analyze** ideas from abstract thinking
CO5	**Develop** an approach to architectural thinking
CO6	**Apply** theoretical aspects of design to architectural design

REFERENCES:

1. Francis D.K.Ching, Architecture-Form, Space and Order, Van Nostrand Reinhold Company, New York, 2007.
2. Simon Unwin, Analysing Architecture, Rouledge, London, 2003.
3. V.S.Pramar, Design Fundamentals in Architecture, Somaiya Publications Private Ltd., New Delhi, 1973.
4. Peter von Meiss -Elements of architecture - from form to place, Spon Press 1992.
5. Steen Eiler Rasmussen - Experiencing architecture, MIT Press, 1964.

7. Workshop – II (Code – 210207)

Objectives –

The course aims to obtain the ability to appreciate the three dimensional implications of design and to introduce the students to the techniques of model making, basics of rendering , presentation skills &model making with various materials.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
7	210207	Workshop – II	SEC- 3	-	-	-	20	30	50	4	-	-	4	**2**

UNIT-1 MODEL MAKING

Use of clay, Plaster of Paris, metal scrap, metal sheets, jute fibre etc. for study of forms through models. Making models of the various structural systems used in buildings like Space frames – using Match sticks, wires. Different forms of shell roofs using POP, Clay, Soap Tensile structures using fabric.

UNIT-2

Development of surfaces of simple and composite forms using paper, Thermocol, wire, Wax, acrylic, sheets and similar materials. Introduction to metallic sections, joinery tools, joinery processes and working with them. Bonds in masonry based on the programme of building construction to make the various forms of masonry structures. Mixing of concrete, preparation of various objects

UNIT-3 INTRODUCTION TO MODEL MAKING AND BLOCK MODELLING

Introduction to concepts of model making and various materials used for model making Preparation of base for models using wood or boards. Introduction to block models of buildings (or 3D Compositions) involving the usage of various materials like Thermocol, Soap/Wax, Boards, Clay etc.

UNIT-4 DETAILED MODELLING

Making a detailed model which includes the representation of various building elements like Walls, Columns, Steps, Windows/glazing, Sunshades, using materials like Mount board, Snow-white board, and acrylic sheets. Representing various surface finishes like brick/stone representation, stucco finish etc. Various site elements– Contour representation, Roads/Pavements, Trees/Shrubs, Lawn, Water bodies, Street furniture, Fencing etc.

UNIT-5 PHOTOGRAPHY

Introduction to photography, use of camera, techniques in architectural photography.

COURSE OUTCOME: After completion of this course student will be able to-

CO1	**Incorporate** basics of rendering, presentation skills &model making with various materials
CO2	**Appreciate** three dimensional implications of design and techniques of model making
CO3	**Criticize**the properties of different materials for various products for designing and model making
CO4	**Review** requirements and design consideration of complementing field of architecture and designing such as photography and set designing
CO5	**Develop** small scale models using various building construction techniques
CO6	**Design** a functional model for real life situation

REFERENCES:

1. BENN, the book of the house ,Errnest Benn limited London
2.Jannsen, Constructional Drawings & Architectural models, Kari Kramer Verlag Stuttgart, 1973.

SECOND YEAR THIRD SEMESTER

1. Architectural Design – III (Code – 210301)

Objectives –

The course aims to obtain knowledge of Architecture as responding to site conditions, the designing process, spaces and relationship of architecture with personal traits, information and choices such as occupation, life style, religion etc.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
1.	210301	Architectural Design – III	DC- 8	100	30	20	50	50	250	7	2	3	2*(1.5)	**8**

PROJECT 1(Prototype): TOWN HOUSE / VILLA

Study of contemporary practices & design for town houses and villas in urban areas, to sensitize the students towards life style, individual preferences, space – activity relationship and exploration of how material, color, texture and light affect the quality of spaces is the main focus. It is also intended as an exercise in massing & configuration of façade elements such as the balancing of solids & voids, adoption of a system of proportioning and elements of contemporary detailing. This design exercise will also attempt to involve the student in the built form / open space relationship & explore the connectivity between indoor & outdoor spaces.

PROJECT 2(Prototype): NUSERY / PRIMARY / SECONDARY SCHOOL

Case studies on contemporary trends in school design to know how various architects have responded to the design program, site conditions, student age group etc. The project aims to enlighten the student on how the school design responds to various education philosophy and grooming methods. The analysis of important functional aspects such as space adequacy, circulation in the built form and play areas, locating the various spaces according to functional adjacency and careful design of toilet areas is intended. The objective is to also optimize the variables of the physical environment such as thermal comfort, daylighting and noise control in design.

PROJECT 3 & 4(Prototype): Time bound Problems of 6 hours to 48 hours.

REFERENCES:

1. Time saver standards for building types, De Chiara and Callender, Mc Grawhill company.
2. Neufert Architect's data, Bousmaha Baiche& Nicholas Walliman, Blackwell science ltd.

COURSE OUTCOME:-

After completion of this course student will be able to-

CO1	**Identify** spaces responding to site condition and personal issues such as occupation, lifestyle, religion etc.
CO2	**Analyze** how school designs respond to various education philosophy and grooming methods with help of case studies.
CO3	**Explore** the integration of classroom spaces with outdoor play areas in school buildings.
CO4	**Produce** sketches, models and photographs for analysis and design.
CO5	**Design** school buildings that respond to a particular educational philosophy
CO6	**Design** independent residential buildings in urban areas with concepts that respond to personal preference & taste, family lifestyle, culture & site conditions.

Note: minimum four design problems shall be introduces in the semester out of which, one major problem one small problem and two shall be time bound problem**.**

Note: One design problem shall be given in End Semester Examination. 6X2 hours examination.

2. Building Construction – II (Code - 210302)

Objectives –

The course aims to obtain knowledge about doors, windows, different types of materials and their use in construction, the different water proofing, damp proofing materials& technology available & their application, the vertical transportation designing& detailing.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
2.	210302	Building Construction - II	BSAE- 5	50	30	20	50	50	200	5	2	1	2*(1.5)	**6**

UNIT-1 BUILDING MATERIALS

Ferrous and Non-Ferrous metals & Plastics

- Properties and uses: Aluminum, zinc, lead, copper.
- Properties and Architectural uses of plastics: Thermoplastics, thermosetting plastics and, Structural plastics – Reinforced plastics and Decorative laminates-plastic coatings, Adhesives, and sealants – Modifiers and Plasticizers – Fabrications of plastics.
- Primary plastic building products for walls, roof, and partitions.
- Secondary building products for rooms, windows, roof lights, domes, gutters, and handrails.

UNIT-2 INTRODUCTION TO FOUNDATION AND WALLS

Foundation and walls:

- Different types of Foundation as per structure needs, soil condition and materials need.

UNIT-3DETAILS OF DOORS, WINDOWS & VENTILATORS

- **Timber Doors and its Joints:** Single, double-leaf, ledged braced & battened door, framed ledged braced &battened door, Paneled door, flush door, and Composite door.
- **Timbers Windows & ventilators:** Casement(side hug & top hug), Sliding pivoted (horizontal and vertical) foldingand bay windows, fixed light of different sizes and shapes.
- Combined doors and windows and ventilators.

UNIT-4 STAIRCASES AND MASONRY

- **Staircases:** Types according to profile–straight flight, doglegged, quarter-turn half-turn, bifurcated, spiral & Helical. The foundation for the RCC staircase. Vertical transportation.

UNIT-5 DAMP PROOFING AND WATERPROOFING

- **Damp proofing**: Hot applied and cold-applied–Emulsified asphalt, Bentonite clay. Butyl rubber, silicones, Vinyl's, Epoxy resins and metallic waterproofing materials, their properties, and uses. Waterproofing: waterproofing membranes such as rag, asbestos, glass felt, plastic and synthetic rubber vinyl, butyl rubber, neoprene, polyvinylchloride – prefabricated membranes sheet lead, asphalt their properties and uses.
- **Application**: Application of the above in the basement floor, swimming pool, and terraces.

COURSE OUTCOME:-

After completion of this course student will be able to-

CO1	**Classify** Non-ferrous metals in terms of their properties, manufacturing and their applications in architectural construction.
CO2	**Explain** the concept of foundation and wall in different type of masonry.
CO3	**Classif**y various types of foundation according to structure, considering necessary parameters.
CO4	**Draw** types of timber doors, windows, ventilators and its joinery detail.
CO5	**Define** types of Vertical transportation systems in a building.
CO6	I**dentify** Different water proofing and damp proofing materials and applied technology.

.**REFERENCES:**

1 .W.B. Mckay – Building construction Vol. 1 (5th edition), Vol. 2 (4th edition) and Vol. 3 (5th edition)
2. R.Chudley & R.Greeno – Building Construction Handbook, ninth edition
3. S.C. Rangwala – Engineering materials (Fortieth edition) – Charotar Publishing pvt.ltd
4. P.C Varghese, “Building Materials”, Prentice Hall of India Pvt. Ltd., New Delhi, 2005
5. Use of Bamboo and Reeds in building Construction – UNO Publications

Note: Total five questions shall be asked. Each question will consist of two parts, one of which will be of 7 marks (which shall be compulsory) and another with 3 marks(which shall be optional).

3. Graphics –III (Code – 210303)

Objectives –

The course aims to obtain knowledge of various softwares used for drafting, 3D model making, rendering and presentation, such as AutoCAD, Revit, 3Ds MAX, Photoshop, CorelDraw, etc. according to availability of experts.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
3.	210303	Graphics -III	PAEC- 1	-	-	-	50	50	100	6	-	-	6	**3**

COMPUTER AS A DRAFTING TOOL: Productivity tools in CAD, organization of layers for working drawings, use of blocks and symbols hatch patterns. Dimensioning systems extracting of areas from drawings, concept of paper space plotting the drawings

COMPUTER AS A DESIGN TOOI: Repetition of forms mirroring, coping, and array etc. calculation of areas, volumes. Creating and using templates, blocks, and symbols and using them in architectural drawings. - Managements of large drawing files. - Working in a network environment-Security systems-converting drawing files into Internet compatible files.

VISUAL COMMUNICATION

Photoshop: Creating and saving images, basic image editing, Photoshop tool box and tools, using layers, special effects.

MEASUREMENT DRAWING WITH THE HELP OF CAD

Exercise will be a group activity; to measure and draw the floor plan along with the plot boundaries, four side elevations, four sections, block plan, site plan of a large building or a settlement with the help of CAD. In addition to this drawing shall be prepared based on examples of buildings by giving a sketch design. Drawings shall be detailed enough to explain the complete design.

Note: Exercises of measurement drawings may be clubbed with study tour.

COURSE OUTCOME: -

After completion of this course student will be able to-

CO1	**Explain** fundamental principles of using graphical Software.
CO2	**Develop** Basic skills in visual composition using Graphics
CO3	**Apply** productivity tools of 2D drawings.
CO4	**Produce** presentations for corporate clients-using CAD drawings, pictures, 3Dimages, text etc.

REFERENCES:

1. User manual & tutorials of Google Sketch Up software.
2. Auto CAD reference manual – Autodesk UNC, 1998
3. Auto CAD architectural users guide – Autodesk Inc. 1998
4. Sham Tickoo, Advance Technique in Auto CAD Re.14 – 1977 6. Sham Tickoo, Understanding Auto CAD – 14 (windows) – 1977
5. Photoshop CS Bible – Deke McClelland.
6. Adobe Photoshop 7.0 classroom in a book – Adobe creative team.

4. Surveying and Leveling (Code – 210304)

Objectives –

The course aims to obtain knowledge of the basic process of land surveying and fundamentals of various types of surveys adopted in architecture and civil, use various surveying methods in practice, field survey and to prepare a layout for understanding.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
4.	210304	Surveying and Leveling	BSAE- 6	50	30	20	-	-	100	3	1	2	-	**3**

UNIT-1

Aspects of surveying for the Architect. Surveying instruments classification by function. Useful data and formulae.

UNIT-2

Scales-Plain scale, diagonal scale, comparative scale, shrunk scale, vernier scale.

UNIT-3

Study, test, degree of accuracy, use and care of surveying instruments and accessories.

UNIT-4

Site survey techniques: Chain surveying, compass surveying, plain table, and theodolite.

UNIT-5

Leveling and contouring.

Note: Class work and field work of the above subject should be oriented towards the layout of buildings. Students should also be taken to site visits for explaining the practical aspects of surveying.

COURSE OUTCOME:-

After completion of this course student will be able to-

CO1	**Interpret** the booking for field notes
CO2	**classify** the various types of modern survey
CO3	**Work out** the contour surveying with the help of leveling instrument
CO4	**Apply** the fundamental of chain and compass surveying for field survey
CO5	**Perform** survey of the site and will learn how to make layout of building.

LIST OF TEXT AND REFERENCE BOOKS:

1. T. P. KANETKAR & S.V. KULKARNI, “Surveying & Leveling”, Pune VidyarthiGriha Pub.
2. DR. B.C. PUNAMIA, “Surveying Vol.1”, Laxmi Pub.
3. SHAHANE AND IYENGAR, “A Text book of Surveying & Leveling”, Engineering Book Co.
4. BERNARD H. KNIGHT, “Surveying and leveling for students”.

5. History Of Architecture-III (Code – 210305)

Objectives –

The course aims to obtain knowledge about the development of architecture in the ancient Europe and the culture and context which produced it such as climate, religion, social practices & the politics, the evolution of architectural form & space with reference to Technology, Style and Character using sketches as the principal method of learning - about the prehistoric world, Ancient Egypt, West Asia, Greece ,Rome, Medieval times and Renaissance period.

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CTHRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
5	210305	History Of Architecture-III	DC- 9	50	30	20	-	-	100	3	2	1	-	**3**

UNIT-1 GREEK ARCHITECTURE

Evolution of City states in Greece, the Hellenic & Hellenistic art & architecture, Evolution of the classical orders & the features of the Greek temple, the building of the Acropolis with one outstanding example of Doric (Parthenon), Ionic (Erechtheon) & Corinthian. Public architecture: Theatre of Epidaurus and Agora, Optical illusions in Greek architecture.

UNIT-2 ROMAN ARCHITECTURE

Formation of Roman republic & Empire & influence of geology, culture & lifestyle. Roman architectural character using concrete, marble, travertine etc& masonry types used for walls. Tuscan & Composite orders, Roman forums and basilicas – methods of Vault & Dome construction with examples of Pantheon, Thermae of Caracalla, Colossium, & Basilica of Constantine.

UNIT-3 EARLY CHRISTIAN & BYZANTINE ARCHITECTURE

Spread of Christianity, the evolution of early Christian Church form from the Roman basilica (St. Clemente), Centralized plan concept (St. San Vitale, Ravenna). The creation of eastern & western Roman Empire, the development of domes & pendentive, Byzantine architectural character with study of St. Sophia (Hagia Sophia) at Istanbul.

UNIT-4 ROMANESQUE & GOTHIC ARCHITECTURE

Romanesque period: Monastic orders & development of Craft and merchant guilds, Influences & architectural character of Romanesque churches in Italy (Pisa complex), France (Abbey Aux Hommes) and England (Tower of London) - Development of vaulting.

Development of Gothic architecture in France, evolution of Gothic Cathedral & structural system using vaulting & flying buttress, the example of Notre dame cathedral at Paris.

UNIT-5 RENAISSANCE ARCHITECTURE IN EUROPE

Idea of rebirth and revival of classical architecture & the development of art & science. Italian renaissance character. Early renaissance & urban renaissance style and High renaissance period. Works of various artists and architects during the period (Andrea Palladio, Sir Christopher Wren, Michelangelo, Leonardo

COURSE OUTCOME:-

After completion of this course student will be able to-

CO1	**Outline**the chronological development of Civilizations across the globe.
CO2	**Observe** different styles of Western (Christian) Architecture and it's historical importance
CO3	**Illustrate** visual and verbal vocabularies associated with christian architecture.
CO4	**Explain** the evolution of architectural form & space with reference to Technology, Style and Character of the era.
CO5	**Analyze** Architecture asan outcome of various social, political and economic upheavals.

