



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 53rd Academic Council Meeting on 22.12.2016

Department of Architecture, Thiagarajar College of Engineering, Madurai – 625015

(For the candidates admitted from 2015-2016 onwards)

Scheduling of Courses

SEM	THEORY				THEORY CUM STUDIO				
	Compulsory Foundation Courses				Compulsory Foundation Courses				Programme Core Courses
I	15AR111 Introduction to History of Architecture, Art and Culture (2)			15AR121 Mathematics (2)	15AR131 Building Materials and Construction I (3)	15AR141 Architectural Graphics I (3)	15AR151 Visual Arts (3)	15AR161 Fundamentals of Design (5)	
	Compulsory Foundation Courses		Elective Foundation Courses	Programme Elective	Compulsory Foundation Courses		Elective Foundation Courses	Programme Elective	Programme Core Courses
II	15AR210 Mechanics of Structures (3)		15AR220 Fundamentals of Architecture (3)	**Credits are to be earned Elective foundations that could be chosen are as in Annex1	15AR230 Building Materials and Construction II (3)		** Credits are to be earned Elective foundations that could be chosen are as in Annex 1	** Credits are to be earned Program Elective that could be chosen are as in Annex 1	15AR240 Architectural Design I (6)
III	15AR310 Masonry and Steel Structures (3)	15AR320 Climate and Architecture (3)	15AR330 History of World Architecture (3)		-				15AR340 Architectural Design II (6)
IV	15AR410 RCC Structures (3)	15AR420 Building Services I (3)	-		15AR430 Building Materials and Construction III (3)				15AR440 Architectural Design III (6)
V	15AR510 Theory of Design (3)	15AR520 Building Services II (3)	15AR530 History of Indian Architecture (3)		-				15AR540 Architectural Design IV (6)
VI	15AR610 Estimation and Specification (3)	15AR620 History of Modern Architecture I (3)			-				15AR630 Architectural Design V (6)
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

Board of Studies Meeting approved on 26-11-2016

Approved in 53rd Academic Council Meeting on 22.12.2016

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

Board of Studies Meeting approved on 26-11-2016

Approved in 53rd Academic Council Meeting on 22.12.2016

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:
a. Architecture
Minimum Credits to be earned: 27

Board of Studies Meeting approved on 26-11-2016
 Approved in 53rd Academic Council Meeting on 22.12.2016

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.	15ARFS0	Building Information Modeling	2	-	2	3	V SEM AND ABOVE,	

17.	15ARFT0	Building Science II	2	-	2	3	V SEM AND ABOVE
18.	15ARFU0	Performance Evaluation of Buildings	2	-	2	3	VI SEM
19.	15ARFV0	Housing Standards and Design	2	-	2	3	VI SEM AND ABOVE
20.	15ARFW0	Architectural Conservation	2	-	2	3	VIII SEM AND ABOVE
21.	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							
22.	15ARFZ0	Site Planning and Site Services	2	-	2	3	III SEM AND ABOVE
23.	15ARF10	Structure and Architecture I	2	-	2	3	III SEM AND ABOVE
24.	15ARF20	Building Services and Technology	2	-	2	3	VI SEM AND ABOVE
25.	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								
26.	15ARF40	Human Settlements Planning	3	-	-	3	VI SEM AND ABOVE	
27.	15ARF50	Anthropology and Architecture	3	-	-	3	IV SEM AND ABOVE	
28.	15ARF60	Environment Behavior Studies	3	-	-	3	IV SEM AND ABOVE	

3. 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)

Board of Studies Meeting approved on 26-11-2016
 Approved in 53rd Academic Council Meeting on 22.12.2016

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:**Minimum Credits to be earned:12****a. Programme Specific Elective**

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.	15ARPH0	Building Skins	3	-	-	3	V SEM AND ABOVE
9.	15ARPJ0	Bio Mimicry in Architecture	3	-	-	3	IV SEM AND ABOVE
10.	15ARPK0	Advanced Structures	3	-	-	3	V SEM AND ABOVE
11.	15ARPL0	Disaster Mitigation and Management	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.	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.

Board of Studies Meeting approved on 26-11-2016

Approved in 53rd Academic Council Meeting on 22.12.2016

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 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. [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
6.	15ARFG0	Services in High rise buildings	3	50	50^	-	100	-	25	-	50
7.	15ARFH0	History of Modern Architecture II	3	50	50^	-	100	-	25	-	50
8	15ARF40	Human Settlements Planning	3	50	50^	-	100	-	25	-	50
9.	15ARF50	Anthropology and Architecture	3	50	50^	-	100	-	25	-	50
10.	15ARF60	Environment Behavior Studies	3	50	50^	-	100	-	25	-	50
THEORY CUM STUDIO®											

Board of Studies Meeting approved on 26-11-2016

Approved in 53rd Academic Council Meeting on 22.12.2016

11.	15ARFJ0	Lateral Thinking Techniques	3	50	50^	-	100	-	25	-	50
12.	15ARFK1	Ergonomics	3	50	50^	-	100	-	25	-	50
13.	15ARFL0	Computer Application in Design	3	50	50^	-	100	-	25	-	50
14.	15ARFM0	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.	15ARFS0	Building Information Modeling	3	50	50^	-	100	-	25	-	50
20.	15ARFT0	Building Science II	3	50	50^	-	100	-	25	-	50
21.	15ARFU0	Performance Evaluation of Buildings.	3	50	50^	-	100	-	25	-	50
22.	15ARFV0	Housing Standards and Design	3	50	50^	-	100	-	25	-	50
23.	15ARFW0	Architectural	3	50	50^	-	100	-	25	-	50

Board of Studies Meeting approved on 26-11-2016
Approved in 53rd Academic Council Meeting on 22.12.2016

		Conservation									
24.	15ARFY0	Dissertation	-	50	-	50®	100	-	-	25	50
25.	15ARFZ0	Site Planning and Site Services	3	50	50^	-	100	-	25	-	50
26.	15ARF10	Structure and Architecture I	3	50	50^	-	100	-	25	-	50
27.	15ARF20	Building Services and Technology	3	50	50^	-	100	-	25	-	50
28.	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

Board of Studies Meeting approved on 26-11-2016

Approved in 53rd Academic Council Meeting on 22.12.2016

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.	15ARPH0	Building Skins	3	50	50^	-	100	-	25	-	50
9.	15ARPJ0	Bio Mimicry in Architecture	3	50	50^	-	100	-	25	-	50
10.	15ARPK0	Advanced Structures	3	50	50^	-	100	-	25	-	50
11.	15ARPL0	Disaster Mitigation and Management.	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.

Board of Studies Meeting approved on 26-11-2016
Approved in 53rd Academic Council Meeting on 22.12.2016

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									

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

SEM	THEORY				THEORY CUM STUDIO					
	Compulsory Foundation Courses				Compulsory Foundation Courses				Programme Core Courses	
I	15AR111 Introduction to History of Architecture, Art and Culture (2)			15AR121 Mathematics (2)	15AR131 Building Materials and Construction I (3)	15AR141 Architectural Graphics I (3)	15AR151 Visual Arts (3)	15AR161 Fundamentals of Design (5)		
	Compulsory Foundation Courses		Elective Foundation Courses	Programme Elective	Compulsory Foundation Courses		Elective Foundation Courses	Programme Elective	Programme Core Courses	
II	15AR210 Mechanics of Structures (3)		15AR220 Fundamentals of Architecture (3)	**Credits are to be earned Elective foundations that could be chosen are as in Annex1	**Credits are to be earned Program Elective that could be chosen are as in Annex 1	15AR230 Building Materials and Construction II (3)		** Credits are to be earned Elective foundations that could be chosen are as in Annex 1	** Credits are to be earned Program Elective that could be chosen are as in Annex 1	15AR240 Architectural Design I (6)
III	15AR310 Masonry and Steel Structures (3)	15AR321 Climate and Architecture (3)	15AR330 History of World Architecture (3)			-				15AR340 Architectural Design II (6)
IV	15AR410 RCC Structures (3)	15AR420 Building Services I (3)	-			15AR430 Building Materials and Construction III (3)				15AR440 Architectural Design III (6)
V	15AR510 Theory of Design (3)	15AR520 Building Services II (3)	15AR530 History of Indian Architecture (3)			-				15AR540 Architectural Design IV (6)
VI	15AR610 Estimation and Specification (3)	15AR620 History of Modern Architecture I (3)				-				15AR630 Architectural Design V (6)
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

Board of Studies Meeting approved on 26-11-2016

Approved in 53rd Academic Council Meeting on 22.12.2016

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

Board of Studies Meeting approved on 26-11-2016

Approved in 53rd Academic Council Meeting on 22.12.2016

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	
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.	15ARFS0	Building Information Modeling	2	-	2	3	V SEM AND ABOVE,
17.	15ARFT0	Building Science II	2	-	2	3	V SEM AND ABOVE
18.	15ARFU0	Performance Evaluation of Buildings	2	-	2	3	VI SEM
19.	15ARFV0	Housing Standards and Design	2	-	2	3	VI SEM AND ABOVE
20.	15ARFW0	Architectural Conservation	2	-	2	3	VIII SEM AND ABOVE
21.	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							
22.	15ARFZ0	Site Planning and Site Services	2	-	2	3	III SEM AND ABOVE
23.	15ARF10	Structure and Architecture I	2	-	2	3	III SEM AND ABOVE
24.	15ARF20	Building Services and Technology	2	-	2	3	VI SEM AND ABOVE
25.	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								
26.	15ARF40	Human Settlements Planning	3	-	-	3	VI SEM AND ABOVE	
27.	15ARF50	Anthropology and Architecture	3	-	-	3	IV SEM AND ABOVE	
28.	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)

Board of Studies Meeting approved on 26-11-2016
 Approved in 53rd Academic Council Meeting on 22.12.2016

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**

Part - I 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.	15ARPH0	Building Skins	3	-	-	3	V SEM AND ABOVE
9.	15ARPJ0	Bio Mimicry in Architecture	3	-	-	3	IV SEM AND ABOVE
10.	15ARPK0	Advanced Structures	3	-	-	3	V SEM AND ABOVE
11.	15ARPL0	Disaster Mitigation and Management	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.	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.

Board of Studies Meeting approved on 26-11-2016

Approved in 53rd Academic Council Meeting on 22.12.2016

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
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 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. [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
6.	15ARFG0	Services in High rise buildings	3	50	50^	-	100	-	25	-	50
7.	15ARFH0	History of Modern Architecture II	3	50	50^	-	100	-	25	-	50
8	15ARF40	Human Settlements Planning	3	50	50^	-	100	-	25	-	50
9.	15ARF50	Anthropology and Architecture	3	50	50^	-	100	-	25	-	50
10.	15ARF60	Environment Behavior Studies	3	50	50^	-	100	-	25	-	50
THEORY CUM STUDIO®											

Board of Studies Meeting approved on 26-11-2016

Approved in 53rd Academic Council Meeting on 22.12.2016

11.	15ARFJ0	Lateral Thinking Techniques	3	50	50^	-	100	-	25	-	50
12.	15ARFK1	Ergonomics	3	50	50^	-	100	-	25	-	50
13.	15ARFL0	Computer Application in Design	3	50	50^	-	100	-	25	-	50
14.	15ARFM0	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.	15ARFS0	Building Information Modeling	3	50	50^	-	100	-	25	-	50
20.	15ARFT0	Building Science II	3	50	50^	-	100	-	25	-	50
21.	15ARFU0	Performance Evaluation of Buildings.	3	50	50^	-	100	-	25	-	50
22.	15ARFV0	Housing Standards and Design	3	50	50^	-	100	-	25	-	50
23.	15ARFW0	Architectural	3	50	50^	-	100	-	25	-	50

Board of Studies Meeting approved on 26-11-2016
Approved in 53rd Academic Council Meeting on 22.12.2016

		Conservation									
24.	15ARFY0	Dissertation	-	50	-	50®	100	-	-	25	50
25.	15ARFZ0	Site Planning and Site Services	3	50	50^	-	100	-	25	-	50
26.	15ARF10	Structure and Architecture I	3	50	50^	-	100	-	25	-	50
27.	15ARF20	Building Services and Technology	3	50	50^	-	100	-	25	-	50
28.	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

Board of Studies Meeting approved on 26-11-2016

Approved in 53rd Academic Council Meeting on 22.12.2016

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.	15ARPH0	Building Skins	3	50	50^	-	100	-	25	-	50
9.	15ARPJ0	Bio Mimicry in Architecture	3	50	50^	-	100	-	25	-	50
10.	15ARPK0	Advanced Structures	3	50	50^	-	100	-	25	-	50
11.	15ARPL0	Disaster Mitigation and Management.	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.

