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FACULTY OF ARCHITECTURE
SHARNBASVA UNIVERSITY, KALABURAGI
SCHEME OF TEACHING AND EXAMINATION
I SEM B. ARCH (2024 SERIES)

Sl.no	Course code	Course Categor	Title of Course	Teaching Scheme in Periods per Week					Examination Scheme							
				Lecture	Studio		Prac/Tutorial/ Semina	Total	Dur (hrs)	Theory	Practical	CIE MARKS	VIVA	RM WOI	TOTAL	CREDITS
					core	applied										
1	24ARC11	PC	Architectural Design-I	1	3	2	1	7	-	-	-	100	100		200	7
2	24ARC12	BS & AE	Building construction and Materials - I	2	2	0	0	4	-	-	-	50	50		100	4
3	24ARC13	PC	Architectural Graphics-I	1	0	3	0	4	-	-	-	50	-	50	100	4
4	24ARC14	PC	History of Architecture-I	3	0	0	0	3	3	50	-	50	-	-	100	3
5	24ENG15	BS & AE	Structures-I	3	0	0	0	3	3	50	-	50	-	-	100	3
6	24ART16	PC	Basic Design and Visual Arts	1	1	0	2	4	-	-	-	50	-	50	100	4
7	24ART17	PC	Model Making Workshop	1	1	0	0	2	-	-	-	50	-	-	50	2
8	24ARC18	SEC	Communication Skills	2	0	0	0	2	3	50	-	50	-	-	100	2
9	24SFH19	AEC	Scientific Foundation of Health.	1	0	0	0	1	2	50		50			100	1
TOTAL				15	7	5	3	30	11	200	-	500	150	100	950	30

ARC=Architectural Subjects ART=Art SubjectsENG =Engineering SubjectsHUM = Humanities Subjects.

No. of Subjects/Heads=09 No. of Theory Examinations =04

Progressive Marks to be awarded by the subject teacher. Term work & Viva Voce examination shall be conducted jointly by one internal & one external examiner appointed by the University

Minimum Marks for passing: ProgressiveMarks50%,Theory marks, Term work marks and Viva marks 50% I Cneach

Subject Categories': Professional BS&AE: Building Sciences & Applied Engineering Courses PE: Professional Elective Courses HSMC-Humanity Science and Management course
PAEC: Professional Ability EnhancementCourses SEC: Skill Enhancement Courses OE: Open ElectiveCourses (PC): Project Core
(PC): Project Core

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FACULTY OF ARCHITECTURE
SHARNBASVA UNIVERSITY, KALABURAGI
SCHEME OF TEACHING AND EXAMINATION
II SEM B. ARCH (2024 SERIES)

Sl.no	Course code	Course Category	Title of Course	Teaching Scheme in Periods per Week					Examination Scheme							
				Lecture	Studio		Prac/Tutorial/ Seminar	Total	Dur (hrs)	Theory	Practical	CIE MARKS	VIVA	RM WOI	TOTAL	CREDITS
					core	applied										
1	24ARC21	PC	Architectural Design-II	1	3	3	0	7	-	-	-	100	100		200	7
2	24ARC22	BS & AE	Building construction and Materials - II	2	2	0	0	4	-	-	-	50	50		100	4
3	24ARC23	PC	Architectural Graphics-II	1	2	1	0	4	-	-	-	50	-	50	100	4
4	24ARC24	PC	History of Architecture-II	3	0	0	0	3	3	50	-	50	-	-	100	3
5	24ENG25	BS & AE	Structures-II	3	0	0	0	3	3	50	-	50	-	-	100	3
6	24ENG26	PC	Surveying and leveling	2	0	0	1	3	3	50	-	50	-	-	100	3
7	24ARC27	SEC	Computer Application in Architecture-I	1	0	0	2	3	-		50	50			100	3
8	24ART28	ART	Art Appreciation	1	0	1	0	2	-	-	-	50	-	-	50	2
9	24HUM29	HUM	Social Connect and Responsibility	1	0	0	0	1	2	50	-	50			100	1
TOTAL				15	7	5	3	30	11	200	50	500	150	50	950	30

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No. of Subjects/Heads=09 No. of Theory Examinations =04

Progressive Marks to be awarded by the subject teacher. Term work & Viva Voce examination shall be conducted jointly by one internal & one external examiner appointed by the University

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PAEC: Professional Ability EnhancementCourses SEC: Skill Enhancement Courses OE: Open ElectiveCourses (PC): Project Core
(PC): Project Core

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1	21ARC31	PC	Architectural Design-III	1	3	2	2	8	-	50	50	100	8
2	21ARC32	BS & AE	Building construction and Materials - III	1	2	1	0	4	4	50	50	100	4
3	21ARC33	PC	Graphics-III	1	2	1	0	4	4	50	50	100	4
4	21ARC34	PC	History of Architecture-III	3	0	0	0	3	3	50	50	100	3
5	21ENG35	BS & AE	Structures-III	3	0	0	0	3	3	50	50	100	3
6	21ARC36	BS & AE	Building Services-I	3	0	0	0	3	3	50	50	100	3
7	21ARC37	SEC	Computer Application in Architecture-I	1	0	0	1	2	-	50	50	100	2
8	21ARC38	PC	MEASURING Drawing and Documentation	0	0	1	0	1	-	50	50	100	1
TOTAL				12	7	5	3	28	-	400	400	800	**28**
ARC=Architectural SubjectsART=Art SubjectsENG =Engineering SubjectsHUM = Humanities Subjects.													

No. of Subjects/Heads=08 **No. of Theory Examinations =04**

Progressive Marks to be awarded by the subject teacher. Term work & Viva Voce examination shall be conducted jointly by one internal & one external examiner appointed by the University

Minimum Marks for passing: ProgressiveMarks50%,Theory marks, Term work marks and Viva marks 50% ineach

Subject Categories': PC:Professional Core BS&AE: Building Sciences & AppliedEngineeringCourses PE: Professional Elective Courses
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(PC): Project Core

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FACULTY OF ARCHITECTURE
SHARNBASVA UNIVERSITY, KALABURAGI
SCHEME OF TEACHING AND EXAMINATION
IV SEM B. ARCH (2021 SERIES)

Sl.no	Subject code	Subject Category	Title of Subject	Teaching Scheme in Periods per Week					Examination Scheme				
				Lecture	Studio		Prac/Tutorial/ Seminar	Total	Dur (hrs)	CIE MARKS	SEE MARKS	TOTAL	CREDITS
					core	applied							
1	21ARC41	PC	Architectural Design-IV	1	3	2	2	8	-	50	50	100	8
2	21ARC42	BS & AE	Building construction and Materials - IV	2	1	1	0	4	4	50	50	100	4
3	21ARC43	BS & AE	Climatology	1	1	1	0	3	3	50	50	100	3
4	21ARC44	PC	History of Architecture-IV	3	0	0	0	3	3	50	50	100	3
5	21ENG45	BS & AE	Structures-IV	3	0	0	0	3	3	50	50	100	3
6	21ARC46	BS & AE	Building Services-II	3	0	0	0	3	3	50	50	100	3
7	21ARC47	SEC	Computer Application in Architecture-II	1	0	0	1	2	-	50	50	100	2
8	21ARC48	PC	Working Drawing-I	1	0	2	0	3	-	50	50	100	3
TOTAL				14	5	6	3	29	-	400	400	800	29

ARC=Architectural SubjectsART=Art SubjectsENG =Engineering SubjectsHUM = Humanities Subjects.

No. of Subjects/Heads=08 No. of Theory Examinations =05

Progressive Marks to be awarded by the subject teacher. Term work & Viva Voce examination shall be conducted jointly by one internal & one external examiner appointed by the University

Minimum Marks for passing: ProgressiveMarks50%,Theory marks, Term work marks and Viva marks 50% ineach

Subject Categories': PC:Professional Core BS&AE: Building Sciences & AppliedEngineeringCourses PE: Professional Elective Courses
PAEC: Professional Ability EnhancementCourses SEC: SkillEnhancementCourses OE: Open ElectiveCourses
(PC): Project Core

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FACULTY OF ARCHITECTURE
SHARNBASVA UNIVERSITY, KALABURAGI
SCHEME OF TEACHING AND EXAMINATION
V SEM B. ARCH (2021 SERIES)

Sl.no	Subject code	Subject Category	Title of Subject	Teaching Scheme in Periods per Week					Examination Scheme				
				Lecture	Studio		Prac/Tutorial/ Seminar	Total	Dur (hrs)	CIE MARKS	SEE MARKS	TOTAL	CREDITS
					core	applied							
1	21ARC51	PC	Architectural Design-V	1	3	2	0	6	-	50	50	100	6
2	21ARC52	BS & AE	Building construction and Materials - V	1	2	1	0	4	4	50	50	100	4
3	21ARC53	HUM	Building Economics and Sociology	2	0	0	0	2	3	50	50	100	2
4	21ARC54	PC	Theory of Architecture-I	1	1	0	0	2	3	50	50	100	2
5	21ENG55	BS & AE	Structures-V	3	0	0	0	3	3	50	50	100	3
6	21ARC56	PC	Building Services-III	3	0	0	0	3	3	50	50	100	3
7	21ARC57	SEC	Computer Application in Architecture-III	1	0	0	1	2	-	50	50	100	2
8	21ARC58	BS & AE	WORKING DRAWING	1	0	0	1	2	-	50	50	100	2
9	21ARC5XX	PC	Elective A	2	0	0	1	3	-	50	50	100	3
TOTAL				12	6	3	3	27	-	450	400	900	27

ARC=Architectural SubjectsART=Art SubjectsENG =Engineering SubjectsHUM = Humanities Subjects.

No. of Subjects/Heads=09 No. of Theory Examinations =05

Progressive Marks to be awarded by the subject teacher. Term work & Viva Voce examination shall be conducted jointly by one internal & one external examiner appointed by the University

Minimum Marks for passing: ProgressiveMarks50%,Theory marks, Term work marks and Viva marks 50% ineach

Subject Categories': Professional BS&AE: Building Sciences & Applied Engineering Courses PE: Professional Elective Courses
PAEC: Professional Ability EnhancementCourses SEC: Skill Enhancement Courses OE: Open ElectiveCourses (PC): Project Core

ELECTIVE-A
1.Climate Responsive Design -21ARC591
2.Vernacular Architecture-21ARC592

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Poojya Dr. Sharnbaswappa Appaji
Mahadasohi Peethadhipathi
Sharnbasveshwar Samsthaana
President,Sharnbasveshwar Vidya Vardhak Sangha
Chancellor, Sharnbasva University


Poojya Matoshri Dr. Dakshayini S. Appa
Chairperson,
Sharnbasveshwar Vidya Vardhak Sangha
Member of BOG Sharnbasva University


Poojya Chiranjeevi Doddappa Appa
Mahadasohi 9th Peethadipatigalu
Sharnbasveshwar Samsthana, Kalaburagi

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Poojya Matoshri Godutai Avvaji


Poojya Doddappa Appa
Founder President
Sharnbasveshwar Vidya Vardhak Sangha

FACULTY OF ARCHITECTURE
SHARNBASVA UNIVERSITY, KALABURAGI
SCHEME OF TEACHING AND EXAMINATION
VI SEM B. ARCH (2021 SERIES)

Sl.no	Subject code	Subject Category	Title of Subject	Teaching Scheme in Periods per Week					Examination Scheme				
				Lecture	Studio		Prac/Tutorial/ Seminar	Total	Dur (hrs)	CIE MARKS	SEE MARKS	TOTAL	CREDITS
					core	applied							
1	21ARC61	PC	Architectural Design-VI	1	3	2	0	6	-	50	50	100	6
2	21ARC62	BS & AE	Building construction - VI	1	2	1	0	4	-	50	50	100	4
3	21ARC63	PC	Physical Planning-I	1	1	1	0	3	3	50	50	100	3
4	21ARC64	PC	Theory of Architecture-II	1	1	0	0	2	3	50	50	100	2
5	21ENG65	BS & AE	Structures-VI	3	0	0	0	3	3	50	50	100	3
6	21ARC66	PC	Professional Practice-I	3	0	0	0	3	3	50	50	100	3
7	21ARC67	PC	Building Acoustics	3	0	0	0	3	3	50	50	100	3
8	21ARC6xx	BS & AE	Elective-B	2	0	1	0	3	3	50	50	100	3
TOTAL				15	7	5	0	27	-	400	400	800	27

ARC=Architectural SubjectsART=Art SubjectsENG =Engineering SubjectsHUM = Humanities Subjects.

No. of Subjects/Heads=08 No. of Theory Examinations =06

Progressive Marks to be awarded by the subject teacher. Term work & Viva Voce examination shall be conducted jointly by one internal & one external examiner appointed by the University

Minimum Marks for passing: ProgressiveMarks50%,Theory marks, Term work marks and Viva marks 50% ineach

Subject Categories': Professional BS&AE: Building Sciences & Applied Engineering Courses PE: Professional Elective Courses
PAEC: Professional Ability EnhancementCourses SEC: Skill Enhancement Courses OE: Open ElectiveCourses (PC): Project Core

ELECTIVE-B
1.Housing -21ARC681
2.Architectural Conservation-21ARC682

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FACULTY OF ARCHITECTURE
SHARNBASVA UNIVERSITY, KALABURAGI
SCHEME OF TEACHING AND EXAMINATION
VII SEM B. ARCH (2021 SERIES)

Sl.no	Subject code	Subject Category	Title of Subject	Teaching Scheme in Periods per Week					Examination Scheme				
				Lecture	Studio		Prac/Tutorial/	Total	Dur (hrs)	CIE MARKS	SEE MARKS	TOTAL	CREDITS
					core	applied							
1	21ARC71	PC	Architectural Design-VII	1	5	3	0	9	-	50	50	100	9
2	21ARC72	BS & AE	Building construction - VII	1	1	2	0	4	-	50	50	100	4
3	21ARC73	PC	Physical Planning-II	1	2	0	0	3	-	50	50	100	3
4	21ARC74	PC	Urban design	1	0	2	0	3	3	50	50	100	3
5	21ENG75	BS & AE	Structures-VII	3	0	0	0	3	-	50	50	100	3
6	21ARC76	PC	Professional Practice-II	3	0	0	0	3	3	50	50	100	3
7	21ARC77	PC	Estimation and Costing	2	0	1	0	3	3	50	50	100	3
8	21ARC7XX	EC	Elective-C	2	0	0	0	2	-	50	50	100	2
TOTAL				14	8	8	0	30	-	400	400	800	**30**

ARC=Architectural SubjectsART=Art SubjectsENG =Engineering SubjectsHUM = Humanities Subjects.

No. of Subjects/Heads=08 **No. of Theory Examinations =04**

Progressive Marks to be awarded by the subject teacher. Term work & Viva Voce examination shall be conducted jointly by one internal & one external examiner appointed by the University

Minimum Marks for passing: ProgressiveMarks50%,Theory marks, Term work marks and Viva marks 50% ineach

Subject Categories': Professional **BS&AE: Building Sciences & Applied Engineering Courses** **PE: Professional Elective Courses**

PAEC: Professional Ability EnhancementCourses **SEC: Skill Enhancement Courses** **OE: Open ElectiveCourses** **(PC): Project Core**

ELECTIVE-C
1.Interior Design -21ARC781
2.Earthquake Resistance Building Design -21ARC782

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SHARNBASVA UNIVERSITY, KALABURAGI
SCHEME OF TEACHING AND EXAMINATION
VIII SEM B. ARCH (2021 SERIES)

Sl.no	Subject code	Subject Category	Title of Subject	Teaching Scheme in Periods per Week					Examination Scheme				
				Lecture	Studio		Prac/Tutorial/	Total	Dur (hrs)	CIE MARKS	SEE MARKS	TOTAL	CREDITS
					core	applied							
1	21ARC81	PC	Architectural Design-VIII	1	5	3	0	9	-	50	50	100	9
2	21ARC82	PC	Advanced Building Construction and Materials	2	4	-	0	6	-	50	50	100	6
3	21ARC83	BS & AE	Pre Architectural Design Project.	1	0	2	0	3	-	50	50	100	3
4	21ARC84	PC	Construction and Project Management	3	0	0	0	3	3	50	50	100	3
5	21ARC85	PC	Landscape Design	1	2	0	0	3	3	50	50	100	3
6	21CIPE86	HUM	Constitutional Law	3	0	0	0	3	3	50	50	100	3
7	21ARC8XX	BS & AE	Elective-D	1	0	1	0	2	-	50	50	100	2
TOTAL				12	11	6	0	29	-	350	350	700	29

ARC=Architectural SubjectsART=Art Subject sENG =Engineering SubjectsHUM = Humanities Subjects.

No. of Subjects/Heads=07 No. of Theory Examinations =03

Progressive Marks to be awarded by the subject teacher. Term work & Viva Voce examination shall be conducted jointly by one internal & one external examiner appointed by the University

Minimum Marks for passing: ProgressiveMarks50%,Theory marks, Term work marks and Viva marks 50% ineach

Subject Categories': Professional Course BS&AE: Building Sciences & Applied Engineering Courses PE: Professional Elective Courses

PAEC: Professional Ability EnhancementCourses SEC: Skill Enhancement Courses OE: Open ElectiveCourses (PC): Project Core

ELECTIVE-D
1. Energy Efficient Building Design-21ARC871
2.Furniture Design-21ARC872

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SHARNBASVA UNIVERSITY, KALABURAGI
SCHEME OF TEACHING AND EXAMINATION
IX SEM B. ARCH (2021 SERIES)

Sl.no	Subject code	Subject Category	Title of Subject	Duration					Examination Scheme				
									Dur (hrs)	CIE MARKS	SEE MARKS	TOTAL	CREDITS
1	21ARC91	PAEC	Professional Training	16 weeks 100 days					-	50	50	100	26
TOTAL				0	0	0	0	0	-	50	50	100	**26**

ARC=Architectural SubjectsART=Art SubjectsENG =Engineering SubjectsHUM = Humanities Subjects.

No. of Subjects/Heads=01 **No. of Theory Examinations =00**

Progressive Marks to be awarded by the subject teacher. Term work & Viva Voce examination shall be conducted jointly by one internal & one external examiner appointed by the University

Minimum Marks for passing: ProgressiveMarks50%,Theory marks, Term work marks and Viva marks 50% ineach

Subject Categories': Professional **BS&AE: Building Sciences & Applied Engineering Courses** **PE: Professional Elective Courses**
PAEC: Professional Ability Enhancement Courses **SEC: Skill Enhancement Courses** **OE: Open ElectiveCourses** **(PC): Project Core**

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FACULTY OF ARCHITECTURE
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X SEM B. ARCH (2021 SERIES)

Sl.no	Subject code	Subject Category	Title of Subject	Teaching Scheme in Periods per Week					Examination Scheme				
				Lecture	Studio		Prac/Tutorial/	Total	Dur (hrs)	CIE MARKS	SEE MARKS	TOTAL	1
					core	applied							
1	21ARC101	PC	Architectural Design Project (Thesis)	0	10	8	0	18	-	50	50	100	18
2	21ARC102	PC	Sustainable Architecture	1	0	2	0	3	3	50	50	100	3
4	21ARC103	PC	Seminar	2	0	2	0	6	-	50	50	100	6
TOTAL				3	10	12	0	27	-	150	150	300	**27**

ARC=Architectural SubjectsART=Art SubjectsENG =Engineering SubjectsHUM = Humanities Subjects.

No. of Subjects/Heads=03 No. of Theory Examinations =01

Progressive Marks to be awarded by the subject teacher. Term work & Viva Voce examination shall be conducted jointly by one internal & one external examiner appointed by the University

Minimum Marks for passing: Progressive Marks 50%,Theory marks, Term work marks and Viva marks 50% ineach

Subject Categories':PC: Professional BS&AE: Building Sciences & Applied Engineering Courses PE: Professional Elective Courses

PAEC: Professional Ability EnhancementCourses SEC: Skill Enhancement Courses OE: Open ElectiveCourses (PC): Project Core

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TITLE OF THE COURSE: ARCHITECTURAL DESIGN – I

B.ARCH, I SEMESTER

Course code: 24ARC11	CIE Marks: 100
Contact Periods/week: 7(06 Studio & 1 Lecture)	SEE Marks(VIVA): 100
Total number of lecture/studio hours: 105 Hours	Exam Hours : -
Credits - 7	

OBJECTIVE:

- To develop the ability to translate abstract principles of design and elements into architectural solutions for simple problems.
- Understanding the relation between form and function.

MODULES	TEACHING HOURS
MODULE-I	
1. Introduction to Architecture • What architectural education entails? • What being an architect involves? • Understanding of Architecture's connection with other disciplines of knowledge: science & Technology, Mathematics, Philosophy, Religion, Sociology, Psychology, etc.	10
MODULE-II	
2. Introduction to Principles of Design: • Elements of form from abstract concepts like point, line, plane, mass and / or volume, 2D forms - circle, square and triangle, 3D forms – cube, sphere and pyramid, therefore, development of more complex forms by the method of addition and / or subtraction. • Concepts of volume and scale, width to height ratio. • Concepts of composition like rhythm, contrast, balance and symmetry.	**12**
MODULE-III	
3. Introduction to Anthropometry: • Understanding the relationship between function and spatial requirements with respect to the human body and its postures. • Minimum and optimum areas for mono functions. • User's data, movement and circulation diagrams.	**23**

MODULE-IV	
4. Introduction to Design process – • Understanding the relationship between idea, context, space (form & structure), and functional requirements. • Introduction to the various methods of idea / concept generation - use of form, patterns in nature and in geometry, music, text, and other allied fields. • Space planning based on activity, which will involve the entire body, and its movement in space.	**20**
MODULE-V	
5. Design of Spaces such as Studio Apartment (block), Pavilion, gazebo, kiosk, bus stop, stage, living/dining, bedrooms, Architect's office, Doctor's clinic etc.	**40**

Note-

- Discussions, presentations, and case studies will cover all the topics.
- The portfolio covering all the assignments shall be presented for term work.
- The requirements pertaining to the handicapped or disabled friendly design solutions and elderly people are to be addressed in design and detailing.

STUDIO PROJECT:

The portfolio covering the above topics shall be presented for term work/ viva examination including a design submission with Model of a bungalow designed in Architectural Design with landscape of the proposal to be submitted.

COURSE OUTCOME:

1. Apply the concepts of Architecture design and understand the Profession.

2. Apply the concepts for space required. To understand the basic Principles and design elements.

3.Apply the concepts of Anthropometry in designing spaces.

4. Apply the concepts of Design element and principles to design different spaces.

5. Implement simple building elements for any area w.r.t Design methodology

REFERENCE:

1. Alain de Botton, " How Proust Can Change your life", Picador, 1997.
2. Alain de Botton, " The Architecture of Happiness", Sep. 2006, Vintage Books.
3. Alan Fletcher, " The art of looking sideways", Phaidon Press, 2001 and Partis", Van Nostrand Reinhold, 1985

4. Anthony Di Mari and Nora Yoo, " Operative Design: A Catalogue of Spatial Verbs", 2012, BIS Publishers.
5. Anthony Di Mari, " Conditional Design: An Introduction to Elemental Architecture", 2014, 1st Edition, Thames & Hudson.
6. Bruno Munari,"Design as Art", Penguin UK, 25-Sep-2008
7. Charles George Ramsey and Harold Sleeper, " Architectural Graphic Standards", 1992, Wiley
8. Christopher Alexander, "Notes on the Synthesis of Form", 1964, Harvard University Press.
9. Debkumar Chakrabarti, " Indian Anthropometric Dimensions For Ergonomic Design Practice", 1997.
10. François Blanciak, " Siteless: 1001 Building Forms", 2008, MIT Press
11. Frank Ching, James F. Eckler, "Introduction to Architecture", 2012, John Wiley & Sons, US
12. Frank D.K. Ching, " Architecture: Form, Space, and Order", 4th Edition, Sep. 2014, John Wiley & Sons
13. Herman Hertzberger, "Lessons for Students in Architecture", 2005, 010 Publishers
14. Italo Calvino, " Invisible Cities", Harcourt Brace Jovanovich (May 3, 1978)
15. John Berger, " Way of SEE MARKSing", 1972, Penguin, UK
16. John Hancock Callender, " Time-Saver Standards for Architectural Design Data", 1982,McGraw-Hill
17. Michael Pause and Roger H. Clark, " Precedents in Architecture: Analytic Diagrams, Formative Ideas, National Institute of Design.
18. Paul Jacques Grillo, " Form, Function and Design", 1975, Dover Publications, New York
19. Paul Jacques Grillo, " What is Design?", 1960, P. Theobald
20. Paul Lewis,MarcTsurumaki, David J. Lewis, "Manual of Section", Princeton Architectural Press, 2016
21. Peter H. Reynolds, " The Dot", 2013, Candlewick Press
22. Philip Jodidio, "Tree houses. Fairy tale castles in the air", 2012, Taschen
23. Robert W. Gill, "Rendering with Pen and Ink", Van Nostrand Reinhold (1 June 1984)
24. Tom Alphin, "The LEGO Architect", 2015, No Starch PressCourse Outcomes with Program Outcomes and Program Specific Outcomes mapping

APPLY THE CONCEPTS OF ARCHITECTURE AND UNDERSTAND THE PROFESSION -

COURSE OUTCOMES		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Apply the concepts of Architecture design and understand the Profession	2		3	3	2	2	2							2	
CO2	Apply the concepts for space required. To understand the basic Principles and design elements.	2	2	3	2	2	2	2	2		1			3	2	
CO3	Apply the concepts of Anthropometry in designing spaces.	2	2	3	3	1	2	1	2		2			2		
CO4	Apply the concepts of Design element and principles to design different spaces.	2		3	3	2	2	2							2	
CO5	Implement simple building elements for any area w.r.t Design methodology	2	3	3	2	2	2	3	2			1		1	3	2
	AVERAGE	2	2	3	3	2	2	2	2		2	1		1	3	2

CONTRIBUTION: 1: REASONABLE 2: SIGNIFICANT 3: STRON

TITLE OF THE COURSE: BUILDING CONSTRUCTION & MATERIALS -I

B.ARCH, I SEMESTER

Course code :24ARC12	CIE Marks :50
Contact Periods / Week : 4(2 lecture+ 2 Studio)	SEE Marks(VIVA) : 50
Total Number of Lecture/ Studio Hours: 60	Exam Hours: -
Credits:04	

Course learning Objective:

1. To introduce students to primary building materials and simple construction techniques as Applicable to a low-rise building- three to four-storied contemporary building.
2. To develop an understanding of brick bonding, foundation details, external wall section with flat roof and parapet.

SL.NO	MODULES	TEACHING HOURS
1	**MODULES-I** Various tools and equipment commonly used in construction Introduction to building components usage of basic building materials and construction methods - load bearing construction and framed structure. Introduction to various building components and their function, various conventions used for Drawings plans; sections and elevations.	12
`2	**MODULE-II** Introduction to Bricks and Tiles - Types, properties and manufacturing methods & process; uses of bricks for aesthetic & structural purpose. Types of brick masonry, walls, bonds, buttress, arches, lintels, vaults and domes. Site visit – field visit to construction sites and hands on explanation of basic brick Masonry bonds	12

3	**MODULE-III** Introduction to cement, types of cement, properties, grades and uses. Introduction to sand, properties, types of sand and uses. Lime – varieties, properties and uses in building Lime Mortar – Preparation and application Concrete: composition, properties, uses, water cement ratio, grade of concrete. PCC RCC, lightweight concrete, autoclave concrete, hollow concrete block	12
4	**MODULE-IV** Introduction Foundation. its function ,design criteria, safe bearing capacity of different types of soil. foundation types ,introduction DPC(horizontal & vertical) waterproofing materials	12
5	**MODULE-V** Stones – Types, properties quarrying and uses of stone for aesthetic & structural purpose. Stone construction – types of masonry, Stone arches, lintels, coping	12

SUBMISSION:

Minimum one plate on each topic, Site visit is mandatory for all the topics, site visits to be arranged by studio teacher for study of material and methods of construction

Submission of progressive work in the form of a portfolio for CIE and Viva evaluation.

COURSE OUTCOMES: After studying this course, students will be able to understand;

1. Recognize different building components and application of building construction techniques for load bearing and framed structure.
2. Identify bricks and tiles for construction work and its application in various buildings
3. Application of cement , sand , lime and various concrete blocks
4. Analyze different types of foundation in brick and stone and its utilization as per the design requirement.
5. Recognize and implement various types of stone and stone masonry techniques.

REFERENCE BOOKS:

1. "Building Construction"byW.B.Mackay
2. "ConstructionTechnology"byChudley
3. "Construction of Building" by Barry
4. "Building Constructon" by Rangawala
5. "Building Constructon" by Punmiya

Course Outcomes with Program Outcomes and Program Specific Outcomes mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3													3	
CO2		3												3	
CO3			2											3	
CO4		2												3	
CO5	3													3	
AVG	3	2.5	2											3	

CONTRIBUTION: 1: REASONABLE 2: SIGNIFICANT 3: STRONG.

TITLE OF THE COURSE :ARCHITECTURAL GRAPHICS -I

B.ARCH , I SEMESTER

Course Code :24ARC13	CIE Marks :50
Contact Periods / Week : 4(1 lecture+3 Studio)	SEE Marks(Term Work) : 50
Total Number of Lecture/ Studio Hours: 60	Exam Hours: -
Credits:04	

Course learning Objective:

1. To introduce students to the fundamental techniques of Architectural drawings and also two-dimensional representation of built elements and built forms.
2. To develop the ability of individual students to perceive three dimensional objects and enhance visualization skills.

SL.NO	MODULES	TEACHING HOURS
1	MODULES-I 1. Introduction to visual representation of Graphics. a. Introduction to the basic principles of drawing and lettering used in architectural drawings. b. Introduction to sign conventions used in drawings. c. Concept of scale, dimensioning and its application.	12
2	MODULE-II 2. Introduction to Euclidian Geometry. a. Construction of lines, angles, triangles, quadrilaterals and regular polygons b. Introduction to development of simple surfaces of basic geometrical shapes and its application.	12
3	MODULE-III 3. Introduction and construction techniques of solid geometry. a. Plane curves, ellipse, parabola, hyperbola and oval. b. Typical arch shapes.	10
4	MODULE-IV 4. Orthographic projection (First angle projection) a. Principles of orthographic projections and projection of points, lines, planes and solids. b. Projection of architectural solids, built elements and forms.	12

5	MODULE-V 5. 3D projections – Isometric and Axonometric projection a. 3D projection I – Introduction to Isometric projections and their views of solids, simple Architectural built elements and forms. b. 3D projection II – Introduction to Axonometric projections and their views of solids, simple architectural built elements and forms.	14

Note: A consolidated portfolio containing exercises related to each of above topics are to be submitted for term work examination.

