THIAGARAJAR COLLEGE OF ENGINEERING

(A Government Aided Autonomous Institution affiliated to Anna University)

MADURAI – 625 015

CURRICULUM AND DETAILED SYLLABI

For

B.Arch DEGREE (Architecture) PROGRAMME

2015-2020

For the students admitted from the academic year 2015-2016 onwards

Approved in 51st Academic Council Meeting on 20.02.2016

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Approved in 53rd Academic Council Meeting on 22.12.2016

Department of Architecture, Thiagarajar College of Engineering, Madurai – 625015
(For the candidates admitted from 2015-2016)
Scheduling of Courses

<table>
<tr><td>SEM</td><td colspan="4">THEORY</td><td colspan="4">THEORY CUM STUDIO</td><td></td></tr>
<tr><td></td><td colspan="4">Compulsory Foundation Courses</td><td colspan="4">Compulsory Foundation Courses</td><td>Programme Core Courses</td></tr>
<tr><td>I</td><td colspan="3">15AR111
Introduction to History of Architecture, Art and Culture (2)</td><td>15AR121
Mathematics (2)</td><td>15AR131
Building Materials and Construction I (3)</td><td colspan="2">15AR141
Architectural Graphics I (3)</td><td>15AR151
Visual Arts (3)</td><td>15AR161
Fundamentals of Design (5)</td></tr>
<tr><td></td><td colspan="3">Compulsory Foundation Courses</td><td>Elective Foundation Courses</td><td>Programme Elective</td><td colspan="2">Compulsory Foundation Courses</td><td>Elective Foundation Courses</td><td>Programme Elective</td><td>Programme Core Courses</td></tr>
<tr><td>II</td><td colspan="2">15AR210
Mechanics of Structures (3)</td><td>15AR220
Fundamentals of Architecture (3)</td><td rowspan="8">**Credits are to be earned

Elective foundations that could be chosen are as in Annex1</td><td rowspan="8">**Credits are to be earned

Program Elective that could be chosen are as in Annex 1</td><td colspan="2">15AR230
Building Materials and Construction II (3)</td><td rowspan="8">** Credits are to be earned

Elective foundations that could be chosen are as in Annex 1</td><td rowspan="8">** Credits are to be earned

Program Elective that could be chosen are as in Annex 1</td><td>15AR240
Architectural Design I (6)</td></tr>
<tr><td>III</td><td>15AR310
Masonry and Steel Structures (3)</td><td>15AR320
Climate and Architecture (3)</td><td>15AR330
History of World Architecture (3)</td><td colspan="2">-</td><td>15AR340
Architectural Design II (6)</td></tr>
<tr><td>IV</td><td>15AR410
RCC Structures (3)</td><td>15AR420
Building Services I (3)</td><td>-</td><td colspan="2">15AR430
Building Materials and Construction III (3)</td><td>15AR440
Architectural Design III (6)</td></tr>
<tr><td>V</td><td>15AR510
Theory of Design (3)</td><td>15AR520
Building Services II (3)</td><td>15AR530
History of Indian Architecture (3)</td><td colspan="2" rowspan="2">-</td><td>15AR540
Architectural Design IV (6)</td></tr>
<tr><td>VI</td><td>15AR610
Estimation and Specification (3)</td><td colspan="2">15AR620
History of Modern Architecture I (3)</td><td>15AR630
Architectural Design V (6)</td></tr>
<tr><td>VII</td><td>-</td><td colspan="2">-</td><td colspan="2">-</td><td>15AR710
Practical Training (13)</td></tr>
<tr><td>VIII</td><td>15AR810
Urban Design(3)</td><td colspan="2">15AR820
Landscape Design(3)</td><td colspan="2"></td><td>15AR830
Architectural Design VI (6)</td></tr>
</table>

Board of Studies Meeting approved on 09-11-2015

Approved in 51st Academic Council Meeting on 20.02.2016

IX	15AR910 Professional Practice (3)	15AR920 Project Management (3)						15AR930 Architectural Design VII (6)
X	-							15ART10 Architectural Thesis (14)

Program Core Courses+ Compulsory Foundation Courses =74+ 67 =141 credits; ** Elective Foundation Courses + Program Elective = 27 +12 =39 credits;
TOTAL CREDITS = 180 CREDITS MINIMUM

THIAGARAJAR COLLEGE OF ENGINEERING, MADURAI- 625 015
(A Govt. Aided, ISO 9001:2008 certified Autonomous Institution affiliated to Anna University)

CHOICE BASED CREDIT SYSTEM **Annexure – I**

Degree: B. Arch **Programme: Architecture**

1. Compulsory Foundation Courses: **Total Credits to be earned: 67**

a. Architecture

S. No	Course Code	Name of the Course	Number of Hours / Week			Credit	Semester/ Pre-Requisite
			L	T	P		
THEORY							
1.	15AR111	Introduction to History of Architecture, Art and Culture	2	-	-	2	I SEM ONLY
2.	15AR220	Fundamentals of Architecture	3	-	-	3	II SEM AND ABOVE
3.	15AR320	Climate and Architecture	3	-	-	3	III SEM AND ABOVE
4.	15AR330	History of World Architecture	3	-	-	3	III SEM AND ABOVE
5.	15AR510	Theory of Design	3	-	-	3	V SEM AND ABOVE
6.	15AR530	History of Indian Architecture	3	-	-	3	V SEM AND ABOVE,
7.	15AR620	History of Modern Architecture I	3	-	-	3	VI SEM AND ABOVE,
8.	15AR810	Urban Design	3	-	-	3	VII SEM AND ABOVE
9.	15AR820	Landscape Design	3	-	-	3	VII SEM AND ABOVE
10.	15AR910	Professional Practice	3	-	-	3	VII SEM AND ABOVE

11.	15AR920	Project Management	3	-	-	3	VII SEM AND ABOVE
THEORY CUM STUDIO							
12.	15AR131	Building Materials and Construction I	2	-	2	3	I SEM ONLY
13.	15AR141	Architectural Graphics I	2	-	2	3	I SEM ONLY
14.	15AR151	Visual Arts	1	-	4	3	I SEM ONLY
15.	15AR230	Building Materials and Construction II	2	-	2	3	II SEM AND ABOVE
16.	15AR430	Building Materials and Construction III	2	-	2	3	IV SEM AND ABOVE

b. Engineering Science

S. No	Course code	Name of the Course	Number of Hours / Week			Credit	Semester/ prerequisite
			L	T	P		
THEORY							
17.	15AR121	Mathematics	2	-	-	2	I SEM ONLY
18.	15AR210	Mechanics of Structures	3	-	-	3	II SEM ONLY
19.	15AR310	Masonry and Steel Structures	3	-	-	3	III SEM AND ABOVE
20.	15AR410	RCC Structures	3	-	-	3	IV SEM AND ABOVE
21.	15AR420	Building Services I	3	-	-	3	IV SEM AND ABOVE
22.	15AR520	Building Services II	3	-	-	3	V SEM AND ABOVE
23.	15AR610	Estimation and Specification	3	-	-	3	VI SEM AND ABOVE

2. Elective Foundation Courses: **Minimum Credits to be earned: 27**

a. Architecture

S. No	Course Code	Name of the Course	Number of Hours / Week	Credit	Semester	Pre-Requisite

			L	T	P			
THEORY								
1.	15ARFA0	Concepts and Approaches in Design	3	-	-	3	III SEM AND ABOVE	
2.	15ARFB0	History of Dravidian Architecture	3	-	-	3	II SEM AND ABOVE	
3.	15ARFC0	Vernacular Architecture	3	-	-	3	IV SEM AND ABOVE	
4.	15ARFD0	History of Medieval Architecture	3	-	-	3	IVSEM AND ABOVE	
6.	15ARFG0	Services in High rise buildings	3	-	-	3	VI SEM AND ABOVE	
7.	15ARFH0	History of Modern Architecture II	3	-	-	3	VIII SEM AND ABOVE	
THEORY CUM STUDIO								
8.	15ARFJ0	Lateral Thinking Techniques	2	-	2	3	II SEM AND ABOVE	
9.	15ARFK1	Ergonomics	2	-	2	3	II SEM AND ABOVE	
10.	15ARFL0	Computer Application in Design	2		2	3	III SEM AND ABOVE	
11.	15ARFM0	Working Drawing	2	-	2	3	IV SEM AND ABOVE	
12.	15ARFN0	3D Modeling	2	-	2	3	IV SEM AND ABOVE	
13.	15ARFP0	Interior Design and Practices	2	-	2	3	IV SEM AND ABOVE	
14.	15ARFQ0	Building Science I	2	-	2	3	IV SEM AND ABOVE	
15.	15ARFR0	Building Materials and Construction IV	2	-	2	3	V SEM AND ABOVE	
16.	15ARFT0	Building Science II	2	-	2	3	V SEM AND ABOVE	

17.	15ARFV0	Housing Standards and Design	2	-	2	3	VI SEM AND ABOVE
18.	15ARFW0	Architectural Conservation	2	-	2	3	VIII SEM AND ABOVE
19.	15ARFY0	Dissertation	2	-	8	6	VIII semester only

b. Engineering Science

S. No	Course Code	Name of the Course	Number of Hours / Week			Credit	Semester/ Pre-Requisite
			L	T	P		
THEORY CUM STUDIO							
20.	15ARFZ0	Site Planning and Site Services	2	-	2	3	III SEM AND ABOVE
21.	15ARF10	Structure and Architecture I	2	-	2	3	III SEM AND ABOVE
22.	15ARF20	Building Services and Technology	2	-	2	3	VI SEM AND ABOVE
23.	15ARF30	Structure and Architecture II	2	-	2	3	VI SEM AND ABOVE

c. Humanities and Social Science

S. No	Course Code	Name of the Course	Number of Hours / Week			Credit	Semester	Pre-Requisite
			L	T	P			
THEORY								
24.	15ARF40	Human Settlements Planning	3	-	-	3	VI SEM AND ABOVE	
25.	15ARF60	Environment Behavior Studies	3	-	-	3	IV SEM AND ABOVE	

3. Programme Core Courses: **Total Credits to be earned: 74**

S.No	Course Code	Name of the Course	Number of Hours / Week			Credit	Semester/ Pre-Requisite
			L	T	P		

STUDIO							
1.	15AR161	Fundamentals of Design	-	-	10	5	I SEM
2.	15AR240	Architectural Design I	-	-	12	6	II SEM
3.	15AR340	Architectural Design II	-	-	12	6	III SEM (Passed in Fundamentals of Design)
4.	15AR440	Architectural Design III	-	-	12	6	IV SEM (Passed in Architectural Design I)
5.	15AR540	Architectural Design IV	-	-	12	6	V SEM (Passed in Architectural Design II)
6.	15AR630	Architectural Design V	-	-	12	6	VI SEM (Passed in Architectural Design III)
7.	15AR710	Practical Training	-	-	26	13	VII SEM (Passed in Architectural Design IV)
8.	15AR830	Architectural Design VI	-	-	12	6	VIII SEM (Passed in Architectural Design V)
9.	15AR930	Architectural Design VII	-	-	12	6	IX SEM
10.	15ART10	Architectural Thesis	-	-	28	14	X SEM

4. Programme Elective Courses: **Minimum Credits to be earned:12**

a. Programme Specific Elective Courses

S. No	Course Code	Name of the Course	Number of Hours / Week			Credit	Semester/ Pre-Requisite
			L	T	P		
THEORY							
1.	15ARPA0	Art Appreciation	3	-	-	3	II SEM AND ABOVE
2.	15ARPB0	Art in Architecture	3	-	-	3	II SEM AND ABOVE
3.	15ARPC0	Construction Technology	3	-	-	3	V SEM AND ABOVE

4.	15ARPD0	Building Construction Practices	3	-	-	3	III SEM AND ABOVE

b. Programme Specific Elective Courses for Expanded Scope

S.No	Course Code	Name of the Course	Number of Hours / Week			Credit	Semester/ Pre-Requisite
			L	T	P		
THEORY							
5.	15ARPE0	Environment and Architecture	3	-	-	3	II SEM AND ABOVE
6.	15ARPF0	Appropriate Construction Technology	3	-	-	3	III SEM AND ABOVE
7.	15ARPG0	Sustainable Architecture	3	-	-	3	IV SEM AND ABOVE
8.	15ARPK0	Advanced Structures	3	-	-	3	V SEM AND ABOVE

c. Interdisciplinary Elective

S.No	Course Code	Name of the Course	Number of Hours / Week			Credit	Semester/ Pre-Requisite
			L	T	P		
THEORY							
9.	14EG141	English	3	-	-	3	II SEM AND ABOVE

d. Skill/Proficiency based Elective Courses

S.No	Course Code	Name of the Course	Number of Hours / Week			Credit	Semester/ Pre-Requisite
			L	T	P		
THEORY CUM STUDIO							
13.	15ARPM0	Representation I	2	-	2	3	II SEM AND ABOVE
14.	15ARPN0	Architectural Graphics II	2	-	2	3	II SEM AND ABOVE
15.	15ARPQ0	Architectural Workshop	2	-	2	3	II SEM AND ABOVE

16.	15ARPR1	Representation II	2	-	2	3	III SEM AND ABOVE

SECOND SEMESTER

S.NO	Sub. Code	Name of the Subject	Duration of Terminal Exam. [in Hours]	Max. Marks				Min. Marks for Pass			
				Continuous assessment* (A)	Terminal Exam (B)		Max. Marks (A + B)	Continuous assessment (A)	Terminal Exam (B)		Total (A + B)
					Written test	Viva voce			Written test	Viva voce	
THEORY ^											
1	15AR210	Mechanics of Structures	3	50	50^	-	100	-	25	-	50
2	15AR220	Fundamentals of Architecture	3	50	50^	-	100	-	25	-	50
THEORY CUM STUDIO®											
3	15AR230	Building Materials and Construction II	3	50	50^	-	100	-	25	-	50
STUDIO#											
4.	15AR240	Architectural Design I	-	60	-	40#	100	-	-	-	50

*** Continuous** Assessment Evaluation pattern will differ from subject to subject

^ For Theory courses and Theory cum Studio Courses Terminal Examination will be conducted for maximum marks of 100 and subsequently be reduced to 50 marks for the award of terminal examination marks.

For Studio Courses, Terminal Examination in the form of Viva voce will be conducted during the end semester for a maximum of 100 marks and subsequently be reduced to 40 marks for the award of terminal examination marks.

THIRD SEMESTER

S.NO	Sub. Code	Name of the Subject	Duration of Terminal Exam. [in Hours]	Max. Marks				Min. Marks for Pass			
				Continuous assessment* (A)	Terminal Exam (B)		Max. Marks (A + B)	Continuous assessment (A)	Terminal Exam (B)		Total (A + B)
					Written test	Viva voce			Written test	Viva voce	
THEORY ^											
1	15AR310	Masonry and Steel Structures	3	50	50^	-	100	-	25	-	50
2	15AR320	Climate and Architecture	3	50	50^	-	100	-	25	-	50
3	15AR330	History of World Architecture	3	50	50^	-	100	-	25	-	50
STUDIO#											
4	15AR340	Architectural Design II	-	60	-	40#	100	-	-	-	50

*** Continuous** Assessment Evaluation pattern will differ from subject to subject.

^® For Theory courses and Theory cum Studio Courses Terminal Examination will be conducted for maximum marks of 100 and subsequently be reduced to 50 marks for the award of terminal examination marks.

For Studio Courses, Terminal Examination in the form of Viva voce will be conducted during the end semester for a maximum of 100 marks and subsequently be reduced to 40 marks for the award of terminal examination marks.

FOURTH SEMESTER

S.NO	Sub. Code	Name of the Subject	Duration of Terminal Exam. [in Hours]	Max. Marks				Min. Marks for Pass			
				Continuous assessment* (A)	Terminal Exam (B)		Max. Marks (A + B)	Continuous assessment (A)	Terminal Exam (B)		Total (A + B)
					Written test	Viva voce			Written test	Viva voce	

THEORY ^											
1	15AR410	RCC Structures	3	50	50^	-	100	-	25	-	50
2	15AR420	Building Services I	3	50	50^	-	100	-	25	-	50
THEORY CUM STUDIO®											
3.	15AR430	Building Material and Construction III	3	50	50^	-	100	-	25	-	50
STUDIO#											
4.	15AR440	Architectural Design III	-	60	-	40#	100	-	-	-	50

*** Continuous** Assessment Evaluation pattern will differ from subject to subject.

^® For Theory courses and Theory cum Studio Courses Terminal Examination will be conducted for maximum marks of 100 and subsequently be reduced to 50 marks for the award of terminal examination marks.

For Studio Courses, Terminal Examination in the form of Viva voce will be conducted during the end semester for a maximum of 100 marks and subsequently be reduced to 40 marks for the award of terminal examination marks.

Fifth semester

S.NO	Sub. Code	Name of the Subject	Duration of Terminal Exam. [in Hours]	Max. Marks				Min. Marks for Pass			
				Continuous assessment* (A)	Terminal Exam (B)		Max. Marks (A + B)	Continuous assessment (A)	Terminal Exam (B)		Total (A + B)
					Written test	Viva voce			Written test	Viva voce	
THEORY ^											
1	15AR510	Theory of Design	3	50	50^	-	100	-	25	-	50
2	15AR520	Building Services II	3	50	50^	-	100	-	25	-	50
3	15AR530	History of Indian Architecture	3	50	50^	-	100	-	25	-	50
STUDIO#											
4	15AR540	Architectural Design IV	-	60	-	40#	100	-	-	-	50

*** Continuous** Assessment Evaluation pattern will differ from subject to subject.

^ For Theory courses Terminal Examination will be conducted for maximum marks of 100 and subsequently be reduced to 50 marks for the award of terminal examination marks.

For Studio Courses, Terminal Examination in the form of Viva voce will be conducted during the end semester for a maximum of 100 marks and subsequently be reduced to 40 marks for the award of terminal examination marks.

Sixth SEMESTER

S. No	Sub. Code	Name of the Subject	Duration of Terminal Exam. [in Hours]	Max. Marks			Min. Marks for Pass		
				Continuous	Terminal Exam (B)	Max.	Continuous	Terminal Exam (B)	Total (A

				assessment* (A)	Written test	Viva voce	Marks (A + B)	assessment (A)	Written test	Viva voce	+ B)
THEORY ^											
1.	15AR610	Estimation and Specification	3	50	50^	-	100	-	25	-	50
2.	15AR620	History of Modern Architecture I	3	50	50^	-	100	-	25	-	50
STUDIO#											
3.	15AR630	Architectural Design V	-	60	-	40#	100	-	-	-	50

*** Continuous** Assessment Evaluation pattern will differ from subject to subject and for different tests.

^ For Theory courses Terminal Examination will be conducted for maximum marks of 100 and subsequently be reduced to 50 marks for the award of terminal examination marks.

For Studio Courses, Terminal Examination in the form of Viva voce will be conducted during the end semester for a maximum of 100 marks and subsequently be reduced to 40 marks for the award of terminal examination marks.

SEVENTH SEMESTER

S.NO	Sub. Code	Name of the Subject	Duration of Terminal Exam. [in Hours]	Max. Marks				Min. Marks for Pass			
				Continuous assessment* (A)	Terminal Exam (B)		Max. Marks (A + B)	Continuous assessment (A)	Terminal Exam (B)		Total (A + B)
					Written test	Viva voce			Written test	Viva voce	

STUDIO#											
1	15AR710	Practical Training	-	50	-	50#	100	-	-	-	50

For Studio Courses like Practical Training, Terminal Examination in the form of Viva voce will be conducted during the end semester for a maximum of 100 marks and subsequently be reduced to 50 marks for the award of terminal examination marks.

EIGHTH SEMESTER

S.NO	Sub. Code	Name of the Subject	Duration of Terminal Exam. [in Hours]	Max. Marks				Min. Marks for Pass			
				Continuous assessment* (A)	Terminal Exam (B)		Max. Marks (A + B)	Continuous assessment (A)	Terminal Exam (B)		Total (A + B)
					Written test	Viva voce			Written test	Viva voce	
1.	15AR810	Urban Design	3	50	50^	-	100	-	25	-	50
2.	15AR820	Landscape Design	3	50	50^	-	100	-	25	-	50
STUDIO#											
3.	15AR830	Architectural Design VI	-	60	-	40#	100	-	-	-	50

^ For Theory courses Terminal Examination will be conducted for maximum marks of 100 and subsequently be reduced to 50 marks for the award of terminal examination marks.
# For Studio Courses, Terminal Examination in the form of Viva voce will be conducted during the end semester for a maximum of 100 marks and subsequently be reduced to 40 marks for the award of terminal examination marks.

NINETH SEMESTER

S.NO	Sub. code	Name of the Subject	Duration of Terminal Exam. [in Hours]	Max. Marks			Min. Marks for Pass		
				Continuous assessment* (A)	Terminal Exam (B)	Max. Marks (A + B)	Continuous assessment (A)	Terminal Exam (B)	Total (A + B)

					Written test	Viva voce			Written test	Viva voce	
THEORY ^											
1	15AR910	Professional Practice	3	50	50^	-	100	-	25	-	50
2.	15AR920	Project Management	3	50	50^	-	100	-	25	-	50
STUDIO#											
3.	15AR930	Architectural Design VII	-	60	-	40#	100	-	-	-	50

^ For Theory courses Terminal Examination will be conducted for maximum marks of 100 and subsequently be reduced to 50 marks for the award of terminal examination marks.

For Studio Courses, Terminal Examination in the form of Viva voce will be conducted during the end semester for a maximum of 100 marks and subsequently be reduced to 40 marks for the award of terminal examination marks.

TENTH SEMESTER

S.NO	Sub. Code	Name of the Subject	Duration of Terminal Exam. [in Hours]	Max. Marks				Min. Marks for Pass			
				Continuous assessment* (A)	Terminal Exam (B)		Max. Marks (A + B)	Continuous assessment (A)	Terminal Exam (B)		Total (A + B)
					Written test	Viva voce			Written test	Viva voce	
STUDIO#											
1.	15ART10	Architectural Thesis	-	60	-	40#	100	-	-	-	50

For Studio Courses, Terminal Examination in the form of Viva voce will be conducted during the end semester for a maximum of 100 and subsequently be reduced to 40 marks for the award of terminal examination marks

ELECTIVE FOUNDATION COURSES

S.NO	Sub. Code	Name of the Subject	Duration of Terminal Exam. [in Hours]	Max. Marks				Min. Marks for Pass			
				Continuous assessment* (A)	Terminal Exam (B)		Max. Marks (A + B)	Continuous assessment (A)	Terminal Exam (B)		Total (A + B)
					Written test	Viva voce			Written test	Viva voce	
THEORY ^											
1.	15ARFA0	Concepts and Approaches in Design	3	50	50^	-	100	-	25	-	50
2.	15ARFB0	History of Dravidian Architecture	3	50	50^	-	100	-	25	-	50
3.	15ARFC0	Vernacular Architecture	3	50	50^	-	100	-	25	-	50
4.	15ARFD0	History of Medieval Architecture	3	50	50^	-	100	-	25	-	50

5.	15ARFG0	Services in High rise buildings	3	50	50^	-	100	-	25	-	50
6.	15ARFH0	History of Modern Architecture II	3	50	50^	-	100	-	25	-	50
7	15ARF40	Human Settlements Planning	3	50	50^	-	100	-	25	-	50
9.	15ARF60	Environment Behavior Studies	3	50	50^	-	100	-	25	-	50
THEORY CUM STUDIO®											
10.	15ARFJ0	Lateral Thinking Techniques	3	50	50^	-	100	-	25	-	50
11.	15ARFK1	Ergonomics	3	50	50^	-	100	-	25	-	50
12.	15ARFL0	Computer Application in Design	3	50	50^	-	100	-	25	-	50
13.	15ARFM1	Working Drawing	3	50	50^	-	100	-	25	-	50
14.	15ARFN0	3D Modeling	3	50	50^	-	100	-	25	-	50
15.	15ARFP0	Interior Design and Practices	3	50	50^	-	100	-	25	-	50
16.	15ARFQ0	Building Science I	3	50	50^	-	100	-	25	-	50
17.	15ARFR0	Building Materials and Construction IV	3	50	50^	-	100	-	25	-	50
18.	15ARFT0	Building Science II	3	50	50^	-	100	-	25	-	50
19.	15ARFV0	Housing Standards and Design	3	50	50^	-	100	-	25	-	50

20.	15ARFW0	Architectural Conservation	3	50	50^	-	100	-	25	-	50
21.	15ARFY0	Dissertation	-	50	-	50®	100	-	-	25	50
22.	15ARFZ0	Site Planning and Site Services	3	50	50^	-	100	-	25	-	50
23.	15ARF10	Structure and Architecture I	3	50	50^	-	100	-	25	-	50
24.	15ARF20	Building Services and Technology	3	50	50^	-	100	-	25	-	50
25.	15ARF30	Structure and Architecture II	3	50	50^	-	100	-	25	-	50

* Continuous Assessment Evaluation pattern will differ from subject to subject.

^ For Theory courses and Theory cum Studio Courses, Terminal Examination will be conducted for maximum marks of 100 and subsequently be reduced to 50 marks for the award of terminal examination marks.

® For Theory cum Studio Courses like Dissertation, Terminal Examination in the form of Viva voce will be conducted during the end semester for a maximum of 100 Marks and subsequently be reduced to 50 marks for the award of terminal examination marks.

PROGRAMME ELECTIVE

a. Programme Specific Elective

S.NO	Sub. Code	Name of the Subject	Duration of Terminal Exam. [in Hours]	Max. Marks				Min. Marks for Pass			
				Continuous assessment* (A)	Terminal Exam (B)		Max. Marks (A + B)	Continuous assessment (A)	Terminal Exam (B)		Total (A + B)
					Written test	Viva voce			Written test	Viva voce	
THEORY ^											
1.	15ARPA0	Art Appreciation	3	50	50^	-	100	-	25	-	50
2.	15ARPB0	Art in Architecture	3	50	50^	-	100	-	25	-	50
3.	15ARPC0	Construction Technology	3	50	50^	-	100	-	25	-	50
4.	15ARPD0	Building Construction Practices	3	50	50^	-	100	-	25	-	50

^ For Theory courses Terminal Examination will be conducted for maximum marks of 100 and subsequently be reduced to 50 marks for the award of terminal examination marks.

b. Programme Specific Elective for Expanded Scope

S.NO	Sub. Code	Name of the Subject	Duration of Terminal Exam. [in Hours]	Max. Marks				Min. Marks for Pass			
				Continuous assessment* (A)	Terminal Exam (B)		Max. Marks (A + B)	Continuous assessment (A)	Terminal Exam (B)		Total (A + B)
					Written test	Viva voce			Written test	Viva voce	
THEORY ^											
5.	15ARPE0	Environment and Architecture	3	50	50^	-	100	-	25	-	50
6.	15ARPF0	Appropriate Construction Technology	3	50	50^	-	100	-	25	-	50
7.	15ARPG0	Sustainable Architecture	3	50	50^	-	100	-	25	-	50
8.	15ARPK0	Advanced Structures	3	50	50^	-	100	-	25	-	50

^ For Theory courses Terminal Examination will be conducted for maximum marks of 100 and subsequently be reduced to 50 marks for the award of terminal examination marks.

C. Interdisciplinary Elective

S.NO	Sub. Code	Name of the Subject	Duration of Terminal Exam. [in Hours]	Max. Marks				Min. Marks for Pass			
				Continuous assessment* (A)	Terminal Exam (B)		Max. Marks (A + B)	Continuous assessment (A)	Terminal Exam (B)		Total (A + B)
					Written test	Viva voce			Written test	Viva voce	
THEORY ^											
1	14EG141	English	3	50	50^	-	100	-	25	-	50

c. Skill Proficiency based Elective

S.NO	Sub. Code	Name of the Subject	Duration of Terminal Exam. [in Hours]	Max. Marks				Min. Marks for Pass			
				Continuous assessment* (A)	Terminal Exam (B)		Max. Marks (A + B)	Continuous assessment (A)	Terminal Exam (B)		Total (A + B)
					Written test	Viva voce			Written test	Viva voce	
THEORY CUM STUDIO											
1.	15ARPM0	Representation I	-	100 α	-	-	100	-	-	-	50
2.	15ARPN0	Architectural Graphics II	-	100 α	-	-	100	-	-	-	50
3.	15ARPQ0	Architectural Workshop	-	100 α	-	-	100	-	-	-	50
4.	15ARPR1	Representation II									

α For Theory cum Studio Courses like Representation I, Representation II ,Architectural Workshop, Architectural Graphics II the evaluation will be in the form of Continuous Assessment for maximum of 100 marks.

Department of Architecture, Thiagarajar College of Engineering, Madurai – 625015
(For the candidates admitted from 2016 onwards)
Scheduling of Courses

<table>
<tr><td>SEM</td><td colspan="4">THEORY</td><td colspan="4">THEORY CUM STUDIO</td><td></td></tr>
<tr><td></td><td colspan="4">Compulsory Foundation Courses</td><td colspan="4">Compulsory Foundation Courses</td><td>Programme Core Courses</td></tr>
<tr><td>I</td><td colspan="3">15AR111
Introduction to History of Architecture, Art and Culture (2)</td><td>15AR121
Mathematics (2)</td><td>15AR131
Building Materials and Construction I (3)</td><td colspan="2">15AR141
Architectural Graphics I (3)</td><td>15AR151
Visual Arts (3)</td><td>15AR161
Fundamentals of Design (5)</td></tr>
<tr><td></td><td colspan="3">Compulsory Foundation Courses</td><td>Elective Foundation Courses</td><td>Programme Elective</td><td colspan="2">Compulsory Foundation Courses</td><td>Elective Foundation Courses</td><td>Programme Elective</td><td>Programme Core Courses</td></tr>
<tr><td>II</td><td colspan="2">15AR210
Mechanics of Structures (3)</td><td>15AR220
Fundamentals of Architecture (3)</td><td rowspan="5">**Credits are to be earned

Elective foundations that could be chosen are as in Annex1</td><td rowspan="5">**Credits are to be earned

Program Elective that could be chosen are as in Annex 1</td><td colspan="2">15AR230
Building Materials and Construction II (3)</td><td rowspan="5">** Credits are to be earned

Elective foundations that could be chosen are as in Annex 1</td><td rowspan="5">** Credits are to be earned

Program Elective that could be chosen are as in Annex 1</td><td>15AR240
Architectural Design I (6)</td></tr>
<tr><td>III</td><td>15AR310
Masonry and Steel Structures (3)</td><td>15AR321
Climate and Architecture (3)</td><td>15AR330
History of World Architecture (3)</td><td colspan="2">-</td><td>15AR340
Architectural Design II (6)</td></tr>
<tr><td>IV</td><td>15AR410
RCC Structures (3)</td><td>15AR420
Building Services I (3)</td><td>-</td><td colspan="2">15AR430
Building Materials and Construction III (3)</td><td>15AR440
Architectural Design III (6)</td></tr>
<tr><td>V</td><td>15AR510
Theory of Design (3)</td><td>15AR520
Building Services II (3)</td><td>15AR530
History of Indian Architecture (3)</td><td colspan="2">-</td><td>15AR540
Architectural Design IV (6)</td></tr>
<tr><td>VI</td><td>15AR610
Estimation and</td><td colspan="2">15AR620
History of Modern Architecture I (3)</td><td colspan="2"></td><td>15AR630
Architectural Design V (6)</td></tr>
</table>

Board of Studies Meeting approved on 09-11-2015

Approved in 51st Academic Council Meeting on 20.02.2016

	Specification (3)							
VII	-	-			-			15AR710 Practical Training (13)
VIII	15AR810 Urban Design(3)	15AR820 Landscape Design(3)						15AR830 Architectural Design VI (6)
IX	15AR910 Professional Practice (3)	15AR920 Project Management (3)						15AR930 Architectural Design VII (6)
X	-							15ART10 Architectural Thesis (14)

Program Core + Compulsory Foundation Course =74+ 67 =141 credits; ** Elective Foundation Course + Program Elective = 27 +12 =39 credits;
TOTAL CREDITS = 180 CREDITS MINIMUM

THIAGARAJAR COLLEGE OF ENGINEERING, MADURAI- 625 015
(A Govt. Aided, ISO 9001:2008 certified Autonomous Institution affiliated to Anna University)
CHOICE BASED CREDIT SYSTEM **Annexure – I**

Degree: B. Arch **Programme: Architecture**

5. Compulsory Foundation Courses: **Total Credits to be earned: 67**

a. Architecture

S. No	Course Code	Name of the Course	Number of Hours / Week			Credit	Semester/ Pre-Requisite
			L	T	P		
THEORY							
1.	15AR111	Introduction to History of Architecture, Art and Culture	2	-	-	2	I SEM ONLY
2.	15AR220	Fundamentals of Architecture	3	-	-	3	II SEM AND ABOVE
3.	15AR321	Climate and Architecture	3	-	-	3	III SEM AND ABOVE
4.	15AR330	History of World Architecture	3	-	-	3	III SEM AND ABOVE
5.	15AR510	Theory of Design	3	-	-	3	V SEM AND ABOVE
6.	15AR530	History of Indian Architecture	3	-	-	3	V SEM AND ABOVE,
7.	15AR620	History of Modern Architecture I	3	-	-	3	VI SEM AND ABOVE,
8.	15AR810	Urban Design	3	-	-	3	VII SEM AND ABOVE

9.	15AR820	Landscape Design	3	-	-	3	VII SEM AND ABOVE
10.	15AR910	Professional Practice	3	-	-	3	VII SEM AND ABOVE
11.	15AR920	Project Management	3	-	-	3	VII SEM AND ABOVE
THEORY CUM STUDIO							
12.	15AR131	Building Materials and Construction I	2	-	2	3	I SEM ONLY
13.	15AR141	Architectural Graphics I	2	-	2	3	I SEM ONLY
14.	15AR151	Visual Arts	1	-	4	3	I SEM ONLY
15.	15AR230	Building Materials and Construction II	2	-	2	3	II SEM AND ABOVE
16.	15AR430	Building Materials and Construction III	2	-	2	3	IV SEM AND ABOVE

b. Engineering Science

S. No	Course code	Name of the Course	Number of Hours / Week			Credit	Semester/ prerequisite
			L	T	P		
THEORY							
17.	15AR121	Mathematics	2	-	-	2	I SEM ONLY
18.	15AR210	Mechanics of Structures	3	-	-	3	II SEM ONLY
19.	15AR310	Masonry and Steel Structures	3	-	-	3	III SEM AND ABOVE
20.	15AR410	RCC Structures	3	-	-	3	IV SEM AND ABOVE
21.	15AR420	Building Services I	3	-	-	3	IV SEM AND ABOVE
22.	15AR520	Building Services II	3	-	-	3	V SEM AND ABOVE
23.	15AR610	Estimation and Specification	3	-	-	3	VI SEM AND ABOVE

6. Elective Foundation Courses: **Minimum Credits to be earned: 27**

d. Architecture

S. No	Course Code	Name of the Course	Number of Hours / Week			Credit	Semester	Pre-Requisite
			L	T	P			
THEORY								
1.	15ARFA0	Concepts and Approaches in Design	3	-	-	3	III SEM AND ABOVE	
2.	15ARFB0	History of Dravidian Architecture	3	-	-	3	II SEM AND ABOVE	
3.	15ARFC0	Vernacular Architecture	3	-	-	3	IV SEM AND ABOVE	
4.	15ARFD0	History of Medieval Architecture	3	-	-	3	IVSEM AND ABOVE	
6.	15ARFG0	Services in High rise buildings	3	-	-	3	VI SEM AND ABOVE	
7.	15ARFH0	History of Modern Architecture II	3	-	-	3	VIII SEM AND ABOVE	
THEORY CUM STUDIO								
8.	15ARFJ0	Lateral Thinking Techniques	2	-	2	3	II SEM AND ABOVE	
10.	15ARFK1	Ergonomics	2	-	2	3	II SEM AND ABOVE	
11.	15ARFL0	Computer Application in Design	2		2	3	III SEM AND ABOVE	
12.	15ARFM0	Working Drawing	2	-	2	3	IV SEM AND ABOVE	
13.	15ARFN0	3D Modeling	2	-	2	3	IV SEM AND ABOVE	
14.	15ARFP0	Interior Design and Practices	2	-	2	3	IV SEM AND ABOVE	

15.	15ARFQ0	Building Science I	2	-	2	3	IV SEM AND ABOVE
16.	15ARFR0	Building Materials and Construction IV	2	-	2	3	V SEM AND ABOVE
17.	15ARFT0	Building Science II	2	-	2	3	V SEM AND ABOVE
18.	15ARFV0	Housing Standards and Design	2	-	2	3	VI SEM AND ABOVE
19.	15ARFW0	Architectural Conservation	2	-	2	3	VIII SEM AND ABOVE
20.	15ARFY0	Dissertation	2	-	8	6	VIII semester only

e. Engineering Science

S. No	Course Code	Name of the Course	Number of Hours / Week			Credit	Semester/ Pre-Requisite
			L	T	P		
THEORY CUM STUDIO							
21.	15ARFZ0	Site Planning and Site Services	2	-	2	3	III SEM AND ABOVE
22.	15ARF10	Structure and Architecture I	2	-	2	3	III SEM AND ABOVE
23.	15ARF20	Building Services and Technology	2	-	2	3	VI SEM AND ABOVE
24.	15ARF30	Structure and Architecture II	2	-	2	3	VI SEM AND ABOVE

f. Humanities and Social Science

S. No	Course Code	Name of the Course	Number of Hours / Week			Credit	Semester	Pre-Requisite
			L	T	P			
THEORY								
25.	15ARF40	Human Settlements Planning	3	-	-	3	VI SEM AND ABOVE	
26.	15ARF60	Environment Behavior Studies	3	-	-	3	IV SEM AND ABOVE	

7. Programme Core: **Total Credits to be earned: 74**

S.No	Course Code	Name of the Course	Number of Hours / Week			Credit	Semester/ Pre-Requisite
			L	T	P		
STUDIO							
1.	15AR161	Fundamentals of Design	-	-	10	5	I SEM
2.	15AR240	Architectural Design I	-	-	12	6	II SEM
3.	15AR340	Architectural Design II	-	-	12	6	III SEM (Passed in Fundamentals of Design)
4.	15AR440	Architectural Design III	-	-	12	6	IV SEM (Passed in Architectural Design I)
5.	15AR540	Architectural Design IV	-	-	12	6	V SEM (Passed in Architectural Design II)
6.	15AR630	Architectural Design V	-	-	12	6	VI SEM (Passed in Architectural Design III)
7.	15AR710	Practical Training	-	-	26	13	VII SEM (Passed in Architectural Design IV)
8.	15AR830	Architectural Design VI	-	-	12	6	VIII SEM (Passed in Architectural Design V)
9.	15AR930	Architectural Design VII	-	-	12	6	IX SEM
10.	15ART10	Architectural Thesis	-	-	28	14	X SEM

8. Programme Elective: **Minimum Credits to be earned:12**

a. Programme Specific Elective

S. No	Course Code	Name of the Course	Number of Hours / Week			Credit	Semester/ Pre-Requisite
			L	T	P		
THEORY							
1.	15ARPA0	Art Appreciation	3	-	-	3	II SEM AND ABOVE
2.	15ARPB0	Art in Architecture	3	-	-	3	II SEM AND ABOVE
3.	15ARPC0	Construction Technology	3	-	-	3	V SEM AND ABOVE
4.	15ARPD0	Building Construction Practices	3	-	-	3	III SEM AND ABOVE

b. Programme Specific Elective for Expanded Scope

S.No	Course Code	Name of the Course	Number of Hours / Week			Credit	Semester/ Pre-Requisite
			L	T	P		
THEORY							
5.	15ARPE0	Environment and Architecture	3	-	-	3	II SEM AND ABOVE
6.	15ARPF0	Appropriate Construction Technology	3	-	-	3	III SEM AND ABOVE
7.	15ARPG0	Sustainable Architecture	3	-	-	3	IV SEM AND ABOVE
8.	15ARPK0	Advanced Structures	3	-	-	3	V SEM AND ABOVE

c. Interdisciplinary Elective

S.No	Course Code	Name of the Course	Number of Hours / Week			Credit	Semester/ Pre-Requisite
			L	T	P		
THEORY							
12.	14EG141	English	3	-	-	3	II SEM AND ABOVE

d. Skill/Proficiency based Elective

S.No	Course Code	Name of the Course	Number of Hours / Week			Credit	Semester/ Pre-Requisite
			L	T	P		
THEORY CUM STUDIO							
13.	15ARPM0	Representation I	2	-	2	3	II SEM AND ABOVE
14.	15ARPN0	Architectural Graphics II	2	-	2	3	II SEM AND ABOVE
15.	15ARPQ0	Architectural Workshop	2	-	2	3	II SEM AND ABOVE
16.	15ARPR0	Representation II	2	-	2	3	III SEM AND ABOVE
17.	15ARPR1	Representation II	2	-	2	3	III SEM AND ABOVE

SECOND SEMESTER

S.NO	Sub. Code	Name of the Subject	Duration of Terminal Exam. [in Hours]	Max. Marks				Min. Marks for Pass			
				Continuous assessment* (A)	Terminal Exam (B)		Max. Marks (A + B)	Continuous assessment (A)	Terminal Exam (B)		Total (A + B)
					Written test	Viva voce			Written test	Viva voce	
THEORY ^											
1	15AR210	Mechanics of Structures	3	50	50^	-	100	-	25	-	50
2	15AR220	Fundamentals of Architecture	3	50	50^	-	100	-	25	-	50
THEORY CUM STUDIO®											
3	15AR230	Building Materials and Construction II	3	50	50^	-	100	-	25	-	50
STUDIO#											
4.	15AR240	Architectural Design I	-	60	-	40#	100	-	-	-	50

* **Continuous** Assessment Evaluation pattern will differ from subject to subject
^ For Theory courses and Theory cum Studio Courses Terminal Examination will be conducted for maximum marks of 100 and subsequently be reduced to 50 marks for the award of terminal examination marks.
# For Studio Courses, Terminal Examination in the form of Viva voce will be conducted during the end semester for a maximum of 100 marks and subsequently be reduced to 40 marks for the award of terminal examination marks.