Board of Studies Meeting approved on 26-11-2016
Approved in 53rd Academic Council Meeting on 22.12.2016

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									

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 DURATION OF THE PROGRAMME AND SEMESTERS

- 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/	Total marks
-------	---------------------------	-----------------------	----------------------------	-------------

			Viva	
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 REQUIREMENTS FOR MOVING TO A HIGHER SEMESTER

- 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.

C Category	L	T	P	Cre dit
	CFC	3	0	0

Preamble

Climate plays a very important role in Architecture and Built Environment. This Course describes how climate affects building patterns in various Climatic regions and discusses the various design strategies to be developed for designing buildings across various Climatic Zones through case studies, Site visits and Lab exercises.

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
CO1.	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

Course Level Assessment Questions

Course Outcome 1 (CO1):

1. Define Macro climate and Microclimate.
2. List the various components of Climate.

Course Outcome 2 (CO2)

1. Classify Thermal Comfort factors.
2. Illustrate Effective Temperature and corrected Effective temperature in a nomogram.

Course Outcome 3 (CO3)

1. Identify various day lighting principles adopted in a building with sketches and case studies.
2. Analyze various Natural ventilation strategies and their uses in different climatic zones.

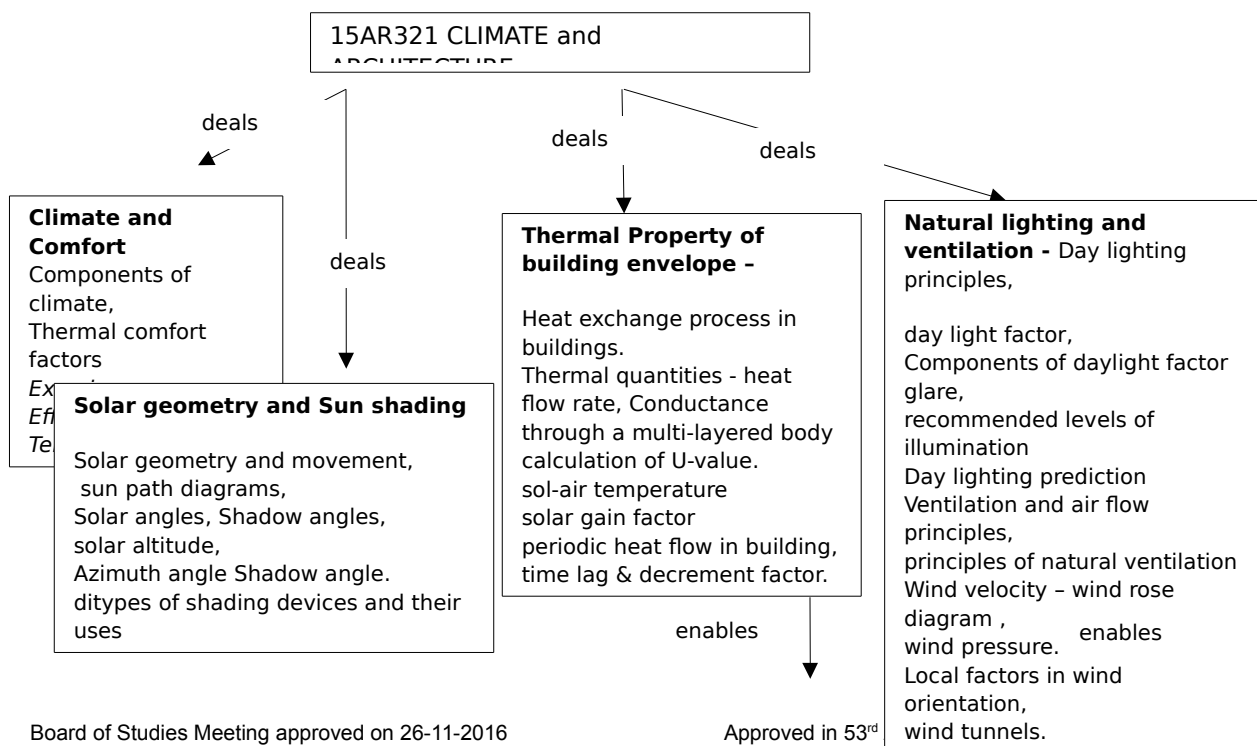
Course Outcome 4 (CO4)

1. Analyse the climate responsive techniques and concepts used in traditional buildings and contemporary buildings with suitable case studies.

Course Outcome 5 (CO5)

1. Evaluate the overheating and under heating period for a given Climatic zone.

Concept Map



Syllabus

enables

Design for different climatic types in India -

Building design & lay out planning
 consideration for different climates,
 Climatic data sets - analysis - Climate graph-
 the Mahoney tables & its recommended

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:

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

Course Contents and Lecture Schedule

S.No.	Topic	No of lectures
1	Climate and Comfort	10
	Definition of the term Climate, Components of climate, Factors that	3

1.1	determine climate, Macroclimate and microclimate, study of World climatic zones and Indian climate zone in specific.	
1.2	Thermal comfort factors, body heat exchange, - Effective temperature, Corrected Effective Temperature, calculation of overheated & under heated periods and comfort Zone.	3
1.3	Exercises on Effective Temperature nomograph calculations using instruments to calculate outdoor and indoor temperature etc, leading to analysis on thermal comfort and plotting isoplethe.	4
2	Solar geometry and Sun shading	4
2.1	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.	3
2.2	Introduction to different types of shading devices and their uses.	1
3	Thermal Design Principles in Buildings	5
3.1	Heat exchange process in buildings. Introduction to Thermal quantities - heat flow rate, conductivity (k-value) , resistivity, convection, radiation.	2
3.2	Conductance through a multi-layered body, surface conductance - transmittance - calculation of U-value.	1
3.3	Concept of sol-air temperature & solar gain factor - Introduction to periodic heat flow in building, time lag & decrement factor.	2
4	Natural lighting and ventilation	10
4.1	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.	5
4.2	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.	5
5	Design for different climatic types in India	13
5.1	Building design & lay out planning consideration for warm humid, hot dry, composite & tropical upland climates, Cold and cloudy, Cold and sunny .	9
5.2	Climatic data sets – analysis – Climate graph– the Mahoney tables & its recommended specification as Design strategies of climate responsive buildings with different case studies.	4
TOTAL NUMBER OF PERIODS		42

Course Designers:

1. R.ShanthiPriya
2. A.Madhumathi
3. J.Vishnu Priya

rsparch@tce.edu
madhu@tce.edu
jvaarch@tce.edu

15AR510

THEORY OF DESIGN

Category	L	T	P	Credit
y CFC	3	0	0	3

Preamble

The overall purpose of the course is to support each student to establish a personal, reflective, and examined intellectual position in relation to design as a process of inquiry, thought, and action.

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	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
CO3.	S	S	-	S	M	L	-	-	-	-	S	-	-	-	-	-
CO4.	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

Course Level Assessment Questions

Course Outcome 1 (CO1):

1. What are the types of thinking ?
2. List the different types of concept .
3. List out the skills a designer should possess.

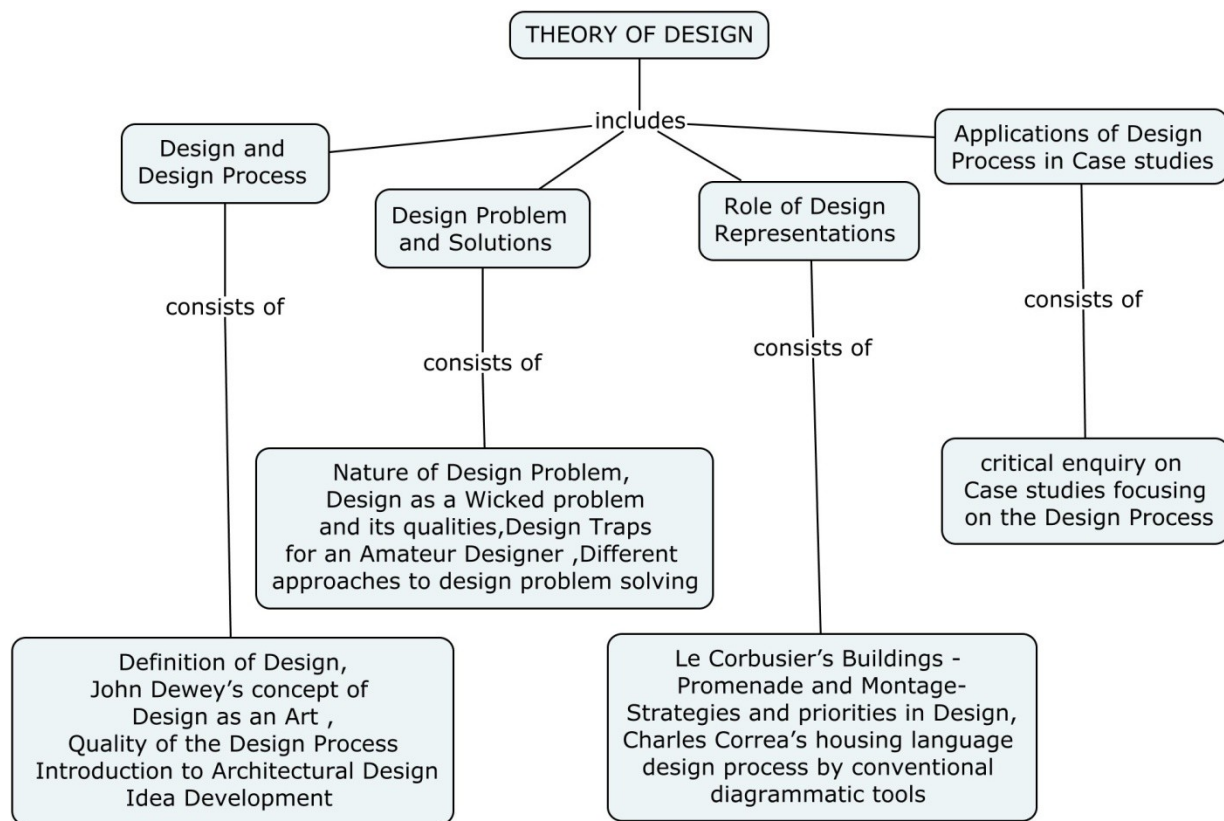
Course Outcome 2 (CO2)

1. Discuss in detail about analogies and metaphor in Architectural Design.
2. Discuss in detail about John Dewey's concept of Design as an Art.
3. Write in detail about the traps that an amateur designer might fall into. Quote examples.

Course Outcome 3 (CO3)

1. Analyze the importance of design inquiry in Architecture.
2. Choose a contemporary designer of your choice. Analyze his/her design process.

Concept Map



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 Thinking.
2. Bryan Lawson – How Designer's Think, Architectural Press Ltd, London 1980.
3. Tom Heath – Method in Architecture, John Wiley & Sons, New York, 1984.

Reference Books

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

Course Contents and Lecture Schedule

Module No.	Topic	No. of lectures
1.	Design and Design Process	3
1.1	Definition of Design, Design in various fields – John Dewey's concept of Design as an Art – How it operates – How it succeeds or fails,	1
1.2	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	1
1.3	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.	1
2	Design Problem and Solutions	4
2.1	Nature of Design Problem, Design as a Wicked problem and its qualities.- Richard Buchanan	1
2.2	Nature of Design Solutions ,Design Traps for an Amateur Designer – Bryan Lawson	1
2.3	What is expected out of a designer - Abilities Designer must possess – Set of skills needed – Nigel Cross	1
2.4	Different approaches to design problem solving – Narrative Design – Examples, Fantasy Design – Examples, Symbolism– Examples	1
3	Role of Design Representations	21
3.1	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	3
3.2	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	3
3.3	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	15
4	Applications of Design Process in Case studies	16
4.1	Undertaking a critical enquiry on relevant readings of Case studies focusing on the Design Process	16
	Total Hours	43
	Scheduled Test	2
	TOTAL HOURS	45

Course Designers

Dr.J.Jinu Loushidha Kitchley
P.Shabitha
M.Shanmathi

hodarch@tce.edu
psarch@tce.edu
msiarch@tce.edu

	L	T	P	Cre dit
H				
Cat ego ry				
CFC**	2	1	0	3

Preamble

History is "the process of inquiry into the past of man in society" (E.H. Carr). History and Theory of Architecture are connected disciplines. History defines and illustrates the cultural context in which theories (scientific, artistic, architectural, philosophical) and architectural objects (cities, buildings, bridges, etc.) emerge.

This course, aims at covering:

- Knowledge about Indian culture, building art and construction techniques helps an architecture student to develop designs that are rooted in this country.
- Appreciation of our heritage buildings should lead to the understanding that architecture is the product of a particular culture, time and place.

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	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
CO5.	S	S	M	-	L	-	-	M	M	-	-	M	L	L	-	S
CO6.	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
	1	
Remember	20	20
Understand	20	20
Apply	-	-
Analyse	60	60
Evaluate	-	-
Create	-	-

Course Level Assessment Questions

Course Outcome 1 (CO1):

What are the geographical and geological influences of Indus valley civilization?
Define the term gopuram.