Outline: At the end of the semester, the students will be equipped with graphical skills which shall be useful in translating the graphical ideas into technically appropriate drawing presentations.

COURSE OUTCOMES: After studying this course, students will be able to ;

1. Analyze the visual representation of Architectural & graphical drawing.
2. Identify the simple development surfaces of basic geometrical shapes.
3. Recognize the different techniques in construction of objects.
4. Analyze the principles of orthographic projections.
5. Distinguish the Isometric and Axonometric projection of Architectural elements.

REFERENCE BOOKS:

1. IS 962 for Architectural graphics standards

2. “Engineering Drawing” by N D Bhat

3. “Geometrical Drawing for Arts Students” By IH Morris

4. “Engineering Drawing Vol I and II” by KR Gopalkrishna

5. “A primer on computer aided engineering drawing” by VTU

6. Architectural Rendering the techniques of contemporary presentation by Albert o Halse.

Course Outcomes with Program Outcomes and Program Specific Outcomes mapping

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO 11	PO1 2	PS O1	PSO2	PSO3
CO 1										2		3			
CO 2	1	2				1				2					
CO 3	1									2		3			
CO 4	1	1		3						2					
CO 5	1									2		3			2
AV G	1	1. 5		3		1				2		3			2

CONTRIBUTION: 1: REASONABLE 2: SIGNIFICANT 3: STRONG

TITLE OF THE COURSE: HISTORY OF ARCHITECTURE – I

B.ARCH, I SEMESTER

Course Code :24ARC14	CIE Marks :50
Contact Periods / Week : 3(3 lecture)	SEE Marks:50
Total Number of Lecture/ Studio Hours: 45	Exam Hours:03
Credits:03	

Course learning Objective:

1. To appreciate the culture and architecture of first societies and early civilizations.
2. (The scope limited from Prehistory, Stone Age to civilizations across continents, early Iron Age); to develop critical reading, discussion and representation skills for architectural history.

SL.NO	MODULES	TEACHING HOURS
1	MODULE-I 1. Introduction meaning, methods and significance of History and Architecture's connection with History 2. Pre historic world-primitive man, shelter, settlements, religious & burial system Ex - oval Hut, Catal Huyuk, Henge monuments – stone Henge, & passage grave.	8
2	MODULE-II 3. River valley cultures – Tigris and Euphrates & Nile Ex – Pyramid of Cheops, temple of Khons, Karnak. 3. Introduction to Pre-Classical Architecture (Indian sub-continent): Aryan and early Mauryans. E.g: Vedic village, Vedic Town and city planning principles (mandalas), Palace at Pataliputra.	9
3	MODULE-III 4. Pre-Classical - Mycenean & Etruscan Ex – The Palace, Tiryns Ex – The Temple of Juno sospita, Lanuvium. 5. Classical - Greek and Roman, Study of principles of Designs, Proportions, compositions and visual effects. Ex – Doric, Ionic & Corinthian orders, Optical corrections, Temple Parthenon Ex – Tuscan and composite orders and Temple Parthenon, Basilica of Tragan.	10
4	MODULE-IV 5. Ecclesiastical – Early Christian, Byzantine, medieval and Gothic Architecture Ex – Basilican Church of St. Peter, Roam Ex – Hagia Sophia at Istanbul. Ex – The Cathedral at Pisa. Ex – Notre Dam Paris.	9

5	MODULE-V 1. Chinese Civilization (Yellow and Yangtze): Forces shaping settlements and habitats. E.g.:Niuheliang Ritual Center and dwellings at Banpo, Shang dynasty (Layout of Zhengzhou, Palace and Tomb at Yin), Zhou dynasty (ritual complex and Wangcheng Plan). 2. Japanese Civilization: Forces shaping settlements and habitats. E.g.:Jōmon and Yayoi Period (dwellings), Kofun Period (burial mounds/ tumulus)	9

COURSE OUTCOMES: After studying this course, students will be able to;

1. Identify the history & settlement of Pre-historic Primitive man.
2. Identify and apply the concept of progression of art & architecture of River valley and Vedic cultures.
3. Distinguish between Pre-classical & classical period with the help of examples such a Mycenae, the Palace, Greek & Roman, Doric, Ionic, Tuscan etc.
4. Application of Ecclesiastical style in early Christian, Byzantine Medieval & Gothic architecture.
5. Identify the characteristics of planning in the Chinese Civilization and Japanese Civilization.

REFERENCE BOOKS:

1. “History of Architecture” by Benistar Fletcher.
2. Pre History of Post modernism by Marvin & Isabel.

Course Outcomes with Program Outcomes and Program Specific Outcomes mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1						3						3	3		
CO2							3						3		
CO3						3		3					3		
CO4								3				3	3		
CO5								3				3	3		
AVG													3		

CONTRIBUTION: 1: REASONABLE 2: SIGNIFICANT 3: STRONG

TITLE OF THE COURSE: STRUCTURES - I

B.ARCH, I SEMESTER

Course Code :24ENG15	CIE Marks :50
Contact Periods / Week : 3(3 lecture)	SEE Marks: 50
Total Number of Lecture/ Studio Hours: 45	Exam Hours:03
Credits:03	

Course learning Objective:

1. To give an introduction to the basic principles governing structural systems.

SL.NO	MODULES	TEACHING HOURS
1	**MODULES-I** Scalars and Vectors, Classification of force, force system, parallelogram law of forces, Principles of transmissibility, principle of superposition and Varignon's Theorem, Resolution and Resultant of co-planner, concurrent and non-concurrent force system.	9
2	**MODULE-II** Equations of static equilibrium and Free- body Diagrams. Lami's Theorem, Friction, types of friction, laws of Dry Friction, numerical problems on Blocks, wedge and ladder.	9
3	**MODULE-III** Support and support reactions – types of loads, supports and their significance. Concept of statically Determinate and In-determinate structures. Determination of support reactions statically determinate beams and Structures.	9

4	**MODULE-IV** Centre of gravity- Determination of centroid of standard geometrical figures by first principle, axis of symmetry. Determination of centroid of symmetrical and Asymmetrical axes of simple Lamina, Parallel Axis Theorem, perpendicular Axis Theorem moment of inertia and Radius of Gyration M.I of regular geometrical lamina by first principles, Determination of M.I of simple figures (Simple numerical problems)	9
5	**MODULE-V** Analysis of Trusses – Definition of perfect, deficient, and redundant trusses. Analysis of determinate trusses by method of joints and sections. (Simple numerical problems).	9

COURSE OUTCOMES: After studying this course, students will be able to;

1. Classify the force system and determine the resultant of force system.
2. Determine the forces acting on Blocks, Wedge and ladder using laws of friction.
3. Identify the types of loads, supports, and calculate support reactions.
4. Determine C.G and M.I of Geometrical properties of plane figures.
5. Analyse Truss by method of joint and method of section

REFERENCE BOOKS:

1) R.K.Bansal, " A Textbook of Engineering Mechanics", Laxmi Publications, 2008

2) S.S. Bhavikatti, “Engineering Mechanics", New Age International, 1994.

3) S. Ramamrutham, “Engineering Mechanics ", DhanpatRai Publishing, New Delhi, 2016.

Course Outcomes with Program Outcomes and Program Specific Outcomes mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2												2	3
CO2	3	3												2	3
CO3	3	2												2	3
CO4	3	2												2	3
CO5	3	2												2	3
AVG	3	2.2												2	3

CONTRIBUTION: 1: REASONABLE 2: SIGNIFICANT 3: STRONG

TITLE OF THE COURSE: BASIC DESIGN AND VISUAL ARTS

B.ARCH , I SEMESTER

Course Code : 24ART16	CIE Marks :50
Contact Periods / Week : 4 (1 Lecture& 3 Studio)	SEE Marks (Term Work) : 50
Total Number of Lecture/ Studio Hours: 60	Exam Hours : –
Credits:04	

Course learning Object-

To introduce the develop an understanding of principles of design in abstract and to introduce the student to visual arts.

To introduce observation skills and to improve sensitivity to surroundings.

To introduce various sources of inspiration for creativity.

SL.NO	MODULES	TEACHING HOURS
1	**MODULE-I** Composition: Elements of design and Principles of design. • To develop an understanding of Composition. • Principles of Design- Balance, Emphasis, Movement, Repetition, Proportion & Scale, Unity, etc., • Various Exercises on Elements of design- Line, Shape, Color, Texture, Pattern, etc.,	8
2	**MODULE-II** Observation and Study Selection of two Indoor & outdoor objects/systems and observation of their natural occurrence, relationships with context, form & structure, colors & textures, and function Sketching & visual representation in various media. 3 dimensional modeling in appropriate medium (Clay/paper/wire/plaster/wax etc.).	9

3	**MODULE-III** Free Hand Sketching: Objects & Surroundings. Free hand outdoor sketching within the campus. Exercises of free hand pencil drawings, sketches on natural elements with various rendering techniques. Sketches of objects, solids, furniture, architectural Elements and built forms.	9
4	**MODULE-IV** Color Theory: Color wheel - Primary color, secondary color, tertiary color, quaternary color, intermediate colors. Color harmony aromatic, monochromatic harmony, chromatic harmony. Complementary colors – Warm colors harmony, cool colors harmony, tints and shades, natural colors	9
5	**MODULE-V** Material Study: Selection of two materials used in everyday life (textiles, Earthenware, terracotta, metals, stone, plastic, glass etc.) Study of properties, Strength, examples of use. Sketching & visual representation of material in various media, like Paper, clay, plaster, wood, wire, wax, photography. Hands-on making of object/joint/structure of own choice with one of the materials studied.	8

COURSE OUTCOMES: After studying this course, students will be able to

1. Apply Elements of design and Principle of design.
2. Draw sketches and prepare 3D Model.
3. Draw free hand sketches using different types of pencils and learning various rendering techniques.
4. Demonstrate the color theory through color wheel such as primary, secondary and tertiary.
5. Understanding of materials through different medium like clay, wood, wire etc.

Teaching Learning Process:

· Studios to conduct hands on work with models, sheets, drawings in Basic Design

· Indoor and outdoor sketching in various medium to explore visual arts.

Note: Progressive marks to include Submission of a portfolio of sketches, sheets and study models, etc.

REFERENCE BOOKS:

1. Donald Norman, 'Design of Everyday Things", Basic Books; 2 edition (5November 2013)
2. JohnBerger, 'WaysofSEE MARKSing'1972,Penguin,UK
3. MaitlandGraves,'TheArtofColorandDesign',McGraw-Hill,1951
4. Robert Gill, "Rendering with Pen and Ink", Thames & Hudson; Revised, Enlarged edition (2 April19).
5. Francis D.K. Ching," Architecture: form, space & order", John Wiley & Sons, 2010
6. Fred S. Kleiner, "Art through the Ages", Cengage Learning; 14 edition, 2012

Course Outcomes with Program Outcomes and Program Specific Outcomes mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2		2	2	2			3					3	2	
CO2			2	2	2								3	3	
CO3			2	2	3										3
CO4		2	2	2	3		2	3		2			3	2	
CO5				2	1			2					2		3
AVG		2	2	2	2.2		2	2.6		2			2.7	2.3	3

CONTRIBUTION: 1: REASONABLE 2: SIGNIFICANT 3: STRONG

TITLE OF THE COURSE : MODEL MAKING WORKSHOP
B.ARCH, I SEMESTER

Course Code : 24ART17	CIE Marks :50
Contact Periods / Week : 2(1 Lecture+1 Studio)	SEE MARKS : -
Total Number of Lecture/ Studio Hours : 30 Hrs	Exam Hours: -
CREDITS : 02	

Course learning Objective:

Objective:- • To develop techniques for 3 dimensional representation

To improve the students' overall capability in model making that help them to translate their architectural ideas..

SL.NO	OUTLINE	TEACHING HOURS
1	**MODULE I : Introduction to Model Making .** Introduction to various materials for model making like paper, thermocol , clay, ceramic, plastic sheet, sheet metal, wood etc. Selection of material for model making. Introduction to various tools for model making Application of tools, suitability, and safety precautions. Model making of geometrical objects such as cube, cuboids, pyramid, cone etc leading to a small two room building model with landscaping using mount board, box board etc.	6
2	**MODULE II : Geometric and Free form** Exercises related to Geometric and free form using various materials such as paper, thermocol, clay, plastic sheet, sheet metal, wood etc. Preparing space models using steel wires by soldering, simple welding etc. use of wax, wire metal, POP for makings spatial forms.	6
3	**MODULE III : Carpentry** – Demonstration to the use of different types of tools used in carpentry. Painting, varnishing and melamine finishes to wooden surface and plywood. Demonstration of different types of joints, fixing of veneers/laminates on different types of timber surfaces i.e., teak and commercial woods viz. ply, block boards, particle boards.	6
4	**MODULE IV : MODERN TECHNIQUEs** Wall painting with and without luppum on OBD,enamel . Introduction to CNC Cutting, 3D Printing. (Site Visit).	6

5	**MODULE V : Architectural models** Study and presentation Models should preferably be coordinated with other subjects like Design/Building technology/Theory of Structure/ History of Architecture etc.	6

Text books

1. Model Building for Architects and Engineers by John Taylor.

2. Architectural Models by Rolf Janke.

3. Color on Metal by Tim Mc Creight & Nicole Bsullak .

4. The complete book of drawing techniques, by Eugene Felder & Emmett Elvin.

5. Architectural Model making by Nick Dunn. 6. Paper Scissor Glue by Catherine Norman, Ryland Peters & Small

COURSE OUTCOMES: After studying this course, students will be able to-

1. Recognize and utilize different materials for model making.
2. Create Different Geometrical Models and analyze the spatial models practically.
3. Analyze different tools for carpentry works and implement the methods.
4. Identification and demonstration of latest techniques and materials materials of various construction elements .
5. Create Aesthetic Architectural models .

Co1 Students will be able to understand the importance of Model making and different types of material, tools and Techniques in model making. CO 2 Students will be able to create geometric and free form models which convey innovative thoughts. CO 3 Students will be able to understand the workshop practice and explore modern manufacturing methods CO 4 Students will be able to CO 5 Students will be able to relate to scaled models to know the geometry of simple and complex built forms.

REFERENCE BOOKS:

1. Arjan Karssen and Bernard otte, “Model making: conceive, creaye and convince”, frame publishers (November 11, 2014)
2. David Neat, "Model-Making: Materials and Methods", Cro Wood Press,2008
3. JocquiAtkin, "250 tips, techniques, and trade secrets for potters", Barron's Educational Series,2009
4. MattDriscoll,"ModelMakingforArchitects",TheCrowoodPressLtd,2013
5. Megan Werner,"Model making", PrincetonArchit.Press,2010
6. NickDunn,"ArchitecturalModelMaking",LaurenceKingPublishing,2014
7. Roark T. Congdon, "ArchitecturalModel Building", Fairchild Books; 1 edition, 2010.

Course Outcomes with Program Outcomes and Program Specific Outcomes mapping:

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO 2	PSO3
CO1	2												3		
CO2			2										3		
CO3	2												3		
CO4	2												3		
CO5			2										3		
AVG	2		2										3		

CONTRIBUTION: 1: REASONABLE 2: SIGNIFICANT 3: STRONG

TITLE OF THE COURSE : - COMMUNICATION SKILLS
B.ARCH , I SEMESTER

Course code :24ARC18	CIE Marks :50
Contact Periods / Week :1 (2 Lecture)	SEE Marks : 50
Total Number of Lecture/ Studio Hours: 30	Exam Hours: 3
Credits:02	

Course Learning Objective:

1. To enable the students to develop skills in effective communication both in written & verbal.

SL.NO	MODULES	TEACHING HOURS
1	**MODULES-I** 1. Introduction: Meaning, Definition, Importance & Purpose of Communication, Process of Communication, Types of Communication, Communication network in an organization, 7c's of communication, Barriers to Communication & Essentials of good Communication. 2. Oral Communication: Meaning, Principles of successful oral communication, barriers to communication. Modes of oral communication – listening as a communication skill, Nonverbal communication. Grapevine Communication – Meaning & Types.	**6**
2	**MODULE-II** 3. Effective writing: Purpose of Writing, Clarity in writing, Principle of Effective writing, writing personal Experiences – Describing a person, situation, memorable events etc. 4. Drafting of Letters: Writing different types of letters - writing for employment, joining letter, complaints & follows up, Enquiries, representation etc. Official Communication – email & social media.	**6**
3	**MODULE-III** **Presentation Skills:** What is a Presentation? – Element of Presentation – Designing &delivering Presentation. Public Speaking, Effective Power Point presentation, body language, Non-verbal facial expressions, Eye Contact, audience research, questions from the audience, communication of emotional intelligence, creativity in oral communication. Communication through telephonic, video conference & Skype.	**6**
4	**MODULE-IV** Employment Communication Skills: Writing Curriculum Vitae (CV), Interview – Types of interview, Candidates Preparation, Interviews Preparation, Time Management, Grooming & Just A Minute (JAM). Speaking for better communication – speaking about yourself.	**6**
5	**MODULE-V** 5. Interpersonal Communication Skills: Advantages& Disadvantages of utilizing the teamwork, Characteristic of Successful teams, Stages of the development of a team, team roles, challenges in team working, forms of Non- Team behaviour.	**6**
Assignment: Assignments need to be given after completion of each chapter and to be evaluated immediately.		

COURSE OUTCOMES: After studying this course, students will be able to understand;

1. Understand the meaning, importance and purpose of communication skills and identify various types of communication.
2. Analyze the various types of letters with different modes.
3. Develop presentation skills , including the ability to design and deliver.
4. Identify effectively use of verbal, visual and electronic modes.
5. Understanding the advantages and challenges of team work.

REFERENCE BOOKS:

1. Prasad P, Communication Skills, S. K. Kataria &Sons.
2. Business Communication – K. K. Sinha, Galgotio Publishing Company, New Delhi.
3. Murphy – Effective Business Communication, McGraw Hill
4. Mc. Grath - Basic Managerial Skills, New Delhi, Prentice Hall India learning pvt. Ltd.

Course Outcomes with Program Outcomes and Program Specific Outcomes mapping:

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1										3			-		
CO2										3			-		
CO3										3			-		
CO4										3			-		
CO5										3			-		
AVG										3			-		

CONTRIBUTION: 1: REASONABLE 2: SIGNIFICANT 3: STRONG

TITLE OF THE COURSE: - SCIENTIFIC FOUNDATION OF HEALTH B.ARCH, I SEMESTER

Course code :24SFH19	CIE Marks :50
Contact Periods / Week :1 (1 Lecture)	SEE MARKS : 50
Total Number of Lecture/ Studio Hours: 15	Exam Hours:-2
Credits:01	

Course learning Objective:

The course 24SFH19 will enable the students:

- To know about Health and wellness (and its Beliefs).
- To acquire Good Health & its balance for positive mind-set.
- To build the healthy lifestyles for good health for their better future.
- To Create of Healthy and caring relationships to meet the requirements of MNC and LPG world.
- To learn about Avoiding risks and harmful habits in their campus and outside the campus for their bright future to Prevent and fight against harmful diseases for good health through positive mindset.

SL.NO	MODULES	TEACHING HOURS
1	**MODULES-I** Good Health and its balance for positive mindset: What is Health; Why Health is very important Now? – What influences your Health? Health and Behaviour, Health beliefs and advertisements, Advantages of good health (Short term and long term benefits), Health and Society, Health and family, Health and Personality - Profession. Health and behaviour, Disparities of health in different vulnerable groups. Health and psychology, Methods to improve good psychological health. Psychological disorders (Stress and Health - Stress management), how to maintain good health, Mindfulness for Spiritual and Intellectual health, Changing health habits for good health. Health and personality.	**3**
2	**MODULE-II** Building of healthy lifestyles for better future: Developing a healthy diet for good health, Food and health, Nutritional guidelines for good health and well beingness, Obesity and overweight disorders and its management, Eating disorders - proper exercises for its maintenance (Physical activities for health), Fitness components for health, Wellness and physical function.	**3**
3	**MODULE-III** Creation of Healthy and caring relationships : Building communication skills (Listening and speaking), Friends and friendship - education, the value of relationships and communication, Relationships for Better or worsening of life, understanding of basic instincts of life (more than a biology), Changing health behaviours through social engineering.	**3**
4	**MODULE-IV** Avoiding risks and harmful habits : Characteristics of health compromising behaviours, Recognizing and avoiding of addictions, How addiction develops	**3**

	and addictive behaviours, Types of addictions, influencing factors for addictions, Differences between addictive people and non addictive people and their behaviour with society, Effects and health hazards from addictions Such as..., how to recover from addictions.	
5	**MODULE-V** Preventing and fighting against diseases for good health: Process of infections and reasons for it, How to protect from different types of transmitted infections such as…., Current trends of socio economic impact of reducing your risk of disease, How to reduce risks for good health, Reducing risks and coping with chronic conditions, Management of chronic illness for Quality of life, Health and Wellness of youth: a challenge for the upcoming future Measuring of health and wealth status.	**3**

Assignment: Assignments need to be given after completion of each chapter and to be evaluated immediately.

COURSE OUTCOMES:

At the end of the course the student will be able to:

1. CO1: Implement practices leading to good health and well-being (and its Beliefs).
2. CO2: Acquire Good Health & its balance for positive mindset.
3. CO3: Inculcate and develop the communication skills leading to healthy lifestyle.
4. CO4: Ability to recognize and practice healthy behaviours.
5. CO5: Adopt the innovative & positive methods to avoid risks from harmful habits in their campus & outside the campus.

REFERENCE BOOKS:

1. Health Psychology (Second edition) by Charles Abraham, Mark Conner, Fiona Jones and Daryl O'Connor – Published by Routledge 711 Third Avenue, New York, NY 10017.
2. Health Psychology - A Textbook, FOURTH EDITION by Jane Ogden McGraw Hill Education (India) Private Limited - Open University Press
3. HEALTH PSYCHOLOGY (Ninth Edition) by SHELLEY E. TAYLOR - University of California, Los Angeles, McGraw Hill Education (India) Private Limited - Open University Press
4. Scientific Foundations of Health (Health & Welness) - General Books published for university and colleges references by popular authors and published by the reputed publisher.

1) SWAYAM / NPTL/ MOOCS/ We blinks/ Internet sources/ YouTube videos and other materials / notes.

Activity Based Learning (Suggested Activities in Class)/ Practical Based learning

- Contents related activities (Activity-based discussions).
- For active participation of students, instruct the students to prepare Flowcharts and Handouts.
- Organizing Group wise discussions and Health issues based activities.
- Quizzes and Discussions.
- Seminars and assignments.

Course Outcomes with Program Outcomes and Program Specific Outcomes mapping:

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2	PSO 3
CO1			3												
CO2			3												
CO3			3												
CO4			3												
CO5			3												
AVG			3												

CONTRIBUTION: 1: REASONABLE 2: SIGNIFICANT 3: STRONG

TITLE OF THE COURSE: ARCHITECTURAL DESIGN –II

B.ARCH, II SEMESTER

Course code :24ARC21	CIE Marks :100
Contact Periods / Week :7(1 Lecture+6Studio)	SEE Marks (Viva) : 100
Total Number of Lecture/ Studio Hours: 105	Exam Hours: -
Credits:07	

Course learning Objective:

1. To develop the ability to generate solutions to spatial constructs, i.e., space and form which integrate principles of design with functional requirements by emphasizing the study of variables like light, movement, transformation, scale, structure & skin., physical constraints and cultural context, either urban or rural, Formal and informal housing.

2. To develop the ability to translate abstract principles of design into architectural solutions for simple problems.

SL.NO	MODULES	TEACHING HOURS
1	**MODULE I** To relearn the "principles of Design" and anthropometric requirements of space planning.	**12**
2	**MODULE II** Introduction to "Nature of Space": • Understanding the notions of PLACE: A "boundary", a "center" and a "spirit", PATH: A "way" and a "goal", DOMAIN: A conglomeration of paths and goals that forms a "whole" with its own "identity", • Understanding the notions of "Enclosure, Ambiguity, and Transparency", "Spatial Context in formal and informal built environment. - open, closed, transition spaces", "cultural context – inclusion, exclusion, spatial segregation", • Culture & Design: Understanding social attitudes to Built-form: extroverted/introverted, formal/informal, typical/individual, simple/labyrinthine, contiguous/isolated etc.	**24**
3	**MODULE III** Introduction to "Poetics of Space": • light, movement, transformation, scale, structure and skin, • key tools for learning: text / language as a tool; emotion, cultural, climatic, eg.- contemplative / severe / dramatic / minimalist / natural / organic / contemporary / traditional / etc.	**24**
4	**MODULE IV** Understanding the role of Physical Context - terrain, materials, structure, etc.	**12**

5	**MODULE V** Design process to test the learning of the semester using a multifunctional program to incorporate "nature of space", "poetics of space" and "physical constraints",. • Generation of a design brief for a multifunctional program, generation of areas based on human activity and anthropometric data • Selection a of suitable site. • Idea generation, design development, & design drawings. • Eg. **- A House for self, Guest House, Farm house, Villa, Container house, Courtyard house, Tree house, house in an informal settlement etc**.	**33**

COURSE OUTCOMES: After studying this course, students will be able to understand;

1. Explore with space planning considering Anthropometry.
2. Apply the thermal comfort in built environment.
3. Convert the space to a place with social attitude in built environment.
4. Apply various physical aspects in design.
5. Explore the poetic space (transformation, scale).

REFERENCE BOOKS:

1. 'Time Saver Standards for Architectural Design Data' by John Hanck.
2. Charles George Ramsey and Harold Sleeper, " Architectural Graphic Standards", 1992, Wiley
3. Anthony Di Mari and Nora Yoo, " Operative Design: A Catalogue of Spatial Verbs", 2012, BIS Publishers.
4. Peter H. Reynolds, " The Dot", 2013, Candlewick Press

Course Outcomes with Program Outcomes and Program Specific Outcomes mapping:

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	3												3		
CO2		3					2								3
CO3						3									
CO4			3										3		
CO5			3										3		
AVG	3	3	3			3	2						3		3

CONTRIBUTION: 1: REASONABLE 2: SIGNIFICANT 3: STRONG

TITLE OF THE COURSE :BUILDING CONSTRUCTION & MATERIALS – II

B.ARCH , II SEMESTER

Course code :21ARC22	CIE Marks :50
Contact Periods / Week:4(1Lecture+3 Studio)	SEE Marks(Viva): 50
Total Number of Lecture/ Studio Hours: 60	Exam Hours:
Credits:04	

Course learning Objective:

1. To comprehend the students with different types of doors and windows and contemporary construction practices pertaining to roofing systems for larger spans using timber, steel truss & concrete.

SL.NO	MODULES	**TEACHING HOURS**
1	**MODULES-I** 1. Doors – Types of wooden Doors, i.e., paneled, flush and glazed doors, study of joinery details. 2. Doors – Types of Doors other than wood (steel, PVC etc) study of joinery details	12
2	**MODULE-II** 3. Windows – Types of windows (metal windows, sliding windows, glazed windows/sash, louvered windows, bay window, gable & dormer window), study of joinery details	12
3	**MODULE-III** 4. Roof – Timber and steel trussed roof, various parts, their purposes and method of construction. 5. Timber Roof- Lean to Roof, collared roof, king post roof, queen post roof, details of joinery 6. Steel roof – Types of steel truss roofs & methods of construction	12

4	**MODULE-IV** 7. Timber – Quality of timber used in building, defects, seasoning and preservation of timber, types – Natural, hard and softwood, uses of timber for aesthetic & structural purpose 8. Uses of commercial wood in building i.e., plywood, block boards, particleboards, veneers and laminates and other types. Manufacturing processes in brief, their properties and application. 9. Introduction to various tools & equipment's commonly used in construction work.	12
5	**MODULE-V** 10. Cement - Types of cement, their applications, manufacturing process, laboratory and field tests. 11. Use of AC sheet, GI sheets and aluminum sheets for roofing. Materials and methods 12. Other materials for covering small spans like Mangalore tiles, clay tiles, wood shingles etc 13. Introduction to types, properties, uses and application of non – ferrous metals and glass	12

Submission

Minimum one plate on each topic shall be submitted as term work. Site visits to be arranged by studio teachers. Study of material application in the form of portfolio to be submitted.

COURSE OUTCOMES: After studying this course, students will be able to -

1. Apply different types of doors suitable to the building using sustainable material
2. Apply different types of windows suitable to the building
3. Select & use of suitable types of roofs & roofing materials using appropriate technique based on local requirement
4. Utilization of timber & alternate materials according to type of building & availability
5. Analyze different types of roof coverings & its implementation based on spanning, building type & local conditions

REFERENCE BOOKS:

1. "Building Construction "by W.B Mackay
2. "Construction Technology "by Chudley
3. "Construction of Building "by Barry
4. "Building Construction "by Rangawala
5. "Building Construction "by Punmiya

Course Outcomes with Program Outcomes and Program Specific Outcomes mapping:

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO 11	PO12	PSO 1	PSO 2	PSO3
CO 1						2	3							3	
CO 2												3		3	
CO 3	3		2											3	
CO 4	3													3	
CO 5	3													3	
AV G	3	3	2			2	3					3		3	

CONTRIBUTION: 1: REASONABLE 2: SIGNIFICANT 3: STRONG

TITLE OF THE COURSE :ARCHITECTURAL GRAPHICS - II
B.ARCH , II SEMESTER

Course code :24ARC23	CIE Marks :50
Contact Periods / Week :4 (1 Lecture+3 Studio)	SEE Marks(Term work): 50
Total Number of Lecture/ Studio Hours: 60	Exam Hours: -
Credits:04	

Course learning Objective:

1. To introduce students to the fundamental techniques of architectural drawings and to enhance their visualization skills by practice on drawing board by conventional method

SL.NO	MODULES	TEACHING HOURS
1	**MODULE -I** 1. Section of solids of simple geometric objects like prism, pyramid, cone & cylinder in different positions & its true shapes of sections.	10
2	**MODULE-II** 2. Development of surfaces of simple geometrical objects of prisms, pyramids, cylinder and cone.	12
3	**MODULE-III** 3. Inter-penetration of geometric solids of simple geometrical objects prism with prism, cylinder with cylinder, cone with cylinder, cylinder with prism.	10

4	**MODULE-IV** 3. Perspective – Principles and visual effects of three-dimensional objects Study of picture plane, station point, vanishing point, eye level, ground level, their variation and their resultant effects. One point & two-point Perspective drawings of simple geometrical objects (like pyramids, cubes prisms, cylinders, cones and their combinations) & built forms.	14
5	**MODULE-V** 5. Sciography Study of Shades and shadows Principles of drawing shade and shadow with source of light in sun. 6. Sciography for simple geometrical forms on vertical, horizontal and inclined planes.	14

Note: Module wise Assignments need to be given after completion of each module and to be evaluated immediately.