THIRD SEMESTER

S.NO	Sub. Code	Name of the Subject	Duration of Terminal Exam. [in Hours]	Max. Marks				Min. Marks for Pass			
				Continuous assessment* (A)	Terminal Exam (B)		Max. Marks (A + B)	Continuous assessment (A)	Terminal Exam (B)		Total (A + B)
					Written test	Viva voce			Written test	Viva voce	

THEORY ^											
1	15AR310	Masonry and Steel Structures	3	50	50^	-	100	-	25	-	50
2	15AR321	Climate and Architecture	3	50	50^	-	100	-	25	-	50
3	15AR330	History of World Architecture	3	50	50^	-	100	-	25	-	50
STUDIO#											
4	15AR340	Architectural Design II	-	60	-	40#	100	-	-	-	50

*** Continuous** Assessment Evaluation pattern will differ from subject to subject.

^® For Theory courses and Theory cum Studio Courses Terminal Examination will be conducted for maximum marks of 100 and subsequently be reduced to 50 marks for the award of terminal examination marks.

For Studio Courses, Terminal Examination in the form of Viva voce will be conducted during the end semester for a maximum of 100 marks and subsequently be reduced to 40 marks for the award of terminal examination marks.

FOURTH SEMESTER

S.NO	Sub. Code	Name of the Subject	Duration of Terminal Exam. [in Hours]	Max. Marks				Min. Marks for Pass			
				Continuous assessment* (A)	Terminal Exam (B)		Max. Marks (A + B)	Continuous assessment (A)	Terminal Exam (B)		Total (A + B)
					Written test	Viva voce			Written test	Viva voce	
THEORY ^											
1	15AR410	RCC Structures	3	50	50^	-	100	-	25	-	50
2	15AR420	Building Services I	3	50	50^	-	100	-	25	-	50

S.NO	Sub. Code	Name of the Subject	Duration of Terminal	Max. Marks				Min. Marks for Pass			
THEORY CUM STUDIO®											
3.	15AR430	Building Material and Construction III	3	50	50^	-	100	-	25	-	50
STUDIO#											
4.	15AR440	Architectural Design III	-	60	-	40#	100	-	-	-	50

*** Continuous** Assessment Evaluation pattern will differ from subject to subject.

^® For Theory courses and Theory cum Studio Courses Terminal Examination will be conducted for maximum marks of 100 and subsequently be reduced to 50 marks for the award of terminal examination marks.

For Studio Courses, Terminal Examination in the form of Viva voce will be conducted during the end semester for a maximum of 100 marks and subsequently be reduced to 40 marks for the award of terminal examination marks.

Fifth semester

			Exam. [in Hours]	Continuous assessment* (A)	Terminal Exam (B)		Max. Marks (A + B)	Continuous assessment (A)	Terminal Exam (B)		Total (A + B)
					Written test	Viva voce			Written test	Viva voce	
THEORY ^											
1	15AR510	Theory of Design	3	50	50^	-	100	-	25	-	50
2	15AR520	Building Services II	3	50	50^	-	100	-	25	-	50
3	15AR530	History of Indian Architecture	3	50	50^	-	100	-	25	-	50
STUDIO#											
4	15AR540	Architectural Design IV	-	60	-	40#	100	-	-	-	50

*** Continuous** Assessment Evaluation pattern will differ from subject to subject.

^ For Theory courses Terminal Examination will be conducted for maximum marks of 100 and subsequently be reduced to 50 marks for the award of terminal examination marks.

For Studio Courses, Terminal Examination in the form of Viva voce will be conducted during the end semester for a maximum of 100 marks and subsequently be reduced to 40 marks for the award of terminal examination marks.

Sixth SEMESTER

S. No	Sub. Code	Name of the Subject	Duration of Terminal Exam. [in Hours]	Max. Marks				Min. Marks for Pass			
				Continuous assessment* (A)	Terminal Exam (B)		Max. Marks (A + B)	Continuous assessment (A)	Terminal Exam (B)		Total (A + B)
					Written test	Viva voce			Written test	Viva voce	

THEORY ^											
1.	15AR610	Estimation and Specification	3	50	50^	-	100	-	25	-	50
2.	15AR620	History of Modern Architecture I	3	50	50^	-	100	-	25	-	50
STUDIO#											
3.	15AR630	Architectural Design V	-	60	-	40#	100	-	-	-	50

*** Continuous** Assessment Evaluation pattern will differ from subject to subject and for different tests.

^ For Theory courses Terminal Examination will be conducted for maximum marks of 100 and subsequently be reduced to 50 marks for the award of terminal examination marks.

For Studio Courses, Terminal Examination in the form of Viva voce will be conducted during the end semester for a maximum of 100 marks and subsequently be reduced to 40 marks for the award of terminal examination marks.

SEVENTH SEMESTER

S.NO	Sub. Code	Name of the Subject	Duration of Terminal Exam. [in Hours]	Max. Marks				Min. Marks for Pass			
				Continuous assessment* (A)	Terminal Exam (B)		Max. Marks (A + B)	Continuous assessment (A)	Terminal Exam (B)		Total (A + B)
					Written test	Viva voce			Written test	Viva voce	
STUDIO#											
1	15AR710	Practical Training	-	50	-	50#	100	-	-	-	50

[#] For Studio Courses like Practical Training, Terminal Examination in the form of Viva voce will be conducted during the end semester for a maximum of 100 marks and subsequently be reduced to 50 marks for the award of terminal examination marks.

EIGHTH SEMESTER

S.NO	Sub. Code	Name of the Subject	Duration of Terminal Exam. [in Hours]	Max. Marks				Min. Marks for Pass			
				Continuous assessment* (A)	Terminal Exam (B)		Max. Marks (A + B)	Continuous assessment (A)	Terminal Exam (B)		Total (A + B)
					Written test	Viva voce			Written test	Viva voce	
1.	15AR810	Urban Design	3	50	50^	-	100	-	25	-	50
2.	15AR820	Landscape Design	3	50	50^	-	100	-	25	-	50
STUDIO[#]											
3.	15AR830	Architectural Design VI	-	60	-	40[#]	100	-	-	-	50

^ For Theory courses Terminal Examination will be conducted for maximum marks of 100 and subsequently be reduced to 50 marks for the award of terminal examination marks.
[#] For Studio Courses, Terminal Examination in the form of Viva voce will be conducted during the end semester for a maximum of 100 marks and subsequently be reduced to 40 marks for the award of terminal examination marks.

NINETH SEMESTER

S.NO	Sub. code	Name of the Subject	Duration of Terminal Exam. [in Hours]	Max. Marks				Min. Marks for Pass			
				Continuous assessment* (A)	Terminal Exam (B)		Max. Marks (A + B)	Continuous assessment (A)	Terminal Exam (B)		Total (A + B)
					Written test	Viva voce			Written test	Viva voce	

THEORY ^											
1	15AR910	Professional Practice	3	50	50^	-	100	-	25	-	50
2.	15AR920	Project Management	3	50	50^	-	100	-	25	-	50
STUDIO#											
3.	15AR930	Architectural Design VII	-	60	-	40#	100	-	-	-	50

^ For Theory courses Terminal Examination will be conducted for maximum marks of 100 and subsequently be reduced to 50 marks for the award of terminal examination marks.

For Studio Courses, Terminal Examination in the form of Viva voce will be conducted during the end semester for a maximum of 100 marks and subsequently be reduced to 40 marks for the award of terminal examination marks.

TENTH SEMESTER

S.NO	Sub. Code	Name of the Subject	Duration of Terminal Exam. [in Hours]	Max. Marks				Min. Marks for Pass			
				Continuous assessment* (A)	Terminal Exam (B)		Max. Marks (A + B)	Continuous assessment (A)	Terminal Exam (B)		Total (A + B)
					Written test	Viva voce			Written test	Viva voce	
STUDIO#											
1.	15ART10	Architectural Thesis	-	60	-	40#	100	-	-	-	50

For Studio Courses, Terminal Examination in the form of Viva voce will be conducted during the end semester for a maximum of 100 and subsequently be reduced to 40 marks for the award of terminal examination marks

ELECTIVE FOUNDATION COURSES

S.NO	Sub. Code	Name of the Subject	Duration of Terminal Exam.	Max. Marks			Min. Marks for Pass		
				Continuous	Terminal Exam (B)	Max.	Continuous	Terminal Exam (B)	Total (A

			[in Hours]	assessment* (A)	Written test	Viva voce	Marks (A + B)	assessment (A)	Written test	Viva voce	+ B)
THEORY ^											
1.	15ARFA0	Concepts and Approaches in Design	3	50	50^	-	100	-	25	-	50
2.	15ARFB0	History of Dravidian Architecture	3	50	50^	-	100	-	25	-	50
3.	15ARFC0	Vernacular Architecture	3	50	50^	-	100	-	25	-	50
4.	15ARFD0	History of Medieval Architecture	3	50	50^	-	100	-	25	-	50
5.	15ARFG0	Services in High rise buildings	3	50	50^	-	100	-	25	-	50
6.	15ARFH0	History of Modern Architecture II	3	50	50^	-	100	-	25	-	50
7	15ARF40	Human Settlements Planning	3	50	50^	-	100	-	25	-	50
9.	15ARF60	Environment Behavior Studies	3	50	50^	-	100	-	25	-	50
THEORY CUM STUDIO®											
10.	15ARFJ0	Lateral Thinking Techniques	3	50	50^	-	100	-	25	-	50
11.	15ARFK1	Ergonomics	3	50	50^	-	100	-	25	-	50
12.	15ARFL0	Computer Application in Design	3	50	50^	-	100	-	25	-	50
14.	15ARFM1	Working Drawing	3	50	50^	-	100	-	25	-	50
15.	15ARFN0	3D Modeling	3	50	50^	-	100	-	25	-	50

16.	15ARFP0	Interior Design and Practices	3	50	50^	-	100	-	25	-	50
17.	15ARFQ0	Building Science I	3	50	50^	-	100	-	25	-	50
18.	15ARFR0	Building Materials and Construction IV	3	50	50^	-	100	-	25	-	50
19.	15ARFT0	Building Science II	3	50	50^	-	100	-	25	-	50
20.	15ARFV0	Housing Standards and Design	3	50	50^	-	100	-	25	-	50
21.	15ARFW0	Architectural Conservation	3	50	50^	-	100	-	25	-	50
22.	15ARFY0	Dissertation	-	50	-	50®	100	-	-	25	50
23.	15ARFZ0	Site Planning and Site Services	3	50	50^	-	100	-	25	-	50
24.	15ARF10	Structure and Architecture I	3	50	50^	-	100	-	25	-	50
25.	15ARF20	Building Services and Technology	3	50	50^	-	100	-	25	-	50
26.	15ARF30	Structure and Architecture II	3	50	50^	-	100	-	25	-	50

* Continuous Assessment Evaluation pattern will differ from subject to subject.

^ For Theory courses and Theory cum Studio Courses, Terminal Examination will be conducted for maximum marks of 100 and subsequently be reduced to 50 marks for the award of terminal examination marks.

® For Theory cum Studio Courses like Dissertation, Terminal Examination in the form of Viva voce will be conducted during the end semester for a maximum of 100 Marks and subsequently be reduced to 50 marks for the award of terminal examination marks.

PROGRAMME ELECTIVE

d. Programme Specific Elective

S.NO	Sub. Code	Name of the Subject	Duration of Terminal Exam. [in Hours]	Max. Marks				Min. Marks for Pass			
				Continuous assessment* (A)	Terminal Exam (B)		Max. Marks (A + B)	Continuous assessment (A)	Terminal Exam (B)		Total (A + B)
					Written test	Viva voce			Written test	Viva voce	

THEORY ^											
1.	15ARPA0	Art Appreciation	3	50	50^	-	100	-	25	-	50
2.	15ARPB0	Art in Architecture	3	50	50^	-	100	-	25	-	50
3.	15ARPC0	Construction Technology	3	50	50^	-	100	-	25	-	50
4.	15ARPD0	Building Construction Practices	3	50	50^	-	100	-	25	-	50

^ For Theory courses Terminal Examination will be conducted for maximum marks of 100 and subsequently be reduced to 50 marks for the award of terminal examination marks.

e. Programme Specific Elective for Expanded Scope

S.NO	**Sub. Code**	**Name of the Subject**	**Duration of Terminal Exam. [in Hours]**	**Max. Marks**				**Min. Marks for Pass**			
				Continuous assessment* (A)	**Terminal Exam (B)**		**Max. Marks (A + B)**	**Continuous assessment (A)**	**Terminal Exam (B)**		**Total (A + B)**
					Written test	**Viva voce**			**Written test**	**Viva voce**	

THEORY ^											
5.	15ARPE0	Environment and Architecture	3	50	50^	-	100	-	25	-	50
6.	15ARPF0	Appropriate Construction Technology	3	50	50^	-	100	-	25	-	50
7.	15ARPG0	Sustainable Architecture	3	50	50^	-	100	-	25	-	50
8.	15ARPK0	Advanced Structures	3	50	50^	-	100	-	25	-	50

^ For Theory courses Terminal Examination will be conducted for maximum marks of 100 and subsequently be reduced to 50 marks for the award of terminal examination marks.

C. Interdisciplinary Elective

S.NO	Sub. Code	Name of the Subject	Duration of Terminal Exam. [in Hours]	Max. Marks				Min. Marks for Pass			
				Continuous assessment* (A)	Terminal Exam (B)		Max. Marks (A + B)	Continuous assessment (A)	Terminal Exam (B)		Total (A + B)
					Written test	Viva voce			Written test	Viva voce	
THEORY ^											
1	14EG141	English	3	50	50^	-	100	-	25	-	50

f. Skill Proficiency based Elective

S.NO	Sub. Code	Name of the Subject	Duration of Terminal Exam. [in Hours]	Max. Marks				Min. Marks for Pass			
				Continuous assessment* (A)	Terminal Exam (B)		Max. Marks (A + B)	Continuous assessment (A)	Terminal Exam (B)		Total (A + B)
					Written test	Viva voce			Written test	Viva voce	
THEORY CUM STUDIO											

1.	15ARPM0	Representation I	-	100 α	-	-	100	-	-	-	50
2.	15ARPN0	Architectural Graphics II	-	100 α	-	-	100	-	-	-	50
3.	15ARPQ0	Architectural Workshop	-	100 α	-	-	100	-	-	-	50
4.	15ARPR1	Representation II									

α For Theory cum Studio Courses like Representation I, Representation II ,Architectural Workshop, Architectural Graphics II the evaluation will be in the form of Continuous Assessment for maximum of 100 marks.

THIAGARAJAR COLLEGE OF ENGINEERING, MADURAI - 625 015
(An Autonomous Institution affiliated to Anna University)

RULES AND REGULATIONS

B.ARCH. DEGREE PROGRAMME

CHOICE BASED CREDIT SYSTEM
(These Rules and Regulations are applicable to the candidates admitted from the Academic year 2015 – 16 onwards)

1.0 PRELIMINARY DEFINITIONS AND NOMENCLATURE

In these Regulations, unless the context otherwise requires:

i. **"Programme"** means B. Arch Degree Programme

ii. "**Degree"** means Under Graduate (UG) Degree that is B.Arch degree.

iii. **"Course"** means a theory, theory cum studio or studio subject that is normally studied in a semester, like Fundamentals of Architecture, Building Materials and Construction I, Architectural Design I, etc.

iv. "**University**" means Anna University.

2.0 QUALIFICATION FOR ADMISSION

2.1 Students for admission to the first semester of the ten semester B.Arch. Degree Programme shall be required to have passed the Higher Secondary Examination of (Academic 10+2) curriculum with Mathematics as subject of study or 3 year Diploma (10 +3) recognized by the Central / State Government with mathematics as subject of study or any other examination of any University or Authority accepted by the Syndicate of this University as equivalent thereto.

2.2 Notwithstanding the qualifying examinations, the student shall have passed an aptitude test as specified by the Council of Architecture in the minimum standards of Architectural Education and Regulations or any other statutory authorities dealing with Architectural Education.

2.3 The eligibility criteria such as marks, number of attempts and physical fitness shall be as prescribed by the Syndicate of the University from time to time.

3.0 STRUCTURE OF THE PROGRAMME

3.1 Categorization of Courses

B.Arch. Programme will have a curriculum with syllabi consisting of theory, theory cum studio and studio courses that shall be categorized as follows:

i. **Professional Core Courses (PC)** courses include the core courses relevant to the chosen specialization/branch like Fundamentals of Design, Architectural Design etc

ii. **Compulsory Foundation Courses** (CFC) courses which provides basic foundation to the core courses or supplement the core courses like Fundamentals of Architecture, Theory of Design etc

iii. **Elective Foundation Courses** (EFC) are foundation courses which leads to knowledge enhancement selected from a pool of courses under specific streams like Architecture, Design, Technology, Planning, Energy and Environment.

iv. **Programme Elective** –courses which are Supportive (specific or specialized) to the discipline of study like Art Appreciation, Construction Technology etc. These are pooled under the following categories.

   a. Programme Specific Elective for Expanded Scope: Courses which are advanced/ courses with latest technologies or courses which are supportive to the discipline like Appropriate Construction Technology, Advanced Structures, Disaster Mitigation and Management etc.

   b. Interdisciplinary Elective: Courses which are chosen from varied discipline like English, Civil Engineering department, Mechanical department etc.

   c. Skill/ Proficiency based Elective: Courses which nurture skills and proficiency of the candidate like Representation I, Representation II, Architectural Workshop etc.

The distribution of credits for each category is given Table 1.

Table1: Credit Distribution

S.No	Category	Credit distribution
1.	Programme Core	74
2.	Programme Elective	12
3.	Elective Foundation Courses	27
4.	Compulsory Foundation Courses	67
	Minimum Credits to be earned for the award of the degree	180

3.2 Personality and Character Development

All students shall register, on admission, in any one of the personality and character development programmes (NCC/NSS) and undergo training and attends camps as prescribed by the respective officers / coordinators. The training shall include classes on hygiene and health awareness and also training in first aid.

- **National Cadet Corps (NCC)** will have a number of parades/camps specified by the NCC officer.
- **National Service Scheme (NSS)** will have social service activities in and around the college specified by the NSS coordinator
- **Sports, games, drills and physical exercises** specified by the Physical Director

While the training activities will normally be during weekends, the camp will normally be during vacation period. Every student shall put in a minimum attendance in the training and attend the camp. The training and camps shall be completed during the first year of the programme. However, for valid reasons, the Principal may permit a student to complete this requirement in the second year.

3.3 Credit Assignment

Each course is assigned certain number of credits based on the following:

TABLE 1

Contact period per week	**CREDITS**
1 hour Lecture Period	1
2 hours Tutorial Period	1
2hours Studio/Practical Periods	1

3.4 Number of Courses/ Credits per semester

Curriculum of a semester shall normally have a blend of theory courses, theory cum studio courses, and studio courses. Each course may have credits assigned as per clause 3.3. However, the total number of courses per semester shall not exceed 7 of which the studio courses shall not exceed 1. The maximum number of credits the student can register in a particular semester cannot exceed 27 credits (including courses for which the student has done reappearance registration (vide clause 5.6).

3.5 Educational Tour

Every student shall undergo one educational tour compulsorily as arranged during the course of the B. Arch degree programme.

3.6 Online Courses / Guided Study Courses/ Onsite study courses/Industry Supported Courses

3.6.1 Students may be permitted to credit only one online course / Guided Study course / Onsite study course/Industry Supported Courses with the approval of the Department Committee constituted by the Head of the Department and approved by the Academic Council after IV semester of the programme.

3.6.2 Students may be permitted to credit online courses (which are provided with certificate) with the approval of Department Committee constituted by the Head of the Department and Academic Council subject to a maximum of three credits. The student needs to obtain certification or credit to become eligible for the End Semester Examination conducted by the Controller of Examinations.

3.6.3 The student can opt for Guided Study course provided the student does not have current arrears and earns a CGPA of 8.0 and above.

Guided study courses may be offered by a Department within the Institute. The purpose of the course is to permit the student to study a course / a topic of the student's choice. The students shall study on their own under the guidance of a faculty member. No formal lectures need to be delivered. The syllabus of the course and mode of assessments shall be approved by the Department Committee constituted by the Head of the Department and Academic Council. Preferably One Faculty member approved by the Head of the Department shall be responsible for the periodic monitoring and evaluation of the course.

3.6.4 The student may be permitted to credit onsite study courses (which are provided with certificate) offered by any Industry/Research Organization/NGO/National Labs, Teaching Faculty/Independent expert in the field related to Architecture.
The course shall be offered with the prior approval of the syllabus from the Department Committee constituted by the Head of the Department and Academic Council for final approval.

3.6.5 Industry supported Courses: Students can opt for one-credit courses and two credit courses, offered by experts from industry/ research organizations and approved by academic council. Students can register such courses from his/her third year of study as and when these courses are conducted by different departments. A student is also permitted to register for these courses of other departments, provided the student has fulfilled the necessary pre-requisites of the course being offered and subject to the approval of both the heads of departments. However, a student can register for only one course in a semester.

3.6.6 The online course/Guided study course / onsite study course/Industry Supported Courses of 3 credits can be considered instead of one elective course (Programme Elective or Elective Foundation course).

3.7 Medium of Instruction

The medium of instruction is English for all courses, design studios, seminar presentations and project/thesis reports.

4.0 <u>DURATION OF THE PROGRAMME AND SEMESTERS</u>

4.1 A student is ordinarily expected to complete the B.Arch. Programme in 10 semesters (5 years) but in any case not more than 10 years (20 Semesters).

4.2 Each semester normally consists of 90 working days (including examination days). In any contingent situation the number of working days per semester shall not be less than 65 days. The Principal is given the discretionary powers to decide the number of working days in

such contingencies. The Principal shall ensure that every teacher imparts instruction as per the number of periods specified in the syllabus and that the teacher teaches the full content of the specified syllabus for the course being taught.

4.3 For the purpose of regulations, the academic year will be divided into two semesters, the odd semester normally spanning from June to November and the even semester from December to May.

4.4 The total duration for completion of the programme reckoned from the commencement of the first semester to which the student was admitted shall not exceed the maximum duration specified in clause 4.1 irrespective of the period of break of study (vide clause 16) or prevention in order that the student may be eligible for the award of the degree (vide clause 14).

4.5 The student shall complete and pass the first three academic years or six semesters (First Stage) within 5 years of admission to the B.Arch. course as stipulated in the Council of Architecture Minimum Standards of Architectural Education 1983.

5.0 COURSE REGISTRATION

5.1 Each student on regular admission shall register for all the courses prescribed in the curriculum in the student's first year of study.

5.2 A student has to earn the minimum number of total credits (180 Credits) specified in the curriculum of the chosen programme of study in order to be eligible to obtain the degree. However, a student can earn more than the number of credits, if he/she wishes. In such case, the highest grades in the relevant category would be considered for CGPA calculation.

5.3 From II semester onwards, a student has to register courses in the range between 15 and 27 credits, including the courses for which the student has done reappearance registration and supplementary examination for first semester arrear courses.

5.4 The registration for the courses of the Semesters II to X will commence 7 working days prior to the last working day of the preceding semester. The student shall register for the courses with the guidance of the student's Faculty Mentor. If the student wishes, the student may drop or add courses (vide clause 5.3) within **five** working days after the commencement of the concerned semester and complete the registration process. The student is allowed to register for additional courses equivalent to the credit corresponding to the passed courses in revaluation.

5.5 No course shall be offered by a Department unless a minimum of 25 students register for that course.

5.6 After registering for a course, a student shall attend the classes, satisfy the attendance Requirements (vide clause 6.1 and 6.2.1), earn Continuous Assessment marks and appear for the End Semester Examinations, except for the arrear courses in first semester of study.

5.7 The student shall register for the practical training in the VII semester only, Dissertation in the VIII semester only and Thesis in the X semester only.

5.8 Reappearance Registration

5.8.1 If a student fails in a theory or theory cum studio course, they shall do reappearance registration for that course when it is offered next. They shall earn Continuous Assessment Marks and attend the end semester Terminal Examination.

5.8.2 The student may attend the classes for the reappearance registration courses and improve continuous Assessment Marks, if the student wishes. However, the attendance requirement (vide clause 6.1) is not compulsory for such courses.

5.8.3

a) If a student fails in a theory or theory cum studio course, of Programme electives or Elective Foundation Courses, he/she may register for some other programme elective or Elective Foundation course respectively in the subsequent semesters.

b) If a student fails in Dissertation (Theory cum Studio Course) and desires to continue with the same course, the student has to repeat the course when offered next. In this case, the student shall attend the classes/review, satisfy the attendance requirements (vide clause 6), earn Continuous Assessment Marks and appear for the End Semester Viva Voce Examinations. The facility of Reappearance Registration is not available for the elective course, Dissertation.

c) The student who fails in any Studio Course/ Thesis his/her Continuous Assessment Marks is valid for only one subsequent attempt. After one subsequent attempt (clause 10.4.4) the student shall register for the same, when offered next, and repeat the course. In this case, the student shall attend the classes, satisfy the attendance requirements (vide clause 6), earn Continuous Assessment Marks and appear for the End Semester Viva -Voce Examinations. The facility of Reappearance Registration is not available for such courses.

d) The student who fails in Practical Training shall repeat the course again, when offered next.

5.8.4 If a student is prevented from taking the end semester examination of a course (theory / theory cum studio / studio) due to lack of attendance, student has to register for that course again, when offered next, attend the classes and fulfill the attendance requirements as per clause 6. If the course, in which student has lack of attendance, is a Programme Elective or an Elective Foundation Courses, student may register for some other Programme Elective or Elective Foundation course respectively in the subsequent semesters.

5.8.5 A student who has already appeared for a course in a semester and passed the examination is not entitled to reappear the same course for improvement of Grade/Marks.

6.0 REQUIREMENTS FOR APPEARING FOR THE END SEMESTER EXAMINATION OF A COURSE

6.1 A student who has fulfilled the following conditions shall be deemed to be eligible to appear for the end semester examination.

Ideally, every student is expected to attend all the classes and earn 100% attendance. Students who have earned not less than 75% attendance course wise taking into account the number of periods required for that course as specified in the curriculum.

- Students who have earned attendance less than 65% will not be permitted to appear for End Semester Examination for that course. The student has to register and repeat that particular course in a subsequent semester when it is offered next.
- However, exemption may be given for the students who earned attendance between 65% and less than 75% in a particular course from the prescribed attendance requirement based on medical leave (hospitalization / accident / specific illness) and On Duty leave for participation in the College / University / State / National / International level Sports events (Vide clause 6.1.3) with prior approval from the Principal / competent authority. Such student shall be permitted to apply for condonation to the Principal through the respective Head of the Department. After the approval from the principal, the student shall be permitted to appear for the end semester examination for that course by paying the prescribed fee by the Controller of Examinations of the college. However, the students who have represented the college in NCC/NSS/Sports are exempted from the Condonation.
- His / her progress has been satisfactory and obtained bona fide certificate in the Record of all the Practical courses in the semester, and
- His / her conduct has been satisfactory.

6.1.1 Student who is permitted by the respective Head of the Department to carry out Practical Training at industries/ organizations/higher learning institutions should submit the attendance certificate from the competent authority at every project review meetings and at the time of project report submission.

6.1.2 A student shall be permitted to appear for the terminal examinations only if,

a. he/she satisfies the attendance requirements
b. the student's conduct has been satisfactory
c. he/she has paid the examination fees and registered for the examinations for all the courses of that semester by paying the prescribed examination fees within the due date. If any student fails to register and pay the examination fees within the due date, he /she shall not be permitted to attend the end semester examinations.
    - the prescribed fee by the Controller of Examinations of the college. However, the students who have represented the college in NCC/NSS/Sports are exempted from the Condonation.
    - His / her progress has been satisfactory and obtained bona fide certificate in the Record of all the Practical courses in the semester, and

6.1.3 The students who are consistently good in academics ONLY be considered for the grant of ODL under co-curricular / extra-curricular activities by the competent authorities. The following activities shall be considered for the award of ODL:

- Sports and Games: TIES, Inter collegiate, Inter Zonal, Inter University, State level, National level and Open Tournaments.
- NCC: Camps and expeditions, NSS camps
- Cultural Programs at State, National and International level
- Seminar / Symposia: Paper presentation / Quiz
- Leadership course organized by other organizations & Alumni Association activities, Association Activities, Placement Activities
    - NASA(National Association of Students of Architecture)
    - Zonal NASA Conventions.
- Training Programs/internship at Industries and Higher Learning Institutions
- Personal damages incurred during the extra-curricular activities.
- The ODL requisition letter shall be forwarded to the Principal through the Head of the Department of the student by the staff-in-charge of the respective activities before completion of every activity.

- The ODL sanctioned letters shall be submitted to the Department office. The faculty-in-charge of the department office will check the eligibility for the award of attendance at the end of semester and the same may be submitted to the Head of the Department for approval.

6.1.4 Those students who are not deemed to have completed the semester with reference to the conditions specified above shall undergo the semester again in all the courses in the respective semester during next academic year.

7.0 FACULTY MENTOR

To help the students in planning their courses of study and for general advice on the academic programme, the Head of the Department will attach a certain number of students (20 to 25) to a faculty member of the Department. He /she shall function as Faculty Advisor for these students throughout their period of study. The faculty advisor shall

- Advise the students in registering and reappearance registering of courses
- Monitor their attendance, academic progress and discipline of the students
- Counsel periodically or during the Faculty Advisor/Tutor/Proctor-ward meeting scheduled in the class time table.
- Inform the students about the various facilities and activities available to enhance the student's curricular and co-curricular activities.
- If necessary, the faculty mentor may also discuss with or inform the parents about the progress of the students through the Head of the Department or in the parent –teacher meeting.

8. 0 ACADEMIC COMMITTEES

8.1 Class Committee

- The objective of the Class Committee is to improve the teaching-learning process. The functions of the class committee include:
- Resolving difficulties experienced by students in the classroom and in the laboratories.
- Clarifying the regulations of the degree programme and the details of rules therein.
- Discussing the progress of academic schedule and deviations if any.
- Evaluating the performance of the students of the class after each test and finding the ways and means of improvement.
- Every class in first semester of study shall have a class committee consisting of faculty members who are teaching in that class, student representatives (cross section of students from boys and girls) and a chairperson who is a faculty not handling the course for the class.
- From III semester onwards, Class committee comprises of all the faculty members who are handling courses in that particular semester and one student nominee from each course. A chairperson who is a faculty not handling course for that particular semester, nominated by the Head of the Department shall coordinate the activities of this committee.
- The class committee shall be constituted by the Head of the Department/Chief Tutor on the first week of commencement of the semester.
- The class committee shall meet three times in a semester:
- The first meeting within 10 days from the date of commencement of the semester.
- The second meeting a week after the first Internal test results.
- The third meeting a week before the last lecture day of the semester.
- The Principal may participate in any class committee of the institution.
- During these meetings, the representative of the class shall meaningfully interact and express the opinions and suggestions of the other students of the class to improve the effectiveness of the teaching-learning process.
- The Chairperson is required to prepare the minutes of the meeting, signed by the members and submit the same to Head of the Department within five working days of the meeting. Head of the Department will in turn consolidate and forward the same to the Principal/Dean, within 10 working days of the meeting.
- In each meeting, the action taken report of the previous meeting is to be presented by the Chairperson of the class committee.

8.2 Performance Assessment Committee

- The Performance Assessment Committee comprises of the Course Coordinators / Course faculty members and Programme coordinator, nominated by the Head of Department. This committee shall meet to assess the attainment of Course Outcomes and Program Outcomes, progress and status of the students of the semester concerned at the beginning and end of the semesters. The committee can invite Faculty mentors and students as invitees.

9. 0 SYSTEM OF EXAMINATION

9.1 B.Arch. Programme consists of Theory Courses, Theory cum Studio Courses and Studio Courses.

Performance in each course of study shall be evaluated based on (i) Continuous Assessments throughout the semester and (ii) End Semester Examination at the end of the semester.

For Theory courses and Theory cum Studio Courses including Programme elective courses and Elective Foundation Courses, out of 100 marks, the maximum marks for Continuous Assessment is 50 and the End Semester Terminal Examination carries 50 marks.

For Theory cum Studio Courses like Dissertation, out of 100 marks, the maximum marks for Continuous Assessment is 50 and the End Semester Terminal Examination (viva voce) carries 50 marks.

For Theory cum Studio Courses (Skill based)/ interdisciplinary elective like Visual Arts, Architectural workshop, Representation I, Representation II shall be evaluated based on Continuous Assessment only, for a maximum of 100 marks.

For Studio Courses like Fundamentals of Design, Architectural Design, Architectural Thesis out of 100 marks, the maximum marks for Continuous Assessment is 60 and the End Semester Viva Voce Examination carries 40 marks.

For Studio Courses like Practical Training out of 100 marks, the maximum marks for Continuous Assessment is 50 and the End Semester Viva Voce Examination carries 50 marks.

S. No	Categorization of courses	Continuous Assessment	End Semester Examinations/Viva	Total marks
1.	Theory Courses	50	50	100
2.	Theory cum Studio Courses	50	50	100
3.	Theory cum Studio Courses (Skill based)	100	-	100
4.	Dissertation	50	50	100
5.	Studio Courses	60	40	100
6.	Practical Training	50	50	100
7.	Architectural Thesis	60	40	100
8.	Industry Supported Courses/ Onsite courses/ Online courses / Guided Study	-	100	100

9.2 Assessment for Theory Courses

Theory courses

Continuous Assessment comprises of two assessments, conducted by the course instructor / coordinator / department. One assessment will be in the form of internal test. The number of internal test would be two per semester. The total marks obtained in the test and the assignment put together shall be reduced to 50.

The apportioning of marks shall be as follows:

- 30 marks for test
- 20 marks for assignments/tutorials/seminars/mini projects/site study/ field visit report / working model / evaluation report / test report / drawings/construction yard exercises etc.

A minimum of two tests would be conducted in a day (in the case of tests and they would be of two hours durations each) students will not have regular classes on the scheduled day of these tests. In case a **student misses** the assessment due to medical reasons (hospitalization / accident / specific illness) or due to participation in the College / University / State / National / International level Sports events with prior permission and approval from the Head of the Department within one week, **Re test** / **Assignment submission** may be given through the concerned course instructor.

9.3 Assessment for Theory cum Studio Courses

The award of marks for continuous assessment shall be based on **two** evaluations out of which one will be in the form of written test. The number of internal test would be two per semester. Test will be conducted as per the schedule given in the academic calendar which carries a maximum of 50 marks.

The apportioning of marks shall be as follows:

- 20 marks for test

- 30 marks for assignments/tutorials/seminars/mini projects/site study/ field visit report / working model / evaluation report / test report / drawings/construction yard exercises etc.

The assignments shall be subject specific in the form of field visit report / working model /evaluation report / test report / drawings/construction yard exercises/viva etc. The weightage for these evaluations shall be discussed and recommended by the Department Committee constituted by the Head of the Department.

9.4 Assessment for Theory cum Studio Courses (Skill Based)

The assessment of Theory cum studio courses like Representation I, Representation II, Architectural Workshop, Visual Arts, etc., will be based on the Continuous Assessment only. The evaluation will be carried out in the form of assignments/drawings/sketches/report etc. for a maximum of 100 marks only. The weightage for these evaluations shall be discussed and recommended by the Department Committee constituted by the Head of the Department.

9.5 Assessment for Dissertation

The Continuous Assessment evaluation for Dissertation shall be carried out for 50 marks. Every candidate shall submit at the end of the VII semester a topic approved by a Dissertation review committee, which shall comprise of the Dissertation Coordinator, Supervisor and one External member, constituted by the Head of the Department. The dissertation shall be evaluated for 50 marks by the Dissertation review committee, through continuous assessment with a minimum of 4 reviews (including one topic selection review which will not be evaluated) throughout the semester. The External Review member will be appointed by the Controller of Examination from a panel recommended by the Head of the Department.