Identify the architectural features of mughal architecture.

Course Outcome 2 (CO2)

Define the term Indo-saracenic architecture.
What are the different types of Islamic arches?

Course Outcome 3 (CO3)

Elaborate the architectural characteristics of Mughal architecture.
Describe the national and international guidelines and standards for urban planning

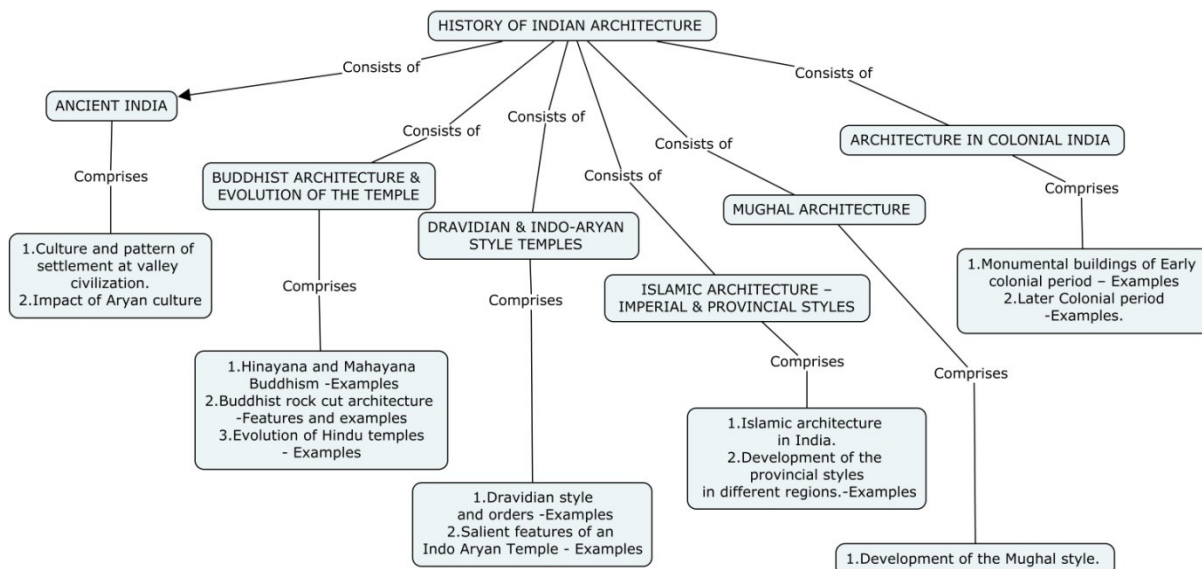
Course Outcome 4 (CO4)

Critically analyse the architectural differences of North Indian and south Indian Hindu temples.
Analyse the regional influences on architecture of that place with relevant examples of buildings in the 12th century in India.

Course Outcome 5 (CO5)

Analyse the impact of scale and proportion on the architectural elegance of Mughal architecture with an example.
Explain the architectural feature of Indo-saracenic architecture with a building example.

Concept Map



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, Mahabalipuram 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 Ghasuddin 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, Aurangzeb - Important examples –Humayun's Tomb, Delhi, Fatehpur Sikri (lay out, Buland darwaza, Diwani Khas, Tomb of Salim Chisti & Jami masjid) Akbar's 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. Paul's 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, 1983
2. Satish Grover, *The Architecture of India (Buddhist and Hindu period)*, Vikas Publishing House, New
- Brown Percy, *Indian Architecture (Islamic Period)* - Taraporevala and Sons, Bombay, 1983.
3. Delhi, 1981
4. Satish Grover, *The Architecture of India (Islamic)* Vikas Publishing House Pvt. Ltd., New Delhi, 1981.

Reference Books

1. A. Volwachen, *Living Architecture – India (Buddhist and Hindu)*, Oxford and IBM, London, 1969

2. Christopher Tadgell, *The History of Architecture in India*, Longman Group, U.K. Ltd., London, 1990
3. George Mitchell, *Monuments of India, Vol I, Buddhist, Jain, Hindu*; Penguin books, 1990
4. *Gateway to Indian Architecture*, Guruswamy Vaidyanathan, Edifice Publication, 2003
5. *Architecture of the Islamic World - George Michell - (its history and social meaning)*, Thames and Hudson, London, 1978.
6. *Islamic Architecture, Form, Function and Meaning*, Robert Hillenbrand, Edinburgh University Press, 1994.
7. R. Nath – *History of Mughal Architecture* – Abhinav Publications – New Delhi, 1985

Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures
1.	ANCIENT INDIA	3
1.1	Indus Valley Civilization - Culture and pattern of settlement.	1
1.2	Impact of Aryan culture - Vedic village and the rudimentary forms of bamboo and wooden construction under the Mauryan rule.	2
2.	BUDDHIST ARCHITECTURE & EVOLUTION OF THE TEMPLE	8
2.1	Hinayana and Mahayana Buddhism –Ashokan School of Architecture – Examples - Ashokan Pillar at Sarnath, & Sanchi stupa.	2
2.2	Buddhist rock cut architecture - Salient features of a Chaitya hall and Vihara, - Examples – Chaitya hall at Karli, Vihara at Nasik, Concept.	2
2.3	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.	4
3.	DRAVIDIAN & INDO-ARYAN STYLE TEMPLES	9
3.1	Dravidian style - Rock cut architecture of Pallavas – Mandapas & rathas Example of masonry temples - Shore Temple, Mahabalipuram and Kailasanathar temple, Kanchipuram.	3
3.2	Evolution of the Dravidian Orders - Example of Brihadeeswara Temple (the Chola style), Tanjore –Meenakshi Amman temple, Madurai (Pandyan period).	4
3.3	Salient features of an Indo Aryan Temple –Examples at Orissa - Lingaraja Temple, Bhuvaneswar & Sun Temple, Konarak — Example at Gujarat – Surya Temple, Modhera.	2
4.	ISLAMIC ARCHITECTURE – IMPERIAL & PROVINCIAL STYLES	12
4.1	Islamic architecture in India- Brief Chronological introduction about dynasties- Slaves, Khaljis, Tughlaqs, Lodhis and Mughals.	2
4.2	Salient architectural features of Qutb Minar Complex, Varieties of squinch – Alai Darwaza, Delhi - Tomb of Ghiasuddin Tughlaq & Khirki Masjid.	2
4.3	Development of the provincial styles in different regions –Exchanges between Islamic traditions and local building practices.	2

Module No.	Topic	No. of Lectures
4.4	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.	6
5.	MUGHAL ARCHITECTURE	6
5.1	Development of the Mughal style under the different rulers - Babur, Humayun, Akbar, Jahangir, Shahjahan, Aurangzeb.	2
5.2	Important examples – Humayun's Tomb, Delhi, Fatehpur Sikri (lay out, Buland darwaza, Diwani Khas, Tomb of Salim Chisti & Jami masjid) Akbar's Tomb at Sikandara – The Taj Mahal, Agra – Red Fort, Delhi (Diwan-i- Am, Rang Mahal).	4
6.	ARCHITECTURE IN COLONIAL INDIA	7
6.1	Monumental buildings of Early colonial period – Examples – St. Paul's Cathedral, Calcutta & Bombay Town hall.	2
6.2	Architectural character of Indo-Saracenic and Classical revival – University of Madras Senate House & Victoria Memorial hall, Calcutta	2
6.3	Later Colonial period – Contribution of Edwin Lutyens & Herbert Baker to the lay-out and Architecture of New Delhi – Rashtrapathi Bhavan & Parliament House.	3
	Total	43

Course Designers:

1	G. Balaji	gbarch@tce.edu
.		
2	S. Subhashini	ssarch@tce.edu
.	R. Snega	rsaarch@tce.edu
3		
.		

15AR620

HISTORY OF MODERN ARCHITECTURE - I

Categor y	L	T	P	Credit
CFC	3	0	0	3

Preamble

Architecture in the 20th century was an exploration in pursuit of a universal style. The study of Modern architecture enables the student to understand the response of architecture to technological advancement and the modernization of society due to industrial revolution, its decline and the emergence of post modernism.

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	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.	-	M	S	-	M	L	-	-	L	-	M	M	-	-	-	-
CO8.	-	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
Evaluate	0	0
Create	0	0

Course Level Assessment Questions

Course Outcome 1 (CO1):

- 1.List the characteristic features of Neo classical style of architecture.
- 2.Name any two important examples of 20th century skyscrapers.

Course Outcome 2 (CO2)

- 1.Explain any one important architectural work of Norman Foster.
- 2.Describe art nouveau architecture and list the important architects of the style.

Course Outcome 3 (CO3)

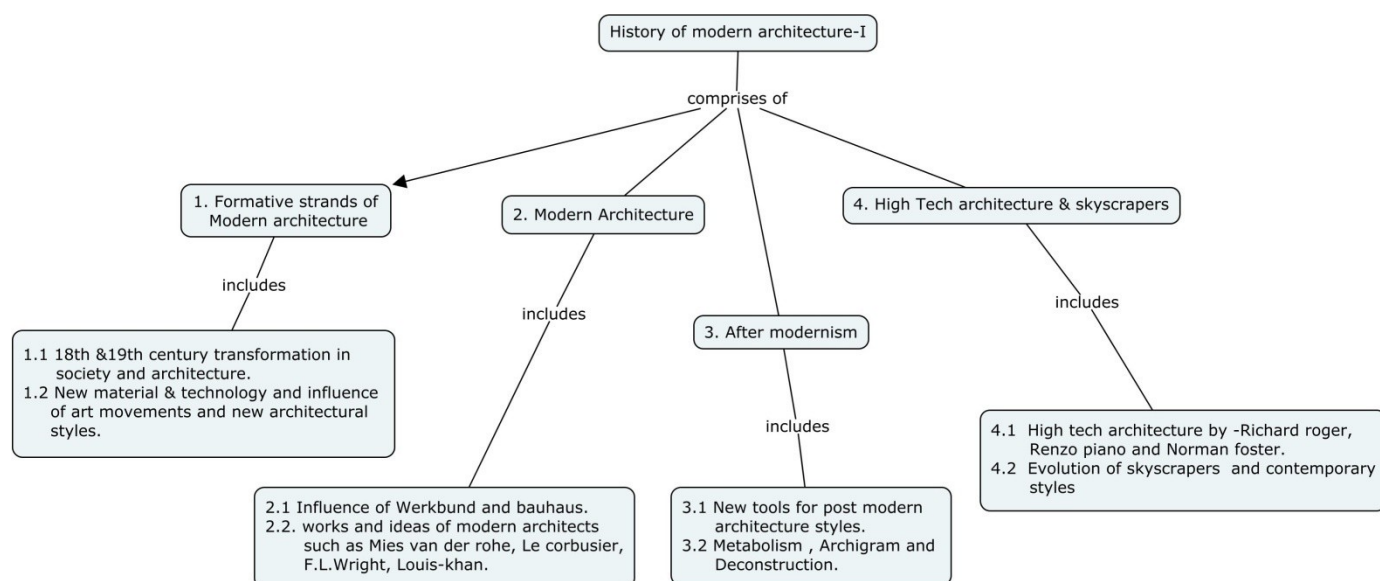
- 1.Appraise the early and later works of F.L.Wright along with his theories.
- 2.What was the reason for the rise of Chicago school of architecture ? Who were the prominent architects of Chicago school of architecture.

Course Outcome 4 (CO4)

- 1.Analyze in detail any two works of Louis Kahn.
- 2.Investigate the impact of new building materials of the industrial era on architecture.

|

Concept Map



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 Tafel/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

Course Contents and Lecture Schedule

Module No.	Topic	No. of lectures
1	Formative strands of Modern Architecture	12
1.1	18 th and early 19 th century transformations in society and architecture Neoclassicism, onset of industrial revolution	3
1.2	Introduction of new material and technology, evolution of large span structures, new building types and a search for new architectural style	3
1.3	Arts & crafts movement, Art nouveau Works and influence from various art movements.	3
1.4	Influence of Chicago school	3
2	Modern Architecture	12
2.1	Contribution of Werkbund and Bauhaus, New conception of space –International style, works of Walter Gropius	3
2.2	Works and ideas of Mies Van De Rohe and Le Corbusier.	3
2.3	Works and ideas of works of F.L.Wright, Louis Kahn	3
2.4	Works and ideas of Eero Saarinen , Oscar Niemeyer, B.Fuller.	3
3	After Modernism	10
3.1	Post Modernism – Reason for emergence and Tools of new Architecture.	4
3.2	Technological advancements, Metabolism, Archigram,	3
3.3	Deconstructivism	3
4	High Tech Architecture and Architecture of skyscrapers	9
4.1	High tech architecture – Richard Rogers, Renzo Piano, Norman Foster.	3
4.2	Evolution of skyscrapers – concepts of structural design, technological applications,	3
4.3	Stylistic evolution through contemporary examples.	3
	TOTAL	43
	Schedule test -1	2
Board of Studies Meeting approved on 26-11-2016		45
Approved in 53 rd Academic Council Meeting on 22.12.2016		

Course Designers

P.Shabitha
P.Vivek
M.Shwetha

psarch@tce.edu
pvkarch@tce.edu
msaarch@tce.edu

	L	T	P	Cre dit
U				
Cat ego				

ry

CFC** 3 0 0 3

**** BS- Basic Sciences; HSS-Humanities and Social Sciences; ES-Engineering Sciences; PC-Programme Core; PE-Programme Elective; GE-General Elective; OC-One Credit Course; TC-Two Credit Course; SS-Slef-Study Course (in the list of Programme Electives; CFC – Compulsory Foundation Course**

Preamble

Urban design involves the organization and design of buildings, public spaces, transport systems, and services in an urban level. This course is introduced to make the student understand the connections between people and places, movement, nature and the built fabric and to understand the management of public space and the way public places are experienced and used.