COURSE OUTCOMES: After studying this course, students will be able to-

1. Implement the fundamental techniques of section of solids.
2. Identify the development of surfaces of solids.
3. Explain and interpret the inter – penetration of geometrical solids.
4. Distinguish between the one-point &two-point perspective with solids &the built forms.
5. Analyze the study of Sciography for simple geometrical forms.

REFERENCE BOOKS:

1. “Engineering Drawing” by N D Bhat
2. “Geometrical Drawing for Arts Students” By I H Morris
3. “Engineering Drawing Vol I and II” by KR Gopalkrishna
4. “Perspective” by SH Mullik

Course Outcomes with Program Outcomes and Program Specific Outcomes mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1								2					3	1
CO2	1		3						2					3	1
CO3	1								2					3	1
CO4									2						
CO5									2						
AVG	1								2					3	1

CONTRIBUTION: 1: REASONABLE 2: SIGNIFICANT 3: STRONG

TITLE OF THE COURSE: HISTORY OF ARCHITECTURE – II
(Indian Architecture)

B. ARCH, II SEMESTER

Course code: 24ARC24	CIE Marks: 50
Contact Periods/week: 3 Lectures	SEE Marks : 50
Total number of lecture/studio hours: 45 Hours	Exam Hours - 3
Credits- 3	

Objective:

To introduce culture & architecture of early civilization

To provide an understanding of the evolution of Hindu Architecture in India in its various stylistic modes with critical appreciation, characterized by technology, ornamentation, planning practices & influences in general.

MODULE-I	**TEACHING HOURS**
1. Introduction to Classical (Buddhist): Mahayana phase, Stupa and rock cut cave Architecture. 2. Buddhist Examples: Study of principles of design of buildings through study of three kinds of Architecture – a) Monumental – Great Stupa at Sanchi, Chaitya at Karli, Viharas at Ajanta and Toranas at Sanchi b) Domestic (Built to inhabit) c) Civic space 3. Introduction to Jain Architecture: Study of principles of design of buildings through study of three kinds of Architecture: a) Monumental b) Domestic c) Civic space	9
MODULE-II	
1. Evolution of Hindu temple: Indo Aryan and Dravidian – Eraly temples at Udaygiri, Tigawa and Sanchi. 2. Evolution of Hindu temple: Dravidian Experiments at Aihole (Durga temple and Ladkhan temple) Deogarh, Bhitargaon and Badami. 3. Beginnings of Dravidian Architecture: Pallavas, rathas at Mamallapuram, Shore Temple, Kailasnatha and vaikuntaperumal temples at Kancheepuram.	9
MODULE-III	

1. The Cholas contribution: Study of principles of design of buildings through study of three kinds of Architecture: a) Monumental: Brihadeshwara temple at Tanjavur and GangaikondaCholapuram b) Domestic c) Civic space 2. The Pandayan& Madurai dynasties contribution: Study of principles of design of buildings through study of three kinds of Architecture: a) Monumental: Gopurams Madurai (Meenakshi Temple) and Srirangam b) Domestic c) Civic space.	9
MODULE-IV	
1. The Hoysala contribution: Study of principles of design of buildings through study of three kinds of Architecture a) Monumental: Eg: Channakesava temple, Belur, Hoysalesvara temple, Halebid, Kesava Temple, Somnathpur b) Domestic c) Civic space 2. Indo Aryan Mode: The beginnings in Orissa – the Lingaraj at Bhubaneshwar.	9
MODULE-V	
1. Hindu Architecture at Rajputana & Khajuraho group: (temple of Surya, Orissa, Marwar) and Gujrat (Temple of Surya, Modhera). The Khajuraho group: Khandariya Mahadev, Jian temples- Chaumukh temple at Ranpur. 2. Later Dravidian Period: The Vijayanagar and – noted temples at Hampi (Vitthala temple and Hazara Rama temple)	9

Course outcome:

CO1: Application of Buddhist architecture & Jain architecture in planning of temples

CO2: Distinguish between Dravidian architecture and later Dravidian architecture features.

CO3: Identify the Cholas contribution in Study of principles of design of buildings

CO4: Identify and apply the concept of planning Indo-Aryan and hoysala (later chalukyan) architecture.

CO5: Identification of planning and evolution of Hindu temple.

References:

1. “Indian Architecture, Buddhist & Hindu Period” by Brown, Percy
2. “Architecture of India-Buddhist & Hindu” by Grover, Satish
3. “History of Architecture in India” by Christopher, Tadgell

4. “Hindu India” by Stierlin, Henri

Course Outcomes with Program Outcomes and Program Specific Outcomes mapping

COURSE OUTCOMES		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Application of Buddhist architecture & Jain architecture in planning of temples	3	2	2			1							3		
CO2	Distinguish between Dravidian architecture and later Dravidian architecture features.	3	2	2			1							3		
CO3	Identify the Cholas contribution in Study of principles of design of buildings	3	3	2										3		
CO4	Identify and apply the concept of planning Indo-Aryan and hoysala (later chalukyan) architecture.	3	2	2	2		2							3		

CO5	Identification of planning and evolution of Hindu temple.	3	2	2			1							3		
	AVERAGE	3	2	2	2		1							3		

CONTRIBUTION: 1: REASONABLE 2: SIGNIFICANT 3: STRONG

TITLE OF THE COURSE: STRUCTURES- II

B.ARCH, II SEMESTER

Course Code :24ENG25	CIE Marks :50
Contact Periods / Week :3 (3 Lecture)	SEE Marks : 50
Total Number of Lecture/ Studio Hours: 45	Exam Hours:03
Credits:03	

Course learning Objective:

1. To give an introduction to the basic principles governing structural systems and structural behavior of materials

SL.NO	MODULES	TEACHING HOURS
1	**MODULES-I** Simple Stresses and Strains – Concept of Deformable Bodies, Types of Stress (compressive, tensile, bending, shear) and strain (axial, shear, volumetric), Hook's law and Saint-venant's principle. Concept of Temperature stresses and simple problems, Modulus of Elasticity, Typical stress-strain behavior of steel and concrete	10
2	**MODULE-II** Elastic Constants – Elastic constants, Rigidity Modulus, Poisson's Ratio, Bulk Modulus and Shear Modulus. Relations. Modulus of Elasticity and Modulus of Rigidity. Application to uniform section.	8
3	**MODULE-III** Bending Moment and Shear Force Diagrams – Concept of Shear force and Bending moment. BMD and SFD for statically determinate beams subjected to combinations of concentrated and uniformly distributed load. Relationship among Load, Shear force and Bending Moment.	9
4	**MODULE-IV** Bending stress in Beams – Theory of simple Bending with assumptions. Flexure formula. Bending stresses. Distribution of stress in symmetrical sections. Strength of a section, Flitched Beams.	9

5	**MODULE-V** Shear stresses in Beams, Equation for shear stress distribution across a section. Shear stress Distribution for simple sections.	9

Note: Module wise Assignments need to be given after completion of each module and to be evaluated immediately.

COURSE OUTCOMES: After studying this course, students will be able to;

1. Application of concepts of simple stress, strains, and deformable bodies.
2. Relation between Elastic constants and their application to uniform section.
3. Determine the SF and BM and draw the diagram for the SFD and BMD.
4. Distribution of Bending stress of symmetrical section and fletched beam.
5. Distribution of shear stress for simple beam section.

REFERENCE BOOKS:

1. B.S.Basavarajaih& P. Mahadevappa, "Strength of Materials", Universities Press, 3rd editn. 2010. 2) Dr. S. Ramamrutham& R. Narayan "Strength of Materials", DhanpatRai Publ., 8th edi. 2014.
2. William A. Nash, "Strength of Materials", McGraw-Hill Education; 6th edition, 2013.
3. R.K.Bansal, "Strength of Materials", Laxmi Publications; 6th edition (2017).
4. R.S Khurmi& N. Khurmi, “Strength of Materials", S Chand Pub., revised edition 2006.

Course Outcomes with Program Outcomes and Program Specific Outcomes mapping:

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO3
CO 1	3	2												2	
CO 2	3	3												2	
CO 3	3	2												2	
CO 4	3	3												2	
CO 5	3	3												2	
AVG	3	2.6												2	

CONTRIBUTION: 1: REASONABLE 2: SIGNIFICANT 3: STRON

TITLE OF THE COURSE: SURVEYING & LEVELING

B.ARCH, II SEMESTER

Course code :24ENG26	CIE Marks :50
Contact Periods / Week :3 (2 Lecture+1 Practical)	SEE Marks : 50
Total Number of Lecture/ Studio Hours: 45	Exam Hours:03
Credits:03	

Course learning Objective:

1. To develop the knowledge and skill relative to surveying and leveling principles and practice

SL.NO	MODULES	TEACHING HOURS
1	**MODULES-I** Definitions, principles of surveying, Objects of surveying. Instruments used in chaining, metric chain, field book and different symbols used in chaining. Ranging: ranging of line using ranging rods, Construction of perpendicular by 3, 4, 5method and construction of Geometrical figures on site.	8
2	**MODULE-II** Compass Survey: Definition, prismatic compass and its parts. Different methods of setting out, representation, plotting, Plane table Survey: Plan table and its accessories. Methods of plane table survey 1. Radiation 2. Intersection 3. Traversing 4. Resection	9

3	**MODULE-III** Leveling: Definition, technical terms in dumpy level and its parts. Classification, simple leveling and differential leveling. Temporary adjustments of dumpy level. Booking and reduction of levels by HI / Rise and fall method.	10
4	**MODULE-IV** Profile leveling, block leveling. Contouring- Characteristics of contours, methods of contouring, plotting of contouring ,interpolation of contouring, capacity contouring and uses of contouring.	9
5	**MODULE-V** Theodolite: Definition, technical terms, temporary adjustments of Theodolite. Measuring of horizontal and vertical angles.Tachometric surveying ,principle and its uses.Total station function and its applications.	9

Note: Module wise Assignments need to be given after completion of each module and to be evaluated immediately.

Field work:

Field work to be conducted involving all above topics

1. Setting out center lines of a building for a small unit.
2. Construction of perpendicular on site and construction of Geometrical figures.
3. To determine the distance between inaccessible points.
4. Plane table survey.
5. Profile leveling
6. Contouring: Block level Survey.
7. Demonstration of Total station.

COURSE OUTCOMES: After studying this course, students will be able to;

1. Identify the Principles of surveying.

2. Identify the compass survey and plane table survey.

3. Identify the instrument used for leveling, profile leveling.

4. Explain the characteristics of contours, methods of contouring and uses of contours.

5. Applications of Theodolite and Total station.

REFERENCE BOOKS:

1.“Surveying Vol -1” by Dr. PC Punmia

2.“Surveying and Leveling (Vol -1)” by Kanetkar TP and Kulkarni SV

3.“Surveying and Leveling” by S C Rangwala

Course Outcomes with Program Outcomes and Program Specific Outcomes mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1		2												3	
CO2	1	2												3	
CO3	1	3												3	
CO4	1	3												3	
CO5		2			2									3	
AVG	1	3			2									3	

CONTRIBUTION: 1: REASONABLE 2: SIGNIFICANT 3: STRONG

TITLE OF THE COURSE: COMPUTER APPLICATION IN ARCHITECTURE-I

B.ARCH, II SEMESTER

Course code :24ARC27	CIE Marks :50
Contact Periods / Week :3 (1 Lecture+2Practical)	SEE Marks(Practical) : 50
Total Number of Lecture/ Studio Hours: 45	Exam Hours:
Credits:03	

Course learning Objective:

- To develop and train students to use computers and digital media as tools to explore, develop, evaluate and present architectural ideas.
- To equip the student with a range of digital tools and techniques in 2D drafting along with presentation skills.

SL.NO	MODULES-I	TEACHING HOURS
1	**MODULE-I** **Introduction to 2D Drafting:** Overview of CAD and its Applications, Introduction to AutoCAD Interface and tools. **Coordinate systems**: Introduction to Coordinate systems,Applications.	**9**
2	**MODULE-II** **Basic Drawing Tools:** Creating basic drawings using Draw tools, Working with Layers and Templates. **Modify Tools:** Object selection methods and basic editing commands and their applications.	9
3	**MODULE-III** **Advanced Drawing & Modifications:** Using Modify tools (Trim, extend, Fillet, chamfer, Mirror, Array), Creating and editing polylines. Working with 2D Plan, Sections and Elevations.	9

4	**MODULE-IV** **Introduction to Photoshop:** Basics of Photoshop interface and tools, Importing and handling CAD drawings in Photoshop, Basic editing techniques and color corrections.	9
5	**MODULE-V** **Rendering & Sheet Composition in Photoshop:** Rendering CAD Files, Applying textures, shadows and effects for realistic presentations, Creating final sheets.	9

COURSE OUTCOME:

Upon completion of the course, students will be able to:

CO1- Understand the fundamentals of CAD and AutoCAD
CO2- Apply basic drawing and editing tools to create accurate 2D geometric designs, utilizing layers and templates for organized drawings.
CO3- Develop advanced 2D drawings, including plans, sections, and elevations
CO4- Understand the basics of Photoshop and its applications for enhancing CAD drawings.
CO5- Demonstrate the ability to compose final presentation sheets with rendering and visual effects.

SOFTWARE FOR REFERENCES

1. AutoCAD Student Version
2. Adobe Photoshop

Books for References: AP Gautam, Pradeep Jain, Engineering AutoCAD

Course Outcomes with Program Outcomes and Program Specific Outcomes mapping:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	P0 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO 1	3				3			3				3		3	
CO 2					3			3				3		3	
CO 3					3			3				3		3	
CO 4					3			3				3		3	3
CO 5					3			3				3		3	
AV G	3				3			3				3		3	3

CONTRIBUTION: 1: REASONABLE 2: SIGNIFICANT 3: STRONG

TITLE OF THE COURSE: ART APPRECIATION
B.ARCH, II SEMESTER

Course Code :24ART28	CIE Marks:50
Contact Periods/Week : 2(1Lecture+1Seminar)	SEE Marks: -
Total Number of Lecture/ Studio Hours: 30	Exam Hours: -
Credits:02	

OBJECTIVE: To encourage Visual creative thinking and critical orientation to design thinking and action. Implementation of Arts and crafts, its aesthetics and application in Architecture.

SLNO.	OUTLINE	TEACHING HOURS
	MODULE-1 **1. Definition of Art and role of Art in Society:** Role and meaning of art, various types of arts-fine arts, performing arts, commercial arts, industrial arts, folk arts, abstract art, visual arts, spatial arts, temporal arts, pop art etc. Relationship of architecture with other arts like Painting and Sculpture. **Study Tools- Any three can be explored** • Observation & Study to develop hand & cognitive skill. • Colours, Pattern & textures, and function • Additive and Subtractive of Forms Freehand sketching • Exercises of rendering techniques.	7
	MODULE-2 **2.** Study of Art Forms & Crafts of India and Asia. Difference between art and craft. **Study tools-** • **E**xplore and learn any one Indian art form and regional craft. • Structural/Material translation from concept mind mapping.	5
	MODULE-3 3. Appreciation of oriental and western performing arts. **Study tools-** Exploring Performing arts of India, • Regional Folk Dance and Crafts like, Leather puppets etc. • To understand the oriental & western styles. Use them in product	5

	design	
	MODULE-4 **4. Style in art & Architecture:** Basis for classification of styles including chronology of styles arrangement according to order that changes over time. Evolution of styles; reflecting the emergence of new ideas as reaction to earlier styles as a result of changing of fashions, beliefs, technology etc. Popular and modern art, Art trends, periods and Isms. Study Tools- : • Material Study • Experience of architecture in basic psychological and physiological terms	6
	MODULE-5 **5. Ornamentation in Architecture (Aesthetics):** Historical perspective of the use of ornament in buildings and use of ornament as a decoration to embellish parts of a building. Use and need of ornament in architectural design – different types of ornamentation in buildings. Ornamentation in Architecture Criticism–Argument against ornamentation. Ideas of architect Adolf Loos (Ornament and Crime); Ornaments as economically inefficient and morally degenerate, reduction of ornament or lack of decoration as the sign of an advanced society. **Study Tools**- Structural/Material translation from concept and architectural form	7

Learning outcome: The students will be able to:

CO1 identify various art forms & develop hand & cognitive skill.
CO2 differentiate between Art and craft and how these are related to Architecture
CO3 recognize oriental/western performing arts & implement critical orientation to design thinking
CO4 recognize style in art & architecture and its impact on Architecture
CO5 implement the concepts of ornamentation in Architecture

REFERENCES:

1) Maitland Graves, 'The Art of Color and Design', McGraw-Hill, 1951
2) Antony Mason, John T. Spike, "A History of Western Art: from prehistory to the 21st Century", McRae Books, 2007.
3) Fred S. Kleiner, "Art through the Ages", Cengage Learning; 14 edition, 2012
4) Theory of Architecture by Paul Alan Johnson 4. Creating Architectural Theory by John Lang

Course Outcomes with Program Outcomes and Program Specific Outcomes mapping

CO's	PO 1	PO 2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	1	1	1	1	1				2	1		3		
CO2	1	2	1	1	2	1				1	1		3		
CO3		1		2	2								3		
CO4				1									3		
CO5	1	1	1	1	1		1						3		
AVG	1	1.2	1	1.2	1.2	1	1			1.5	1		3		

CONTRIBUTION: 1: REASONABLE 2: SIGNIFICANT 3: STRONG

TITLE OF THE COURSE: SOCIAL CONNECT & RESPONSIBILITY

B.ARCH, II SEMESTER

Course code: 24HUM29	CIE Marks: 50
Contact Periods/week:1(1 Lecture)	SEE Marks: -50
Total number of lecture/studio hours: 15 Hours	Exam Hours –02
Credits- 1	

OBJECTIVE:

1. Provide a formal platform for students to communicate and connect to the surrounding.
2. create a responsible connection with the society.
3. Understand the community in general in which they work.
4. Identify the needs and problems of the community and involve them in problem –solving.
5. Develop among themselves a sense of social & civic responsibility & utilize their knowledge in finding practical solutions to individual and community problems.
6. Develop competence required for group-living and sharing of responsibilities & gain skills in mobilizing community participation to acquire leadership qualities and democratic attitudes

MODULE-I	HRS
Plantation and adoption of a tree: Plantation of a tree that will be adopted for four years by a group of BE / B.Arch students. (ONE STUDENT ONE TREE) They will also make an excerpt either as a documentary or a photo blog describing the plant's origin, its usage in daily life, its appearance in folklore and literature - Objectives, Visit, case study, report, outcomes.	3
MODULE-II	
Heritage walk and crafts corner: Heritage tour, knowing the history and culture of the city, connecting to people around through their history, knowing the city and its craftsman, photo blog and documentary on evolution and practice of various craft forms - Objectives,Visit,case study, report, outcomes.	3
MODULE-III	
Organic farming and waste management: Usefulness of organic farming, wet waste management in neighboring villages, and implementation in the campus Objectives, Visit, case study, report, outcomes.	3
MODULE-IV	

Water conservation: Knowing the present practices in the surrounding villages and implementation in the campus, documentary or photoblog presenting the current practices – Objectives, Visit, case study, report, outcomes.	3
MODULE-V	
Food walk: City's culinary practices, food lore, and indigenous materials of the region used in cooking – Objectives, Visit, case study, report, outcomes	3

COURSE OUTCOME:

CO1: To understand the environment and sustainability by nurturing a tree through its growth period. To learn how tree planting can contribute to sustainable urban and Rural Planning.

CO2: Understanding local history and culture and to learn the connection of people to heritage and gain knowledge of traditional craftsmanship.

CO3:Students will gain a comprehensive understanding of organic farming's benefits, such as soil health improvement, reduced reliance on chemical inputs and promotion of biodiversity.

CO4:To enable students to gain a comprehensive understanding of local agricultural, environmental or community-based practice.

CO5:To provide students with a deep environmental influence on regional cuisine, students will explore traditional cooking methods, unique local ingredients and their cultural significance, while learning how these elements shape the identity and heritage of region.

Course Outcomes with Program Outcomes and Program Specific Outcomes mapping

COURSE OUTCOMES		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	To understand the environment and sustainability by nurturing a tree through its growth period. To learn how tree planting can contribute to sustainable urban and Rural Planning.						1	2		2	3				1	

CO2	Understanding local history and culture and to learn the connection of people to heritage and gain knowledge of traditional craftsmanship.									2	3	1				
CO3	Students will gain a comprehensive understanding of organic farming's benefits, such as soil health improvement, reduced reliance on chemical inputs and promotion of biodiversity.								1	2	2					
CO4	To enable students to gain a comprehensive understanding of local agricultural, environmental or community-based practice.							1	1	2	1	2	1			
CO5	To provide students with a deep environmental influence on regional cuisine, students will explore traditional cooking methods, unique local ingredients and their cultural significance, while learning how these elements shape the identity and heritage of region.									2		2				
	AVERAGE						1	2	1	2	3	2	1		1	

CONTRIBUTION: 1: REASONABLE 2: SIGNIFICANT 3: STRONG

21ARC31 ARCHITECTURAL DESIGN – III

LECTURES/WEEK –1 L/ 7S	**CEE MARKS-50**
NO OF CREDITS -8	**SEE VIVA MARKS-50**
TOTAL NO OF LECTURE HOURS – 110	**SEE VIVA**

OBJECTIVES:

- To expose the students to the grammar of creating architectural space and form.
- To study individual variables like light, movement, transformation, scale, structure and skin in the formation and evolution of architectural form.
- To explore the relationship between human feelings and architectural form.

OUTLINE	HOURS
• In the earlier part of the studio, projects shall be restricted to walls, floors, roof plans, openings, and structural elements. Functional assignment to spaces shall be avoided to restrict the dimensions of investigation. Projects shall be attempted with the help of models and sketches. • Space making projects may be tied to the context, but objective shall be illustrating the variables like color, material, texture and scale in evolving the necessary conditions for the prescribed activity. Final project shall be formulated as a process of testing the various elements of space making, learnt earlier in the semester. Ex: Nursery School, Primary Health Centre, Post Office, Bank Branch, Guest House, Restaurant etc. The design shall be sensitive to the needs of disabled, aged people and children.	110hrs
Studio Projects: One minor exercise on first chapter and One Major Project on second chapter be presented in the form of a portfolio and two time problems (as test problems) to be submitted with the fallowing • Data collection, case studies and literature surveys • Design proposal including study model and perspective view •	

Reference:

- 'Time Saver Standards for Architectural Design Data' by John Hanck.
- 'Architectural Graphic Standard' by Ramsay and Sleeper Wucious Wong.

Course Outcome (CO):

After completion of the course, a student will be able to:

CO1. Apply the Basic Principles and Design elements in built environment.

CO2. Explore with space making elements.

CO3. Apply various design elements with context to the surrounding Public Spaces.

CO4. Explore with the forms and space.

CO5. Explore the design which is sensitive to the needs of disabled, aged people and children.

Course Outcomes with Program Outcomes and Program Specific Outcomes mapping

CO's	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO 1			3										3		
CO 2		3												3	
CO 3						3								3	
CO 4			3										3		
CO 5			3										3		
AVG		3	3			3							3	3	

CONTRIBUTION: 1: REASONABLE 2: SIGNIFICANT 3: STRONG

21ARC32 – BUILDING CONSTRUCTON & MATERIALS – III

LECTURES/WEEK –1L/3S	CEE MARKS -50
TOTAL CREDITS -4	SEE MARKS -50
TOTAL TEACHING HOURS -60	SEE DURATION – 4 HRS

Objective:

1. To comprehend the students with construction practices pertaining to RCC, floors, roofs and flooring alternatives, masonry plastering and paint finishes.
2. To assimilate the students with the materials used in such construction practices, their properties, and effect on climate and life cycle of the building.

MODULE	Teaching hours
MODULE - I 1.Principles of staircase , construction and its elements Types of Staircases. Requirements of staircase. Construction &design of staircase – Masonry, RCC, Steel, timber, Composite. Study of fire escape staircase.	**20**
MODULE - II 1. Study of principles and methods of construction of RCC and steel foundations and columns, types of foundations – isolated, combined, Raft, Base slab, Grillage, pile foundations.	**20**
MODULE - III 1. Concrete Ingredients, grades of concrete, admixture, properties of concrete, production of concrete, mix, proportioning, mixing, transporting, placing, compaction, curing of concrete and ready mix concrete, sampling and testing of concrete. 2. Concreting under water, special concretes like light weight and high density concrete. Construction joints, expansion joints, finish in concrete, chemical admixture. Uses of concrete for aesthetic & structural purpose.	**20**
MODULE - IV Formwork and shuttering uses and applications – timber , steel and composite material.	**20**

Properties and architectural uses of mild steel and stainless steel for aesthetic and structural purpose.	
MODULE - V Flooring and flooring finishes – various natural and manufactured materials . types of stone flooring , granite , marble , kota, shahbad(limestone), flagstone, wooden flooring, ceramic and vetrified tiles, concrete floors , brick on edge , Indian patent floor, granolithic , terrazzo .	**20**

COURSE OUTCOME

CO1 – Identification of different types of staircase and its application suitable to various buildings
CO2 – Understand various types of foundation and its principles and application as per requirement.
CO3 – Distinguish different grades of cement , admixtures, and its utilization to suitable areas.
CO4 – Understand different types of formworks and shuttering and application as per the requirement,
CO5 – Distinguish and understand different types of flooring and its implementation in building

References:

- "Building Construction" by W.B. Mackay
- "Construction Technology" by Chudley
- "Construction of Building" by Barry
- "Building Construction" by Rangawala
- "Building Construction" by Punmiya
- "Building Materials" by S K Duggal.

CO PO MAPPING

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	P0 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO 1	3													3	
CO 2		3												3	
CO 3		3												3	
CO 4	3													3	
CO 5	3													3	
AV G	3	3												3	

CONTRIBUTION ; 1. REASONABLE 2; SIGNIFICANT 3; STRONG

21ARC33 GRAPHICS -III

LECTURES/WEEK –1 L/3S	CEE MARKS-50
NO OF CREDITS -4	SEE MARKS-50 (VivaVoice)
TOTAL NUMBER OF LECTURE HOURS:80	SEE DURATION – 4 hrs

Objective:

- Training the students in the techniques of three – dimensional presentation of built form.
- Enhance their visualization skills by practice on drawing board by conventional method

MODULE	Teaching hours
MODULE-I Perspective-Drawing of one point Perspective of interiors view of Living Room, Bedroom, and Kitchen etc. with Rendering.	**16HRS**
MODULE-II Drawing of Two-point Perspective of exteriors view of built–form with landscaping etc. by Hand drafting.	**16HRS**
MODULE-III Perspective drawing of built form. Free hand perspectives	**16HRS**
MODULE-IV Rendering-Rendering of the perspectives using different media such as • Pencil • Pen and Ink • Color Pencils • Water Color, etc	**16HRS**
MODULE-V Digital-Expressing the concept and making compositions in the sheet through software such as flash, Photo-shop, illustrator in design, sketch up etc. using the above to prepare effective drawing sheets.	**16HRS**

Note: Assignments need to be given after completion of each chapter and to be evaluated immediately.

References:

1. Architectural Rendering the techniques of contemporary presentation by Albert o Halse
2. “Perspective” by S. H Mullik
3. “Rendering by Pen and Ink” by Robert W. Gill.

COURSE OUTCOME(CO):

CO1:Explaininterior building with one point perspective.
CO2: Explain thetwo point perspective of the exterior view.
CO3: Understand the free hand perspective of build forms.
CO4: Distinguish the various media of rendering.
CO5: DigitalProduction and composition of rendered plans, elevation and views .

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO 1					3					2			1		
CO 2					3		2			2			1		
CO 3					3					2					
CO 4					3					2					
CO 5					3					2		3	2		
					3		2			2		3	1.3		

CONTRIBUTION ; 1. REASONABLE 2; SIGNIFICANT 3; STRONG **21ARC34**

HISTORY OF ARCHITECTURE – III
(Islamic & British Architecture)

LECTURE/WEEK: 3L	CIE-CONTINUOUS INTERNAL EVALUATION: 50
NO OF CREDITS: 3	SEE-THEORY EXAM MARKS (3 HOURS): 50
TOTAL TEACHING HOURS - 48	SEE DURATION: 3

Objective:
To provide an understanding of the evolution of Islamic and colonial architecture in India in their various stylistic modes characterized by technology, ornamentation and planning practices.