9.6 Assessment for Studio Courses

9.6.1 The Continuous Assessment evaluation for Studio Courses like Fundamentals of Design and Architectural Design will be carried out for 60 marks for the performance of the candidate in the studio projects throughout the semester. A minimum of 2 studio projects shall be done in a semester of which one shall be a time project for a period of not less than 2 working days. The evaluation weightage for these studio projects shall be discussed and recommended by the Department Committee constituted by the Head of the Department.

9.7 Assessment for Practical Training

9.7.1 Every student shall undergo Practical Training in the VII Semester. The student shall undergo Practical Training in architectural firms/offices under architects registered with the Council of Architecture, India with a minimum of 5 years professional standing with the approval of the Head of the Department.

If the student wishes to undergo training outside India, it should be under an architect registered with the Governing body for Architects of that Country with a minimum of 5 years professional standing. This should be duly approved by the Department Committee two weeks prior to the training period.

9.7.2 Ideally every student is required to undertake the entire duration of Practical Training in the VII semester in a single architectural firm/office. However, under unforeseen circumstances, if the student wishes to change his/ her place of Practical Training, student shall be allowed to do so only once.

9.7.3 The Continuous Assessment evaluation for Studio Courses like Practical Training shall be carried out for 50 marks for the entire period of the practical training during the VII semester. A minimum of three evaluations shall be in the form of Monthly Progress report, Work diary, Portfolio, Site visits etc. The evaluation weightage for these studio subjects shall be discussed and recommended by the Department Committee constituted by the Head of the Department.

9.7.4 For the Practical Training, End semester examination shall be conducted in the form of a viva-voce examination at the end of the VII semester by an internal and external examiner appointed by the Head of the Department and approved by the Controller of Examinations.

9.8 Assessment for Architectural Thesis

Every candidate shall submit a synopsis at the end of IX Semester to be approved by the Department Committee constituted by the Head of the Department. The thesis review committee constituted by the Head of the Department shall comprise of the Coordinator of the Thesis, one internal member/Visiting Faculty, the Supervisor and Two External members. The Thesis shall be evaluated for 60 marks by the Thesis review committee through continuous assessment with a minimum of 5 reviews (including one topic selection review which will not be evaluated) throughout the semester. The External Review members will be appointed by the Controller of Examination from a panel recommended by the Head of the Department.

9.9 Assessment for Online Course

Students may be permitted to register for online courses (which are provided with certificate) with the prior approval of Department Committee and Academic Council to a maximum of three credits. Department Committee constituted by the Head of the Department will take decision on the evaluation methodology for the online course. The Committee can decide the Scheme of Evaluation and same may be conveyed to the Controller of Examinations, at the beginning of the semester when the course is offered. The student needs to obtain certification or credit to become eligible for writing the End Semester Terminal Examination. The Head of the Department may identify a faculty member as a coordinator for the course, who is responsible for the evaluation process. The End Semester Examination shall be in the form of written Test/Viva Voce.

9.10 Assessment for Guided Study Course

The syllabus of the course and mode of assessments shall be approved by the Department Committee constituted by the Head of the Department, Academic Council and forwarded to the Controller of Examinations before the commencement of the semester. One Faculty member approved by the Head of the Department shall be responsible for the periodic monitoring and evaluation of the course.

9.11 Assessment for Onsite Study Course

Students may be permitted to register onsite study courses (which are provided with certificate) with the approval of Departmental Committee constituted by the Head of the Department and Academic Council subject to a maximum of three credits. The student needs to obtain certification to become eligible for writing the End Semester Terminal Examination to be conducted by Controller of Examinations. The Head of the Department may identify a faculty member as coordinator for the course, who is responsible for the evaluation process. The course shall be evaluated through the End Semester Terminal Examination only in the form of written test/Viva Voce.

9.12 Assessment for Industry Supported Courses

Industry supported One credit Courses and Two credit Courses shall be organized by the department for a period of 14 or 28 hours. The evaluation will be carried out at the end of the course for a maximum of 100 marks in the form of test/ report/ viva-voce/practical by the course coordinator. These courses are evaluated by the respective course coordinator of the programme. If a student who registers for industry supported one-credit or two credit courses does not successfully complete the course, the registration of that course will be considered as cancelled. Further, it will not be treated as arrear and no supplementary examination will be conducted; alternatively, if he/she wishes, he/she can re-register for the same course in the ensuing semesters and successfully complete it as and when it is offered subsequently.

9.13 Students are prohibited from entering into the Examination Hall / Laboratories with any book or portion of book, manuscript, or paper of any description or Communicating with or copying from each other or communicating with anyone outside the Examination Hall / Laboratories. Programmable calculator and mobile phone shall not be permitted inside the Examination hall / Laboratories. However, any required codebooks and data sheets / books as specified in the question paper will be supplied inside the Examination hall / laboratories by the office of the Controller of Examinations. The students are warned that any form of Malpractice will be dealt with severely. The punishment may be canceling all the examinations registered by the student in that semester and debarring permanently from all the examinations and disciplinary action will be taken by the college authorities after conducting enquiry. Identity card of the college must be produced at the time of terminal examination. Any student fails to produce Identity card shall not be permitted to appear for the examination.

9.14 A student can apply for revaluation of his/her semester examination answer paper in theory and theory cum Studio courses, within a week from the declaration of results, on payment of a prescribed fee through proper application to the Controller of Examinations. The Controller of Examination will arrange for the revaluation and the results will be published before the commencement of supplementary examinations. Revaluation is not permitted for practical courses, project work and industry supported courses.

9.15 Students can go through the answer script for re-totaling before they apply for revaluation after the publication of the results.

9.16 A student can apply for revaluation of his/her semester examination answer paper in theory and theory cum Studio courses, within a week from the declaration of results, on payment of a prescribed fee through proper application to the Controller of Examinations. The Controller of Examination will arrange for the revaluation and the results will be published before the commencement of supplementary examinations. practical courses, project work and industry supported courses

9.17. Revaluation is not permitted for Studio Courses like Architectural Design, Theory cum Studio Courses like Dissertation, Computer application in Design, 3D Modeling and Skill based Theory cum Studio Courses like Representation I, Representation II, Architectural Graphics II, Visual Arts, Architectural Workshop and Onsite/Industry Supported Courses.

10.0 ELIGIBILITY FOR PASS IN EACH COURSE

The Passing requirement for a student in a course is determined statistically based on the analysis of the marks obtained both in Continuous Assessment and End Semester Examinations put together.

10.1 Theory Courses

10.1.1 For theory courses a candidate shall be declared to have passed the examination, if he / she secures minimum of 25 marks out of 50 in the end semester terminal examination with a minimum aggregate of 50 marks in continuous assessment and end semester examination put together.

10.1.2 If a student fails to secure a pass in a theory course (except Elective Foundation and Programme Elective) the student shall do reappearance registration for that course, when offered next, earn continuous assessment marks and attend the end semester examination.

10.2 Theory cum Studio Courses

10.2.1 For Theory cum Studio courses, a candidate shall be declared to have passed the examination, if he / she secures minimum of 25 marks out of 50 in the End Semester Terminal Examination with a minimum aggregate of 50 marks in Continuous Assessment and End Semester Examination put together.

10.2.2 If a student fails to secure a pass in a Theory cum Studio course (except Elective Foundation and Programme Elective) the student shall do reappearance registration for that course, when offered next, earn Continuous Assessment Marks and attend the End Semester Examination.

10.2.3 If the course, in which the student has failed, is an elective foundation course or a programme elective, the student may be permitted to register for some other Elective Foundation Courses or Programme elective course in the subsequent semesters, attend the classes and fulfill the attendance requirements as per Clause 6.

10.2.4 If a student fails to secure a pass in Dissertation and decides to register again the same course then the student shall repeat the course again, when offered next.

10.3 Theory cum Studio Courses (Skill Based)

10.3.1 For Theory cum Studio courses (Skill Based), (as indicated in 3.1)) a candidate shall be declared to have completed the course, if he / she secures minimum of 50 out of 100 marks in continuous assessment.

10.3.2 If a student fails to secure a pass in a theory cum studio course (Skill Based) the student shall do reappearance registration for that course, when offered next and earn continuous assessment marks.

10.3.3 If a student fails the student may be permitted to register for some other elective foundation courses or Programme elective course in the subsequent semesters, attend the classes and fulfill the attendance requirements as per Clause 6.

10.4 Studio Courses

10.4.1 For Fundamentals of Design and Architectural Design studio courses, a candidate shall be declared to have passed the examination if he / she secures an aggregate of 50 marks out of 100 obtained in the Continuous Assessment and End semester examination put together. The End Semester Examination will be conducted as Viva-Voce for the portfolio submitted by the candidate.

10.4.2 For Practical Training, a candidate shall be declared to have passed if he / she secures a minimum of 50 marks out of 100 in the Continuous Assessment and the End Semester Examination put together. The End Semester examination will be conducted as Viva-Voce for the portfolio submitted by the candidate.

10.4.3 For Architectural Thesis, a candidate shall be declared to have passed if he / she secures an aggregate of 50 marks of the total of 100 marks in the Continuous Assessment and the End Semester Viva Voce examination put together.

10.4.4 If a student fails to secure a pass in examinations of studio courses comprising of Fundamentals of Design and Architectural Design/ Architectural Thesis, the student shall resubmit an improved portfolio/works/sheets for the subsequent viva voce examination conducted in the following semester. The continuous assessment marks shall be valid for the subsequent attempt.

In case, a student fails to secure a pass in the subsequent attempt also, in the studio courses comprising of Fundamentals of design and Architectural Design/ Architectural Thesis, the student shall repeat when the course is offered next, secure fresh continuous assessment and submit the portfolio/works/sheets as in the case of a regular student.

10.4.5 If a student fails to secure a pass in Practical Training, the student shall repeat the course again, when offered next.

10.4.6 If a student fails to secure a pass in Dissertation, the student shall repeat the course again by re registration when offered next or he/she can register for other Elective Foundations courses.

10.5 Award of Grades

Range of Total Marks (TM) (Continuous assessment +Terminal Examination)	Letter Grade	Grade Point (GP)
$90 \leq TM \leq 100$	S	10
$80 \leq TM < 90$	A	9
$70 \leq TM < 80$	B	8
$60 \leq TM < 70$	C	7
$50 \leq TM < 60$	D	6
$0 \leq TM < 50$	U	0
Non-completion of a semester(Repeat course)	I	0
Withdrawal from terminal examination	W	0
Absent	AA	0

$$GPA = \frac{\sum_{i=1}^{N} C_i GP_i}{\sum_{i=1}^{N} C_i}$$

N is the number of all courses to be registered in the particular semester, GP_i is the grade point obtained in i^{th} course and C_i is the number of credits assigned to i^{th} course. Cumulative GPA (CGPA) will be calculated when the student is declared to be eligible for the award of the degree. CGPA calculation is based on all the courses considered (vide clause 5.2) for the award of the degree.

11.0 <u>REQUIREMENTS FOR MOVING TO A HIGHER SEMESTER</u>

11.1 A student of the B.Arch. shall move to the higher semester if student satisfies Semester completion requirements (vide clause -6) and the following conditions.

To move to:

(i) III semester, a pass is required in -Fundamentals of Design (Sem I)
(ii) IV semester, a pass is required in -Architectural Design I (Sem II)
(iii) V semester, a pass is required in -Architectural Design II (Sem III)
(iv) VI semester, a pass is required in -Architectural Design III (Sem IV)
(v) VII semester, a pass is required in -Architectural Design IV (Sem V)
(vi) VIII semester, a pass is required in -Architectural Design V (Sem VI)

11.2 A student shall move to the next higher semester if the student has satisfied the

Semester completion requirements (vide Clause 6).

12.0 ISSUE OF GRADE CARD

12.1 The grade card will be issued, through the head of the department every semester after the publication of results up to prefinal semester and a consolidated grade card will be issued after successful completion of all the courses and eligible for the award of degree. The grade card will contain the following information:

i. The courses for which credits are earned with Course code and title
ii. Grade obtained in each course
iii. Cumulative grade point average earned during the course
iv. Month and year of successful appearance

13.0 ELIGIBILITY FOR THE AWARD OF DEGREE

A student shall be declared to be eligible for the award of the B.Arch. Degree provided the student has

(a) A student seeking B.Arch degree shall be required to undergo the **prescribed** courses of study and evaluation in the college for the specified duration and to pass all the examinations prescribed therefore.
(b) He/ she should enrol for all the courses prescribed in the curriculum of the respective degree programme and earn the minimum number of credits (180 credits).
(c) The maximum time limit for the completion of the B.Arch Degree programmes will be 10 (TEN) years from the date of admission to the first semester of the programme
(d) Student should have mandatorily enrolled and registered for the course Environmental Architecture and earned three credits from Programme Elective.
(e) The student completes the NCC / NSS /Sports requirements.
(f) No disciplinary action pending against the student

14.0 CLASSIFICATION OF THE DEGREE AWARDED

14.1. First class with Distinction

A student who qualifies for the award of degree (vide clause 13.0) having passed the examination in all registered courses in his / her first appearance (including industry supported courses), within SIX years including the authorized Break of Study of One Year, and securing a CGPA of not less than 8.50 shall be declared to have passed in First class with distinction and should not have been prevented from writing end semester examination due to lack of attendance in any of the courses. The authorized break of study (vide clause 15.0) and withdrawal from the examination (vide clause 16.0) will not be counted as an attempt.

14.2. First Class

A student who qualifies for the award of degree (vide clause 13.0) having passed the examination in all the courses within SIX years including the authorized Break of Study of One Year and securing a CGPA of not less than 7.00 shall be declared to have passed in First class and should not have been prevented from writing end semester examination due to lack of attendance in any of the courses. The authorized break of study (vide clause 15.0) and withdrawal from the examination (vide clause 16.0) will not be counted as an attempt.

14.3. Second Class

All other students (not covered in 14.1 and 14.2) who qualify for the award of degree having passed the examination in all the courses and fulfilling the requirements given in clause 13.0 above shall be declared to have passed in Second Class.

A student who is absent for end semester examination in a course / project work after having registered for the same shall be considered to have appeared in that (except approved withdrawal from end semester examination) for the purpose of classification.

15.0 TEMPORARY BREAK OF STUDY FROM A PROGRAMME

15.1. A student is not normally permitted to break the study temporarily. However, if a student intends to temporarily discontinue the programme in the middle for valid reasons (such as accident or hospitalization due to prolonged ill health) and to rejoin the programme, he/she shall apply in advance to The Principal, through the Head of the Department stating the reasons, in any case, not later than the last lecture day, provided he/she fulfills the requirement in Clause 6.0.

15.2 The student permitted to rejoin the programme after the break shall be governed by the rules and regulations in force at the time of rejoining.

15.3 The duration specified for passing all the courses for the purpose of classification vide Clause 14.1 and 14.2 shall be increased by the period of such break of study permitted.

15.4 The total period for completion of the programme reckoned from the commencement of the first semester to which the student was admitted shall not exceed the maximum period specified in clause 13.0 irrespective of the period of break of study in order that he/she may be eligible for the award of the degree.

15.5 If any student is detained for want of requisite attendance, progress and good conduct, the period spent in that semester shall not be considered as permitted 'Break of Study'.

16. 0 PROVISION FOR WITHDRAWAL FROM THE EXAMINATIONS

16.1 A student will be permitted to withdraw in any one of the semesters except first semester during the entire duration of the degree programme for valid and genuine reasons by making an application in the office of the Controller of Examinations through the respective Head of the Department for withdrawal at least one day in advance of the last theory examination in that semester. When he / she appear subsequently, he / she have to appear for all the courses of that semester on registration and payment of fees. Subsequent appearance will not be counted as separate attempt.

16.2 Those students who withdraw are eligible for the award of First Class and First Class with Distinction as per the requirement in this regard. However he / she will not be considered for ranking.

16.3 Withdrawal is permitted ONLY ONCE during the entire duration of the degree programme.

16.4. Withdrawal is not permitted to the student who has not satisfied the conditions prescribed in clause 6.0 as requirements for appearing in the end semester examination.

16.5. Withdrawal is permitted for the end semester examinations in the final semester only if the period of study the student concerned does not exceed 5 years as per clause 14.1.

17.0 DISCIPLINE

17.1 Every student is required to observe discipline and decorous behavior both inside and outside the college and not to indulge in any activity, which will tend to bring down the prestige of the college. The Principal shall constitute a disciplinary committee to enquire into acts of indiscipline and notify the institution about the disciplinary action recommended for approval. In case of any serious disciplinary action which leads to suspension or dismissal, then a special committee shall be constituted by the Head of the Institution for taking the final decision.

17.2 If a student indulges in malpractice in any of the Examinations, the student shall be liable for punitive action as prescribed by the College from time to time.

18.0 REVISION OF REGULATIONS AND CURRICULUM

The standing committee/Academic Council of the College reserves the right to revise or change or amend the regulations, the scheme of examinations, the curriculum and the syllabi from time to time if found necessary.

19.0 SPECIAL CASES

In the event of any clarification in the interpretation of the above rules and regulations, they shall be referred to the Standing Committee. The Standing Committee will offer suitable interpretations/ clarifications /amendments required for special case on such references and get them ratified in the next meeting of the Academic Council. The decision of the Academic Council is final.

15AR111 **INTRODUCTION TO ARCHITECTURE, ART AND CULTURE**

Category	L	T	S	Credit
PC	2	0	0	2

Prerequisite

Nil

Course Outcomes

On the successful completion of the course, students will be able to

1.	Graduates will appreciate the architectural history of the world.	Remember and understand
2.	Graduates will understand the architectural developments in each period, recognize significant buildings, monuments, and built environments and distinguish their key characteristics.	Analyse
3.	Graduates will learn the cultural, socio-economic, political, technological, and environmental context that influenced the developments in the historic periods.	Understand and Analyse

Mapping with Programme Outcomes

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PO 13	PO 14	PO 15	PO 16
CO1.	L	L	L	M	L	L	L	L	S	L	L	L	S	S	L	S
CO2.	L	L	L	S	L	L	L	L	M	L	L	L	S	S	L	S
CO3	L	L	L	S	L	L	L	L	M	L	L	L	S	S	L	S

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment Tests			Terminal Examination
	1	2	3	
Remember	10	10	10	20
Understand	10	10	10	20
Apply	10	10	10	20
Analyse	20	20	20	40
Evaluate	-	-	-	-
Create	-	-	-	-

Syllabus

Introduction: Definition of History of architecture- theoretical and practical ways, primary and secondary sources, evidences- pictorial evidence and literary evidences, purpose of analysis and experiment in history of architecture, ideas in history of architecture, the role of drawing in history of architecture, need for studying history of architecture. **The beginnings in architecture:** The cave and the Stone Age buildings, the concept of shelter, clustered dwelling units, monuments in Stone Age periods. Primitive place types- hearth, altar, bed space, communal spaces, performance places- its evolution and transformation till classical architecture. **Basic elements in history of architecture:** primary elements of architecture – the use of point, line, plane and volume in history ; principles of composition — scale, axis, symmetry and balance, rhythm, hierarchy , different classes of public buildings-individual palaces, residential places, religious buildings, defensive and utilitarian buildings. **The total context in architecture:** Various factors affecting architecture- climate, socio- culture, geography, attitude and patronage, construction methods and materials, prevailing architectural styles in a region. **Introduction of art and culture:** Introduction to art and culture, Origin and development of art: primitive / medieval /modern- role of art in cultural and architectural perspective-various in mediums in art- painting/sculpture, introduction of Indian and western art with case examples.

Text Book

1. *Jenkins keith, Rethinking history, Routledge classics,2003*
2. *Irving L.Gordon, World History, Amsco school of publication, INC, New York, 2000.*
3. *Norbert Schoenaver, 6000 years of housing, WW Norton & Company, 2000*
4. *Lorna Oakes & Lucia Gahlin, Ancient Egypt, Anness publishing Ltd, 2007*
5. *Charles Gates, Ancient Cities- The archeology of urban life in the ancient near east and Egypt, Greece and Rome.*
6. *Edith Tomory, A history of fine arts in India, Orient Longman, 2003*
7. *Francis D.K. Ching and others, A global History of Architecture, 2nd edition, John wiley and sons, Inc., 2011.*

Reference Books

1. Sir Banister Fletcher, A History of Architecture, University of London, The Antholone Press, 1996.
2. Spiro Kostof -A History of Architecture -Setting and Rituals, Oxford University Press, London, 1985.
3. Leland M Roth; Understanding Architecture: Its elements, history and meaning; Craftsman House; 1994
4. Pier Luigi Nervi, General Editor -History of World Architecture -Series, Harry N.Abrams, Inc.Pub., New York, 1972

		Category	L	T	P	Credit
15AR220	**FUNDAMENTALS OF ARCHITECTURE**	CFC	3	0	0	3

Prerequisite

Nil

Course Outcomes

On the successful completion of the course, students will be able to

CO 1: Remember the role of architecture on physical and psychological grounds	Remember
CO 2: Understand the phenomena of perception and interpret the qualities of an architectural space along with spatial relationship and organisation.	Understand
CO 3: Interpret the role of light and shade in an architectural space	Understand
CO 4 : Compare Architectural Examples with respect to basic elements of architecture and ordering principles	Analyse
CO 5: Analyse factors that significantly shape a built environment	Analyse
CO 6: Criticise the spatial experience of a built environment	Evaluate

Mapping with Programme Outcomes

COs	PO1	PO2	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO12	PO13	PO14
CO3.	**S**	**S**	**M**	**S**	**S**	**M**	**L**	**S**	**-**	**S**	**M**	**M**
CO4.	**S**	**-**	**M**	**M**	**L**	**M**	**L**	**M**	**-**	**M**	**M**	**S**
CO3.	**S**	**M**	**S**	**S**	**M**	**S**	**L**	**S**	**L**	**M**	**L**	**S**
CO4.	**S**	**M**	**S**	**S**	**S**	**S**	**L**	**M**	**M**	**S**	**M**	**S**
CO5.	**S**	**L**	**S**	**M**	**M**	**L**	**L**	**S**	**-**	**S**	**L**	**S**
CO6.	**S**	**-**	**L**	**S**	**M**	**L**	**L**	**L**	**-**	**M**	**L**	**M**

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment Tests	Terminal Examination
Remember	20	20
Understand	20	20
Analyse	30	30
Evaluate	30	30

Syllabus

Introduction: Purpose of architecture – physical, physiological, psychological needs**;** Phenomena of perception – Sensations of space – architecture as space, perceptual space, multi sensory space, perceptual – psychological space, conceptual space, pictorial space **;** Visual Perception - Basic principles of visual perception in architecture, foreground & background characteristics ; *Narrative Exercises on observation and documenting spatial experience of a built environment* **, Architectural Space :** Elements of architectural space making – basic elements and modifying elements of architecture; Spatial quality - degree of enclosure, Openings, spatial; Spatial relationship – types, juxtaposition and interpenetration, 2 Dimensional and 3Dimensional spatial linkages with building examples ; Light and shade in architecture - Quantity and quality, light and space, perception of color and texture in the context of light; Organization of space – linear, centralized, radial, cluster, grid; circulation – Attributes of circulation in built environment, Transition and Hierarchy, **Composition :** Principles of order and disorder in architecture – coherence and disruption, axis, hierarchy, rhythm, complexity & simplicity, regularity & irregularity; Measure and Balance in architecture – Scale- human scale and generic scale – anthropometrics (static and dynamic), proxemics – Proportion (introduction, various proportioning systems and theories of proportion) - Balance (symmetrical & asymmetrical)- *Above aspects to be taught with examples from Architecture,* **The Built environment :** Case studies of architecture as response to various Factors shaping built environment - Socio-cultural, climate, materials and technology, site, economics, etc ;*Analysis, interpretation and conclusion of Narrative Exercises in 1.4 on spatial experience of built environment*

Reference Books

Pierre von Meiss, 'Elements of Architecture – From form to place + tectonics, EPFL Press, 2013.

1. Tom Porter, 'The Architect's eye, visualization and depiction of space in architecture,' E & FN Spoon, Chapman and Hall, 1997.
2. Ernest Burden-Elements of Architectural Design- A visual resource, Van Nostrand Reinhold,1994.
3. Bryan Lawson, 'The Language of space' , Architectural Press, 2001
4. Pramar.V.S., 'Design fundamentals in architecture', 1973, Sowmiya publications pvt.ltd, New Delhi.
5. Francis DK Ching, 'Architecture form, space and order' 1996, John Wiley and Sons,
6. Joan Zunde and Hocine Bougdah, Integrated Strategies in Architecture, Taylor and Francis,2006
7. Simon Unwin, Analysing Architecture, 2003, Routledge, London

15AR321

CLIMATE AND ARCHITECTURE

Category	L	T	P	Credit
CFC	3	0	0	3

Prerequisite
Nil

Course Outcomes
On the successful completion of the course, students will be able to

CO1: Understand the various climatic factors and their influence in building design — **Remember**

CO2: Understand the of design of built environment that are sensitive to the climatic zones and characteristics — **Understand**

CO3: Understand the effect of day lighting and ventilation in buildings and means to effectively design building interiors for day lighting and ventilation. — **Apply**

CO4: Analyze the different design parameters that have to be **practiced** for different climatic zones. — **Analyze**

CO5: Choose appropriate design elements, strategies, form for achieving thermal comfort in Buildings. — **Evaluate**

Mapping with Programme Outcomes

COs	PO1	PO2	PO5	PO8	PO9	PO10	PO12	PO13	PO14	PO16
CO5.	**S**				**S**			**S**		
CO6.	**S**	**M**	**S**	**L**	**S**		**M**	**S**		
CO3.	**S**				**S**			**S**		
CO4.	**S**		**S**	**L**	**S**	**L**	**S**	**S**	**M**	**S**
CO5.	**S**			**L**	**S**	**L**	**S**	**S**	**M**	**S**

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment Tests	Terminal Examination
Remember	10	10
Understand	10	10
Apply	20	20
Analyse	40	40
Evaluate	20	20

Syllabus

Climate and Comfort - Definition of the term Climate, Components of climate, Factors that determine climate, Macroclimate and microclimate, study of World climatic zones and Indian climate zone in specific. Thermal comfort factors, body heat exchange, - Effective temperature, Corrected Effective Temperature, calculation of overheated & under heated periods and comfort Zone. *Exercises on Effective Temperature nomograph calculations using instruments to calculate outdoor and indoor temperature etc, leading to analysis on thermal comfort and plotting isoplethe.* **Solar geometry and Sun shading -** Solar geometry and movement, sun path diagrams (solar chart), Solar angles, Shadow angles, solar shading masks etc. Method of calculating solar altitude, Azimuth angle and Shadow angle. Introduction to different types of shading devices and their uses. **Thermal Property of building envelope -** Heat exchange process in buildings. Introduction to Thermal quantities - heat flow rate, conductivity (k-value) , resistivity, convection, radiation. Conductance through a multi-layered body, surface conductance - transmittance - calculation of U-value. Concept of sol-air temperature & solar gain factor - Introduction to periodic heat flow in building, time lag & decrement factor. **Natural lighting and ventilation -** Day lighting principles, day light factor, Components of daylight factor - the sky component, the internal and external reflected Component, glare, recommended levels of illumination for different types of building interiors. Day lighting prediction- the day light design graph. Ventilation and air flow principles, principles of natural ventilation - Stack effect due to the thermal forces, air change, wind flow around buildings and air flow patterns inside buildings., Wind velocity – wind rose diagram , wind pressure. Local factors in wind orientation, Flow pattern inside building using wind tunnels.

Text Books: O.H.Koenigsberger and others, Manual of Tropical Housing and Building-Part-I-Climatic Design, Longmans, London,1980., B.Givoni,Man,Climate and Architecture, Applied Science, Banking, Essex,1982.

Reference Books: Donald Watson and Kenneth Labs., climatic Design-McGraw Hill Book Company-New Yor 1983.G.Z.Brown, Sun Wind and light,

Fuller Moore, Environmental Control System. M.Evans-Housing, climate and Comfort-Architectural Press, London, 1980

		Category	L	T	P	Credit
15AR330	**HISTORY OF WORLD ARCHITECTURE**	CFC	3	0	0	3

Prerequisite
Nil

Course Outcomes

On the successful completion of the course, students will be able to

CO 1: Graduates will appreciate the architectural history of the world.	Remember
CO 2: Graduates will understand the architectural developments in each period, recognize significant buildings, monuments, and built environments and distinguish their key characteristics.	Understand
CO 3: Graduates will learn the cultural, socio-economic, political, technological, and environmental context that influenced the developments in the historic periods.	Understand
CO 4: Graduates will analyze the architectural developments by studying the matrix of the climate, ideas and technology	Analyze

Mapping with Programme Outcomes

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PO 13	PO 14	PO 15	PO 16
CO7.	-	S	S	L	M	-	-	L	L	-	-	M	-	S	-	M
CO8.	-	S	M	L	M	-	-	L	L	-	-	M	-	S	-	M
CO3.	-	M	M	L	M	-	-	L	L	-	-	M	-	S	-	S
C04.	-	S	S	S	M	-	-	M	M	-	-	S	-	S	-	S

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment Tests	Terminal Examination
Remember	20	20
Understand	20	20
Apply	-	-
Analyse	60	60

Syllabus : EGYPT-Factors influencing architecture-belief systems in Egyptian architecture - evolution of tomb architecture - Mastabas - Stepped pyramids -development of pyramid complex – The great pyramids at Gizah- Use of geometry in pyramids-Religious building in Egypt - various parts/idea of the temples-evolution of trabeated systems- treatment of walls in temples- Examples- Temple of Amon karnak, - Mesopotamia- factors influencing Mesopotamia, early Sumerian cities-their environment, development of cities- city of Uruk- Ziggurat at Ur-Important discoveries-various building materials- roofing techniques : arches & vaults- glimpses of engineering services under Mesopotamian civilization – Examples - Hanging gardens of Babylon, Palace of Khorsabad - palace of Persepolis. Greek architecture- Factors influencing Greek Architecture-Evolution of city states-Government systems of Greek-the concept /ideas behind polis and acropolis –architectural importance of public spaces like stoas, market square, theatres- evolution of orders in Greek architecture- Doric, ionic and Corinthian- optical refinement of Greek architecture-aesthetic principles in Greek architecture-case examples theatre of Epidarous,acropolis. Roman architecture: factors influencing architecture-orders in roman architecture-Tuscan and composite-components of a city-the materials and methods of roman building-different types of wall- emergence of public architecture-the forums with formal and informal-glimpses of engineering aspects of roman world- enclosure and manipulation of spaces-case examples-the pantheon, the colossuem. Early Christian and Byzantine Architecture: Introduction of chapels and churches, evolution of church architecture, Factors influencing architectural characters of early Christian architecture – examples like st.vitale, st Ravenna, Rome. Factors influencing architectural characters of Byzantine architecture- construction of domes structures in byzantine architecture- different plan forms of churches-examples like Hagia Sophia.

Text Book :

Jenkins keith, Rethinking history, Routledge classics,2003, Irving L.Gordon, World History, Amsco school of publication, INC, New York, 2000., Norbert Schoenaver, 6000 years of housing, WW Norton & Company, 2000, orna Oakes & Lucia Gahlin, Ancient Egypt, Anness publishing Ltd, 2007 , Charles Gates, Ancient Cities- The archeology of urban life in the ancient near east and Egypt, Greece and Rome. Edith Tomory, A history of fine arts in India, Orient Longman, 2003 Francis D.K. Ching and others, A global History of Architecture, 2nd edition, John wiley and sons, Inc., 2011 Reference Books:Sir Banister Fletcher, A History of Architecture, University of London, The Antholone Press, 1996.Spiro Kostof -A History of Architecture -Setting and Rituals, Oxford University Press, London, 1985.Leland M Roth; Understanding Architecture: Its elements, history and meaning; Craftsman House; 1994Pier Luigi Nervi, General Editor -History of World Architecture -Series, Harry N.Abrams, Inc.Pub., New York, 1972

15AR510	THEORY OF DESIGN	Category	L	T	P	Credit
		CFC	3	0	0	3

Prerequisite

Nil

Course Outcomes

On the successful completion of the course, students will be able to

CO 1	Remember and Understand the various processes involved in Design	Remember / Understand
CO 2	Understanding the qualities of Design problems and solutions	Understand
CO 3	Analyzing the implicit design thinking involved in the design process of eminent architects and designers.	Analyze

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15	PO16
CO9.	S	S	-	S	M	L	-	-	-	-	S	-	-	-	-	-
CO10.	S	S	-	S	S	L	L	-	-	-	S	-	-	L	-	-
CO3.	S	M	-	M	S	L	L	-	-	-	S	-	-	L	-	-

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment Tests	Terminal Examination
Remember	20	20
Understand	20	20
Apply	0	0
Analyse	60	60
Evaluate	0	0
Create	0	0

Syllabus

Design and Design Process - Definition of Design, Design in various fields – John Dewey's concept of Design as an Art – How it operates – How it succeeds or fails, Design process and its uniqueness, Quality of the Design Process Introduction to Architectural Design, Stages of Design and Tools used in each of the stages Diagrams as a tool for designing , Thinking with Sections and Views, How tools promote or restrict the design process, Idea Development – Role of Form, Importance of thinking in the third and fourth dimension. **Design Problem and Solutions** Nature of Design Problem, Design as a Wicked problem and its qualities.- Richard Buchanan Nature of Design Solutions ,Design Traps for an Amateur Designer – Bryan Lawson What is expected out of a designer - Abilities Designer must possess – Set of skills needed – Nigel Cross - Different approaches to design problem solving – Narrative Design – Examples, Fantasy Design – Examples, Symbolism – Examples **. Role of Design Representations –** Enquiry into Le Corbusier's Buildings - Promenade and Montage-Strategies and priorities in Design - Explanation of the Design Inquiry, Design thinking and Design action – Attempt to retrace the design process by conventional diagrammatic tools like Zoning, bubble diagrams etc. – Understanding the restriction of each tool - Enquiry into Charles Correa's housing language - Incrementality, Identity, Pluralism, Equity, Cost as priorities - Explanation of the Design Inquiry, Design thinking and Design action - Attempt to retrace the design process by conventional diagrammatic tools like Zoning, bubble diagrams etc. – Understanding the restriction of each tool - Discussions on two famous architectural design examples – Strategies, Philosophies and priorities Identification –Attempt to retrace the design process by conventional diagrammatic tools like Zoning, bubble diagrams etc. – Understanding the restriction of each tool - Overcoming these restrictions through sketching. **Applications of Design Process in Case studies** Undertaking a critical enquiry on relevant readings of Case studies focusing on the Design Process.

Text Books

1.Edward De Bono, Lateral Thinking2. Bryan Lawson – How Designer's Think, Architectural Press Ltd, London 1980.3.Tom Health – Method in Architecture, John Wiley & Sons, New York, 1984.

Reference Books : Buchanan, R. (1992). Wicked Problems in Design Thinking. In Design Issues, Vol. 8, No. 2 Spring, 1992), pp. 5-21. Cross, N. (2001). Desi nerly Ways of Knowing: Design Discipline Versus Design Science. Design Studies, 17(No.3), Summer 2001, 49-55

		Category	L	T	P	Credit
15AR530	**HISTORY OF INDIAN ARCHITECTURE**	CFC**	2	1	0	3

Prerequisite

Nil

Course Outcomes

On the successful completion of the course, students will be able to

CO 1	Identify the Hindu and Islamic architectural styles, character and influence.	Remember
CO 2	Understand the ancient construction techniques of our country.	Understand
CO 3	Understand the architectural influences of culture, time and place.	Understand
CO 4	Differentiate the architectural features of both the styles of architecture.	Analyse
CO5	Analyse the technological advancements in building construction and structural details of buildings in British colonial period.	Analyse

Mapping with Programme Outcomes

COs	Po1	Po2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15	PO16
CO11.	S	S	M	-	L	-	-	M	M	-	-	M	L	L	-	S
CO12.	L	S	M	-	-	-	-	L	L	-	-	-	-	S	-	L
CO3.	-	S	S	M	S	L	-	S	M	-	-	S	M	M	-	-
CO4.	S	M	S	-	-	-	L	S	L	-	M	S	-	-	-	-
CO5.	S	S	-	-	-	-	-	S	S	-	-	-	-	S	S	-

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment Tests	Terminal Examination
Remember	20	20
Understand	20	20
Analyse	60	60

Syllabus

ANCIENT INDIA: Indus Valley Civilization - Culture and pattern of settlement. Impact of Aryan culture - Vedic village and the rudimentary forms of bamboo and wooden construction under the Mauryan rule. **BUDDHIST ARCHITECTURE & EVOLUTION OF THE TEMPLE:** Hinayana and Mahayana Buddhism –Ashokan School of Architecture – Examples - Ashokan Pillar at Sarnath, & Sanchi stupa. Buddhist rock cut architecture - Salient features of a Chaitya hall and Vihara, - Examples – Chaitya hall at Karli, Vihara at Nasik,Concept and evolution of Hindu Temple – Early shrines of the Gupta and Chalukyan periods - Tigawa temple, Ladh Khan temple and Durga Temple, Aihole - Papanatha and Virupaksha temple at Pattadakal. **DRAVIDIAN & INDO-ARYAN STYLE TEMPLES** : Dravidian style - Rock cut architecture of Pallavas – Mandapas & rathas Example of masonry temples - Shore Temple, Mahaballipuram and Kailasanathar temple,Kanchipuram –Evolution of the Dravidian Orders - Example of Brihadeeswara Temple (the Chola style),Tanjore –Meenakshi Amman temple, Madurai (Pandyan period). Salient features of an Indo Aryan Temple –Examples at Orissa - Lingaraja Temple, Bhuvaneswar & Sun Temple, Konarak — Example at Gujarat – Surya Temple, Modhera.: **ISLAMIC ARCHITECTURE – IMPERIAL & PROVINCIAL STYLES** Islamic architecture in India- Brief Chronological introduction about dynasties- Slaves, Khaljis, Tughlaqs, Lodhis and Mughals. Salient architectural features of Qutb Minar Complex, Varieties of squinch – Alai Darwaza, Delhi - Tomb of Ghiasuddin Tughlaq & Khirki Masjid –. Development of the provincial styles in different regions –Exchanges between Islamic traditions and local building practices - Example of Punjab style – Tomb of shah Rukni Alam — Atala masjid – Example of Gujarat style – Jami masjid, Ahmadabad – Examples of Deccan style – Golgumbaz,Bijapur, & Charminar, Hyderabad. **MUGHAL ARCHITECTURE** : Development of the Mughal style under the different rulers - Babur, Humayun, Akbar, Jahangir, Shahjahan, Aurangazeb - Important examples –Humayuns Tomb,Delhi, Fatehpur Sikhri (lay out, Buland darwaza, Diwani Khas, Tomb of Salim Chisti & Jami masjid) Akbars Tomb at Sikandara – The Taj Mahal, Agra – Red Fort, Delhi (Diwan-i- Am, Rang Mahal). **ARCHITECTURE IN COLONIAL INDIA** : Monumental buildings of Early colonial period – Examples – St.Pauls Cathedral, Calcutta & Bombay Town hall –Architectural character of Indo-Saracenic and Classical revival –University of Madras Senate House & Victoria Memorial hall, Calcutta – Later Colonial period – Contribution of Edwin Lutyens & Herbert Baker to the lay-out and Architecture of New Delhi – Rashtrapathi Bhavan & Parliament House.