CO6	**Draw** sketches as the principal method of learning - about the prehistoric world, West Asia, Greece, Rome, Medieval times and Renaissance period.

REFERENCES:

1. Sir Banister Fletcher, A History of Architecture, CBS Publications (Indian Edition), 1999.
2. Spiro Kostof – A Historyof Architecture – Setting and Rituals, Oxford University Press, London, 1985.
3. Leland M Roth; Understanding Architecture: Its elements, history and meaning; Craftsman House; 1994.
4. Pier Luigi Nervi, General Editor – History of World Architecture – Series, Harry N. Abrams, Inc.Pub., New York, 1972.
5. S. Lloyd and H.W. Muller, History of World Architecture – Series, Faber and Faber Ltd., London, 1986.
6. Gosta, E. Samdstrp, Man the Builder, Mc. Graw Hill Book Company, New York, 1970.
7. Webb and Schaeffer; Western Civilisation Volume I; VNR: NY: 1962.
8. Vincent Scully: Architecture; Architecture – The Natural and the Man Made : Harper Collins Pub: 1991

6. Structures-III (Code – 210306)

Objectives –

The course aims to obtain understanding of the basic principles of limit state design in reinforced concrete structural systems and the interpretation of detail structural drawings for the purpose of construction, the structural behavior of RCC buildings from an architect's perspective and hence does not delve into the process of detailed structural analysis design which is the forte of the structural engineer.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
6.	210306	Structures-III	BSAE-7	50	30	20	-	-	100	3	2	1	-	**3**

UNIT- 1 FOUNDATIONS IN BUILDINGS

Soil load bearing capacity – concept of RCC spread footing - Types of R.C.C. foundation – Individual, Combined, Strip footings – Raft foundation (Theory only) – Eccentric footings with projection on one side only- the situations in which the various footings are used – friction pile foundation used in clayey soil (section & understanding of the principle)- pile foundation used in sandy soil & the pile foundation used in multi-storied buildings (section & principle only).Interpretation of typical structural details in foundation drawings .Site visits necessary for understanding the above.

UNIT – 2 ROOF SLABS & STAIRCASE

Exposure to the basic design concepts of Limit state method of design – recommendations in the code book - Classification of slabs – Estimation of loads – Design of one way, two way, circular and continuous slabs using SP – 16(Theory only). Interpretation of reinforcement details in a typical structural drawing for one way, two way slab & continuous slab. Understanding the reinforcement details for a RCC waist slab in dog legged staircase and for a folded slab staircase using typical structural drawings.

UNIT-3 BEAMS& LINTELS

Exposure to the basic design concepts - Estimation of loads on beams – Transfer of load from slab to beam – Understanding the design of simply supported beams, cantilevered &continuous beams using code coefficients & detailing using SP-16 for the design (Theory only). Steel detailing of beams for earthquake proofing (section only) – the function of plinth beam belt & continuous lintel belt –ring beam for RCC dome roof, typical reinforcement detail for waffle (coffer) slab (section only).Site visits to understand typical details in RCC slabs & beams.

UNIT - 4 COLUMNS

Understanding the estimation of loads on columns – Load transfer from slab and beam to columns. Structural behavior of Long and short columns –Distinction between rectangular and circular columns – Difference between columns subjected to uniaxial and those subjected to bi-axial bending. Knowledge about the design of columns using column interaction diagrams (Theory only) – Use of SP-16 for reinforcement detailing. Interpretation of typical structural drawing for columns& footings.

UNIT- 5 FLAT SLABS

Understanding the situations in which flat slabs are used - advantages of flat slab construction. Components of flat slab – Configuration of columns – Design of flat slab by direct design method as per BIS codes (Theory only). Site visit to understand flat slab construction.

COURSE OUTCOME:-

After completion of this course student will be able to-

CO1	**Outline** the features of IS code provisions regarding limit state method for designing concrete structures
CO2	**Explain**basic principles of limit state design in reinforced concrete structural systems with detail structural drawings for the purpose of construction.
CO3	**Analyze**the structural behavior of RCC buildings from an architect's perspective without detailed structural analysis
CO4	**Model** design of different R.C. Structural components: Beam, Slab, Column, Stair and Foundation.

REFERENCES:

1. Victor E. Sauoma, Structural Engineering- analysis & design, University o Colorado,2011.
2. Simha .N.C and Roy .S.K, Fundamentals of Reinforced Concrete, S. Chand& Co. Ltd, Delhi,2001

7. Summer Internship Project –I (Institute Level Evaluation) (Code – 210307)

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
7.	210307	Summer Internship Project –I (Institute Level Evaluation)	SEC- 4	-	-	-	50	-	50	2	-	-	2	**1**

SECOND YEAR FOURTH SEMESTER

1. Architectural Design – IV (Code –210401)

Objectives –

The course aims to obtain knowledge of Architecture as responding to Social issues such ascommunity, culture, religion, politics etc, designing for special groups such as the villagers, elderly, and the handicapped.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem	Mid Sem	Quiz/ Assignment	End Sem	Lab work & Sessional			L	T	P	
1.	210401	Architectural Design – IV	DC- 10	100	30	20	50	50	250	7	2	3	2*(1.5)	**8**

PROJECT 1(Prototype): VILLAGE SURVEY & RURAL HOUSING

Study of the physical, socio economic and cultural aspects of a selected village by conducting various surveys to understand the settlement pattern, housing stock and amenities that are existing or required – To understand the linkages between Occupation, Social structure and Religious beliefs and its physical manifestation in the form of the settlement – Identification of a suitable Design intervention that would improve the quality of life – Ex. Design of housing prototypes for a particular community / occupation using rural building materials & cost effective technology. Design exercise may include the design of any facility required such as Primary health center / Community hall / Farm training center, etc.

PROJECT 2(Prototype): DESIGN OF COMMUNITY FACILITIES

Community facilities –Design of Community hall, Nursing home, Youth hostel, Old age home etc., encourage the student to explore concepts an agglomeration of simple spaces with particular emphasis on the special needs of elderly, handicapped etc. It also focuses on the bioclimatic approach to the design of the building envelope i.e. articulation of openings, choice of materials for roof & walls of different orientations etc. Concepts integrating the use of passive, active & hybrid solar technologies with the design proposals are encouraged.

PROJECT 3 & 4(Prototype): Time bound Problems of 6 hours to 48 hours.

COURSE OUTCOME:-After completion of this course student will be able to-

CO1	**Explain** the Settlement pattern in village and socio-cultural, geographic and economic aspects that shape the built environment.
CO2	**Analyze** design of any rural settlement that evolved organically over a period of time.
CO3	**Analyze** housing typology, locally available materials, craftmanship and integration of landscape with the built environment.
CO4	**Explore** concepts of agglomeration of simple spaces with particular emphasis on the special needs of elderly, handicapped etc
CO5	**Develop** presentation of concepts through 2D and 3D presentation including sketches and models.

REFERENCES:

1. Time saver standards for building types, DeChiara and Callender, Mc Grawhill company.
2. Neufert Architect's data, Bousmaha Baiche& Nicholas Walliman, Blackwell science ltd.
3. National Building Code – ISI.
4. Time saver standards for landscape architecture – Charles W Harris – McGraw Hill.
5. New Metric Handbook – Patricia Tutt and David Adler – The Architectural Press.

Note : Design exercises that explore Architecture as responding to Social issues such as community, culture, religion, politics etc. Students familiarize themselves with designing for special groups such as the villagers, elderly, and the handicapped.

Note: One design problem shall be given in End Semester Examination. 6X2hour's examination.

2. Building Construction –III (Code – 210402)

Objectives –

The course aims to obtain knowledge of the preparation of concrete, construction methods, special concrete and concreting methods, the properties and its use in foundation, beams and slabs, various exterior finishes and advanced structural systems.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
2.	210402	Building Construction –III	BSAE- 8	50	30	20	50	50	200	5	2	1	2*(1.5)	**6**

UNIT-1 BUILDING MATERIALS

- **Concrete**: Various types of cement concrete, its properties, and uses. Proportioning of concrete, grading of aggregates, water-cement ratio, and workability of concrete, Estimating yield concreting. Formwork for concreting, mixing, transporting and placing, consolidating and curing of concrete. Types of Special concrete and concreting method, concrete block and its uses.
  Glass: Curtain walls & glass block construction

UNIT -2 RCC FOUNDATION

- **Introduction to RCC framed structures, concrete foundation**: Types of footing – Isolated, combined, continuous, strip raft & piles.
- **Pile foundation**: Definition, functions, and Design factors.
- Tool equipment and plants for piling.
- Precast pile – timber, concrete, and steel
- Friction pile and bearing pile bore pile.
- Cast in situ & Steel and Concrete, Pile Cap

UNIT-3 BEAMS AND SLABS

- **Concrete slabs**: One-way, two ways, continuous & cantilever.
- **Detailing of Slabs:** One-way slabs, 2-way slab, continuous, flat slab.
- **Concrete beams**: Singly reinforced, doubly reinforced, cantilever & continuous beams.
- **R.C.C**: Column, beams, slabs, lintel, chajja, staircase, canopy, coffer slab & pergola.

UNIT-4 RETAINING WALL, EXPANSION JOINTS, AND WATERPROOFING

- Detailing of R.C.C. retaining wall.
- Expansion Joints: Walls, roofs, and flooring.
- Detailing of apertures (lintels, sunshades, arches).
- Study of Various types of precast concrete blocks, their extensive uses in Building construction.
- Waterproofing basement, construction of pools, fireplaces, and fuels. Fire safety construction techniques.

Exercises of the above through case studies and drawings of selected building types.

UNIT-5 CLADDING SYSTEMS & FINISHES

- **Types of Cladding systems** – Stone, timber, weatherboard, Fiber cement, Brick, Vinyl, Metal (aluminum composite panels (ACP), Precast concrete cladding panel, Curtainwall, Rain screen wall system. Exterior insulation& Finishes

COURSE OUTCOME:-

After completion of this course student will be able to-

CO1	**Explain** the preparation of concrete, its construction methods, and its properties
CO2	**List** properties, characteristics, strength, manufacturing, processing and application of materials such as cement, glass, paints and other finishing materials.
CO3	**Draw** details of water proofing construction, fire proofing construction details.
CO4	**Outline** types of Cladding systems and finishes
CO5	**Draw** details of RCC Beams, Columns, Slabs, Staircases, etc

REFERENCES:

1. Dr. B.C Punmia – Building construction (10th edition) - Laxmi Publications
2. Roy Chudley (Author), Roger Greeno (Author) -construction Technology, 4th Edition
3. Francis D.K.Ching – Building Construction illustrated, 4th edition, 2015
4. M.S Shetty, concrete Technology, S.Chand publishing

Note: Total five questions shall be asked. Each question will consist of two parts, one of which will be of 7 marks (which shall be compulsory) and another with 3 marks(which shall be optional).

3. Building Services-I (Water supply & Sanitation) (Code – 210403)

Objectives –

The course aims to obtain knowledge of water supply and waste water management, in residential unit, small campus, and commercial buildings, plumbing layouts for various building typology, best practices for Solid waste management.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
3.	210403	Building Services-I (Water supply & Sanitation)	BSAE - 9	50	30	20	-	-	100	3	2	1	-	**3**

UNIT-1 WATER SUPPLY

Sources of water supply – Water Quality - Water requirements for different types of buildings and for town, simple method of removal of impurities, Rainwater harvesting to include roof top harvesting, type of spouts, sizes of rainwater pipes and typical detail of a water harvesting pit. System of supply - continuous and intermittent supply, sump, overhead tanks, pumps, distribution pipes, cold water and hot water supply for single and multi-storied buildings. Pipes sizes, types – GI, CPVC, Copper, Cast Iron (CI) Pipes, Steel Pipes, Asbestos Cement (AC) Pipe, Concrete Pipes fittings, valves, and types of taps.

UNIT-2 DRAINAGE AND SEWAGE DISPOSAL

Recycling/Reuse of Wastewater, Systems of drainage – separate, combined and partially separate system, surface drainage, sizes and construction, system of plumbing - single stack, one pipe system, one pipe partially ventilating system and two pipe system.

House drainage – principles, traps-floor trap, multi-trap, gully trap, grease and oil trap,: Anti Siphonage pipe, Types of fixtures and materials, Arrangements of fixtures in a bathroom. Design of Septic tank, Treatment and disposal of septic tank effluents – Design of soak pit and dispersion trench, Biological filter, up flow anaerobic reactors

Sewage treatment technologies: Activated sludge process, Membrane bioreactors, packaged treatment plants, Root zone treatment system, Decentralized Wastewater Treatment Systems (DEWATS), Soil Bio technology

UNIT-3 SOLID WASTE DISPOSAL

Solid waste management: Generation of Solid waste, Collection & Transportation of solid waste to the secondary/ locality storage/community bins, Storage of solid waste at locality level, Transport of solid waste to dumping sites and treatment plants, Treatment and Dumping of Solid Waste, Methods of Disposal of solid waste Approaches to Solid Waste Management: Waste minimization / reduction at source, recycling, waste processing (with recovery of resources and energy), waste transformation(without recovery of resources) and disposal on land.

UNIT-4 EMERGING PROCESSING TECHNOLOGIES

Emerging processing technologies : Vermicomposting, Biogas from MSW, Pyrolysis (including plasma arc technology), refuse derived fuel, Bio reactor landfill - Biomethanation plant at koyambedu, wholesale vegetable market Chennai, Door-to-door collection, transportation and waste processing services by Exnora Green pammal.

UNIT-5 PLUMBING AND FIRE FIGHTING LAYOUT OF SIMPLE BUIDINGS

Designing of toilet blocks in residential and public buildings, showing complete details of fittings and plumbing required for water supply and drainage.

Designing and preparing a complete water supply and drainage layout of an academic Architectural design project, with all required calculations.

COURSE OUTCOME:-

After completion of this course student will be able to-

CO1	**Understand** water distribution components and networks and sanitation systems and their functioning process.
CO2	**Study** Water supply, treatments and plumbing system for all type of buildings.
CO3	**Design** Plumbing layout with working drawing and specifications for buildings.
CO4	**List and identify** waste water management systems and the drainage for various building typology and understand solid waste management systems with respect to urban and rural set up.
CO5	**Apply** of all the above systems to Buildings, Small Campus and a Residential neighborhood.
CO6	**Produce** plumbing and fire fighting layouts for various building typology.

REFERENCES:

1. Birdie G. Sand Birdie J. S Water Supply & Sanitary Engineering, Dhanpat Rai Publishing Company (p) Ltd (2010)
2. Sanitary Engineering by R S Deshpande
3. S. K. Garg , Water Supply Engineering: Environmental Engineering v. khanna publishers 2010
4. Charangith shah, Water supply and sanitary engineering, Galgotia publishers.
5. Kamala & DL Kanth Rao, Environmental Engineering, Tata McGraw – Hill publishing company Limited.
6. Technical teachers Training Institute (Madras), Environmental Engineering, Tata McGraw Hill publishing Company Limited.
7. M.David Egan, Concepts in Building Fire Safety.
8. V.K.Jain, Fire Safety in Building 43
9. National Building Code 2005.
10. Toolkit for Solid Waste Management, Jawaharlal Nehru National Urban Renewal Mission, November 2012, Ministry of Urban Development Government of India.