MODULE-I	**HRS**
Coming of Islam - 11th century AD: **Imperial style** – understanding the evolution & characteristics features of imperial style. slave, Khilji, Tughlaq, Sayyid& Lodi Dynasties Ex: Quwaat-Ul-Islam Mosque, Qutb –Minar, Enlargement of Quwaat-Ul-Islam Mosque by Iltumish, Tomb of Iltumish, Alai Darwaza, Tomb of Ghias-Ud-din Tughlaq, Khirki masjid, Delhi, & Tomb of Feroz shah Tughlaq.	7
MODULE-II	
Provincial style-understanding the evolution & characteristics features of Provincial style. Ahmedabad, Bijapur and Deccan (Gulbarga, Bidar& Golconda). EX: Jami Masjid-Ahmedabad, Jami Masjid-Bijapur, Ibrahim Rauza-Bijapur, GolGumbaz -Bijapur, Jami Masjid-Gulbarga, Bidar Fort- Bidar, Golconda fort-Golconda	8
MODULE-III	
Moghul period- understanding the evolution & characteristics features of Mughal period.. Monumental building in the regime of Humayun, Akbar, Jehangir, Shahjahan&Aurangazeb. Ex: Humayun's tomb, FatehpurSikri (layout, Jami masijid, Buland Darawaza, Tomb of SalimChisti, diwan-I- khas), Akbar's Mausoleum, Taj Mahal, Tomb at Aurangabad, Bibika Makbara at Aurangabad& Pearl Mosque at Delhi.	8
MODULE-IV	
Arrival of British Early colonial period: The purpose & stylistic features evolved	6

during colonial period. monumental buildings executed in the regime of East India company up to middle of 19th century Ex: St Paul's cathedral - Calcutta & Bombay town hall.	
MODULE-V	
Later colonial period: – understanding colonial features with regional influence contribution of Edwin Lutyens and Herbert Baker to the layout and Architecture of New Delhi. Ex: Layout of New Delhi, RashtrapathiBhavan and Parliament house.	6

Reference:

- "History of Architecture in India" by Tadgel, Christopher
- "Indian architecture –Islamic period 'by Brown Percy.
- "Indian architecture –Islamic period 'by .Satish Grover
- "History of Architecture" by Sir Banister Fletcher

Course outcome(CO):

CO1: Identification of evolution and apply characteristics features of Imperial Style.
CO2: Distinguish the planning concepts and salient features Jami-masjid Provincial style.
CO3: Applying the planning concepts and layout evolution of Mugul Period.
CO4: Identification of purpose & stylistic features evolved during early colonial period.
CO5: Explain and apply the colonial features with regional influence

COURSE OUTCOMES		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
CO 1	Identification of evolution and apply characteristics features of Imperial Style.	3												**3**		
CO 2	Distinguish the planning concepts and apply architectural features Jami-masjid Provincial style.			2												
CO 3	Applying the planning concepts and layout evolution of Mugul Period.	3														

CO 4	Identification of purpose & stylistic features evolved during early colonial period.						2									
CO 5	Explain and apply colonial features with the regional influence.						2									
	AVERAGE	6		2			4							3		

CONTRIBUTION: 1: REASONABLE 2: SIGNIFICANT 3: STRONG

21ENG35 – STRUCTURES – III

LECTURES/WEEK – 03 lectures	CEE MARKS-50
NO OF CREDITS – 3	SEE MARKS-50
TOTAL TEACHING HOURS - 40	SEE DURATION – 3HRS

Objective:

To give an insight into the structural behavior of columns and beams

Modules	Teaching hours
MODULE-I 1. Elastic stability of columns, Actual length of column, Effective length of column, Expression for Effective length of columns for various conditions (fixed, hinged, and free), No Derivations, Assumptions and limitations of Euler's Theory for critical load on long columns (No derivations)	**8 hour**
MODULE-II 2. Arch- Three hinged arch with supports at the same levels Numerical based on the above concepts parabolic and circular.	**9 hour**
MODULE-III 3. Torsion Theory: Assumptions, Torsion equation, strength of solid and hallow shaft Simple numerical examples.	**8 hour**
MODULE-IV 4. Slope deflections of cantilever simply supported and overhang beam conditions. Moment area method, Macaulay's method for simple case of loading.	**9 hour**
MODULE-V 5. Testing of materials such as Steel- tensile and impact wood- compression and deflection concrete- compression and split tensile strength	**8 hour**

Course outcome (CO):

1: Determine the Elastic stability of short and long columns.
2: Identify the basic concept of three hinged arch.
3: Determine the Torsional strength of shafts.
4: Determine the Slope and deflection of beams.
5: Determine the Physical properties of steel, wood, and concrete.

Reference:

1) B.S.Basavarajaih& P. Mahadevappa, "Strength of Materials", Universities Press, 3rd editn. 2010. 2) Dr. S. Ramamrutham& R. Narayan "Strength of Materials", DhanpatRai Publ., 8th edi. 2014.
3) William A. Nash, "Strength of Materials", McGraw-Hill Education; 6th edition, 2013.
4) R.K.Bansal, "Strength of Materials", Laxmi Publications; 6th edition (2017). 5) R.S.Khurmi& N. Khurmi, " Strength of Materials", S Chand Pub., revised edition 2006.

Course Outcomes with Program Outcomes and Program Specific Outcomes mapping

COURSE OUTCOMES		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Determine the Elastic stability of short and long columns.	2	3												3	
CO2	Identify the basic concept of three hinged arch.	2	3												3	
CO3	Determine the Torsional strength of shafts.	2	3												3	
CO4	Determine the Slope and deflection of beams.	2	3												3	
CO5	Determine the Physical properties of steel, wood, and concrete.		3												3	
	AVERAGE	2	3												3	

CONTRIBUTION: 1: REASONABLE 2: SIGNIFICANT 3: STRONG

21ARC36 BUILDING SERVICES – I

LECTURES/WEEK :3 LECTURES	**CIE- CONTINUOUS INTERNAL EVALUATION : 50**
NO.OF CREDITS:3	**SEE-THEORY EXAM MARKS : 50**
TOTAL TEACHING HOURS - 40	**SEE DURATION: 3 HRS**

Objective:

To impart the knowledge and skills required for understanding the building services of water supply and sanitation and their integration with Architectural design.

Outline:

To have emphasis on Services (water supply and sanitation) which includes Residence to three storied building only (such as Apartments, commercial complexes, public buildings) Etc.

MODULE	Teaching hours

MODULE – I
• Water Supply
  • Introduction
  • Assessment of Water requirements.
• Sources and collection
  • Sources of supply
  • Bore wells
	8 Hrs

MODULE – II • Distribution : Distribution Systems, Different types of water pipes and its materials (GI, PVC, CPVC/UPVC PIPES). • Introduction to Copper plumbing, pipe accessories, storage tanks and pumps	**8 Hrs**
MODULE – III • To study about water conservation; Rain water harvesting, Drip irrigation, Recharging, Recycling and Reuse application in planning	**8 Hrs**

water supply systems. • Brief study of provision of water for firefighting – Fire hydrants. With reference to National Building Code – Part – IX	
MODULE – IV • Introduction to sanitation and drainage • Collection and conveyance of Refuse: Waste water conveyance system, drainage in building, sewers, traps, sanitary fittings, sewer accessories.	**8 Hrs**
MODULE – V • Disposal and treatment for larger project • Sewage treatment • Septic tanks • Waste and Storm water drainage system • Solid waste management • Types of Garbage • Collecting, treating and Disposing of solid wastes – Landfills and treatment.	**8 Hrs**

Site Visits:

Water treatment plant, sewage treatment plant, multistoried apartments, for studying water supply
and sanitary arrangements.

Assignments:

- To design detail layout plans and sections showing details of water supply and plumbing system and underground drainage system to be submitted showing location of all fittings and fixtures in two bed room house.
- To design detailed sections of toilets and bathrooms showing fittings and appliances.
- To design three storied hostel building showing line diagram of water supply and sanitation
- Calculation of water demand for small settlement.
- To design of overhead water tank and underground water sump.

Course outcome(CO):

- CO1: Assess water requirement and identify sources for collection and supply of water.
- CO2: Identify and Explain Distribution systems, Different types of water pipes, Pipe accessories, Storage tanks and Pumps.
- CO3: Application of different water conservation system and water required for firefighting as per NBC.
- CO4: Application of waste water conveyance system and its accessories.
- C05: Treat and Dispose liquid and solid waste.

Course Outcomes with Program Outcomes and Program Specific Outcome mapping

COURSE OUTCOMES	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO1		2											2		
CO2		2											2		
CO3			2					2					2		
CO4	2												2		
CO5						2							2		
AVERAGE	2	2	2			2		2					2		

CONTRIBUTION: 1: REASONABLE2:SIGNIFICANT3:STRONG

21ARC37 –COMPUTER APPLICATIONS IN ARCHITECTURE - I

CONTACT PERIODS / WEEK: (1LECTURE+1PRACTICAL)	**CONTINUOUS INTERNAL EVALUATION: 50**
CREDITS: 2	**SEE MARKS: 50**
TOTAL NUMBER OF LECTURE HOURS:50	**SEE DURATION – VIVA**

OBJECTIVE

- To develop and train students to use computers and digital media as tools to explore, develop, evaluate and present architectural ideas.
- To equip the student with a range of digital tools and techniques in 2D drafting, 3D modeling.

SL	MODULE-I	HRS
1	**Introduction to 2d Drafting;**, Introduction to computer aided 2-D drafting. To develop and understand basic set up and menu bars for computer aided drafting. Screen Layout- status bar, tool bar, graphics area, labeled buttons, drawing editor, handling commands (utility commands). Setting units and scale. **2D Drafting Tools Drafting**: simple and complex geometric shapes such as square circles, triangles, lines, curves, poly lines and their combinations etc. Application o various toolbars and their sub tools including draw, edit, modify, view, file, dimension, parametric, etc.	**10**
	MODULE-II	
2	**2D Drafting of Building:** Preparation of two dimensional architectural drawings incorporating layers, line-weights, texts, scale, dimensioning and formatting of drawings for taking prints and plots And Modeling of Walls, Doors, Windows, Sta etc. **2D Presentation Drawings:** Preparation of two dimensional architectural presentation drawings (including plans, elevations and sections) incorporating human figures, plants, car etc. Preparation of two dimensional architectural presentation drawings (including plans, elevations and sections) incorporating grid, column, dimensioning, legend and architectural elements details with proper line weight etc.	**10**
	MODULE-III	
3	**Practical Work :** Making 2 dimensional architectural plan, elevation and sections for any one of the architectural design assignments studied in previous semesters with submission in the form of printouts in scale.	**10**
	MODULE-IV	
4	**Introduction to AutoCAD 3D modelling:** Latest version of relevant 3D modeling software, software interface, demonstration of 3D modelling commands required to convert 2D project (of 2D drafting) into 3D.	**10**

	MODULE-V	
5	**3D modelling:** drawing quickly with basic shapes in3D, viewing models in 3D, adding detail to Models in 3D space, use of cameras, material applications. Presenting models.	**10**

COURSE OUTCOME:

With the successful completion of the course student should have capability to

CO1- Apply basic CAD Concepts to 2D Geometry shapes.
CO2- Draw Walls, Doors, Windows, Stairs using Auto CAD Software.
CO3- Prepare plan, elevations, sections, of asingle storied building using 2D Drafting.
CO4- Apply 3D Modeling to convert 2D drawings into 3D.
CO5- Perform photo realistic rendering of the building project using Autocad 3D.

SOFTWARE FOR REFERENCES

1. AutoCAD Student Version
2. Sketch-Up.
3. DraftSight
4. FreeCAD

Books for References : AP Gautam, Pradeep Jain, Engineering AutoCAD

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	P0 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO 1	3				3			3				3		3	
CO 2					3			3				3		3	
CO 3					3			3				3		3	
CO 4					3			3				3		3	3
CO 5					3			3				3		3	
AV G	3				3			3				3		3	3

CONTRIBUTION ; 1. REASONABLE 2; SIGNIFICANT 3; STRONG

21ARC38 -MEASURING DRAWING AND DOCUMENTATION

LECTURES/WEEK –1 L+ 1 S	**CEE MARKS-50**
NO OF CREDITS -1	**SEE MARKS-50 (Viva Exam)**
TOTAL NUMBER OF LECTURE HOURS:40	**SEE DURATION – VIVA**

OBJECTIVE:

To understand the character of a settlement, street, building, spaces, materials through a process of measured drawings and photographic documentation.

Sl.	OUTLINE	TEACHING HOURS
1	Introduction to Documentation - Need for Documentation undertaken? Tools for Documentation available, Methodology, Importance of Archival research, Old Photographs, Maps etc. Selection of Historical site / 100 year old planned layout / residence.	96hrs
2	Site work - Secondary information on the /street/heritage - Reconnaissance survey of the /street/heritage building; - Mapping of the street - Identification of selected typology of structures for detailed measured drawing - Recording of measurements- horizontal, vertical, measuring angles, marking center lines, datum, notations, building orientation - Legend of materials used; Structural details and joineries - Details of various elements – openings, ornamental details - Mapping activities in various locations - Supporting sketches - Information on people, surroundings, climate, Access to site.	
3	Preparation of Drawings - Developing drawings from the field data – Plans at various levels, Building floor plans, Reflected ceiling plans, roof plans, all elevations, relevant sections. - Drawings of details such as openings, ornamental details, joineries	
4	Analysis: - Analysis as tools for understanding and interpreting the measured	

	drawings	

Note: The assignment may be given as group work (4 to 5 students per group). The students have to submit a report on the measured drawing & study tour separately. The reports are to be assessed by the departments for Continuous Internal Evaluation and final review has to be conducted.

REFERENCES:

1) RSP Program Monographs –CEPT University
2) Building Craft Lab- DICRC, CEPT University

COURSE OUTCOME

With the successful completion of the course student should have capability to
CO1: Explain the need and scope of project documentation.
CO2: Implement the research and site study of documentation in design.
CO3: Understand the design concepts and prepare the site plan, street and the layout of project.
CO4: Prepare the various levels of planning of documentation.
CO5: Analyze the various tools to measure and implement them in survey.

SYLLABUS CONTENT OF IV SEMESTER B.ARCH.
21ARC41- ARCHITECTURAL DESIGN – IV

CONTACT PERIODS / WEEK : (1 LECTURE + 7 STUDIO)	**CONTINUOUS ASSESSMENT MARKS: 50**
CREDITS: 8	**VIVA: 50**
TOTAL NUMBER OF LECTURE HOURS:108	**SEE VIVA EXAM**

Objective:

- To understand the meaning to cultural and physical context of built environment and techniques of reading such contexts considering the philosophy of reputed architects
- To isolate the various factors of the context which influence the design of built environment.
- To understand the nature of place making as an architectural goal

Outline	Teaching hours
Studio project shall be based on case studies literature survey and analysis leading to form generation and realization of the objective	

Studio Project

The studio project shall include various problems of level such as School, Hotel, Motel, children's' library, Recreation Club, Museum, Polyclinic, and Nursing home etc.
The design shall be sensitive to the needs of disabled, aged people and children.

Submission

One major project and one minor problem and two time problems

- Data collection, case study and literature survey
- Design proposal including study model and perspective view

COURSE OUTCOME:

After completion of the course, a student will be able to:

CO1: Ability of the basic necessary requirements restricted to walls, floors, roof plans etc

CO2: Implement the architectural bye - laws in construction and various services involved in the design of a building.

CO3: understand about the material, color, texture etc. used in the particular climate.

CO4: Prepare details of architectural features and elements for buildings/built form.

CO5: Apply the relationship between form, spaces and aesthetics in design or construction.

REFERENCE:

- Time-Saver Standards on Housing and development.
- The Architecture of Hasmukh C Patil- Selected Projects 1963-2003 – Catherine Desai Bimal Patel.
- Factories & office buildings- CarlesBroto.

CO PO MAPPING

	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**P0 9**	**PO1 0**	**PO1 1**	**PO1 2**	**PSO 1**	**PSO 2**	**PSO 3**
CO1		2			3			3				3			
CO2					3	2	3	3						2	
CO3								2							2
CO4					3			2							
CO5					2			3							3
AV G		2			3	2	3	2.6				3		2	2.5

CONTRIBUTION ; 1. REASONABLE 2; SIGNIFICANT 3; STRONG

21ARC42: BUILDING CONSTRUCTION & MATERIALS – IV

LECTURES/WEEK –1 LECTUREN/ 3 STUDIO	CEE MARKS -50
NO OF CREDITS - 4	SEE MARKS - 50
TOTAL TEACHINGS HOURS- 56	SEE DURATION – 3 HRS

Objective:

- To assimilate students with construction practices pertaining to RCC floors, roofs and flooring with different materials and plastering.
- Study of principles and methods of construction of slabs including form-work techniques and reinforcement details for RCC Construction.

MODULES	TEACHING HOURS
MODULE-I Introduction to RCC slabs - one way, two way slabs, and cantilever slabs, sloping RCC roof,	**14hrs**
MODULE-II Alternate roofing techniques: vaults, domes, Madras terrace roof, Jack arch roof, Hollow clay blocks roofing techniques (filler slab)	**14hrs**
MODULE-III Earth Retaining walls, Shoring, Underpinning, Ferro cement elements	**14hrs**
MODULE-IV Construction Joints & Expansion joints – Necessity, location and detailing, Chemicals admixtures, Grouts, repairs and protective coatings, bonding agents, sealants and water proofing and weather proofing compounds, tile adhesives, tile joint filers, shotc	**14hrs**
MODULE-V Plastering, pointing & finishing Paints, distemper's, emulsions, cement base paints & Constituents of oil paints, Characteristics of good paints, types of paints and process of painting different surfaces. Varnishes: Types of varnish, methods of applying varnish and fresh polish and melamine finish.	**14hrs**

Submission – Minimum one plate on each construction topic. Site visits to be arranged by studio teachers. Study of material applications in the form of portfolio.
The entire portfolio on Construction and Materials shall be submitted along with study models.

Course outcome:

CO1: Identify different types of RCC Slabs & its application suitable to building spans
CO2: Recognize alternate roofing techniques & its utilization suitable to various building designs

CO3: Implementation of different geo-technical components such as earth retaining wall, shoring, underpinning & ferro cement elements
CO4: Identify the Joints, properties of different building construction chemicals & its utilization in construction industry
CO5: identify & analyze the application of various internal & external finishes used in buildings depending upon the suitability.

Reference:

- "Building Construction" by W.B. Mackay
- "Construction Technology" by Chudley
- "Construction of Building" by Barry
- "Building Construction" by Rangawala
- "Building Construction" by Punmiya
- "Building Materials" by S K Duggal.

CO PO Mapping:

	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO1 0**	**PO1 1**	**PO1 2**	**PSO 1**	**PS O 2**	**PS O 3**
CO1		3												3	
CO2		3												3	
CO3		3												3	
CO4	2													3	
CO5		2	3											3	
Averag e	2	2.5	3											3	

CONTRIBUTION: 1.REASONABLE 2.SIGNIFICANT 3.STRONG

21ARC43 CLIMATOLOGY

LECTURES/WEEK – 2L / 1 Practical	**CEE MARKS-50**
NO OF CREDITS -3	**SEE MARKS-50**
TOTAL NO OF LECTURE HOURS – 40	**SEE DURATION – 3 HRS**

OBJECTIVES:

- To understand the elements of climate and its classification and thermal comfort .
- To understand the overheated and under heated period, sun path diagram , thermal performance of a building .
- The understand the concept of thermal heat gain and loss , techniques for thermal insulation
- To understand the concept of shading devices and natural ventilation.
- To understand the concepts and types of natural day lighting and climatic considerate design .

Modules	Teaching hours
Module I Introduction to Climate **1. Introduction to Climate-1:** The Climate-built form interaction; some examples. Elements of climate, measurement and representations of climatic data. Classifications and Characteristics of tropical climates. **2. Introduction to Climate-2:** Major climatic zones of India. Site Climate: Effect of landscape elements on site/micro climate. **3. Thermal comfort-1:** Thermal balance of the human body, Thermal Comfort Indices (Effective temperature, corrected effective temperature, bioclimatic chart, tropical summer index by CBRI Roorkee). Measuring indoor air movement: Kata-thermometer, and measuring indoor radiation: Globe thermometer.	8 hours
Module-II Thermal comfort **4. Thermal comfort-2:** Calculation of Overheated and Under heated period (based on air temperature only) for locations in Climatic zones and their optimization in terms of solar heating and Passive cooling desired. **5. Sun-path diagram:** Solar geometry & design for orientation and use of solar charts in climatic design. **6. Thermal performance of building elements:** Effect of thermo-physical properties of building materials and elements on indoor thermal environment. Convection, Radiation,	10 hours

concept of Sol-air temperature and Solar Gain factor.	
Module-III Thermal Heat gain or loss **7. Thermal Heat gain or loss:** Steady state and periodic heat flow concepts, Conductivity, resistivity, diffusivity, thermal capacity, time lag and 'U' value. Calculation of U value for multilayered walls and Roof, Temperature Gradient, Inference of time lags from Graphs for walls and Roof. Construction techniques for improving thermal performance of walls and roofs. (Effect of density, Insulation, and Cavity).	10 hours
Module-IV Shading devices **8. Shading devices:** Optimizing Design of Shading devices effective for overheated periods while allowing solar radiation for under heated periods for different wall orientations. **9. Natural ventilation:** Functions of natural ventilation, Stack effect due to thermal force and wind velocity. Air movements around buildings, Design considerations and effects of openings and external features on internal air flow and Wind shadows.	10 hours
Module-V Day Lighting Nature of natural light, its transmission, reflection, diffusion, glare. Advantages and limitations in different climatic zones, North light, Daylight factor, components of Daylight devices. **11. Climatic Design considerations-1:** Literature study of relevant traditional and contemporary building examples. **12. Climatic Design considerations-2:** Two Indian case studies and one international for each climatic zone.	10 hours

REFERENCE:

1. Koenigsberger, Manual of Tropical Housing & Buildings (Part-II), Orient Longman, Bombay, 1996.
2. Arvind Kishan, Baker & Szokolay, Climate Responsive Architecture, Tata McGraw Hill, 2002.
3. Martin Evans; Housing, Climate, and Comfort; Architectural Press (1 March 1980)
4. Donald Watson and Kenneth Labs; Climatic Building Design - Energy-Efficient Building Principles and Practice; McGraw-Hill Book Company, 1983.
5. Mili Majumdar (Editor); Energy Efficient Buildings in India; The Energy and Resources Institute, TERI (28 February 2009)

6. Baruch Givoni; Passive and Low Energy Cooling of Buildings; John Wiley & Sons (1 July 1994).
7. Energy Conservation Building Code (ECBC) 2007; Bureau of Energy Efficiency, Ministry of Power, Government of India.

COURSE OUTCOME:

CO1-To investigate the elements of climate and its classification to improve thermal comfort of buildings .
CO2-To analyze the overheated and under heated period, sun path diagram to improve thermal performance of a building .
CO3-The utilize the concept of thermal heat gain and loss and apply the techniques for thermal insulation
CO4- To consider the concept of shading devices and natural ventilation and apply in design.
CO5-To analyze the concepts and types of natural day lighting and climatic considerate design and implement in design.

Mapping of Course Outcomes, Program Outcomes and Program Specific Outcomes.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2			2				3							1
CO2	3							3							2
CO3	2			2											3
CO4						2									3
CO5						3									3
AVG	2.3			2		2.5		3							2.4

CONTRIBUTION: 1: REASONABLE 2: SIGNIFICANT 3: STRONG

21ARC44 - HISTORY OF ARCHITECTURE – IV
(Modern Architecture)

Lecture/Week: 3L	**CIE-Continuous Internal Evaluation: 50**
No of Credits: 3	**SEE-Theory exam marks (3 hours): 50**
TOTAL TEACHING HOURS : 40	**SEE Duration: 3Hrs**

Objective:

To provide an understanding of evolution of modern architecture and high modernism in India and Abroad.

MODULE-I	**HRS**
Impact of Industrial Revolution on Architecture- The social, Economic and political changes, affected, requirements of the society, new materials and technological development. Birth of various styles and movements such as Beaux art, Chicago school, Bauhaus, De stijl movement, Art Nouveau etc. Study of examples: Crystalpalace atLondon, Wain Wright building by Adler and Sullivan, Bauhaus school at Dessau by Walter Gropius, Paris Metro Station entrance, Schroder House by Rietveld	8
MODULE-II	
Study of the works of masters: Antony Gaudi- Casamila and SagradaFamilia Le Corbusier – Villa Savoy and Ron Champ Cathedral F.L.Wright – Falling Water House and JohnsonWaxTower Mies van der Rohe - Farnsworth House and Seagram building KenzoTange – National Gymnasium for Tokyo Olympiad , Kagawa Prefectural center Louis- I khan – RichardMedicalResearchBuilding, Philadelphia and First Unitarian Church And School	7
MODULE-III	
Study of other architects who contributed to development of modernism EeroSaarinen – Trans world Air Line Terminal Paul Rudolph - ArchitectureSchool At YaleUniversity. Richard mier – Smith House	6
MODULE-IV	
Modern architecture in India: : (8hr-9hr) Study of the works and philosophy of Foreign architects. Le-Corbusier - Capitol complex at Chandigarh	6

Louis-I-khan – IIM Ahmedabad J. A Stein – IIC at New Delhi, International Kashmir center at Kashmir Roger Anger – works at Auroville , Pondicherr	
MODULE-V	
Study of the works and philosophy of Indian architects A.P.Kanvinde –Nehru science center Mumbai. BVDoshi – IIM,Bangalore and SanghatAhmedabad Charles correa – KanchanJunga apartments at Bombay Uttam . c .Jain - KotaEngineeringCollege ,Jodhpur university, Raj Rewal – Asiad village at Delhi, Pavilion at PragatiMaidan New Delhi. Laurie Baker – Center for Development studies Thiruvananthapuram, St. John's cathedral Thiruvalla.	7

Reference:

- "Modern architecture –A Critical history" By Frampton Kenneth
- "A History of Architecture" by Fletcher Bannister
- "Pre History to Post Modernism" by Marvin &Isabell.
- "Modern architecture in India "by Bahga and Bahga&Bahga
- Contemporary Indian Architecture-After The Masters – Vikram Bhatt and Peter Scriver

Course outcome:

CO1: Application of industrial revolution impact on architecture.
CO2: Identification and apply of famous works of master architects in design concepts.
CO3: Explain and apply the contribution of modern architects in development of modernism style.
CO4: Application of philosophy of Modern architect in planning and design development.
CO5: Application of philosophy of Indian architect in planning and design development.

Course Outcomes with Program Outcomes and Program Specific Outcomes mapping

COURSE OUTCOMES		PO 1	PO2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
CO 1	Application of industrial revolution impact on architecture.						3							**3**		
CO 2	Identification and apply of famous works of master architects in design concepts.		2													
CO 3	Explain and apply the contribution		3													

	of modern architects in developmen t of modernism style.															
CO 4	Application of philosophy of Modern architect in planning and design developmen t.		3													
CO 5	Application of philosophy of Indian architect in planning and design developmen t.		3													
	AVERAGE		1 1				3							3		

CONTRIBUTION: 1: REASONABLE 2: SIGNIFICANT 3: STRONG

21ENG45 – STRUCTURES – IV

LECTURES/WEEK – 03 lectures	**CEE MARKS-50**
NO OF CREDITS – 3	**SEE MARKS-50**
TOTAL TEACHING HOURS-40	**SEE DURATION – 3hrs**

Objective:

To give an insight into the structural behavior of portal frames.

MODULE	Teaching hours
MODULE-I 1. Propped beam: Analysis of propped beam development shear force and BMD numerical examples on simple loading case (Point load & UDL)	**8 Hours**
MODULE-II 2. Fixed beams: Behavior of fixed beam. Analysis of fixed beam subjected to point load and uniformly Distributed load development of SF, BM, and elastic curve with numerical examples	**9 Hours**
MODULE-III 3. Clapeyron's three moment method: Clapeyron's theorem derivation of Clapeyron's three moment equation. Numerical examples on simple loading cases.	**8 Hours**
MODULE-IV 4. Moment distribution method: Stiffness, carry over theorem, distribution theorem. Analysis of continuous beams by moment distribution method.	**9 Hours**
MODULE-V 5. Analysis of portal frames: -single bay single storey with non-sway by moment distribution method	**8 Hours**

Course outcome:

1: Analyse the propped beam and draw SFD and BMD.
2: Analyse the fixed beam and draw SFD and BMD.
3: Analyse the Continuous beam by Clapeyron’s method.
4: Analyse the Continuous beam by moment distribution method.

5**:** Analyse the portal frames single bay single storey with non-sway by moment distribution method.

Reference:

1." By RamamruthamDhanpatRai publishing company New Delhli
2. "Basic structural analysis" by C.S. Reddy Tata mcgrawHill,New Delhi
3."Strength of materials and Theory of structures" by B.C Punmia& R.K Jain vol I & VolII Laxmi publication New Delhi
4. "Analysis of structures" by Thandav Murthy Oxford university of Press

Course Outcomes with Program Outcomes and Program Specific Outcomes mapping

COURSE OUTCOMES		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
CO 1	Analyse the propped beam and draw SFD and BMD.			3											3	
CO 2	Analyse the fixed beam and draw SFD and BMD.			3											3	
CO 3	Analyse the Continuous beam by Clapeyron's method.			3											3	
CO 4	Analyse the Continuous beam by moment distribution method.			3											3	
CO 5	Analyse the portal frames single bay single storey with non-sway by moment distribution method.			3											3	
	AVERAGE			3											3	

CONTRIBUTION: 1: REASONABLE 2: SIGNIFICANT 3: STRONG

21ARC46 BUILDING SERVICES – II

Lectures/Week :2 Lectures	CIE- Continuous Internal Evaluation : 50
Number of credits: 3	SEE-Theory Exam Marks : 50
TOTAL TEACHING HOURS - 42	SEE Duration: 3 Hrs

Objective:

To make students aware about the different electrical services and make them introduced to illumination. And the use of these into the Architectural projects

Outline:

To make students understand the electrical services such as Wiring, Earthing etc. and study as a whole to sensitize them towards the Architectural design.

MODULE	No. of Hrs
MODULE – I • Introduction to Electrical services in the building. Basic terminologies used in them • Distribution of Electric supply/ Electric current inside the buildings. This includes detailed study of Transformers, AC Current, DC Current, Resistors, Capacitors, Voltage etc. To make them understand about Generators, Panel boards, low tension panels, overhead and underground distribution systems	**8 Hrs**
MODULE – II • Brief description about various types of wiring, PVC Casing and Capping wiring systems in detail, House wiring • Distribution of power to various appliances, process of electrification.	**8 Hrs**
MODULE –III • i. Necessity of Earthing in buildings, types of earthing. ii. Protective devices : Fuses, MCB, ELCB, Lightening arrestor • Lighting circuits, study of power circuits in detail.	**8 Hrs**
MODULE – IV • Introduction to Quality and quantity of light. • Systems of Luminaries : Direct and Indirect etc • Various types of electrical lamps – Incandescent, flouroscent/ CFL, HID'S,	**8 Hrs**

Neon lamps and their lighting characteristics.	
MODULE – V • Estimation for Electrification and load estimation • Indian electricity rules – Relevant codes of practice.	**8 Hrs**

Submission:

- Estimation and preparation of a lighting and electrical scheme showing electrical fixtures using terminology and load distribution diagram for a small industrial work area, classroom etc.