Text Book 1. Percy Brown, Indian Architecture (Buddhist and Hindu period), Taraporevala and sons, Bombay, 19832. Satish Grover, The Architecture of India (Buddhist and Hindu period), Vikas Publishing House, NewBrown Percy, Indian Architecture (Islamic Period) - Taraporevala and Sons, Bombay, 1983.3. Delhi, 19814. Satish Grover, The Architecture ofIndia(Islamic)VikasPublishing House Pvt. Ltd., New Delhi, 1981.Reference Books1. A.Volwahsen, Living Architecture – India (Buddhist and Hindu), Oxford and IBM, London, 19692. Christopher Tadgell, The History of Architecture in India, Longman Group, U.K. Ltd., London, 19903. George Mitchell, Monuments of India, Vol I, Buddhist, Jain, Hindu; Penguin books, 19904. Gateway o Indian Architecture, Guruswamy Vaidyanathan, Edifice Publication, 20035. Architecture of the Islamic World - George Michell - (its history and social meaning), Thames and Hudson, London, 1978.

Islamic Architecture, Form, Function and Meaning, Robert Hillenbrand, Edinburgh University Press, 1994. R. Nath – History of Mughal Architecture – Abhinav Publicaitons – New Delhi, 1985

		Category	L	T	P	Credit
15AR620	HISTORY OF MODERN ARCHITECTURE - I	CFC	3	0	0	3

Prerequisite

Nil

Course Outcomes

On the successful completion of the course, students will be able to

CO 1	Acquire knowledge about the social changes and transformation in building typology, architectural styles, and influence of art movement during the 18 th century.	Remember
CO 2	Understand the works and ideas of various architects for the development of modern architecture.	Understand
CO 3	Obtain knowledge about the application of new tools and concepts for the evolution of post modern architectural styles.	Apply
CO 4	Gain knowledge of analyzing the influence of technology in architecture and evolution of structure, styles based on it.	Analyze

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15	PO16
CO13.	-	M	S	-	M	L	-	-	L	-	M	M	-	-	-	-
CO14.	-	S	L	-	S	M	-	-	L	-	M	L	-	-	-	-
CO3.	-	M	L	-	M	S	-	-	M	-	M	L	-	-	-	-
CO4.	-	-	-	-	M	M	-	-	S	-	L	M	-	-	-	-

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment Tests	Terminal Examination
Remember	20	20
Understand	20	20
Apply	30	30
Analyse	30	30

Syllabus

Formative strands of Modern Architecture - 18th and early 19th century transformations in society and architecture Neoclassicism, onset of industrial revolution,- Introduction of new material and technology, evolution of large span structures, new building types and a search for new architectural style, -Arts & crafts movement, Art nouveau Works and influence from various art movements. -Influence of Chicago school. **Modern Architecture -**Contribution of Werkbund and Bauhaus, New conception of space –International style, works of Walter Gropius Works and ideas of Mies Van De Rohe and Le Corbusier. Works and ideas of works of F.L.Wright, Louis Kahn Works and ideas of Eero Saarinen , Oscar Niemeyer, B.Fuller. **After Modernism** Post Modernism – Reason for emergence and Tools of new Architecture. Technological advancements, Metabolism, Archigram ,Deconstructivism **High Tech Architecture and Architecture of skyscrapers** -High tech architecture – Richard Rogers, Renzo Piano, Norman Foster. Evolution of skyscrapers – concepts of structural design, technological applications, Stylistic evolution through contemporary examples.

Text Books:

1. Kenneth Frampton, Modern Architecture : A Critical History, Thames and Hudson,London,1994
2. Curtis, William J. R., Modern Architecture Since 1900, Phaidon Press, Oxford 1982; Prentice-Hall, Englewood NJ 1982

Reference Books

1. Manfredo Taferi/Francesco dal co., Modern Architecture, Faber and Faber/Electa,1980
2. Sigfried Gideon, Space, Time and Architecture :The growth of a new Tradition, Harvard University Press,1978
3. Leonordo Benevolo, History of Modern Architecture,2 Vols, Routledge &Kegan Paul,London,1971
4. Nikolaus Pevsner, Pioneers of Modern Design: From William Morris to Walter Gropius, Penguin books, 1975
5. Nikolaus Pevsner, The Sources of Modern Architecture and Design, Thames & Hudson, 1985

		Category	L	T	P	Credit
15AR810	**URBAN DESIGN**	CFC**	3	0	0	3

Prerequisite:

NA

Course Outcomes

On the successful completion of the course, students will be able to

CO1.	Understand the role of an urban designer and allied fields related to Urban Design	Understand
CO2.	Understand Urban Design theories and concepts proposed by Pioneers	Understand
CO3.	Analyse characteristics of Urban open spaces taking references from History.	Analyse
CO4.	Analyse qualities of a successful streetscape across different urban contexts	Analyse
CO5.	Recall Urban Renewal methods and strategies	Remember

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15	PO16
CO15.	**M**	**L**	**-**	**S**	**M**	**S**	**M**	**-**	**-**	**-**	**L**	**S**	**-**	**L**	**-**	**L**
CO16.	**M**	**L**	**-**	**S**	**S**	**M**	**L**	**-**	**-**	**-**	**L**	**S**	**-**	**L**	**-**	**L**
CO3	**M**	**S**	**-**	**S**	**S**	**M**	**L**	**-**	**-**	**-**	**L**	**S**	**-**	**L**	**-**	**L**
CO4	**M**	**-**	**-**	**S**	**M**	**M**	**L**	**-**	**-**	**-**	**-**	**S**	**-**	**L**	**-**	**L**
CO5	**L**	**-**	**-**	**S**	**M**	**L**	**L**	**-**	**-**	**-**	**L**	**S**	**-**	**-**	**-**	**L**

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment Test	Terminal Examination
Remember	20	20
Understand	40	40
Analyse	40	40

Syllabus

Introduction to urban design - Origin of urban Design – Role of an urban designer - Urban qualities under the control of a Urban Designer - Relationship between Architecture, Urban Design, Town Planning and allied fields - Feeling and Remembering a space - Perception of city form and pattern - Mental mapping Exercises - **Urban Design Theories -** Broad Classification of Urban Design theories based on Sociology, Senses, Technology – Pioneers in Urban Design - Jean Jacob's Philosophies and Oscar Newman's defensible spaces - Gordon Cullen's Townscape – Serial Vision, Deflection, Mystery, Texture, Juxtaposition, Here and There, Closed vista, Projection and Recession, Enclosure/Enclaves, Punctuation, Closure, Focal Point, Intricacy, Scale, Precinct, Anticipation - Kevin Lynch - Townscape elements – Path , Edges, Nodes, Landmark and Districts – Townscape element interactions – Imageability, Legibility - Visual survey and Analysis - Perception of city image - Assignment – Seminar - **Urban Space in Historical Context -** Origin of Towns – Prehistoric period – Over view of Ancient India Towns - Urban Squares – Definition and Qualities – Types based on use and as classified by Cameillio Sittae and Paul Zucker – Qualities of a successful square - Urban public spaces, their organization, location and articulation in Greece, Roman, Medieval and Renaissance in west in brief - Urban public spaces in Indian context - early history, medieval, colonial and modern cities - Temple complex as a public space - Photos and video compilation with text - **Organisation of Space -** Urban Streets – Guiding Principles – A discussion on Characteristics of a successful street – Qualities of Asian Streets – Street elements - Jon Lang's Basic Human Needs – Meeting Safety Security Needs in Urban Spaces - Understanding, organizing and articulation of spaces of Residential, Commercial, Parks and Industrial spaces - Understanding the articulation of spaces for various uses – Sketches and perception representations - **Urban Interventions, Methods and Contemporary Practices -** Types of Interventions - Parameters for identifying type of intervention, objectives - Urban Renewal – Objective and Need – Strategies – Redevelopment, Rehabilitation, Clearance, Urban Decentralisation, Conservation, Reproduction, Revitalisation - Methods of Survey - Public Participation stages and its Role - Need for new bye-laws - Existing Regulations - Townscape policies - regulations and emerging areas of development - Generic Types of Urban Design Procedures – Total, All of a Piece, Piece by Piece, Plug in – Financing - Incentives and Disincentives – Carrots and Sticks – Moratoria - Contemporary Urban Design Projects in Indian Context

Text Book 1. Paul. D. Spriregen, "On the art of designing cites" M.I.T. Press, Cambridge 19682. Lynch. Kevin, "The Image of the city" M.I.T. Press Cambridge 19603 Gordon Cullen - The concise TOWNSCAPE - The Architectural Press - 1978. 4. Bacon. Edmund "Design of Cities", Thames & Hudson, London, 19675. Urban Design – A typology of procedures and products – Jon LangUrban open spaces – Helen Woolley Safe cities – Gerda R. Wekerle Urban Design – Jon Lang and others

Reference Books 1. Lawrence Halprin - CITIES - Reinhold Publishing Corporation N.Y. 1962. Gosling and Maitland - URBAN DESIGN - St. Martin's Press, 1984.3. Jonathan Barnett - An Introduction to Urban Design - Harper & Row, Publishers, N.Y., 1982

15AR820	LANDSCAPE DESIGN	Category	L	T	P	Credit
		CFC	3	0	0	3

Prerequisite

Nil

Course Outcomes

On the successful completion of the course, students will be able to

CO 1	Acquire basic knowledge on the role of landscape in design aspects and its integration of built and outdoor environment.	Remember
CO 2	Have a glimpse on the historic development of landscape design.	Understand
CO 3	Acquire knowledge about the elements and their scope in landscape design.	Apply
CO 4	Gain knowledge on various forms of landscape design and the constructions to evolve better design and some basic aspects of construction details.	Analyze

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15	PO16
CO17.	S	L	M	M	S	M	S	-	S	-	-	S	S	L	-	-
CO18.	S	S	M	L	L	-	-	L	M	-	-	M	L	-	-	S
CO3.	S	-	M	M	M	-	-	L	L	L	L	-	M	S	-	M
CO4.	S	L	M	M	S	M	-	-	S	-	M	M	S	S	-	-

S- Strong; M-Medium L –Low ;

Asessment Pattern

Bloom's Category	Continuous Assessment Tests	Terminal Examination
Remember	10	10
Understand	10	10
Apply	40	40
Analyse	40	40

Syllabus

Introduction to landscape architecture : Definitions, Importance, Need and Scope - Roles and Responsibilities of Landscape Architects. Relation of Ecology and Landscape Architecture – Importance of Geology, Hydrology, Flora and Fauna with Landscape Design. Landscape Design Process - Site Analysis – Methods and Tools used in Site Analysis & Synthesis – Conceptual Landscape Design – Schematic Landscape Design – Landscape Graphics & Representation, environmental impact assessment. **Parks and Garden Design in History:** Sacred Gardens and Sacred Groves in India. Mughal Gardens in India- Tomb & Pleasure gardens. Italian Gardens **-** Japanese Gardens- Parks in America – Central park , Newyork. Plants as Landscape Element – Hardscapes i.e. Paving , Softscapes i.e. Trees, Shrubs & ground cover. **Elements of Landscape Design:** Factors to be considered in Landscape Design – Land Form – Influence of existing land form, soil, topography, contour levels, drainage, vegetation etc. in Landscape Design. Landscape elements – Land, Water and Vegetation. Land & Landform: Importance of Land & Landform – Grading – Use of Land and Land form as Landscape Element. Water : Various Forms of Water such as Water Falls, Water Channels as Landscape Element i.e. Aquascapes - Water Fountains, Water Cascades etc. Vegetation: Plant as a Landscape Element - Structural and Visual characteristics of plants- Plant Database for Tropical Conditions – Selection of Plants – Importance of Water and Plants in Landscape Design – Plants as Landscape Element – Hardscapes i.e. Paving , Softscapes i.e. Trees, Shrubs & Ground Cover. **Landscape Services:** Landscape Irrigation, Drainage, Storm Water Drainage, Landscape Lighting, Landscape Furniture. **Forms of Landscape Design** Planning and Design Consideration of Interior Landscape – Design Consideration of Courtyard Landscape. Planning and Design Consideration of Terrace Landscape – Roof Garden – Vertical Garden – Balcony Garden. Planning and Design Consideration of Pool and Ponds – Lily & Lotus Pond – Pools – Swimming Pools, Dipping Pool, Infinity Pool etc. **Landscape Design for Various Areas:** Landscape Design Considerations for building forms. Residential Projects, Commercial Projects, Institutional Projects, Industrial Projects. Landscape Design for Recreation Areas such as Parks, Play Grounds etc. Road & Street Landscapes. Landscape Design in Water Front Areas such as River, Lakes, Ponds etc

Text Books

1. John L. Motloch, Introduction to landscape architecture: A manual to site planning and design, McGraw-Hill, 1983.
2. Planting Design – Theodore D Walker, John Wiley and Sons, 1991.

Reference Books

1. John L. Motloch, Introduction to landscape design, John wiley and Sons, 2000.
2. Nick Robinson, Planting design Handbook, Ashgate Publishing,1992.
3. Joseph dechiara Lee E Koppelman, Site planning Standards , McGraw-Hill,1984.
4. Glift Tandy, Hand Book of Urban Landscape, The Architectural Press, London,1971.

15AR910 PROFESSIONAL PRACTICE

Category	L	T	S	Credit
PC**	3	0	0	3

Prerequisite

- NACourse Outcomes

On the successful completion of the course, students will be able to:

CO1 Understand the uniqueness of architectural profession and ethics and associated services	Understand & Remember
CO2 Get familiarized with the various roles and responsibilities of COA and IIA	Understand & Remember
CO3 Understand the fee structure and legal legislation that are associated with architectural practice	Understand
CO4 Get familiarize with local DCR, CRZ, GATS etc	Apply & Analyze

Mapping with Programme Outcomes

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PO 13	PO 14	PO 15	PO 16
CO19.	**M**	**-**	**-**	**M**	**-**	**S**	**M**	**-**	**-**	**M**	**M**	**-**	**-**	**-**	**-**	**-**
CO20.	**-**	**-**	**-**	**-**	**-**	**S**	**-**	**-**	**L**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO3.	**-**	**-**	**-**	**-**	**-**	**S**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO4.	**-**	**-**	**-**	**-**	**-**	**S**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment	Terminal Examination
Remember	30	30
Understand	30	30
Apply	20	20
Analyze	20	20

Syllabus

INTRODUCTION TO ARCHITECTURAL PROFESSION – Importance of architectural profession – Role of Architects in society – Registration of Architects – Architects' office and management – Location, Organizational Structure – Infrastructure requirement – Skills required, elementary accounts – Tax Liabilities - **PROFESSIONAL & REGULATORY BODIES FOR ARCHITECTURAL PRACTICE IN INDIA, CODE OF CONDUCT AND ETHICS –** Role of Indian Institute of Architects – Architects Act 1972 (intent, objectives, provisions with regards to architectural practice) – Council of Architecture (role and functions) – Importance of ethics in professional practice – Code of conduct for architects – punitive action for professional misconduct of an architect - **ARCHITECT'S SERVICES, SCALE OF FEES AND COMPETITIONS –** Mode of engaging an architect – Comprehensive services, Partial services and Specialized services – Scope of work of an architect – Schedule of Services – Scale of fees as per COA norms – Mode of payment – Terms and Conditions of Engagement – Letter of Appointment – COMPETITIONS – Importance of architectural competitions – Types of competitions (open, limited, ideas competition) – Single and two stage competitions – COA guidelines for conducting architectural competitions – National and International competitions – Case Studies - **LEGAL ASPECTS, IMPORTANT LEGISLATIONS AND CURRENT TRENDS –** Arbitration (Definition, Advantages, Sole and joint arbitrators, role of umpires, award, Conduct of arbitration proceedings) – Arbitration clause in contract agreement (role of architect, excepted matters) – Easements (types, acquisition and extinction of easements) – Copyright and Patenting (provisions of copyright acts in India and abroad, copyright in architectural profession) **–** Madurai LPA Rules and Regulations – Persons with Disabilities Act – Coastal Regulation Zone – **GLOBALIZATION & ARCHITECTURAL PROFESSION** - Globalization and its impact on architectural profession (WTO, GATS) – Preparedness for International practice – Entry of foreign architects in India – Emerging specializations in the field of architecture

TEXT BOOKS : Architects Act 1972 1. Publications of Handbook of Professional Practice by IIA2. Publications of Council of Architecture – Architects (Professional Conduct) Regulations 1989, Architectural Competition Guidelines 3. Roshan Namavati, Professional Practice, Lakhani Book Depot, Mumbai, 1984 4. Ar V S Apte, Architectural Practice and Procedure

Reference Books

1. Arbitration Act 2005
2. Persons with Disabilities Act 1985

		Category	L	T	S	Credit
15AR920	**PROJECT MANAGEMENT**	PC**	3	0	0	3

Prerequisite

- NA

Course Outcomes

On the successful completion of the course, students will be able to:

CO1	Understand the need for project management in construction through solved problems	Understand & Remember
CO2	Get familiarized with the process of project management and planning from conception to completion and through close out	Understand & Remember
CO3	Understand the various techniques in project management	Apply & Analyze

Mapping with Programme Outcomes

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PO 13	PO 14	PO 15	PO 16
CO21.	-	-	-	-	-	-	M	-	-	-	-	-	M	M	S	-
CO22.	-	-	-	-	-	-	-	-	L	-	-	-	-	-	S	-
CO3.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	S	-

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment	Terminal Examination
Remember	20	20
Understand	20	20
Apply	20	20
Analyse	40	40

Syllabus

BASICS OF PROJECT MANAGEMENT – Introduction - Need for Project Management, Project Management Knowledge Areas and Processes - The Project Manager (PM) - The Project Life Cycle - Phases of Project Management Life Cycle - Impact of Delays in Project Completions - Tender – Definition and types of tenders – Open and closed tenders – Conditions of tender – Tender Notice – Tender Documents – Concept of EMD – Submission of Tender – Tender Scrutiny – Tender Analysis – Recommendations – Work Order – E-Tendering (advantages, procedure and conditions) – Contract – Definition – Contract Agreement – its necessity – Contents (Articles of Agreement, Terms & Conditions, Bill of Quantities and Specifications, Appendix) – Certification of contractor's bills at various stages – Project Management Principles – Introduction to BOT, BOOT, BOLT and relevant case studies - **PROJECT IDENTIFICATION, SELECTION AND PROJECT PLANNING –** Introduction - Project Identification Process - Project Initiation - Pre-Feasibility Study - Feasibility Studies - Project Break-even point – Introduction to FEED – Introduction to Project Planning - Need of Project Planning - Project Life Cycle - Roles, Responsibility and Team Work - Project Planning Process – Bar Chart & Work Breakdown Structure (WBS) - **PERT & CPM NETWORK ANALYSIS –** Introduction - Development of Project Network with inter-relationship and standard set of rules - Time Estimation - Determination of the Critical Path - PERT Model & Analysis - CPM Model & Analysis - Network Cost System - **RESOURCES CONSIDERATION IN PROJECTS –** Introduction, Resource Allocation – Resource Smoothing and Resource Leveling – Resource Smoothing and Resource Leveling Analysis - **PROJECT COSTING, PROJECT CLOSE-OUT, TERMINATION AND FOLLOW UP –** Introduction to activity cost information – Cost Time relationship – Cost Slope – Crashed Estimates – Direct and Indirect Costs – Crashed Program – Determination of Least Cost Solution and Least Time Solution - **–** Introduction - Project Close-out - Steps for Closing the Project - Project Termination - Project Follow-up

Text Book

Dr C Punmiya & K K Khandelwal - Project Planning & Control with PERT/CPM; Laxmi Publications, New Delhi, 1987 2. Jerome D. Wiest & Ferdinand K. Levy – A Management Guide to PERT/CPM, PHI Publications Ltd, New Delhi, 1982 3. L S Srinath, PERT/CPM 3. Herald Kerzner – Project Management Case Studies, John Wiley & Sons, 2013

Reference Books

1. PMBOK – Latest release from Project Management Institute (PMI)
2. Standard Operating Procedures from leading International Property Consultants

		Category	L	T	S	Credit
15AR131	**BUILDING MATERIALS AND CONSTRUCTION - I**	PC	2	0	2	3

Prerequisite

No Prerequisites needed.

Course Outcomes

On the successful completion of the course, students will be able to

CO1. Acquire basic knowledge about building's primary, physical, structural and functional aspects. (Remember and Understand)

CO2. Acquire an array of multi faceted knowledge on properties, uses and applications of soil, stone, lime and cement as materials for Building construction. (Apply)

CO3. Gain practical knowledge about types of stone masonry construction and techniques.

CO4. Gain Knowledge about Concrete and R.C.C. (Analyze and Evaluate)

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15	PO16
CO1	M	-	-	-	-	-	-	S		S				S		
CO2	M	-	-	-	-	-	-	S			L		M	S		
CO3								S		S			S	S	S	
CO4	M			L				S			L			S		L

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment Tests			Terminal Examination
	1	2	3	
Remember	5	5	5	10
Understand	5	5	5	10
Apply	10	10	10	20
Analyse	15	15	15	30
Evaluate	15	15	15	30
Create	-	-	-	-

Syllabus

INTRODUCTION OF BUILDING MATERIALS AND CONSTRUCTION- Introduction to the set of courses in this stream. The introduction should be given from the first semester till fifth semester with respect to the course content of this stream.)

An overview of construction industry in India - Covers the current scenario of construction industry, persons involved –construction labours, builders, promoters, contractors, suppliers, authorities concerned to construction industry, Engineers, Associates and Architects.**STONE** - Classification, types & application of stone as building material - Stone for masonry & types - Stone finishes -for wall cladding, flooring and interiors - Aggregates, types, sizes, properties, qualities and uses - Case study of stone masonry in historical buildings and stone application in contemporary works of Architects.

SOIL, CLAY PRODUCTS, SAND AND SAND - Classification, types, uses and application - Soil- Soil Bearing Capacity and foundation with respect to soil bearing capacity - Clay Product - Brick - Earth block, mud block and stabilized mud block - Terracotta – Terracotta Brick, Terracotta tile and types, sizes & properties, Terracotta Blocks & types & special products like jollies etc - Ceramics - Products, uses & application in building industry - Tiles – types, uses & application in building industry - River sand – properties and application in building industry - Sand – silica – glass and glass products - Market survey of types of glasses and its application on building industry.**LIME, CEMENT AND AGGREGATES (COARSE) -** Classification, Properties Uses and Application in buildings - Lime mortar and its properties - Lime plastering - Lime flooring - Advantages and disadvantages of lime as a building material - Classification, types, application and uses - Case study of usage of lime in historical buildings and lime application in contemporary works of Architects - Cement –Introduction – types - Cement mortar - types and application - Market forms of cement.**INTRODUCTION TO PRIMARY PHYSICAL AND STRUCTURAL COMPONENTS OF BUILDING -** Sub-structure - Foundation --- Shallow, Deep – Basement - Super-structure - Plinth, Sill, Wall, Lintel/sunshade, Roof, Parapet, Openings, Staircase, Ramps, Floors and Terrace - Loads in Buildings - Introduction to loads on buildings, Types and concepts of load – Dead, live, wind, snow, earthquake load.

Text Book

1. Building Construction by B.C Punmia, Lakshmi Publications Pvt. Ltd., N.Delhi.
2. Engineering materials by S.C.Rangwala.
3. Building Construction Vol I & II by W.B.Makay, Vol.1,2,3Longmans,U.K.1981
4. R.Chudleu,Building Construction Handbook',British Library Cataloguing in Publication Data, London, 1990.

Reference Books

1. Building Construction Illustrated by Francis D K Ching, CBS publisher and distributors.
2. Construction methods, materials and techniques by William P.Spence.
3. Brickwork by E.LindsayBraley.
4. Architectural Graphics standards by Charles G.Ramsey.
5. S.C.Rangawala, Engineering Materials, Charotar Pub. House, Anand,1997.
6. Don A.Watson, Construction Materials and Processes, McGraw Hill Co., 1972.
7. Allen Edward, Iano Joseph, Fundamentals of Building Construction: Materials and Methods
8. Alanwerth, Materials, The Mitchell Pub. Co.Ltd., London,1986

		Category	L	T	S	Credit
15AR141	**ARCHITECTURAL GRAPHICS I**	PC	2	0	2	3

Prerequisite

No prerequisite

Course Outcomes

On the successful completion of the course, students will be able to

CO 1 –To understand basic architecture drafting principles and techniques - (Understand)

CO 2 – Able to distinguish different geometric shapes and their projections – (Apply& Analyse)

CO 3 -To visualize ,understand and document spaces using various methods of measure drawing- (Analyse)

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12	PO 13	PO 14	PO 15	PO 16
CO23.	-	-	M	M	-	-	L	S	-	L	-	-	-	S	-	-
CO24.	-	M	M	L	-	-	-	S	-	-	-	-	-	S	-	-
CO3	-	-	M	-	-	-	-	M	-	-	-	-	-	S	-	-

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment Tests			Terminal Examination
	1	2	3	
Remember	-	-	-	-
Understand	10	10	10	20
Apply	10	10	10	20
Analyse	30	30	30	60
Evaluate	-	-	-	-
Create	-	-	-	-

Syllabus

Principles of architectural graphics - Introduction to architectural graphics. Need for architectural drawing. Introduction to Drafting principles and techniques, To develop lettering and dimensioning styles and sheet format for presentation.Introduction to scales. To study different types of scales and create drawings in plain and diagonal scales-

Construction of basic geometrical drawings – Introduction to basic geometrical shapes, Construction of geometrical shapes and curves. Construction of geometrical shapes such as Square, rectangle, polygons, ellipse and emphasising their application in architectural drawing. Introduction to the principle of orthographic projection . Analyzing the projection of objects in four quadrants with physical models. Drawings in Orthographic projection of points, lines and planes and understand to represent them in a given direction of perception.**Orthographic projection of solids-**Introduction and classification of geometrical solids such as platonic solids. Model making of geometrical solids and understand its form such as cube, prism, pyramids, cones and cylinders**.** Geometrical Objects used in daily life can be experimented to understand form. Drawings in orthographic projection of solids in various positions with respect to its surfaces, axis and its relation to Vertical and horizontal plane. Introduction to section of solids and types such as frustum and truncated solids. Drawings in orthographic projection of solids in various positions with respect to its cutting plane, surfaces, axis and its relation to Vertical and horizontal plane.

Measure drawing-Principles of basic measuring and drawing techniques. Understanding of scales and uses in professional practice- able to prepare drawings to scale. Measure of simple objects – table chair, door, windows. Entrance gate, simple furniture. Measure drawing and documentation of plan, section and elevation simple spaces. Site and landscape elements.

Text Book

1. Francis D K ching –architectural graphics – john wiley and sons-2009.
2. Clandebately, Indian architecture, D.B.Taraporevale sons and co LTD Bombay.
3. K.Vengopal Engineering graphics -11th edition, new age international publishers2010
4. William Kirby Lockard,- Drawing as a means to Archtiecture,vannostrandreinholdcompany,newyork.

Reference Books

1. C.Leslie Martin, architectural graphics – the macmillan company, new yok 1976
2. Roberw.gill.advanced perspective – thanes and Hudson,London-1974.
3. George A.Dinsmore, Analytical Graphics-D. vannostrandompany,Canada.

		Category	L	T	S	Credit
15AR151	**VISUAL ARTS**	PC	1	0	4	3

Prerequisite

No pre-requisites required.

Course Outcomes

On the successful completion of the course, students will be able to

CO1 - Obtain the skill of observation.
CO2 - Think and create innovative designs.
CO3 – acquire the skill of visual communication.
CO4 – develop hand-mind coordination

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12	PO 13	PO 14	PO 15	PO 16
CO1.	**S**	-	**S**	-	M	L	L	**M**	**M**	**M**	-	-	L	-	-	-
CO2.	**S**	L	**S**	**M**	M	**M**	-	-	**S**	L	-	-	**M**	-	-	-
CO3	**S**	L	**S**	**M**	**S**	L	-	L	**M**	**M**	-	-	**S**	-	-	-
CO4	**S**	-	**S**	**M**	**S**	-	**M**	-	-	-		-	-	**M**	-	-

S- Strong; **M**-Medium; L-Low

Syllabus

Basics of Drawing: Introduction to Drawing**.** Exercises: Techniques of Pencil handling, lines, curves, circles and perspective lines.
Still life Study: Outline of simple objects - Still Life Composition with multiple objects to study on measurement and perspective relations - Applying volume on object to study a light and shade in pencil medium - Still life - mono tone in watercolour medium
Study of Colour: Introduction to Colour Theory. Practical exercise on Primary, Secondary and Tertiary colours Exercise on colour wheel. Exercise in complementary colours found in nature.
Perspective: Introduction: One point -Two points - Three point perspective studies through free hand sketching from simple objects to structures.
Perspective practical: 2D drawing from a 3Dmodel of basic design in perspective views.
Rendering: Introduction, applying simple rendering techniques on furniture, flora, building elements.
Architectural Rendering: Sketching buildings in light and shade – outdoor study on Modern and Historical Architecture elements. Rendering of building and clusters in Perspective views.

Text Book

1. Peter Stanyr, The Complete Book of Drawing Techniques, Arcturus Publishing Ltd, London, 2003.
2. Milind Mulick, Water colour, Jyotsna Prakashan, Mumbai.
3. Robert G. Well, Basic Rendering, Thames and Hudson. London.

Reference Books

1. Diane Douglas & Dirk van Wyk, The Drawing Process, Rendering, Prentice Hall, New Jercy, 1993.
2. Robert G.Will, Manual of Rendering with Pen and Ink, Thames and Hudson, London.
3. Architecture Rendering a Colour reference, (Name and Publisher name not known)
4. David Sanmiguel, Art of Still Life Drawing, Sterling Publication, 2006, ISBN-10: 1402732848.
5. John Montague, Basic Perspective Drawing a Visual approach, II nd Edition, Van Nostrand Reinhold, New York, 1993.
6. Alison Cole, Perspective, Dorling Kindersley, Delhi, 2000.
7. Francis D.K. Ching, A Visual Dictionary of Architecture, New York, 1995.
8. Christopher Sia, Eight easy steps to Drawing a Portrait, E – Book.
9. Giovanni Civardi, Drawing Portraits (Faces and Figures), Search Press.
10. Diane Douglas & Dirk van Wyk, The Drawing Process, Rendering, Prentice Hall, New Jercy, 1993.
11. Robert G.Will, Manual of Rendering with Pen and Ink, Thames and Hudson, London.
12. Architecture Rendering a Colour reference, (Name and Publisher name not known)
13. A Curriculum based on Fine art syllabus of painting and sculpture and with huge self experience of fine art faculty.

	Category	L	T	P	Credit
15AR230 BUILDING MATERIALS AND CONSTRUCTION II	CFC	2	0	2	3

NIL

Course Outcomes

On the successful completion of the course, students will be able to

CO1. Acquire basic knowledge about the construction materials like brick, ferrous metals and non ferrous metals	(Remember and Understand)
CO2. Acquire an array of multifaceted knowledge on properties, uses and applications of brick, steel and aluminium as materials for building construction	(Apply)
CO3. Gain Practical Knowledge on various markets forms of Steel and aluminium	(Analyze)
CO4. Gain knowledge about the different construction techniques of bricks, steel and aluminium	(Evaluate and create)

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15	PO16
CO25.	**M**	**-**	**-**	**-**	**-**	**-**	**-**	**M**	**M**	**-**	**-**	**-**	**M**	**-**	**-**	**-**
CO26.	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**S**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO3.	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**L**	**-**	**-**	**-**	**-**	**L**	**-**	**-**	**-**
CO4.	**S**	**-**	**-**	**-**	**-**	**-**	**-**	**S**	**M**	**-**	**-**	**-**	**S**	**M**	**-**	**-**

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment Tests	Terminal Examination
Remember	10	10
Understand	10	10
Apply	20	20
Analyse	20	20
Evaluate	20	20
Create	20	20

SYLLABUS

Bricks: Properties – uses of brick in building construction – Types of bricks: traditional and modular – Properties of sound bricks. Types of brick bonding. Drawings of brick bonding – Stretcher and header bond, English, Flemish: L- junction, T- junction, intersections. (Including estimation of quantities). Assignments on Rat-trap bond, Creative bonding. Foundation, reinforced brick masonry – Masonry walls & piers, cavity wall, Arches and lintels, Brick roofs and flooring. Drawings of foundation, reinforced brick masonry – Masonry walls & piers, cavity wall, Arches and lintels, Brick roofs and flooring.Ferrous Metal- STEEL- Introduction to steel, Properties and Application of various types of steel applied in building industry, Market form of steel and steel sections. Types of Steel joints and connections, Bar bending techniques - Steel joist/ stanchions, Fabrication & erection. Drawings in: Steel doors, windows – Open able and fixed, Grills and Gates. Design of Steel Grills. Sketches in: Steel Collapsible gates and Steel Rolling Shutters. Drawings of: types of Steel roof truss, detailing of any one steel roof. Non Ferrous Metal- ALUMINIUM- Introduction to aluminium as a building material and Aluminium Alloys - properties and uses. Market forms of Aluminium -extrusions, foils, castings, sheets, etc.-tin and lead, properties and uses-current developments. Aluminium partitions, false ceiling, Roof finishing. Sketches in: Aluminium Sections in Aluminium Construction. Assignment and hands on exercises/ workshop on Aluminium Construction: Aluminium doors- open able, sliding, pivoted, Aluminium windows-open able, sliding, fixed, and pivoted, Aluminium ventilators –top hung, pivoted, louvered, Aluminium partitions, False ceiling with Aluminium Sections.

Text Books: 1. Engineering Materials by S.C.Rangwala , W.B.Mckay,'Building Conctruction', Vol.1,2,3 Longmans,U.K.1981.Building Construction by B.C.Punmia, Lakshmi Publications Pvt. Ltd., N.Delhi.Alanwerth, Materials, The Mitchell Pub. Co.Ltd., London,1986.R.Chudleu,Building Construction Handbook', British Library Cataloguing in Publication Data, London, 1990.S.C.Rangawala, Engineering Materials, Charotar Pub. House, Anand,1997. Don A.Watson, Construction Materials and Processes, McGraw Hill Co., 1972.Allen Edward, Iano Joseph, Fundamentals of Building Construction: Materials and MethodsAllen Edward, Exercises in Building Construction Deplazes Andrea, Constructing Architecture: Materials, Processes, Structures.Alanwerth, Materials, The Mitchell Pub. Co.Ltd., London,1986. R.Chudleu,Building Construction Handbook',British Library Cataloguing in Publication Data London, 1990.

15AR430	BUILDING MATERIALS AND CONSTRUCTION - III	Category	L	T	P	Credit
		CFC	2	0	2	3

Prerequisite

NIL

Course Outcomes

On the successful completion of the course, students will be able to

CO 1	Acquire basic knowledge about timber types, ingredients of concrete, types of plastics.	Remember
CO 2	Acquire basic knowledge about various physical, biological, and engineering aspect of Timber, knowledge on physical, chemical and structural aspects of R.C.C, and physical and engineering aspects of Plastics.	Understand
CO 3	Gain knowledge on construction techniques and details of king Post/ Queen post truss, R.C.C constructions etc	Apply
CO 4	To understand the suitability of different materials and their application in building construction.	Analyse and Evaluate

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15	PO16
CO27.	**M**	**-**	-	-	**-**	**-**	**-**	**S**	**L**	**S**	**-**	**-**	**L**	**S**	**-**	**-**
CO28.	**M**	**-**	**-**	**-**	**-**	**-**	**-**	**S**	**L**	**S**	**-**	**-**	**-**	**S**	**-**	**-**
CO3.	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**M**	**-**	**S**	**-**	**-**	**-**	**S**	**-**	**-**
CO4.	**M**	**-**	**-**	**-**	**-**	**-**	**-**	**S**	**L**	**S**	**-**	**-**	**-**	**S**	**-**	**-**

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment Test	Terminal Examination
Remember	10	10
Understand	20	20
Apply	50	50
Analyse	10	10
Evaluate	10	10

SYLLABUS

TIMBER - Types of timber – physical properties – seasoning, conversion, defects – decay and preservation of timber – Industrial timber – Plywood – block, particle and Fibre board - Drawings on types of wooden joineries – window, doors and ventilators – its construction details - Drawings of Timber partition – staircase (Dog legged) construction details - Drawings of Timber roof truss – King post and Queen post (any one to be done as drawings), and close couple roof - Sketches of Timber furniture using plywood. R.C.C - Concrete and concreting – concrete ingredients – cement, fine aggregate, coarse aggregate and water – specification – mix proportion and process – curing – testing for quality – uses – special concretes – light weight, high density, fibre reinforced, polymer – properties and uses – Ready mix concrete - Drawings on R.C.C construction – columns, beams, sunshades, lintel, roof slabs, arches, shuttering, reinforcement – details and concrete casting - Drawings of R.C.C staircase – shuttering, reinforcement details (Dog legged and helical) and concrete casting - Sketches of Expansion joints in R.C.C structures – details. PLASTICS - Types of plastics – thermo plastics and thermo setting – PVC, FRP, GRP of plastics in building industry – PVC conduit- electrical and plumbing – roofing sheets – doors and windows. CURTAIN WALLS AND GLAZING - Glass - properties and application - Drawings of Construction details of curtain walls – components and fixing details - Drawings of Construction details of structural walls – components, erection and fixing details.

Text Books

1. Building Construction by B.C Punmia, Lakshmi Publications Pvt. Ltd., N.Delhi.
2. Engineering materials by S.C.Rangwala.
3. Building Construction Vol I & II by W.B.Makay, Vol.1,2,3Longmans,U.K.1981
4. R.Chudleu,Building Construction Handbook',British Library Cataloguing in Publication Data, London, 1990.

Reference Books

1. Building Construction Illustrated by Francis D K Ching, CBS publisher and distributors.
2. Construction methods, materials and techniques by William P.Spence.
3. Brickwork by E.LindsayBraley.
4. Architectural Graphics standards by Charles G.Ramsey.
5. S.C.Rangawala, Engineering Materials, Charotar Pub. House, Anand, 1997.
6. Don A.Watson, Construction Materials and Processes, McGraw Hill Co., 1972.
7. Allen Edward, Iano Joseph, Fundamentals of Building Construction: Materials and Methods
8. Alanwerth, Materials, The Mitchell Pub. Co.Ltd., London,1986.