4. History Of Architecture-IV (Code- 210404)

Objectives –

The course aims to obtain knowledge of Design philosophies of colonial, post independent and contemporary architecture in Indian context, modern design philosophies in the evolution of innovative architectural forms and designs, the effect of industrial revolution on architecture.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignmen t	End Sem.	Lab work & Sessional			L	T	P	
4.	210404	History Of Architecture-IV	DC- 11	50	30	20	-	-	100	3	2	1	-	**3**

UNIT-1 INDUSTRIAL REVOLUTION

Impact of the Industrial Revolution on Architectural practices. Transformation from iron to steel and the demand for a new Architecture.

UNIT -2 MODERNISM

Context of Origin; Characteristics; Key Movements – Arts and Crafts, Constructivism, Bauhaus, Expressionism, International Style, Minimalism, Brutalism. Works of notable conforming Architects: Frank Lloyd Wright, Ludwig Mies van der Rohe, Le Corbusier, Walter Gropius, Oscar Niemeyer and Alvar Aalto.

UNIT-3 DECONSTRUCTIVISM

Origin and influences breaking away from Modernism and Postmodernism, Deconstructivist philosophy. Influence on Architectural practice; Works of notable conforming Architects: Frank Gehry, Daniel Libeskind, Rem Koolhaas, Peter Eisenman, Coop Himmelb(l)au, and Bernard Tschumi.

UNIT-4 NEO-MODERNISM AND OTHER POST-POST MODERN REACTIONS

Origin and Characteristics, Other associated movements: Metamodernism, Re-modernism, Neo-futurism, Neo-Historism. Works of Richard Meier, Charles Gwathmey, I.M. Pei, Tadao Ando, ZahaHadid, and Santiago Calatrava.

UNIT-5 COLONIAL, POST COLONIAL CONTEMPORARY INDIAN ARCHITECTURE

Architecture in colonial India and post independence, Indo-Sarcenic Architecture, Modernism and Works of notable contemporary Architects.

COURSE OUTCOME:-

After completion of this course student will be able to-

CO1	**Understand** the basic terminology of the subject and know the chronology and typology of western architecture in the 20th/21st century.
CO2	**Identify** the stylistic characteristics of different epochs in different western, Indian countries and relate them to structural/tectonic systems, architectural theories and socio-economic and cultural conditions of their emergence.
CO3	**Know** the life and masterpieces of the most renowned western architects.
CO4	**Understand** types of Cladding systems and finishes
CO5	**Gain** an in-depth knowledge of modern design philosophies in the evolution of innovative architectural forms and designs.

REFERENCES:

1. Kenneth Frampton, Modern Architecture: A Critical History, Thames and Hudson, London.
2. Sigfriedgiedion, .Space time and Architecture: The Grwoth of a New tradition, Harvard University Press.
3. Tzonis Alexander, Santiago calatrova , International Publications, January 2005, New York.
4. Steele James, Hassan fathy - The complete works , London : Thames and Hudson.

5. Structures-IV (Code – 210405)

Objectives –

The course aims to obtain knowledge about the structural behavior of various types of steel structural systems those are commonly employed in the building construction industry presently, methods those are used to design a steel structural system for a specific condition & loading. Interpretation of structural detail drawings in the site is also intended.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
5.	210405	Structures-IV	BSAE- 10	50	30	20	-	-	100	3	2	1	-	**3**

UNIT- 1 PROPERTIES OF STEEL SECTIONS & TYPES OF CONNECTIONS

Introduction Properties of Indian standard rolled steel section – Use of IS 800 and steel tables – Permissible and stresses in tension, compression and shear. Connections: Welded and bolted connections – Types of failure – Design of welded and bolted connections for members subjected to axial forces. Site visit to a steel fabrication unit.

UNIT-2 TENSION AND COMPRESSION MEMBERS

Steel structures – Identification of tension and compression members in trusses & girders– Understanding the process of design of single angle and double angle sections in tension– understanding the method to design compression members – signify chance of Slenderness ratio– Design of simple and compound sections (Theory only) – Design of lacings and battens.

UNIT -3 STEEL BEAMS

Identification of principal & secondary beams in a structural system - Allowable stresses in Principal beams, General specifications for steel beams, Understanding the design process for simply supported & cantilevered beams – Comprehending the design of laterally supported beams.(Simple problems).

UNIT-4 STEEL TRUSSES & GIRDERS

Study of the various types of roof trusses & where a particular truss can be used – Selection of trusses according to the span – Estimation of gravity loads and wind loads on roof – Use of BIS and book SP-38 in analyzing and design of trusses – gusseted plate connections (Theory Only).

UNIT-5 INTRODUCTION TO LONG SPAN STEEL STRUCTURAL SYSTEMS

Space frame structural system in tubular steel – various types of connectors – single / double & triple grid space frames and the span for which they can be employed – various types of space frame configurations. Tensile structural systems using steel cables – Examples of space frame & tensile structural systems.

COURSE OUTCOME:-

After completion of this course student will be able to-

CO1	**Analyze** structural behavior of various types of steel structural systems that are commonly employed in the building construction industry presently.
CO2	**Explain** methods that are used to design a steel structural system for a specific condition & loading.
CO3	**Design** simple and compound sections, Design of lacings and battens
CO4	**Design** trusses – gusseted plate connections

REFERENCES:

1. Ramachandra .S Design of steel structures Vol. I, Standard publication, New Delhi, 1992
2. Vazirani V.N, and Ratwani M.M, Steel structures, Khan
3. Handbook of Typified Designs for Structures with steel roof trusses, SP 38 (S&T) – 1987, BIS, New Delhi, 1987
4. Code of practice for Earthquake Resistant Design and Construction of Buildings IS4326-1976, BIS, New Delhi.

6. Elective – I

Objectives –

The course aims to obtain knowledge about ecology, society, culture, environment, the use of ecology, etc. in architecture design and site planning.

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
6.	210411	Ecology & Environment	DE- 1	50	30	20	-	-	100	3	2	1	-	**3**

UNIT-1 INTRODUCTION TO THE STUDY OF ECOLOGY & ENVIRONMENT

Introduction, Structure and Function: Introduction to ecology, its meaning and growing importance in daily life. Basic terms used in ecology and their meanings. Fundamental concepts of ecology. Ecology – Environment relationship. Concept of spaceship as earth. Structure and function of eco- system, Eco- system equilibrium, natural cycles, ecological foot print, climate change

UNIT-2 RELATIONSHIP WITH NATURE:

Man's relationship with nature in the present: Industrial activities, urbanization, de-forestation, mining and similar incursions on nature for technological progress. Environmental impacts of these activities. The ecological crisis.

UNIT-3 IMPORTANCE OF ECOLOGY

Importance of Ecology: Relevance and growing importance of ecology in a highly urbanized and technological world with reference to dwindling resources, increasing demands and advancing technology. Adaptation of life-styles, and adoption of alternate technologies to harmonize with the natural environment. Discussion on alternatives available. Guiding environmental principles

UNIT-4 ECOLOGICAL APPLICATIONS TO ARCHITECTURE AND PLANNING

Ecological applications to Architecture and Planning. Preserving and improving the human settlement in harmony with nature. Conservation of natural resource for improving the quality of life on earth and attempting to ensure its continuity for the future of humanity. Eco cities, eco- communities and eco buildings: Archeology. Designing settlements and other man-made eco- systems. Ecological and environmental cities for sustainable future.

UNIT-5 ECOLOGY AND ENVIRONMENT FOR SUSTAINABLE FUTURE.

Eco building materials and construction – Bio mimicry, Low impact construction and recyclable products and embodied energy. Life cycle analysis. Energy sources-Renewable and non- renewable energy.

COURSE OUTCOME:

After completion of this course the student will be able to :

CO1	**Outline** the importance of ecology and environment along with basic concepts of ecosystem.
CO2	**Analyze** the relationship between man and its natural surroundings, focusing on negative impacts of man made activities on environment.
CO3	**Apply** various practical applications of ecology in field of architecture to form new concepts of sustainability.
CO4	**Design** with innovative methods by using sustainable materials to reduce the impacts of construction and urbanization.
CO5	**Develop** environmental sensitivity.

REFERENCES:

1. Fundamentals of Ecology by E.P. Odum
2. The Ecology of Man: An Ecosystem Approach by Robert Leo Smith
3. Introduction to Ecology by Kurmundi
4. Review Our Dying Planet by Sarala Devi
5. Ecological Crisis: Reading for Survival by G. A. Love & R.M. Love

S.No	Subject	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
1.	210412	**S**ociety, Culture And Architecture	DE- 1	50	30	20	-	-	100	4	2	1	-	**3**

SOCIETY, CULTURE AND ARCHITECTURE

UNIT-1 CULTURE

Fundamentals of sociology and its relationship to architecture. Culture and social identity with reference to architecture. Fundamentals of society, culture and politics with reference to architectural history. Forms of social organization in history. Various definitions of culture and civilizations

UNIT-2 ARCHITECTURAL TRADITIONS

Cosmological models and architectural form. Articulation of people and built environments. House form and communication. Asian traditions in architecture. Concept of vernacular Architecture

UNIT-3 SOCIETY AND CIVILISATION

Architecture and its context. Social and cultural aspects of building practices. Architecture-expression of power. Architecture as an agent of change. Architecture as an identity

UNIT-4 INDIGENIZATION AND CULTURAL CHANGE

Transformations and changes in forms of historical architecture. Localization and globalization –cases and examples. Loss of architectural identify and role of culture

UNIT-5 ARCHITECTURAL REJUVENATION

Definition of Renewal, transformation, redevelopment, rejuvenation in architectural context and basic concepts

COURSE OUTCOME: After completion of this course student will be able to-

CO1	**Recognize** importance of architecture and design through time and across cultures
CO2	**Comprehend** what have been the major issues in the development of architectural design in socio- cultural context
CO3	**Illustrate** the place specific nature of architectural design
CO4	**Appraise** about architecture and its relationship to its historical, political, social, economic, technological contexts
CO5	**Interpret** the aesthetics related to more general systems of ordering within a particular society or group

REFERENCES:

1. Conformity and Conflict: Readings in Cultural Anthropology by McCurdy, David W., Dianna Shandy, and James Spradley, eds.
2. Case examples of research on cultural anthropology
3. Field studies of communities
4. House, Form and Culture by Amos Rapoport
5. Case studies of various examples on social and cultural issues relating to architectural history in India and world.
6. Architecture in Cultural Change: Essays in Built Form and Culture Research by David G. (ed). Saile (Author)

7. Tour/ Seminar / Workshop/ NASA Training during winter break (Code – 210407)

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
7.	210407	Tour/ Seminar / Workshop/ NAS Training during winter break	SEC- 5	-	-	-	50	-	50	2	-	-	2	**1**

THIRD YEAR FIFTH SEMESTER

1. Architectural Design – V (Code – 210501)

Objectives –

The course aims to obtain knowledge Architecture as a design response to the culture of a place, artistic expressions with common building materials such as brick, concrete, steel & glass, building components using the same building material, designing various services and spaces required specifically for a particular use.

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CTHRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
1.	210501	Architectural Design – V	DC- 12	100	30	20	50	50	250	7	2	3	2*(1.5)	**8**

PROJECT I: MATERIAL STUDIO

Studio project: Cultural Center / Multiplex with mall. The cultural center project exposes the student to the design issues such as effects by manipulating day light in the art gallery space, designing for clear sight lines and sound in the auditorium space & optimizing day light for reading in the library space. The additional challenge is to create spaces for fine arts & performing arts by creating artistic expressions with building materials such as brick, concrete etc. The multiplex project expects the student to the design issues involved in entertainment spaces such as cinema halls and the challenges in creating commercial spaces such as food courts, shops, gaming parlours etc. Moreover it exposes the student to contemporary materials such as steel, aluminum & glass.

PROJECT II: **HEALTHCARE BUILDINGS**

Hospitals and Nursing homes are a special category of buildings where functional aspects such as planning, building services & the creation of a sterile environment become important design issues. This project aims to familiarize the student with the design of critical health care spaces such as operation theatres, diagnostic facilities, outpatient department and inpatient rooms. The modern trends in hospital design challenge the architect to create world class ambience.

COURSE OUTCOME:-

After completion of this course student will be able to-

CO1	**Analyze**the culture of a place – building types such as the cultural center comprising of spaces such as the art gallery, auditorium for performing arts, library etc.
CO2	**Identify** the various common building materials such as brick, concrete, steel & glass.
CO3	**Examine** the same building material through Material studio.
CO4	**Illustrate** with materials to find suitable artistic & commercial expressions and the learning of design methods for healthcare buildings.
CO5	**Design** commercial buildings integrating entertainment spaces, where the student is given exposure to the finer aspects of auditorium design.
CO6	**Express** the design with drawings and model to support the concept.

REFERENCES:

1. Richard Weston, Plan sections & elevations of key buildings of the 20th century, Lawrence king publishing, London,2004.
2. Time saver standards for building types, De Chiara and Callender, McGraw hill company
3. Neufert Architect's data, Bousmaha Baiche& Nicholas Walliman, Blackwell science ltd.
4. National Building Code – ISI
5. Time saver standards for landscape architecture – Charles W Harris – McGraw Hi

Note: One design problem shall be given in End Semester Examination. 6X3 hours examination.

2. Building Construction –IV (Code – 210502)

Objectives –

The course aims to obtain knowledge of detail the various materials used in construction, various advanced structural components, modern masonry units, and its components, types of insulation and temporary structures.

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
2.	210502	Building Construction–IV	BSAE- 11	50	30	20	20	30	150	5	2	1	2*(1.5)	**6**

UNIT-1 BUILDING MATERIALS –IV

- **Steel:** Properties and uses of cast iron, wrought iron, pig iron, and steel.
- **Market forms of steel:** Structural steel, stainless steel, steel alloys – properties and uses.

UNIT -2 STEEL

- **Steel trusses** – Sawtooth roof truss with north light glazing, simple trusses in steel, and types of connections – to foundations, steel stanchion, and beams.
- **Space frames**:-Single, double & triple-layered tubular space frames, Gates: collapsible gate, entrance gate, rolling shutter.
- **Steel components**: Steel doors, (hinged, fixed sliding, sliding &folding& Revolving door. steel windows (casement window & sliding window) Steel stairs (dog-legged, spiral stair) steel handrails and balustrade grill designs for windows

UNIT-3 WALL & FLOOR

- **Wall**: Modern masonry units - Fly ash brick, Aerated concrete blocks, Hollow concrete blocks &Hollow clay blocks
- **Floor finishes–** Indian patent stone (IPS), Terrazzo flooring, Granolithic flooring stone flooring, Resilient flooring & Carpeting.

UNIT-4 PARTITIONS & FALSE CEILING:

- **Simple paneled and glazed partitions:** Timber, Glass, Aluminium & PVC.
- **Falseceiling:** False ceiling of interior spaces using wood panels, glass, Thermacol, gypsum board, plaster of Paris, aluminum strips & perforated metal sheets.
- Jam casing, skirting, molding, architrave & pelmet

UNIT-5 THERMAL INSULATION AND ACOUSTICS INSULATION

- **Thermal insulation:** vapor barriers and rigid insulations, blanket, poured and reflective insulation– properties and uses of spun glass foamed glass, cork, vegetable fibers Gypsum plaster of Paris, hydride gypsum properties and their uses.
- **Acoustics insulation:** porous, baffle and perforated materials such as Acoustic plastic, Acoustic tiles,wood, partition board, fiberboard, cook, quilts and mats – their properties and uses – current developments. Applications of the above insulations in seminar hall, theatre, and cold storage.

COURSE OUTCOME:-

After completion of this course student will be able to-

CO1	**Summarize** Properties and uses of cast iron, wrought iron, pig iron and steel. Market forms of steel: Structural steel, stainless steel, steel alloys .
CO2	**Identify** various steel members and joints for building industry.
CO3	**Prepare** detail drawings of steel doors, rolling shutters etc.
CO4	**Illustrate** modern methods of wall and floor construction
CO5	**Design** interior wall panelling and suspended ceiling detail drawings
CO6	**Summarize** thermal insulation techniques, acoustical treatment details for different spaces.