Course Outcome :

- CO1: Identify Electrical Services in the building and distribution of Electrical supply/ Electric current.
- CO2: Application of various types of wiring, and distribution of various appliances.
- CO3: Application of types of earthing, protective devices and Explain lighting circuits in detail.
- CO4: Identify quality and quantity of light, System of luminaries and various types of Electric lamps.
- CO5: Estimation of electrical load and application of relevant codes.

Course Outcomes with Program Outcomes and Program Specific Outcomes mapping

COURSEOUTCOMES	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1		2												2	
CO2	2													2	
CO3	2													2	
CO4			2											2	
CO5				2										2	
AVERAGE	2	2	2	2										2	

CONTRIBUTION: 1: REASONABLE 2:SIGNIFICANT3: STRONG

21ARC47 COMPUTER APPLICATIONS IN ARCHITECTURE – II

Contact Periods / week: (1Lecture+3Seminar)	Continuous Internal Evaluation: 50
Credits: 2	SEE marks: 50
Total Number of Lecture Hours:50	SEE VIVA

OBJECTIVE :

- To develop required skills in preparation 3 dimensional drawing using computers.

MODULE-I	HRS
Introduction to 3Ds Max-Importance of 3DS Max for Architecture Students, Creating all type of Standard, Extended, Primitive objects, Creating Doors, Windows and Stairs according to parameters, Creating all types of shapes like Circle, Line and Ellipse etc. Convert all solid objects into Editable Mesh, Convert all shapes in Editable Spline and Editable poly.	**10**
MODULE-II	
Introduction to Material Textures and maps concept of Texturing and Adding material - Introduction to Material Editor, color concepts Texturing with Bitmap Files, Apply Material on surface, UVW Mapping Tilling , UVW Mapping Tilling ,Architectural Maps. Importing AutoCAD 2D Building Plan File in 3Ds Max And Importing AutoCAD 3D Building Model File in 3Ds Max.	**10**
MODULE-III	
Lights, Camera – Introduction To lights, types of lights, lights parameters, Application on lights in interior and exterior. Introduction to Camera, Application and utilities of camera, types of camera, parameters of camera. **Rendering Model View using Default Scan line Renderer.**	**10**
MODULE-IV	
Introduction to photo shop -Use of photo shop, Editing images, Create documents, Photo shop system requirements, Photo shop FAQ'S. **Work space**- Workspace basics, Create documents, Photo shop search, Use the touch bar, Microsoft dial support, Tool galleries.	**10**
MODULE-V	
Image and color basics- How to resize images, Image essentials, Image size and resolution, Acquire images from cameras and scanners, Create, open and import images, View images. **Layers** – Layers basics , Create and manage layers and groups, Place images into	**10**

frames, Nondestructive editing, Select, group, and link layers, Layer opacity and blending.	

COURSE OUTCOME:

With the successful completion of the course student should have capability to

- Apply basic 3ds max Concepts to 2D Geometry shapes And Draw Walls, Doors, Windows, Stairs using 3D'max software .
- Apply 3D Modeling to convert 2D drawings into 3D Model.
- Perform photo realistic rendering of the building project using 3D'max software.
- Ability to prepare documents, Work space using photo shop.
- Apply color basics and Layers for the import images.

SOFTWARE FOR REFERENCES

1. AutoCAD Student Version
2. Autodesk Revit
3. Sketch-Up
4. Paint 3D
5. 3D Max

REFERENCES: Pradeep Jain & A.P. Gautam, Engineering AutoCAD

	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**P0 9**	**PO1 0**	**PO1 1**	**PO1 2**	**PSO 1**	**PSO 2**	**PSO 3**
CO1	3				3			3				3		2	
CO2					3							3		3	3
CO3					2			3				2		3	
CO4					2			3				3			
CO5					2			3				2			
AV G	3				2.4			3				2.6		2.6	3

CONTRIBUTION ; 1. REASONABLE 2; SIGNIFICANT 3; STRONG

21ARC48 WORKING DRAWING - I

LECTURES / week: 1(01 lecture + 3 Studio)	CIE (Continuous Internal Evaluation): 50
STUDIO / week:3	SEE-Viva : 50
Credits: 3	SEE EXAM VIVA

Objective:

Introduction of working drawings and Details: Coordination between Architectural, Structural, Services and other disciplines, Preparation of Architectural Working Drawings for a design project.

MODULE	TEACHING HOURS
MODULE-I Conventional Method: Architectural Drafting – lettering, Dimensioning Line, Title Block, Office Standard.	**8HRS**
MODULE-II Load Bearing Structure: Center line plan, Measuring Drawing , Foundation plan , Floor plan working plan showing the details of wall and openings, elevation, section, (manual Drafting)	**9HRS**
MODULE-III Site plan/Permission/Approval Drawing SOP, Schedule of opening (Door, window, grills)	**8HRS**
MODULE-IV Load Bearing Structure: detail measuring drawing of plumbing and Detail measuring drawing of electrical layout	**9HRS**
MODULE-V Detail drawing of kitchen or toilet Flooring Details, Sop, Schedule of opening (manual Drafting)	**8HRS**

Portfolio:

- The above drawing need tp be prepaid for one design projection of Residence One set of drawing need to be prepaid on AUTOCAD for one design projection formulity story framed structure.
- This enterer team work to be prepared for Vivo Examination.

Course Outcome (CO)

CO-1-Identifying and applying different conventional method of architecture in practice
CO-2 prepare working drawing for load bearing structures
CO-3 prepare detailed site, permission / approval drawing as per bylaws
CO-4 prepare detailed working drawing for load bearing
C0-5 prepare detailed working drawing for kitchen or toilet

Reference:

- Metric Architectural Construction, Drafting and Design fundamentals by William J Hornhung
- Working Drawings Hand Book by Keith Styles
- General Architectural Drawing by William E Wyatt.

CONTRIBUTION; 1. REASONABLE 2; SIGNIFICANT 3; STRONG

SYLLABUS CONTENTS OF V SEMESTER B.ARCH
21ARC51 ARCHITECTURAL DESIGN – V

Lectures/Week - 01	CIE Marks - 50
Studio/ Week - 05	SEE Marks (Viva) - 50
Credits- 6	Exam Hours- Viva
Total Teaching Hours -84	

OBJECTIVES:

- To understand the use of technologies developed in other fields as a precursor for creating architecture.
- The design shall deal with multiple functions resulting in complex form.
- The design shall be sensitive to the needs of disabled, aged people and children
- To understand creating of spaces. Formal, informal and interactive spaces and their Hierarchies in built environment.
- To understand regarding services to be provided i.e., Working operating and their maintenance.

OUTLINE	TEACHING HOURS
Design emphasis shall be laid on techniques of construction for achieving the thermal comfort and energy efficiency for a given context. The design shall be mainly addressing to the local issues and construction processes. **STUDIO PROJECT**: Studio project shall include problems involving above considerations such as institutes, Residential schools, shopping complex, medium rise buildings, medium size apartments (G+3), Single function Sports Complex, etc. One major project and a time problem to be tackled in the semester. Detailing of architectural features of the major project has to be attempted. • Study of various building techniques and planning methods adopted in building for achieving thermal comfort and energy efficiency. • Study of structural system adopted. **SUBMISSION:** Case study, data collection, literature survey, Design proposal including study model , Detailing of architectural features involved shall be attempted.	112

REFERENCE:

- Time-Saver Standards on Housing and development.
- The Architecture of Hasmukh C Patil- Selected Projects 1963-2003 – Catherine Desai Bimal Patel.
- Factories & office buildings- CarlesBroto.

COURSE OUTCOME:

After completion of the course, a student will be able to:

CO1: Design the project by implementing the constraints like local bye –laws, and various services.

CO2: Explore the designs that are sensitive to the needs of disabled, aged people and Children.

CO3: Develop the built environment, incorporating thermal comfort and energy efficient.

CO4: Prepare the details of architectural features and elements for buildings/built form.

CO5: Apply the relationship between form, space sand aesthetics in design or Construction.

Mapping of Course Outcomes, Program Outcomes and Program Specific Outcomes.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1		3			2							3		
CO2			3	2			3							3	
CO3			3				3				2				3
CO4						2					3				
CO5			1	3	2								3		
AVG	1		2.5	2.5	2	2	3						3	3	3

CONTRIBUTION: 1: REASONABLE 2: SIGNIFICANT 3: STRONG

21ARC52– BUILDING CONSTRUCTION – V

Lectures/Week - 01	CIE Marks - 50
Studio/ Week - 03	SEE Marks - 50
Credits- 4	Exam Hours- 04
Total Teaching Hours -56	

OBJECTIVE:

Building course with emphasis on study and analysis of different advanced building components with sensors and its manufacturing process.

Study of aluminium as a building material and and different cladding materials

MODULE	TEACHING HOURS
MODULE-I PVC & FRP, frameless glass doors and windows and partitions. Wooden, steel, Aluminum sliding and folding doors and partitions.	12
MODULE-II Steel doors for garages and workshops.	12
MODULE-III Collapsible gate and rolling shutters .use and manufacturing method. Remote control system for doors windows and gates.	12
MODULE-IV Aluminum as a building material Types , properties uses and manufacturing method, detailing of aluminum partitions. Aluminum doors windows : casement , pivot ,sliding type. False ceiling , types details of various materials.	10
MODULE-V Structural glazing, aluminum composite panel. Cladding and fixing details.	10

Submission :
Minimum one plate on each construction topic. Site visits to be arranged by studio teachers. The entire portfolio on construction shall be presented for term work.

Course outcome:
CO1 – Understand and analyze different types of doors/ windows like PVC , FRP , frameless glass door and its application.
CO2 – Compare and apply types of steel doors for garages and workshops
CO3 – Recognize collapsible door and rolling shutters , remote control for doors and windows..
CO4 – Analyze aluminum as a building material and its utilization in building construction.
CO5 – Recognize structural glazing , and different cladding technique and its implementation in construction .

Reference:
"Construction Technology" by Chudley
"Construction of Buildings" by Barry
"Building construction" by Frank Chi

CO PO MAPPING

	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**P0 9**	**PO 10**	**PO 11**	**PO 12**	**PS O1**	**PS O2**	**PS O3**
CO 1	3													3	
CO 2	3													3	
CO 3			3											3	
CO 4		3												3	
CO 5			3											3	
AV G	3	3	3											3	

CONTRIBUTION ; 1. REASONABLE 2; SIGNIFICANT 3; STRONG

21ARC53 BUILDING ECONOMICS & SOCIOLOGY

Lectures/Week - 02	CIE Marks - 50
Credits- 02	SEE Marks - 50
Total Teaching Hours -28	Exam Hours- 03

Objective: The objective of the subject is to enable students to understand:

- Society and it's issues
- Influence of Society on Architecture
- Basic principles of building economics at macro and micro levels

MODULE	TEACHING HOURS
Module-I Introduction to Sociology: Definition of Sociology; Nature, Scope and Utility of Sociology; Branches of Sociology; relation between Sociology and society. Essential elements of society, bio-social and socio-cultural systems. Rural and urban communities and their characteristics. Origin, growth and influence of cities. Definition of urbanization –patterns of life and influence of urbanization on rural life, urbanization process in India.	**8**
Module-II Migration and its impact on urbanization, social problems of urbanization – problems relating to public health, public transport and public housing, sociological understanding of slums. Type of social setup influencing architecture. Variations in design solutions arising out of social setup. Type of community, religion, culture and politics playing role in defining architecture.. Concepts of CPTED (Crime prevention through Environmental Design) in architecture.	**8**
Module-III	**8**

Social surveys and Social research – The need for research; the research process; ethics of social research; principles of social research, scope of research, units of study, choice of research topics, Difference between methodology and methods. Types of research methods: qualitative, quantitative, mixed research methods. Sources of information or research data: primary and secondary sources. Secondary data sources include literature review, official and unofficial documents, library references, publication etc.,. Primary data sources use methods such as field surveys & adoption of suitable techniques in field research viz, questionnaires, different types of interviews (open-ended / closed / structured / semi- structured),and case study approach etc., analysis and classification of data.	
Module-IV Definition of Economics, Economic laws, Economic goods, utility, value, price and economy affordability, wealth. Economic organization of society- Consumption, wants, their characteristics and laws based upon them. Concepts of economics: Standard of living, market value, opportunity cost, the laws of diminishing, increasing and constant returns. Urban land values, land utilization, factors involved in Development of urban land. The Bid Rent theory that defines relationship between location and land value. Theoretical city models based on land use and land value–Burgess's Concentric Zone Theory; Hoyt's Sector Theory; Ullman and Harris's Multiple Nuclei Theory.	**8**
Module-V Concepts of life cycle costing with reference to buildings. Time value of money-present worth and inflation. Different Sources of finance for buildings. Architecture evolving out of affordability and constraints of economy. Contribution of various architects towards low cost construction.	**8**

COURSE OUTCOMES:

CO1: Distinguish between sociology Vs society, Urban Vs rural communities & analyze the process of urbanization in India

CO2: Analyze migration process, its impact on urbanization or on social set ups influencing architecture & application of concepts like CPTED accordingly.

CO3: application of core concepts of social surveys, social research & their methodologies

CO4: Identify basic economics, its fundamental concepts & various theoretical models based on land use & land value
CO5: application of economic principles like building life cycle costing, building sources of finance & various architects contribution towards low cost housing

References:

- Pannerselvam R, Engineering Economics, Prentice Hall India, New Delhi, 2000
- Bruce, Steve, Sociology: A very short Introduction, Oxford University Press, Oxford, 1999
- OpenstaxCollege(2012) Introduction to Sociology. OpenstaxCollege.
- Samuelson, P. and Nordhaus,W.(2010) Economics. Mcgraw- Hill Education.
- Yin, Robert K. (2014) Case Study Research Design and Methods (5th Ed.). Thousand Oaks, CA:Sage.
- Groat, Linda N. and David Wang (2013) Architectural Research Methods (2nd Ed.). John Wiley & Sons.
- Jones, Paul (2011). The Sociology of Architecture: Constructing Identities. Liverpool University Press.
- Mann,Thorbjoern (1992)Building Economics for Architects. Wiley.

CO PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1							3						3		
CO2								2					3		
CO3				3									3		
CO4												2	3		
CO5												2	3		
Average				3			3	2				2	3		

CONTRIBUTION: 1.REASONABLE 2.SIGNIFICANT 3.STRONG

21ARC54 THEORY OF ARCHITECTURE

Lectures/Week - 02	CIE Marks - 50
Credits- 02	SEE Marks - 50
Total Teaching Hours -28	Exam Hours- 03

Objective:

To acquaint the students with the basic aesthetic principles involved in architectural design and the grammar of architectural aesthetics.

MODULE-I	HRS
Definition of Art and role of Art in Society: Role and meaning of art, various types of arts-fine arts, performing arts, commercial arts, industrial arts, folk arts, abstract art, visual arts, spatial arts, temporal arts, pop art etc., relationship of architecture with other art like Painting and Sculpture. **Principles of Aesthetics and Architectural Composition -1 –** Unity, Balance, Proportion, Scale in Architectural composition. Illustrations and its application to the practice of design with historical as well as contemporary buildings.	6
MODULE-II	
Principles of Aesthetics and Architectural Composition -2: Contrast, harmony, accentuation, restraint in Architectural composition. Illustrations and its application to the practice of designing historical as well as contemporary building. **PrinciplesofAestheticsandArchitecturalComposition3:** Repose, vitality, strength in Architectural composition. Illustrations and its application to the practice of design in historical as well as contemporary building.	6
MODULE-III	
OrganizingprinciplesofAestheticsandArchitecturalComposition-1: Symmetry, asymmetry, hierarchy, datum, axis, rhythm in Aesthetics and Architectural Composition and its application to the practice of design. **Spatial organizations of Masses in Architecture -1:** Centralized and clustered; Illustrations of centralized and clustered massing in spatial organizations of masses in Architecture and its application to the practice of design with both historical as well as contemporary buildings.	7
MODULE-IV	
Spatial organizations of Masses in Architecture -2: linear, radial, grid organization. Illustrations of linear, radial, grid organization in spatial organizations of massesin Architecture and its application to the practice of	9

design with both historical as well as contemporary buildings. **Ornamentation in Architecture:** Historical perspective of the use of ornament in buildings and use of ornament as a decoration to embellish parts of a building. Use and need of ornament in architectural design–different types of ornamentation in buildings. **Ornamentation in Architecture Criticism**–Argument against ornamentation. Ideas of architect Adolf Loos (Ornament and Crime); Ornaments as economically inefficient and morally degenerate, reduction of ornament or lack of decoration as the sign of an advanced society.	
MODULE-V	
Materials, Materiality and Tectonics: Aesthetic and structural potentials in Architecture of materials like brick, timber, stone, concrete, glass. **Style in Architecture:** Basis for classification of styles including chronology of styles arrangement according to order that changes over time. Evolution of styles; reflecting the emergence of new ideas as reaction to earlier styles as a result of changing of fashions, beliefs, technology etc. **Perceptions in Architecture:** Experience of architecture in basic psychological and physiological terms. Way in which human minds and bodies respond to space, light, texture, color, and other architectural elements. (8hr-9hr)	8

References:

- Form, Space and Order"byFrancisDKChing
- Design Fundamentals in Architecture"byParmarVS
- Theory of Architecture byPaulAla Creating Architectural Theory by John Lang

Course outcome:

CO1: Identification of aesthetics principles and application of role of art in society.
CO2 Application of principles of aesthetics and composition
CO3: Comparing organizing and spatial organization; application in architecture.
CO4: Explain and apply ornamentation in architecture
CO5: Identification of materials, style and its application in architecture

Course Outcomes with Program Outcomes and Program Specific Outcomes mapping

COURSE OUTCOMES		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Identification of aesthetics principles and application of role of art in society.						**3**							**1**		
CO2	Application of principles of aesthetics and composition		2													
CO3	Comparing organizing and spatial organization; application in architecture.		2													
CO4	Explain and apply ornamentation in architecture						3									
CO5	Identification of materials, style		3													

	and its applicati on in architect ure															
	AVERA GE		6				6							3		

CONTRIBUTION: 1: REASONABLE 2: SIGNIFICANT 3: STRONG

21ENG55 STRUCTURE – V

Lectures/Week - 03	CIE Marks - 50
Credits- 03	SEE Marks - 50
Total Teaching Hours -42	Exam Hours- 03

Objective:

To provide an introduction to design of reinforced concrete structures.

Modules	Teaching hours
MODULE-I 1. Concrete: properties of fresh and hardened, Basics of mix design, water cement ratio, strength, Durability, workability requirements. Relevance of RCC in Architectural practice Advantages of RCC over other conventional structural practices. Steel for RCC – Plain & Twisted bars, IS 456 code provisions.	**8 Hours**
MODULE-II 2. Working Stress method of design – Basic concept, types of loads, assumptions, calculation of MR For singly RC beam (only).	**9 Hours**
MODULE-III 3 Necessity and philosophy of limit state design, Rectangular Beam Limit state design of simply supported slabs, Necessity and Philosophy of limit state design, Limit state design of singly and doubly reinforced and simply supported one way and two-way slabs. Use of SP 16, IS 456 permitted	**8 Hours**
MODULE-IV 4. Limit state design of columns (axial and uniaxial bending) and footing (axially loaded square footing)	**9 Hours**
MODULE-V	**8 Hours**

5. Design of Dog-legged and open well stairs (waist slab type)	

Course outcome:

- Identify the Basics concepts of concrete and RCC.
- Determine the moment of resistance for singly RC beam using working stress method of design.
- Design of beam and slab using limit state method of design.
- Design of Column and Footing using limit state method of design.
- Design of Dog-legged and open well Staircases.

Reference:

1. A. K. Jain "Limit State method of Design" Nemchand& Bro's, Roorkee
2. N Krishnaraju "Design of Reinforced Concrete structures" CBS Publishers
3. Shah &Karve "Limit state theory & design of Reinforced structures" structures publication Pune. 4. Park &Paulay "Reinforced Concrete" John wiley& son's
5. P. Purushothaman "Reinforced Concrete structural elements" Tata Mcgraw- Hill Publishers, New
Dehli.
6. BIS code – IS 456-2000

Course Outcomes with Program Outcomes and Program Specific Outcomes mapping

COURSE OUTCOMES		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Identify the Basics concepts of concrete and RCC.	2													3	
CO2	Determine the moment of resistance for singly RC beam using working stress method				3										3	

	of design.															
CO3	Design of beam and slab using limit state method of design.			3											3	
CO4	Design of Column and Footing using limit state method of design.			3											3	
CO5	Design of Dog-legged and open well Staircases.			3											3	
	AVERAGE	2		3	3										3	

CONTRIBUTION: 1: REASONABLE 2: SIGNIFICANT 3: STRONG

21ARC56 BUILDING SERVICES – III

Lectures/Week - 03	CIE Marks - 50
Credits- 03	SEE Marks - 50
Total Teaching Hours -42	Exam Hours- 03

Objective:
To make students understand, Mechanical services in building and follow the norms of NBC with their integration in Architectural design.

Outline:
To emphasize the knowledge of vertical Transportation, AC, Fire fighting system etc for Multistoried buildings

MODULE	TEACHING
MODULE–I **Air Conditioning:** Introduction, types of Air conditioning systems, Calculation of Air conditioning loads. Ducts, Duct systems. Air Outlets, Air conditioning methods and equipments. Residential and commercial air conditioning, energy conservation techniques, preparation of air conditioning layout.	**8 Hours**
MODULE–II **Elevators(Lifts):** Types of Elevators, Civil dimensions of hospital lift, goods lift and service lift, definitions and components, lift locations in building i.e grouping of lift building as per NBC Norms. Architects role for installations of Elevators	**8 Hours**
MODULE–III **Escalators:** Introduction and various components of escalators, types of escalators. Capacity, size, space and speed of Escalators. Types of Escalators: (Vertical/ Horizontal locations in buildings). Escalators vs Elevators	**8 Hours**
MODULE–IV **Fire:** Introduction, fire safety in buildings. Planning stage, brief description of Combustible and non combustible materials in case of fire, fire rating, fire escape routes, active fire control using portable extinguishers, basic concepts in fixed fire fighting installations, smoke alarm systems, wet riser,	**8 Hours**

down composer, comparative analysis. Fire hydrants, yard hydrants, fire sump – placement, design.	
MODULE–V • Artificial intelligent equipments used in Architectural fields Door sensors, sensor controlled lightings, GPS controlled equipments, sensor securities system, sensor plumbing fittings. • Solar system equipments used in Architecture and construction fields Solar water heater, photovoltaic cells for generation and equipments used for lighting.	**8 Hours**

Assignment :

- Air conditioning layout for a small residence and only study of AC Layout in a large shopping complex and office complex
- Lift and Escalators : Study and design of Hospital lifts, Capsule Lifts, Finishes and precautions

Course outcome :

- Application of the Air Conditioning systems for Residential and commercial buildings
- Installation of different types of Elevators as per NBC Norms w.r.t Design consderations
- Analyzing and Installing, Escalators and Elevators for various types of buildings
- Prevention & safety fire fighting measures for fire safety of buildings
- Applying Artificial intelligent equipments for buildings

Reference:

- " Principles of Refrigeration" by Roy J Dosat
- "Air Conditioning and Refrigeration Data Hand book"by Manohar Prasad
- "Refrigeration and Air Conditioning" by Don Kundwar
- *NBC Part

Course Outcomes with Program Outcomes and Program Specific Outcomes mapping

COURSE OUTCOMES		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Application of the Air Conditioning	3													3	

	systems for Residential and commercial building															
CO2	Installatio of different types of Elevators as per NBC Norms w.r.t Design consderations		2												3	
CO3	Analyzing and Installing, Escalators and Elevators for various types of buildings		3												3	
CO4	Prevention & safety fire fighting measures for fire safety of buildings		3												3	
CO5	Applying Artificial intellige	3													3	

	nt equipments for building															
	AVERAGE	3	4												3	

CONTRIBUTION: 1: REASONABLE 2: SIGNIFICANT 3: STRONG

21ARC57 COMPUTER APPLICATIONS IN ARCHITECTURE – III

Studio/Week - 02	CIE Marks - 50
Credits- 02	SEE Marks(Viva) - 50
Total Teaching Hours -28	Exam Hours-

OBJECTIVE:

- To develop required skills in preparation 3 dimensional drawing using computers.

SL	MODULE-I	HRS
1	**Introduction** To Sketch UP **Pro**: Importance of Sketch UP Pro for Architecture Students, Getting to Know the Interface, Interface basics, Adding toolbars, Navigating, Changing perspective, , Shading faces and edges, Setting preferences. **Manipulating Objects:** Selecting and moving objects, Scaling and rotating objects, Manipulating faces and edges, Advanced selection tools. **Drawing:** Line tool fundamentals, Refining objects with the Line tool, Using the Rectangle tool, Pushing and pulling faces into 3D,Creating circles and polygons, Creating arcs, Using the Offset tool to create outlines, Creating 3D text. **Measuring and Labeling:** Using the Tape Measure tool, Creating text labels, using the Dimension tool, Creating sections.	**10**
	MODULE-II	
2	**Organizing Scenes**: Grouping objects, Working with layers, Creating layers, Using the Outliner , Hiding and un hiding objects, Locking and unlocking objects **Creating Textures and Materials:** Using the Materials Browser on a Mac, Applying materials, Editing materials, Creating materials, Adjusting materials, Applying bitmap images, Mapping curved objects, Projecting maps on curved objects **Importing floor plans, Modeling with floor plans, Rendering .**	**10**
	MODULE-III	
3	**Introduction To Revit**: : Importance of Revit, Using Basic Building Components I**,** Using the Editing Tools**,** **Datum Planes and Creating Standard Views** - Working with Reference Planes , Working with Levels, Working with Grids ,Working with Project Views **Using Basic Building Components II -** Creating Floors -Creating Roofs – Shape Editing Tools - Creating Ceilings - Adding Rooms **Using Basic Building Components III**-Working with Components, Adding Stairs, Adding Railings and Ramps , Creating Curtain Walls	**10**
	MODULE-IV	

4	**Annotations and Dimensions**-Adding Tags ,Keynotes **Creating Project Details and Schedules**: Project Detailing, Adding Text Notes, Working with Schedules **Creating Drawing Sheets and Plotting:** Creating Drawing Sheets , Creating Duplicate Dependent Views	**10**
	MODULE-V	
5	**Creating 2D drawing:** Working on plans, elevation and sections with Revit. **Creating 3D Views** -Three Dimensional Views **Rendering:** Working with Materials, and Rendering.	**10**

COURSE OUTCOME:

With the successful completion of the course student should have capability to:

- Apply basic Sketch UP Concepts to 2D Geometry shapes And Draw Walls, Doors, Windows, Stairs using Sketch UP Software.
- Apply 3D Modeling to convert 2D drawings into 3D Model using Sketch UP software.
- Apply basic Revit Concepts to Building Components And Draw Roofs, Ceilings, Stairs, Ramps using Revit software.
- Ability to prepare Annotations, Dimensions Project Details ,Schedules of a project .
- Perform photo realistic rendering of the building project Revit software.

SOFTWARE FOR REFERENCES

1. AutoCAD Student Version
2. Autodesk Revit
3. Sketch-Up
4. Paint 3D
5. 3D Max

REFERENCES: Pradeep Jain & A.P. Gautam, Engineering AutoCAD

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	P0 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO 1	2				3			3				3		3	
CO 2					3			3				3		3	3
CO 3					3			3				2			
CO 4	3				2			3				3			
CO 5					3			3				3			3
AV G	2.5				2.8			3				2.8			3

CONTRIBUTION ; 1. REASONABLE 2; SIGNIFICANT 3; STRONG.

21ARC58 WORKING DRAWING – II

Lectures/Week - 01	CIE Marks :50
Studio / Week:01	SEE Viva Marks: 50
Credits- 03	Exam Hours-
Total Teaching Hours -42	

Objective:

Introduction of working drawings and Details: Coordination between Architectural, Structural, Services and other disciplines, Preparation of Architectural Working Drawings for a design project.

MODULE	TEACHING HOURS
MODULE-I Conventional Method: Architectural Drafting – lettering, Dimensioning Line, Title Block, Office Standard. (Cad)	**8HRS**
MODULE-II frame Bearing Structure: Center line plan, Measuring Drawing , Foundation plan , Floor plan working plan showing the details of wall and openings, elevation, section, (cad Drafting)	**9HRS**
MODULE-III Site plan/Permission/Approval Drawing SOP, Schedule of opening (Door, window, grills) frame structure	**8HRS**
MODULE-IV frame Structure: detail measuring drawing of plumbing and Detail measuring drawing of electrical layout	**9HRS**
MODULE-V Detail drawing of kitchen or toilet Flooring Details, Sop, Schedule of opening (cad drawing)	**8HRS**

Portfolio:

- The above drawing need tp be prepaid for one design projection of Residence One set of drawing need to be prepaid on AUTOCAD for one design projection for mulity story framed structure.
- This enterer team work to be prepared for Vivo Examination.

Course Outcome (CO)

CO-1-Identifying and applying different conventional method of architecture in practice
CO-2 prepare working drawing for frame bearing structures
CO-3 prepare detailed site, permission / approval drawing as per bylaws
CO-4 prepare detailed working drawing for frames structure
C0-5 prepare detailed working drawing for kitchen or toilet

Reference:

- Metric Architectural Construction, Drafting and Design fundamentals by William J Hornhung
- Working Drawings Hand Book by Keith Styles
- General Architectural Drawing by William E Wyatt.

CONTRIBUTION; 1. REASONABLE 2; SIGNIFICANT 3; STRONG

ELECTIVE-A

21ARC591-CLIMATE RESPONSIVE DESIGN

Lectures/Week - 01	CIE Marks - 50
Studio /Week - 02	SEE Marks(Viva) - 50
Credits- 03	Exam Hours-
Total Teaching Hours -42	

OBJECTIVE:

To develop awareness and familiarity with climatic responsive design and its integration with Architectural design.