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	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	L	-	S	M	S	M	-	-	-	L	S	-	L	-	L
CO10.	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
Apply	-	-
Analyse	40	40
Evaluate	-	-
Create	-	-

Course Level Assessment Questions**Course Outcome 1 (CO1):**

1. What is the role of an urban designer?
2. Define node.

Course Outcome 2 (CO2):

1. How do you feel and remember a space?
2. Write briefly about Serial vision and its importance.

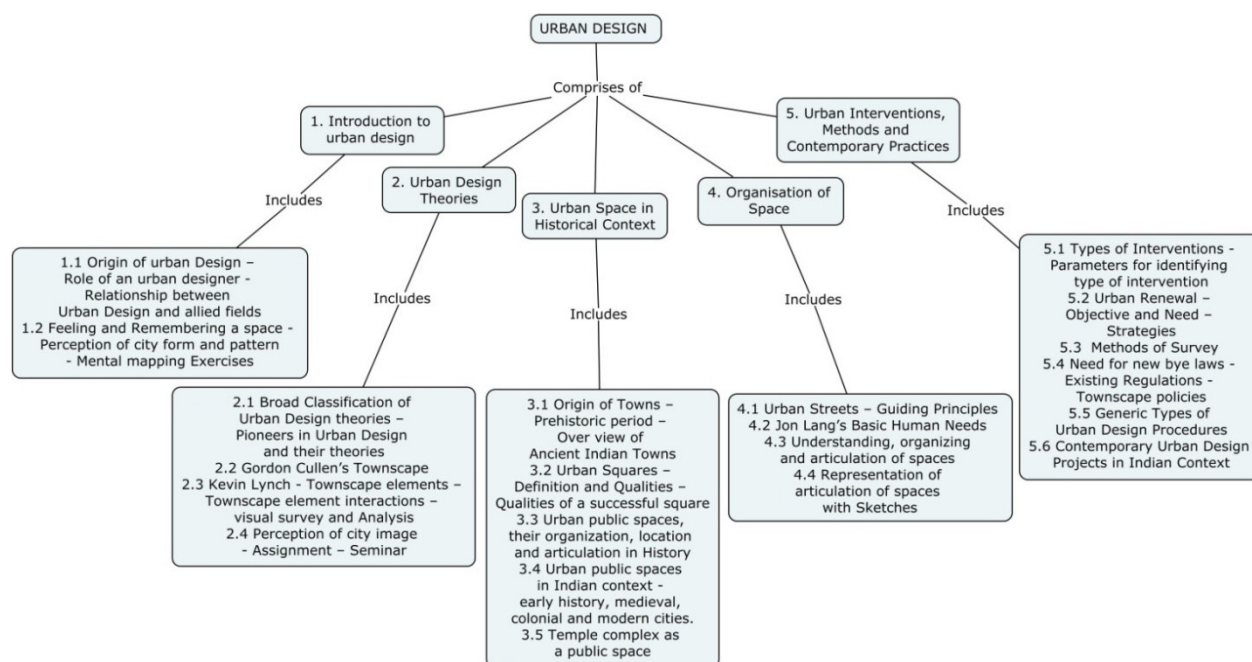
Course Outcome 3 (CO3)

1. What do you understand by a mental map? Discuss how we feel and remember a space.
2. **Elaborate on the characteristics of urban spaces in Asian context.**

Course Outcome 4 (CO3)

1. **Critically analyze the role of public space during Greek and Roman era citing examples.**
2. **Discuss in detail about the various types of streets and the essence of a successful, liveable street in the urban context.**

Concept Map



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 Camillo 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. Spiregen, "On the art of designing cities" M.I.T. Press, Cambridge 1968
2. Lynch. Kevin, "The Image of the city" M.I.T. Press Cambridge 1960
- 3 Gordon Cullen - The concise TOWNSCAPE - The Architectural Press - 1978.
4. Bacon. Edmund "Design of Cities", Thames & Hudson, London, 1967
5. Urban Design – A typology of procedures and products – Jon Lang
 1. Urban open spaces – Helen Woolley
 2. Safe cities – Gerda R. Wekerle
 3. Urban Design – Jon Lang and others

Reference Books

1. Lawrence Halprin - CITIES - Reinhold Publishing Corporation N.Y. 1964.
2. Gosling and Maitland - URBAN DESIGN - St. Martin's Press, 1984.
3. Jonathan Barnett - An Introduction to Urban Design - Harper & Row, Publishers, N.Y., 1982

Course Contents and Lecture Schedule

S. No.	Topic	No. of Lectures
1	Introduction to urban design	6
1.1	Origin of urban Design – Role of an urban designer - Urban qualities under the control of an Urban Designer - Relationship between Architecture, Urban Design, Town Planning and allied fields	1
1.2	Feeling and Remembering a space - Perception of city form and pattern	1

S. No.	Topic	No. of Lectures
1.3	Mental mapping Exercises	4
2	Urban Design Theories	9
2.1	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	1
2.2	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	2
2.3	Kevin Lynch - Townscape elements – Path , Edges, Nodes, Landmark and Districts – Townscape element interactions – Imageability, Legibility - Visual survey and Analysis	2
2.4	Perception of city image - Assignment – Seminar	4
3	Urban Space in Historical Context	9
3.1	Origin of Towns – Prehistoric period – Over view of Ancient Indian Towns	1
3.2	Urban Squares – Definition and Qualities – Types based on use and as classified by Camillo Sitte and Paul Zucker – Qualities of a successful square	1
3.3	Urban public spaces, their organization, location and articulation in Greece, Roman, Medieval and Renaissance in west, in brief	2
3.4	Urban public spaces in Indian context - early history, medieval, colonial and modern cities.	1
3.5	Temple complex as a public space - Photos and video compilations with text	4
4	Organisation of Space	9
4.1	Urban Streets – Guiding Principles – A discussion on Characteristics of a successful street – Qualities of Asian Streets – Street elements	1
4.2	Jon Lang's Basic Human Needs – Meeting Safety and Security Needs in Urban Spaces	1
4.3	Understanding, organizing and articulation of spaces of Residential, Commercial, Parks and Industrial spaces	1
4.4	Understanding the articulation of spaces for various uses – Sketches	6

S. No.	Topic	No. of Lectures
	and perception representations.	
5	Urban Interventions, Methods and Contemporary Practices	10
5.1	Types of Interventions - Parameters for identifying type of intervention, objectives	1
5.2	Urban Renewal – Objective and Need – Strategies – Redevelopment, Rehabilitation, Clearance, Urban Decentralisation, Conservation, Reproduction, Revitalisation	2
5.3	Methods of Survey - Public Participation stages and its Role	1
5.4	Need for new bye-laws - Existing Regulations - Townscape policies - regulations and emerging areas of development	1
5.5	Generic Types of Urban Design Procedures – Total, All of a Piece, Piece by Piece, Plug in – Financing - Incentives and Disincentives – Carrots and Sticks - Moratoria	1
5.6	Contemporary Urban Design Projects in Indian Context	4
Total Working Hours		43

Course Designers:

1. Dr. J. Jinu jinu Joshua@tce.edu
LoushidhaKithley
2. Prof. G. Balaji gbarch@tce.edu
3. Prof. M. ardipika@tce.edu
Dipika
4. Prof. M. msaarch@tce.edu
Shwetha

15AR8
20

LANDSCAPE DESIGN

Category	L	T	P	Credit
CFC	3	0	0	3

Preamble

The scope of landscape architecture ranges from microlevel landscapes to complex site planning issues, to macro level issues such as regional landscape planning and ecological conservation. However the scope of the subject at the architectural curriculum would be restricted to micro level and site planning level and to landscape issues of architecture beyond the building to outdoor spaces and site ecology.

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	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
CO11.	S	L	M	M	S	M	S	-	S	-	-	S	S	L	-	-
CO12.	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 ;

Assessment Pattern

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

Course Level Assessment Questions

Course Outcome 1 (CO1):

1. Define: Landscape Architecture
2. List the roles of a landscape architect.
3. Define: Ecology

Course Outcome 2 (CO2)

1. Describe the salient features of sacred gardens in India.
2. Describe the landscape elements in Mughal Gardens.
3. Describe the salient features of Central Park.

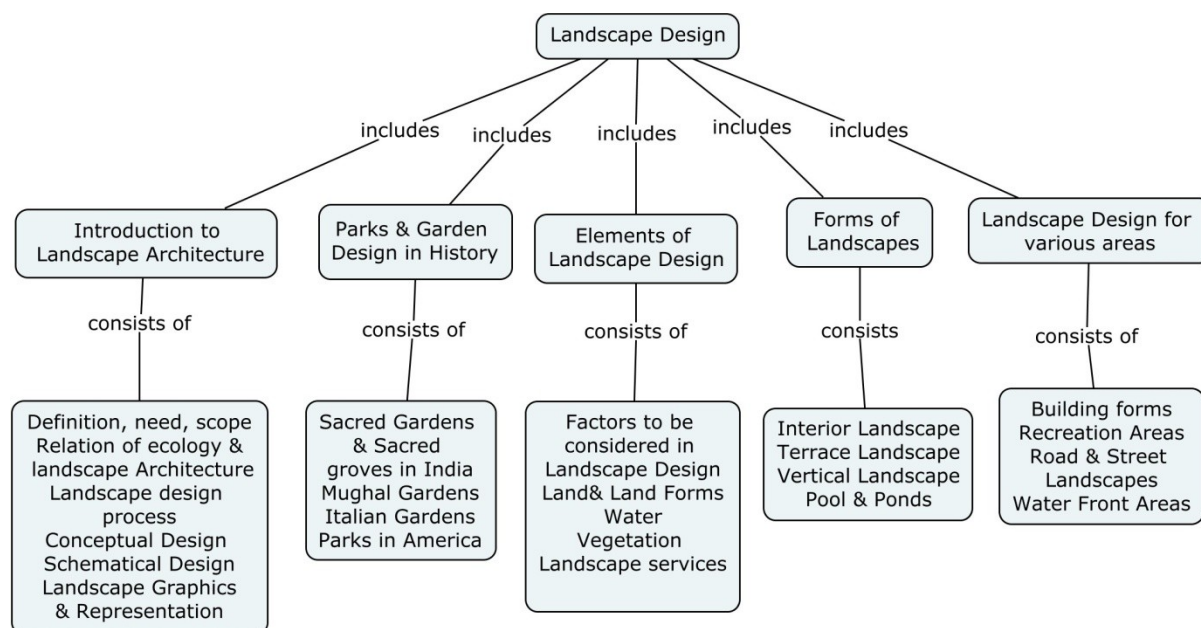
Course Outcome 3 (CO3)

1. Explain the importance of roof gardens applied in micro climate modification of the space.
2. Detail out the application of vertical garden in building design.
3. Explain the application of interior landscaping.

Course Outcome 4 (CO4)

1. Analyse the merits of terrace gardens and roof gardens.
2. Analyse the various materials used as paving in landscape design.
3. Analyse the various forms of water features in landscape design.

Concept Map



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 dechiera Lee E Koppelman, Site planning Standards , McGraw-Hill, 1984.
4. Glift Tandy, Hand Book of Urban Landscape, The Architectural Press, London, 1971.