REFERENCES:

1. W.B. Mckay – Building construction Vol. 1 (5th edition), Vol. 2 (4th edition) and Vol. 3 (5th edition)
2. R.Chudley &R. Greeno – Building Construction Handbook, ninth edition
3. Francis D.K. Ching – Building Construction illustrated, 4th edition, 2015
4. R.Chudley &R. Greeno – Building Construction Handbook, ninth edition
5. Arthur Lyons, Materials for Architects and Builders – Oxfordshire, England, New York : Routledge, 2014
6. Don A.Watson, construction materials and process, McGraw Hill Co, 1972
7. Stephen Emmitt, Christopher A. Gorse - Barry's Advanced Construction of Buildings, 3rd Edition
8. The American Institute of Architects - Architectural Graphics standards – 11th edition

Note: Total five questions shall be asked. Each question will consist of two parts, one of which will be of 7 marks (which shall be compulsory) and another with 3 marks(which shall be optional).

3. Building Services-II (Electrical & Mechanical) (Code – 210503)

Objectives –

The course aims to obtain knowledge of various services in a building such as electrical, illumination, etc., an understanding of layouts of electrical, plumbing, AC ducts, lighting, etc., Air conditioning system and its working.

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
3.	210503	Building Services-II (Electrical & Mechanical)	BSAE-12	50	30	20	-	-	100	3	2	1	-	**3**

UNIT-1 ELECTRICAL SERVICES

Electrical systems – Basic of electricity – single/Three phase supply , Electrical installations in buildings – Types of wires, Wiring systems and their choice, planning electrical wiring for building – Main and distribution boards, HT transformers, electrical panel rooms, cable trenches, controls, Circuits, fuses, main switch box, meter box, circuit breakers. Uninterrupted power supply, inverters, protective devices in electrical installation – Earthing for safety – Types of earthing – ISI Specifications, Lighting protection Electrical installations in various building types, Residential bungalow, apartments, commercial recreational buildings and factory buildings etc. Market survey of Electrical materials and electrical appliances.

UNIT-2 ILLUMINATION AND LIGHTING DESIGN

Principles of Illumination: Basics of Lighting Technology and Terminology, Classification of lighting–Artificial light sources. Systems of lighting such as direct, indirect, diffused etc.,

Design of modern lighting: Lighting for stores, offices, schools, hospitals and house lighting.Elementary idea of special features required and minimum level of illumination required for physically handicapped and elderly in building types. Seeing light: learn about vision and perception, color, and - understanding shade and shadow

Light fixture :Controlling light, luminaire optics and distributions - introduction to light fixture materialsand construction, and components Light in Architecture and the Psychology of Light,

Lighting Design Concepts, Lighting in terms of energy efficiency, ergonomic aspects and aesthetic aspects.

Light a surface: Horizontal and vertical - present various approaches and techniques - finding lightfixtures. For a Task - present various approaches and techniques, simple lighting effects.

Calculating Light: learn light metrics and calculation methods - review energy and the environment

Lighting calculations

Lighting Design :Residential lighting, Office and Corporate Lighting, Hospitality Lighting Design,

Health Care/Institutional Lighting Design, Lighting for Stores, Lighting Common Spaces

UNIT-3 AIR CONDITIONING

Components of an air-conditioning system & their function-Refrigeration cycle, different systems of AC, window, split, small standalone unit, and air cooled direct expansion system used for auditorium spaces, chill water systems with air handling units, estimating the cooling load of different spaces in a building with simple calculation, duct lay out for both types of systems. Intelligent building systems in air conditioning, Sick building syndrome, effect of pollutants, improving air quality in air-conditioned buildings.

UNIT-4 PUMPS AND MACHINERIES

Pumps: Different types of Pumps, working, applications. Water pumps, sewage pumps, Centrifugal,Reciprocating pump, turbine (diagrams & functioning only)

Compressors: Different types of Compressors and their applications.

Lifts And Escalators : Elevators (Lifts) and escalators–Brief history-types of Elevators like traction,Hydraulic etc., Double-decker, 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., Service requirements: Quality of service, quantity of service, time, passenger handling capacity, space and physical requirements, machine room spaces and its typical layout Escalators – Definition,

Application. Location and arrangement in buildings. Space requirement, Conveyor belts-movement of passengers and goods

UNIT-5 ELECTRICAL AND AC DUCT LAYOUT OF SIMPLE BUILDINGS

Fixtures and accessories used in electrical installation –Preparing an electrical layout for part of design project, with simple load calculations. Design consideration for AC plant location and size. Ac ducting layout for an office building, shopping complex etc.

COURSE OUTCOME:-

After completion of this course student will be able to-

CO1	**Classify** various technical aspects of electrical services.
CO2	**Summarize** basic principles of illumination and practical application of lighting while designing a building.
CO3	**Explain** the importance, installation and working of essential services in buildings.
CO4	**Elaborate** the importance and application of mechanical services while designing a building.
CO5	**Develop** electrical distribution plans and layout for installation purposes.
CO6	**Develop** a comfortable mechanical system for a building by means of various natural and mechanized measures.

REFERENCES:

1. Heating, Cooling, Lighting: Sustainable Design Methods for Architects Oct 13, 2014 by NorbertLechner DEWALT Plumbing Code Reference: Based on the 2015 International Plumbing and Residential Codes (DEWALT Series)
2. Electrical Wiring Residential Jan 1, 2011by Ray C. Mullin and Phil Simmons
3. Architectural Lighting: Designing with Light and Space (Architecture Briefs),May 4, 2011 by Hervé Descottes and Cecilia Ramos.
4. HVAC Design Sourcebook Oct 26, 2011, by W. Larsen Angel

4. Building Sciences & Energy Conservation (Code – 210504)

Objectives –

The course aims to obtain knowledge of building sciences such as design methodology, resource optimization and innovative approaches to eco-design, the acclaimed sustainable buildings designed within the past decade, energy conservation through building design, designing an eco-building.

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
4.	210504	Building Sciences & Energy Conservation	BSAE-13	50	30	20	-	-	100	3	2	1	-	**3**

UNIT-1 CLIMATE &THERMAL COMFORT

Global climatic factors, elements of climate, classification & characteristics of tropical climates, site climate and Urban climate - Thermal balance of the human body, Thermal comfort indices – Effective temperature, CET, calculation of comfort zone & determination of overheated& under heated periods.

UNIT-2 SOLAR GEOMETRY &DESIGN OF SUNSHADING DEVICES

Apparent movement of the sun, sun path diagrams (solar chart) - Solar angles, Shadow angles, solar shading masks. etc - Exercises on plotting isopleths, transfer of isopleths to solar chart, fitting a shading mask over the overheated period & design of sun shading devices for different orientations.

UNIT-3 PRINCIPLES OF THERMAL DESIGN IN BUILDINGS

Thermal quantities – heat flow rate, conductivity (k–value)& resistivity, conductance through a multilayered body, surface conductance, transmittance – U value of different materials – convection , radiation , concept of sol-air temperature & solar gain factor - heat loss & heat gain .Periodic heat flow in building – time lag & decrement factor & its application in selection of appropriate materials for walls & roof. Effect of Insulation & cavity on time-lag.

UNIT-4 VENTILATION & DAY LIGHTING

Functions of ventilation – stack effect due to the thermal forces, wind velocity – wind rose diagram, wind pressure - Air movement through building & around buildings – factors affecting indoor air flow, wind shadow etc. - The nature of light , its transmission , reflection – colored light, the Munsell system
– Photometric quantities – illumination, day lighting prediction – the daylight design graph.

UNIT-5 DESIGN FOR CLIMATIC TYPES

Building design & layout planning consideration for warm humid, hot dry, composite & tropical upland climates, climatic data sets – analysis – climate graph – the Mahoney tables & its recommended specification - Exercises on design of small Buildings for various climates.

COURSE OUTCOME:

After completion of this course student will be able to-

CO1	**Classify** various climatic parameters on micro and macro level of site and design shelters according to different climatic conditions.
CO2	**Elaborate** the concept of thermal balance in human beings and its statistical parameters.
CO3	**Apply** various aspects of solar geometry in building orientation.
CO4	**Apply** various principles of thermal design in buildings.
CO5	**Develop** designs considering sustainable design tools, design methodology and innovative approach towards eco-designs.
CO6	**Explore** various design strategies for building in different type of climatic zones.

REFERENCES:

1. O.H. Koenigsberger, Manual of Tropical housing and building – Climatic Design, Orient Longman, Chennai, 1975.
2. M .Evans – Housing, Climate &Comfort , Architectural Press, London ,1980.
3. E.Schild &M. Finbow – Environmental Physics in construction & its application in Architectural Design ,Granadar , London, 1981.
4. B.Givoni - Man, Climate & Architecture, Applied Science, Essex 1982.
5. Donald Watson & Kenneth labs – Climatic Design – Mcgraw hill NewYork 1983.
6. A.Konya- Design Primer for Hot Climates, Architectural Press, London, 1980.

5. ELECTIVE- II

Objectives –

The course aims to obtain knowledge of eminent Town planners and their contribution to planning thought. To understand the contemporary issues in urban planning, overall understanding of classification of settlements, land-use, zoning and types of development plan, simple Town planning techniques, various types of journalism, various techniques of Architectural Journalism, changing scenario in the context of globalization, Architectural Journalism in practical.

S. No	Subject Code	Subject Name	Category	Maximum Marks Allotted							Total Marks	CTHRS	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot		MOOC							
				End Sem.	Mid Sem Exam	Quiz/ Assignment / Sessional	End Sem	Lab work & Sessional	Assignment	Exam			L	T	P	
5.	210511	Human Settlement	DE- 2	-	-	-	-	-	25	75	100	4	-	-	4	**2**

I) HUMAN SETTLEMENT

UNIT - 1 Introduction to Settlement Planning

Evolution of human settlements- man, environment and built structure. Community and settlement patterns. Characteristics of settlements. Growth patterns. Ancient rural and urban settlements. Settlement patterns and birth of early and medieval cities. Renaissance and High Baroque cities. Factory and Company towns.

UNIT - 2 Introduction to Town Planning and Design of Cities

Definitions related to Planning, levels of planning, scope and components. Types of planning, elements and scope. Characters of a town, census definition of urban area, densities of town. Constituents of town/city.

UNIT - 3 Town and Urban Planning Concepts

Evolution of Planning concepts: City beautiful movement, Garden cities, Radburn city and neighbourhood concept. Theories related to growth and decay of settlements- Luis Mumford, Geddesian triad, Ekistics. Utopian Planning theories-Linear city- Tony Garnier, Soriya Y Mata. Planning concepts by Le Corbusier and FLW.

UNIT - 4 Planning Framework and Process for Various Development Plans

Planning process, components and techniques- survey techniques and data collectionmethods. Concept of master plan, its elements, preparation and implementation. Perspective plans, structure plans, advocacy plans, zonal plans. Participatory and inclusive planning

UNIT - 5 Problems and Issues of Towns and Settlements

Identification of planning problems of land use distribution and change, communication system, overcrowding. Informal growth- slums, blighted areas. Sporadic growth and conurbation, primacy, traffic. UDPFRI Guidelines, MoUD laws, Zoning and developmental controls. Case Study of Existing Settlement

COURSE OUTCOME: After completion of this course the student will be able to:

CO1	**Define** types of settlements based on different criteria
CO2	**Identify** the elements of a settlement
CO3	**Describe** the principle of a settlement pattern.
CO4	**Classify** constituents of town/city
CO5	**Distinguish** between different settlements, concepts of planning and techniques of survey
CO6	**Review** the condition of development/status of urbanization

REFERENCES

1. An Introduction to the Science of Human Settlements by C.L.Doxiadis; Ekistics Hutchinson, London, 1968.
2. Housing and Urban Renewal by Andrew D.Thomas, George Allen and Unwin; Sydney, 1986.
3. Ministry of Urban Affairs and Employment; Government of India, New Delhi,1999
4. Sustainable Human Settlements by R. S. Sandhu; Asian Experience, Rawat publications, 2001.
5. Living Plans: New concepts for advanced housing by P. Gastek; Brikhauser publications, 2005
6.

S. No	Subject Code	Subject Name	Category	Maximum Marks Allotted							Total Marks	CTHRS	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot		MOOC							
				End Sem.	Mid Sem Exam	Quiz/ Assignment / Sessional	End Sem	Lab work & Sessional	Assignment	Exam			L	T	P	
5.	210512	Interior Design	DE- 2	-	-	-	-	-	25	75	100	4	-	-	4	**2**

II) INTERIOR DESIGN

UNIT-1 INTRODUCTION TO INTERIOR DESIGN

Introduction to interior design, Design process, style, Behaviour psychology, perception. Basic elements of evolution of creativity, dot line, plane, volume,2D, 3D. Basic principles of design Axis, Symmetry, Balance, Focus, Rhythm, Harmony, Unity,Variety Contrast, Hierarchy, Scale& Proportion, Movement, Emphasis, Dominance, Fluidity, etc.

UNIT-2 HISTORY OF INTERIOR AND FURNITURE DESIGN

Brief study of the history of interior design context to western through the ages, Relating to historical context and design movement.Brief study of Indian folk arts and crafts with reference to interior design and decoration.

UNIT-3 ELEMENTS OF INTERIOR DESIGN INTERIOR TREATMENT AND FINISHES

Introduction to various elements of interior like floor, ceiling, walls,staircase, opening, services elements, incidental elements etc. And various methods of their treatment involving use of modern building materials and methods of construction in order to obtain certain specific functional aesthetic and psychological effects.

UNIT-4 ELEMENTS OF INTERIOR DESIGN-LIGHTING & INTERIOR LANDSCAPING

Study of interior lighting –different types of lighting ,types of lighting fixtures their effects and suitability in different context, And accessories used for enhancement of interior .Interior Landscaping-elements like rocks, plants, water ,flower, fountains, paving, artifacts etc. Their physical properties and effects on interior space.

UNIT-5 ELEMENTS OF INTERIOR DESIGN- FURNITURE & SPACE PLANNING

Study of human relationship between furniture and spaces, furniture design as related to human comfort and function. Material of furniture types of interior: office furniture, children's furniture, residential furniture, display systems etc. construction, changing trends and lifestyles innovations and design ideas. Study on furniture.

COURSE OUTCOME

After completion of this course the student will be able to:

CO1	**Explain** basic principles, multiple dimensions and concepts of interior design.
CO2	**Elaborate** concept of interior lighting which includes various lighting fixtures and their effects.
CO3	**Analyze** human relationship between furniture and interior spaces considering material and types of furniture according to different spaces.
CO4	**Summarize** the history of interior design in western context followed by various design movements.

CO5	**Analyze** various elements of interior design and their methods of treatment by using modern building materials so that attractive and efficient design can be achieved.
CO6	**Examine** various interior landscaping elements, their physical properties and effects on interior space.

REFERENCES:

1. Francis D.K.Ching, " interior design illustated" U.N.R publication.NY1987
PremavathySeetharaman, ParveenPannv" Interior Design and Decoration" CBS publication, 2015
2. Julius Penero and Martin Zelnik, 'Human Dimensions and Interior Space' Whitney library of design, NY 1979
3. SyanneSlesinAnd Stafford Ceiff 'Indian Style,ClarksonN.Potter', New York 1990.
4. Gary Gordon 'Interior Lighting For Designers' John Willey&Sons-2003.
5. Kathryn.B.HiesingerAnd George H.Marcus,Landmarks Of Twentieth Century Design; Appey Ville Press,1993.
6. Inca/Interior Design Register,Inca Publications, Chennai,1989.
7. Steprt-DevanKness, Logan AndSzebely,'Introduction To Interior Design' Macmillan Publication Co, Newyork 1980.
8. NBC,2016 (Part 4)

6. Self-study, Seminar (SWAYAM/NPTEL & MOOC) (Code – 210508)

7.