OUTLINE	TEACHING HOURS
• Introduction to Passive cooling: Application to passive techniques of cooling such as orientation of building in different latitude on earth surface. To apply the principles of Solar Passive Architecture to design buildings. • Types of planning -the implementation of climatic features used for particular climate. • Introduction to a design exercise (Project application): Design of surrounding Space by landscape to change the micro climate by water bodies and plantation. • Study and implementation: Use of advanced reflective material & color to control the heat propagation through building envelope. • Advance technique: Use advanced construction technique and materials used in building to bring down the temperature of indoor space. • Climatic components: Use of evaporative cooling, earth tunnels, roof pond, wind scope, and shaded courtyard etc.	110hrs

Note: Only one design exercise (in hot dry climate) with an objective to integrate passive cooling systems in the design. Study of local materials with respect to thermal cooling and construction Technique & Landscape

Reference:

- "Housing Climate and Comfort" by Martin Evans
- "Climate Responsive Architecture" by Arvind Kishan Baker and Szokolay
- "Energy efficient in India" by Mili Mujumdar

COURSE OUTCOME

With the successful completion of the course student should have capability to

CO1: Explain the introduction and various types.

CO2: Implement the ideas based on proposed site area.

CO3: Understand different material and color in climate responsive design.

CO4: Analyze the various construction equipment usage.

CO5: Prepare a of various components used in a building for climate.

21ARC592 -VERNACULAR ARCHITECTURE

Lectures/Week - 03	CIE Marks - 50
Credits- 03	SEE Marks- 50
Total Teaching Hours -42	Exam Hours- 03

OBJECTIVE:

Study of Vernacular Architecture in India with respect to its local identity and culture.

Modules	Teaching hours
MODULE - I Introduction to the history, planning concepts, building construction techniques and materials of Vernacular Architecture.	
MODULE - II Study of factors affecting the designing and shaping the character of building with respect to the regional setting climatic condition, socio-economic and religious aspects.	
MODULE - III • Methods of documentation and analysis of Vernacular Architecture.	
MODULE - IV • Study of building typologies, street and settlement pattern and built fabric of selected region or area (Case Study).	
MODULE - V • Application of techniques and concepts in contemporary times through an illustration.	

COURSE OUTCOME:

- Understand the concepts, selection of materials and construction techniques.
- Identify the building design and character in various aspects of Vernacular Architecture.
- Documenting and analysing techniques.
- Analysing various aspects of built environment in given area of study

- Application of Vernacular Architecture through an example.

References:-

- Cooper, I Traditional buildings of India, Ilay.
- Paul Oliver [ED], Encyclopedia of Vernacular Architecture of the world, Volume 1, 2 & 3.
- Writings on Architecture and Identity, by B.V Doshi.

Course Outcomes with Program Outcomes and Program Specific Outcomes mapping

	COURSE OUT COMES	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO12	PSO 1	PSO 2	PSO 3
CO 1	Understand the concepts, selection of materials and construction techniques.							3						3		
CO 2	Identify the building design and character in various aspects of Vernacular Architecture.	2		3										2		
CO 3	Documenting and analyzing techniques.		3		3		2									3
CO 4	Analyzing various aspects of built environment in given area of study,				3	2				3	3				3	
CO 5	Application of Vernacular Architecture through an example.			3				3					3			3

	AVERAGE	2	3	3	3	2	2	3		3	3			3	3	3

CONTRIBUTION: 1: REASONABLE 2: SIGNIFICANT 3: STRONG

SYLLABUS CONTENTS OF VI SEMESTER B.ARCH
21ARC61 ARCHITECTURAL DESIGN – VI

Lectures/Week : 01	CIE Marks - 50
Studio / Week:05	SEE Viva Marks- 50
Credits- 06	Exam Hours-
Total Teaching Hours:84	

OBJECTIVES:

- To understand the differences and similarities of institutional goals and architectural goals.
- To understand the role of built environments.
- Projects shall be of urban scale with multiple functions based on considering building services such as water supply and sanitation, plumbing, vertical transportation, air conditioning, firefighting, security system, electrical data caballing, hospital services such as humidifier, exhausts, gas lines, bio-waste and pharmaceutical waste etc.
- To understand the need for creating architecture as an envelope to system dependent program (various building services as a system).

OUTLINE	TEACHING HOURS
Various utilities, which remain invisible in most of the buildings, become visible and important in certain categories of buildings. Architecture in such buildings remains at the level of envelopes. Buildings of such nature shall be identified and studied. Projects like hospitals, IT buildings industries, sports complex, pharmaceutical company, milk dairy (medium scale) or three-star hotels where services and technology play important role may be considered. **STUDIO PROJECT:** studio project shall be attempted with utilities and service dominant buildings like pharmaceutical manufacturing units or medical facilities. Consultants in the field of utilities and services shall be called as part of studio review. **SUBMISSION:** One major project and a time problem to be dealt in the semester. Detailing of architectural features of the major project has to be attempted. • Study of service and technology as main feature in design • Study of structural system adopted, influence of Climatic, Environmental and ecological factors.	112

• Case study, data collection, literature survey, detailing of architectural features involved shall be attempted. NOTE – CASE STUDY TO BE CONDUCTED COMPULSORY	

COURSE OUTCOME –

After completion of the course, a student will be able to:

- Apply the built environment's role at planning and designing work.
- Implement building services and waste management at large projects.
- Prepare drawings considering external and internal factors like site approach, traffic, ecology, Size, volume, levels, functional spaces or zones, structural possibilities.
- Design the project by implementing the constraints like architectural bye –laws, budget, ideology etc.Create Architecture as an envelope to system dependent program.
- Apply environmental and ecological factors and influence of climate at built environment.

REFERNCES–

1) RogerH.ClarkandMichaelPause,"Precedentsinarchitecture",1984,JohnWiley&Sons.
2) GeoffreyHBaker,"LeCorbusierananalysisofform",1996,VanNostrandReinhold.
3) HermanHertzberger,"Lessonsforstudentsinarchitecture",1991,DelftUniversity.
4) Charles Correa,"Aplaceinshade",2010,PenguinIndia
5) RemKoolhaas,"Conversationwithstudents",1996, Princeton Architectural Press

MAPPING OF Course Outcomes, Program Outcomes and Program Specific Outcomes.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1			3	3	3							2		3	
CO2						3	3					2	3		
CO3			3		3							2	3		
CO4	1		3											3	
CO5			3				3								3
AVG	1		3	3	3	3	3					2	3	3	3

CONTRIBUTION: 1: REASONABLE 2: SIGNIFICANT 3: STRONG

21ARC62 BUILDING CONSTRUCTION- VI

Lectures/Week : 01	CIE Marks : 50
Studio / Week:03	SEE Viva Marks: 50
Credits:04	Exam Hours:
Total Teaching Hours:56	

Objective:

- To Study the construction systems of roofing for large span and complex buildings

Modules	Teaching hours
MODULE I Steel trusses for various spans, ridge truss, saw tooth truss with lattice girders, roof lightings, Asbestos sheet.	**16 hrs**
MODULE II Poly carbonate sheet, FRP Sheet and Profiled MS Sheet cladding and roof fixing details, StructuralGlazing.	**16hrs**
MODULE III Roofs–Shell Roof Folded Plate, Geodesic Domes, Space Frame.	**165hrs**
MODULE IV Tensile Structures, Pneumatic structures, pre-engineering metal buildings.	**16hrs**
MODULE V Self–Supporting steel roofing, Flat Slab, waffle Slab, Coffer Slab.	**16hrs**

Submission:

Minimum one plate on each construction topic. Site visits to be arranged by studio teachers. The EntireportfolioonConstructionshallbepresentedfortermwork.

Courseoutcome:

CO1: recognize different types of steel trusses & implement them as per local conditions

CO2: identify different types of roofing sheets, cladding materials & its application suitable to different building types
CO3: identify different pre-engineered buildings such as shell roof, folded plates, geodesic domes, space frames & its utilization as per suitability
CO4: analyze different self supporting & advanced structures such as tensile structures, pneumatic structures & pre-engineered metal buildings
CO5: application of different types of flat slabs

Reference:

- Various Prefab corporation websites.
- Central Buildin Research Institute Web Material.
- Building Construction by W.B.Mackay
- Construction Technology by Chudley
- ConstructionofBuilding by Barry
- BuildingConstruction by Rangawala
- BuildingConstruction by Punmiya

CO PO Mapping:

	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PS O1**	**PS O 2**	**PS O 3**
CO1		2												3	
CO2		3												3	
CO3		3												3	
CO4		3												3	
CO5	3													3	
Average	3	2.5												3	

CONTRIBUTION: 1.REASONABLE 2.SIGNIFICANT 3.STRONG

21ARC63 PHYSICAL PLANNING - I

Lectures/Week : 01	CIE Marks : 50
Studio / Week:02	SEE Viva Marks: 50
Credits:03	Exam Hours:03
Total Teaching Hours:42	

Objective:

To give an introduction to the discipline of urban and regional planning

MODULE	TEACHING HOURS
MODULE –I Human settlements – Urban settlements and rural settlements, differences, origins, evolution and growth of settlements. Major functions of a city, city forming and city serving functions. Problems faced by a typical city. Relation between urban and rural settlements, characteristics and planning efforts of cities and towns of various historical periods like Egyptian, Greek, Roman, Medieval, Renaissance, Neo-classical. Industrial Revolution and its impact on cities, the contemporary city. Cities of Indus valley and Vedic period, cities of Moghul period and British period, typical IndoAryan cities, typical Dravidian temple city. (To be dealt in brief)	**9HRS**
MODULE –II Planning Theories – enunciated by Ebenezer Howard, Patrick Geddes, Soria Y Mata, Dioxides, LeCorbusier, Clarence Stein , Clarence Arthur Perry, Hilberseimer , Jane Jacobs – their relevance to Indian Conditions.	**8HRS**
MODULE –III Land use planning, land use classification for cities and rural settlements, analysis of land uses in Indian cities. Urbanisation, Industrialisation and urban growth, definitions and inter relationship. Trends in urbanization in India since Independence. Growth of metropolitan cities, their growth and management problems, world urbanization trends.	**9HRS**

MODULE –IV Components of a settlement – activity pattern and land use, traffic and road network, density of Population and population distribution. Central business district of a city, other business districts, Urban nodes, rest of the city, fringe area and suburbs. Growth and aging of various parts of the city Particularly the CBD the problems caused due to this including slums, internal spatial structure of Cities – concentric zone theory, sector theory, multiple nuclei concept and work-home concept.	**8HRS**
MODULE- V Planning Techniques – study and analysis of existing settlements, methodology of conducting diagnostic surveys and studies, land use survey, density survey, FSI survey, traffic surveys, presentation of data Regional Planning – relation among various settlements of a region, pattern of settlements in a region. Definition of a region, various types of regions, basic principles of regional planning Urban Redevelopment, Renewal, Rehabilitation and Conservation	**8HRS**

Course Outcome (CO)

CO-1-Identifying different types of settlement
CO-2 Application of various theories for efficient physical planning
CO-3 classify land use for cities and settlement
CO-4 Identifying the component of settlement and applying the theories of cities (CBZ section theories
CO-5 conduct survey as per principle techniques and principle of regional planning

References:

1) Simon Eisner, Arthur Gallion& Stanley Eisner, Urban Pattern, VNR, New York, 1993
2) Clara Greed, Introducing Town Planning, Longman, Scientific and Technical, Harlow, 1973

21ARC64 THEORY OF ARCHITECTURE – II

Lectures/Week : 031	CIE Marks : 50
Credits:03	SEE Marks: 50
Total Teaching Hours:42	Exam Hours:03

Objective:

To acquaint the students with architectural theory from antiquity to the present and

MODULE-I	HRS
Introduction to Theory in Antiquity: Marcus Vitruvius and his multi-volume work entitled De Architecture. Maya Mata: Indian Treat is on Housing &Architecture **Introduction to Theory in Renaissance:** Leon Alberti, Andrea Palladio – Jacques Francois Blondel and Claude Perrault of French Academic Tradition. **18th Century Theory**: Ideas of Laugier, Boullee,Ledoux **19thCenturyTheory:**Concepts of Viollet Le Duc,John Ruskin,Quatramerede Quincy and Gottfried Semper	6
MODULE-II	
Modern Movement Theory: Ideas of Adolf Loos, Eero Saarinen, Erich Mendelsohn, Richard Neutra,OttoWagner,KenzoTange. **Post Modern Theory-1:** Ideas on Post-Modern Classicism by Robert Venturi and CharlesJencks.Deconstruction: Fundamental beliefs and philosophy and ideas of Peter Eisenman.	6
MODULE-III	
Post Modern Theory-2: Contribution to architectural thought: Ideas of Kenneth Frampton and Christopher Alexander **PostModernTheory-3:**Contributiont Of architectural thought :Ideas of Amost Rapoport, Geoffrey Broad bent-his design generation theories.	6
MODULE-IV	
Architectural Criticism: Definition & Sources, to examine fundamental questions of what Architectural criticism actually is, its role and function in architecture and the relationship between criticism and judgment. Specifically in terms of, thinking, discussing, and writing on architecture, social or aesthetic issues. Positive and Normative theories of JonLang., **Architectural Criticism types:** Definition, Sources, Types of Criticism according to WayneAttoe	9
MODULE-V	
Design Logic: Design generation process: Role of logic and intuition in concept generation. Step by step development of design from problem definition, site analysis to post occupancy evaluation as the last stage of design.	9

Contemporary Significant Theory: Ideas of Hassan Fathy who pioneered the use of appropriate technology for building in Egypt, especially by working store-establish the use of mud brick (or adobe) and tradition as opposed to western building designs and layouts and Paolo Soleri's concept of "Arcology", architecture coherent with ecology. Shape of built environment to come. Floating, walking, plug-in, satellite settlements, earth sheltered etc.Works of Archigram, Paolo Soleri, KenzoTange, MosheSafdie etc.	

References:

- Broadbent,Geoffrey.DesigninArchitecture,JohnWiley&SonsLtd,1977
- Lang,Jon,CreatingArchitecturalTheory,VanNostrandReinholdCo,NewYork1987
- "Amomentin Architecture" and Other Books by Gautam Bhatia.

Course outcome:

CO1: Application of theory in antiquity for housing and architecture
CO2: Identify and apply renaissance theory in architecture.
CO3: Explain postmodern theory 1 & 3 and apply concept of architectural thought.
CO4: Apply fundamental architectural critism
CO5: Identify design logic and apply contemporary significant theory.

Course Outcomes with Program Outcomes and Program Specific Outcomes mapping

COURSE OUTCOMES	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PSO1**	**PSO2**	**PSO 3**
CO1	1												**3**		
CO2	2														
CO3	2														
CO4						3									
CO5	2														
AVERAGE	2.6					3							3		

CONTRIBUTION: 1: REASONABLE 2: SIGNIFICANT 3: STRONG

21ENG65 – STRUCTURES –VI

Lectures/Week : 03	CIE Marks : 50
Credits:03	SEE Marks: 50
Total Teaching Hours:42	Exam Hours:03

Objective:
Introduction to the design of steel structures (with ref to IS 800- 2007 Limit state method) and prestressed concrete

Modules	Teaching hours
MODULE-I • Advantages & disadvantages of steel structures. Different structural steel forms load and Load combination (limit state method of design) Design of simple and eccentric bolted connections bearing type & HSFG bolts.	**8 Hours**
MODULE-II 2. Welded connection: Advantage &disadvantage. Types of welds. Design of simple weld connections Design of Structure tension members	**9 Hours**
MODULE-III 3. Design of compression members: design of angle struts design of column of lacing (single & double)	**8 Hours**
MODULE-IV 4. Basic concept of pre-stressed concrete, PSC materials advantage and disadvantage pre-stressed concrete member pre-stressing system. Problems on analysis and losses in pre-stressed concrete and estimation of total losses (simple problems on estimation of losses)	**9 Hours**
MODULE-V 5. Basic concept of shell advantages and disadvantages classified of shells. Structural concept and detailing in shell structure folded plate behavior. Structural concept and detailing in folded plate	**8 Hours**

behavior of flat slab advantages and disadvantages and typical detailing in flat slab. Behavior of grid slab and structural detailing in grid slab.	

Note: the teacher is also expected to expound the structural concepts introduced in non–mathematical terms with examples and application in architectural design and Site Visits (Minimum 4nos.)

Course outcome:

- Design of bolted connection and basic concepts of structural steel.
- Design of tension members.
- Design of compression members.
- Basic Concept of prestressed concrete and the losses of prestress.
- Basic concepts of shell, folded plates, flat slab, and grid slab.

Reference:

1.“Design of Steel Structures” by Ramachandra (by Limit state method)
2.“Design of Steel Structures” BY Kazimi and Jindal (by Limit state method)
3.“Design of steel structures” By L. S. Negi
4.“Design of steel structures by Subramanian
5.“Design of steel structures by Duggal

Course Outcomes with Program Outcomes and Program Specific Outcomes mapping

COURSE OUTCOMES		**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PSO1**	**PSO2**	**PSO3**
CO 1	Design of bolted connection and basic concepts of structural steel.			3											3	
CO 2	Design of tension members			3											3	
CO 3	Design of compression membe			3											3	

	rs.															
CO 4	Basic Concept of prestressed concrete and the losses of prestress.	2													3	
CO 5	Basic concepts of shell, folded plates, flat slab, and grid slab.	2													3	
	AVERAGE	2		3											3	

CONTRIBUTION: 1: REASONABLE 2: SIGNIFICANT 3: STRONG

21ARC66 PROFESSIONAL PRACTICE –I

Lectures/Week : 03	CIE Marks : 50
Credits:03	SEE Marks: 50
Total Teaching Hours:42	Exam Hours:03

Objective:

- To understand the responsibility and liabilities of the profession.
- To understand the process of Contract management

Modules	Teaching hours
MODULE-I **Profession:** Idea of profession; differences between profession, trade and business. **Profession of architecture:**Types and extent of services offered by architects, scale of fees, stages ofpayment, and contract between client and architect. **Code of Professional Conduct:**Architects Act of 1972, role of Council of Architecture, Indian Institute ofArchitects in functioning of the Profession.	**8HRS**
MODULE-II **Practice:**Types of Architectural firms, proprietorship, partnership, associate ship and private limited firms;advantages and disadvantages of each type of firm; building clientele and projects. **Architectural competitions:** guidelines of COA, procedure of conduct of competitions. **Office Management:** Administration of Architectural firms; basic accounting procedures.	**8HRS**
MODULE-III **Tender:**Tender document and its content. Types of tenders, advantages and disadvantages of each type; suitability to various projects. Tender notices, opening, scrutiny, process of selection and award. Architect's role in tender process. Earnest Money Deposit, Security Deposit, Retention Amount, MobilizationAmount and Bonus & Penalty Clauses. Issues arising out of tendering process and the role of an architect.	**8HRS**
MODULE-IV	

Contract: General Principles, types of contracts; Contract document. Contract Management: Architect's rolein Contract Management. Conditions and Scope of Contract; role of an architect in ensuring completion ofcontract. Issues arising in Contract: i) Termination of contract, ii) Certificates of value and quality, iii) Virtualcompletion and final completion, iv) Defects liability period, v) Latent and patent defects, vi) Liquidated andun-liquidated damages, vii) Extension of time, delays and penalty, viii) Non tendered items, extras, extra work,additional works, variations, rate analysis and architect's role in certification of variations, ix) Prime cost,provisional sum.	**8HRS**
MODULE-IV **Byelaws:**Building byelaws, National Building Code, floor area ratio, floor space index, floating FAR, zoningregulations. Overview of Master Plan/CDP of relevant cities.	**8HRS**

References:

Namavathi, Roshan, Professional Practice for Architects and Engineers, Lakhani Book, New Delhi, 2001.

Krishnamurthy K G and Ravindra S V, Professional Practice, S V Ravindra, 2009,Bangalore

COURSE OUTCOME:

CO1: Differentiatebetween the Idea of Profession and business.

CO2: Understandabout the different architectural firms and about the various competition.

CO3: Explain the Tender with the role of Architect.

CO4: Analyze the various contract with the role of Architect.

CO5: Understandthe byelaws with the overview of Master plan with relevant cities.

CO PO MAPPING

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3
CO 1						1		2		1					
CO 2		2				1	2	2		1					
CO 3						1	2	2		1		3			
CO 4						1	2	2		1		3			
CO 5						1		2		1		3	1	3	
Avg.		2				1	2	2		1		3	1	3	

CONTRIBUTION: 1: REASONABLE 2: SIGNIFICANT 3: STRONG

21ARC67 BUILDING ACOUSTICS

Lectures/Week : 03	CIE Marks : 50
Credits:03	SEE Marks: 50
Total Teaching Hours:42	Exam Hours:03

Objective:

- To develop the knowledge and skills required for understanding acoustics in buildings at its integration with architectural design.
- To explore the role and capacity of sound in all its variations and to enhance the comfort of built form .

Modules	Teaching hours
MODULE-I Introduction to the study of acoustics – nature of sound, basic terminology – frequency, pitch tone, sound pressure, sound intensity, decibel scale, loudness, threshold of audibility and pain, masking, sound distance – inverse square law.	
MODULE-II Behavior of sound in enclosed spaces – reflection of sound, nature of reflection from plane, convex and concave surfaces, sound diffraction, absorption of sound, sound absorption coefficient, reverberation, reverberation time calculation, use of Sabine's and Eyring's formulae, sound absorbents, porous materials, panel or membrane absorbers and cavity or Humboldt resonators, role of functional absorbers. Absorption coefficient of indigenous acoustical materials, method of setting out of raked seating.	
MODULE-III Acoustical design requirement for halls used for speech, drama and music – general purpose halls used for both speech and music, cinema theatres, open air theatres. Study of auditoria designed and acoustically treated.	
MODULE-IV Introduction to environmental noise control, noise and its classification,	

outdoor and indoor noise, airborne noise and structure borne, impact noise, community and industrial noise. Transmission of noise and transmission loss. Maximum acceptable noise levels, .Means of noise control and sound insulations. Constructional measures of noise control and sound insulation.	
MODULE-V Use of Sound measuring instrument. Sources of industrial noise – impact, friction, reciprocation, air turbulence and other noise. Methods of reduction by enclosures and barriers, sources of outdoor noise – air traffic, rail traffic, road traffic and seashore and inland. Traffic planning and design against outdoor noise for air traffic, road traffic and rail traffic.	

Assignment

Design of a small auditorium for a capacity up to 200 persons

- Speech
- Dance & Drama plus multipurpose hall
- Film theater
- Design & draft plans, sections, and acoustical details at least any two of the above
- Noise attenuation technique inside and outside with examples and sketches
- Submission of portfolios with material finishes and samples.

Course outcome :

CO1 – Classify the properties and principles of Sound waves,
CO2 - Analyze behavior of sound in different enclosed spaces and various materials
CO3 - Identify acoustical design requirements and apply in construction.
CO4 - Analyze different noise sources , noise control and insulation.
CO5 –Analyze noise classification and barrier in different zones

Reference:

"Environmental Acoustic" by Leslie L Doelle
"Acoustical Designing in Architecture" by Knudson, Vern
"Acoustics: Noise and building" by Parich Peter,
Architectural Acoustics" by David Egan.

	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**P0 9**	**PO 10**	**PO 11**	**PO 12**	**PS O1**	**PS O2**	**PS O3**
CO 1	3													3	
CO 2		3												3	
CO			3											3	

3															
CO 4		3												3	
CO 5			3											3	
AV G	3	3	3											3	

CONTRIBUTION ; 1. REASONABLE 2; SIGNIFICANT 3; STRONG

ELECTIVE – B
21ARC681 - HOUSING

Lectures/Week : 03	CIE Marks : 50
Credits:03	SEE Marks: 50
Total Teaching Hours:42	Exam Hours:03

OBJECTIVE:
To introduce to the scenario of housing in India. To understand the development of housing sector in India Context with various factors defining its architecture.

MODULE	TEACHING HOURS
Module – I Definition of Housing & House. Problems of housing in India context, housing & its relationship with town & neighborhood, housing typology.	8 hours
Module – II Housing standards, derivation, approval of existing standards & design criteria for different Socio economic group.	**8 hours**
Module – III National housing policy, housing programme at national and local level. Role of public & private institutions (Like HUDCO, LIC, National Housing Bank, Housing Boards, Housing Infrastructure Boards etc.) in solving the housing problems. National Urban and Rural Housing and Habitat Policies.	**8 hours**
Module - IV Site planning selection of site for housing, mass housing, Housing Density and impact on Cities, slums, squatter settlements problems & possibilities, -CPTED (crime prevention through environmental design) concept in housing- Defensible Spaces, Idea of Neighborhood (by Clarence Stein and Perry), Introduction to RERA (Real Estate Regulatory Authority).	**8 hours**
Module – V Study of some of the examples of houses with cost effective, socially interactive, safe and architecturally unique Design solutions for a housing problem at local and National level.	**8 hours**

Assignment: Module wise Assignments need to be given after completion of each module and to be evaluated immediately.

COURSE OUTCOME:
- Applying various aspects of Housing and city development strategies in India.
- Implementing Housing standards in planning process.

- Implementing Housing policies at various levels.
- Implementing various aspects of housing in design process.
- Applying cost effective techniques in various aspects.

References:

- Housing & Urbanization – Charles Correa
- Housing & Economic Development in Indian county: Challenges & opportunity – By Robinleichenko
- Housing/ national portal of India.
- Urban Development & Housing in India – 1947 to 2007 – By Rishimuni Dived

Course Outcomes with Program Outcomes and Program Specific Outcomes mapping

	COURSE OUT COMES	**PO 1**	**PO 2**	**PO 3**	***PO 4***	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO12**	**PSO 1**	**PSO 2**	**PSO 3**
CO 1	Applying various aspects of Housing and city development strategies in India			3	*3*	3							2	3	3	
CO 2	Implementing Housing standards in planning process.						3	3					2		3	
CO 3	Implementing Housing policies at various levels.			3		3							2	3		
CO 4	Implementing various aspects of housing in design process.	1		3										3		
CO 5	Applying cost effective			3				3				3				3

	techniques in various aspects.															
	AVERAGE	1		3	*3*	3	3	3				3	2	3	3	3

CONTRIBUTION: 1: REASONABLE 2: SIGNIFICANT 3: STRONG

ELECTIVE – B
21ARC682 -ARCHITECTURAL CONSERVATION

Lectures/Week : 02	CIE Marks : 50
Studio/ Week:01	SEE Marks: 50
Credits:03	Exam Hours:03
Total Teaching Hours:42	

OBJECTIVE:

- To understand what is heritage and its importance in terms of Architecture, structure, materiality and its significance in the evolution of the mankind in understanding nature and adapt and make its dwelling units respecting the nature and local climatic conditions.
- The overall goal is to conserve our rich heritage specially built heritage to showcase the richness of our Architecture, culture & society during various period of time and regime and promote conservation of our heritage for our future generations to see and learn evolution in building architecture and technologies during various time periods.
- Our main objective will be to document the heritage of our city and make guidelines, policies, conservation plans for built heritage structures, Heritage precincts and region with respect to its economic viability and spread awareness in the locals and institutions through workshops which will help in sustainable development of the societies.

MODULE	TEACHING HOURS
MODULE –I • Definition of heritage, what is an historic building? • Introduction to architectural conservation of buildings of importance – definition, nature, purpose and scope. • Values in conservation; Ethics of conservation building conservation legislation etc.	**05HRS**
MODULE –II • Causes of defects and decay of a heritage structure. • Natural agents of deterioration and loss.	**05HRS**
MODULE –III • Preparatory procedures for conservation. Initial inspection, Continuing Documentation, Analysis of the documentation. • Role or need of documentation for the conservation & restoration of the	**15HRS**

any Heritage built form, Heritage precincts or any sort of tangible and Intangible heritage. • Listing of the Region or Precincts for generating a data base of the heritage properties. • Development of regional level maps for various types of heritages. (Heritage site maps, Heritage land-use maps). • Buildings and Precincts typology study according to is usage, Architectural style, religion (study of demography and its comparison past and present) study. • Building material, Construction techniques of Heritage structures in various typologies of buildings with respect to time.	
MODULE –IV Introduction to various charters, their significance and their role in guiding our conservation policies and guidelines or regional level and structural level (special reference to Barra and Venice charter).	**05HRS**
MODULE –V Literature case study of Red Fort (available on ASI web site) and site visit of ASI protected heritage buildings (in local city/town) and along with condition assessment techniques and methods.	**10HRS**

Note:
A consolidated portfolio containing exercises related to each of above topics are to be submitted for term work examination.

Outline:
At the end of the semester, the students will understand about conservation and preservation technique.

Reference:
- An introduction to conservation by Feildon B. M.
- Conservation of Building by I. H. Harvey.
- A critical bibliography of Building Conservation by Smith I. H.

COURSE OUTCOME

CO1: Understand the basics of heritage and conservation.
CO2: Study about the deterioration of historical buildings.
CO3: Understand the process of preservation and conservation.
CO4: Understanding various policies in preserving/conserving the historical monuments.
CO5: Understand the ASI policies.

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3
CO 1				2											
CO 2				2		1									
CO 3				2			1								
CO 4				2		1	2		1						
CO 5				1		1									1
AV G				2		1	1		1						1

CONTRIBUTION; 1. REASONABLE 2; SIGNIFICANT 3; STRONG

21ARC71 – ARCHITECTURAL DESIGN – VII

LE CTURE /STUDIO / WEEK: 6(1L / 5S)	CONTINUOUS INTERNAL ASSESSMENT MARKS: 50
TOTAL CREDITS – 6	SEE MARKS: 50
TOTAL TEACHING HOURS - 110	SEE VIVA

Objectives:

- To gain knowledge about reading and documenting urban contexts and to understand the idea of urban space. To understand the difference between urban designs as opposed to urban development.
- To understand the role of architecture in shaping urban fabric.
- To develop architectural design which fits into a specific urban context.
- To understand the needs of privacy, community spaces, efficiency of open spaces and idea of extended living areas
- To understand the structural feasibility of buildings for various forms
- To differentiate and understand the nature of organic and planned communities.

Outline	TEACHING HOURS
1. Studio projects shall be based on considering the principals involved in community architecture 2. Studio projects shall be based on sustainable architecture and energy efficient buildings, reuse recycled and recharging resources such as water, solar bio-resources, The role of urban space as a public realm needs to create such spaces as extension of private domain. The public building shall be investigated and shall become one of the architectural goals of the project. Some of the prerequisites of the project shall be; 1. Multiple functions. 2. Public access to majority of the space, 3. Large-gathering areas, which are open and extendable to the immediate urban context 4. Analyzing structural feasibility of the project to adopt various structural systems for spanning.	