15AR121 **MATHEMATICS**

Category	L	T	S	Credit
AES	2	0	0	2

Prerequisite

Nil

Course Outcomes

On the successful completion of the course, students will be able to

1. Consider the concepts of Integration and Differentiation to solve complex mathematical relationships.	Remember, Understand and Apply
2. Understanding of the basics of statistics and probability to enable logical reasoning.	Remember and Understand
3. Understanding of the mathematical relationships governing lines and planes	Remember, Understand and Apply

Mapping with Programme Outcomes

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO8	PO 9	PO 10	PO 11	PO 12	PO 13	PO 14	PO 15	PO 16
CO29.	-	-	-	-	-	-	-	S	M	-	-	-	-	-	-	-
CO30.	-	-	-	-	-	M	M	-	-	L	-	-	-	L	M	-
CO3	L	L	-	-	-	-	-	S	-	-	-	-	-	-	-	-

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment Tests			Terminal Examination
	1	2	3	
Remember	10	10	10	20
Understand	10	10	10	20
Apply	30	30	30	60
Analyse	-	-	-	-
Evaluate	-	-	-	-
Create	-	-	-	-

Syllabus

Integration & functions of two variables - Integration of rational, trigonometric and irrational functions, properties of definite integrals, Reduction formulae for trigonometric functions. Area bounded by curve – Arc length of curve – volume & surface Area of solids of revolution. Taylor's Theorem with remainder Maxima and Minima (Simple Problems) **Ordinary differential equations -** Linear, second order and higher order Differential equations with constant coefficients **Basic statistics and probability-** The arithmetic mean, median, mode, standard deviation and variance. Regression and correlation, elementary probability theory, conditional probability **Analytical geometry-** Introduction: Direction cosines, Direction rations – Angle between lines Plane: Equations of plane – Angle between planes – Distance between parallel planes. St. Line: Equations of straight line – plane and straight line – coplanar lines - shortest distance between skew lines. (Problem oriented Approach)

Text Book

1. B. S. Grewal, Higher Engineering Mathematics, Khanna Publishers, Delhi, 1998

2. P. Kandasamy, K. Thilakavathy and K. Gunavathy, Engineering Mathematics Vol I and II, S. Chandan Publishers – 1998

Reference Books

1.Kappraff Jay, Connections; The Geometric bridge between art and science, McGraw Hill Inc. Ltd., USA, 1991.

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15AR210 MECHANICS OF STRUCTURES

Category	L	T	P	Credit
CFC	3	0	0	3

Prerequisite

Nil

Course Outcomes

On the successful completion of the course, students will be able to

CO1	Compute resultant, resolve several concurrent forces and also to apply equilibrium concepts	(Apply)
CO2	Determine simple stresses and strains	(Apply)
CO3	Compute geometric properties of sections	(Apply)
CO4	Practice shear force and bending moment computations and construct shear force and bending moment diagrams	(Apply)
CO5	Compute bending stresses and deflection in determinate beams	(Apply)

Mapping with Programme Outcomes

COs	PO1	PO8	PO10
CO1.	**S**	**S**	**S**
CO2.	**S**	**S**	**S**
CO3.	**S**	**S**	**S**
CO4.	**S**	**S**	**S**
CO5.	**S**	**S**	**S**

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment Tests	Terminal Examination
Remember	10	10
Understand	10	10
Apply	80	80
Analyse	-	-
Evaluate	-	-
Create	-	-

Syllabus

Need and understanding the basics of behaviour of structure - Statics of Forces and Moments: Forces and type of forces system – Composition and Resolution of forces - Equilibrium of a particle - Moments and Couples **Stress, Strain and Compound Stress:** Stress and Strain – Types - Elastic limit, Hooke's law - Deformation of simple and compound bars under axial load **Centroid and Moment of Inertia:** Centroid of length, area and volume - Centroid of sections –Rectangle, circle, triangle from integration - Centroid of sections – Symmetrical I section, Angle section by using standard formula - Moment of inertia of plane area – principal moment of inertia – parallel and perpendicular axis theorem - Moment of inertia of square, rectangular, circular, symmetrical I section. **Shear force and Bending Moment Diagram:** Different types of loads and support conditions – Types of Beams - Shear force and bending moment – cantilever beams subjected to concentrated load and UDL - Shear force and bending moment – simply supported beams subjected to concentrated load and UDL **Bending stresses and Deflection of Beams:** Bending Stress in Beams - Cantilever & Simply Supported beams - Deflection of cantilever beams, simply supported beams - Double integration method - Deflection of cantilever beams, simply supported beams - Macaulay's method.

Text Books

1. Palanichamy, M.S., Nagan, S., "Engineering Mechanics – Statics & Dynamics", Tata McGraw-Hill, (2001).
2. Bansal R.K., "A Text Book of Strength of Materials", Laxmi Publications, New Delhi, 4th edition, 2007

Reference Books

1. Timoshenko. S.P. and Young D.H., "Elements of Strength of Materials", 5th edition (SI Units), Affiliated East-West Press Ltd., New Delhi, 2012.
2. Ferdinand P. Beer and E. Russell Johnston Jr, "Mechanics of Materials", McGraw Hill Book Company, Singapore, 1992.
3. Egor. P. Popov, "Mechanics of Materials", Prentice Hall, 1976.
4. Bansal, R.K., "A Text Book of Strength of Materials", Laxmi Publications (P) Ltd., New Delhi 2010.

15AR310	MASONRY AND STEEL STRUCTURES	Category	L	T	P	Credit
		CFC	3	0	0	3

Prerequisite

NIL

Course Outcomes

On the successful completion of the course, students will be able to

CO 1	Design brick masonry walls and piers	Create
CO 2	Analyze the statically determinate trusses	Apply
CO 3	Design bolted and welded connection	Create
CO 4	Design Tension and Compression member	Create
CO 5	Design steel beams	Create

Mapping with Programme Outcomes

COs	PO1	PO7	PO8	PO10	PO11
CO31.	**S**	**-**	**S**	**S**	**L**
CO32.	**M**	**M**	**M**	**M**	**L**
CO3.	**S**	**-**	**S**	**S**	**L**
CO4.	**S**	**-**	**S**	**S**	**L**
CO5.	**S**	**-**	**S**	**S**	**L**

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment Tests	Terminal Examination
Remember	10	10
Understand	20	20
Apply	20	20
Create	50	50

Syllabus

Design of Brick masonry: Permissible stress as per IS Codes - Types of Brick masonry wall – Design of solid and cavity walls – Design of pier for axial load. **Static Analysis of determinate trusses**: Type of trusses - Analysis of Trusses by Method of Joints - Analysis of Trusses by Method of Sections. **Design of Bolted and welded connections:** Bolted connections - Lap joint and Butt joint for axial load – Efficiency of Bolted joints – Types of weld – Strength of fillet and butt weld - Design of joints under axial load using butt and fillet weld. **Design of Tension and compression members:** Design of Tension members – Plates - Single angle – Double angle – Compression member - Effective length – End condition – Slenderness ratio - Design of columns for axial loads – Rolled steel I section – angle section. **Design of simple beams:** Introduction to beam concept - Design of Laterally restrained beam - Design of Laterally unrestrained beam.

Text Books

1. Dayaratnam. P., (1987) "Brick and reinforced Brick Structures"' Oxford IBH Publishing Co. Pvt Ltd, New Delhi.
2. Teaching resource for structural steel design, Vol. 1, 2, 3 (2000), INSDAG - Institute for steel development and growth, Kolkotta.
3. Duggal S.K., "Limit State Design of Steel Structures", Mc Graw Hill Education (India) Pvt., Ltd., New Delhi, 2015

Reference Books

1. Punmia B.C., and Arunkumar Jain, "Strength of Materials and Theory of Structures", Vol I and Vol II, Laxmi Publications, New Dellhi, 2007
2. Rajput R.K., "Strength of Materials", Laxmi Publications, New Delhi, 1999.
3. Subramanian N," Design of Steel Structures", Oxford University Press, New Delhi, 2008.
4. List of IS codes

1. IS 800-2007 – Code of practice for general Construction in steel
2. SP6 (1) – Hand book for Structural Engineers – Part I :Structural Steel Sections, BIS
3. IS 816 :1969 - Code of practice for Metal Arc Welding for general Construction in Mild Steel, BIS
4. IS 1905 – 1987 – Code of practice for Structural Use of Unreinforced Masonry, BIS

15AR410	RCC STRUCTURES	Category	L	T	P	Credit
		CFC	3	0	0	3

Prerequisite

15AR210 – Mechanics of Structures

Course Outcomes

On the successful completion of the course, students will be able to

CO 1	Design beams for flexure	Create
CO 2	Design beams for shear and torsion	Create
CO 3	Design slabs	Create
CO 4	Design columns	Create
CO 5	Design footing	Create

Mapping with Programme Outcomes

COs	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16
CO3.	S	-	-	-	-	-	-	S	-	S	L	-	-	-	-	-
CO4.	M	-	-	-	-	-	M	M	-	M	L	-	-	-	-	-
CO3.	S	-	-	-	-	-	-	S	-	S	L	-	-	-	-	-
CO4.	S	-	-	-	-	-	-	S	-	S	L	-	-	-	-	-
CO5.	S	-	-	-	-	-	-	S	-	S	L	-	-	-	-	-

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment Tests	Terminal Examination
Remember	10	10
Understand	10	10
Apply	20	20
Create	60	60

Syllabus

Concept of Limit State Design and Design of Beams: Principles of Limit state method of design – characteristic load and strength - partial safety factors for load and strength - study of stress block parameters - analysis and design of singly and doubly reinforced rectangular sections – design of simply supported beam - reinforcement detailing. **Design of Beams for Shear and Torsion:** Design of rectangular beam sections for shear, shear & torsion and bending & torsion - reinforcement detailing. **Design of Slabs:** Design of one way and two way slabs – simply supported, continuous and restrained – using coefficients in IS code - Design of one way continuous slab. **Design of Columns:** Design of columns for axial load- square, rectangular and circular sections with lateral and spiral ties- design of short columns for uniaxial and biaxial eccentricities using interaction charts- reinforcement detailing - design principles of long columns for uniaxial and biaxial eccentricities. **Design of Footing:** Types of foundation – design of isolated footing - square and rectangular sections – design of isolated sloped footing - reinforcement detailing- design principles for combined footing and pile foundation.

Text Books

1. Unnikrishna Pillai and Devdas Menon, reinforced Concrete Design, Tata Mc Graw Hill Publishing Company Ltd., New Delhi, 2007.
2. B.C.Punmia, Ashok K.Jain and Arun K.Jain, Comprehensive RCC designs, Lakshmi Publications Pvt., Ltd., New Delhi, Ninth Edition, 2009.

Reference Books

1. P. Dayaratnam, Limit State Design of Reinforced Concrete Structures, Oxford & IBH Publishing Company Ltd, 2008.
2. P.C. Varghese, Limit State Design of Reinforced Concrete, 2nd Edition, Prentice-Hall of India Pvt. Ltd., New delhi, 2004.
3. N. Krishna Raju and R.N. Pranesh, Reinforced concrete design, Principles and practice, New Age International (P) Ltd Publishers, New Delhi, 2006.

List of IS codes

1. IS 456-2000 - Plain and Reinforced Concrete – Code of Practice
2. IS 875-1987 (Part1-5), Code of practice for design load (other than Earth quake) for building and structures
3. SP16:1980 Design Aids for Reinforced Concrete to IS 456:1978
4. SP34:1987 Handbook for concrete reinforcement and detailing

15AR420	BUILDING SERVICES - I	Category	L	T	P	Credit
		CFC	3	0	0	3

Prerequisite

Nil

Course Outcomes

On the successful completion of the course, students will be able to

CO 1	Retain knowledge about various types of building services involved in buildings.	Remember
CO 2	Understand the relationship between different water supply and sanitation systems, rain water harvesting systems, Fire services in housing, large factories, towns and cities.	Understand
CO 3	Apply the knowledge in evolving Plumbing layout, fire fighting system layouts for buildings as to know the intricacies involved in planning and design services	Apply
CO 4	Analyze the arrangement of sewerage systems and relate the Rural and Urban Sanitation systems.	Analyze

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15	PO16
CO5.	S	-	-	-	-	-	-	M	-	-	-	-	-	-	-	-
CO6.	S	-	-	-	-	-	-	S	-	-	-	-	-	M	-	-
CO3.	S	L	-	L	-	-	-	M	-	L	-	-	-	S	-	-
CO4.	S	L	-	L	-	-	-	M	-	L	-	-	-	S	-	-

S- Strong; M-Medium L –Low ;

Asessment Pattern

Bloom's Category	Continuous Assessment Tests	Terminal Examination
Remember	10	10
Understand	10	10
Apply	40	40
Analyse	40	40

Syllabus

Introduction - Introduction to Building Services – Service Core – Definitions, Types – Basics of **(MEP)** Mechanical, Electrical and Plumbing in Building **- Mechanical** – Introduction to Heating, Ventilation & Air Conditioning and Fire Fighting Services – **Electrical** – Introduction to Electrical Services and Artificial Lighting Systems – **Plumbing** – Introduction to Water Supply and Sanitation, Waste Management – Rain Water Harvesting Systems. **Water Supply** – Sources of Water – Quantity of Water- Quality of Water – Requirements of Water for various purposes – Water Supply System – Water Distribution Systems – Water Supply Service Connections – Water Supply at Site & Building Level – Sources of Water at Site Level – Treatment of Water - Storage of Water – Basics of Plumbing – Water Supply - Plumbing at Site Level and Building Level as per NBC and IS Specifications & Recommendations. **Sanitation** – Introduction to Sanitation – Refuse – Sanitation – Plumbing at Building Level and Site Level as per NBC and IS Specifications & Recommendations – Sanitary Plumbing Systems in Building – Introduction to Sewerage Layout – Sanitary Service Connections – Introduction to Plumbing Fittings and Sanitary Fittings such as Pipe , Taps, Valves, Pumps & Motors, Water Closets, Urinals and other accessories – Reuse of Waste – Treatment of Sewage - Planning and Design Consideration of Kitchen, Toilets, Bathrooms as per NBC and IS Specifications & Recommendations. **Rain Water Harvesting** – Introduction to Rain Water Harvesting – Need and Importance of Rain Water Harvesting in Buildings - Rain Water Harvesting Systems at Site Level and Building Level – Treatment of Water – Storage of Water – Planning and Design Consideration for Rain Water Harvesting in Multi-Storied Buildings. – Introduction to Plumbing Layout with Case Study explaining the Water Supply Layout, Sewerage Layout & Rain Water Harvesting Layout. **Fire Services** - Fire safety – Causes of Fire – Types of Fire – Components of Fire safety Systems – Fire Stairs, Fire Lifts etc. – Fire Detection and Fire fighting Systems – Fire Extinguishing Systems – Planning and Design Consideration of Components of Building as NBC and IS Specifications & Recommendations- Introduction to Fire Safety Layout with Case Study.

Text Books 1. S.C.Rangwala, Water Supply and Sanitary Engineering, Charaotar Publishing House, Anand 388601.1989.2. Handbook for Building Engineering in Metric Systems, NBC, New Delhi,1968.

Reference Books1. G.M,Fair, J.C.geyer and D.Okun, Water and Waste Water Engineering. Vol.II. John Wiley & sons,Inc.,New York,1968.2. Manual of Water Supply and Treatment, Second Editions, CPHEEO, Ministry of works and Housing. New Delhi1977 ,3. Manual on Sewerage and Sewage Treatment, CPHEEO, Ministry of Works and Housing. New Delhi. 1980. ,4. National Building Code, 2007

15AR520	BUILDING SERVICES - II	Category	L	T	P	Credit
		CFC	3	0	0	3

Prerequisite

NIL

Course Outcomes

On the successful completion of the course, students will be able to

CO 1	Retain knowledge on various services like, electrical, lighting and security systems involved in buildings	Remember
CO 2	Understand about the basics of electrical systems and various electrical installations, principles of illumination, security systems and its Installations which are needed to co-ordinate the various services involved in building as designer.	Understand
CO 3	Apply the knowledge in evolving electrical, lighting layouts for buildings as to know the intricacies involved in planning & design services.	Apply
CO 4	Relate and comprehend the integration of various services like, electrical, lighting ,Heating , Ventilation ,Air Conditioning and security systems involved in buildings	Analyze

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15	PO16
CO7.	S	-	-	-	-	-	-	M	-	-	-	-	-	-	-	-
CO8.	S	-	-	-	-	-	-	S	-	-	-	-	-	M	-	-
CO3.	S	L	-	L	-	-	-	M	-	L	-	-	-	S	-	-
CO4.	S	L	-	L	-	-	-	M	-	L	-	-	-	S	-	-

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment Tests	Terminal Examination
Remember	10	10
Understand	10	10
Apply	40	40
Analyse	40	40

Syllabus

Electrical Services – Basics of Electrical Services - Service Connection – Single Phase and Three Phase Supply – Components of Service Connection – Transformer, Substations, Main Distribution Boards, Switch Gears- Protective Devices, Earthing – Wiring Systems – Under Ground Cabling at Site Level – Service Connections at Building Level – Distribution Systems at Building Level – Wiring at Building Level – Lightning Protection - Introduction to Electrical Fittings such as Motors, Wires, Pipes, Switches, Lamps, Fans etc - Planning and Design Consideration of Electrical Service, Connection and Systems as per NBC and IS Specifications & Recommendations - Introduction to Electrical Layout with Case Study **Artificial Lighting Systems –** Visual tasks - factors affecting visual tasks- Luminous flux-candela-Solid angle illumination-Utilization factor-depreciation factor - Laws of illumination. -Modern theory of light and colour- Synthesis of light - Additive and subtractive synthesis of colour - Special features required and minimum level of illumination required for various activities - Classification of lighting based on activities, light sources and fixtures - Spectral energy distribution-luminous efficiency- colour temperature-colour rendering, Lighting for residential, commercial and institutional spaces –. **Heating, Ventilation and Air Conditioning (HVAC)** – Basics of HVAC – Introduction to Mechanical Ventilation – Study of Ventilation Systems in Kitchens, Toilets etc. – Basics of Air Conditioning – Types of Air Conditioning Systems – Introduction to the Mechanical and Electrical Fittings used for Heating, Ventilation and Air Conditioning of a spaces. **Gas Supply and Services –** Cooking Gas Supply at Site Level and Building Level – Gas Supply Connection – Gas Bank - Planning and Design Consideration of Gas Supply Connection and Systems as per NBC and IS Specifications & Recommendations - Introduction to Cooking Gas Supply Layout with Case Study. **Communication Lines, Telephone Lines & IT Networks and Security Systems** – Basics of Communication Lines, Telephone Lines & IT Networks Supply and Distribution at Site Level and Building Level – Security Systems – CCTV -Types of Surveillance & Security Systems - Planning and Design Considerations of Communication Lines, Telephone Lines & IT Networks and Security Systems.

Text Books

1. Derek Philips, Lighting in Architectural Design, McGraw Hill, New York, 1964.

2. Aly S. Dadras, Electrical Systems for Architects, Mc Graw-Hill, Jan-1995

Reference Books

1. E.R.Ambrose, Heat Pumps and Electric Heating, John and Wiley and Sons.Inc., NewYork,1968.
2. R.G.Hopkinsoon and J.D.Kay, The Lighting of Buildings, Faber and Faber, London, 1969

		Category	L	T	S	Credit
15AR610	**ESTIMATION AND SPECIFICATION**	CFC	3	0	0	3

Prerequisite

- NA

Course Outcomes

On the successful completion of the course, students will be able to:

CO1 Understand the importance of estimation and detailed estimation of buildings	Understand & Remember
CO2 Get familiarized with different types of specification and writing specification for the purpose of tender issue	Analyze & Apply
CO3 Understand the schedule of rates for various items of work within the state of Tamilnadu and rate analysis for the same	Apply
CO4 Understand the component of budgeting, valuation and depreciation	Understand & Remember

Mapping with Programme Outcomes

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PO 13	PO 14	PO 15	PO 16
CO9.	-	-	-	-	-	-	M	M	-	-	-	-	-	M	-	-
CO10.	-	-	-	-	-	-	M	M	-	-	-	-	-	-	S	-
CO3.	-	-	-	-	-	-	M	M	-	-	-	-	-	M	-	-
CO4.	-	-	-	-	-	-	M	M	-	-	-	-	-	M	S	-

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment	Terminal Examination
Remember	20	20
Understand	20	20
Apply	30	30
Analyze	30	30

Syllabus

INTRODUCTION TO ESTIMATION: Types and purpose – Approximate Estimate andDetailed Estimate of buildings - Measurement of basic materials like brick masonry, stone masonry, P.C.C, R.C.C, Woodwork according to Bureau of Indian Standards - **SPECIFICATIONS AND SPECIFICATION WRITING FOR VARIOUS ITEMS OF WORK:** Various items of works for different types of buildings – Types of specification - Writing specifications for the purpose of calling tenders – Specification for foundation, earth work, Brick work- Concrete work - RCC work - Plastering – Flooring – Wood work – Finishes -**RATE ANALYSIS:** Schedule of rates of Tamil Nadu for various items of work and labor - Rate analysis for earth work – P.C.C – Brick Work – R.C.C – Plastering – Flooring - **DETAILED ESTIMATE:** Quantity Estimate for all items of work involved in simple buildings - Preparation of Detailed Estimate using computer tools - **BUDGETING:** Financing of projects economic feasibility report –valuation –depreciation and its implicationz

Text Book

1. Bryan Staffold and Alex Coull - Tall buildings and Structures - Analysis and Design; John Wiley and Sons, New York, 1991
2. B C Punmia, Building Construction; Firewall Media, 2005
3. Sinha M C and Roy S K – Fundamentals of Pre-stressed Concrete; S Chand & Company, New Delhi, 2001
4. Claude Michael and Henry Barritt – Advanced Building Construction Vol 2; Longman Co, 1998

Reference Books

1. Bungale S Taranath – Structural Analysis and Design of Tall Buildings; McGraw Hill Inc US, 1988
2. Barry's Advanced Construction of Buildings, Emmitt, Wiley
3. James Ambrose and Patrick Tripeny – Building Structures; Wiley 3rd Edition, 2011
4. Lin T.Y. and Sidney D. Stotesbury - Structural Concepts and systems for Architects and Engineers; John Wiley & Sons, 1981

Category	L	T	P	Credit
EFC	3	0	0	3

15ARFA0 CONCEPTS AND APPRAOCHES IN DESIGN

Prerequisite

Nil

Course Outcomes

On the successful completion of the course, students will be able to

CO 1: Understands the basic idea of concept, its role in design development and various types of generating concepts.

UNDERSTAND

CO 2: Learns concept applications in Architectural design by analyzing case study examples.

ANALYSE

CO 3: Generates ideas and applies concept consciously into his/her designs when necessary.

CREATE

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO5	PO7	PO9	PO12	PO13	PO14
CO33.	**M**	**L**	**L**	**M**	**L**	**M**	**M**	**L**	**L**
CO34.	**M**	**L**	**L**	**M**	**L**	**M**	**M**	**L**	**L**
CO3.	**M**	**L**	**L**	**M**	**L**	**M**	**M**	**L**	**L**

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment Tests	Terminal Examination
Remember	-	-
Understand	20	20
Apply	20	20
Analyse	40	40
Evaluate	-	-
Create	20	20

Syllabus**: Introduction:** Definitions of concepts, need and importance of concept in design, Design process and the role of concepts in design development, relationship between ideas, notions, concepts & conceptual scenarios, hierarchy of concepts and parti development; **Concept generators –**Approaches to Concept in Architectural Design - Approaches for generating concepts – levels of concept development – variety, expression, reinforcement,Concept using keywords – Issue based concept – Theory based concept – Concept combining issue and theory Concepts - Types of concepts – Analogies, Metaphors(Direct, Personal, Symbolic, Fantasy, Narrative) Essences, Programmatic Concepts, Ideals - Case examples for all of the above; **Tools for Design Development:** Pre designing phase- Programming and Problem seeking tools- context analysis **(**site , social, cultural etc), program analysis, proximity, adjacency tools (like matrix, bubble, zoning), check list, circulation , layering analysis, synthesis and diagrams –architectural programming – mission, goal, performance requirements and concepts , Case studies and examples ; ***Exercises on :*** *Focus on People , Observation using Visual language , Identifying Patterns - Design principles : Listing, Choosing , Reversing, Reframing, Designing - Idea sketching - Generating Alternatives and Evaluation*; **Concept development stage :** Concept diagrams – qualities of a good concept diagram **-** Sketches of Ideas , Illustration of Concept – Free hand drawing, Parti diagrams - techniques for developing clear concepts, Schematic drawings , Presentation drawings, Construction Drawings, presentation techniques.

Text Books

1. Donna Duerk , "Architectural Programming - Information Management for Design", Wiley, John & Sons, Incorporated, 1993
2. Keyam, S.M., "Psychology in relation to design" Dowden, Hutchinson an Ross, 1973.
3. Hall, E.T., "The Hidden Dimension" New York, Doubleday, 1996
4. James C.Snyder,Anthony J.Catarex – Introduction to Architecture, McGraw Hill Inc., 1979.
5. Joan Zunde and Hocine Bougdah, Integrated Strategies in Architecture, Taylor & Francis, 2006
6. Geoffrey Broadbent, 'Design in Architecture', John Wiley & Sons, 1973
7. John Chris Jones, Design Methods, Wiley, 1992
8. Helen Mari, An Invitation to Design,

		Category	L	T	P	Credit
15ARFB0	HISTORY OF DRAVIDIAN ARCHITECTURE	EFC	3	0	0	3

Prerequisite

Nil

Course Outcomes

On the successful completion of the course, students will be able to

CO 1	Acquire knowledge on the history of Dravidian culture and architecture	Remember
CO 2	Understand the typologies of buildings, the evolution and concepts in temple architecture	Understand
CO 3	To understand the Dravidian architectural developments in Palar river, Cauvery and vaigai river region	Understand
CO 4	Analyse the rich architectural and urban heritage of Dravidians and the contributions by various dynasties	Analyse

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO8	PO12	PO13	PO14	PO16
CO35.	-	M	-	M	M	M	-	M	L	S	L
CO36.	L	M	M	L	M	L	L	M	-	M	L
CO3.	L	M	M	-	L	L	-	M	-	L	L
CO4.	L	M	M	-	L	L	-	M	-	L	L

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment Tests	Terminal Examination
Remember	20	20
Understand	40	40
Apply	-	-
Analyse	40	40
Evaluate	-	-
Create	-	-

Syllabus

Introduction to Dravidian Architecture: Over view of Dravidian civilisation origin and evolution; society and culture - religious , social and political institutions – basics of philosophies of religion, beliefs and rituals, art forms etc; geographical and linguistic categories; **Dravidian Architecture:** Over view of Building typologies – religious, royal, defence, residential etc forms; Hindu temple – evolution , cosmological and metaphysical dimensions; principles of composition and spatial organisation like visual and physical axis, layering, circulation and sequence ,concept of kinaesthetics, semiotics etc; Elements of temple – concept, meaning and purpose, rituals, worship, festivals and pilgrimage; structural systems, material and technology; sacred space and urban space – the temple and the temple towns, urban context. **Dravidian dynasties and architecture:** Pallavas, Cholas, Pandyas, Vijayanagar and Nayaks – origins, beliefs and contributions to architecture and town planning, contributions in architecture- style, characteristics etc; **Dravidian architecture in Palar river region:** Over view of Architecture, contextual adaptations, urban context of Mamallapuram, Kanchipuram, Thiruvannamalai, Gingee and significant case examples – Mamallapuram, Kanchipuram; **Dravidian architecture in Cauvery river region:** Over view of Architecture, contextual adaptations, urban context - Thanjavur, Gangaikonda Cholapuram, Chidambaram, Kumbakonam, Srirangam and significant case examples **–** Thanjavur, Kumbakonam, Srirangam; **Dravidian architecture in Vaigai river region and south:** Over view of Architecture, contextual adaptations, urban context - Tirunelveli, Sriviliputur, Rameswaram and significant case examples - Madurai, Rameswaram.

Text Books

1. Percy Brown, Indian Architecture (Buddhist and Hindu Period), Read Books, 2010
2. Satish Grover, Buddhist and Hindu Architecture in India, CBS, 2008

Reference Books

1. George Michell, Temple towns of Tamil Nadu, Marg Publications, Mumbai, 2008
2. George Michell, The new Cambridge history of India – architecture and art of southern india, Cambridge university press, 2000
3. Yatin Pandya , Concepts of space in traditional Indian architecture, Mapin, 2005
4. Satish Grover, Masterpieces Of Traditional Indian Architecture, Om Books, 2004
5. Adam Hardy, *The Temple Architecture of India*, Wiley, 2007
6. Ananda K. Coomaraswamy , Michael W. Meister, Essays in Early Indian Architecture, Oxford University Press (January 20, 1994)

15ARFC0 VERNACULAR ARCHITECTURE

Category	L	T	P	Credit
EFC	3	0	0	3

Prerequisite

NIL

Course Outcomes

On the successful completion of the course, students will be able to

CO1. Recognize the essence of architecture of vernacular buildings and settlements. (Remember and Understand)
CO2. Understand how climate influences architecture (Apply)
CO3. Comprehension of the application of vernacularism in contemporary buildings towards sustainable built environment. (Evaluate and create)

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15	PO16
CO11.	M	S	M	-	-	M	M	M	M	L	L	M	M	-	-	-
CO12.	S	M	M	M	M	L	-	S	-	M	M	L	-	M	M	-
CO3.	S	M	M	M	-	M	-	L	-	S	M	M	L	-	M	M

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment	Terminal Examination
Remember	20	20
Understand	20	20
Apply	30	30
Analyse	30	30

Syllabus

Vernacular Architecture and Concepts: Definition of Vernacular Architecture. Importance and factors determining the Character of vernacular Architecture - Various approaches and concepts used in the study of vernacular Architecture - Aesthetic, Anthropology - Architectural and Geographical approach - Spatial and Ecological approach - Behavioral, Culturalistic, climatic and developmental approach - **Vernacular architecture in North India -** Architecture for Desert- Traditional Havelies in Rajasthan and Bhunga Houses -Factors Influencing Vernacular Architecture- Settlement planning, street layouts, Typology, Forms, Cultural aspects. Land form, occupation, Traditions, materials, Construction techniques, Symbolism and decoration. Gujarat- Wooden Houses and Mansions of Gujarat, their primitive form, climate, Materials and construction details. Banni Houses in Kutch regions and Pol houses of Ahmedabad. Architecture for water – Step wells.

Exercises on Documentation of Vernacular building and understanding various spatial elements which evolved as a response to Climate.

Vernacular Architecture of South India- Kerala -Nallukettu, Ettukettu houses and Boat Houses - Architectural significances, planning, materials and construction techniques, occupation, culture, traditions, value systems, climate and landform. Karnataka- Gutthu and kodava houses - Architectural significances, planning, materials and construction techniques, occupation, culture, traditions, value systems, climate and landform. Tamilnadu- Architecture in Hilly region- – Irula, Kurumba, Todas and Badagas.-Architectural significances, planning, materials and construction techniques, occupation, culture, traditions, value systems, climate and landform Hinterlands- Agraharams at Tanjore, Kumbakonam Chettinad houses, Kuchi veedus etc.

Exercises on documentation/sketches of a vernacular building and study the Evolution of Architectural Spaces – with response to their Culture.

Vernacular Architecture as a Design Tool - Generative concepts in vernacular Architecture – Case studies of building like Sriram Ganapathy, Beeny Kuriokose, SathyaPrakash Varanasi, Hasan Fathy, B V Doshi, Sanjay Udayamalya, Raj Rewal etc - Concepts derived from vernacular buildings and used in modern buildings - Case studies from International Vernacular Architecture.

Text Books

1. Paul Oliver, Encyclopedia of Vernacular Architecture of the World, Cambridge University Press, 1997.
2. Taylor and Francis, Vernacular Architecture in the 21st century, 1999.
3. Sanjay Udamale, Architecture for Kutch, English edition, 1980
4. Channa Daswate, Dominic Sansoni, Srilanka style – Tropical design and Architecture, Periplus Edition, 2006.
5. S.Muthiah, Meenakshi Meyappan, Visalakshy Ramasamy The Chettiar Heritage –published by The Chettiar Heritage.
6. Madhavi Desai Traditional Architecture , published by the The Bombay Presidency Gazetteer 2007
7. Ilay Cooper Barry Dawson, Traditional Buildings of India, Thames and Hudson (1998).
8. Traditional and Vernacular Architectue- madras craft foundation ltd.
9. R. Champakalakshmi, Usha Kris, Architecture of the Indian Desert, Luster press- Rolli book

		Category	L	T	P	Credit
15ARFD0	**HISTORY OF MEDIEVAL ARCHITECTURE**	EFC**	2	1	0	3

Prerequisite

Nil

Course Outcomes

On the successful completion of the course, students will be able to

CO 1	Remember the architectural features of medieval times.	Remember
CO 2	Understand the influence of regional variations on the architecture of that place.	Understand
CO 3	Understand the innovative construction techniques of the structural systems used in medieval times.	Understand
CO 4	Analyse the construction techniques and choice of materials in a particular style of architecture	Analyse

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15	PO16
CO13.	S	S	L	L	M	M	-	M	S	-	-	S	L	L	-	-
CO14.	-	S	S	L	S	L	S	M	S	-	-	S	M	L	-	L
CO3.	S	S	-	-	M	-	-	S	S	-	-	L	L	S	-	L
CO4.	M	S	-	-	-	-	-	M	S	-	-	-	L	S	L	S

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment Tests	Terminal Examination
Remember	20	20
Understand	20	20
Analyse	60	60

Syllabus

Romanesque architecture Factors influencing Romanesque architecture in France and Italy, expansion of church forms and monasteries – regional variations with respect to materials and construction techniques- Outline of architecture character in Italy, France and England -Examples: Pisa group, Italy ; Abbaye aux Hommes, Caen ; Tower of London. Gothic architecture: Factors influencing Gothic Architecture in France, Italy and England- evolution of construction of vaulting systems in churches- regional variations with respect to materials and construction techniques- main differences between the early- high and late Gothic period- Outline of Architectural character - Examples: Notre Dame, Paris. Development of English gothic vaulting - Outline of Architectural character in England and Italy - Examples: West minister Abbey, Hampton Court Palace, London; Doges Palace, Venice; Milan Cathedral. Renaissance Architecture Factors influencing in Renaissance architecture-The rise and spread of Renaissance- Features of a typical Renaissance palace, eg. Palazzo Ricardi, Study of the contribution of the following architects: Brunelleschi, Michelangelo, Andrea Palladio, Example - St. Peter Rome, Villa capra in Vicenza, French and English Renaissance - architectural character in the classical & Rococo period - Example – Chateau de Chambord, Louvre,Paris –Domestic British architecture- Study of the works Sir Christopher Wren,& Inigo Jones, Example - St. Paul's Cathedral, London, Banqueting House, Whitehall. Introduction to Baroque architecture and its essence in interiors.

Text Book

1. Sir Banister Fletcher, A History of Architecture, University of London, The Antholone Press, 1986.
2. G.K.Hiraskar, Great Ages of World Architecture, Dhanpat Rai & Sons, Delhi.
3. Francis D.K. Ching and others, A global History of Architecture, 2nd edition, John wiley and sons, Inc., 2011.

Reference Books

1. Jenkins keith, Rethinking history, Routledge classics,2003
2. Irving L.Gordon, World History, Amsco school of publication, INC, New York, 2000.
3. Edith Tomory, A history of fine arts in India, Orient Longman, 2003
4. Pier Liugi Nervi, General Editor – History of World Architecture – Series, HARRY N.Abrams, Inc. Pub, New York, 1972.
5. S.Lloyd and H.W.Muller, History of World Architecture Series, Faber and Faber Ltd., London, 1986.

15ARFG0 **SERVICES IN HIGHRISE BUILDINGS**

Category	L	T	P	Credit
PE	2	0	0	2

Prerequisite

Nil

Course Outcomes

On the successful completion of the course,

CO1	Understand the basic concepts of Services in High rise buildings, service core, energy management and automation of different services in highrise buildings	Remember & Understand
CO2	The students are exposed to services in vertical design and their applications of services in Architectural Design.	Apply
CO3	Analyze the relationship of service planning and evaluate highrise building with respect to the efficiency of its services.	Analyze

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15	PO16
CO15.	-	-	-	-	-	-	-	-	S	-	-	-	-	M	-	M
CO16.	S	-	-	-	-	-	-	-	S	-	-	-	-	M	-	L
CO3.	S	-	-	-	-	-	-	L	S	-	-	-	-	S	-	S

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment Tests	Terminal Examination
Remember	20	20
Understand	20	20
Apply	20	20
Analyse	40	40

Syllabus

Introduction to highrise building and its components- Indian Standards and Global Standards on High Rise Buildings; Introduction to services in high rise buildings, Integration of Services, - Importance of Service Core Design, Design Criteria for Service Core, Components of Service Core, Various Service Core Configurations - Vertical and Horizontal Ducts for various services. Various Service Installation In Highrise Buildings – Mechanical services - Naturally and Mechanically assisted Ventilation Systems for high rise buildings - Air Conditioning Systems for Multi-Zone, Multi-Storey Buildings - Passive Fire Safety Standards for high rise buildings as per National Building Code of India - Security Systems at site level & building level: Compartmentalization in structure; Perimeter protection & Access Control - Electrical and transportation services - Planning and Location of Electrical Rooms and power supply Distribution systems-Power Back-Up Systems - Passive and Active Day Lighting Systems-Glass and Glazing system for natural lighting. Vertical transportation system-Planning and Designing of Elevator Systems and Services – Express & Local Elevators, Sky lobbies etc, Escalators and Capsule elevators – Stairways & Ramps - Plumbing services - Types of Water Storage and Distribution Systems in high rise buildings - Types of Sewage Collection Systems in high rise buildings-Standards of Sanitary Services in high rise buildings - Refuse Collection and Disposal: Methods and types including solid waste collection and disposal -Selection of pumps, Auto Hydro-pneumatic & Pressure Boosting/Control Pumps - Integrated Building Management systems - IBMS encompasses the technologies which include energy management systems and building controls. List of utility, safety and security systems that are generally monitored and controlled through IBMS, the various components of IBMS, types of utility, safety & security systems and the basic knowledge on how they are designed and installed

Text Book Fred Hall & Roger Greeno, Building Services Handbook, Elsevier,2005. 2.A K Mittal, Electrical and Mechanical Services in High Rise Buildings Design and Estimation Manual, 2001 3. R.Barry, The Construction of Buildings, Volume 5, Affiliated East-West Press Pvt. Ltd., New Delhi, 1999. 4. Building Automation Systems – A Practical Guide to selection and implementation – Author :Maurice Eyke Mechanical and Electrical Services for High Rise Buildings: Handbook by Basem M. M. (Author)

Reference Books : National Building Code of India, 2005.2.Proceedings of the council for tall buildings – vol 1 & 2, 3.Fire Safety Issues in High-Rise Residential Buildings: escape routes 4.Yahya Mohamad Yatim design and specification,Lambert Academic Publishing, 2011 Frank R.Dagostino, Mechanical and Electrical Systems in Construction and Architecture, Reston Publishing Company Inc.Reston, Virginia, 1978. Ken Yeang, Ivor Richards, Bioclimatic Skyscrapers, Ellipsis, 1994.Johann Eisele and Ellen Kloft, High-Rise Manual, Birkhäuser-Publishers for Architecture, 2003

Design and Application of Security/Fire Alarm system – Author: John E. Traister.