S. No	Subject Code	Subject Name	Category	Maximum Marks Allotted							Total Marks	CTHRS	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot		MOOC							
				End Sem.	Mid Sem Exam	Quiz/ Assignment / Sessional	End Sem	Lab work & Sessional	Assignment	Exam			L	T	P	
6.	210508	#Self study, Seminar (SWAYAM/ NPTEL & MOOC)	SEC-6	-	-	-	-	-	25	75	100	4	-	-	4	**2**

Note: Any one of the course available on SWAYAM shall be opted and shall not be repeated throughout the course (B.Arch)

8. Summer Internship Project- II (Code – 210507)

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
7.	210507	Summer Internshi Project- II	SEC- 7	-	-	-	50	-	50	2	-	-	2	**1**

Seminar / Workshop/ Training during previous Summer break will be evaluated

9. Constitution of India/ Essence of Indian Traditional knowledge (Code – 100006)

Objectives –

The course aims to obtain knowledge of traditional knowledge system in Indian context and its usage in building construction and architecture, constitution of India and various reforms and political, social, civil rights and movements.

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
8.	100006	Constitution of India/ Essence of Indian Traditional knowledge **(Audit course)**	MC-2	70	20	10	-	-	100	3	-	-	-	-

Unit-1

- Introduction to Basic Structure of Indian Knowledge System
- Homogeneity of modern science and Indian Knowledge Tradition
- Yoga: Promoting positive health and personality
- Case Studies

Unit-2

- Indian Philosophy or Darshanas: Jainism, Buddhism, Yoga, Śaiva and Vedanta
- Indian Linguistic Tradition: Panini's Ashtadhyayi
- Indian Art: Mauryanart, Buddhist art, Gupta art, Muslim Art &Culture Contemporary art
- Case Studies

UNIT 3 INTRODUCTION TO POLITICAL SCIENCE

- Nature and scope of political science
- Definition, elements and theories of origin of State (Social Contract and Evolutionary)
- Meaning and features of Civil Society
- Indian Political Thought: Raja Ram Mohan Roy, Swami Vivekanand, Gandhi, Ambedkar

Unit 4 Concept of Government and Its Organs

- Government: Definition and its characteristics
- Types and meaning of Legislature: Composition, Function and Role of the Parliament (LokSabha and RajyaSabha)
- The Powers, Position and Role of the President, Prime Minister and the Cabinet
- The Powers, Position and Role of the Governor and the Chief Minister; Composition and the role of Supreme Court, Judicial Review and Judicial Activism

UNIT 5 SALIENT FEATURES OF INDIAN CONSTITUTION

- Preamble, Conventions, Sovereignty of the Constitution and the Rule of Law
- Parliamentary Democracy, Federalism, Secularism and Socialism
- Fundamental Rights, Directive Principles of State Policies and Fundamental Duties
- Election Commission and Electoral Reforms

COURSE OUTCOME:-

After completion of this course student will be able to-

CO1	**Elaborate** basic concept of Traditional and modern knowledge system of India.
CO2	**Explain** the significance of Yoga with respect to health.
CO3	**Elaborate** the concept, significance and evolution of political science.
CO4	**Summarize** the political views of various great Indian politicians.
CO5	**Apply** the various aspects of Indian philosophy and art in contemporaryarchitecture.
CO6	**Apply** the various laws of the Indian government in implementation of projects.

Basic Readings:

1. O.P. Gauba, *Political Theory,* Macmillan, (latest edition).

2. D.D. Basu, *Introduction to the Constitution of India,* (Latest Edition).

3. N.G. Jayal & Pratap Bhanu Mehta, *The Oxford Companion of Politics in India*, 2000.

4. W.H. Morris-Jones, *The Government and Politics of India.*

5. Swami Jitamanand, Holistic Science and Vedam, Bhartiya Vidyabhawan

6. V. Shivramakrishnan (Ed.), Cultural Heritage of India, Bhartiya Vidyabhawan, Mumbai Fifth Edition, 2014.

7. Yoga sutra of Patanjali, Ramakrishnan Mission, Kolkata.

8. Panini Shiksha, MotilalBanarsidas

9. VN Jh, Language, Thought and Reality

10. Krishna Chaitanya. Arts of India, Abhinav Publications, 1987.

11. SC Chaterjee and DM Datta, An Introduction to Indian Philosophy, university of Calcutta, 1984

12. A L Basham, The Wonder That was India

THIRD YEAR SIXTH SEMESTER

1. Architectural Design – VI (Code – 210601)

Objectives –

The course aims to obtain knowledge of Architecture as a design response to Technology, hospitality industry in the first project & requires the student, large scale building with Innovation & experimentations.

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot				L	T	P	
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional						
1.	210601	Architectural Design – VI	DC- 13	100	30	20	50	100	300	9	2	2	4*(1.5)	**10**

PROJECT I: DESIGN FOR HOSPITALITY INDUSTRY

The project requires the understanding of the special nature and functioning of the hotel industry and to respond with suitable concepts of space planning, circulation, interior design, materials and lighting. Example: Hotels- Business, resort, heritage, boutique etc. The student needs to concentrate on site planning, space planning, circulation, services and the various aspects of interior design such as furniture, flooring, ceiling, lighting etc. Students get exposure to the difference between a business hotel & a resort as well as the special needs of heritage and Boutique hotels. Exercises in interior space visualization using computer software is attempted.

PROJECT II: URBAN INFRASTRUCTURE PROJECTS

Contemporary transportation terminals and stadiums are large buildings with multiple entries & exits dealing with large crowds and having multiple levels with large spans, complex services & demanding environmental conditions. Function, convenience and security will become the basic design parameters. Example - Bus terminal / Railway station / Indoor sports complex / Aquatic complex etc. This studio challenges the designer to come up with a feasible structural solution after undertaking a study of large span structural systems. Moreover planning for transport terminals requires understanding of safety norms & to design sport facilities understanding of optimum environmental parameters is the requisite.

OUTCOME:

After completion of this course the student will be able to:

CO1	**Summarize** basic concept of spatial planning of different types of buildings such as Hospitality and Infrastructure projects
CO2	**Apply** large span structural systems in design
CO3	**Apply** building bye laws in building design**.**
CO4	**Apply** various essential services in complex buildings.
CO5	**Analyze** the project with respect to various environmental parameters.
CO6	**Design**Hospitality and Infrastructure projects

REFERENCES:

1. Time saver standards for building types, De Chiara and Callender, McGraw hill company
2. Neufert Architect's data, Bousmaha Baiche& Nicholas Walliman, Blackwell science ltd
3. National Building Code - ISI
4. New Metric Handbook – Patricia Tutt and David Adler – The Architectural Press

Note: One design problem shall be given in End Semester Examination.

6X3 hours examination.

2. Building Services-III (Acoustic & Fire Fighting) (Code – 210602)

Objectives –

The course aims to obtain knowledge of the basic principles of acoustics in buildings and their integration with architectural design, suitable materials in the design of auditoria and the method to achieve noise control in built spaces, firefighting services and design alteration for it, Layout of firefighting integrated system in building design.

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
2.	210602	Building Services-III (Acoustic & Fire Fighting)	BSAE-14	50	30	20	-	-	100	4	3	1	-	**4**

UNIT-1 INTRODUCTION TO THE STUDY OF ACOUSTICS & SOUND TRANSMISSION, ABSORPTION, INSULATION

Acoustics-Definition, terms related to acoustics. Theory of sound: generation, propagation, transmission, reception of sound, sound waves, frequency, intensity wavelength, sound pressure, measurement of sound scales-decibel scale. Calculation of reverberation time using Sabine's formula, Recommended RT/Volume for different spaces. Acoustical defects-echoes, focusing of sound, dead spots, flutter echo. Room resonances, small enclosures, standing waves, proportioning of room dimensions. Room acoustic phenomena: Reflection (plane, concave and convex surfaces), diffusion, reverberation, absorption. Acoustical requirements of different types of building, sound absorption, absorption co-efficient and their measurements, Sound insulation, materials, STC ratings, sound isolation. Sound absorptive materials and their choices, absorption coefficients and their measurements, NRC value.

UNIT-2 NOISE CONTROL AND SOUND REINFORCEMENT & ACOUSTICS IN BUILDING DESIGN AND CONSTRUCTION

Sources and types of noise, characteristics and effect of noise impact on human beings/behavior, noise curves, transmission of noise – airborne and structure borne, transmission loss, Means of noise control-source (enclosures), path (Barriers and insulations) and receiver (personal controls).Measure of noise control for different constructions – construction details of cavity walls, composite walls, floating floor, wood-joist floors, plenum barriers.

Design: Site selection, shape, volume, treatment for interior surface, basic principles in designing open air theatres, cinemas, broadcasting studios, concert halls, class rooms, lecture halls, theatres – Auditorium.

Construction: Constructional detailing, relation to walls/ partition, floor / ceiling/ opening/ windows/ doors. Acoustical requirement of different types of buildings.

UNIT-3 FIRE FIGHTING SERVICES

Fire extinction / suppression technology: constituents of fire, methods of fire extinguishment, Extinguishing agents / media Fire suppression equipment & installations (active fire protection measures) : fire detection and alarm systems (automatic fire alarm systems), Heat Detectors, Smoke detectors, flame detectors, Choice / Selection of Fire Detectors

Hydrant systems / installations- stand post and Underground type of hydrants (Sluice Valve Type). Internal Hydrant Systems - Dry-riser system, Wet-riser system, Wet-riser-cum -down-comer system and Down-comer-system. Sprinkler system types. Early Suppression Fast Response Sprinklers (ESFR), water spray systems, automatic drencher systems.

UNIT-4 FIRE FIGHTING SYSTEMS & BUILDING NORMS

Extinguishing Systems - Foam, CO_2 and Halon Fire System, first aid firefighting equipment: portable fire extinguishers and its types, graphic symbols for fire protection plans, fire protection - safety signs.

Building fire hazards: Relationship of Building Fire Hazards with Life Safety, Hazards from Building Contents, Fire Load and Fire Effects, Exposure Hazard, Hazards from Interior Finish and services. Hazards in Buildings from Collapse, Explosion. Life hazards in buildings and means of escape / egress / exit : Factors affecting Life Safety of Occupants, Growth and Spread of Fire and Smoke, Design Considerations of Means of Exit, Exit Requirements, Lifts and Escalators as Means of Exit, Occupant load, capacities of exits, internal staircases, fire lifts, Firefighting Shafts, external stairs, horizontal exit, illumination of exits ,fire compartmentation, fire tower, refuge areas and ramps.

UNIT-5 FIRE FIGHTING LAYOUT OF BUILDINGS & DESIGN AND DETAILING FOR ACOUSTICS OF MULTIPURPOSE HALLS

Analyze a Fire fighting layout for a commercial building, Reflected ceiling plan of smoke detectors / sprinklers, etc. for a multistoried building.

Discuss and analyses fire accident case studies.

Case studies of acoustically designed and treated multipurpose halls. Onsite measurement with Sound measurement equipment's. Design of a multipurpose hall for optimum acoustics - drawings and construction details of acoustical treatment on walls, ceilings and floors.

COURSE OUTCOME :

After completion of this course the student will be able to:

CO1	**Summarize**concept of acoustics and its various aspects .
CO2	**Identify**effect of noise while designing a building.
CO3	**Apply**basic concept of firefighting systems in different types of buildings.
CO4	**Identify** various suitable sound insulation materials and techniques for construction .
CO5	**Apply** the basic principles of acoustics in design.
CO6	**Explore** various techniques of firefighting services in large scale buildings.

REFERENCES:

1. Architectural Acoustics- David Egan, J. Ross Publishing Classics
2. Acoustical Designing in Architecture- Vern.O Knudsen and Cyril M. Harris, Wiley Publisher
3. Acoustics, noise and buildings- Peter.H. Parkins and H.R.

Humphreys, Pitman *publishing* corporation, New York, Chicago

4. Master Handbook of Acoustics–F. Alton Everest and Ken.C. Pohlmann Paper back *Publisher*

3. Site Planning &Landscaping (Code – 210608)

Objectives –

The course aims to obtain understanding of environment, human interventions and its impacts on nature and knowledge about various measures of protecting it, various concepts, ideas and techniques prevalent in landscape architecture, concepts of site planning and effective measures of doing it, the historic development of landscaping and site planning to students.

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
3.	210608	Site Planning & Landscaping	DC- 14	50	30	20	-	-	100	3	2	1	-	**3**

UNIT-1 INTRODUCTION& ELEMENTS OF LANDSCAPE ARCHITECTURE AND LANDSCAPE DESIGN

Introduction to landscape architecture, ecology, ecological balance, landscape conservation, reclamation and landscaping of derelict lands, environmental impact assessment. Elements of landscape – land elements, land form plants and planting, water, lighting etc. characteristics and classification of plant materials, basic principles of landscape design; Factors to be considered, Use and application of plant materials in landscape design, and other components involved

UNIT-2 HISTORY OF LANDSCAPE ARCHITECTURE & URBAN LANDSCAPE

Development of landscape design: Detailed study of selected examples from Eastern, Central and Western traditions; Ancient Heritage - Mesopotamia, Egypt, Greece, Rome; Western Civilization – Europe: Italy, France, and England; The middle-east - The Persian tradition and its far reaching influence Eastern Civilization: China and Japan Ancient and medieval period in India; Mughal and Rajput Landscapes and study of contemporary landscape architecture.

Basic principles and elements of Urban landscape, Significance of landscape in urban areas, introduction to street furniture, road landscaping, waterfront development, landscaping of residential areas, Industrial Landscaping.

UNIT-3 INTRODUCTION TO SITE ANALYSIS & SITE INFLUENCING FACTORS

Introduction to Site analysis, Importance of site analysis; interrelationship between nature and human interventions , thematic traditions in site design, history of site design as a source for precedent analysis On site and off site factors; Analysis of natural, cultural and aesthetic factors; topography, hydrology, soils, landforms, vegetation, climate, microclimate. Influence of water bodies

UNIT-4 DESIGN OF LANDFORMS IN A SITE & SITE PLANNING PRINCIPLES AND TECHNIQUES

Contours - representation of landforms and landform design, interpolation of contours, slope analysis, uses and function. Grading - Symbols and grading and alignment of paths/roads, angle of repose and use of retaining walls. Grading terraces. Drainage - surface drainage, functional and aesthetic considerations. Site Zoning. Organization of vehicular and pedestrian circulation; parking; street widths; turning radii; street intersections; steps and ramps. Site planning considerations in relation to water systems, sewage disposal, outdoor electrical systems.

UNIT-5 SITE CHARACTERISTICS AND DESIGN REQUIREMENTS& LANDSCAPE EXERCISE

Landscape design of a neighborhood open space (area of 2000 to 3000 sq. meters)

Exploration of site planning options for residential, commercial, office, industrial and mixed-use projects; street network, civic space, and open space planning; emphasis on walkable, mixed-use, transit-oriented sustainable development.

COURSE OUTCOME:

After completion of this course the student will be able to:

CO1	**Summarize** various elements of landscape architecture and design.
CO2	**Analyze** different aspects of landscape architecture history through various design principles of urban landscape.
CO3	**Examine** various parameters of site analysis along with different site influencing factors like topography, hydrology, soil ,landforms etc.
CO4	**Illustrate** contours as representation of landforms and its application in analysis of various physical characteristics like grading, drainage pattern, etc.
CO5	**Apply** the various techniques in landscape exercise which includes different site planning projects.