Studio Project

High-rise building Projects like transport interchanges, large retail areas with entertainment areas, transport terminals with commercial areas, performing art center with museums and such multiple functions shall be taken. Study part of the studio shall be documented and shall review as part of the viva.

Eg of projects: Large group housing with other amenities, large retail areas with entertainment areas, Bus Terminal, Sports terminals, Community areas etc.

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

Submission :

One major project and one mini project as time problem to be tackled in the semester. Detailing of architectural features of the major project has to be attempted

- Study of sustainable as a concept adopted in design
- Study of structural system adopted, influence of Climatic, Environmental and ecological factors, harvesting solar energy.
- Case study, data collection, literature survey
- Design proposal including block model
- Detailing of architectural features involved shall be attempted.

COURSE OUTCOME:

CO1: formulate multifunctional building with sustainability concepts in urban context
CO2: demonstrate knowledge of building services, climatic design, Environmental and ecological factors in built form
CO3: Analyze structural feasibility of the project to adopt various structural systems for large scale spannings.
CO4: utilization of energy efficient techniques, reuse recycled and recharging resources such as water, solar bio-resources
CO5: examine building orientation, public access, Large-gathering areas, which are open and extendable to the immediate urban context

CO PO Mapping:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3
CO1		3													3
CO2			3										3		
CO3		3												3	
CO4					3										3
CO5				3											3
Average		3	3	3	3								3	3	3

CONTRIBUTION: 1.REASONABLE 2.SIGNIFICANT 3.STRONG

21ARC72 BUILDING CONSTRUCTION-VII

LECTURES/WEEK –1L /3S	CEE MARKS-50
TOTAL CREDITS -4	SEE MARKS-50
TOTAL TEACHING HOURS - 65	SEE DURATION – VIVA

Objectives:

Building techniques with emphasis on applied constructional details and prefabricated construction , long spans and earth quake resistant techniques,

MODULE	TEACHING HOURS
MODULE-I • Pre stressed and Post Tension Technology. • Various Building components developed by CBRI. • Various structural systems. Suitable for long span structures.	
MODULE-II Multi Basement construction with structural, lighting, ventilation, rain water disposal details. Various structural systems suitable for High Rise Structures. Wind pressure, shear wall and various other issues.	
MODULE-III Earth quake resistance detailing. Curtain wall construction.	
MODULE-IV Pre Engineered Building system. Factory Building using precast and prefabricated concrete elements.	
MODULE-V New trends in industrial buildings, spanning, roofing, lighting, ventilation etc. Architectural detailing of any one structure, such as a. Stadium. b .Tensile structure c. Multiplex, d. Cinema Theatre/Cultural center, e. Civic Center. f. Green roof construction.	

Course outcome :

CO1 – Understand the large span , pre stressed / post tensioned structure along with components developed by CBRI

CO2 – Recognize multilevel basement construction and various structural system for high rise structures and its components,

CO3 – Identify different earth quake resistance components and its application along with curtain walls

CO4 – Identify different pre engineered structural elements in construction as per the design requirement

CO5 – Distinguish different advanced roofing , lighting and ventilation systems in different building types and its application in construction

Reference books:

- Elements of Structures by MORGAN
- Structures in Architecture by SALVADORI
- Building Construction by MACKAY WB. Vol. 1 to 4
- Construction of Building by BARRY Vol. 1 to 5
- Construction Technology by CHUDLEY R. Vol. 1 to 6
- Building Construction illustrated by CHING FRANCIS D. K.
- Elementary Building Construction by MITCHELL
- Structure and Fabric by EVERET

CO PO MAPPING

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	P0 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO 1			3											3	
CO 2		3												3	
CO 3		3												3	
CO 4		3												3	
CO 5		3												3	
AV G		3	3											3	

CONTRIBUTION ; 1. REASONABLE 2; SIGNIFICANT 3; STRONG

21ARC73 – PHYSICAL PLANNING – II

LECTURE / WEEK:1 (1LECTURE + 2STUDIO)	CONTINUOUS INTERNAL EVALUATION: 50
TOTAL CREDITS: 3	SEE MARKS: 50
TOTAL TEACHING HOURS - 40	SEE VIVA

MODULE	TEACHING HOURS
MODULE-I Urbanization industrialization & urban growth. Definitions & inter relationship trends in Urbanization in India since independence. Growth of metropolitan cities, their growth of management problems. world Urbanization trends. Human settlements: Urban settlements and rural settlements, differences. origins, evolution and growth of settlements, characteristics, Relation between urban and rural settlements.planning efforts or cities and towns or various historicalperiods like Egyptian, Greek, roman, Medieval, Renaissance. Neo-classical. cities or Indus valley and Vedic period. cities of Moghul period and British period. typical lndoAryan cities. typical Dravidian temple city. (To be dealt inbrief)	9HRS
MODULE-II Planning Theories - Theories by Ebenezer Howard. Patrick Geddes, Soria Y Mata, Dioxides, Le Corbusier, Clarence Stein, Clarence Arthur Perry. Hilberseimerpresent in India & Abroad their relevance to Indian conditions.	8HRS
MODULE-III Components of a settlement - Activity pattern and land use, traffic and road network, density of population and population distribution. Central business district of a city, other business districts, urban nodes, rest of the city, fringe area and suburbs. Growth and aging of various parts of the city. Particularly the CBD the problems caused due to this including slums,	8HRS

internal spatial structure of cities – concentric zone theory, sector theory, multiple nuclei concept and work – home concept.	
MODULE - IV Planning Tools& Techniques - Study and analysis of existing settlements, methodology of conducting diagnostic surveys and studies, land use survey, density survey FSI survey, traffic surveys. presentation of data. Introduction to GIS (local for Geographical information) Analytical Methods: • Classification of Regions, delineation of various regions. • Threshold Analysis,input output analysis.SWOTanalysis. • Methods of population forecasts &projections. • Lorenz Curie, Ginny Ratio, theils Index. Ratios - Urban- rural, Urban Concentration & Metropolitan Concentration.	9HRS
MODULE - V Planning Standards: Spatial standards, performance standards & bench Marks URDPFI guidelines, zoning regulation & development controls. Regional planning: Relation among various settlements & pattern. Definition or a region, various types of regions. Basic principles of regional planning.	8HRS

Course Outcome (CO)

CO-1-Identifying urbanization, industrialization, urban growth and human settlement

CO-2 Apply the various theories of planning

CO-3 Identifying the components of settlement & development to collect the information of central business district of city , other business districts ,urban node & growth of various parts of city

CO-4collect spatial and non special data and apply for planning

CO-5 apply bylaw for planning and land development

References:

1) Simon Eisner, Arthur Gallion& Stanley Eisner, Urban Pattern, VNR, New York, 1993

2) Clara Greed, Introducing Town Planning, Longman, Scientific and Technical, Harlow, 197

CO4	Explain and apply different surface treatments.					3										
CO5	Explain and apply different materials in interior.					3										
	AVERAGE	2		6		6								2		

CONTRIBUTION: 1: REASONABLE 2: SIGNIFICANT 3: STRONG

21ARC74- URBAN DESIGN

CONTACT PERIODS / WEEK: 3 LECTURE	CONTINUOUS ASSESSMENT MARKS: 50
TOTAL CREDITS: 3	THEORY MARKS: 50
TOTAL TEACHING HOURS -40	SEE DURATION – 3 H

OBJECTIVES:

- To understand the scope and nature of urban design as a discipline
- To introduce the component of a city and their interdependent
- To learn to interpret the city in different ways and layers
- To create awareness of contemporary urban issues as well as learn about possible Ways to address them

MODULE	TEACHING HOURS
MODULE - I INTRODUCTION TO URBAN DESIGN Components of urban space and their interdependencies – Outline of issues/aspects of urban space and articulation of need for urban design – Scope and objectives of urban design as a discipline	8 hours
MODULE - II ISSUES OF URBAN SPACE Understanding and interpreting of urban problems/issues- place making and identity, morphology; sprawl, generic form, incoherence, privatized public realm – effects/ role of real estate, transportation, zoning, globalization – ideas of sustainability, heritage, conservation and renewal contemporary approaches : idea of urban catalyst, transit metropolis, community participation - studio exercise involving the above	8 hours
MODULE - III BEST PRACTICE IN URBAN DESIGN Contemporary case studies from developing and developed economies that offer design guidelines and solutions to address various issues/aspects of urban space – case studies URBAN DESIGN FRAMEWORK • Formulating the vision of the place • Formulation of Objectives • Development strategy	8 hours

• Policy and development framework • Bench mark study and presentation by each group	
MODULE - IV Working as a studio group, you will transform community issues and objectives into a unified vision for the neighborhood with a series of strategies and an urban design framework. The urban design framework will establish a future vision of the corridors, districts and neighborhoods of the community. The framework will establish significant places for public investment as well as important civic design features of private development URBAN DESIGN PROJECT	8 hours
MODULE - V This unit will involve reading task on the new urbanism followed by class room discussions Once the overall vision for the place has been formulated and development objective are chalked out the group disperses. Each individual design will zoon in to their respective area of intervention for: • Project identification • Formulation of design program • Urban Design Project framework • Formulation of area • Design Development • Draft Proposal • Final Project	8 hours

COURSE OUTCOMES

- Applying various urban design terminologies.
- Identifying the various issues of Urban space
- Formulating various urban design frameworks.
- Analysing various urban design aspects of built environment in given area of study.
- Implementing the learning in a systematic way while working on an urban level project.

Reference Books:-

- Alexander Christopher : Urban Pattern
- Alexander Christopher : New theory of Urban Design
- Alexander Christopher : City is not a Tree

- Lynch Kevin : City Sense
- Lynch Kevin : Image of City
- DETR and CABE (2000) By Design : Urban Design in the planning System : Towards Better Practice
- DETR (2000) Planning policy Guidance Note 3 : Housing
- Krieger, A (Ed) (1991) Towns and Town Making Principles, New York, Rizzoli
- Tibbalds, F (1992) Making people Friendly Towns, Longman
- Urban Villages Group (1992 and 1998) Urban Villages
- English Partnerships/ Urban villages Forum (1998) Making Places
- Housing Corporation (1998) Scheme Development Standards
- Housing Corporation/DETR (1999) Housing Quality Indicators

Course Outcomes with Program Outcomes and Program Specific Outcomes mapping

COURSE OUT COMES		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO1 2	PSO 1	PSO 2	PSO 3
CO 1	Apply the built environment's role at planning and designing work.			3	3	3							2		3	
CO 2	Implement building services and waste management at large projects.						3	3					2	3		
CO 3	Prepare drawings considerin g external and internal factors			3		3							2	3		
CO 4	Design the project by implementing the constraints and Create Architecture as an envelope to system dependent	1		3											3	

	program.															
CO 5	Apply environmental and ecological and influence of climate at built environment.			3				3								3
	AVERAGE	1		3	3	3	3	3					2	3	3	3

CONTRIBUTION: 1: REASONABLE 2: SIGNIFICANT 3: STRONG

21ENG75 - STRUCTURE – VII

LECTURES/WEEK – 03 LECTURES	CEE MARKS-50
TOTAL CREDITS – 3	SEE MARKS-50
TOTAL TEACHING HOURS -40	SEE DURATION – 3 H

Objective:
Introduction to special and advanced structural systems and structural forms. Detailing of RCC & steel structural members.

MODULES	Teaching hours
MODULE-I 1. Structural detailing of various foundations 2. Typical structural detailing's in RCC staircases (doglegged stairs, spiral stairs, cantilever)	8 Hours
MODULE-II 3. Typical structural detailing's RCC beam to beam connections and beam to column connections. Structural detailing of one way & two slabs (simple supported)	9 Hours
MODULE-III	

4. Typical structural detailing's of steel- beam to beam and beam to column connections. (Framed, Seated connections) 5. Basic structural concepts of space frame, tensile structures pneumatic structures advanced structural systems high rise buildings.	8 Hours
MODULE-IV 6. Typical structural detailing drawing of Domes, shells, and folded plates 7. structural detailing of RCC flat slab and grid slab	9 Hours
MODULE-V 8. Introduction to lateral load, resisting system, structural system of buildings designed to withstand lateral loads caused by wind and seismic activity as per respective IS codes Seismic load IS 1893 Wind load IS 875 (part 3)	8 Hours

Course outcome:

- Draw the typical structural detailing of RCC staircases.
- Draw the typical structural detailing of RCC beam and slab.
- Draw the typical structural detailing of steel beam to beam and beam to column connection.
- Draw the typical structural detailing of Domes, shells, folded plates, flat slab, and grid slab.
- Identify the basic concepts of lateral loads.

Reference:

- A. K. Jain "Limit State method of Design" Nemchand& Bro's, Roorkee
- N Krishnaraju "Design of Reinforced Concrete structures" CBS Publishers
- Shah &Karve "Limit state theory & design of Reinforced structures" structures publication Pune. 4. Park &Paulay "Reinforced Concrete" John wiley& son's
- P. Purushothaman "Reinforced Concrete structural elements" Tata Mcgraw- Hill Publishers, New Dehli. 6. BIS code – IS 456-2000

Course Outcomes with Program Outcomes and Program Specific Outcomes mapping

COURSE OUTCOMES		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Draw the typical structur					3									3	

	al detailing of RCC staircases.															
CO2	Draw the typical structural detailing of RCC beam and slab.					3									3	
CO3	Draw the typical structural detailing of steel beam to beam and beam to column connection.					3									3	
CO4	Draw the typical structural detailing of Domes, shells, folded plates, flat					3									3	

	slab, and grid slab.															
CO5	Identify the basic concepts of lateral loads.	2													3	
	AVERAGE	2				3									3	

CONTRIBUTION: 1: REASONABLE 2: SIGNIFICANT 3: STRONG

21ARC76 PROFESSIONAL PRACTICE II

LECTURES/WEEK –3 LECTURES/WEEK	CEE MARKS-50
NO OF CREDITS – 3	SEE MARKS-50
TOTAL NO OF LECTURE HOURS – 40	SEE DURATION – 3 H

OBJECTIVES:

- To understand the professional responsibilities within the ambit and laws of land, building codes, contract documents and ethics
- To gain insight into valuation, arbitration and building by laws.

MODULE	TEACHING HOURS
MODULE – I Supervision & Contract Administration: Site visits, site meeting. Co-Ordination with Various agencies, site book, site instructions, clerk of works and site office. Bill checking, Quality auditing, handover procedure and final certification. Disputes in contract and architect's role in resolving such disputes. Case studies from practice highlighting disputes in contract and methods adopted to solve such disputes.	8 HOURS
MODULE – II	

Valuation and Dilapidation: Definitions and architect's role in preparation of valuation and dilapidation reports and certification. Physical and Economic life of building introduction to valuation, essential characteristics, classification and purpose of classification. Method of valuation standard rent and cost of construction.	8 HOURS
MODULE – III Arbitration: Arbitration and conciliation act 1996, arbitrator, umpire, order of reference, selection of arbitrators, power and duties of arbitrators, arbitration award and implementation of award.	8 HOURS
MODULE – IV Byelaws and Easements: Building byelaws, National Building Code, floor area ration, floor space index, floating FAR, Zoning regulations, Easements, various casement rights, architect's role in protecting easements rights.	8 HOURS
MODULE – V Laws related to Property and Land: Land tenure, types of land holdings, land registration, easement rights, covenants, trespass and nuisance etc.	8 HOURS

REFERENCES:

1) "Professional Practice for Architects & Engineers" by RoshanNamavathi.
2) "Legal and Contractual Procedure for Architects" by Bob Greenstreet.
3) AJ Legal Handbook.
4) "Professional Practice" by KG Krishnamurthy and SV Ravindra.

COURSE OUTCOME:

After completion of the course, a student will be able to:

CO1: Prepare the building contract documents and site report. Solve the disputes related to Architectural issues.
CO2: Prepare valuation and dilapidation reports.
CO3: Participate in arbitration process and prepare the awards.
CO4: Preparation of drawing as per local Building byelaws.
CO5: Application of legal provisions for easement rights.

MAPPING OF COURSE OUT COMES, PROGRAMME OUTCOMES and PROGRAMME SPECIFIC OUTCOMES.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO						3	2	3		3	2	2		3	

1															
CO 2	3							2		3				3	
CO 3								3		3				3	
CO 4						3	2					2		3	
CO 5						3	2					2		3	
AV G	3					3	2	2.6		3	2	2		3	

CONTRIBUTION: 1: REASONABLE 2: SIGNIFICANT 3: STRONG

21ENG77 ESTIMATION & COSTING

LECTURE / WEEK: 02 (02LECTURES+ 01 STUDIOS)	CIE-CONTINUOUS INTERNAL EVALUATION: 50
TOTAL CREDITS: 3	SEE-THEORY MARKS: 50
TOTAL TEACHING HOURS - 42	SEE DURATION-3H

Objective:

To develop the necessary skills for estimation and writing specifications for various types of buildings anddevelopmental work

MODULE	TEACHING HOURS
MODULE-I Introduction:- importance of Estimation, types of Estimates modes ofmeasurements Principle of rate analysis. Factors affecting rate analysis preparation of rateAnalysis of building items.	8HRS

MODULE-II Specification: importance of specification detailed specifications of building items. Study of local schedule of rates, PWD system, measurement book, muster roll, running account bill, interim and final certificate.	8HRS
MODULE-III Preparation of detailed estimate and abstract of single story building load bearingstructure (long wall & short wall method and center line method)	9HRS
MODULE-IV Estimation of RCC works (beam, slab & column with footing). Detailed estimateand abstract of single story RCC framed building Detailed estimate and abstract of sloped roofs with roof materials such asMangalore tiles, AC sheet, GI sheet, PVC sheet supported by steel or wood.	9HRS

Course Outcome (CO)

CO-1 prepares rate analysis for various building components and understands types of estimate and measurement CO-2 writes detailed specification of building components and understand schedule of rate and measurement

CO-3 pre pare detailed and abstract estimation of single story building. CO-4 pre pare detailed and abstract estimation of RCC and sloped roof

CO-5 pre pare detailed and abstract estimation of water tank and septic tank.

21ARC781 - INTERIOR DESIGN.

LECTURE/WEEK: 1L /1 S	CIE-CONTINUOUS INTERNAL EVALUATION: 50
TOTAL CREDITS: 2	SEE-THEORY EXAM MARKS (3 HOURS): 50
TOTAL TEACHING HOURSB – 40	SEE VIVA

Objective:
To introduce the students to the discipline of Interior Design and to develop basic skills required for handling simple interior design projects.

MODULE-I	HRS
Designing the size and form of interior spaces using user – activity analysis and	8

anthropometrics, effect of enclosure, fenestration, color and lighting on perception of interior space, application of scale, proportion to enhance the quality of interior space, psychological effects of space.	
MODULE-II	
Elements of interior space – design for comfort – climatic comfort, natural and artificial lighting, air conditioning and acoustics.	6
MODULE-III	
Furniture design – Role of furniture, ergonomic factors of furniture design and materials used. Matching furniture to decorative style, fitted furniture, its characteristics and application. Functional classification of space, barrier free design.	7
MODULE-IV	
Surface treatment– decorative material for ceiling, walls, floors drapery upholstery for openings and furniture respectively and matching them with overall color scheme and composition, source and collection of information, elements of indoor plants and interior landscape and use of water.	6
MODULE-V	
Study of different materials used in interior design like steel, glass, pop, aluminum, timber, fabrics, plastic, composite materials, through market survey. Detailed Estimation & specification of Interiors.	8

Assignment:

The class work shall include two interior design projects (one major and one minor) to be handled with complete design, detailed furniture layout, specification for the materials, and their application. The projects shall relate to residential, commercial educational or interiors of other public spaces of smaller scale

- Collection of samples,
- Study & submission of portfolios relating to individual aspect like furniture, accessories, water, special lighting schemes and upholstery.

Note – use of hand skills may be encouraged rather than computer.

Site visits and study tour is compulsory

Reference:

- "Human Dimension and Interior Space" by PaneroJulious & Zelink Martin
- "Design of Interior Environment" by Alexander and Mercourt.
-
    - Course outcome:
    - CO1: Application of interior context and space designing
    - CO2: Explain and apply Interior elements.

- CO3: Identify and apply the designing of furnitures.
- CO4: Explain and apply different surface treatments.
- CO5: Explain and apply different materials in interior.
-
  - Course Outcomes with Program Outcomes and Program Specific Outcomes mapping

COURSE OUT COMES		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	Application of interior context and space designing	2													2	
CO2	Explain and apply Interior elements.			3												
CO3	Identify and apply the designing of furnitures.			3												

ELECTIVE-C
21ARC782 EARTHQUAKE RESISTANT ARCHITECTURE

CONTACT PERIODS / WEEK: 3 LECTURE	CONTINUOUS ASSESSMENT MARKS: 50
TOTAL CREDITS: 3	THEORY MARKS: 50
TOTAL TEACHING HOURS -40	SEE DURATION – 3 H

Objective:
To provide awareness and introduction to earthquake prevention measures in building.

MODULE	TEACHING HOURS
MODULE - I Building safety from natural Hazards: an introduction Elementary seismology Earthquake occurrence in the world, plate tectonics, faults, earthquake hazard maps of India and the states. Causes of earthquake, seismic waves, magnitude, intensity, epicenter and energy release, characteristics of strong earthquake ground motions Seismological instruments: Seismograph, Accelerograph, Seismoscope/multi SAR Flexibility of long and short period structures	8 hours
MODULE - II Site planning, Building forms and Architectural Design Concepts for Earthquake resistance Historical experience , Site selection, Site development, Building forms – Horizontal and vertical eccentricities, mass and stiffness distribution, soft storey etc., Seismic effects related to building configuration Plan and vertical irregularities, redundancy and setbacks Special aspects – Torsion, appendages, staircase, adjacency, pounding, Contemporary international approaches,	8 hours
MODULE - III Performance of Ground and Building in past earthquakes Earthquake effects – On ground, soil rupture, liquefaction, landslides Behaviors of various types of buildings, structures. Seismic Design Principles Concepts of seismic design, stiffness, strength, period, ductility, damping hysteric energy dissipation, center of mass, center of rigidity, torsion and	8 hours

design eccentricities. Seismic base isolation and seismic active control Structural detailing, Innovations and selection of appropriate materials	
MODULE - IV References to code provisions for the buildings, IS 1893 – 2002, IS 4326 – 1993 Seismic detailing provisions: Masonry and Wood building (IS 4326, IS 13828) Seismic Designs and detailing of RCC and steel buildings: IS 1893 – 2002, IS13920 – 1993, IS 456 – 2000 IS 800 – 2004 Brief about Special reinforcing and connection details in structural drawings.	8 hours
MODULE - V Earthquake Resistant Construction Details. Various types of construction details of Foundations, soil stabilization, retaining walls, plinth fill, flooring, walls opening, roofs terraces, parapets and boundary walls, underground and overhead tanks, staircases and isolation of structures. Local practices: traditional regional responses. Seismic vulnerability evaluation of existing buildings. Weakness in existing buildings, aging weathering, development of cracks. Concepts in repair, restoration and seismic strengthening, materials and methodologies for seismic retrofitting. Retro fitting for earth quake resistant building	8 hours

Assignment:
Seminars on one case study and proposal need to be conducted examples.

COURSE OUTCOME –

- Applying various aspects of earthquake resistance design.
- Implementing Site planning, Building forms and Architectural Design Concepts for Earthquake resistance
- Applying concepts and principles of seismic design
- Applying Seismic detailing provisions
- Designing and implementing various construction methods and strategies

REFERENCES:

1. Martin Bechthold, Daniel L Schodek , "Sructures", PHI Learning Private limited.
2. Pankaj Agrawal and Manesh Shrikande , "Earthquake resistant design of structures", PHI learning Pvt. Ltd.
3. Dr Vinod Hosur , "Earthquake resistant design of building structures", Wiley Precise.

4. "Learning earthquake design and construction- earthquake tips", IIT Kanpur- NICEE
5. IS: 4326- Seismic detailing of Masonry buildings.
6. IS: 1893-2002, IS: 13920-1993 , IS: 456-2000, IS: 800-2007 – Seismic design and detailing of RC and steel structures

Course Outcomes with Program Outcomes and Program Specific Outcomes mapping

	COURSE OUT COMES	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO12	PSO 1	PSO 2	PSO 3
CO 1	Applying various aspects of earthquake resistance design.	3													3	
CO 2	Implementing Site planning, Building forms and Architectural Design Concepts for Earthquake resistance			3			3	3					2	3		
CO 3	Applying concepts and principles of seismic design		3	3									2	3		
CO 4	Applying Seismic detailing provisions	3		3					2						3	
CO 5	Designing and implementing various			3	3	2		3								3

	construction methods and strategies															
	AVERAGE	3	3	3	3	2	3	3	2				2	3	3	3

CONTRIBUTION: 1: REASONABLE 2: SIGNIFICANT 3: STRONG

21ARC81 ARCHITECTURAL DESIGN-VIII

LECTURES/STUDIO /WEEK –1L/4S	CEE MARKS-50
TOTAL CREDITS -6	SEE MARKS-50
TOTAL TEACHING HOURS - 110	SEE VIVA

INTRODUCTION:

In an increasingly urbanized world, architecture plays a vital role in shaping and influencing complex urban environment (the design of cities) and creating meaningful places that enrich the lives of people. It is important to understand the many scales at which architecture can engage with the urban context, from building on the unique local character/form to enhance public spaces to urban development projects (infrastructure/transport interchanges/terminals) that impact larger geographic region beyond the city. The Studio intent is to introduce the discipline urban design (interdisciplinary premise, scope, techniques and best practices) and understand architecture as a part of implementing urban design projects, from gathering insights into urban fabric to understanding how communities use spaces.

OBJECTIVES:

- To introduce the student to the field of urban design and various aspects of the design process
- Introduce the students to the fundamental techniques of urban design schemes.
- Identify and analyze urban design issues and problems.
- Create an understanding of various factors such as physical, social, economic and infrastructural components and decision making processes.

PROJECT

- The probable architectural design projects include urban infill, revitalization and renewal of urban fragments.
- Adaptive reuse, urban waterfront development, transportation nodes/interchanges, multi-use urban complexes including museums, performing arts centers.
- The project will choose a particular neighborhood in a chosen city in order to comprehend the process of documenting the neighborhood.
- With its actual character and developing scenarios that will clearly illustrate the need for improvement.
- To illustrate contemporary multi-disciplinary theories of form, space of urban design.

OUTLINE:

The studio will be divided into two components. Analysis and brief study of an urban context (mapping techniques), documenting the issues affecting the area. To develop design strategies that enhances spaces for communities. The focus will be on understanding the Concepts of “Fabric, Texture and Weave”. Evolving design intervention addressing the issue identified with the help of goals and objectives.

COURSE OUTCOME:

- Analyzing various urban design projects and concepts.
- Analyzing and documenting the issues.
- Prepare various design strategies.
- Formulating vision.
- Application of vision and strategy to individual's intervention.
-

REFERENCES:

(a) Donald Watson, "Time Savers Standard for Urban Design", 2005, McGraw Hill.
(b) Jon Lang, "Urban Design: A Typology of Procedures and Product", 2005, Routledge.
(c) Edmund Bacon, "Design of Cities", 1976, Penguin Books.
(d) Gosling and Maitland, "Urban Design", 1984, St. Martin's Press.
(e) Kevin Lynch , "Site Planning", 1967, MIT Press, Cambridge.

Course Outcomes with Program Outcomes and Program Specific Outcomes mapping

	COURSE OUT COMES	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO12	PSO 1	PSO 2	PSO 3
CO 1	Analyzing various urban design projects and concepts.	2	3											3		
CO 2	Analyzing and documenting the issues.				3	3	3	3							3	
CO 3	Prepare various design strategies.			3			3								3	
CO 4	Formulating vision											3	3		3	
CO 5	Application of vision and strategy to individual's intervention.									3	3		3			3
	AVERAGE	2	3	3	3	3	3	3		3	3	3	3	3	3	3

CONTRIBUTION: 1: REASONABLE 2: SIGNIFICANT 3: STRONG

21ARC82 ADVANCED BUILDING CONSTRUCTION AND MATERIAL

LECTURES/WEEK –1 lecture/ 4 S	CEE MARKS-50
TOTAL CREDITS -5	SEE MARKS-50 (Viva Exam)
TOTAL NUMBER OF LECTURE HOURS:65	SEE DURATION – 4 hrs

OBJECTIVE:

- To study contemporary building construction systems, as an integrative discipline, connecting across various technology areas impacting the construction industry.
- The focus to be on methods, materials and technology prevailing in the industry, with case study examples.

MODULES	TEACHING HOURS
MODULE –I • New directions in Construction Industry: Impact of Automation, Information, Prefabrication, Modular Construction, New Materials, Equipment and Environmental concerns on Building Construction. • Special Constructions: Under water constructions, underground constructions, kinetic constructions High Rise Buildings: • Form work in High-rise buildings: Issues and Constraints. Materials used; some examples like Maivan, Doka. PERI • Enclosure Systems: Types, properties and materials • Special and Light Weight materials, eg. Concretes, plastics	10HRS
MODULE –II • Influence of Informatics in construction Industry: Big Data, Cloud Collaboration, Information Management, Modeling, Simulation, 3D Printing • Construction Equipment: New advances in Construction Equipment	15HRS
MODULE –III • Life Cycle concept of buildings and materials. • Repairs: Types of damage to buildings; Types of Repairs used Retrofit: Reuse of buildings, Renovations	15HRS
MODULE –IV Green Building Concepts, Construction, Materials Zero Energy Building Concepts	10HRS
MODULE –V • Smart Materials: Properties of Smart Materials, Applications in Building Industry	15HRS

• Nano Materials: Introduction to Nano technology in building materials, Applications in Building Industry a) 3D projection I – Introduction to Isometric projections and their views of solids, simple Architectural built elements and forms. b) 3D projection II – Introduction to Axonometric projections and their views of solids, simple 3. Architectural built elements and forms.	

Note: A consolidated portfolio containing exercises related to each of above topics are to be submitted for term work examination.

Outline:
At the end of the semester, the students will be equipped with advanced building construction and material which shall be useful in technically appropriate drawing presentations.

Reference:

- Andrew Watts, "Modern Construction Handbook", 4th Edition
- Andrew Watts, "Modern Construction Case Studies: Emerging Innovation in Building Techniques", Birkhauser Basel.