15ARFH0 HISTORY OF MODERN ARCHITECTURE- II

Category	L	T	P	Credit
EFC	3	0	0	3

Prerequisite

Nil

Course Outcomes

On the successful completion of the course, students will be able to

CO 1	Gain Information about the alternative building technology practiced by various architects.	Remember
CO 2	Understand the interpretations of function and culture in architecture.	Understand
CO 3	Analyze the works of Pioneering Indian Architects.	Analyze
CO 4	Evaluate the emerging Architectural trends in India.	Evaluate

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15	PO16
CO17.	-	S	S	-	M	L	-	-	L	-	M	M	-	-	-	-
CO18.	-	S	M	-	S	L	-	-	L	-	M	S	-	-	-	-
CO3.	-	S	M	-	S	M	-	-	M	-	M	S	-	-	-	-
CO4.	-	S	-	-	M	M	-	-	M	-	L	M	-	-	-	-

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment Tests	Terminal Examination
Remember	20	20
Understand	20	20
Analyse	30	30
Evaluate	30	30

Syllabus

Critical Regionalism and reflective practices - The need of reflective practices – culture, climate local resources - Ideas and works of Hassan Fathy ,Geoffrey Bawa and Alvar Aalto - Ideas and works of Paolo Soleri, Tadao Ando, Laurie Baker .

Post independent Architecture in India - Implications of freedom – Post independence visions of development. - Works of Le Corbusier and Louis Kahn in India - Works and ideas of Habib Rahman.

Modern architecture in India - Works and ideas of Kanvinde, Raje - Works and ideas of B.V. Doshi, Charles Correa - Works and ideas of Nari Gandhi, Raj Rewal - Works and ideas of Christopher Beninger, Stein, Hasmukh Patel.

Regional Contemporary architecture - Concepts and works Chitale, Pithavadian, CNR Concepts and works – Jaism, Sanjay Mohe , SatyaprakashVaranasi - Concepts and works – Chithra Viswanath, Benny Kuriakose, Anupama Kundoo - Appropriate practices –works in Auroville, COSTFORD, Habitat etc.

Text Books

1. Jon Lang, A Concise History of Modern Architecture in India, Orient Blackswan, 2002.
2. Miki Desai, Architecture and Independence, Oxford University Press, New Delhi, 1998
3. Robert Venturi, Complexity and Contradiction in Architecture, The Architectural Press, London, 1977

Reference Books

1.Charles Jencks, The language of post Modern Architecture, 1984
2. Aldo Rossi, The Architecture of the city, M.I.T Press, Massachusetts, 1982
3. D.Ghirardo, Architecture after Modernism, Thames and Hudson, London,1996

15ARFJ0 **LATERAL THINKING TECHNIQUES**

Category	L	T	P	Credit
EFC	2	0	2	3

Prerequisite

Nil

Course Outcomes

On the successful completion of the course, students will be able to

CO 1: Understand the difference between vertical thinking and lateral thinking. **UNDERSTAND**
CO 2: Apply lateral thinking process consciously into his/her thinking when necessary. **APPLY**
CO3: Provoke new patterns of thinking and to question common assumptions **ANALYSE**

Mapping with Programme Outcomes

COs	PO1	PO3	PO4	PO5	PO6	PO10	PO12	PO14	PO16
CO	**S**	**M**	**M**	**S**	**M**	**S**	**M**	**S**	**S**
CO2.	**S**	**M**	**M**	**S**	**M**	**S**	**M**	**S**	**S**
CO3.	**S**	**M**	**M**	**S**	**M**	**S**	**M**	**S**	**S**

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment Tests	Terminal Examination
Remember	10	10
Understand	20	20
Apply	30	30
Analyse	40	40

Syllabus

Thinking – Definition – Attributes of a Good thinker Vs. Bad Thinker – Imagination- Creativity – Factors influencing origin of a creative idea – Reasoning Vs Imagining - Inductive Reasoning Vs. Deductive Reasoning – Convergent Thinking Vs. Divergent Thinking –Landscape of mind - The way the mind works - Features of memory – Disadvantages of the memory system - Vertical Thinking Vs Lateral thinking – Lateral Thinking - Humour, Insight and Creativity . **Lateral Thinking Techniques -** The generation of alternatives – theory and exercises; Challenging Assumptions – – theory and exercises; Suspended Judgement – theory and exercises; Dominant Ideas and Crucial Factors– theory and exercises -Fractionation– theory and exercises; Reversal Method– theory and exercises - Brainstorming– Six thinking Hats - theory and exercises -Analogies– theory and exercises; Choice of entry point and attention area– theory and exercises; Random Stimulation – Oblique strategies– theory and exercises;

Text Books

1. Edward De Bono, Lateral thinking, Creativity Step by step, Penguin UK, 2010
2. Edward De Bono , Six thinking Hats, Penguin UK, 2010

Reference Book

1. Glatthorn A.A.,& Baron J (1985), Developing Minds: A Resource Book for Teaching Thinking. Revised Edition, Volume 1.Costa, Arthur L., Ed.
2. Serious Creativity: Using the power of Lateral thinking to create new ideas by Edward de Bono.

15ARFK0 ERGONOMICS

Category	L	T	P	Credit
EFC	2	0	2	3

Prerequisite

Nil

Course Outcomes

On the successful completion of the course, students will be able to

CO1: Understanding about Ergonomics, Anthropometry and Ergonomic Checklist **(UNDERSTAND)**

CO 2 : Studying and applying the concepts of Ergonomics in Residential, Office and Learning spaces **(APPLY)**

CO 3: Analyzing the Ergonomic patterns involved and enumerating the comfort chart **(ANALYSE)**

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15	PO16
CO37.	**S**	**L**	**M**	**L**	**S**	**L**	**L**	**L**	**M**	**L**	**L**	**L**	**L**	**L**	**L**	**L**
CO38.	**S**	**L**	**M**	**L**	**S**	**L**	**L**	**L**	**M**	**L**	**L**	**L**	**L**	**L**	**L**	**L**
CO3.	**S**	**L**	**M**	**L**	**S**	**L**	**L**	**L**	**M**	**L**	**L**	**L**	**L**	**L**	**L**	**L**

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment Tests	Terminal Examination
Remember	-	-
Understand	20	20
Apply	40	40
Analyse	40	40
Evaluate	-	-
Create	-	-

Syllabus

Introduction to Ergonomics- Definition , Importance and Advantages of Ergonomics**-** Anthropometry – Definition , Anthropometric Data, Common Work Place Postures and Motion, Difference between Ergonomics and Anthropometry**-**A study on Human Comfort in relation to basic Concepts of Day Lighting, Artificial Lighting, Natural Ventilation , Mechanical Ventilation and Acoustics**-**Introduction to Ergonomics, Checklist – Discomfort Survey Checklist – Human Comfort and Good Practices**-Ergonomics in residential spaces -**Anthropometric database, Planning and design consideration techniques in Kitchen, Bathrooms, Toilets, Study Room, Living Room, Bedroom etc., Study on overall and individual ergonomic pattern in the above spaces, the anthropometric postures and motions **-** Participatory design process - Exercises on full scale modelling of spaces such as kitchen, study room, toilet, bedroom with attached toilet etc. to study and understand the ergonomics **-Ergonomics in work/ learning spaces**-Anthropometric database, Planning and design consideration techniques in classrooms Work Stations, Laboratory ,library etc., Study on overall and individual ergonomic pattern in the above spaces, the anthropometric postures and motions-Exercises on above spaces to understand the ergonomics

Text Book

1. Debkumar Chakrabarti, Indian Anthropometric Design for Ergonomic Design Practice, National Institute of Design, Hardcover (Edition: 1997)**.**
2. IS 4838 (1990): Anthropometric dimensions for school children age group 5-17 years.
3. Joseph De Chiara, Julius Panero, Martin Zeinik, Time – Saver Standards for Interior Design and Space Planning, McGRAW-HILL International Editions.
4. Sp 7 (2005): National Building Code Of India 2005(Group 1 To 5).
5. Wiley Blackwell, Neufert Architects Data Fourth Edition, **Kenrick Munnings**

		Category	L	T	P	Credit
15ARFL0	**COMPUTER APPLICATION IN DESIGN**	EFC	2	0	2	3

Prerequisite

Nil

Course Outcomes

On the successful completion of the course, students will be able to

CO1: Distinguish computer technology, operating systems and software application in architecture. **(Remember)**

CO2: Manipulate appropriate software and create drawings by applying various digital drafting techniques **(Apply)**

CO3: Draw rendered presentations of drawing using appropriate Software. **(Apply)**

CO4: Identify appropriate software's and its tools to produce photo realistic pictures. **(Understand)**

Mapping with Programme Outcomes

COs	PO1	PO2	PO9	PO10
CO1	**S**	**M**	**M**	**L**
CO2	**S**	**M**	**M**	**L**
CO3.	**S**	**M**	**M**	**L**
CO4.	**S**	**M**	**M**	**L**

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment Tests	Terminal Examination
Remember	20	20
Understand	20	20
Apply	80	80

Syllabus

INTRODUCTION TO COMPUTER TECHNOLOGY - Introduction to computer systems and understanding of computer terminologies.Operating principles of computer system.

Introduction to software's – their types and application in architecture.Management of files and formats –creating, saving, storing and manipulation etc. Recent advancements in computer technologies such as software, plugins, file formats etc.**TOOLS FOR 2D DIGITAL MODELING -**Introduction to digital drafting techniques using appropriate software's. Understanding software interface, drawing settings and customization.Exploring basic tools for drawing format such as Units, limits, Layers, Blocks, templates, layouts, tools & menu bars, drawing utilities importing and exporting files. Creating floor plans using object toolbars, commands such as lines polygons, circle etc.Using editing and modifying tools and commands. Creating and customizing hatching patters, dimension styles, text style etc. Appropriate Print and plot settings, paper space for the created drawings.**2D - DIGITAL RENDERING TECHNIQUES-**Introduction to general approach to composition and architectural rendering - Colour study and tones. Introduction to Rendering software's, &appropriate tools for enhancing presentationsdrawings. Rendered presentation of drawings such as Concept ,Site plan , floor plans ,section ,elevations and views. **INTRODUCTION TO 3D MODELLING -** Introduction to 3D visualization - understanding, types of soft wares and understanding its basic tools .Rendering of scene using camera and light settings to create a photo realistic picture. Understandingtexture ,material mapping, quantity analysis techniques (BIM).

Books

1. AutoCAD, "Computer Aided Design guide for Architecture, Engineering and construction",process,2012.
2. Watt, "Fundamentals of Three-Dimensional Computer Graphics", Addison Wesley, Massachusetts, 1989.
3. Deke McClelland, "Photoshop 7 Bible Professional Edition", Wiley John & Son INC, New York,2000.

15ARFM0 WORKING DRAWING

Prerequisite

- NA

Course Outcomes

On the successful completion of the course,

CO 1:	Ability to read drawings required for construction and Comprehend the conventions of building drawings.	Understand / Apply
CO 2:	Ability to prepare complete set of drawings including Approval drawings pertaining to the specifications.	Understand / Apply
CO3:	Understand and apply IS codes and Internationally accepted norms / conventions / methods of preparing a working drawing, linking up working drawings / specifications / bill of quantities in an Architectural project.	Remember and Apply

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15	PO16
CO1.	S	-	-	-	L	M	-	M	-	M	S	L	-	L	-	-
CO2.	M	-	-	-	L	M	-	-	-	-	-	L	-	-	-	-
CO3.	S	-	-	-	L	M	-	M	-	M	S	L	-	L	-	-

S- Strong; M-Medium; L-Low

Assessment Pattern:

Bloom's Category	Continuous Assessment Tests	Terminal Examination
Remember	10	10
Understand	10	10
Apply	80	80
Analyse	0	0
Evaluate	0	0
Create	0	0

Syllabus

The Structure of Information in Working Drawings - Introduction to the need and relevance of Working Drawings, types of drawings and Comparison to presentation drawings - Information expected in drawings, various components and functions through set of drawings, The plan of work, various users of drawings – Structure of working drawing, primary, secondary structuring- **Reading set of Working Drawings and related exercises-** Reading of working drawing - Co-relation and cross-referencing in various technical projections like plans, elevations, sections, detailing etc.- Exercise 1: – Reading from an example and exercises on it. - Site plan, Floor plans - Centerline drawing with structural details, Foundation plan, roof plan, External elevations with façade details, general sections - Drawing conventions: Handing and opening - Drawing sheet size – Templates - Title panels - Non-active lines, Grids, Dimensioning – Hatching - Electrical symbols - Annotation of drawing.(Universal Representation and its updations identification)- Working drawing management: Planning the working drawing set – Drawing programming, Drawing register, Status coding, Issuing drawings, Comprehending drawings of other consultants- **Computer Aided Drafting – Complete set of working drawings for residential** / **institutional building -** Block libraries, Reference edit, drawing overlay methods, Model exchange method. Explaining the link between working drawings / specifications / bill of quantities in an Architectural project. Introduction to conventions in preparation of drawings - Exercise 2: Understanding and preparing the details (Tutorial). Detailing for walls, roof and flooring, detailing of facades and details of carpentry, plumbing layouts, electrical layouts- Initial Drafting - Final Drafting and lettering **Drawings for approval of local authorities -** Introduction to need and relevance of approval drawings – Checklist as a guide for information in a approval drawing - Exercise 4: Approval Drawing Layout – Initial Drafting (Tutorial) Final Drafting, Lettering and Conventions

Text Books

1. Keith Styles and Andrew Bichard, "Working Drawings Handbook", Architectural Press, 2004.
2. Francis D.K.Ching, "Building Construction Illustrated", 3rd Ed. John Wiley, New York 2003.

Reference Book

1. W.Otie Kilmer, Rose Mary Kilmer, "Construction Drawings and Details for Interiors", John Wiley & Sons, In., 2003.
2. Edward Allen, "Fundamentals of Building Construction: Materials and Methods, John Wiley & Sons, Inc., 1999.
3. Edward Allen, "Architectural Detailing: Function, Construction ability, Aesthetics", John Wiley & Sons, Inc., 1992.

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Category L T P Credit

EFC 2 0 2 3

15ARFN0 3D MODELLING

Prerequisite

- NA

Course Outcomes

On the successful completion of the course, students will be able to

CO1.	Get familiarized with various forms, types and their combinations Understand building massing	Understand
CO2.	Apply massing techniques to explore the built form through sketching	Apply
CO3.	Understand the fundamentals the 3D Modelling software and get familiarized with the tools and commands of the software	Understand
CO4.	Create a 3D model of a building from a 2 Dimensional plan	Create
CO5.	Apply the commands to develop and render a 3D Model of an architectural drawing	Apply

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO12	PO13	PO14	PO15
CO19.	**S**	**-**	**-**	**M**	**L**	**L**	**-**	**-**	**-**
CO20.	**M**	**M**	**-**	**M**	**L**	**L**	**-**	**L**	**-**
CO3	**S**	**-**	**-**	**L**	**-**	**L**	**-**	**-**	**-**
CO4	**S**	**-**	**-**	**-**	**-**	**L**	**-**	**-**	**-**
CO5	**S**	**L**	**L**	**L**	**M**	**L**	**-**	**-**	**-**

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment Tests	Terminal Examination
Remember	-	-
Understand	20	20
Apply	40	40
Create	40	40

Syllabus

INTRODUCTION TO FORMS AND FORM EXPLORATION – Regular and irregular geometric forms – Arrangement and combinations – Lattice, Surface, Body, Space – Arrangements, Combinations, Cross-sections, Connections, Intersections – to be explained with building examples – Massing – factors governing massing – methods to do massing – exercises involving manual sketching to understand massing - **INTRODUCTION TO DIGITAL 3D MODELING** - Introduction to the software, its advantages and ease of use – User interface – Understanding the drawing unit's settings, scales, limits, drawing tools, drawing objects, object editing, and text, dimensioning - Transparent overlays, hatching utilities, line type, line weight and colour, Multiline, Polyline, etc. Styles, blocks and symbol library - **MODELING COMMANDS** – Learning commands and keyboard shortcuts - 3D-modelling techniques and construction planes, drawing objects, 3D surfaces setting up elevation thickness and use of dynamic projections - Solid modeling with primitive commands and Boolean operation - Exercise to transform an architectural drawing into 3D model - **3D RENDERING AND SETTINGS** – Apply materials, texture, components, set lighting (day lighting and artificial lighting), view points, etc. – Rendering using plugins - Rendering and scene setting to create a photo realistic picture, understanding material mapping, environment setting and image filling - Exercise to identify and visualize a building using the above said utilities.

Text Book :

1. Simon Haykin, "Digital Communications", John Wiley & Sons Pvt. Ltd., 2001

Reference Books

1. John G. Proakis, "Digital Communications", McGraw Hill International Edition, Fourth Edition, 2001.
2. Simon Haykin, "Communication Systems" 3rd Edition, PHI, 1996.
3. Bernard Sklar: "Digital Communications: Fundamentals and Applications", 2nd Edition, Prentice Hall, 2001
4. John R Barry, Edward Lee and David G. Messerschmitt, "Digital Communication", 3rd Edition. Springer, 2003.

15ARFQ0 **BUILDING SCIENCE I**

Category	L	T	P	Credit
EFC	3	0	0	3

Prerequisite

15AR321 – Climate and Architecture

Course Outcomes

On the successful completion of the course, students will be able to

CO1: Remember different building materials and their properties to counteract to different climatic conditions. Remember

CO2: Understand the different processes involved in performance of buildings in terms of thermal comfort. Understand

CO3: Apply different strategies of passive design in building co relating its performance and the existing climatic conditions. Apply

CO4: Analyze the different natural ventilation strategies and its suitability to the climate. Analyze

CO5: Choose appropriate design elements and materials for the building element and fenestration that can provide the optimum standards of comfort. Evaluate

Mapping with Programme Outcomes

COs	PO1	PO2	PO5	PO8	PO9	PO10	PO12	PO13	PO14	PO16
CO	S				S			S		
CO2.	S	M	S	L	S		M	S		
CO3.	S				S			S		
CO4.	S		S	L	S	L	S	S	M	S
CO5.	S			L	S	L	S	S	M	S

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment Tests	Terminal Examination
Remember	10	10
Understand	10	10
Apply	20	20
Analyse	40	40
Evaluate	20	20

Syllabus

Introduction to Building science: Building Science definition- Building Science Concepts, Building as a System, Building energy Performance. Built environment, conditions, impact and issues of climate balance in traditional and contemporary built environment. **Building envelope and fenestration design:** Elements that compose the building envelope. Periodic heat flow in building elements- Calculation of Time-Lag and Decrement factor. Heat flow through materials and its application in selection of appropriate materials for walls & roof. Heat exchange process in buildings. *Calculations of conductance, resistance, U value and Time lag of materials - application in selection of building materials. Exercises using thermal balance equations.*Types of fenestration in building envelop. Fenestration Pattern, Orientation, Fenestration Pattern, Orientation and Configuration, Controls like Shading Devices. Size, location, details and Configuration, Controls like Shading Devices. *Exercises on design of sun shading devices for different orientations using shadow angle protractors, isopleths and solar charts for overheated and under heated periods.* Shading Coefficient, Solar Heat Gain Factor, Visible Light Transmittance, Glazing Types. Design for appropriate materials and Insulation. Shading measurement and analysis for different orientations and building configurations. **Air movement:** Natural Ventilation - Physical Principles –Air quality- Layout planning for air movement -Ventilation principles to achieve comfort in buildings-Ventilation controls and their applications in buildings. *Exercises Using physical models to understand airflow through buildings.* **Passive design strategies:** Passive heating design strategies - heat loss control - passive solar heating - windows - glazed walls - roof
space collectors - transitional spaces - glazed atriums Passive cooling design strategies - `wall and roof openings for convective cooling - natural and architectural means of evaporative cooling - radiative cooling through roof - ground cooling and building underground - transitional spaces - courtyards, patio, veranda. Climatic data sets – analysis – Climate graph– the Mahoney tables & its recommended specification as Design strategies of climate responsive buildings with different case studies.

Text Book 1. O.H.Koenigsberger and others, Manual of Tropical Housing and Building-Part-I-Climatic Design, Longmans, London,1980.

2. B.Givoni,Man,Climate and Architecture, Applied Science, Banking, Essex,1982.

Reference books

1. Donald Watson and Kenneth Labs., climatic Design-McGraw Hill Book Company-New York-1983.
2. G.Z.Brown, Sun Wind and light,
3. Fuller Moore, Environmental Control System.
   M.Evans-Housing, climate and Comfort-Architectural Press, London, 1980

15ARFR0	BUILDING MATERIALS AND CONSTRUCTION - IV	Category	L	T	P	Credit
		CFC	2	0	2	3

Prerequisite

NIL

Course Outcomes

On the successful completion of the course, students will be able to

CO1. Acquire basic knowledge about the various building finishes like painting, claddings etc and building treatments like damp proofing, water proofing, thermal and sound insulation. (Remember and Understand)

CO2. Acquire an array of multifaceted knowledge on planning, aspects working mechanism and installation of mechanical movement systems like vertical and horizontal movement systems in buildings. (Apply)

CO3. Gain knowledge about on the advancement in smart materials and its scope and application in building construction. (Evaluate and create)

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15	PO16
CO3.	**M**	**-**	**-**	**-**	**-**	**-**	**-**	**M**	**M**	**-**	**-**	**-**	**M**	**-**	**-**	**-**
CO4.	**M**	**-**	**-**	**-**	**-**	**-**	**-**	**S**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO3.	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**M**	**-**	**-**	**-**	**-**	**L**	**M**	**-**	**-**

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment	Terminal Examination
Remember	20	20
Understand	20	20
Apply	20	20
Analyse	40	40

Syllabus

MOVEMENT SYSTEMS : Basic study of movement system - classification and components – properties - Vertical movement system – Historical development of elevators or lifts - size, capacity, speed, mechanical safety method – position of core under planning grid - Various types of elevators- Electric, hydraulic passenger, hospital, capital, freight and dumb waiters - Drawings on details of lift shaft and other mechanism – detailing and lifting for physically handicapped - Drawings of – types of elevators - parallel and criss cross- Drawings of Horizontal movement system – moving walk ways, Conveyor system, travelators, etc. **BUILDING FINISHES** : Paints – ingredients, types, application, properties and uses. Types of paints for various application – painting defects – causes and remedies. Coating of paints on masonry, steel and wooden surfaces. Cladding of masonry walls – types and application.**TREATMENTS :** Damp proofing and water proofing – causes and effects of dampness in buildings – material used for Damp proof. Principles of DP - Detail study through drawing the application of damp proofing and water proofing for Basement floors, swimming pools and terraces - Drawings of DPC at plinth, lintel and roofs - Thermal insulation – materials used - construction details through drawings – floors, wall and roofs – cold storage - Acoustical insulation - materials used - construction details through drawings – floors, wall and roofs – Sound Recording studio.**SMART MATERIALS :** Smart materials – classification and components – properties – Shape memory alloy – Quantum Tunneling Composite (QTC) – CHROMO-genic material – self healing material.

Book

1. Engineering Materials by S.C.Rangwala
2. W.B.Mckay,'Building Conctruction', Vol.1,2,3 Longmans,U.K.1981.
3. Building Construction by B.C.Punmia, Lakshmi Publications Pvt. Ltd., N.Delhi.
4. Alanwerth, Materials, The Mitchell Pub. Co.Ltd., London,1986.
5. R.Chudleu,Building Construction Handbook', British Library Cataloguing in Publication Data, London, 1990.
6. S.C.Rangawala, Engineering Materials, Charotar Pub. House, Anand,1997.
7. Don A.Watson, Construction Materials and Processes, McGraw Hill Co., 1972.
8. Allen Edward, Iano Joseph, Fundamentals of Building Construction: Materials and Methods
9. Allen Edward, Exercises in Building Construction
10. Deplazes Andrea, Constructing Architecture: Materials, Processes, Structures.
11. Alanwerth, Materials, The Mitchell Pub. Co.Ltd., London,1986.
12. R.Chudleu,Building Construction Handbook',British Library Cataloguing in Publication Data London, 1990.

		Category	L	T	P	Credit
15ARFT0	**BUILDING SCIENCE II**	EFC	3	0	0	3

Prerequisite

15AR321 – Climate and Architecture

Course Outcomes

On the successful completion of the course, students will be able to

CO1: Remember different visual and aural parameters to be considered in building design.	Remember
CO2: Understand the importance of incorporating day lighting and acoustical Treatments in to the building.	Understand
CO3: Apply different methods of day lighting into the building suiting the user, activity, surrounding context and layout of the built space.	Apply
CO4: Analyze the source and the types of noise in and around the buildings and to provide suitable noise control or sound reinforcement.	Analyze
CO5: Choose appropriate design strategies of daylighting and acoustics to achieve optimum standards of comfort within a built environment.	Evaluate

Mapping with Programme Outcomes

COs	PO1	PO2	PO5	PO8	PO9	PO10	PO12	PO13	PO14	PO16
CO5.	**S**				**S**			**S**		
CO6.	**S**	**M**	**S**	**L**	**S**		**M**	**S**		
CO3.	**S**				**S**			**S**		
CO4.	**S**		**S**	**L**	**S**	**L**	**S**	**S**	**M**	**S**
CO5.	**S**			**L**	**S**	**L**	**S**	**S**	**M**	**S**

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment Tests	Terminal Examination
Remember	10	10
Understand	10	10
Apply	20	20
Analyse	40	40
Evaluate	20	20

DAYLIGHTING: Concepts (health and other benefits) Design skies: Uniform Luminance Sky Distribution, CIE Standard Overcast Sky Distribution, Clear Blue Sky Distribution, Tropical Design Sky. Direct, diffuse and reflected components. Design Parameters: Glare, critical indoor and outdoor luminance, daylight factor and its calculation and distribution.

Techniques of incorporating daylight in buildings: galleries, porches, courtyards, atria, light-pipe and shafts, lateral pass-through components (windows, translucent wall, curtain wall), zenithal pass-through components (north lights, clerestories, translucent roofs, skylights, domes and lanterns), global pass-though components (membrane envelope), optical day lighting. Control devices: conventional divisions, optical division, prismatic division, awnings, curtains, overhangs, light shelves, sills, fins, jallis, louvers and shutters, photo chromatic and film controls. **ARCHITECTURAL ACOUSTICS**: Acoustics – Definitions, terms related to acoustics. Theory of sound, Measurement of sound, Sound pressure, scales to measure sound. Characteristics of speech. Human ear characteristics making of sound, Binomial hearing, behavior of sound in enclosed spaces. **SOUND TRANSMISSION, ABSORPTION, INSULATION**: Room acoustics- resonance, reverberation, echo, reverberation time, *Simple exercise using Sabine's formula.* Acoustical requirements of different types of building Sound absorption, absorption co-efficient and their measurements, Absorbing materials and sound insulation used and their choices, *Exercises involving reverberation time and absorption co-efficient.* **NOISE CONTROL AND SOUND REINFORCEMENT** : Sources and types of noise- in and around buildings, characteristics and effect of noise impact on human beings/ behavior, noise curves, transmission of noise, noise control for buildings- laws and legislation, regulations. Sound amplification and distribution, sound reinforcement of different rooms. Environmental acoustics legislature – related to transportation, examples- airports, railway stations, railway tracks, MRTS etc.

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

Text Book

1. O.H.Koenigsberger and others, Manual of Tropical Housing and Building-Part-I-Climatic Design, Longmans, London,1980.
2. Claude L.robbins, Van Noster and Reinhold Company, Daylighting- Design and Analysis
3. Hausladen de Saldanha, Leidl, Sagar Birkhauser, Climate Design
4. Leslie Doelle, Environmental Acoustics , McGraw-Hill 1972.

Reference Books

4. D.J.Groomet - Noise, Building and People, Pergumon Press - 1977.
5. 2. Thomas D.Northwood - Architectural Acoustics - Dowden, Hutchinson and Ross Inc. - 1977.
6. Donald Watson and Kenneth Labs., climatic Design-McGraw Hill Book Company-New York-1983.
7. G.Z.Brown, Sun Wind and light,

15AR321 PERFORMANCE EVALUATION OF BUILDINGS

Category	L	T	P	Credit
PE	2	0	2	3

Prerequisite

NIL

Course Outcomes

On the successful completion of the course, students will be able to

CO 1	Remember various parameters involved in thermal and visual performance of the building.	Remember
CO 2	Understands various tools and methods to assess the different factors that contribute to the comfort of the building.	Understand
CO 3	To apply different methods to assess the thermal performance and visual performance of the building.	Apply
CO 4	Analyze the quantities arrived through different assessment methods.	Analyze
CO 5	Evaluate the energy performance of the built space from the analysis and suggest recommendations to achieve optimum comfort level for dwelling.	Evaluate

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15	PO16
CO7.	**S**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**S**	**-**	**-**	**-**	**S**	**-**	**-**	**-**
CO8.	**S**	**M**	**-**	**-**	**S**	**-**	**-**	**L**	**S**	**-**	**-**	**M**	**S**	**-**	**-**	**-**
CO3.	**S**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**S**	**-**	**-**	**-**	**S**	**-**	**-**	**-**
CO4.	**S**	**-**	**-**	**-**	**S**	**-**	**-**	**L**	**S**	**L**	**-**	**S**	**S**	**M**	**-**	**S**
CO5.	**S**	**-**	**-**	**-**	**-**	**-**	**-**	**L**	**S**	**L**	**-**	**S**	**S**	**M**	**-**	**S**

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment Tests	Terminal Examination
Remember	10	10
Understand	10	10
Apply	20	20
Analyse	30	30
Evaluate	30	30
Create	0	0

Syllabus

Introduction to building performance evaluation: Need and importance for Building performance Evaluation – Terminology & metrics. Emerging role of performance evaluation in building design. Criteria for evaluation such as thermal zoning criteria, schedules, and assumptions, Building Envelope - walls, roofs, buildings structures, building details, construction, Internal Loads and indoor environment in buildings. Introduction to thermal, visual, embodied energy performance of different components and parameters, energy analysis for building covering the audit techniques, survey methods, analytical methods, numerical methods and simulation tools. **Thermal Performance Evaluation of Building:** Building and building components - the thermal performance assessment – numerical and simulation methods. Post Occupancy Evaluation of Buildings - Ongoing research in thermal performance evaluation and case studies - various thermal comfort survey methods, analytical methods, Mathematical models of heat and mass transfer phenomena through building components, comfort survey models, numerical models and simulation tools. *Exercise: Thermal Performance Assessment of Existing small scale Buildings.* **Visual Performance Evaluation of Building:** Daylight Availability Metrics - use of daylight in space - Physical Model Building and Theory - Introduction to Heliodon - Predicting day lighting performance in buildings based on the use of tools - Measurements hand calculations, graphic tools, physical modelling and simulations. Ongoing research in day lighting and case studies - simulation tools. Work of architects who have integrated daylight in a meaningful and effective way in the design of a building and Verify compliance of a building to known certification systems. *Exercise: Visual Performance Assessment of Buildings.* **Energy Audit:** Building energy use characteristics; Energy consumption prediction; Energy performance evaluation, Energy Audit, Performance audit and rating systems ASHRAE, ISHRAE, BREAM, and LEED - Need, Types, Methodology and Approach.

Text Books

1. O.H.Koenigsberger and others, Manual of Tropical Housing and Building-Part-I-Climatic Design, Longmans, London,1980.
2. B.Givoni, Man, Climate and Architecture, Applied Science, Banking, Essex, 1982.

Reference Books

1. Donald Watson and Kenneth Labs., climatic Design-McGraw Hill Book Company-New York-1983.
2. G.Z.Brown, Sun Wind and light,
3. Fuller Moore, Environmental Control System.
4. M.Evans-Housing, climate and Comfort-Architectural Press, London, 1980

		Category	L	T	P	Credit
15ARFV0	**HOUSING STANDARDS AND DESIGN**	EFC	2	0	2	3

Prerequisite

NIL

Course Outcomes

On the successful completion of the course, students will be able to

CO1. Sensitively approach Housing design. (Remember & Understand)
CO2. Acquire knowledge on Housing Development aspects (Apply)

CO3. Have an insight on Housing project Formulation. (Evaluate and create)

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15	PO16
CO9.	M	M	S	-	M	S	-	M	-	S	-	S	-	S	M	S
CO10.	-	L	-	-	M	M	-	S	-	S		M	M	-	-	M
CO3.	-	M	S	S	-	S	S	L	M	S	S	S	S	S	S	S

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment	Terminal Examination
Remember	20	20
Understand	20	20
Apply	20	20
Analyse	20	20
Evaluate	20	20
Create	-	-

Syllabus

Housing Issues - Indian Context: Definitions – Dwelling Units, Household, Housing Need and Housing Supply – Housing Density. Emerging Issues of Housing in the Indian Context. Role of Housing agencies in the Housing development in the Post Independence era. **Housing Types:** Urban Housing - Villa, Apartments, Condominium, Core Housing, Cooperative housing, Employee Quarters, Slums and Squatters, Portable, compact etc **Housing schemes and Standards:** Site and Services, BSUP & RAY , IAY – Its Characteristics, Tenure ship, Problems and Issues-Salient features of National Urban Housing and Habitat policy and housing standards. DCR relevant to Housing- Special Building rules- Performance standards.**Housing Design and Case Studies:** Case studies for Traditional Housing- its characteristics, tenure ship problems and issues. Case studies – Charles Correa, B V Doshi, Rajrewal – Neighbourhood level – street level – cluster level- street and House interface. Exercise on analysis of Housing Case studies. **Housing Design Methodology-** Factors affecting Housing Design Socio- Economical and Cultural- Affordability – Resources, Housing layout concepts – Row housing, cluster housing, Terrace housing, Incremental Housing, High rise housing and New Townships- Study of climate, Hierarchy of roads, connections, Open space and built environment, Size, typology, volume, degree of Enclosure, Connection to the street, thresholds and transitions, boundary treatment, adjacent houses scale, materials, construction and services. Housing Management and Community Participation. Exercise on study of local Neighborhood housing through observation, activity mapping charts with temporal changes, figure ground map for open and built space analysis, connectivity, landuse analysis, Site plan and sections.

Book

1. Christopher Alexander, A Pattern Language, Oxford University Press, New York - 1977.
2. Joseph de chiara & others - Time Saver Standards for Housing and Residential development, McGraw Hill Co., New York, 1995.
3. Richard Untermanu & Robert Small, Site Planning for Cluster Housing, Van Nostrand Reinhold Company, London/New York, 1977.
4. Forbes Davidson and Geoff Payne, Urban Projects Manual, Liverpool University Press, Liverpool, 1983.
5. HUDCO Publications - Housing for the Low income, Sector Model.

		Category	L	T	P	Credit
15ARFW0	**ARCHITECTURAL CONSERVATION**	EFC	2	0	2	3

Prerequisite

- NA

Course Outcomes

On the successful completion of the course, students will be able to

CO1.	Understand the timeless quality achieved through spatial design in heritage	Remember
CO2.	Understand the building assessment indicators and methods	Understand
CO3.	Analyze the factors and stages of conservation	Analyze
CO4.	Critically evaluate any heritage built form	Evaluate
CO5.	Apply suitable conservation techniques for conserving	Apply
CO6.	Provide / Create architectural solutions from conservation perspective	Create

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15	PO16
CO11.	**M**	**S**	**M**	**-**	**S**	**M**	**M**	**M**	**L**	**-**	**-**	**S**	**S**	**M**	**-**	**-**
CO12.	**-**	**-**	**M**	**-**	**M**	**L**	**S**	**M**	**M**	**-**	**-**	**M**	**S**	**S**	**L**	**-**
CO3	**L**	**L**	**M**	**-**	**M**	**-**	**L**	**L**	**-**	**-**	**-**	**S**	**S**	**S**	**-**	**-**
CO4	**-**	**S**	**S**	**-**	**M**	**-**	**S**	**-**	**-**	**-**	**-**	**S**	**-**	**-**	**-**	**-**
CO5	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**L**	**-**	**S**	**S**	**-**	**M**
CO6	**M**	**-**	**-**	**-**	**-**	**-**	**L**	**-**	**-**	**-**	**-**	**L**	**-**	**M**	**-**	**-**

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment Test	Terminal Examination
Remember	10	10
Understand	10	10
Analyse	20	20
Apply	30	30
Evaluate	20	20
Create	10	10

Syllabus

Introduction to Architectural Conservation: Definition of the term Conservation with respect to Heritage, Culture and Architecture - Various stages in Conservation such as Preservation, Renovation, Restoration, Rehabilitation and Consolidation - History of conservation movement in India - Significance and Values of Heritage such as Architectural, cultural, material, social, anthropological etc. **Components in Architectural Conservation:** Architectural Conservation Process – Listing, Inventory, Documentation, Condition Assessment and Structural Assessment - Levels of Architectural intervention in Conservation. *Exercise on components in architectural conservation.* **Role of national and international agencies in Architectural Conservation:** Introduction to Charters and legislative frame work in Conservation - Indian context - Role of ASI, UNESCO, ICCROM, ICOMOS, Urban Arts Commission, INTACH and other NGOs involved in Conservation - Government policies towards conservation. **Architectural Conservation – case examples:** National and International Case studies at Building level, Town level, City level - *Architectural Conservation/ Adaptive reuse for a Simple building / Monument / Precinct / Town.*

Text Book

1. Sir Bernard Feilden, Guidelines for conservation in India– a technical manual – UNESCO, 1989
2. Sir Bernard Feilden, An Introduction to Conservation, UNESCO, 1980.
3. Sir John Marshall, Conservation manual, INTACH, 1990.

Reference Books

1. Scott Greet, Urban Renewal in American Cities, 1998.
2. Roy Work Hest, Character of Towns, 1986.
3. Donald Apple Yard, Conservation of European cities, 1979.
4. Architectural Heritage of Pondicherry, INTACH publication, 2006.

15ARFYO DISSERTATION

Category	L	T	P	Credit
EFC	2	0	8	6

Prerequisite

NIL

Course Outcomes

On the successful completion of the course, students will be able to

Acquire Knowledge of research methodology
Acquire Knowledge of technical/report writing.
Exhibit proficiency in creative, logical and lateral thinking processes, verbal and visual communication skills
Acquire knowledge through variety of specializations related to Architecture and allied fields and apply in their projects.
Acquire the skill of Documentation, analysis, synthesize and evaluation of the study topics/Projects.

Syllabus

The students are expected to choose topics, which are of special interest to them and prepare a report after research. The topics may range from analyzing the works of an architect, history, typological changes, writing, design process and many more.