Course Contents and Lecture Schedule

Module No.	Topic	No. of lectures
1	Introduction to landscapes Architecture	6
1.1	Definitions, Importance, Need and Scope - Roles and Responsibilities of Landscape Architects	2
1.2	Relation of Ecology and Landscape Architecture - Importance of Geology, Hydrology, Flora and Fauna with Landscape Design.	2
1.3	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.	2
2	Parks and Garden Design in History	6
2.1	Sacred Gardens and Sacred Groves in India.	2
2.2	Landscape Architectural Features in Ancient India Mughal Gardens in India- Tomb & Pleasure gardens.	2
2.3	Italian Gardens - Japanese Gardens	1
2.4	Parks in America - Central park , New York	1
3	Elements of Landscape Design	10
3.1	Factors to be considered in Landscape Design - Land Form - Influence of existing land form, soil, topography, contour levels, drainage, vegetation etc. in Landscape Design	2
3.2	Landscape elements – Land, Water and Vegetation Land & Landform: Importance of Land & Landform - Grading - Use of Land and Land form as Landscape Element.	2

3.3	Water : Various Forms of Water such as Water Falls, Water Channels as Landscape Element i.e. Aquascapes - Water Fountains, Water Cascades etc.	2
3.4	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.	2
3.5	Landscape Services: Landscape Irrigation, Drainage, Storm Water Drainage, Landscape Lighting, Landscape Furniture.	2
4	Forms of landscapes	6
4.1	Planning and Design Consideration of Interior Landscape – Design Consideration of Courtyard Landscape.	2
4.2	Planning and Design Consideration of Terrace Landscape – Roof Garden – Vertical Garden – Balcony Garden	2
4.3	Planning and Design Consideration of Pool and Ponds – Lily & Lotus Pond – Pools – Swimming Pools, Dipping Pool, Infinity Pool etc.	2
5	Landscape Design for Various Areas	15
5.1	Landscape Design Considerations for building forms Residential Projects, Commercial Projects, Institutional Projects, Industrial Projects.	5
5.2	Landscape Design for Recreation Areas such as Parks, Play Grounds etc.	5
5.3	Road & Street Landscapes	2
5.4	Landscape Design in Water Front Areas such as River, Lakes, Ponds etc	3
	Total Hours	43

Course Designers

1. S.Karthikeyaraja
2. I. Chandramathy
3. A. Madhumathi
4. S.Santhana Iyyappa Sundararaj
4. M.Shanmathi

skrarch@tce.edu
cmarch@tce.edu
madhu@tce.edu
pothi@tce.edu
msiarch@tce.edu

L T S Cre
 dit
 P
 Cat
 ego
 ry

PC** 3 0 0 3

Preamble

To introduce the students to the understanding of the formation of Council of Architecture (COA), and the Indian Institute of Architects (IIA) and their elaborate role in architectural education and profession.

Prerequisite

- NA

Course 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
CO13.	M	-	-	M	-	S	M	-	-	M	M	-	-	-	-	-
CO14.	-	-	-	-	-	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
Evaluate	-	-
Create	-	-

Course Level Assessment Questions

Course Outcome 1 (CO1):

Discuss the importance of architectural profession
 Explain the code of conduct for architects as laid down by Architects Act 1972
 Discuss the various types of services that are offered by an architect or a firm
Explain the various types of architectural competitions

Course Outcome 2 (CO2):

Explain the importance Architects Act 1972
 Explain the roles and responsibilities of COA and IIA

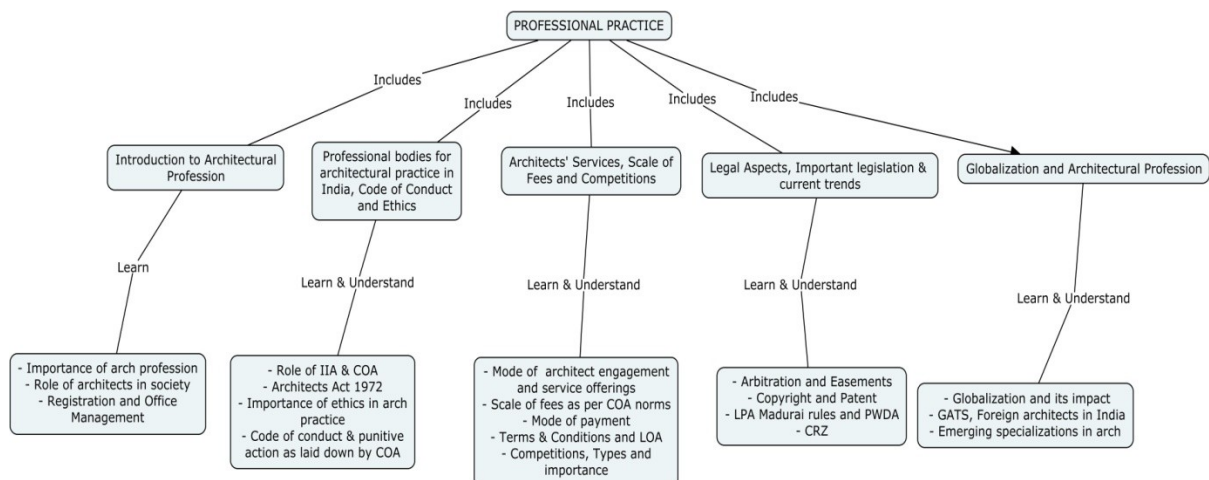
Course Outcome 3 (CO3):

1. Discuss the various modes by which an architect can be engaged
2. Enumerate the scope of services of an architect

Course Outcome 4 (CO4):

1. Discuss the importance of globalization in architectural practice with reference to GATS
2. Discuss the impact of the entry of foreign architects into India

Concept Map



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

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

Reference Books

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

Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures
1.	INTRODUCTION TO ARCHITECTURAL PROFESSION (5)	
1.1	Importance of architectural profession – Role of Architects in society – Registration of Architects	1
1.2	Architects' office and management – Location, Organizational Structure	2
1.3	Infrastructure requirement – Skills required, elementary accounts – Tax Liabilities	2

Module No.	Topic	No. of Lectures
2.	PROFESSIONAL & REGULATORY BODIES FOR ARCHITECTURAL PRACTICE IN INDIA, CODE OF CONDUCT AND ETHICS (10)	
2.1	Role of Indian Institute of Architects	2
2.2	Architects Act 1972 (intent, objectives, provisions with regards to architectural practice)	3
2.3	Council of Architecture (role and functions)	2
2.4	Importance of ethics in professional practice – Code of conduct for architects – punitive action for professional misconduct of an architect	3
3.	ARCHITECT'S SERVICES, SCALE OF FEES, COMPETITION (12)	
3.1	Mode of engaging an architect – Comprehensive services, Partial services and Specialized services	2
3.2	Scope of work of an architect – Schedule of Services – Scale of fees as per COA norms	3
3.3	Mode of payment – Terms and Conditions of Engagement – Letter of Appointment	2
3.4	COMPETITIONS – Importance of architectural competitions – Types of competitions (open, limited, ideas competition) – Single and two stage competitions	3
3.5	COA guidelines for conducting architectural competitions – National and International competitions – Case Studies	2
4.	LEGAL ASPECTS, IMPORTANT LEGISLATIONS AND CURRENT TRENDS (10)	
4.1	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)	2
4.2	Easements (types, acquisition and extinction of easements)	2
4.3	Copyright and Patenting (provisions of copyright acts in India and abroad, copyright in architectural profession)	3
4.4	Madurai LPA Rules and Regulations – Persons with Disabilities Act – Coastal Regulation Zone	3
5.	GLOBALIZATION & ARCHITECTURAL PROFESSION (6)	
5.1	Globalization and its impact on architectural profession (WTO, GATS)	2
5.2	Preparedness for International practice – Entry of foreign architects in India	2
5.3	Emerging specializations in the field of architecture	2

TOTAL LECTURE HOURS**: 43****Course Designers:**

1	C Sam Charles	scharles@tce.edu
.	Devanand	
2	R Snega	rsaarch@tce.edu
.	M Shanmathi	msiarch@tce.edu
3		
.		

	L	T	S	Cre dit
P				
Cat ego ry PC**	3	0	0	3

Preamble

To introduce the students to the understanding of the various project management techniques and the application of the same on construction projects.

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	P O1	P O2	P O3	P O4	P O5	P O6	P O7	P O8	P O9	P O10	P O11	P O12	P O13	P O14	P O15	P O16
CO15.	-	-	-	-	-	-	M	-	-	-	-	-	M	M	S	-
CO16.	-	-	-	-	-	-	-	-	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
Evaluate	-	-
Create	-	-

Course Level Assessment Questions

Course Outcome 1 (CO1):

Explain the importance of project management and project manager
 Explain the different phases of construction project lifecycle
 Analyze PERT/CPM networks and evaluate the components of cost, resources and time

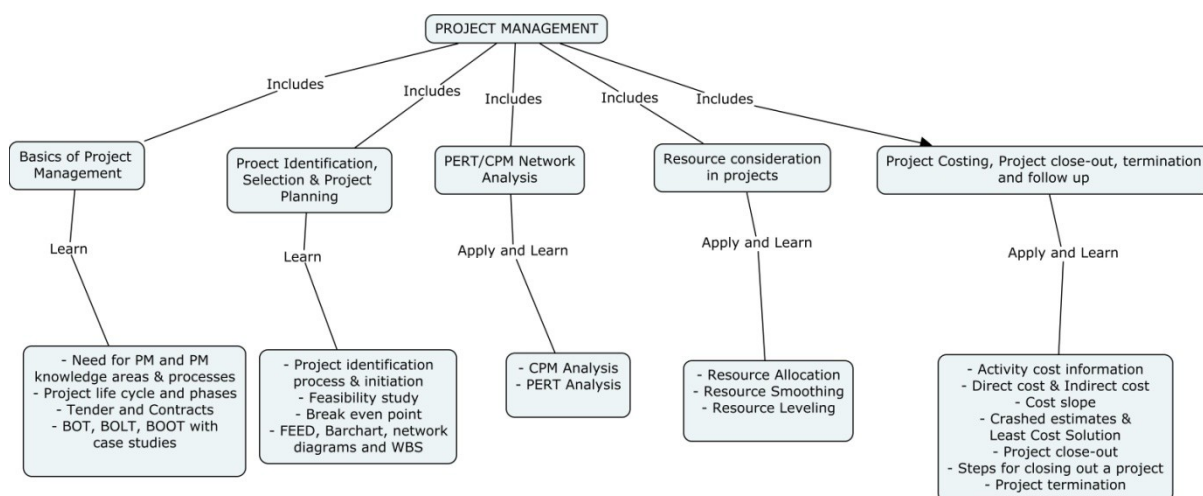
Course Outcome 2 (CO2):

Explain the process of project identification, selection and planning
 Discuss the various principles of project management

Course Outcome 3 (CO3):

1. Explain the importance of direct and indirect cost on a project
2. Explain the process of resource leveling and resource smoothing on a construction project

Concept Map



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

6. Dr C Punmiya & K K Khandelwal - Project Planning & Control with PERT/CPM; Laxmi Publications, New Delhi, 1987
7. Jerome D. Wiest & Ferdinand K. Levy – A Management Guide to PERT/CPM, PHI

Publications Ltd, New Delhi, 1982

8. L S Srinath, PERT/CPM

9. Herald Kerzner – Project Management Case Studies, John Wiley & Sons, 2013

Reference Books

3. PMBOK – Latest release from Project Management Institute (PMI)

4. Standard Operating Procedures from leading International Property Consultants

Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures
1.	BASICS OF PROJECT MANAGEMENT (10)	
1.1	Introduction – Need for Project Management – Project Management Knowledge areas and processes – The Project Manager	1
1.2	The Project Management Lifecycle – Phases of project management lifecycle	1
1.3	Impact of delays in project completions	1
1.4	Tender – Definition and types of tenders – Open and closed tenders – Conditions of tender	1
1.5	Tender Notice – Tender Documents – Concept of EMD – Submission of Tender – Tender Scrutiny – Tender Analysis – Recommendations – Work Order – E-Tendering (advantages, procedure and conditions)	2
1.6	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	2
1.7	Project Management Principles	1
1.8	Introduction to BOT, BOOT, BOLT and relevant case studies	1
2.	PROJECT IDENTIFICATION, SELECTION AND PROJECT PLANNING (7)	
2.1	Introduction - Project Identification Process	1
2.2	Project Initiation - Pre-Feasibility Study - Feasibility Studies	1
2.3	Project Break-even point – Introduction to FEED – Introduction to Project Planning – Need for Project Planning	1
2.4	Project Life Cycle - Roles, Responsibility and Team Work	1
2.5	Project Planning Process – Bar Chart & Work Breakdown Structure (WBS)	3
3.	PERT AND CPM NETWORK ANALYSIS (11)	
3.1	Introduction - Development of Project Network with inter-relationship and standard set of rules	2
3.2	Time Estimation - Determination of the Critical Path	1
3.3	PERT Model & Analysis	3
3.4	CPM Model & Analysis	3
3.5	Network Cost System	2
4.	RESOURCES CONSIDERATION IN PROJECTS (7)	
4.1	Introduction, Resource Allocation – Resource Smoothing and Resource	1

Module No.	Topic	No. of Lectures
	Leveling	
4.2	Resource Smoothing and Resource Leveling Analysis	6
5.	PROJECT COSTING, PROJECT CLOSE-OUT, TERMINATION AND FOLLOW – UP (8)	
5.1	Introduction to activity cost information – Cost Time relationship – Cost Slope	1
5.2	Estimates – Direct and Indirect Costs – Crashed Program	2
5.3	Determination of Least Cost Solution and Least Time Solution	2
5.4	Introduction - Project Close-out - Steps for Closing the Project	1
5.5	Project Termination	1
5.6	Project Follow up	1

TOTAL LECTURE HOURS : 43

Course Designers:

1	C Sam Charles	scharles@tce.edu
.	Devanand	
2	R Snega	rsaarch@tce.edu
.	M Shanmathi	msiarch@tce.edu
3		
.		

**15AR43
0**

**BUILDING MATERIALS AND
CONSTRUCTION - III**

Category	L	T	P	Credit
CFC	2	0	2	3

Preamble

The students will be exposed to various building materials and understands the properties and building applications. This learning will make the student proficient in various construction principles and hands-on-experience through preparation of drawings, market survey and site visits etc. This course involves the study of properties, applications and uses of materials like timber, R.C.C, plastics and glass. The basic knowledge of construction techniques and applications of timber, R.C.C, plastics and glass in buildings will be imparted to the students. The learning will expose students to scientific principles and hands-on experience through preparation of drawings, model making, and site visits etc.