COURSE OUTCOME

CO1: Understand the new directions in construction industry and techniques performed in high rise buildings.
CO2: understand the influence of informatics and construction equipment's in construction industry
CO3: Understand the life cycle concepts of buildings and materials and analyze the repairs and retrofits.
CO4: Analyze the green building concepts.
CO5: Understand the smart materials, Nano materials.

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PS O1	PS O2	PS O3
CO 1	2		2		1					1					
CO 2		1													
CO 3				2								2			
CO 4	1			1			2		1						

CO 5				2											
AV G	1	1	2	2	1		2		1	1		2			

CONTRIBUTION; 1. REASONABLE 2; SIGNIFICANT 3; STRONG

21ARC83 PRE - ARCHITECTURAL DESIGN PROJECT

LECTURES/WEEK –1LECTURE/ 2 S	CIE MARKS-50
TOTAL CREDITS -3	SEE MARKS- 50
TOTAL NUMBER OF LECTURE HOURS:40	SEE VIVA VOCE

Introduction/Overview:

The Thesis Seminar course is designed to discover, frame and develop a Proposal for VIII Architectural Design Project. The objective of the Thesis Seminar is to expand the scope and focus of the student by introducing diverse topics in architecture (allied disciplines) and to nurture design/research projects that can make creative and technically competent contributions to the field of architecture. The intent of the Thesis Seminar is to encourage new ideas/research avenues/design experimentation in architecture (allied disciplines); to provide a larger framework (structure) within which systematic research on a chosen Topic can be undertaken; to develop a proposition, narrative and methodology for the chosen topic which can be tested through design in VIII Semester.

The Thesis Proposals can be developed from important issues on architecture (inter-disciplinary), hypothetical scenarios connected with architecture (theoretical premise) or live/ current projects proposed by government or other organizations.

Objective:

In depth study of building type & area of interest selected for Architectural Design Thesis in 8th semester as a database.

- To outline the larger focus and relevance of the Thesis topic (design/research), its architectural implications and projected design results.
- Alternatively, to conceptually formulate an architectural proposition, explore and articulate ideas through research and critically evaluate the feasibility of the Thesis Proposal. This includes determining the Project, context where it shall be explored and its significance to architecture.
- To encourage students to pose relevant questions on the discipline (theoretical/design); to undertake self-directed study with inquisitiveness, rigor and demonstrate a depth of inquiry in exploring the chosen topics.
- To focus on innovation, experimentation (theoretical premise/ tectonics/modes of representation/other) as some of the learning outcomes and draw inspiration/build on the various Electives/Design Studios proposed/taken through the undergraduate Program

Outline: The work involves identification & research of an area of interest & specific	

building type with certain issue become the basis of design (Ex: Thermal comfort, Low cost, Sustainable, Construction technology, Cultural context etc), which in turn becomes a basis for Architectural Design project dealt in next semester.
 	
• Pre-Project: –The stage should ideally be accomplished in this semester. The work involves students to discuss with the faculty to identify an area of interest & specific types of buildings. The pre project stage should end with a conclusion drawn from literature and desktop case studies. Formation of clear design guidelines and "project program".
 	
• Project seminar - Student shall present a seminar on the project topic, which would include the following;
  • Precedents of similar projects, either actual visit to such projects or through literature reviews.
  • Cultural, contextual, historical models of architectural approach to such project,
  • Prevalent or historical models and
  • Rhetorical (symbolic) or a speculative (tentative) statement that would be the basis of further investigation. (For example: Architecture in the information age: Design of libraries, in the new virtual reality regime).
  • Documentation which is a part of this presentation shall be taken as completion of "Desktop case study" and design guidelines as a part of the final requirement
  • Site selection place and finalization of program for Architectural Design thesis	

Submission The study shall be submitted in the form of report & a seminar should be conducted for each student. The study shall be carried under the guidance of staff. The final outcome shall include a formal submission of • (a) Written Synopsis (key ideas on the topic including premise, description/ justification and conclusion) and Thesis Proposal Document (booklet) clearly highlighting/explaining the Project type; architectural Proposition/ Premise; Site/ Location; Scope and Limitations; Program (includes basic documentation with drawings, images or photographs of context, case studies, citations to various sources) • (b) Portfolio of presentations, critical readings, drawings/ models produced by the student on the chosen topic (urban	

issue/conservation/sustainability/digital architecture/other) • • (c) The grading shall consider the participation and depth of inquiry presented by each student and the various submissions/ reviews on each topic organized through the term.	

COURSE OUTCOME:

CO1: identify different types of design projects & recognize area of student's individual interest

CO2: analyze different project topics & its scope, scale & requirements

CO3: utilize the selected project topic for further analysis

CO4: Identification of suitable case studies & analysis of proposed site conditions with respect to its surroundings

CO5: formulate design project feasibility in terms of structure, services &aesthetics.

SUGGESTED REFERENCES:

- All references will be project specific and will include a wide range of subjects (history, theory and criticism; services; material and construction) from architecture and allied fields addressed through critical papers, essays, documented studies and books.
- Linda Grant and David Wang, Architectural Research Methods, John Wiley Sons,2002
- Iain Borden and Katerina Rüedi, The Dissertation, Architectural Press, 2000
- CO PO Mapping:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O 2	PS O 3
CO1		3													3
CO2			3												3
CO3			3												3
CO4				3											3
CO5		3													3
Avera ge		3	3	3											3

21ARC84 CONSTRUCTION MANAGEMENT

LECTURES/WEEK –3 lecture	CEE MARKS-50
NO OF CREDITS -3	SEE MARKS-50 (THEORY EXAM)
TOTAL NUMBER OF LECTURE HOURS:40	SEE DURATION –3hrs

Objective:

- To provide an insight into Management of Building/Construction projects involving management of money, manpower and machinery.
- To enhance the professional ability of the students to manage a construction project by exposing the students to the currently prevalent techniques in the planning, programming & management of a construction project.

MODULE	TEACHING
MODULE-1 (Introduction to Construction Project Management & construction organization) 1. Introduction to projects, its stages & Construction Project Management: Need for management of building /construction projects, principles & objectives of Project Management, brief understanding about study areas in Project Management, projects, types of construction projects & life cycle/stages of a project. 2.Construction Organization: types of construction firms/companies. Types of organization, study of organizational structures suitable for building and construction projects, the roles of the various members of a typical construction organization, qualities of an ideal construction organization, ethics in construction industry. .	8hrs
MODULE-2 <u>MODULE-2 (Decision making & role of Project managers)</u> • Decision making and Feasibility Study: Involvement and Roles of Consultants and Contractor in decision making at various stages. Basic understanding of decision making principles and tools (e.g. Decision Tree, SWOT Analysis, Cost-Benefit Analysis), Value Engineering, Investment Criteria, Project Feasibility Study. • Roles of Project Manager: Roles & Responsibilities of Project/ Construction Managers, Scope Management in Construction: Scope Planning, Definition, Verification and Control	8hrs

MODULE-3 (Construction Management techniques: Project planning & scheduling) 1. Project planning & scheduling in construction: network, elements of network & their relations, Activity definition, activity sequencing, event, their relations, dual role of event, dummy activity, network rules, graphical guidelines for network, numbering of events, work breakdown structure. CPM & PERT Networks. 2.Construction Management techniques – project scheduling-Bar Chart, Mile Stone Chart, Networking analysis using PERT and CPM. Projects cost Analysis & project crashing using CPM, Resource leveling and Resource smoothening. Computer applications in Project Management: Introduction to use of computer softwares for analysis of network- Primavera, Microsoft Project Schedule (MSP) or Project Libre)	8hrs
MODULE-4 *(Project Monitoring and Control)* • Construction Management Techniques: Project Monitoring and Control – Role of the project manager in monitoring the specifications, Follow-up for quality control, the measurement book (MB), RA bills, interim and final checking and certification of works on site based on the BOQ and terms of contracts. Project updating, Progress Curves. • Quality Management in Construction: Quality Planning and Quality Control. Technical Specifications and Procedures. Codes and Standards. Construction Health and safety and management: Safety Measures and management: Integrating workers Health and Safety into management.	8hrs
MODULE-5 *(Use of Construction Equipment)* • Construction Equipment: The role of equipment/machinery in construction industry, factors affecting selection of construction machinery, standard versus special equipment, and understanding of the various issues involved in owning, operating and maintaining of construction equipment, economic life of equipment. • Types of Construction Equipment: earth moving (tractors, excavators, dragline, trenching equipment, etc.,) transporting (various types of trucks), spreading and compacting (motor graders and various types of rollers) and concreting equipment (including	8hrs

concrete mixers, transporting and pumping equipment),	

Note – Use of software to be encouraged although the same is not for the examination purposes.

COURSE OUTCOME:

CO1: Recognize importance & objectives of construction management & application of organizational structures suitable to different projects in construction Industry.

CO2: Analyze role of construction/project managers & other stakeholders in decision making

CO3: Application of construction management techniques suitable to project planning & scheduling

CO4: Application of project monitoring & controlling

CO5: Identify & application of various construction equipments suitable as per project requirements

Reference:

- 'Construction Planning, Equipment and Methods' by RL Peurifoy
- 'Project Management for Architects' by S P Mukopadhyay
- 'Part and CPM' by L S Srinath

CO PO Mapping:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O 2	PS O 3
CO1								3	3		3			3	
CO2											3	2		3	
CO3	3				3			3		3	3			3	
CO4		2				3			3	3	3			3	
CO5	3													3	
Average	3	2			3	3		3	3	3	3	2		3	

CONTRIBUTION: 1.REASONABLE 2.SIGNIFICANT 3.STRONG

21ARC85 - LANDSCAPE DESIGN

LECTURES/WEEK –1LECTURE/ 3 STUDIO	CEE MARKS-50
TOTAL CREDITS -4	SEE MARKS-50 (VIVA EXAM)
TOTAL NUMBER OF LECTURE HOURS:120	SEE VIVA

OBJECTIVE:

To introduce students to the discipline of landscape architecture. and to develop basic skills required in handling simple landscape design projects.

OUTLINE	TEACHING HOURS
• Introduction to Landscape Architecture • Role of Landscape in architecture, natural and manmade landscape, urban and rural landscape. • Landscape elements – land forms, water bodies vegetation, climate, landscape furniture – their application in design • Study of Landscape materials and plant materials of surrounding region. • Landscape Design principles. Graphic design in Landscape • Introduction to site planning: site study, site analysis, requirement analysis, synthesis and final site plan. • Introduction to historical gardens like Mughal, Chinese, Japanese, Indian etc. • Study and analysis of contemporary landscape designs with two or three examples. • Study of landscape of courtyards, roads, pathways, urban spaces, gardens, parking areas etc.	120hrs

Note: Application of landscape design principles to any two examples such as landscaping for residences, gardens, courtyards, urban space office complex etc.

Reference:

- Landscape architecture by J .O. Simonds
- The landscape we see –Garrett Eckbo
- Introduction to landscape architecture by Michael Laurie.
- Time Saver Standards for Landscape architecture

COURSE OUTCOME

With the successful completion of the course student should have capability to

CO1: Analyze the role of landscape Architecture in terms of Urban and Rural.
CO2: Implement the various landscape elements and materials in design.
CO3: Understand the landscape principles involved in various design concepts.
CO4: Prepare the procedure of site planning – study, analyze and implementation.
CO5: Analyze the various contemporary landscape designs with built form.

21ARC86 CONSTITUTIONAL LAW

CONTACT PERIODS / WEEK: 3 LECTURES	CIE-CONTINUOUS INTERNAL EVALUATION: 50
TOTAL CREDITS – 3	SEE-THEORY EXAM (3 HRS) MARKS: 50
TOTAL TEACHING HOURS – 40	SEE DURATION – 3 H

COURSE OBJECTIVES:

- To educate students about the Supreme Law of the Land.
- To create an awareness about Civil Liberties.
- To enhance awareness and consciousness of the issues related to the profession and discuss the issue of liability of risks and safety at work place.

MODULE	TEACHING HOURS
MODULE-1 Framing of the Indian constitution: Role of the Constituent Assembly - Preamble Salient features of the Constitution of India, Fundamental Rights and its limitations. Fundamental Duties and their significance.	8hrs
MODULE -2 Directive Principles of State Policy: Importance and its relevance. Special Constitutional Provisions for Schedule Castes, Schedule Tribes & Other Backward Classes. Constitutional provisions for safety and protection of rights of women and children in society and at workplaces.	8hrs
MODULE -3 The Union Executive – The President and The Vice President, The Prime Minister and the Council of Ministers. The Union Parliament – LokSabha & RajyaSabha. State Executive – The Governors, The Chief Ministers and The Council of Ministers. The State Legislature – Legislative Assembly and Legislative Council. State High Courts. Functioning of Judiciary in India.	8hrs
MODULE -4 Election Commission of India – Powers & Functions – Electoral Process in India. Methods of Constitutional Amendments and their Limitations.	8hrs

Important Constitutional Amendments.	
MODULE -5 Definition of ethics, Professional ethics as laid down by Council of Architecture, RIBA, Indian Institute of Architects, Institution of Engineers & Valuers etc.	8hrs

Course Outcomes:

At the end of the course the student should be able to:

CO1. Identify the significance of Indian Constitution as the fundamental law of the land.
CO2. Understand special provisions for SC/ST, BC & application of safety measures, protection of rights for women & children at workplace
CO3. Analyze & apply the Indian political system, the powers and functions of the Union, State and Local Governments in detail
CO4. Recognize Electoral Process, Emergency provisions and Amendment procedure.
CO5. Application of professional guidelines & ethics laid by concern regulatory bodies.

TEXT BOOKS:

- Merunandan K.B. and B.R. Venkatesh, "An Introduction to Constitution of India and Professional Ethics", Meragu Publications, 3rd edition, 2011.
- Phaneesh K. R. , "Constitution of India and Professional Ethics", Sudha Publications, 7th edition, 2014.

REFERENCES:

1. Pylee M. V, "An Introduction to Constitution of India", Vikas Publishing, 2002.
2. Martin, W. Mike., Schinzinger, Roland, "Ethics in Engineering" McGraw-Hill, New York 10020, fourth edition, 2005.
3. Ghai K .K. &. RoohiMakol E R , "Constitution of India and Professional Ethics", Kalyani Publishers.1stedition, 2009.

E-BOOK:

- https://books.google.co.in/books/about/Constitution_of_India_and_Professional_ E.html?id=VcvuVt-d88QC G.B. Reddy and MohdSuhaib, I.K , "Constitution of India and Professional Ethics", International Publishing House Pvt. Ltd., 2006.

- http://www.scribd.com/doc/82372282/Indian-Constitution-M-Raja-Ram-2009# scribd M. Raja Ram, "Indian Constitution", New Age International Pvt. Limited, 2009.

CO PO Mapping:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO1							3						3		
CO2						3							3		
CO3							3						3		
CO4							3						3		
CO5									3				3		
Avera ge						3	3		3				3		

ELECTIVE-D
21ARC871 FURNITURE DESIGN

LECTURE/WEEK: 1L/ 2 S	CIE-CONTINUOUS INTERNAL EVALUATION: 50
TOTAL CREDITS: 3	SEE-THEORY EXAM MARKS (3 HOURS): 50
TOTAL TEACHING HOURS – 42	SEE DURATION: 3 H

Objective:

To understand fundamental aspects and cultural considerations of Furniture Design from Ancient to modern times.

SL	MODULE-I	HRS
1	Introduction to Furniture Design styles- antique, traditional, modern, contemporary, classical etc. Study of Furniture Design Style to exemplify the method to understand the art form and appreciate them in the context of culture, Understand ergonomics and human anthropometrics.	8
	MODULE-II	
2	Current trends in furniture design. Types of furniture like built-in (cabinetry etc.), modular, manufactured, custom-made for seating, storage, sleeping, street furniture and office furniture.	6
	MODULE-III	
3	Study of materials in furniture – timber, plywood, bent wood, bamboo/cane, metal, plastics, polyurethane and glass. Upholstery materials – leather, natural and synthetic fabrics.	6
	MODULE-IV	
4	Study type of finishes like laminate, veneer, lacquer, varnish, stains, polish and Ability to comprehend human dimensions and body movement to arrive at a usable product adhesive.	6
	MODULE-V	
5.	Understanding selection of furniture, cost and longevity. Study of technology, wood joinery, sections, framework, detailing. Design furniture using found object. Design project like furniture layout, relationship to context and design of furniture.	8

Course outcome:

CO1: Identify different styles in furniture design and apply in ergonomics; human anthropometrics.

CO2: Application of current trends in furniture design.

CO3: Identify different furniture material and its application on different type of furniture.

CO4: Explain different finishes and its application in furniture design.

CO5: Design of different style of furniture and applying it in layout design.

Course Outcomes with Program Outcomes and Program Specific Outcomes mapping

COURSE OUT COMES		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3	PSO4
CO 1	Identify different styles in furniture design and apply in ergonomics; human anthropometrics.	3													2		
CO 2	Application of current trends in furniture design.			3													
CO 3	Identify different furniture material and its application on different type of furniture.			3													
CO 4	Explain different finishes and its application in furniture design.					3											

CO 5	Design of different style of furniture and applying it in layout design.					3											
	AVERAGE	3		6		6											

CONTRIBUTION: 1: REASONABLE 2: SIGNIFICANT 3: STRONG

ELECTIVE-D

21ARC872 ENERGY EFFICIENT BUILDING DESIGN

LECTURE/WEEK: 1L/ 2 S	CIE-CONTINUOUS INTERNAL EVALUATION: 50
TOTAL CREDITS: 3	SEE-THEORY EXAM MARKS (3 HOURS): 50
TOTAL TEACHING HOURS - 42	SEE DURATION: 3 H

Objective:
To familiarize the students with simple and passive design consideration, use of natural ventilation in building design and to make the students aware of the future trends in creating sustainable built environment.

SL	**MODULE-I**	HRS
1	Significance of energy efficiency in the contemporary context. Alternative means of energy, use of energy in a built environment, use of energy at site level, impact of built structure on microclimate.	8
	MODULE-II	
2	Simple passive design considerations involving site conditions, building orientation, Plan form, building envelope and materials, sources of energy.	6
	MODULE-III	
3	Wind energy, tidal energy etc. Measures to mitigate the electricity consumption.	6
	MODULE-IV	
4	Ways and means of mitigating use of energy, Passive Solar techniques (For hot-dry and warm humid region)	6
	MODULE-V	
5.	Construction and techniques: Use of alternative material, various levels of usage in building, use of latest technologies.	8

Assignment:
The assignment may be given as a group work (2 to 3 students per group). The students have to submit are port on the work of a project with energy efficiency.
Course Outcome:

CO1: Identify alternate means of energy and apply in built environment.
CO2: Explain and identify the application of passive design
CO3: Measures to mitigate the electricity consumption and its application
CO4: Application of passive solar techniques in designing.
CO5: Identify latest technologies and apply the construction methods in designing.

Course Outcomes with Program Outcomes and Program Specific Outcomes mapping

COURSE OUT COMES		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	Identify alternate means of energy and apply in built environment.							3							2	
CO2	Explain and identify the application of passive design.						2									
CO3	Measures to mitigate the electricity consumption and its application						2									
CO4	Application of passive solar techniques in designing.					3										

CO5	Identify latest technologies and apply the construction methods in designing.					3										
	AVERAGE					3	2	3							2	

CONTRIBUTION: 1: REASONABLE 2: SIGNIFICANT 3: STRONG

SYLLABUS CONTENTS OF IX SEMESTER B.ARCH.

21ARC91: PROFESSIONAL TRAINING.

1st Part of 5th year

Contact Period/Week :16 1/2	CIE Marks : 50
Credits: 26	SEE Viva Marks: 50

Objective:

To provide exposure to the various dimensions of architectural practice.

OUTLINE	
Outline :(at the end of 9th semester) Each student of Ninth. B. Arch shall undergo a practical training during the 1st term the final year (second stage of B. Arch Course), which shall be of minimum 16½ weeks in each semester as per the instructions given by the Head of the department from time to time and as per regulations AR 6.6 of B. Arch Attendance shall be **100%** during the training period, i.e., he/she shall complete total minimum 100 working days each in 9th sem totaling to minimum 100 working days of training excluding Sundays, holidays and leaves etc. in the architect's firm. The trainees shall regularly send the fortnightly report duly signed by the Chief of their respective firms, in the prescribed format only as per the instructions to the candidates given below every fortnightly The students during the training must work in accordance with the discipline of the organization. Any complaint regarding the indiscipline and irregularity shall be viewed seriously. The type of work a student should expose himself shall be • To assist the senior Architect in Design process including conceptualization, circulation etc. • Assist in preparation of working drawings including study of the materials, constructional details and understanding application of the same on site. • Preparation of permission drawings for Govt. authorities including thorough knowledge of local building by:laws etc., and area analysis considering by:laws. • Preparation of Architectural models, computer applications in design and drafting, filing system in respect of documents, drawing, ammonia prints, preparation of tender documents • Site visits etc., with due importance to the practical handling of materials, stacking etc. and problems evolved on site and their solutions. Study of taking measurements and recording etc. • In depth study of any new advanced typed of building material highlighting its properties, uses, applications, merits and	

demerits, cost factor etc. • Critical appraisal of any one public building designed preferably in the office. • Architects bio:data including all the projects done and executed by him, his design philosophy and concept, awards, competitions won, etc., through photographs, plans, sections, elevations and write up.	

Submission (at the end of 9th semester)

- Certificate of completion of training and log book containing the record of the work done during training and confidential report
- All drawings done in the office certified by the senior architect in the firm, photographs of site visited
- Submit in the following Heads: 1. Working drawing, 2. Presentation drawings, 3. Site visits, 4. Photographs of models 5. Estimation of steel and wood (optional)
- Samples of building Materials, Hard and soft copy of the report.
- Critical appreciation of the public building designed preferably in the office
- Hard and soft copy of the general profile of the office containing the brief history, design philosophy, works executed : past and current, the resume of the chief architect with photograph etc.

COURSE OUTCOME:

After completion of the course, a student will be able to:

1. Ability to prepare design, approval, documentation of a project.
2. Apply legal, ethical, & technical standards for projects.
3. Apply Management techniques for the projects.
4. Implement the architectural bye : laws in construction and various services involved in the design of a building.
5. Prepare tender documents and ammonia prints for the projects.

CO PO Mapping

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	P0 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO1							2		3						2
CO2									3						
CO3															3
CO4						3			3					2	
CO5						3			3						3
AV G						3	2		3					2	2.6

CONTRIBUTION ; 1. REASONABLE 2; SIGNIFICANT 3; STRONG

21ARC 101 – ARCHITECTURE DESIGN PROJECT (Thesis)

Lectures/Week : 2	CIE Marks : 50
Studio/Week : 1**6**	SEE Viva Marks: 50
Credits: 18	Exam Hours:
Total Teaching Hours :231	

Objective:

- To demonstrate an ability to comprehend the nature of architectural problem and create a brief which sets the framework for design.
- To demonstrate an advanced level design ability to convert the brief set forth earlier into a speculative proposition of design.
- To articulate and delineate the propositions of design into an architectural solution addressing all the dimensions.

Outline:

Architectural Design projects can be of any scale and size (in terms of built area) as long as the required rigor and depth is demonstrated by the student to merit consideration as a final project. Very large campus projects can be avoided as the work tends to be repetitive and more often ends with a large number of Structure but with minimal variations and content. It is expected that all type of projects (study or design) would end with a design solution; in fact all projects (study or design) would end with a design solution; in fact all projects should be grounded in some kind of critical enquiry. The maximum weightage for study will be 25% in the case of a Study + Design can be reduced in a specific case, but such a project should demonstrate clarity in terms of research design. The following stages have been identified as a generic model of the studio. The stages can be fine:tuned depending on the resources. It is expected that this project will be run as a studio with individual guidance under a project coordinator and assisted by several guides.

Early Review –There shall be a review to clarify the conceptual statement and synthesizing the analysis carried out by student and the assumptions of the student. Students shall present a clearly articulated response to context, program and users; Conceptual framework and preliminary architectural scheme shall be the end products of this stage.

Mid Review – this review shall aim at fairly clear drawings of the entire scheme with reference to the objectives practiced in all earlier semesters and give a clear understanding of the project proposal. The preliminary report in typed or computer printed form shall be presented to discuss the program, site – analysis, literature review, case studies, design criteria, concept and detailed design.

Final Review : Final review should consist of all the works, which would be presented at the viva. Mode of presentation shall be drawings

draw to proper scale supported by a on screen digital presentation. Number of sheets shall be limited to maximum of 15 to 20 of A0 size plus three to five case study sheets. Study Models shall be presented	

Note: :

1) The requirements pertaining to the handicapped and elderly people and children are to be addressed in design and detailing.

2) At the time of Viva examination, the student shall show to the jurors the portfolio containing the evolution of his/her design from the beginning to the final output. All the drawings and reports shall be certified by the Head of the Department as bonafide work carried out by the student during the semester.

Final Submission

The final output shall include a report, all drawings study models, and a presentation model. The hard and soft copy of report shall discuss the program, site:analysis, literature review, case studies, design criteria, concept and detailed design. Three copies of the reports & a digital presentation in CD shall be submitted along with competed set of drawings and models at least 4 days before the viva exam.

Digital presentation shall be sent to the external examiner by the department well before viva examination

Note :There shall be 3 examiners such as 1 internal examiner & 2 externals, preferably one from professional one from academic background.

21ARC102 – SUSTAINABLE ARCHITECTURE.

Lectures/Week : 1	CIE Marks : 50
Studio/Week : 2	SEE Marks: 50
Credits: 3	Exam Hours: 3
Total Teaching Hours :42	

Objective: To introduce the student to the discipline of sustainable architecture. Learning various methods of sustainable architecture, which could be adopted in architectural design with respect to the local climate and region.

MODULES	TEACHING HOURS
MODULE:I • Introduction to Sustainable Architecture. Present scenario of Environment. Architect's role in regarding environmental degradation. Needs & advantages of sustainable architecture.	8
MODULE:II • Sustainability in planning: Various aspects of sustainability in site planning and planning of building. Planning techniques : efficient space utilization, minimum exposed hard surfaces, usage of landscape elements for various needs of site etc. • Climate: Various means of passive techniques in buildings with respect to local climate. Indoor temperature management. Local techniques of passive architecture.	8
MODULE:III • Materials: Selection of materials based on environmental qualities, Use of local materials, recyclable and reusable materials and low energy embodied materials, etc.	8
MODULE:IV 5 .Construction techniques: Various methods of constructions that are considered to be sustainable. Services: • Sewerage: Sewerage system and its disposal, treatment methods within the site, • Electricity: Ways and means of reduction in electricity consumption. Use of solar energy for lighting of building, road, parks and garden, water pumping etc. use of solar panels as architectural feature. • Water: Rainwater harvesting, recycling and reuse of water, recharging of water table, methods of water	9

treatment within the site, ways and means of reducing consumption of water.	
MODULE:V 6. Waste management: Recycling & reuse of waste produced within the site. Concepts like Biogas and biomass plant, Vermiculture etc. • .Role of LEED India and TERI GRIHA etc in certification process for Green buildings	9

Assignment

Seminars on one case study and proposal need to be conducted examples.

References

- Energy:efficient buildings in India by MiliMuzumdar
- Climate responsive architecture by ArvindKrishan and team
- Tropical architecture by C P Kukreja
- Housing, climate and comfort by Evan Martin
- Design with climate by Victor Olgey
- Climatic design by D Watson
- Green Architecture by Micheal J. crosbie

Solar Architecture

21ARC103 SEMINAR

Lectures/Week : 1	CIE Marks : 50
Studio/Week : 5	SEE Viva Marks: 50
Credits: 6	Exam Hours:
Total Teaching Hours :84	

OBJECTIVE:

- To outline the larger focus and relevance of the Thesis topic (design/research), its architectural implications and projected design results.
- Alternatively, to conceptually formulate an architectural proposition, explore and articulate ideas through research and critically evaluate the feasibility of the Thesis Proposal. This includes determining the Project, context where it shall be explored and its significance to architecture.
- To encourage students to pose relevant questions on the discipline (theoretical/design); to undertake self: directed study with inquisitiveness, rigor and demonstrate a depth of inquiry in exploring the chosen topics.

OUTLINE	TEACHING HOURS
• The Thesis Seminar can be conducted as a combination of interactive workshops, presentations/ seminar, key lectures and focused discussions with individual students on chosen topics. Each topic should be studied using extensive literature reviews including readings in relevant critical theoretical/ philosophical premise; case studies (site visits); focused meetings with internal subject/ topic experts and design research methods. • The Thesis Seminar should be seen as an opportunity to engage with a topic/ question on the discipline architecture through reading, writing, drawing, diagramming and modelling ideas. • The role of the Thesis guide/ subject internal member is to introduce the students to issues relevant to architecture. significant design research methodologies and discuss the new research directions in the discipline through readings, exercises and workshops. • The Thesis guide/ subject internal member shall also critique student ideas/ research and help formulate/ shape a design/ research method. The dedicated discussion sessions on topic should clarify the intent, type of project, location, scope and limitations.	48hrs

Note:

- Written Synopsis (key ideas on the topic including premise, description/ justification and conclusion) and Thesis Proposal Document (SSR) clearly highlighting/explaining the Project type; Architectural Proposition/ Premise; Site/ Location; Scope and Limitations; Program (includes basic documentation with drawings, images or photographs of context, case studies, citations to various sources)
- Portfolio of presentations, critical readings, drawings/ models produced by the student on the chosen topic (urban issue/ conservation/ sustainability/ digital architecture/ other) The internal and external grading shall consider the participation and depth of inquiry presented by each student and the various submissions/ reviews on each topic organized through the term and in final conduction of jury.

Reference:

- All references will be project specific and will include a wide range of subjects (history, theory and criticism; services; material and construction) from architecture and allied fields addressed through critical papers, essays, documented studies and books.
- Linda Grant and David Wang, Architectural Research Methods, John Wiley Sons, 2002.
- Iain Borden and Katerina Ruedi, The Dissertation, Architectural Press, 2000.

COURSE OUTCOME

With the successful completion of the course student should have capability to

CO1: Explain the procedure and methodology, of the report with interactive session.
CO2: Implement the ideas based on relevant topic literature and case studies.
CO3: Understand different diagramming and modelling ideas through different skills.
CO4: Analyze the area of interest or issue related to the design.
CO5: Prepare on topic with the intent, type of project, location, scope and limitations.