REFERENCES:

1. T S S for Landscape Architecture, Mc Graw Hill,Inc, 1995 .
2. Grant W Reid, From Concept to Form in Landscape Design, Van Nostrand Reinhold Company,1993 .
3. Brian Hacket, Planting Design .
4. T.K. Bose and Chowdhury, Tropical Garden Plants in Colour, Horticulture And Allied Publishers,Calcutta, 1991.
5. Motloch, J.L., "Introduction to Landscape Design", Van Nostrand Reinhold Publishing Co., New York, 1991.., McGraw Hill Book Co., New York, 1981.Sam kubba, " Green construction project management and cost oversight", Elseiver, 2010
6. Kevin Lynch , "Site Planning", MIT Press, 1967
7. Time Savers Standards for Site Planning, McGraw Hill, Inc, 1995
8. Richard Untermann and Robert Small, "Site planning for cluster housing", Van NostrandReinholdCompany, 1977
9. Michael Laurie, "An Introduction to Landscape Architecture", Elsevier, 1986
10. TSS for Landscape Architecture, McGraw Hill, Inc, 1995
11. John Ormsbee Simonds, "Landscape Architecture: A manual of site planning & design", McGra

4 . Working Drawing (Code – 210604)

Objectives –

The course aims to obtain understanding of standards and conventions used for preparation of architectural drawings to develop the skills of preparing various architectural drawings and details used for construction of buildings, drawings in sufficient details such that the contractor is able to construct a building as per the design, Graphical presentation of all the components of a building along with dimensioning and annotations, application of IS Codes, Conventions/ methods of preparing a working drawing along with tabulation of schedules of materials, finishes and hardware/ Linking up working drawings / specifications in an architectural project.

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot				L	T	P	
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional						
4.	210604	Working Drawing	PAEC- 2	-	-	-	20	30	50	4	-	-	4	**2**

UNIT- 1 BUILDING DRAWING

Centre line plan, Foundation plan, Structural grid plan (in case of framed structures), Basement floor plan, Ground floor plan, Typical floor plan, All elevations, All sections: one at least through staircase and one through toilet, Terrace floor plan giving details of surface drawing etc.

UNIT- 2 SERVICES

Sanitation drawings showing fixtures etc, Electrical layout plan, typical wall profiles sections, detailed drawings of special rooms like kitchens, toilets, staircase etc.

UNIT- 3 SPECIFICATION

In addition to the above, students are expected to prepare a detailed clause by chance specifications for at least one of the 3 projects Specifications writing include the following aspects: Materials, Pre and post installation work., Test if any, Mode of measurements, Knowledge of manufacturers specifications as a database for writing specifications for the following materials, based on surveys:

UNIT- 4 MATERIALS

Glass Plywood and laminates Hardware Electrical wires and accessories Water supply and plumbing: fittings and fixtures flooring and cladding.

UNIT- 5 EXERCISE

One working drawing of a previous year architectural design project having load bearing structure with Minimum 150 sq. m. carpet area not exceeding 2 stories. Two details such as doors/windows/railings/kitchen etc.

COURSE OUTCOME:

After completion of this course the student will be able to:

CO1	**Analyze** various finishing materials along with their installation methods.
CO2	**Illustrate** various relevant architectural and structural layouts of respective buildings
CO3	**Incorporate** various specification aspects during execution of a project.
CO4	**Develop** necessary service layout plans of different buildings.
CO5	**Produce** working drawing sets for load bearing and a frame structure architectural Design project.

REFERENCES:

1. Building construction specification – Jack Lerrs
2. Standard specification of state governments
3. Specification in detail –Frank W. Makay
4. Building Drawing – M.G. Shah, CM, Kale, S.Y. Paoui
5. Architectural Working Drawings –Ralph W. Liebing, Mimi Ford.

5 ELECTIVE-III

Objectives –

The course aims to obtain knowledge of fundamental concepts and theories of Housing and apply them in their design projects, various types of Housing and its components, the vocabulary of interior design, interior and furniture design and design movements through history, components of interior space and treatment and finishes for the same, the various components of interior design like lighting, landscaping and furniture.

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
5.	210611	Housing	DE- 3	50	30	20	-	-	100	3	1	2	-	**3**

(i) HOUSING

UNIT- 1 INTRODUCTION TO HOUSING AND HOUSING ISSUES.

Housing demand and need, Role of Government and public agencies in Housing development, National housing policy, comparison of housing policies and programmes of developed and developing country, Housing agencies, housing programmes and resources, Housing finance.

UNIT- 2 SOCIO ECONOMIC ASPECTS.

Social factors influencing Housing Design – identity, safety, convenience, access, amenities etc, economic factors -affordability and its relationship to house income, incremental housing concept, Slum Upgrading and sites and services schemes and reconstruction process.

UNIT- 3 HOUSING STANDARDS.

Different types of housing standards – spatial standards, safety standards, standards for amenities, Methodology of formulating standards, UD PFI – guide lines, standard and regulations – DCR – performance standards for housing, TCPO, New norms and amenities

UNIT- 4 MODERN TECHNIQUES IN HOUSING CONSTRUCTION.

Prefabrication techniques –modular house, panelized and precast homes, sustainable practices – zero energy home, eco housing, green homes - Teri – Griha and its rating system, Recent advancement in materials, Design guidelines, Environmental impact of Building materials, Environmental quality.

UNIT- 5 HOUSING DESIGN AND PROCESS.

Traditional housing, row housing, cluster housing – apartments and high-rise housing, gated community, Government housing – HUDCO financed project for economically weaker section, their Advantages and disadvantages. Methods and approaches to housing design. Various stages and tasks in project development – feasibility study, detailed study.

COURSE OUTCOME:

After completion of this course the student will be able to:

CO1	**Comprehend** the history, demand, policies, and various stakeholders in housing.
CO2	**Define** the socio-economic aspects, schemes and reconstruction process.
CO3	**Identify** various housing standards, guidelines, regulations, norms, amenities, etc.
CO4	**Summarize**modern housing construction techniques in context of changing scenario and globalization.
CO5	**Elaborate** design process, stages, tasks, methods, approaches of different type of housing projects with respect to varying requirements.
CO6	**Apply** the housing principles hereafter.

REFERENCES:

- Kavita Datta and GA. Jones,' Housing and Finance in Developing Countries',Routledge,London,1999.
- Housing Design –Eugene Henry Klaber – Reinhold publishing corp.
- Daniel Vallero and Chris Brasier, Sustainable Design – The science of sustainability and Green Engineering;Wiley;2008
- Thomas E Glavinich; Green Building Constction; Wiley;2008
- GeofreyK.Payne, Low Income Housing in the Development World, John Wiley and Sons, Chichester,1984.
- Martin Evans, Housing, Climate and Comfort, Architectural Press, London, 1980
- An introduction to Urban Housing Design –Graham Towers.

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
5.	210611	Architectural Journalism	DE- 3	50	30	20	-	-	100	3	1	2	-	**3**

ARCHITECTURE JOURNALISM

UNIT-1 JOURNALISM

Introduction to journalism, key concepts and objectives of Journalism – Specialized journalism: with emphasis on architectural journalism - Journalism skills: research, reporting, writing, editing, criticism.

UNIT- 2 DISCUSSIONS AND ISSUES

Regional, National and International discussion forums, Changes in contemporary and historical design practices. Discussions on topics needed in an architectural journal and current issues - types of journals, works of key architectural journalists, Public Discourse on the Internet, Mass Media and Public Opinion – critique on selected pieces of journalism.

UNIT – 3

Contemporary Architectural Journalism, Digital journalism, Cinematography, Critical appraisal of Technical, Literature, Visual and Media

UNIT-4 FIELD PROGRAM

Exercise on integrating photography in architectural journalism

COURSE OUTCOME:

After completion of this course the student will be able to :

CO1	**Elaborate** basic concepts of journalism with the main focus on various aspects of architectural journalism.
CO2	**Analyze** theoretical and contextual needs for conducting journalism through research
CO3	**Prepare** architectural report (critical, appraisal or research) of a project.
CO4	**Prepare** architectural photography report

REFERENCES:

Huckerby, Martin., The Net for Journalists: A Practical Guide to the Internet for Journalists in Developing Countries. UNESCO/Thomson Foundation/ Common wealth Broadcasting Association, 2005.

S. No	Subject Code	Subject Name	Category	Maximum Marks Allotted							Total Marks	CTHRS	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot		MOOC							
				End Sem.	Mid Sem Exam	Quiz/ Assignment / Sessional	End Sem	Labwork & Sessional	Assignment	Exam			L	T	P	
6.		# ELEXTIVE –IV	DE- 4	-	-	-	-	-	25	75	100	4	-	-	4	**2**

S no	Elective	Sub code	Sub Name	Remark
1	ELECTIVE- 4			opted from NPTEL platform

6. Tour/ seminar / Workshop/Training during winter break (Code – 210607)

S.No.	Subjet Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
7.	210607	Tour/ seminar Workshop/Traiing during winter break	SEC-8	-	-	-	50	-	50	2	-	-	2	**1**

Study Tour/ Seminar / Workshop/ Training during previous winter break will be evaluated

FOURTH YEAR VII SEMESTER

1. Architectural Design – VII 210701

OBJECTIVE: The objective of the subject is to

- Understand design as a function of specific agenda of complex services, acoustics, building byelaws and structure;
- Understand design as a process: of problem identification, space analysis, formulation of requirements, evolution of design criteria and design;
- Incorporate elements of site planning and landscape in the design process;
- Prepare computer aided presentation drawings.

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
1	210701	Architectural Design – VII	DC-15	-	-	-	100	100	200	6	-	-	6*(1.5)	**9**

UNIT-1

The range of design problems shall include projects of progressively increasing complexity.
Exercises related to public buildings i.e. Commercial center, hospital, Study and incorporation of building bye-laws should be complete in this Sem.

UNIT-2

The range of design problems shall include projects of progressively increasing complexity.
Exercises related to public buildings i.e. Auditorium, sports cinema, sports complex & educational buildings on sloping/ flat sites. Simultaneously, stress should be given on the interior treatment of small and large spaces. Freedom in design is to be given with preliminary introduction of importance and role of bye laws in building design.

Note: The sessional will be in the form of drawings and models along with technical report for the design dealt with. The evaluation should be done in intermediate review consisting of internal /external experts. There should be regular site visits to the building types dealt in the studio problems of which audio- visual should be prepared. The various aspects of the design problem shall be dealt with lectures, group discussions and library research so as to provide the necessary philosophical and attitudinal background to a rational design approach.

COURSE OUTCOME:

After completion of this course the student will be able to:

CO1	Analyze and study, pre-design process, design process & conceptualization stages in design.
CO2	Understand the materials and technology required to build the same.
CO3	Understand the building byelaws and apply them to the project.
CO4	Handle large scale buildings such as projects of progressively increasing complexity.
CO5	Design the projects based on the concept of space and form, Innovate Visualization of projects using computer software is also acquired.

REFERENCES

1. "Planning by E. & O.E". Lliffe book Ltd., London.
2. D.E. CHIRAIRA & CALLENDAR, "Times Saver Standard for Building Types".
3. RUDOLF HERGE, "Nuferts Architects Data", Cross By Lockwood & Sons Ltd.
4. EDWARD D. MILLS, "Planning the Architects Hand Book".
5. National Building Code.

FOURTH YEAR VII SEMESTER

2. Adv Building Construction- 210702

OBJECTIVE: The objective of the subject is to introduce the students about the implementation of new technology concepts which are applied in field of advanced construction and also to study different methods of construction in the field of architecture.

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
2	210702	Adv Building Construction	DC - 16	50	30	20	20	30	150	4	2	-	2*(1.5)	**5**

UNIT-1 SPECIAL STRUCTURES

Definitions, Types – single, double & multilayered grids – two way & three way space grids, connectors, Grids – Domes - various forms - Geodesic domes, Suspended cable structures – types of cable network systems, shapes of cable suspended systems, examples of tensile membrane structures – types of pneumatic structures. Long Span bridges, Cables Structure.

UNIT- 2 ADVANCE CONSTRUCTION SYSTEM

Advance construction systems and techniques developed by research organization in India- Design and detailing of building materials and components developed by research organizations like CBRI, SERC, NBO & BMTPC.

UNIT- 3 PRE STRESSED CONCRETE

Introduction to pre stressed concrete – Pre stressed concrete materials – Methods of pre stressing - Comparison between RCC and pre stressed concrete.

UNIT- 4 TALL BUILDINGS

Tall buildings structural systems – Rigid frames – Braced frames – Shear wall – Buildings – Wall frame buildings – Tubular buildings – Tube-in tube buildings – Outrigger braced system – Brief outline of their behavior and their applicability for various heights of buildings.

UNIT- 5 SHELLS AND FOLDED PLATES

Basic concepts of Shells – Types –Relative merits and applicability.
Folded plates – Types – Comparison with shells – Applicability. Arches & its types

COURSE OUTCOME:

After completion of this course the student will be able to:

CO1	Study behaviors of various non-conventional and long span structures
CO2	Understand the concept of Shells and Space Frames.
CO3	Design and detailing of building materials and components developed by research organizations like CBRI, SERC, NBO & BMTPC
CO4	Appreciate the difference between RCC and pre stressed concrete.
CO5	Identify appropriate tall structural systems, shells and folded plates and tensile structure for the space coverage

REFERENCES:

1. Salvadori
2. Sinha .N.C and Roy .S.K, Fundamentals of Reinforced Concrete, S.Chand& Co. Ltd., New Delhi, 2001

3. Ramamrutham .S and Narayanan .R, Reinforced Concrete Structures, DhanpatRai Publications, New Delhi, 1997
4. Bryan Stafford and Alex Coull, Tall Building Structures, Analysis and Design John Wiley & Sons, New York, 1991
5. Bandyopadhyay .J.N, Thin Shell Structures Classical and Modern Analysis, New Age International Publishers, New Delhi, 1998
6. Ramaswamy .G.S, Design of Construction of Concrete Shell Roofs, McGraw Hill Publishing Company, New York, 19

Note: Total five questions shall be asked. Each question will consist of two parts, one of which will be of 7 marks (which shall be compulsory) and another with 3 marks(which shall be optional).

3. Project Management & Building Economics (Code – 210703)

Objective –

The course aims to obtain knowledge of Project planning and project scheduling and project controlling, Role of decision in project management, etc.

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot				L	T	P	
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional						
3.	210703	Project Management & Building economics	PAEC-3	50	30	20	-	-	100	3	2	1	-	**3**

UNIT- 1 INTRODUCTION.

Project planning and project scheduling and project controlling, Role of decision in project management, Method of planning and programming, Human aspects of project management,. Work breakdown structure, Life cycle of a project, Disadvantages of traditional management system. Project management constructional organization, delegation of responsibilities, Role of an Architect, Engineer and Contractor.

UNIT- 2 ELEMENTS OF NETWORK & CPM AND PERT ANALYSIS

Event, Activity, Dummy, Network Rules, Graphical guidelines for network, Numbering of events. CPM network analysis & PERT time estimates, time computation & network analysis

UNIT- 3 PROJECT TIME REDUCTION AND OPTIMIZATION

Project cost, indirect cost, direct project cost, Slope of the direct cost curve, Total project cost & optimum duration, contracting the network for cost optimization, steps in cost-time optimization.

UNIT- 4 PROJECT UPDATING & RESOURCE ALLOCATION

When to update? Data required for updating, steps in the process of updating. Resource usage profile: Histogram, Resource smoothing and Resource leveling.

UNIT- 5 COMPUTERIZED PROJECT MANAGEMENT & PRACTICAL IMPLICATIONS

Introduction: creating a new project, building task. Creating resources and assessing costs, refining your project. Project tracking – understanding tracking, recording actual. Reporting on progress. Analyzing financial progress, Construction site practices, Inspection & quality control.