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	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
CO17.	M	-	-	-	-	-	-	S	L	S	-	-	L	S	-	-
CO18.	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 - 1	Terminal Examination
Remember	10	10
Understand	20	20
Apply	50	50
Analyse	10	10
Evaluate	10	10
Create	-	-

Course Level Assessment Questions

Course Outcome 1 (CO1):

What are stirrups? Sketch any two form of stirrups used in beams.
List out the process in seasoning of Timber.

State the span range for which King post truss can be used.

List any four properties of concrete.

Course Outcome 2 (CO2)

Explain the design principles of “T” beam with neat sketches.

Draw to suitable scale any one type of Timber truss and label its parts.

Course Outcome 3 (CO3)

Choose an appropriate timber door for the interior rooms of a residence. Sketch plan, section and elevation of the timber door and mark the various parts and dimensions.

A wooden floor for a room of dimension 4.5m X 3.6m in the ground floor is to be designed.

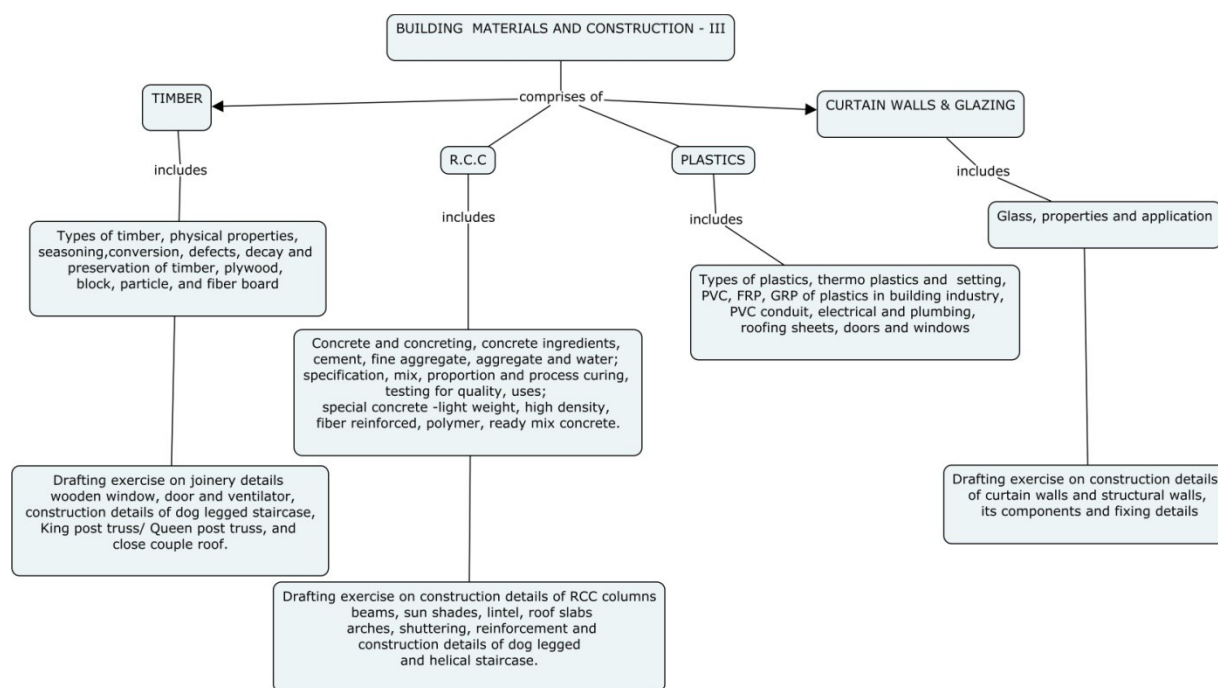
Draft to suitable scale the plan and section of wooden floor.

Course Outcome 4 (CO4)

Interpret the need for seasoning timber and explain about the various artificial method of seasoning.

Assess the various elements of a Helical staircase with neat and detailed sketches.

Concept Map



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.

Course Contents and Lecture Schedule

Module No.	Topic	No. of lectures
1.0	TIMBER	20
1.1	Types of timber – physical properties – seasoning, conversion, defects – decay and preservation of timber – industrial timber – plywood – block, particle and fibre board	4
1.2	Drawings on types of wooden joineries – window, doors and ventilators – its construction details	
1.3	Drawings of Timber partition – staircase (Dog legged) construction details	4
1.4	Drawings of Timber roof truss – King post and Queen post (any one to be done as drawings), and close couple roof	6
1.5	Sketches of Timber furniture using plywood	2
2.0	R.C.C	20
2.1	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, fiber reinforced, polymer – properties and uses – Ready mix concrete	4
2.2	Drawings on R.C.C construction – columns, beams, sunshades, lintel, roof slabs, arches, shuttering, reinforcement – details and concrete casting	10
2.3	Drawings of R.C.C staircase – shuttering, reinforcement details (Dog legged and helical) and concrete casting	4
2.4	Sketches of Expansion joints in R.C.C structures - details	2
3.0	PLASTICS	6
3.1	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	6
4.0	CURTAIN WALLS AND GLAZING	10

4.1	Glass - properties and application	2
4.2	Drawings of Construction details of curtain walls – components and fixing details	4
4.3	Drawings of Construction details of structural walls – components, erection and fixing details	4
	Total hours	56

Course Designers

- | | | |
|----|------------------------|----------------------|
| 1. | Prof. S.Karthikeyaraja | skarch@tce.edu |
| 2. | Prof. S.Thanga Lavanya | lavanya_arch@tce.edu |
| 3. | Prof. M.Sindhuja | crissindhu@tce.edu |

15AR410	RCC STRUCTURES	Catego ry CFC	L 3	T 0	P 0	Credi t 3
----------------	-----------------------	------------------------------	----------------	----------------	----------------	--------------------------

Preamble

Architects wish to be adventurous with their structures, the knowledge of structural behaviour and the potential of structural materials is certainly useful. On the other hand, where they are content to employ generic structural systems, one can get knowledge of structural design, relying instead on the expertise of structural consultants and also to have knowledge on common spans, heights, and cross-sectional dimensions around which many ordinary buildings can be planned. This course will help the student to design the reinforced concrete elements such as beams, slabs, columns and footings using Limit State Method as per the recommendations of IS codal provisions.

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
CO19.	S	-	-	-	-	-	-	S	-	S	L	-	-	-	-	-
CO20.	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
Analyse	-	-
Evaluate	-	-
Create	60	60

Course Level Assessment Questions

Course Outcome 1 (CO1):

Define the term characteristic strength of materials.

State the assumptions made in Limit state method.

Design a section of a RC beam to resist an ultimate moment of 62kNm, assuming width 230mm, concrete grade M20 and HYSD bars of grade Fe415.

Course Outcome 2 (CO2):

How the shear stress can be resisted in the beams?

A rectangular beam width $b = 250\text{mm}$ and effective depth 500mm reinforced with 4 bars of 20mm diameter. Determine the shear reinforcement required to resist a shear force of 150kN . Use concrete M20 and steel Fe415.

Design a rectangular beam section of width 250mm and effective depth 500mm , subjected to an ultimate moment of 160kNm and ultimate torsional moment of 10kNm . Use concrete M20 and steel 415.

Course Outcome 3 (CO3):

Distinguish between one –way and two way slabs.

Design a simply supported R.C.C.SLAB for a roof of a hall $4\text{m} \times 10\text{m}$ (inside dimensions) with 230mm walls all around. Assume a live load of 4kN/m^2 and finish 1kN/m^2 . Use grade 25 concrete and Fe 415 steel.

Design the interior span of a continuous one way slab for an office floor continuous over beams spaced at 3 meters. Live load = 4 kN/m , Floor finish = 1 kN/m^2 . Use concrete M20 and steel Fe415. Adopt limit state method. Sketch the steel reinforcement.

Course Outcome 4 (CO4):

What is the minimum and maximum percentage of steel allowed in R.C. Column? Explain why it is necessary to specify the minimum and maximum percentage.

How do you classify a column as short or long?

Design an axially loaded column of $400\text{ mm} \times 400\text{ mm}$ pinned at both ends with an unsupported length of 3 m for carrying a factored load of 1200 kN . Use M20 concrete and Fe415 steel.

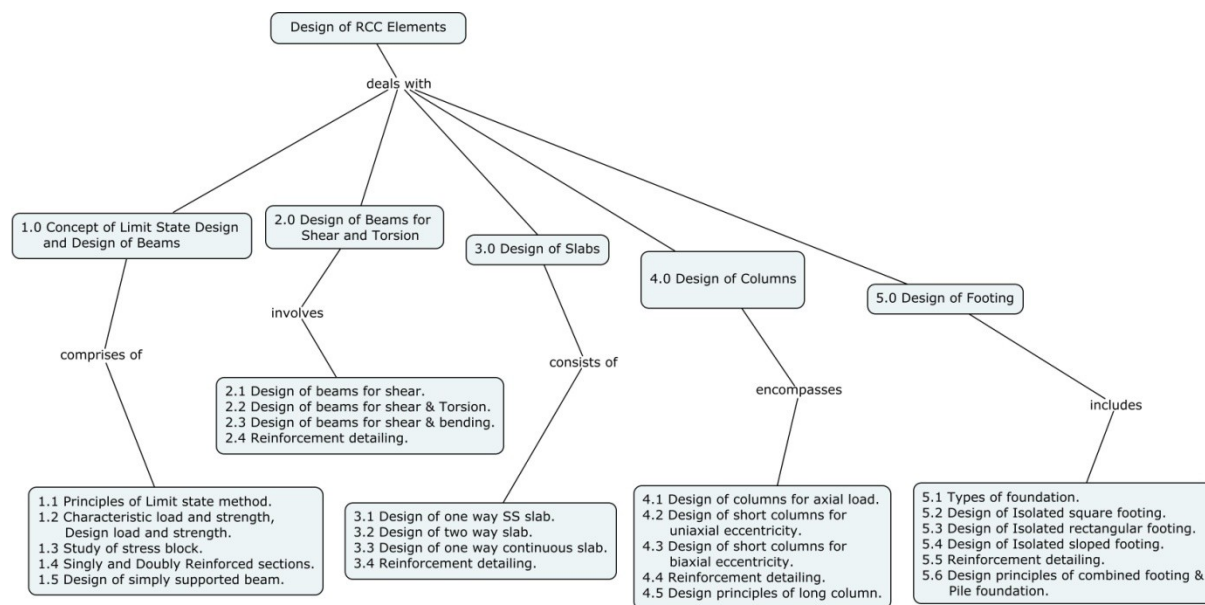
Course Outcome 5 (CO5):

What are the situations in which combined footings are preferred over isolated footings?

Sketch the placement of steel in isolated rectangular footing.

A rectangular column $300\text{ mm} \times 400\text{ mm}$ reinforced with 20 mm diameter bars carries a load of 1400 kN . Design a suitable footing for the column. The safe bearing capacity of the soil is 200 kN/m^2 . Use concrete M20 and steel Fe415.