The report will contain three parts namely,

1. Reasons for selecting a particular topic and detailed synopsis of the topic selected.
2. Research Methodology adopted which will include personal interviews, written correspondence, questionnaires, sample surveys, photographs, statistical data, literary data and any other supporting documents.
3. The last part will contain actual report – the Dissertation proposal in approximately 3000 words in prescribed format with its objectives, followed by exhaustive documentation and arguments along with student's inferences, and recommendations.

Text Books

4. Linda Grant and David Wang, Architectural Research Methods, John Wiley Sons, 2002
5. Research Methods, William M.K Trochium, Bizantra publications, 2003
6. Ian Border, Kurt Rueideu, The Dissertation, An Architectural Students Hand Book, Architectural Press, 2000
7. The Good Research Guide, Martyn Denscombe, Open University press, 1999.
8. Architectural Programming, Donna P.Duerk, Van Nostrand Reinhold, New York, 1993
9. Visual Research Methods in Design, Henry Sanoff, Van Nostrand Reinhold, 1991.

		Category	L	T	P	Credit
15ARFZ0	**SITE PLANNING AND SITE SERVICES**	EFC	2	0	2	3

Prerequisite

Nil

Course Outcomes
On the successful completion of the course, students will be able to

CO 1: Understand the objectives, principles of surveying, levelling and few types of surveying	Understand
CO 2: Understand the process and the stages involved in site planning	Understand
CO 3: Understand about the site services involved in site planning	Understand
CO 4: Assess the site potentials and constraints on the offsite and onsite factors	Analyse
CO 5: Evaluate the spatial design issues in the site level.	Evaluate
CO 6: Design the spatial aspects in a site and to design the site circulation.	Apply

Mapping with Programme Outcomes

COs	PO2	PO4	PO5	PO7	PO9	PO11	PO14
CO39.	-	S	-	-	-	-	S
CO40.	M	-	-	S	-	S	-
CO3.	-	-	-	-	-	-	S
CO4.	-	-	-	-	-	-	-
CO5.	-	-	S	-	S	-	-
CO6.	-	-	S	-	-	-	-

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment Tests	Terminal Examination
Remember	20	20
Understand	20	20
Apply	20	20
Analyse	30	30
Evaluate	10	10

Syllabus

Surveying - Definition of plot, site, and units of measurements. Surveying - Introduction to survey, need for surveying, objective of surveying. Classification of survey – chain surveying and plane table surveying. **Levelling** - Introduction to levelling, terms used in levelling, levelling methods. Contours, characteristics of contours, uses of contours. Methods of locating contours *Exercises - Contour map and its interpretation – slope analysis*. **Site Planning process** - Problem solving approach - program based to site based design, and Program formulation. **Site Planning process** – importance of site inventory and site analysis, use of symbols and graphical representations. **Site inventory –** Collection of data on Onsite & Offsite Factors –Topography – Landform –Soils - Quality & Quantity of Water - Site Drainage – Climate - Vegetation – Visual Aspects –Accessibility. **Site analysis** – Process of Site Analysis - Site Synthesis - Site Essence Map.
Exercises – Preparation of site analysis diagrams. **Site planning process - Spatial development –** relationship of space and mass, enclosure and **spatial perception**, sense of place – issues of placeness, spatial design – base and overhead plane. **Site circulation -**
Design considerations for circulation networks. Pedestrian circulation: movement, material, design consideration, linkage and visual system, spatial experience. Vehicular circulation – types of roads, hierarchy of roads, road networks, Turning radii, street intersections and safety, design consideration and parking. Parking regulations. **Services at Site Level - Water Supply and Sanitation** - Conveyance of Water at Site Level - Conveyance of Sewage at Site Level. **Rain Water Harvesting -**Techniques at Site Level - **Fire Fighting Systems at site level**. **Electrical Services** - Distribution from the Source to Campus, Outdoor Lighting Systems. *Exercise – site Layout with site circulation and services.* Preparation of a site plan for a small project.

Text Books

1. John I.Motloch, Introduction to landscape design, john wileyand sons, Inc.
2. John Ormsbee Simonds, Landscape architecture – A manual of site planning and design Mc.Graw Hill, 1977
3. G.K.Hiraskar, Basic civil Engineering, Danpat Rai Publications (P) Ltd, New Delhi.
4. Kevin Lynch, "Site planning, MITPress, Cambridge, MA, 1984.
5. Edward.T.White., "SiteAnalysis", Architectural Media, 1983

Reference Books

1. B.C.Punmia, Ashok K.Jain, "Surveying", Vol.I, Firewall Media, 2005.
2. P.B.Shahani, "Text of surveying", Vol.I, Oxford and IBH Publishing Co, 1980
3. Joseph De.Chiarra and Lee Coppleman, "Urban Planning Design Criteria", VanNostrand Reinhold Co., 1982
4. Storm Steven, "Site engineering for landscape Architects", John wiley & Sons Inc, 2004.

5. Second Master Plan –Development Regulations –CMDA, 2008

15ARF20 **BUILDING SERVICES AND TECHNOLOGY**

Category	L	T	P	Credit
EFC	3	0	2	4

Prerequisite

Building services I and Building services II

Course Outcomes

On the successful completion of the course,

CO1 The students are exposed to various building services systems and their applications, they are also exposed to various design issues in the services distribution system.	Apply
CO2 Understand the relationship between Multidisciplinary services in a built environment.	Understand& Remember
CO3 Analyze the arrangement of various service systems in various types of buildings.	Analyze

Mapping with Programme Outcomes

COs	PO1	PO2	PO5	PO 6	PO 7	PO8	PO9	PO10	PO11	PO14	PO15	PO16
CO13.	S	-	M	-	-	-	S	L	-	M	-	L
CO14.	S	L	M	-	-	S	-	-	M	S	-	M
CO3.	S	-	L	-	-	M	S	L	L	S	S	S

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment Tests	Terminal Examination
Remember	10	10
Understand	10	10
Apply	40	40
Analyse	40	40
Evaluate	-	-
Create	-	-

Syllabus

Introduction to Building Services- Classification of building services, Types of services and selection of services. Brief about integration of services-**Plumbing Services-Water Supply-** Water Supply, Distribution and Storage -Service Connection- Water Supply at Site Level- Introduction to Water Supply Layout for Residential Buildings, Institutional Buildings, Public Buildings, Industrial Buildings etc. with relevant case examples-**Plumbing Services-Sanitation-** Sanitation-Refuse- Disposal of Waste – Service Connection- Water Supply at Site Level- Introduction to Water Supply Layout for Residential Buildings, Institutional Buildings, Public Buildings, Industrial Buildings etc. with relevant case examples-**Plumbing Services-Storm water drainage and Rainwater harvesting-**Basic principles of Storm Water Drainage and Rainwater Harvesting Systems for Residential Buildings, Institutional Buildings, Public Buildings, Industrial Buildings etc. with relevant case examples- Drawing Exercise 1:Undertake a live Case study/Site visit to understand Water supply and Plumbing services for a Residential building and prepare a detailed documentation report. **Fire Fighting Services-** Fire safety Design Principles – Planning considerations in various types of buildings-Different methods of fire fighting and fire detection for Residential Buildings, Institutional Buildings, Public Buildings, Industrial Buildings etc. with relevant case examples-**Electrical Services and HVAC-** Basic concept of Electricity-Principles of Electric Wiring- Supply Systems-Types of Lighting-Artificial Lighting at Site Level and Building Level – Principles of HVAC- Types of Air Conditioning Systems for Residential Buildings, Institutional Buildings, Public Buildings, Industrial Buildings etc. with relevant case examples-Drawing Exercise 2:Undertake a live case study/site visit to understand Fire fighting, Electrical and HVAC services for a local Commercial building and prepare a detailed documentation report-Horizontal Distribution Systems – Design Principles with relevant case examples- Practical Exercise- Select a design of the student from the previous semester and prepare semester and prepare Coordination layout drawings for a small Commercial / Residential Building.

Text Book 1. National Building Code 2005, 2.Handbook of building Engineers in metric systems, New Delhi 1968 , 3.Manual of water supply and treatment, Second edition, CPHEEO, Ministry of works and housing, New Delhi 1977 **4.** Punmia B.C., Waste Water Engineering, Laxmi Publications, 2009**, 5.** Fred Hall & RagerGreeno; Building ServicesHandbook;Butterworth-Heinmann 6. 2011 – Sixth Edition

Reference Books

1. S.L. Uppal- G.C. Garg; Electrical Wiring Estimation and Costing; Khanna Publication 2010 – SixthEdition
2. The architect's studio companion- Edward allen and Joseph lano
3. E.P.Ambrose, Electric Heating, John Weley & Sons Inc., New York, 1968
4. Philips Lighting in Architectural Design, McGraw Hill. New York, 1964
5. R.G.Hopkenson & J.D.Kay, The lighting of Buildings, Faber & Faber, London, 1969

15ARF10 **STRUCTURE AND ARCHITECTURE I**

Category	L	T	P	Credit
EFC	2	0	2	3

Prerequisite

Nil

Course Outcomes

On the successful completion of the course, students will be able to

CO1: Understand the relationship between Architecture and Structure through History.	Remember
CO2: Understand the mechanism of Load transfer in Buildings and the importance of various Structural Materials.	Understand
CO3: Identify various Structural patterns and Systems with case studies.	Apply
CO4: Classify the various Grid types and patterns with case studies and models.	Analyze

Mapping with Programme Outcomes

COs	PO1	PO2	P08	PO11	P014
CO41.	**S**				**S**
CO42.	**S**	**M**	**S**	**L**	**S**
CO3.	**S**				**S**
CO4.	**S**		**S**	**L**	**S**

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment Tests	Terminal Examination
Remember	10	10
Understand	10	10
Apply	40	40
Analyse	40	40

Syllabus

Introduction to building structures

Relationship of structure to building; Relationship between structure and architecture through history with examples. Relationship between architects and engineers. Scope based on building types. clash checking process and introduction to clash checking software. Structural requirements; load transfer methods – Load tracing; Importance of Equilibrium, strength and stiffness-structural systems. **Structural Materials-** Importance of Materials, Architectural Perception - Types of structural materials- timber, steel and RCC – Thumb rules and understanding of Cross sectional properties by cross comparison- Longitivity of materials. **Building structural patterns and system** Structural patterns: Pattern of supports, spanning system and lateral force resisting elements, structural units, support options.Spatial patterns: structural grids-regular grids-types, irregular grids, modification of grid, Transitional patterns, Patterns in context-Foundation grids-Building on slopes, parking structures. Exercise: Student will do case study on related building structure by a renowned architect and will do the physical model of structural pattern of the same. **Spanning system-**Horizontal spanning system: Concrete spanning system – Types, Bay proportions, Spanning systems; steel spanning systems - Types, Spanning systems, Bay proportions, Structural layers-irregular bays, corner bays Vertical dimensions: Vertical supports-Load accumulation, vertical continuity; Walls, columns and Roof structures. **Long span structures**

Design issues and construction issues, Span ranges for the basic type of long span structure Long span beams: Trusses; Arches; Cable structures; plate structures; shell structures; Exercise: Student will do case study on related long span structure by a renowned architect and will do the physical model of structural pattern of the same

Books

1. "Structure and architecture-second edition" Angnus J.Macdonald
2. "Building structures illustrated", Francis D.K Ching,Barryonouye,Douglas zuberbuhler
3. "Architectural structures",wayne place
4. "Structure for architects", Ramsey dabby
5. Structural Elements for Architects and Builders, Jonathan Ochshorn

6.

15ARF30	Structure and Architecture II	Category	L	T	P	Credit
		EFC	2	0	2	3

Prerequisite

Nil

Course Outcomes

On the successful completion of the course, students will be able to

CO 1	Understand the lateral stability of the structural system.	Remember
CO 2	Understand the importance of the curvature forms.	Understand
CO 3	Identify various structural patterns and systems with case studies	Apply
CO 4	Classify the various tensile spanning structures with case studies and models	Analyze

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15	PO16
CO15.	-	L	-	S	M	M	-	S	-	-	-	-	-	-	-	-
CO16.	-	-	-	S	L	L	-	S	-	-	-	-	-	-	-	-
CO3.	-	-	-	M	M	S	-	S	-	-	-	-	-	L	-	-
CO4.	-	-	-	L	M	L		S	L	-	-			L		

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment Tests	Terminal Examination
Remember	10	10
Understand	10	10
Apply	40	40
Analyse	40	40
Evaluate	-	-
Create	-	-

Syllabus

Structural Stability: Factors affecting structural stability; structural advancements in high rise structures and integration. Lateral stability: Importance of lateral stability and its resistance to various environmental conditions .Dynamic loading –Wind, Earthquakes; Lateral force resisting mechanisms. **Thin shells** Introduction to Thin shells – Effective use of curvature forms, thin shells ;Form resistant structures; Construction issues with Thin shell construction. Curvatures and various thin shells surfaces. Membrane action and bending stress on dome. Saddle shell action. Exercise on thin shells along with curvature**. Tensile spanning structures** Introduction to tensile spanning structures; Stress in tensile elements and selection of materials for efficient tensile structures; cable and fabric structures. Case example for cable trusses and cable network. Case example for fabric structures**. High rise Structures** Definition of High rise buildings; Structural principles and system of high rise buildings; construction materials; floor systems; Net usable area. Forces on high rise structures-Gravity loads, shear, bending, overturning; stable plan configurations. Types of High rise structures – Interior structures, Exterior structures; Stabilizing high rise structures-rigid frame, Braced core, Shear wall core structures; Braced frames, shear walls, Tube structures, mega frame, diagrid structures; Damping mechanism.

Text Books

1. "Structure and architecture-second edition" Angnus J. Macdonald
2. "Building structures illustrated", Francis D.K Ching, Barryonouye, Douglas zuberbuhler
3. "Architectural structures" wayne place
4. "Structure for architects", Ramsey dabby
5. Structural Elements for Architects and Builders, Jonathan Ochshorn

Reference Books

1. "Structure and architecture-second edition" Angnus J. Macdonald
2. "Building structures illustrated", Francis D.K Ching,Barryonouye,Douglas zuberbuhler
3. "Architectural structures",wayne place
4. "Structure for architects", Ramsey dabby
5. Structural Elements for Architects and Builders, Jonathan Ochshorn

15ARF40 HUMAN SETTLEMENTS PLANNING

Category	L	T	P	Credit
EFC	3	0	0	3

Prerequisite

NIL

Course Outcomes

On the successful completion of the course, students will be able to

CO 1	Acquire knowledge in planning surveys and strategies.	Understand
CO 2	Analyse, generate alternative planning strategies and evaluation of options and preparation of plans.	Analyse & Evaluate
CO 3	Understanding of planning concepts and philosophies of various Architects.	Remember

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15	PO16
CO17.	**M**	**M**	**L**	**-**	**L**	**-**	**-**	**-**	**S**	**M**	**-**	**M**	**-**	**L**	**-**	**-**
CO18.	**M**	**M**	**L**	**M**	**L**	**S**	**-**	**-**	**S**	**M**	**-**	**M**	**-**	**L**	**-**	**S**
CO3.	**S**	**-**	**L**	**M**	**-**	**-**	**-**	**-**	**M**	**L**	**-**	**-**	**-**	**-**	**-**	**S**

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment Test - 1	Terminal Examination
Remember	20	20
Understand	20	20
Apply	-	-
Analyse	30	30
Evaluate	30	30
Create	-	-

Syllabus

ELEMENTS OF HUMAN SETTLEMENTS - Rural and Urban settlements – Evolution of settlements – Ancient, Medieval and Modern - Planning as an interdisciplinary process - Types of settlements – Models of land use structures of Urban settlements. **PLANNING FOR HUMAN SETTLEMENTS -** Objective of Planning – Planning process and Monitoring - Strategies and guidelines for planning – UDPFI guidelines. **PLANNING CONCEPTS AND PHILOSOPHIES -** Doxiadis, Pattric Geddess, Ebenezer Howard, CA Perry, Lewis Mumford, Le Corbusier, Otto Koeinsberger. **PLANNING SYSTEM IN INDIA -** Hierarchy of planning – Types of plan – Regional plan, Master plan, Structure plan, Zonal development plan - Various Urban development Programmes – IDSMT, IUDP, Sustainable Cities Programme, JNNURM, ITUC and Smart Cities - Rural planning – salient features of 73rd and 74th amendment act – Rural development programmes. **OTHER EMERGING ISSUES -** Informal city of the poor – Concept of the informal sector – concern for urban poverty – gender issues in planning - Vulnerable groups pavement dwellers – street kids, hawkers – social and communal conflicts in urban area – Environmental issues in planning.

Text Books

1. Dr.H.D.Kopardekar, 'Urban and Regional planning: Principles practice and the Law', Sudhanwa.H.Kopardekar. Talegaon-Dabhade, 1994.
2. Rangwala, 'Town Planning', Charotar publishing house, 2003.
3. G.K.Hiraskar, 'Fundementals of Town Planning', DhanpatRai publications, 2005.
4. John Ratcliffe, An Introduction to Town and Country Planning: 2000.

Reference Books

1. C.L.Doxiadis, Ekistics, 'An Introduction to the Science of Human Settlements', Hutchinson, London, 1968.
2. Government of India, 'Report of the National Commission on Urbanisation', 1988.
3. Ministry of Urban Affairs and Employment, Government of India, New Delhi, 'Urban Development Plans: Formulation & Implementation' - Guidelines - 1996.
4. Hansen N., 'Regional Policy and Regional Integration' Edward Elgar, UK, 1996.
5. Andro D.Thomas, 'Housing and Urban Renewal, George Allen and Unwin, Sydney, 1986.

15ARF60 ENVIRONMENT BEHAVIOUR STUDIES

Category	L	T	P	Credit
EFC	3	0	0	3

Prerequisite

NIL

Course Outcomes

On the successful completion of the course, students will be able to

CO 1	Get familiar with terms related to environmental behaviour like territoriality, proxemics, etc.	Remember
CO 2	To understand the biological, personal, social and cultural context of the users on built environment.	Understand
CO 3	Understanding of the multiplicity of living patterns, activities, geometric patterns in space and designing for the same.	Understand
CO 4	Analyze the user behavior in a space by mapping their activity pattern, with respect to time.	Analyse
CO 5	Know behavioral design process, techniques and design contexts to enhance the quality of spaces designed.	Evaluate

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15	PO16
CO19.	**M**	**L**	**-**	**-**	**S**	**M**	**-**	**-**	**-**	**-**	**L**	**L**	**-**	**-**	**-**	**-**
CO20.	**M**	**-**	**-**	**-**	**S**	**L**	**-**	**-**	**-**	**-**	**L**	**L**	**-**	**L**	**-**	**-**
CO3.	**M**	**-**	**-**	**-**	**S**	**M**	**-**	**-**	**-**	**-**	**L**	**L**	**-**	**-**	**-**	**-**
CO4.	**M**	**-**	**-**	**-**	**S**	**M**	**-**	**-**	**-**	**-**	**L**	**L**	**-**	**-**	**-**	**-**
CO5.	**M**	**-**	**-**	**-**	**S**	**M**	**M**	**-**	**-**	**-**	**L**	**L**	**-**	**-**	**-**	**-**

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment Tests	Terminal Examination
Remember	20	20
Understand	20	20
Apply	-	-
Analyse	30	30
Evaluate	30	30
Create	-	-

Syllabus

Introduction to Environmental Behaviour Studies - Introduction to Environmental Behaviour studies and its relation with Architecture - Understanding the relationship between Human behaviour and built environment - Behaviour within Environment & the influence of Environment upon Behaviour - Architectural elements and its relation to Behaviour - Factors affecting Environmental behaviour. **Understanding Space -** Fundamental understanding of Micro space, Meso space, and Macro space Behaviour - Behavioural issues – Personal space, Personalization, Proxemics, Territoriality, Crowding/Density, Defensible space -Theories of EBS - Socio petal and Socio fugal theories – Examples. **Behaviour Studies and the Urban environment -** Scope of Environmental Behaviour studies – Value for design - Behaviour setting: Fits and Misfits – Anthropometry, Orientation/ Way finding, Sense of a place - User group and Design – Children and Environment – Aging and Environment – Mentally ill/ Handicapped and Environment – Examples - Behavioral Mapping – approach – process - potential and future direction. **Application of Behavioural studies in Architecture -** Understanding the application and influence of behavioural studies in architectural design process - *Exercise: Environmental Behavior mapping based on Activity and Time of any space.*

Text Books

1. Architectural programming: Information management for Design, Donna P.Duerk, 1993.
2. Environment & Behavior: An Introduction, Robert B.Bechtel, SAGE publications, New Delhi, 1997.
3. J Douglas Porteous, Environment and behavior – Planning & Everyday Urban life, Addison Wesley Publishing, 1977
4. The Language of Space, Bryan Lawson – Architectural Press.

Reference Books

1. Thomas F Saarinen, Environmental planning – Perception and Behavior, Houghton Mifflin Company Boston, 1976
2. Clovis Heimsath, Behavioral architecture, Mc Graw hill, 1977, David canter & Terence lee, Psychology and the built environment, Halstead press, New York, 1974.
3. Oscar Newman, Defensible spaces, HUD's Office of Policy Development and Research,1970
4. Kevin Lynch, The image of a city, Cambridge MIT, 1973.

		Category	L	T	S	Credit
15AR161	**FUNDAMENTALS OF DESIGN**	PC	0	0	10	5

Prerequisite

Nil

Course Outcomes

On the successful completion of the course, students will be able to

CO1 - Develop proficiency in lateral and creative thinking processes	Analyze
CO2 - Apply the principles of visual composition through hands-on experience in designing simple 2D & 3D compositions	Apply
CO3 - Understand the basic elements of design such as point, line, plane, volume & masses, colour, texture etc	Understand
CO4 - Develop proficiency in visual communication skills using various mediums in 2D and 3D compositions	
CO5 - Be proficient in hand-mind coordination through basic skills in model making and handling different materi	Create
CO6 - Understand the concept of anthropometry	
CO7 – Comprehend the characteristics of form and space	Create
	Remember/Understand
	Understand

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12	PO 13	PO 14	PO 15	PO 16
CO1	S	S	M	-	-	-	L	-	-	-	-	-	-	-	-	-
CO2	S	S	S	-	-	-	-	M	-	-	-	-	-	-	-	-
CO3	S	M	S	-	-	-	-	-	-	-	-	-	-	-	-	-
CO4	S	M	S	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	M	L	L	-	-	-	-	M	-	-	-	-	-	M	-	-
CO6	-	-	-	-	S	-	-	-	-	-	-	-	-	-	-	-
CO7	S	-	-	-	-	-	-	-	-	M	-	-	-	L	-	-

S- Strong; M-Medium; L-Low

Syllabus

Introduction to Fundamentals of Design – Fundamentals of design - Point and Line, Radial Balance, Focal Point - Straight Line, Curved Line, Implied Line, Symmetry – Colour– Colour Wheel, Colour Harmonies, Gray Value Scale and Colour Attributes - Exercises involving points, lines, radial balance, symmetry, Colour - Attributes. Application in the evolution of architectural design process.

Primary Elements of Design – Primary elements – Form and its properties, transformation of forms – Additive and Subtractive forms – Exercises on additive and subtractive forms using simple geometric forms and moulds cast of Plaster-of-Paris and/or Clay – Elements of spatial definition – Horizontal & Vertical elements, Opening in spaces - Space in architecture – positive and negative spaces – Exercises involving the various primary elements of design.

Fundamentals of Design Composition – Exercises to explore the various fundamentals of design composition – Introduction to order & disorder, coherence & disruption, axis - Unity/Harmony through proximity, similarity, continuation, rhythm, repetition – Plane -Shape – Volume – Texture - Balance through symmetry and asymmetry, Hierarchy, Scale and Proportion, Dominance and Emphasis, Similarity and Contrast -. Exercises on the various principles of design composition – Introduction to Qualities of Design such as dominance, dramatic effect, punctuating effect, harmony, climax, accentuation, contrast and its application in the evolution of architectural design process.

Techniques and Principles of 3D perception and communication – Techniques and principles of model making using simple and complex geometric shapes and solids for effective 3D perception and communication using various materials – Creation of study models and conceptual models and demonstration of form, depth, texture and spatial organization using clay, Thermocol, Plaster of Paris, papers/card boards, boards, wires and any other suitable material. Application in the evolution of architectural design process.

Ergonomics and Anthropometry – Introduction to ergonomics – Human factors and ergonomic principles in building design - Introduction to anthropometry – Static and Dynamic - Types of anthropometric data – Uses of anthropometric data – Anthropometric Variables - Exercises to arrive at dimensional requirements for various activities – Exercises involving application of anthropometry

Text Book

1. Simon Unwin, “Exercises in Architecture: Learning to think as an architect”, Routledge, January 2012
2. Ellen Lupton, “The ABC’s of Bauhaus, The Bauhaus and Design Theory”, Princeton Architectural Press, June 2000
3. James C. Snyder, Anthony J. Catarex, “Introduction to Architecture”, McGraw Hill Inc., 1979
4. Francis D K Ching, Steven P Juroszek, “Design Drawing – 2nd Edition”, Wiley and Sons, January 2013

Reference Books

1. Maitland Graves, “The Art of Colour and Design”, McGraw Hill Book Company Inc. 1951
2. V S Pramar, “Design Fundamentals in Architecture”, Somaiya Publications P Ltd, New Delhi, 1973
3. Charles Wallschlaeger&SynthiaBusic Snyder, “Basic Visual Concepts & Principles for Artists, Architects and Designers”, McGraw Hill Publishing, USA, 1992
4. Paul Laseau, “Graphic Thinking for Architects & Designers”, John Wiley & Sons, NY, 2001
5. Bryan Lawson, “The Language of Space”, Architectural Press, 2001
6. Simon Unwin, “Analyzing Architecture”, Routledge, London, 2003

		Category	L	T	P	Credit
15AR240	**ARCHITECTURAL DESIGN I**	PC	0	0	12	6

Course Outcomes

On the successful completion of the course, students will be able to

1. Architectural design to respond to the context, man, society and time, concern to the environment, developments in the building industry, changing trends of a practicing architect etc.
2. Proficiency in creative, logical and lateral thinking processes, verbal and visual communication skills.
3. Acquisition of knowledge through exposure to the professional fields / site/field visits.
4. Understanding of the process of architectural design, various stages and procedures involved in design.

Syllabus

Design for Single user –Product Design like workstation, Walk in wardrobe, Bus Shelter Design etc; **Multi-User , Single Space design -** Living space, Kitchen, Shop space, Office room , Doctor consulting room etc. Drawing Representations – Plan, Sections and Elevations

Books

1. Ernest Burden-Elements of Architectural Design- A visual resource, Van Nostrand Reinhold,1994.
2. James C. Snyder, Introduction to Architecture, Mcgraw-Hill,1979
3. Bryan Lawson, 'The Language of space' , Architectural Press, 2001
4. De Chiara and Callender, Time-Saver Standards for Building Types, Mc Graw Hill Co., New York, 1973
5. Nufert Ernst, Architects Data, Blackwell Science Ltd., Britain, 1980
6. Julius Panero, Martin Zelick, Human Dimension and Interior Space, Whitney Library of Design, Canada,1979

		Category	L	T	P	Credit
15AR340	**ARCHITECTURAL DESIGN II**	PC	0	0	12	6

Course Outcomes

On the successful completion of the course, students will be able to

1. Recognize the various standards, functional activities and hierarchy of activities in multiple users and multiple units in single and simple multi level building plans.
2. Comprehension of the various stages involved in design evolution involving simple structures for single and multiple activity spaces.
3. Correlate various influencing factors of a design such as function, activities, spatial standards, form, volumetric definition, etc.
4. Analyse a design question and formulate the problem
5. Design spaces involving multiple user and multiple units in single level plan.
6. Design spaces involving multiple user, multiple units and simple vertical movement.

Syllabus

Introduction to design process/ methods ; **Multi Space design -** Multi user, Multi space, Simple structure, Single level/ simple multi level, Simple circulation, Simple Site planning like Residence etc petrol station, bank, post office, library, restaurant etc; **Explorations in Building material/ interior detailing** of a space in design project. Representational Drawings focussing on Perspectives (Exterior and Interiors) and Isometric views.

Books

1. De Chiara and Callender, Time-Saver Standards for Building Types, Mc Graw Hill Co., New York, 1973
2. Nufert Ernst, Architects Data, Blackwell Science Ltd., Britain, 1980
3. Julius Panero, Martin Zelick, Human Dimension and Interior Space, Whitney Library of Design, Canada,1979

		Category	L	T	P	Credit
15AR440	**ARCHITECTURAL DESIGN - III**	PC	0	0	12	6

Syllabus

Study Focus - To study and understand a rural settlement by collecting, analyzing and synthesizing the information collected on the major aspects like structure of the settlement, socio economics, housing typology, visual characteristics and services.

Design Focus – Physiological Response to context like Social and Cultural Aspects - Multiple user multi SPACE simple structure design - Banks, nursery or primary school, primary health centre, primary school, neighborhood market.

Digital Skills Focus - Use of basic 2D computer aided drafting for final presentation only.

Books

1. De Chiara and Callender, Time-Saver Standards for Building Types, Mc Graw Hill Co., New York, 1973
2. Nufert Ernst, Architects Data, Blackwell Science Ltd., Britain, 1980
3. Julius Panero, Martin Zelick, Human Dimension and Interior Space, Whitney Library of Canada,1979

		Category	L	T	P	Credit
15AR540	**ARCHITECTURAL DESIGN - IV**	PC	0	0	12	6

Syllabus

Study Focus - identity and image of buildings – to understand the Creative explorations in design process, spatial experience, form, material etc

Design Focus – to evolve/create a design with focus on identity of the building- through the knowledge gained on the scale, proportion, articulation and create an image for the building - Simple multi level planning complex circulation – learning campus, museums, shopping malls – large span structures – complex site planning – design and drawings for structures in design project.

Digital Skills Focus - Conceptual and basic Massing studies using 3D computer applications.

Books

1. De Chiara and Callender, Time-Saver Standards for Building Types, Mc Graw HillCo., New York, 1973
2. Nufert Ernst, Architects Data, Blackwell Science Ltd., Britain, 1980
3. Julius Panero, Martin Zelick, Human Dimension and Interior Space, Whitney Library of Design, Canada,1979
4. Understanding structure – Derek . W. Seward 1994 – Mac Millan.Course

		Category	L	T	P	Credit
15AR630	**ARCHITECTURAL DESIGN - V**	PC	0	0	12	6

Syllabus

Study Focus – Study on the various building services to understand the technological and design aspects to integrate them in the design process - Design of intense function buildings with complex circulation and service - Application of services in the design at both site and building level
Design Focus –To evolve a design that satisfies the architectural needs and integrates service and technology - multiple user – multi space - complex multi storey building- Hospital, 5 Star Hotel - Site planning for services - Design and Drawings for services in design project
Digital Skills Focus - Use of 2D computer aided drafting in architectural design project and detailing

Books

1. De Chiara and Callender, Time-Saver Standards for Building Types, Mc Graw Hill Co., New York, 1973
2. Nufert Ernst, Architects Data, Blackwell Science Ltd., Britain, 1980
3. Julius Panero, Martin Zelick, Human Dimension and Interior Space, Whitney Library of Design, Canada, 1979.
4. Building automation systems- A practical guide to selection and implementation – Maurice Eyke.

		Category	L	T	S	Credit
15AR710	**PRACTICAL TRAINING**	PC**	0	0	26	13

Prerequisite

- NA

Course Outcomes

On the successful completion of Practical Training, students will be able to:

CO1	Design built environment through practical application, hands-on training and workshops	Apply/Create
CO2	Demonstrate proficiency in creative, logical and lateral thinking processes, verbal and visual communication skills	Apply/Create
CO3	Cater to complex array of multifaceted technical input and knowledge base needed for the multi-dimensional architectural profession	Apply/Create
CO4	Relate relevant issues such as context, man, society, time and concern to the environment for designing habitable spaces	Evaluate
CO5	Have acquired practical knowledge through exposure to the professional fields, industry and existing built environment	Apply
CO6	Instill managerial and professional skills consciously to develop entrepreneurship abilities and social responsibility	Apply

Mapping with Programme Outcomes

Cos	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PO 13	PO 14	PO 15	PO 16
CO21.	S	-	-	M	M	M	M	L	L	L	L	L	L	S	-	-
CO22.	S	-	-	-	M	L	M	-	-	-	-	-	-	M	-	-
CO3.	S	-	-	L	M	M	L	L	L	-	-	-	-	S	-	-
CO4.	M	-	-	-	M	L	L	-	M	L	L	S	S	M	-	-
CO5.	M	-	-	L	-	L	-	-	-	-	S	M	L	-	-	-
CO6.	-	-	-	-	-	S	-	-	-	-	-	-	-	-	-	-

S- Strong; M-Medium; L-Low

Assessment Pattern

SUB CODE	SUB NAME	CONTINUOUS ASSESSMENT (A)	VIVA-VOCE (B)	MAX MARKS TOTAL (A+B)	MIN MARKS FOR PASS
15AR710	**PRACTICAL TRAINING**	**50**	**50**	**100**	**50**

Syllabus

The internship program would be done in offices empanelled by the Institution and in firms that are registered under the Council of Architecture. The choice of the place of training shall be Architectural Firms, Organizations, and Development Authorities etc which are headed by Registered Architects. The students shall work for a period of 120 business days of the semester. The choice of the office shall be approved by the Head of the Department of Architecture.The Evaluation shall be based as per the Regulations. The evaluation of Practical Training will be based on the following features:

1. Site supervision
2. Concept development and critical study of the project to be built
3. Schematic Drawings and Presentation drawings
4. Working drawings
5. Estimation

The students are expected to submit various deliverables like Joining Report and Undertaking Form upon joining an office. The students shall also send their monthly progress reports duly signed and authorized by the architect or the architectural firm, every month within 10 days of the succeeding month. Apart from this, the students are also advised to maintain a work diary.Towards the end of the practical training period, the architect/architectural firm of the concerned students shall be required to send a confidential feedback report to the practical training coordinator, which will further be evaluated by the department.At the end of the Practical Training, a portfolio of work done during the period of PracticalTraining along with certification from the offices are to be submitted for evaluation by a viva voce examination. This will evaluate the understanding of the students about the drawings, detailing, materials, construction method and service integration and the knowledge gained during client meetings, consultant meetings and site visits.

15AR830 **ARCHITECTURAL DESIGN - VI**

Category	L	T	P	Credit
PC	0	0	12	6

Syllabus

Study Focus – Study of developments of various to gain knowledge on developmental aspects of densities, land utilization, building standards, building regulations, mass construction etc . Project formulation based on information collected**–** Conceptual Project Formulation - Design development focusing on density, quality and economic value and estimation in the design.

Design Focus – Response to context- Economic aspects - Multiple densities – multiple uses –economic values - Residential development, commercial development, mixed use development, large Institutional campus

Digital skills Focus - Use of 2D computer aided drafting and 3D modeling

Books

1. De Chiara and Callender, Time-Saver Standards for Building Types, Mc Graw Hill Co., New York, 1973
2. Nufert Ernst, Architects Data, Blackwell Science Ltd., Britain, 1980
3. Julius Panero, Martin Zelick, Human Dimension and Interior Space, Whitney Library of Design, Canada,1979

		Category	L	T	P	Credit
15AR930	**ARCHITECTURAL DESIGN - VII**	PC	0	0	12	6

Syllabus

Study Focus – To understand the complexity of an urban space through data collection, analysis and synthesis Public space in urban setting - Complex circulation - Complex planning of built and open spaces

Design Focus – To evolve a design that address the relationship between architecture and urban space based on the knowledge gained through the study - Project formulation for the given urban context –

Digital skills Focus - Use of 2D computer aided drafting and 3D modeling

Books

1. De Chiara and Callender, Time-Saver Standards for Building Types, Mc Graw Hill Co., New York, 1973
2. Nufert Ernst, Architects Data, Blackwell Science Ltd., Britain, 1980
3. Julius Panero, Martin Zelick, Human Dimension and Interior Space, Whitney Library of Design, Canada,1979
4. Public spaces – the management dimension – Matthew Carmona, Claudio de Magalhaes & Leo Hammond.

		Category	L	T	S	Credit
15ART10	**ARCHITECTURAL THESIS**	PC**	0	0	28	14

Prerequisite

- NA

Course Outcomes

On the successful completion of Practical Training, students will be able to:

CO1 Design built environment through practical application, hands-on training and workshops	Apply/Create
CO2 Demonstrate proficiency in creative, logical and lateral thinking processes, verbal and visual communication skills	Apply/Create
CO3 Cater to complex array of multifaceted technical input and knowledge base needed for the multi-dimensional architectural profession	Apply/Create
CO4 Relate relevant issues such as context, man, society, time and concern to the environment for designing habitable spaces	Evaluate
CO5 Have acquired practical knowledge through exposure to the professional fields, industry and existing built environment	Apply
CO6 Instill managerial and professional skills consciously to develop entrepreneurship abilities and social responsibility	Apply

Mapping with Programme Outcomes

Cos	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PO 13	PO 14	PO 15	PO 16
CO23.	S	-	-	M	M	M	M	L	L	L	L	L	L	S	-	-
CO24.	S	-	-	-	M	L	M	-	-	-	-	-	-	M	-	-
CO3.	S	-	-	L	M	M	L	L	L	-	-	-	-	S	-	-
CO4.	M	-	-	-	M	L	L	-	M	L	L	S	S	M	-	-
CO5.	M	-	-	L	-	L	-	-	-	-	S	M	L	-	-	-
CO6.	-	-	-	-	-	S	-	-	-	-	-	-	-	-	-	-

S- Strong; M-Medium; L-Low

Assessment Pattern

SUB CODE	SUB NAME	CONTINUOUS ASSESSMENT (A)	VIVA-VOCE (B)	MAX MARKS TOTAL (A+B)	MIN MARKS FOR PASS
15ART10	ARCHITECTURAL THESIS	60	40	100	50

Syllabus

The main areas of study and research shall be Architecture, Urban design, Urban renewal and urban and rural settlements, Environmental Design, Conservation, Landscape Design, Housing etc. However, the specific thrust should be architectural design of built environment.