COURSE OUTCOME:

After completion of this course the student will be able to:

CO1	**Know** about the methodology of executing a project.
CO2	**Understand** the fundamentals of economics, Land economics and financing.
CO3	**Compute** the money values and demand forecasting.
CO4	**Develop** valuation of property/building through various valuation methods.
CO5	**Enhance** the professional ability as an architect.

REFERENCES:

1. S.P. Mukhopadyay, “Project Management for architects and Civil Engineers”, IIT, Kharagpur
2. 1974.
3. Jerome D. Wiest and Ferdinand K. Levy, “A Managementuide to PERT/CPM”, prentice hall ofIndian pub. Ltd. New Delhi 1982.
4. SR.A. Burgess and G. White, “ Building production and project management”, the
5. construction press, London 1979.
6. Dr. Punmia and K.K Kandelwal – project planning and control with PERT/CPM, Laxmi publications, New Delhi, 1987
7. Elaine marmel, Microsoft office project 2003 Bible, Wiley Dreamtact (p) Ltd, New Delhi, 2004

4. Estimating and Costing & Specifications- 210704

OBJECTIVE- The objective of the subject is to introduce the students about the successful implementation of the project to know about the material required and cost to be incurred before starting a new project.

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot				L	T	P	
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional						
4	210704	Estimating and Costing & Specifications	PAEC-4	50	30	20	-	-	100	3	2	1	-	**3**

UNIT- 1 INTRODUCTION TO SPECIFICATION

Specification - Definition, purpose, procedure for writing specifications for the purpose of calling tenders, types of specification. General specifications for 1St, 2nd, 3rd and 4th Class buildings**.** Data base for writing specification.

UNIT- 2 SPECIFICATION FOR DIFFERENT ITEMS

Specifications for the following items – Bricks; sand; cement; coarse aggregate; water; reinforcement; storing and handling of materials; Earth work in foundation; PCC; RCC; First class brick work in cement mortar; half brick thick partition in cement mortar; reinforced brick work; DPC; glazed tiles in skirting and dado; cement plaster; joinery in wood, steel &aluminum; painting to walls –emulsion, enamel paint ; painting to joinery ; varnishing ; French polishing ; based on surveys and Current trends.

UNIT- 3 INTRODUCTION TO ESTIMATION

Estimation – definition; purpose; types of estimate; various methods of approximate estimate of buildings with Introduction of computer applications in estimation.

UNIT- 4 DETAILED ESTIMATE

Detailed estimate – data required, factors to be considered, methodology of preparation, abstract of estimate, contingencies, work-charged establishment, bill of quantities, different methods for estimating building works, methods of measurement of works. – With case studies.

UNIT- 5 RATE ANALYSIS

Rate analysis – definition; method of preparation; quantity and labor estimate for unit work; task or outturn work; rate analysis for: earth work, concrete works, first class brick work, reinforced brick work, cement plastering, DPC with cement mortar/ concrete, finishing (cement paint, distemper, acrylic emulsion, enamel paint) to walls & ceiling. Using the current market rates for the materials, labor, tools and equipment

COURSE OUTCOME:

After completion of this course the student will be able to:

CO1	Write specifications for various items of civil works with a view of controlling quality of work executed at site.
CO2	Acquire sufficient knowledge of estimation in order that he/she could advice prospective clients on project viability and also monitor/ control project cost.
CO3	Analyze different types of estimates and their suitability to different kinds of works.
CO4	Calculate the quantity of different items of work using various estimating methods.
CO5	Prepare BOQ's for item rate contract.
CO6	Calculate the approximate estimate, detailed estimate for small scale building projects and low cost housing.

REFERENCES:

1. M.Chakraborti, .Estimation, Costing, Specification and Valuation in Civil engineering.
2. Dutta, Estimating and Costing, S. Dutta and Co., Lucknow 1983.
3. PWD Specifications of Tamil Nadu State Government.
4. CPWD Specifications of Government of India.

5. Elective- V

OBJECTIVE-The objective of the subject is to introduce the students about the best teaching learning resources and programs initiated by the Government of India and designed to achieve the three cardinal principles of Education Policy viz., access, equity and quality.
The course is opted from NPTEL platform in traditional mode.

S. No	Subject Code	Subject Name	Category	Maximum Marks Allotted							Total Marks	CTHRS	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot		MOOC							
				End Sem.	Mid Sem Exam	Quiz/ Assignment / Sessional	End Sem	Labwork & Sessional	Assignment	Exam			L	T	P	
5.	210751	Structural System in Architecture	DE- 5	-	-	-	-	-	25	25	100	3	2	1	-	**3**
	210752	Urban Landuse and transportation planning		-	-	-	-	-	25	25	100	3	2	1	-	**3**
	210753	Urban governance and Development Management (UGDM)		-	-	-	-	-	25	25	100	3	2	1	-	**3**

Opted from NPTEL platform (July- Dec 2020)

6. Intellectual property Rights-

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot				L	T	P	
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional						
6.	100008	Intellectual property Rights	MC-3	70	20	10	-	-	100	3	2	1	-	3

COURSE OBJECTIVES

- To acquaint the learners with the basic concepts of Intellectual Property Rights.
- To develop expertise in the learners in IPR related issues and sensitize the learners with emerging issues in IPR and the rationale for the protection of IPR.

UNIT – I: Introduction

Introduction to IPRs, Basic concepts and need for Intellectual Property – Meaning and practical aspects of Patents, Copyrights, Geographical Indications, IPR in India and Abroad. Nature of Intellectual Property, Industrial Property, technological Research, Inventions and Innovations – Important examples of IPR.

UNIT – II: Intellectual Property Rights

The IPR tool kit, Patents, the patenting process, Patent cooperation treaties: International Treaties and conventions on IPRs, TRIPS Agreement, PCT Agreement, Patent Act of India, Patent Amendment Act, Design Act, Trademark Act, Geographical Indication Act.

UNIT – III: Intellectual Property Protections

IPR of Living Species, protecting inventions in biotechnology, protections of traditional knowledge, biopiracy and documenting traditional knowledge, Digital Innovations and Developments as Knowledge Assets – IP Laws, Cyber Law and Digital Content Protection. **Case studies: The basmati rice issue, revocations of turmeric patent, revocation of neem patent.**

UNIT – IV: Exercising and Enforcing of Intellectual Property Rights

Rights of an IPR owner, licensing agreements, criteria for patent infringement. Case studies of patent infringement, IPR – a contract, unfair competitions and control, provisions in TRIPs,

UNIT- V: Role of Patents in Product Development & Commercialization

Recent changes in IPR laws impacting patents and copy rights, intellectual cooperation in the science and allied industry. Patentable and non-patentable research. **Case studies**

References

P.B. Ganguli, Intellectual Property Rights: Unleashing the Knowledge Economy. Tata Mc Graw Hill, 2001.
Steve Smith, The Quality Revolution.1st ed., Jaico Publishing House, 2002.
Kompal Bansal and Praishit Bansal. Fundamentals of IPR for Engineers, 1st Edition, BS Publications, 2012. Prabhuddha Ganguli. Intellectual Property Rights. 1st Edition, TMH, 2012.
R Radha Krishnan & S Balasubramanian. Intellectual Property Rights. 1st Edition, Excel Books, 2012. M Ashok Kumar & Mohd. Iqbal Ali. Intellectual Property Rights. 2nd Edition, Serial Publications, 2011. VinodV. Scople, Managing Intellectual Property. Prentice Hall of India PvtLtd, 2012.
Deborah E. Bouchoux. Intellectual Property: The Law of Trademarks, Copyrights, Patents and Trade Secrets. Cengage Learning, 3rd ed. Edition, 2012.
Prabuddha Ganguli. Intellectual Property Rights: Unleashing the Knowledge Economy. McGraw Hill Education, 2011. Edited by Derek Bosworth and Elizabeth Webster.The Management of Intellectual Property. Edward Elgar Publishing Ltd.,2013.
B.S. Patil, Legal Aspects of Building and Engineering Contracts, 1974. Wadhera (2004), Intellectual Property Rights, Universal Law Publishing Co. Ramappa (2010), Intellectual Property Rights Law in India, Asia Law House

Course Outcomes: At the end of this course, the student will be able to

1. Imbibe the knowledge of Intellectual Property and its protection through various laws
2. apply the knowledge of IPR for professional development
3. develop a platform for protection and compliance of Intellectual Property Rights & knowledge
4. create awareness amidst academia and industry of IPR and Copyright compliance
5. deliver the purpose and function of IPR and patenting.

7. (04 weeks- Evaluation)

Summer Internship project- III

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot				L	T	P	
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional						
7.	210706	Summer Internship project- III (04 weeks- Evaluation)	SEC-9	-	-	-	50	-	50	2	-	-	2	1

Seminar / Workshop/ Training during previous summer break will be evaluated

FOURTH YEAR EIGHTH SEMESTER

1. Architectural Design – VIII (Code –210801)

Objectives –

The course aims to obtain knowledge of fundamental concepts and theories of Housing and apply them in their design projects, various types of Housing and its components, the vocabulary of urban design, its components. And utilizing it in design.

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot				L	T	P	
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional						
1.	210801	Architectural Design –VIII	DC - 17	-	-	-	150	100	250	8	-	-	8(1.5)	**12**

PROJECT I: HOUSING

The various types of housing projects in a typical urban scenario can be taken with suitable design parameters that get established after conducting a rigorous study. Analysis of existing design trends & user preferences need to be ascertained. Awareness about special building byelaws applicable for Group housing schemes is essential. In addition to design issues such as security, accessibility, identity, social interaction, comfort, economy etc. that would be investigated. The application of Fractals in design can also be explored. Ex. Housing for the poor /Slum dwellers, Multi-storied apartments for Govt. / corporate employees, Multi-storied condominiums for the rich etc.

PROJECT II: URBAN DESIGN OR CONSERVATION

Urban design projects could deal with redevelopment of problem areas such as riverfronts, beach fronts, market areas, bazaars or commercial & residential districts that have reached dead end situation. It could also deal with emerging nodes of transportation with its surrounding areas, the design of city level open spaces such as parks, plazas etc. Alternatively, conservation strategies for heritage areas along with revitalization techniques can also be attempted. The projects thus undertaken as group work will have to ultimately contribute ideas for the improvement of the quality of the urban environment.

OUTCOME: After completion of this course the student will be able to:

CO1	**Formulate** an intellectual position, explored through architectural design, which reconciles the development of a critical brief with spatial and functional criteria.
CO2	**Conceptualize** a brief for a design project, which, through engagement with a series of contexts, seeks to provide a critique of the built environment by proposing alternative spatial, formal, organizational or material solutions.
CO3	**Synthesize** a design solution, which combines appropriate architectural expression, cultural response and the fulfillment of the functional requirements of a brief.
CO4	**Produce** appropriate drawings, models and other media of an architectural design which explore, test and express its qualities of space, form, organization and response to physical and other contexts.
CO5	**Integrate** appropriate technologies concerning structure, materiality and services into the design proposal.
CO6	**Effectively** communicate the design or designs through an exhibition incorporating drawings, models, texts and other appropriate media.

REFERENCES:

1. Time saver standards for building types, DeChiara and Callender, McGraw hill company
2. Neufert Architect's data, Bousmaha Baiche& Nicholas Walliman, Blackwell science ltd
3. National Building Code - ISI
4. New Metric Handbook – Patricia Tutt and David Adler – The Architectural Press
5. Time saver standards for landscape architecture – Charles W.Harris – McGraw Hill

2. Urban Design (Code – 210802)

Objective –

The course aims to prepare the students to develop a holistic view of the city as a basis for designing the city/city components in the third dimension.

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
2.	210802	Urban Design	DC - 18	50	30	20	20	30	150	5	2	1	2	**4**

UNIT- 1 INTRODUCTION

Emergence of urban design as a discipline, need for urban design, Elements of urban design(buildings, streets, public spaces, transports, other elements etc. Principles of urban design- creating form and spatial definition in articulation of urban design expression.

UNIT- 2 STUDY AND ANALYSIS OF URBAN SPACES IN HISTORY AND MODERN CONCEPTS IN

URBAN DESIGN 15 A brief study and analysis of urban spaces in history-in the west(Greek, Roman, Medieval and Renaissance towns)and the east(in India-Vedic towns, temple towns, medieval and Islamic towns). Modern concepts in urban design. Study of Urban design theories of Gordon Cullen and Kevin Lynch. Relevance of historic concepts of urban design in the present context-Critical analysis of Indian cities & understanding the urban design projects of Singapore, China & United States.

UNIT- 3 BASIC PRINCIPLES & TECHNIQUES IN URBAN DESIGN

Components in urban design composition. Urban scale, mass and space, definition of urban fabric, visual surveys and their influence for urban design, various methods of conducting a visual survey. Definition and purpose of open spaces and their hierarchy in urban design-hierarchy of utility spaces for residential, commercial, recreational and industrial use. Special focus on streets-Expressive quality of built forms, spaces in public domain.

UNIT- 4 RENEWAL, RE-DEVELOPEMENT AND FORMULATING URBAN DESIGN

Definition and need for urban renewal and re-development, scope for urban renewal in India challenges and implementation methods of urban renewal for Indian historic towns and cities, impact of public participation. Analysis and formulation of urban design guidelines for new developments. National and international case studies for urban renewal.

UNIT- 5 URBAN DESIGN SURVEY AND PRESENTATION

Conducting an urban design survey of Conservation of historic cities, open-spaces, development of market spaces, transit oriented developments, water front development in India. Analysis of data. Formulating urban design guidelines for an area-practical problem solving, understanding various presentation techniques for urban design presentations.

COURSE OUTCOME:

After completion of this course, the student will be able to

CO1	**Know** about the urban forms and spaces.
CO2	**Understand** the urban design issues at the city level.
CO3	**Analyze** the difference between the history and the contemporary needs.
CO4	**Develop** the strategies that are commonly required to overcome the urban issues.
CO5	**Develop** understanding and strategies towards the society. They will be conversant with the problems in community living and how to address the same**.**

REFERENCES:

1. The Concise townscape- Gordon Cullen,The Architectural press
2. Image of the city - Kevin Lynch
3. Architecture of town and cities - Paul D.Speriregon, The MIT press
4. Urban design – Ornament and decoration , Cliff Moughtin, Bath Press
5. Urban design – street and square, Cliff Moughtin, Bath Press
6. Town and square - Paul Zucker
7. The urban pattern - Arthur B Gallion, CBS publishers
8. Architecture and the urban experience - Raymond J Curran. Van Nostrand Reinhold Company
9. Indian city in the arid West - KulbashanJain , Aadi Centre
10. Indian mega city and economic reforms - A.K.Jain, Management publishing Company

3. Professional Practice & Ethics(Code – 210803)

Objective –

The course aims to obtain understanding of the moral values that ought to guide the Engineering profession, and to resolve the moral issues in the profession, and to justify the moral judgment concerning the profession.

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
3.	210803	Professional Practice & Ethics	PAEC- 5	50	30	20	-	-	100	3	2	1	-	**3**

UNIT- 1 THE PROFESSIONAL ROLE OF AN ARCHITECT & SERVICES RENDERED

Architect's role in society, IIA code of conduct, salient features of architect's act 1972, the council of architecture – Architect's office and its management, elementary accountancy required for the same etc. Architectural services- conditions of agreement- scope of work, comprehensive architectural services and architectural competitions, conditions of engagement, remuneration, professional fees and charges as per IIA norms, - copy rights of drawings.

UNIT- 2 ARCHITECTURAL COMPETITIONS & LEGISLATIONS

Regulations governing the conduct of competitions, Types of competition (open & closed competitions), appointment & duties of Assessors, instructions to participants, award of premium. Role of development authorities & urban arts commissions, salient features of the DCR for CMA, important regulations in the Tamilnadu cinema rules 1973 & the TN factory rules 1950, Environmental acts & laws, special rules governing hill area development & coastal area management, Heritage act of India etc.