Concept Map



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

3. Unnikrishna Pillai and Devdas Menon, reinforced Concrete Design, Tata Mc Graw Hill Publishing Company Ltd., New Delhi, 2007.
4. 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

Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures
1	Concept of Limit State Design and Design of Beams	10
1.1	Principles of Limit state method of design	2
1.2	Characteristic load and strength, design loads and strength, partial safety factor for loads and materials	2
1.3	Assumptions and study of stress block parameters	2
1.4	Analysis and Design of singly reinforced and doubly reinforced rectangular sections	2
1.5	Design of simply supported beam – reinforcement detailing	2
2	Design of Beams for Shear and Torsion	8
2.1	Design of beams for shear	2
2.2	Design of beams for combined shear & torsion	2
2.3	Design of beams for combined bending & torsion	2
2.4	Reinforcement detailing	2
3	Design of Slabs	8
3.1	Design of one way simply supported slab	2
3.2	Design of two way simply supported, continuous and restrained slab using coefficients in IS code	2
3.3	Design of one way continuous slab using coefficients in IS code	2
3.4	Reinforcement detailing	2
4	Design of Columns	9
4.1	Design of columns for axial load – square, rectangular and circular sections with lateral and spiral ties	2
4.2	Design of short columns for uniaxial eccentricity using interaction charts	2
4.3	Design of short columns for biaxial eccentricities using interaction charts	2
4.4	Reinforcement detailing	1
4.5	Design principles of long columns for uniaxial and biaxial eccentricities	2
5	Design of Footing	8
5.1	Types of foundation	1
5.2	Design of Isolated square footing	1
5.3	Design of Isolated rectangular footing	2
5.4	Design of Isolated sloped Footing	2
5.5	Reinforcement detailing	1
5.6	Design principles of combined footing and pile foundation	1

Total number of lectures	43
---------------------------------	-----------

Course Designers

1	Dr.K.Sudalaimani	ksudalaimani@tce.edu
2	Ms.M.Vigneshwari	<u>mvigneshwari@tce.edu</u>

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

Preamble

Building services in modern buildings involves the design, installation, operation and monitoring of the mechanical, electrical and public health systems required for the safe, comfortable and environmentally friendly operations. This course has been designed to understand the basic concepts and system of services involved in modern buildings such as water supply, sanitation, sewage treatment, sewage disposal and storm water drainage.

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	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	-	-	-	-	-	-	-	-
CO22.	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
Evaluate	0	0
Create	0	0

Course Level Assessment Questions

Course Outcome 1 (CO1):

1. Define Building Services and list the building services involved in Buildings.
2. What is meant by Rain water Harvesting? Discuss about its importance in recent context.
3. What is meant by fire stop?

Course Outcome 2 (CO2)

1. Describe in detail the various categories of refuse.
2. Distinguish the dry and wet riser system for fire fighting.

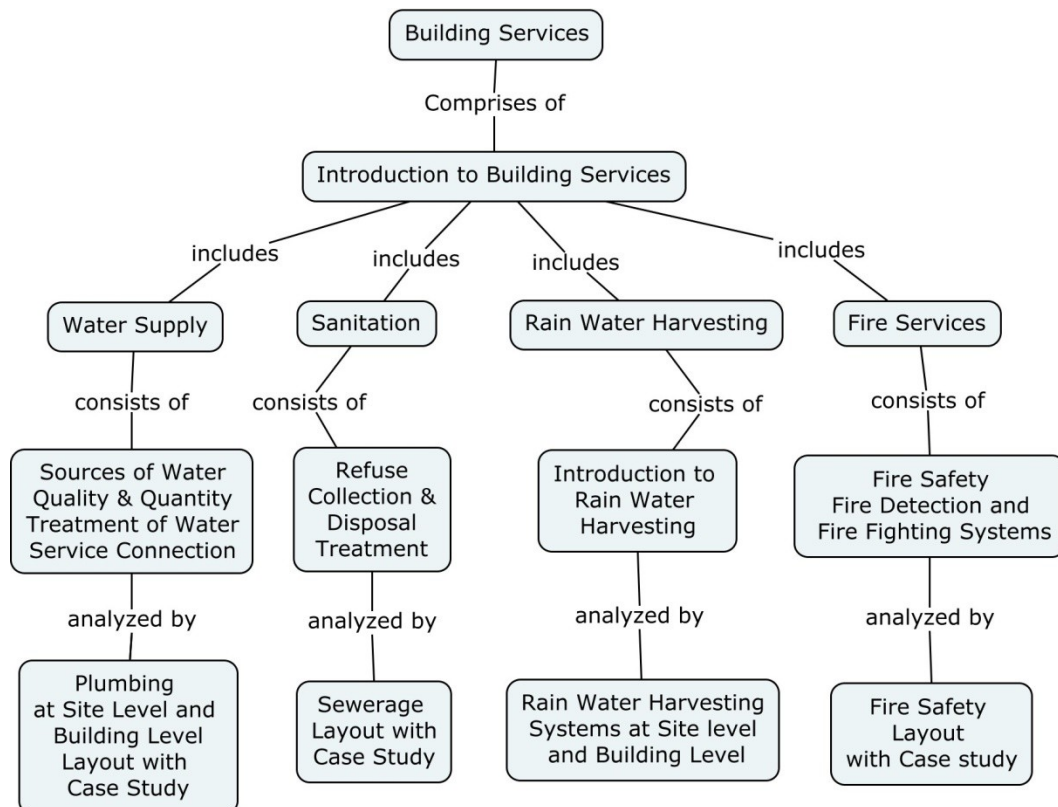
Course Outcome 3 (CO3)

1. Demonstrate the various process involved or applied in treatment of water used for domestic purposes.
2. Demonstrate the various process applied in treatment of sewage

Course Outcome 4 (CO4)

1. Explain the working principle of fire detection systems and elaborate on each of the components involved with necessary sketches.
2. Analyse the plumbing detail and specifications of a Wash basin (below counter type) of a restaurant.

Concept Map



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 per NBC and IS Specifications & Recommendations- Introduction to Fire Safety Layout with Case Study.

Text Books

1. S.C.Rangwala, Water Supply and Sanitary Engineering, Charotar Publishing House, Anand 388601.1989.
2. Handbook for Building Engineering in Metric Systems, NBC, New Delhi,1968.

Reference Books

1. 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

Course Contents and Lecture Schedule

Module No.	Topic	No. of lectures
1	Introduction	10
1.1	Introduction to Building Services – Service Core, Basics of (MEP) Mechanical, Electrical and Plumbing in Building. – Definitions and Types	3
1.2	Mechanical –Introduction to Heating, Ventilation & Air Conditioning and Fire Fighting Services.– Definitions and Types	3
1.3	Electrical – Introduction to Electrical Services and Artificial Lighting Systems ,Plumbing – Introduction to Water Supply and Sanitation, Waste Management – Rain Water Harvesting Systems	4
2	Water Supply	9
2.1	Sources of Water, Quantity of Water, Quality of Water, Requirements of Water for various purposes, Water Supply System, Water Distribution Systems	3
2.2	Water Supply Service Connections, Water Supply at Site & Building Level Sources of Water at Site Level, Treatment of Water, Storage of Water	3
2.3	Basics of Plumbing – Water Supply - Plumbing at Site Level and Building Level as per NBC and IS Specifications & Recommendations.	3
3	Sanitation	9
3.1	Introduction to Sanitation – Refuse – Sanitation – Plumbing at Building Level and Site Level as per NBC and IS Specifications & Recommendations	3
3.2	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	3
3.3	Reuse of Waste – Treatment of Sewage - Planning and Design Consideration of Kitchen, Toilets, Bathrooms as per NBC and IS Specifications & Recommendations.	3
4	Rain Water Harvesting	9
4.1	Introduction to Rain Water Harvesting – Need and Importance of Rain Water Harvesting in Buildings - Rain Water Harvesting Systems at Site Level and Building Level	3
4.2	Treatment of Water – Storage of Water – Planning and Design Consideration for Rain Water Harvesting in Multi-Storied Buildings.	3
4.3	Introduction to Plumbing Layout with Case Study explaining the Water Supply Layout, Sewerage Layout & Rain Water Harvesting Layout.	3
5	Fire Services	6
5.1	Fire safety – Causes of Fire – Types of Fire – Components of Fire safety Systems – Fire Stairs, Fire Lifts etc.	2
5.2	Fire Detection and Fire fighting Systems – Fire Extinguishing Systems – Planning and Design Consideration of Components of Building as NBC and IS Specifications & Recommendations	2
5.3	Introduction to Fire Safety Layout with Case Study	2
	Total Hours	43

Course Designers

I.Chandramathy	cmarch@tce.edu
S.Santhana lyappa Sundararaj	pothi@tce.edu
M.Shwetha	msaarch@tce.edu

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

Preamble

Building services involves the design, installation, operation and monitoring of the mechanical, electrical and public health systems required for the safe, comfortable and environmental friendly operations. This course has been designed to understand the basic concepts and systems of various services required for building operations. In this course the services involve the study of Electrical systems and installation, Illumination and Lighting design Heating, Ventilation, Air-conditioning, Security systems and vertical transportation in buildings.

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	Analyze

like, electrical, lighting ,Heating , Ventilation ,Air Conditioning
and security systems involved in buildings

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	-	-	-	-	-	-	-	-
CO24.	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
Evaluate	0	0
Create	0	0

Course Level Assessment Questions

Course Outcome 1 (CO1):

1. List the protective devices used in electrical installations.
2. What is luminous intensity?

Course Outcome 2 (CO2):

1. Explain the various types of Earthing with neat labelled sketches
2. What is a luminaire? Describe the lighting control components with neat sketches.

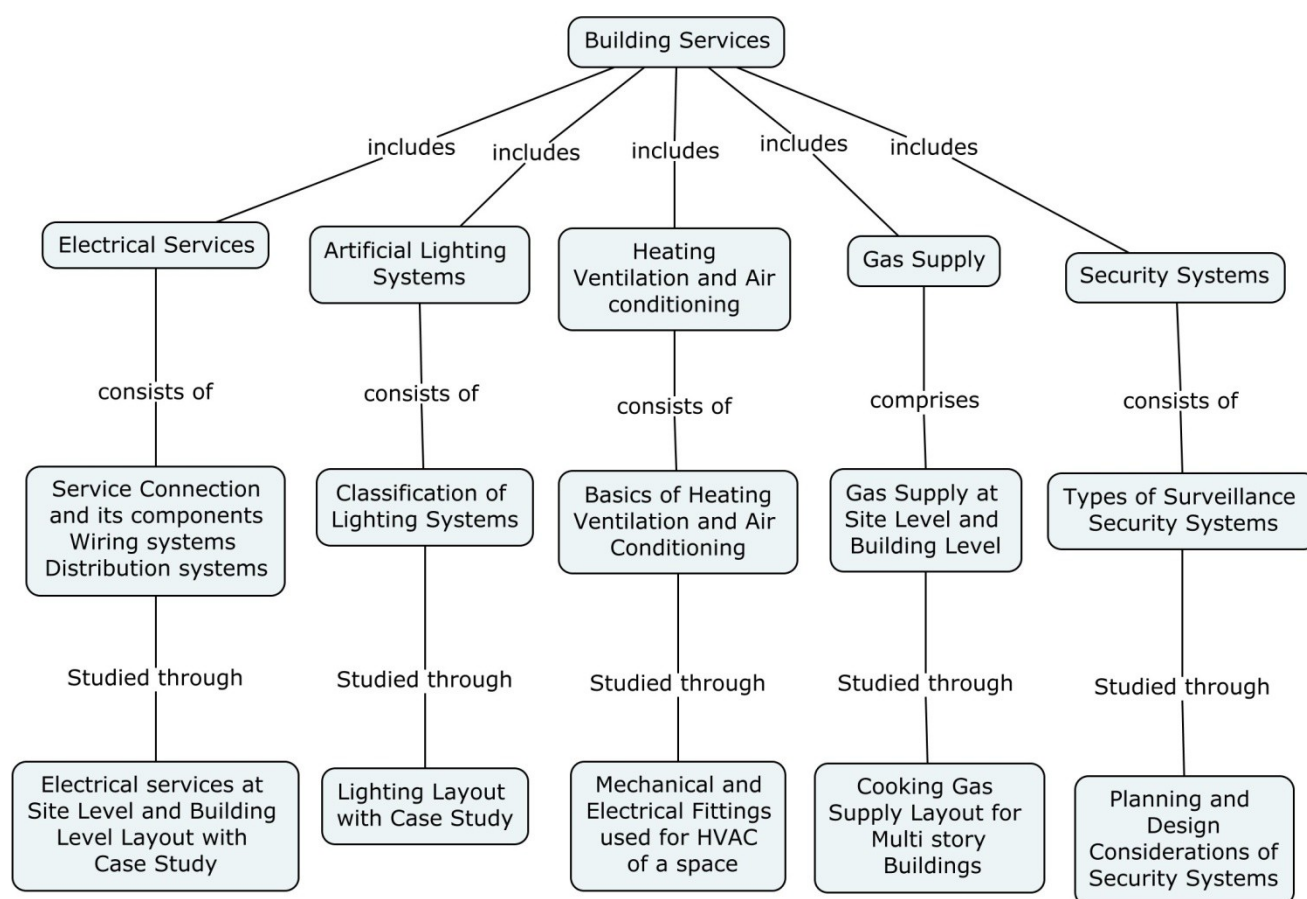
Course Outcome 3 (CO3):

1. Illustrate the types of lighting based on activity with neat labelled sketches.
2. List the Planning and Design Considerations of Lifts and stair cases as per NBC and IS Specifications & Recommendations in Multi-Storied Buildings.