Required Reading

1. Linda Grant and David Wang, “Architectural Research Methods”, John Wiley Sons, 2002

References

1. Donald Appleyard, “The Conservation of European Cities”, M.I.T. Press, Massachusetts, 1979
2. Richard Kintermann and Robert, “Small Site Planning for Cluster Housing”, Van Nostrand Reinhold Company, London/New York 1977
3. Miller T.G. Jr., “Environmental Sciences”, Wadsworth Publishing Co., 1994
4. Geoffrey and Susan Jellico, “The Landscape of Man”, Thames And Hudson, 1987
5. Arvind Krishnan & Others, “ Climate Responsive Architecture”, A Design Handbook for Energy Efficient Buildings, TATA McGraw Hill Publishing Company Limited, New Delhi, 2007

		Category	L	T	P	Credit
15ARPA0	**ART APPRECIATION**	PE	3	0	0	3

Prerequisite

Nil

Course Outcomes
On the successful completion of the course, students will be able to

CO 1: Recall the need and meaning of art	Remember
CO 2: Understand the value of art and its aesthetics	Understand
CO 3: Analyse the techniques, art forms and styles	Analyse
CO 4: Evaluate the western art and the works of Western Artists	Evaluate
CO 5: Evaluate the Indian Art and the works of Indian Artists	Evaluate

Mapping with Programme Outcomes

COs	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15	PO16
CO1	-	S	S	M	M	-	L	M	L	-	-	S	-	M	-	L
CO2	S	M	M	L	-	L	-	-	-	-	-	L	-	-	-	L
CO3	S	M	S	L	-	-	-	-	-	L	-	-	-	-	-	-
CO4	-	L	M	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	-	L	M	-	-	-	-	-	-	-	-	-	-	-	-	-

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment Tests	Terminal Examination
Remember	20	20
Understand	20	20
Apply	-	-
Analyse	30	30
Evaluate	30	30
Create	-	-

Syllabus
An introduction to understanding of art - Defining art-its need & meaning, Theories of art, classes & utility of art, Characteristics of art – symbols, skills, values, communicating emotions – **Techniques of Art** - Forms of art like, drawing, painting, sculpturing, photography, print making (block and lithographic prints), Techniques in art forms- abstract, portray, use of mediums such as clay, glass, metal, wood, digital imaging, Styles of art – surrealism, Pointillism and its techniques - **Art in western world** - Classical art, Medieval art, Renaissance art and Artists –Michelangelo, Leonardo Da Vinci - **Modern Art history -** Birth of modern art, cubism, impressionism, expressionism, constructivism and its artists, Introduction to futurism – pop art, abstract art, minimalism and its artists - **Art in India -** Pre historic India - Cave art, Indus valley civilization, Medieval Indian art – Mughals-Islamic art and paintings, South Indian art – Dravidian temple art and sculptures, South Indian art – Dravidian temple art and sculptures, Post-independent art, Works of Ravivarma, Recent developments in Indian Art and Architecture.

Books
Text books:

1. Ted Drozdowski / Laurie Hoffman, Art and Design, Rockfort publishers.
2. Dale G. Cleaver , Art – In introduction , 5th edition -Harcourt brace Jovanovich.
3. Roy c. Gaven, Indian art, Thames and Hudson.
4. Richard Hertz, Theories of Contemporary Art,2nd edition prentice hall - 1995
5. Gilles Neret, Dali-1904-1989, Taschen.
6. Giovanni Lista, Futurism, , Terrail.
7. Jue welton, Impressionism**,** Dorling Kindersley**.**

Reference Books:

1. Opdyke, H.G.-Macmillan, Art and Nature Appreciation, 1993.
2. Jean Anne Vincent, College out time series - History of Art, Ames &Nobel inc-Newyork.1967.
3. Harcourt,Brace&World, Cardver Art though Ages,
4. Weilenkampf, How to appreciate prints -, New editon, rev.scribner,1932.
5. Judith Collins, John Welchman, Techniques of Modern Artist, 1987.
6. Peter and Linda Murray - The Penguin Dictionary of Art and Artists, Penguin books 1989
7. Georges & Boudaille, The drawings of Picasso, Hamlyn.
8. Peter and Linda Murray - The Penguin Dictionary of Art and Artists, Penguin books 1989

		Category	L	T	P	Credit
15ARPB0	**ART IN ARCHITECTURE**	PE	3	0	0	3

Prerequisite

Nil

Course Outcomes

On the successful completion of the course, students will be able to

CO 1: To understand the relationship between art and architecture.	Remember/ Understand
CO 2: To understand the manifestation of art in architecture by realistic and abstract.	Understand
CO 3: To understand the symbolism used in Early and Contemporary Architecture.	Remember/Understand
CO 4: To Analyze art as function, power and culture through examples from early and contemporary Architecture	Analyze
CO 5: To Evaluate the purpose of 2Dimensional & 3 Dimensional art in Architecture	Evaluate
CO 6: To appreciate Principles of composition and aesthetics	Remember
CO 7: To analyze and Distinguish the purpose and features of architecture dealt in art forms	Analyze

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO11	PO12	PO14	PO16
CO43.	**M**	**L**	**S**	**-**	**L**	**-**	**-**	**L**	**-**	**L**
CO44.	**L**	**M**	**M**	**-**	**-**	**-**	**-**	**L**	**-**	**L**
CO3.	**S**	**M**	**S**	**-**	**-**	**L**	**-**	**L**	**-**	**L**
CO4.	**M**	**S**	**M**	**-**	**-**	**-**	**L**	**M**	**-**	**L**
CO5.	**-**	**-**	**S**	**-**	**-**	**-**	**-**	**L**	**-**	**-**
CO6	**S**	**L**	**S**	**L**	**M**	**-**	**-**	**L**	**L**	**L**
CO7	**S**	**-**	**S**	**-**	**L**	**-**	**L**	**L**	**-**	**-**

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment Tests	Terminal Examination
Remember	20	20
Understand	20	20
Analyse	30	30
Evaluate	30	30

Syllabus

Framework for aesthetic structure of art in architecture - Introduction to art in architecture, Relationship between art and architecture , Art as an aesthetic response – means and nature of aesthetic response – sensory, formal, expressive and symbolic, Importance of visual vocabulary, Inspiration for art, its manifestation in architecture – realistic, abstract and amplification . Role of art in Architecture - Art as symbol through examples in history and contemporary architecture, Art as Function through examples in history and contemporary architecture, Art as Function through examples in history and contemporary architecture, Art as Power through examples in history and contemporary architecture, Art as Culture through examples in history and contemporary architecture

Changes in approach, depiction and techniques in art in relation to material, technology and societal outlook. Two Dimensional art in architecture,Purpose of use of 2 Dimensional art in architecture and its types like paintings in walls, ceilings, windows, floors etc , Principles of composition and aesthetics, Examples from exemplary architectural works in history and contemporary times. Relief work in architecture - Purpose of use of relief art in architecture and its application in architecture , Principles of composition and aesthetics, Examples from exemplary architectural works in history and contemporary times. - Art as architectural elements- Purpose of use of art as architectural elements and its types like column, sculpture, fountains, arcades , etc., Principles of composition and aesthetics, Examples from exemplary architectural works in history and contemporary times - Art in Building form - Purpose of use of art in building form, architecture as art form, Principles of composition and aesthetics in form, Examples from exemplary architectural works in history and contemporary times.

Books

1. Simon Bell, Elements of visual design in the landscape, Spon press, 2004
2. Edith Tomory, A History of Fine Arts in India and the West, Orient Longman
3. George Michael, Monuments of India, Penguin
4. George Michael, Hindu art and Architecture, Thames and Hudson
5. Adam Hardy, Indian Temple Architecture, Forms and Transformation, Abinav Publications.
6. George Michael, The Royal Palaces of India, Thames and Hudson
7. Philippe Bruneau (et.ai), (Ed), Sculpture, Taschen, Cambridge, UK.
8. Elaine Grogan, Beginnings, Charles Rennie Mackintosh's early Sketches, National Library of Ireland
9. Geoffrey H. Baker, Le Corbusier – An analysis of form, Spon Press, London, New York
10. Hector Guimard, Architectural Monographs 2, Academy Editions, London
11. Jackie Cooper, (Ed), Mackintosh Architecture, Academy Editions, London, New York

		Category	L	T	S	Credit
15ARPC0	**CONSTRUCTION TECHNOLOGY**	PC**	3	0	0	3

Prerequisite

- NA

Course Outcomes

On the successful completion of the course, students will be able to:

CO1	Understand the importance of building requirements and its classification	Understand & Remember
CO2	Get familiarized with the various methods of construction systems and practices that are adopted on a wide array of projects	Understand & Apply
CO3	Understand the parameters to evaluate various types of construction equipments and its suitability on a project	Understand & Analyze
CO4	Analyze the problems and adopt proper technology for high rise construction	Analyze

Mapping with Programme Outcomes

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PO 13	PO 14	PO 15	PO 16
CO25.	-	-	-	-	M	-	-	S	L	-	M	-	-	M	-	-
CO26.	-	-	-	-	M	-	-	S	L	-	M	-	-	M	-	-
CO3.	-	-	-	-	M	-	L	M	-	-	-	-	-	S	M	-
CO4.	-	-	-	-	M	-	-	S	L	-	M	-	-	M	-	-

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment	Terminal Examination
Remember	20	20
Understand	20	20
Apply	20	20
Analyze	40	40
Evaluate	-	-
Create	-	-

Syllabus

GENERAL BUILDING REQUIREMENTS & CONSTRUCTION SYSTEMS – Classification of buildings, site and services – Requirements of parts of a building – Floors, Walls and Ceiling as a Construction system – Structural elements and basic design of construction systems – Planning in construction systems – Construction systems planning for pre-cast, pre-fabricated construction, pre-stressed and conventional concrete construction – Modular coordination - **CONSTRUCTION PRACTICES –** Modern construction practices – Best practices in the national and international construction scenario through case study and analysis – Modern construction materials – Impact of modern construction materials in construction practices in terms of ease of construction, speediness, strength and reliability and cost saving – scaffolding in construction – safety practices during construction and demolition of structures – Material storage practices and site and at remote locations - **CONSTRUCTION METHODS AND EQUIPMENT –** Uses of the following: Tractors, bulldozers, shovels draglines, cableways and belt conveyors, batching plants - Transit mixers and agitator trucks used for ready mix concrete pumps - Guniting equipments - Air compressors - welding equipment - cranes and other lifting devices - Choice of construction equipment for different types of works **- CONSTRUCTION TECHNOLOGY FOR HIGH RISE BUILDINGS –** Planning and scheduling for a high rise building – Scheduling – Simulation – Typical floor construction cycle – Appropriate working schedule – Problems in high rise construction with reference to case study from literature – Technology adoption in high rise construction and global best practices - **CONSTRUCTION MANAGEMENT –** Overview of Construction Management – Roles and responsibilities of construction manager – Stakeholders in construction management – Introduction to cost estimate, cost control, quality assurance and control at site, safety, productivity , value engineering, claims and legal issues

Text Books

1. R Chudley, Construction Technology, Pearson, 2005
2. R Barry, The Construction of Buildings, The English Language Book Society and Crosby Lockwood, Staples, London, 1976
3. R L Peurifoy, Construction Planning Equipment and Methods, Tata McGraw Hill 1979
4. Modern Construction Management, Frank Harris, John Wiley and Sons, 1983

Reference Books

1. National Building Code of India 2005
2. Frank R Dagostino, Materials of Construction, Reston Publishing Company, 1976
3. M Mohsin, Project Planning and Control, Vikas Publishers, New Delhi, 1983

		Category	L	T	P	Credit
15ARPD0	**BUILDING CONSTRUCTION PRACTICES**	PE	3	0	0	3

Prerequisite

NIL

Course Outcomes

On the successful completion of the course, students will be able to

CO1 Get familiarized with the requirements for architectural assemblies	Apply
CO2 Understand the broad range of good solutions, construction process and the fundamentals of Indian and International codes of practice	Understand & Remember
CO3 Get familiarized with the best practices that are adopted in the construction industry	Analyze

Mapping with Programme Outcomes

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PO 13	PO 14	PO 15	PO 16
CO45.	**M**	**S**	**M**	**L**	**L**	**M**	**-**	**-**	**-**	**L**	**-**	**-**	**-**	**-**	**-**	**-**
CO46.	**L**	**M**	**S**	**-**	**-**	**M**	**-**	**-**	**-**	**M**	**M**	**-**	**L**	**-**	**-**	**-**
CO3	**S**	**S**	**M**	**-**	**-**	**M**	**-**	**-**	**M**	**L**	**M**	**L**	**L**	**-**	**-**	**-**

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment	Terminal Examination
Remember	20	20
Understand	20	20
Apply	20	20
Analyse	40	40
Evaluate	-	-
Create	-	-

Syllabus

INTRODUCTION TO BUILDING CONSTRUCTION PRACTICES – Overview of construction practices, theory and methods (Traditional construction, Design build, Management approaches, Partnering like JVs and PPPs, Total construction services) – Full cycle construction process from concept to completion including bidding process and award of tender with demonstration of relevant industry standard formats – Case study analysis of a chosen project on construction practice, theory and methods - IDIs (Inherent Difficulty Indicators) such as Established Relationships, Relationship Fluctuation, Relationship Quality, Relationship Configuration, Performance Variability, External Interference - **INDIAN CODES AND STANDARDS** – Introduction to Building codes of practices in India – Various organizations involved and their representations like NBC, BIS, MOEF, CRZ, AAI etc. – NBC 2005 – Salient features of NBC 2005 – DCR and General building requirements – IS Codes for interiors – Codes for architectural and building approval drawings – Safety considerations in NBC 2005 for fire and life safety – Codes for building services – Case study analysis for a multi storied building with reference to NBC - **INTERNATIONAL CODES AND STANDARDS** – Introduction to various international codes of practices - BSI (British Standards Institution), IBC 2015 (International Building Code) (Salient features to be covered) - Russian GOST and SNIP Standards (Salient features to be covered) - Eurocodes, NFPA (National Fire Protection Association) and ASHRAE (Salient features to be covered) - Case study analysis for a multi storied building with reference to any of the aforesaid international codes of practice - **BEST PRACTICES IN THE CONSTRUCTION INDUSTRY** – Overview of best practices in construction industry with demonstration of relevant industry standard formats - Current practices and future potential in modern methods of construction – Service Delivery, Coordination and Collaboration between the various consultants – CII's (Construction Industry Institute) Best Practices – Case study analysis of a special building or multi storied building with respect to adoption of best practices - **GREEN BUILDINGS & LEAN CONSTRUCTION** – Principles, Concepts and Case Study – Last Planner System in Lean Construction – Application exercise of Last Planner System concept in a single space design - Introduction to various organizations involved in standardization like LEED, USGBC, IGBC and Lean Construction Institute

Text Book

1. National Building Code 2005
2. BIS, "Handbook on Building Construction Practices", SP 62: 1997
3. International Code Council, "2015 International Building Code, First Edition", ICC June 2014
4. Francis D K Ching and Ian M Shapiro, "Green Building Illustrated", John Wiley and Sons, 2014

Reference Books

1. ASHRAE Building Code
2. BSI, IBC, GOST & SNIP and Eurocodes Standards online
3. Tariq Abdelhamid, "Lean Construction: Concepts, Precepts and Methods", 2014

15ARPE0 ENVIRONMENT AND ARCHITECTURE

Category	L	T	P	Credit
PE	3	0	0	3

Prerequisite

Nil

Course Outcomes

On the successful completion of the course, students will be able to

CO 1	Remember the Characteristics of Environment and Ecosystem	Remember
CO 2	Illustrate the features of biodiversity	Understand
CO 3	Understand the Concepts and Approaches to Ecological Planning and Environmental Planning	**Apply**

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15	PO16
CO47.	-	-	-	-	M	-	-	-	-	-	-	-	-	-	-	-
CO48.	-	-	-	-	M	-	-	-	-	-	-	-	-	-	-	-
CO3.	-	-	-	S	S	M	-	-	-	-	-	S	S	-	-	-

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment Tests	Terminal Examination
Remember	40	40
Understand	40	40
Apply	20	20
Analyse	-	-
Evaluate	-	-
Create	-	-

Concept Map

Syllabus

Ecosystem: Multidisciplinary nature of environment- need for public awareness-Eco-system-Concept, structure, function, components, laws of Ecology, Energy flow in eco system - Food chains, food webs-Ecological pyramids-Ecological succession. Types of eco system-forest, grass land, desert, aquatic ecosystem, Loss of ecosystem and its estimation. **Biodiversity:** Biodiversity and its conservation-biodiversity types, bio-geographical classification, Values of biodiversity - Hot spots of biodiversity-threats to biodiversity-Biodiversity Indices-Endangered and endemic species- conservation of bio-diversity, Natural resources-Forest-Water-Food-Energy-soil-uses, over exploitation, effects and control. Role of individual in the conservation of natural resources **Issues in Environment-** Introduction-Environmental Issues at Macro level and Micro level in India- Deforestation, Pollution, Climate Change etc.- Environmental Disturbances- Types of Environmental Disturbances due to human intervention- Remedial Measures-Ecologically Disturbed Sites and Restoration-Case Examples- Waste Disposal and Waste Management at Building Level & Site Level-Case Example- Remedial Measures- Water Conservation-Water Shed Management-Waste Land Reclamation- Forest Conservation-Wildlife Conservation- Introduction to Concepts and Approaches to Ecological Planning and Environmental Planning- Introduction to Environmental Law and Environmental Management- Environmental Legislation in India- **Architecture and Environment-** Introduction to Environmental Engineering-Environmental issues in Master Planning of New Proposal and Projects- Professionals involved in those projects such as Residential Townships, Industrial Campus & Townships etc-Introduction to EIA – Environmental Impact Assessment-Components and Methods-Case Example- Case Example- Projects involving considerations related to environment such as Eco Tourism Projects – Reports- Reports & Project proposal Drawings related to Project Proposal for Environmental Clearance- Contribution of Architects, Landscape Architects, Environmental Planners, Environmental Engineers

Text Books

1. Perspective in Environmental studies A.Kaushi and CP Kaushi, New age International (P) Limited Publishers.2014
2. Suresh .K. Dhameja, Environmental Engineering and management, S.K.Khataria & Sons, Delhi, 2000.
3. B.K.Sharma & H.Kaur, An Introduction to Environmental pollution, GOEL Publishing House, Meerut First Edition, 1997 (Unit II & IV)

Reference Books

1. B.K.Sharma & H.Kaur, Environmental Chemistry, GOEL Publishing House, Meerut SecondEdition, 1995 (Unit II & IV)
2. Wright & Nebel, Environmental science towards a sustainable future, Prentice Hall of India Ltd, 2000.

		Category	L	T	P	Credit
15ARPF0	**APPROPRIATE CONSTRUCTION TECHNOLOGY**	PE	3	0	0	3

Prerequisite

NIL

Course Outcomes

On the successful completion of the course, students will be able to:

CO1 Understand the importance of appropriate technology; learn the various appropriate technologies in diverse fields and understand more about Open Source Appropriate Technology OSAT)	Understand & Remember
CO2 Get familiarized with the various appropriate materials that are used around the world	Analyze & Apply
CO3 Understand the parameters to evaluate an appropriate technology	Apply
CO4 Get familiarized with the various emerging appropriate building technologies that are practiced	Analyze & Apply

Mapping with Programme Outcomes

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PO 13	PO 14	PO 15	PO 16
CO49.	**S**	**-**	**S**	**M**	**-**	**-**	**-**	**L**	**-**	**-**	**-**	**-**	**M**	**M**	**-**	**-**
CO50.	**M**	**M**	**S**	**M**	**-**	**-**	**-**	**L**	**-**	**-**	**-**	**-**	**M**	**M**	**-**	**-**
CO3.	**M**	**M**	**S**	**M**	**-**	**-**	**-**	**L**	**-**	**-**	**-**	**-**	**-**	**-**	**M**	**-**
CO4.	**M**	**M**	**S**	**M**	**-**	**-**	**-**	**L**	**-**	**-**	**-**	**-**	**M**	**M**	**-**	**-**

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment	Terminal Examination
Remember	20	20
Understand	20	20
Apply	20	20
Analyse	40	40
Evaluate	-	-
Create	-	-

Syllabus

APPROPRIATE TECHNOLOGY IN CONSTRUCTION – Introduction to appropriate technology – Predecessors like E F Schumacher and the concept of "Small is Beautiful" – Need for appropriate technology in construction – Basic resources of construction industry (Land, Finance, Actors/Stakeholders and Technology) – Guiding principles of appropriate technology – Limitations of appropriate construction technology – Introduction on some of the practitioners of appropriate technology in various fields - Introduction to Open Source Appropriate Technology (OSAT) and its relevance in sustainable development – Agencies involved with OSAT – Ethical considerations - **APPROPRIATE BUILDING MATERIALS** – Choice of appropriate building materials – Fundamental information on appropriate building materials and building elements – Flyash Products – Agro waste and Natural Fibres - Compressed Earth Bricks & Blocks - Cellular Light Weight Concrete, micro concrete roofing tiles and concrete paving blocks - RCC planks and joists - Ferrocement products - Bamboo products in construction - Cost effective brick masonry including reinforced brick panels and joists - Coir polymer composite boards and ply - Red mud polymer doors and panel products - **APPROPRIATE BUILDING CONSTRUCTION TECHNOLOGY –** Emerging technologies – Broad parameters for evaluation of technologies – Panel building system using steel mesh, Polystyrene core and chipping concrete – Expanded steel mesh panels – Pre-stressed precast prefab technology using hollow core slabs, beams, columns, solid walls, stairs etc – Monolithic concrete technology using Plastic/Aluminium Composite Formwork – Monolithic concrete construction using Aluminium formwork – Precast concrete panels using concrete, welded mesh and plates, Polystyrene core – Glass Fiber Reinforced Gypsum (GFRG)/Rapidwall Building System Technology - **APPROPRIATE CONSTRUCTION TECHNOLOGY IN CONSTRUCTION AND INFRASTRUCTURE** – Developing contexts – Developed countries – City construction – Building construction – Energy – Water supply, treatment and sanitation – Transport – Lighting – Cooking – Refrigeration – Ventilation and Air Conditioning – Healthcare – Information & Communication Technologies for Development – Smart growth in terms of infill development, Brownfield development and cluster development – Case studies analysis on appropriate technology and its drive towards sustainable growth and development – **PRACTISING ORGANIZATIONS & THEIR CONTRIBUTIONS** – Auroville, COSTFORD, Habitat Technology Group – Appropriate Technology Development Association (ATDA) Lucknow – Application of Science and Technology to Rural Areas (ASTRA) Cell at IISc, Bangalore – The Honey Bee Network, Ahmedabad – Case study visit to any one of the aforesaid institutions for hands-on learning and practice

Text Book

1. BMTPC, "Standards and Specifications for Cost Effective Innovative Building Materials and Technology including Rate Analysis", 2nd Edition, BMTPC
2. SHEE, "Environmental Friendly Indian Building Materials and Technology for Cost Effective Housing", Society for excellence in Habitat development, Environmental protection and Employment generation

Reference Books

1. Appropedia
2. Online Portals of AT Collaborative, Engineers for Change Movement, ASME and IEEE

15ARPG0	SUSTAINABLE ARCHITECTURE	Category	L	T	P	Credit
		PE	3	0	0	3

Pre-requisites
Nil

Course Outcomes

On the successful completion of the course, students will be able to

CO1.	Remember the sustainable concepts and the design strategies.	**REMEMBER**
CO2.	To understand the importance of environmentally, ecologically sensitive architecture	**UNDERSTAND**
CO3.	To integrate Sustainable planning and building principles in architectural design. To introduce the students to the theoretical and practical aspects of sustainable design and the various technologies involved in executing them.	**APPLY**
CO4.	To equip the students with various tools of sustainable design such as design methodology, resource optimization and innovative approaches to eco-design.	**ANALYZE**

Mapping with Programme Outcomes

COs	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO 11	PO1 2	PO1 3	PO1 4	PO1 5	PO1 6
CO1.	**L**	**L**	**-**	**-**	**-**	**-**	**-**	**-**	**S**	**S**	**M**	**M**	**S**	**M**	**-**	**M**
CO2.	**L**	**L**	**-**	**L**	**M**	**-**	**-**	**-**	**S**	**S**	**M**	**M**	**S**	**M**	**-**	**M**
CO3.	**S**	**L**	**-**	**S**	**-**	**-**	**-**	**M**	**S**	**S**	**M**	**M**	**S**	**M**	**M**	**M**
CO4.	**S**	**L**	**-**	**L**	**-**	**-**	**-**	**M**	**S**	**S**	**M**	**M**	**S**	**M**	**M**	**M**

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment Tests	Terminal Examination
Remember	20	20
Understand	20	20
Apply	30	30
Analyse	30	30

Syllabus: **Introduction to sustainability -** Concepts of sustainability - Sustainable Development - Principles of conservation of energy-synergy with nature, impact. of Energy usage on Climate change - Sustainable planning & Design - Sustainable approach to site planning and design - site inventories - relationships between site factors- impacts of development on surrounding environment Impacts of development in eco sensitive areas - Model ecosystem of the site - Introduction to Environmental Design & Planning, Community Participation in developing sustainable designs, participatory approaches to sustainable development.**Sustainable design methods -** Sustainable Site Planning, Sustainable Cities, Sustainable Transportation - Sustainable design strategies and approaches, Sustainable design innovation, Systems design, Trans-disciplinary collaboration in design - Life cycle design and life cycle assessment (LCA), carbon footprint Design for disassembly, Design for reuse, Design for sustainable manufacturing and construction, Design for remanufacturing**Sustainable Building Materials and Construction -** Sustainable Construction, Three Dimensions. Properties, Uses and Examples of -Primary, secondary and Tertiary Sustainable Materials **-** Techniques of sustainable construction – technologies, sustainability in building services, alternative materials and construction methods: use of local materials; and on site growth of food, fuel and building materials, Contemporary Innovations in sustainable construction.**Recycling and Reuse -** Conservation of natural and artificial building resources- Architectural Reuse- Waste prevention, Pre building, Building, Post building stages, Construction and Demolition recycling - Conservation of natural and artificial building resources- types of wastes - Elimination of waste and minimize pollution- various Decomposing methods –Innovative reuse of various wastes –environmental monitoring and testing during construction- Design facility within social and environmental thresholds.**Case studies of sustainable buildings -** Introduction to the role of green building rating systems- Concept of Green Buildings Different Rating systems TERI GRIHA, LEED, Merits and demerits-Study the site planning and architectural design of the buildings in India and abroad order to explore the use of green building materials, energy and water conservation, and creating safe, healthy indoor environments and sustainable site planning

Text Books

1. B.C.Bose, "Integrated Approach to Sustainable Development". Publishers: Rajat Publications, Delhi, 2001.
2. Laurie Baker's, "Chamoli Earthquake Hand Book:, Publishers : Costford, Centre Of Science And Technology for Rural Development, 2000.
3. Fuller Moore, "Environmental Control Systems Heating, Cooling, Lighting". Publisher: Mc.Graw Hill, Newyork. 1992.
4. Sustainable Building Design Manual – Volume I, TERI, 2005.
5. Sustainable Building Design Manual – Volume II, TERI, 2005.
6. Energy Efficient Buildings in India, TERI, 2005.

Reference Book

1. CARING A. LANGSTON GRACE K.C.DING, " Sustainable Practices In Built Environment", Second Edition, Publishers : Butterworth – Heinman Linacre House Jordanhill Oxford.2009 , 2. R.N. Trivedi, Environmental Sciences, Publishers: Anmol Publications Pvt Ltd, New Delhi. 2002., 3. Dr. N. Arumugam, Concepts of Ecology (Environmental Biology), Saras Publications, Kanyakumari District.1994.

		Category	L	T	P	Credit
14EG141	**ENGLISH**	PE	3	0	0	3

Prerequisite

Nil

Syllabus

Listening-Listening to news bulletins, lectures and conversations; answering comprehension questions; active listening; note-taking

Speaking-Pronunciation, syllable and stress; contracted forms, courtesy words; situational conversation, one-to-one debate and mini presentation on extensive reading and dailies.

Reading-Skipping, scanning and skimming; reading for information and pleasure; study skills – comprehension, note-making and summarizing Writing-Vocabulary: Word analysis, Parts of Speech (Nouns, Verbs, Adjectives, Adverbs, Articles, Prepositions, Conjunction); Sentences Types (Affirmative, Negative, Interrogative, Imperative, Exclamatory(; Sentence Structure (Subject Verb Agreement, Tenses, Voices, Modals, Conditionals, Relative Clauses, Reported Speech); Dialogue, Writing, Notions (Nominal Compounds, Definition, Classification, Cause and Effect, Purpose and Function) Paragraph Writing; Compare and Contrast, Descriptive; Formal Letters; Interpretation of Graphics; Instructions and Recommendations.

Books

Workbook prepared by the Department of English

Reference Books

1. Department of English, Anna University, Mindscapes; English for Technologists and Engineers, Orient Blackswan, Chennai, 2012
2. Dhanavel, S.P. English and Communication Skills for Students of Science and Engineering, Orient Blackswan, Chennai, 2011
3. Murphy, Raymond English Grammar in Use with Answers; Reference and Practice for Intermediate Students, Cambridge: CUP, 2004
4. Jones, Daniel. An English Pronouncing Dictionary, Cambridge: CUP, 2006
5. Prasad, Hari Mohan, Sinha, Uma Rani, Objective English for Competitive Examinations, Tata McGraw-Hill: Noida,2010
6. Thomson, A.J. and Martinet, A.V. A Practical English Grammar, OUP, New Delhi; 1986
7. Lewis, Nowmn, Word Power Made Easy, Goyal Publishers, New Delhi: 2004

		Category	L	T	P	Credit
15ARPM0	**REPRESENTATION I**	PE	2	0	2	3

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Pre-requisite

Nil

Course Outcome
On the successful completion of the course, students will be able to

CO 1: Interpret ideas (concepts) based on analogies	Understand
CO 2: Apply the media and materials of representation	Apply
CO 3: Compare/Contrast effects of varying colours, textures and line weights	Analyse
CO 4: Explore ways of expressing architectural drawings in an informal/semi-informal manner	Create

Mapping with Program Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO7	PO8	PO10	PO14
CO51.	**M**	**M**	**S**	**S**	**S**	**L**	**-**	**M**	**L**
CO52.	**M**	**-**	**S**	**-**	**-**	**-**	**-**	**-**	**-**
CO3.	**M**	**-**	**S**	**L**	**-**	**-**	**-**	**-**	**-**
CO4.	**M**	**-**	**S**	**M**	**M**	**L**	**L**	**-**	**-**

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment
Understand	20
Apply	25
Analyse	25
Create	30

Syllabus **DESIGN DRAWING** – open and close minded illustrations – conceptual and representational – analogies and direct methods – exercises to evolve concepts based on parameters like context and functions - Familiarisation of medium of representation and materials to be used – Understanding value of strokes – **PRESENTATION DRAWING** - Graphical Representation of site level zoning – Exercises to be done on existing site drawing (printed on tracing paper) understand various stippling techniques, value of strokes, media and materials of representation - Plan – Exercises to be done on existing drawing of a plan (printed on board) understand line weight, colours and textures on different media and materials - Section - Graphical Representation on vertical zoning - Exercises to be done on existing drawing of a section (printed on board) understand line weight, colours and textures on different media and materials.

Reference Books

1. Architectural Rendering / A colour Reference, Mike Lin
2. Design Drawing Experiences 2000 Edition, William Kirby Lockard, W.W. Norton and Company, New York
3. Rendering with pen and ink, Gill Robert, Thames and Hudson

		Category	L	T	P	Credit
15ARPN0	**ARCHITECTURAL GRAPHICS II**	PE	2	0	2	3

Preamble

To understand the various measure drawing methods and techniques to document buildings of architectural values. To develop the three –dimensional representation of form using axonometric projection and views. To develop the representation skills and techniques for drawings involving perspective and sciography.

Prerequisite

Nil

Course Outcomes

On the successful completion of the course, students will be able to

CO 1	Measure draw and document buildings, its indoor and outdoor Components.	**(Remember)**
CO 2	Construct various types of axonometric projections and draw objects in its various types &views.	**(Apply)**
CO 3	Draw perspectives of interior and exterior of buildings.	**(Apply)**
CO 4	Understand the principles and draw shades and shadows of**various solids and building elements.**	**(Understand)**

Mapping with Programme Outcomes

COs	**PO1**	**PO3**	**PO5**	**PO12**
CO1	**M**	**S**	**M**	**L**
CO2	**M**	**S**	**M**	**L**
CO3.	**M**	**S**	**M**	**L**
CO4.	**M**	**S**	**M**	**L**

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	**Continuous Assessment Exercises**
Remember	20
Understand	20
Apply	60

Syllabus

Measure Drawing - Measure drawing and manual documentation of architectural heritage buildings such as temples, palaces, institutions etc. and its outdoor elements. Measure drawings of various landscape elements and other structures at site level.**Axonometric projection-** Introduction to axonometric projection and application. Various types of axonometric projections. Isometric projection of geometric solids. Isometric view of geometric solids. **Perspective -** Principles, methods and characteristic of perspective drawing. One point perspective theory of interiors and outdoors. Two point perspective of objects, interior and exterior of buildings. Three point perspective of buildings.**Sciography -** Principles of shades and shadows. Drawing in shades and shadows of plane, solid and building elements. Drawings in shadows of buildings- plan

Books

1. Claude Batley, Indian Architecture, D.B.Taraporevale Sons and Co., Ltd., Bombay
2. William Kirby Lockard, Drawing as a Means to Architecture, Van Nostrand, Reinhold Company, New York.
3. Robert W.Gill, Basic Perspective, Thames and Hudson, London, 1974.
4. Francis Ching, Architectural Graphics, Van Nostrand and Reinhold Company, NY 1975.
5. RoberW.Gill, Advanced Perspective, Thames and Hudson, London, 1974.

		Category	L	T	P	Credit
15ARPQ0	**ARCHITECTURAL WORKSHOP**	PE	2	0	2	3

Pre-requisites
Nil

Course Outcomes
On the successful completion of the course, students will be able to

CO 1: Understand the techniques of Carving using various mediums for making objects Create
CO 2: Understand the techniques of Paper folding to create 3d forms Create
CO 3: Understand the techniques of using Packing board material to create both actual and reduced scale models. Create
CO 4: Understand and Experiment Recycling and Reusing Waste material to create functional or artistic products. Create
CO 5: Understand Tensile Structures through actual or reduced scale models using Ropes,Fabrics,Wires,etc. Create

Mapping with Programme Outcomes

COs	PO1	PO3	PO8	PO12	PO14
CO53.	**S**	**S**	**M**	**L**	**L**
CO54.	**S**	**S**	**M**	**L**	**L**
CO3.	**S**	**S**	**M**	**L**	**L**
CO4.	**S**	**S**	**M**	**L**	**L**
CO5.	**S**	**S**	**M**	**L**	**L**

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment Marks		Total marks
	Process	Product	(20)
Remember	10	10	20
Understand	10	10	20
Apply	10	10	20
Analyse	10	10	20
Evaluate	10	10	20
Create	10	10	20

Syllabus
Exercise to explore the technique of Carving objects and buildings in mediums like Chalkpiece, Soap, Wax, POP, etc - Exercise to explore the technique of Paper Folding using various kinds of papers to visualize 3D forms - Exercise to explore the use of Packing Board material to create useful products like furnitures, storage units, scale down models, etc – Exercise to explore the Recycling or Reusing of waste materials like Plastic, Rubber, etc to create a functional product or an art piece - Exercise to explore the modelling of Tensile Structures using Ropes, Fabrics, Supporting verticals, wire, etc..in actual scale.

		Category	L	T	P	Credit
15ARPR0	**REPRESENTATION II**	PE	2	0	2	3

Pre-requisites
Nil

Course Outcome
On the successful completion of the course, students will be able to

CO 1: Illustrate 3 dimensional perspective drawings (Interior and Exterior)	Understand
CO 2: Apply the media and materials of representation	Apply
CO 3: Compose effects of light and shade	Create
CO 4: Develop ways to represent sectional perspective	Create

Mapping with Program Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO7	PO8	PO10	PO14
CO1.	M	M	S	S	S	L	-	M	L
CO2.	M	-	S	-	-	-	-	-	-
CO3.	M	-	S	L	-	-	-	-	-
CO4.	M	-	S	M	M	L	L	-	-
CO5.	S	-	S	M	M	L	-	-	-

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment
Understand	30
Apply	35
Create	35

Syllabus
Understanding the **Isometric View** - Isometric view Interior, Exterior, Townscape (One point, two point and three point) - Exercises to be done on existing drawing of an

isometric view (printed on board) using different media and materials – focus on tonal interest - Understanding the Perspective view - Perspective view Interior, Exterior, Street view, Sectional Perspective view (one point, Two point and Three point) - Exercises to be done on existing drawing of a perspective view (printed on board) using different media and materials – focus on tonal interest.

Reference Books

1. Architectural Rendering / A colour Reference, Mike Lin
2. Design Drawing Experiences 2000 Edition, William Kirby Lockard, W.W. Norton and Company, New York
3. Architectural Representation Handbook, Paul Laseau, McGraw Hill, New York
4. Architectural Rendering, Philip Crowe, Rotovision SA, United Kingdom

Category	L	T	P	Credit
PE	2	0	2	3

15ARPR1 REPRESENTATION II

Pre-requisites

Nil

Course Outcome
On the successful completion of the course, students will be able to

CO 1: Illustrate conceptual, analytical, and observational sketches	Understand
CO 2: Apply the media and materials of representation	Apply
CO 3: Model making exploring various materials	Create
CO 4: Develop ways to represent sectional perspective	Create

Mapping with Program Outcomes

Os	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15	PO16
C	**M**	**M**	**S**	**S**	**S**	**L**	**S**	**S**	**S**	**L**	**M**	**-**	**M**	**-**	**-**	**-**
CO2.	**M**	**-**	**S**	**-**	**S**	**-**	**S**	**S**	**S**	**-**	**M**	**-**	**-**	**S**	**-**	**-**
CO3.	**M**	**-**	**S**	**L**	**S**	**-**	**-**	**-**	**-**	**-**	**L**	**-**	**-**	**-**	**S**	**-**
CO4.	**M**	**-**	**S**	**M**	**S**	**L**	**S**	**S**	**M**		**L**	**-**	**-**	**-**	**-**	**-**

S- Strong; M-Medium; L-Low

Assessment Pattern

Bloom's Category	Continuous Assessment
Understand	30
Apply	35
Create	35

Syllabus
Sketches- Bubble diagrams, Conceptual sketches, analytical sketches, Observational sketches- exploring various types of medium for drawing the sketches. **Orthographic projections** – plan, section, elevation drawings for a given plan - detailing the elements such as transitions, edges, slopes, stairs, and terraces to architectural scale- **Three-dimensional Images-** Axonometric/perspective views – hand-drawn and computer-assisted formats -expressive techniques- pen and ink rendering, water colours, oil pastels and dry pastels, markers etc., Photomontage, collage- serial views. **Model making** – Physical models of various site elements – Contours, Trees/ Shrubs, roads/ pavements, Lawn, Water bodies, Street furniture, Fencing etc. Models of various structural systems used in buildings like Space frames, Different forms of shell roofs, Tensile structures – using Match sticks, wires, POP, Clay, Soap, fabric. **Layout and Presentation-** Graphic presentations, serial photographs, oral presentations, Architectural portfolio.

Reference Books

1. Architectural Rendering / A colour Reference, Mike Lin
2. Design Drawing Experiences 2000 Edition, William Kirby Lockard, W.W. Norton and Company, New York
3. Architectural Representation Handbook, Paul Laseau, McGraw Hill, New York
4. Architectural Rendering, Philip Crowe, Rotovision SA, United Kingdom