UNIT- 3 EASEMENTS& ARBITRATION

Easement Rights –Definition, characteristics of an easement, Natural Rights ,Various easement rights- Easement of support, Easement of light and air, Easement of right of way, Easement of eave projection, etc . Continuous and Discontinuous easements, extinction of easements, Modes of acquiring easement rights – Need for Arbitration, arbitration agreement, role of arbitrators, umpire etc, excepted matters, arbitral award.

UNIT- 4 TENDER & CONTRACT

Calling for Tenders, tender documents, open & closed tenders, various types such as item rate, lump sum, labour & demolition tenders, conditions of tender, submission, scrutiny, recommendations & award of contract. Conditions of contract, IIA form of contract, articles of agreement, certification of contractor's bills, defects liability. Earnest money deposit, security money deposit etc

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UNIT- 5 VALUATION& RENT

Valuation – purpose of valuation, types of valuation- book value – salvage value- scrap value depreciation- obsolescence- sinking fund- land valuation ,building valuation- mortgage and lease- Annuity- definition, Fixation of rent- out going- gross and net income – year's purchase- capital cost standard rent- market rent- economical rent.

COURSE OUTCOME:

After completion of this course the student will be able to:

CO1	**Identify** the principal legislative, technical and professional factors influencing the design strategy of a building project.
CO2	**Describe** the components and organizational structures and their interrelationships.
CO3	**Define** the issues that an architect will consider with reference to building contract law
CO4	**Determine** the factors effecting cost
CO5	**Explain** the procedures to be followed for compliance with planning and building control regulations.

REFERENCES:

1. Hand book on Professional Practice by I. I. A, Image systems, Mumbai,1998.
2. Estimating and Costing by Dutta
3. CMDA-Development control rules for CMA.
4. TN cinematograph manual, govt central press, Chennai,1998.
5. Environmental Acts of the Ministry of Environment & forests, GoI.

4. Dissertation(Code – 210804)

Objective –

The course aims to obtain understanding of standards and conventions of doing dissertation. , to provide preliminary background information that puts the research in context and to clarify the focus of the study. The subject points out the value of research.

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
4.	210804	Dissertation	PAEC-6	-	-	-	20	30	50	4	-	-	4	**2**

UNIT-1

First phase of dissertation allows students to identify the broad area / field of Architecture of their interest in which they may intend to do the research. This is to be done by studying and reproducing the brief of technical papers in the form of report review.

UNIT-2

Second phase allows the students to do the study of sample example of research already done by choosing the specific aspect / area relevant to broader field they have selected in first phase. This exercise involves the writing of report / review of book / journal dedicated to that specific aspect or area. This review writing is aimed to understand the method of collecting data (survey methods), analysis of data (statistics and mathematical formulas), drawing inferences and conclusion as attempted by the author of the book.

UNIT-3

Third phase is the writing of detailed dissertation report. Students are expected to choose their own topic of research by referring the area / field already identified in other two phases.
NOTE: Sessionals will be submitted in the form of review reports and Dissertation report.

COURSE OUTCOME:

After completion of this course the student will be able to:

CO1	Understand the fundamentals of Research methods before attempting final year Project Thesis.
CO2	Study and develop basic research principles and research methods.
CO3	Develop a sustained and coherent argument on an agreed topic, supported by both secondary and primary sources
CO4	Communicate the result of a systematic programme of research with clear identification of the topic, research issues, the context and the theoretical perspectives.
CO5	Evaluate significant information sources referred to and draw coherent conclusions relevant to the topic and issues initially identified, from the observations, evidence and arguments presented.
CO6	Develop the skill of report writing. Prepare a Dissertation report

LIST OF TEXT AND REFERENCE BOOKS:

- Instruction Manuals on report writing

5. Disaster management – 100007

OBJECTIVE -The objective of the subject is to introduce the students about reduce or avoid the potential losses from hazards, assure prompt and appropriate assistance to the victims of a disaster, and achieve a rapid and effective recovery.

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
5	100007	Disaster management **(MC)**	MC-4	70	20	10	-	-	100	3	2	1	-	**3**

UNIT- 1 NATURAL HAZARDS AND DISASTER MANAGEMENT

Understanding the Concepts and definitions of Disaster, Hazard, Vulnerability, Risk, Capacity – Disaster and Development, Disaster management and Disaster Management cycle Understanding the Causes and effects of natural calamities - floods, tropical cyclones, landslides, heat waves & Tsunami. Institutional and Financial Mechanism National Policy on Disaster Management, National Guidelines and Plans on Disaster Management; Role of Government (local, state and national),Non-Government and Inter-Governmental Agencies

UNIT- 2 ELEMENTARY SEISMOLOGY

Major Historic Earthquakes in the World, earthquake hazard map of India, Causes of Earthquakes: Elastic Rebound theory, Continental Drift and Plate Tectonics, Types of Plate Boundaries, types Of faults, seismic waves – classification of body waves and surface waves, magnitude, intensity, epicenter and energy release, Terminologies and Definitions and types of earthquake based on location, size and focal depth characteristics of strong earthquake ground motions, Flexibility of long & short period structures; concepts of response spectrum, Seismological Instruments: Seismograph and Accelerograph, Introduction to Seismic zones, Need for Seismic Zonation, Types of Zonation and Seismic zonation scales

UNIT- 3 LESSONS LEARNT FROM PAST EARTHQUAKES & SEISMIC DESIGN PRINCIPLES

Earthquake Effects:- On ground, soil rupture, liquefaction and landslides, Behaviors of various types of buildings, lifelines and collapse patterns, Behavior of Non Structural Elements like services, fixtures, mountings etc., Social & Economic Consequences of earthquakes

Concept of seismic design, stiffness, strength, period, ductility, damping, hysteric energy dissipation, center of mass, center of rigidity, torsion, design eccentricities, Seismic effects related to building configuration. Plan & vertical irregularities, Special Aspects: - Torsion, appendages, staircases, adjacency, pounding. Ductility based design: Design of energy absorbing devices, Seismic base isolation and seismic active control.

UNIT- 4 EARTHQUAKE RESISTANT CONSTRUCTION DETAILS

Various Types and construction details of Foundations, soil stabilization, retaining walls, plinth fill, flooring, walls, openings, roofs, terraces, parapets, boundary walls, underground and overhead tanks, staircases and isolation of structures.

Local practices: traditional regional responses.

UNIT- 5 CASE STUDIES AND DESIGN GUIDELINES

Earthquakes at Bhuj, Lattur, etc., Cyclones in coastal Andhra Pradesh & Orissa, Landslides in Nilgiris, Himachal etc, Floods in Bangladesh, and Droughts in Rajasthan & Tsunami in Tamil Nadu. Design guidelines for disaster resistant construction at appropriate situations - Engineering, architectural, landscape & planning solutions for floods, tropical cyclones & Tsunami

COURSE OUTCOME:

After completion of this course the student will be able to:

CO1	Study the various seismic zones.
CO2	Understanding various terminologies like recovery, rehabilitation, response, mitigation and their execution.
CO3	Apply strategies and technology to overcome the harmful effects of disaster.Develop a design the disaster resistant structures.

REFERENCES:

1. Agarwal Pankaj, Shrikhande Manish , Earthquake Resistant Design Of Structures, Prentice-Hall of India, New Delhi, 2006
2. S. K. Duggal, Earthquake Resistant Design Of Structures, Oxford University Press, 2007
3. Publications of National Disaster Management Authority (NDMA) on Various Templates and Guidelines for Disaster Management
4. Guidelines For Reconstruction Of Houses Affected By Tsunami, UNDP India, & Government Of Tamil Nadu, 2004
5. Coppola D P, 2007. Introduction to International Disaster Management, Elsevier Science (B/H), London.
6. Manual on natural disaster management in India, M C Gupta, NIDM, New Delhi
7. Disaster Management Act 2005, Publisher by Govt. of India
8. SERC Guidelines for Design and Construction of buildings and structures in cyclone-prone areas, SERC, CSIR, Government of India, 1998,
9. IS 1893(Part 1):2002 ‘Criteria for Earthquake Resistant Design of Structures: Part 1 General provisions and Buildings’

6. Elective – VI

Objective –

The course aims to obtain knowledge of the creation and evolution of objects, structures and systems at human scale that *aim* to improve the quality of life in the immediate living and working environment, while looking at sustainable and innovative use of diverse materials and processes. The course aims to obtain knowledge of decide how to plan, finance and manage urban areas. Structures supported by effective land markets, appropriate regulation, good public services, adequate public finance and transparent and accountable city level political systems.

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot				L	T	P	
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional						
6.	210811	Furniture Design	DE-6	50	30	20	-	-	100	3	2	1	-	**3**

i) FURNITURE DESIGN

UNIT-1 INTRODUCTIONTO ERGONOMICS AND FURNITURE DESIGN

Introduction to importance of ergonomics for human being in man-made world, Gross human anatomy, Ergonomics for different age group and gender in relation object used in interior.

UNIT-2 HUMAN FACTORSAND FURNITURE DESIGN

Brief study of Anthropometrics –man –machine-environment, static and dynamic, Muscles and work physiology, Static and Dynamic work including maximum capacity , Furniture ergonomics for differentage group and gender.

UNIT-3 ERGONOMIC FOR BUILT ENVIRONMENT

Built environment for the physically handicapped – Ramp, toilets and corridor design, Spatial Requirements for wheel chair movement-Design issues in the design of old age homes – Criteria tobe considered when designing for the Visually handicapped.

UNIT-4 ENVIRONMENTAL ERGONOMICS

Study of Biomechanics, Environmental Condition including, thermal, illumination, noise and vibration,Bio transducers Environmental stress, Psycho Psychological aspects of design.

UNIT-5 ERGONOMICS FOR FURNITURE DESIGN

Study Of Furniture ergonomics for different space like, office , residential, children, Aged andPhysically and visually handicapped user.

COURSE OUTCOME:

After completion of this course the student will be able to :

CO1	Introduce the vocabulary of Anthropometry and furniture design.
CO2	Study various components of ergonomics adapted in furniture design.
CO3	Relate applied Ergonomics and furniture design with human environment.
CO4	Study components of Ergonomics and furniture design like design for special need, Biomechanics, Psychological aspects.
CO5	Design a product for specific purpose.

REFERENCES:

1. De Chiara and Callender - Time Savers Standards for Building Types
2. De Chiara and Callender - Time Savers Standards for Architectural data

3. Julius penero and Martin Zelnik,"Human Dimensions and Interior Space"Whitney Library Of Design,NY 1979.
4. Time Saver Standards for Interior Design.
5. An invitation to Design, Helen Marie Evans.
6. Francis D.K.Ching, Interior Design Illustrated, VNR Publications, New York, 1987

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
6.	210812	City & Metropolitan Planning	DE-6	50	30	20	-	-	100	3	2	1	-	**3**

ii) CITY & METROPOLITAN PLANNING

UNIT-1 URBAN GROWTH AND SYSTEM OF CITIES

Growth of cities scale, complexity and its impact on national development, cities as engines of growth, cities as ecosystems, resources in cities. City, fringe and the periphery - physical and functional linkages, peri-urban development.

UNIT-2 COMMUNITY AND SETTLEMENTS

Social problems of slums and squatter's communities, urban and rural social transformation and their impact on social life, safety, security; Crimes in urban areas and their spatial planning implications, social structure and spatial planning; Role of socio-cultural aspects on growth patterns of city and neighborhood communities; Social planning and policy, and community participation; Marginalization and concepts of inclusive planning, and gender concerns in planning. Settlement Policy: National Commission on Urbanization, Rural Habitat Policy and experiences from developing countries regarding settlement structure, growth and spatial distribution.

UNIT-3 METRO AND MEGA CITIES: PROBLEMS AND ISSUES

Growth trends and processes, characteristics, problems, concepts and concerns of urban sustainability, issues related to diversity and unintended growth, economic, social and environmental sustainability, quality of life, inclusivity and equity, climate change, transit-oriented development, participatory planning. Inner city – issues and problems, approach to development.

UNIT-4 HUMAN SETTLEMENT PLANNING, URBAN DEVELOPMENT POLICIES AND PROGRAMMES

Concepts, approaches, strategies and tools; Policies and programmes at various levels, impact on metro and mega city development.

UNIT-5 LAND AND REAL ESTATE DEVELOPMENT

Economic concepts of land, Land Pricing / valuation; Economic principles of land use; demand forecasting for land use: factors affecting land supply and demand; Land development methods, Supply Management, Demand side Management; Real estate markets, type of property development and its impact on supply and demand, method of development, environmental considerations.

UNIT-6 INFORMATION SYSTEM AND URBAN REFORMS

Spatial and Non - spatial information systems; Urban reforms and acts and policies.

COURSE OUTCOME: After completion of this course the student will be able to:

CO1	**Introduce** the vocabulary of urban development.
CO2	**Study** various components of community and settlements.
CO3	**Study** various components ofhuman settlements, urban development policies.
CO4	**Analyze**the land and real estate development in urban areas.
CO5	**Elaborate** spatial and non – spatial information systems.

REFERENCE:

1. Avis, W. R. (2016). Urban Governance (Topic Guide). Birmingham, UK: GSDRC, University of Birmingham.
2. McGranahan, G. & Satterthwaite, D. (2014). Urbanisationconcepts and trends. London: IIED.
3. McGranahan, G. &Schensul, D. (2015). Inclusiveurbanisation workshop reflections. London: IIED.
4. McIlwaine, C. (2013). Urbanization and gender-basedviolence: Exploring the paradoxes in the global south.Environment& Urbanization, 25, 1: 65–79.

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot				L	T	P	
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional						
6.	210813	Advanced Structural Design	DE-6	50	30	20	-	-	100	3	2	1	-	**3**

III) Adv Structural Design

OBJECTIVE: The objective of the subject is to introduce the students about the fundamentals of stability of Modern structures in R. C. C. and various factors of R.C. C. structure designing.

UNIT- 1

Design of continuous and isolated footings

Design of combined footing: - types of combined footing, design of combined footing (rectangular and trapezoidal only)

Pre stressed concrete: - pre stress and pre stressing methods, type and classification of pre stressing, losses of pre stressed.

UNIT- 2

Design of Flat Slab

Modern construction systems such as lift slab, folded plates, tensile structures etc.

UNIT- 3

Appropriate methods for an analysis for frames by portal method, cantilever method (horizontal forces only)

Space frames, geodesic domes, Large span roofing, special areas, Gymnasium, Airports and Stadiums.

UNIT- 4

Specific constructional considerations for earthquake resistance structures, coastal areas.

UNIT- 5

Conceptual structural systems for high rise buildings such as veranda trusses, shear wall etc.

Domes, shells, vaults, arches (all types) in masonry, R.C.C., timber.

COURSE OUTCOME:

After completion of this course the student will be able to:

CO1	Design the structure for stability, strength and serviceability.
CO2	Prevent overturning, sliding or buckling of the structure, or parts of it, under the action of loads
CO3	Resist safely the stresses induced by the loads in the various structural members.

REFERENCES:

1. SALVADORI, “Structures in Architecture”.
2. SALVADORI, “Structural Design in Architecture”.
3. ROBERT, E. FISCHER, “New Structure”, McGraw Hill Co.
4. WOLFGANG SCHUELLER, “The design of building Structures”.

NOTE: I) I.S. code 456-2000, SP -16 is permitted in examination.
II) Sessional work should include the analysis and design of simple elements along with the drawings using limit state method only for units from 1 to 3 and for rest only an idea along with sketches shall be taught to the students.

FOURTH YEAR VIII SEM

7. Seminar / Workshop/ Training during previous winter break will be evaluated

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
7.	210806	Tour/ seminar / NASA/Workshop/Tining during winter break	SEC- 10	-	-	-	50	-	50	2	-	-	2	**1**