Course Outcome 4 (CO4):

1. Analyze the relationship between colour and light through the theory of colour and light, colour rendering index and colour temperature.
2. Differentiate between the different types of wiring system used in a building.

Concept Map



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.Hopkinson and J.D.Kay, The Lighting of Buildings, Faber and Faber, London, 1969.

Course Contents and Lecture Schedule

Module No.	Topic	No. of lectures
1.	Electrical Services	10
1.1	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	4
1.2	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	3
1.3	Planning and Design Consideration of Electrical Service, Connection and Systems as per NBC and IS Specifications & Recommendations - Introduction to Electrical Layout with Case Study	3
2.	Artificial Lighting Systems	11
2.1	Visual tasks - factors affecting visual tasks- Luminous flux-candela-Solid angle illumination-Utilization factor-depreciation factor - Laws of illumination.	4
2.2	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	3
2.3	Classification of lighting based on activities, light sources and fixtures - Spectral energy distribution-luminous efficiency-	4

	colour temperature-colour rendering, Lighting for residential, commercial and institutional spaces	
3	Heating, Ventilation and Air Conditioning (HVAC)	8
3.1	Basics of HVAC - Introduction to Mechanical Ventilation - Study of Ventilation Systems in Kitchens, Toilets etc.	4
3.2	Basics of Air Conditioning - Types of Air Conditioning Systems - Introduction to the Mechanical and Electrical Fittings used for Heating, Ventilation and Air Conditioning of spaces.	4
4.	Gas Supply and Services	6
4.1	Cooking Gas Supply at Site Level and Building Level - Gas Supply Connection - Gas Bank - Planning and Design Consideration of Gas Connection and Systems as per NBC and IS Specifications & Recommendations	3
4.2	Introduction to Cooking Gas Supply Layout with Case Study.	3
5	Communication Lines, Telephone Lines & IT Networks and Security Systems	8
5.1	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	4
5.2	Planning and Design Considerations of Communication Lines, Telephone Lines & IT Networks and Security Systems.	4
	Total Hours	43

Course Designers

I.Chandramathy

S.Santhana Iyappa Sundararaj

M.Shwetha

cmarch@tce.edu

pothi@tce.edu

msaarch@tce.edu

	L	T	P	Cre dit
V				
Cat ego ry				
EFC	3	0	0	3

Preamble

Architecture being a multifaceted profession, it requires exposure to the essence of vernacular architecture to understand the architecture without architects. The understanding of the

principles of Vernacular Architecture can be used as a design tool for the contemporary buildings across various climatic zones.

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	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	M	-	-	M	M	M	M	L	L	M	M	-	-	-
CO26.	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
Evaluate	-	-
Create	-	-

Course Level Assessment Questions

Course Outcome 1 (CO1):

1. Which are the parts of TamilNadu that falls under Hinter land region and why.
2. What is the occupation of the Eastern tribes of the Nilgiri hills.
3. Describe Rezhi and Thalam spaces with relevant sketches.

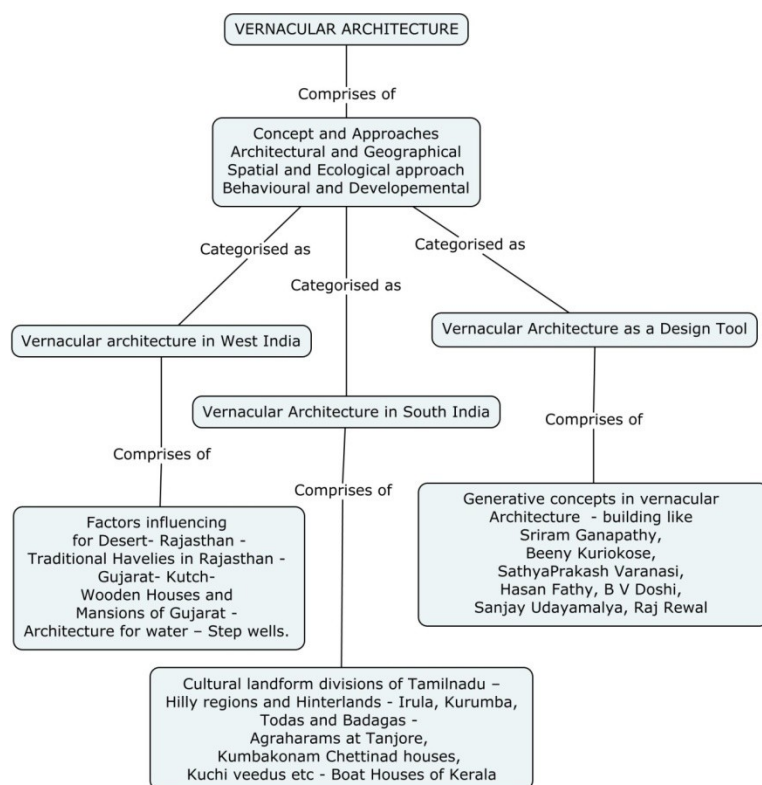
Course Outcome 2 (CO2):

1. Explain the role of Landform and Climate in Vernacular Architecture with the help of any one of the tribal settlements of the Nilgiris?
- 2 Identify 3con of an Agraharam house architecture and propose architectural solutions to overcome the flaws?

Course Outcome 3 (CO3):

1. Analyze the settlement pattern and vernacular architecture of the Badagan population.
2. Analyze in detail, the reflection of Occupation and Culture in the Architecture of the Chettinadu region.

Concept Map



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.

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 books.

Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures
1.	Vernacular Architecture and Concepts	7

Module No.	Topic	No. of Lectures
1.1	Definition of Vernacular Architecture. Importance and factors determining the Character of vernacular Architecture.	2
1.2	Various approaches and concepts used in the study of vernacular Architecture - Aesthetic, Anthropology.	2
1.3	Architectural and Geographical approach.	1
1.4	Spatial and Ecological approach.	1
1.5	Behavioral, Culturalistic, climatic and developmental approach.	1
2.	Vernacular architecture -North India	10
2.1	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.	2
2.2	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 .	2
2.4	Architecture for water – Step wells.	2
2.5	Exercises on Documentation of Vernacular building and understanding various spatial elements which evolved as a response to Climate.	4
3.	Vernacular Architecture - South India	16
3.1	Kerala -Nallukettu, Ettukettu houses and Boat Houses - Architectural significances, planning, materials and construction techniques, occupation, culture, traditions, value systems, climate and landform.	4
3.2	Karnataka- Gutthu and kodava houses - Architectural significances, planning, materials and construction techniques, occupation, culture, traditions, value systems, climate and landform.	4
3.3	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.	4
3.4	Exercises on documentation/sketches of a vernacular building and study the Evolution of Architectural Spaces – with response to their Culture	4
4.	Vernacular Architecture as a Design Tool	10
4.1	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	4
4.2	Concepts derived from vernacular buildings and used in modern buildings.	2
4.3	Case studies from International Vernacular Architecture.	4
TOTAL NO OF HOURS		43

Course Designers:

1 Dr. R Shanthi rsparch@tce.edu
. Priya

2	Prof. M Sindhuja	crissindhu@tce.edu	Cat	L	T	P	Cre	
.		ego					dit	
15ARFD0	HISTORY MEDIEVAL	OF	ry EFC**		2	1	0	3

Preamble

History is "the process of inquiry into the past of man in society" (E.H. Carr). History and Theory of Architecture are connected disciplines. History defines and illustrates the cultural context in which theories (scientific, artistic, architectural, philosophical) and architectural objects (cities, buildings, bridges, etc.) emerge.

This course, covering ancient built environments and landscapes aims to:

- Give the student a basic comprehension of the significant attitudes, philosophies, and theories of the periods under scrutiny and their relevance in the contemporary architectural fields of theory and practice.
- Explore the interrelation between architecture and the landscape (topography in its amplest definition) on which it rests, placing the character of physical form in its social-historical context.
- Develop a comprehension of the needs and aspirations of a given epoch as these were manifested in physical form, as well as to the reception of architectural ideas and buildings in such epoch and their impact on current thinking.

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	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
CO27.	S	S	L	L	M	M	-	M	S	-	-	S	L	L	-	-
CO28.	-	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
	1	
Remember	20	20
Understand	20	20
Apply	-	-
Analyse	60	60
Evaluate	-	-
Create	-	-

Course Level Assessment Questions**Course Outcome 1 (CO1):**

What the factors influencing the rise of Romanesque architecture.
 Draw the sketch of a pointed arch and name its parts.

Course Outcome 2 (CO2)

Outline the architectural character of Romanesque church forms.
 Give the reason for the rise of gothic architecture.
 What is the purpose of flying buttress?

Course Outcome 3 (CO3)

Mention few architectural features of renaissance architecture.

Explain the construction techniques of vaulting systems in gothic architecture.

Differentiate between a barrel vault and groin vault.

Course Outcome 4 (CO4)

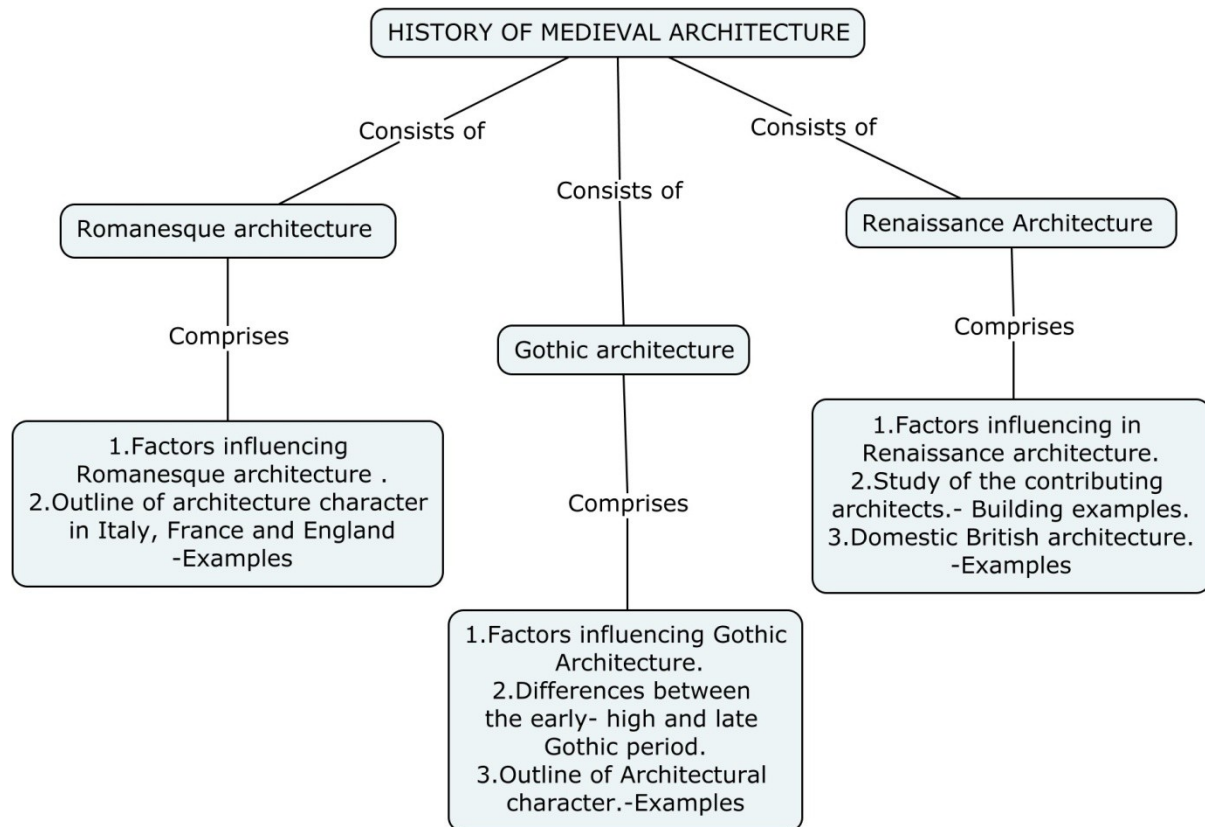
Critically analyse the influence of the regional variations with respect to construction techniques and choice of materials in a particular style of architecture during the medieval period with a relevant example.

Analyse the construction techniques involved in the construction of domes in the early renaissance period.

Analyse the structural systems of gothic times with relevant examples.

Describe the architectural characteristics of villa capra.

Concept Map



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.

Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures
1.	Romanesque architecture	9
1.1	Factors influencing Romanesque architecture in France and Italy, expansion of church forms and monasteries	3
1.2	Regional variations with respect to materials and construction techniques	3
1.3	Outline of architecture character in Italy, France and England -Examples: Pisa group, Italy; Abbaye aux Hommes, Caen; Tower of London.	3

Module No.	Topic	No. of Lectures
2	Gothic architecture:	14
2.1	Factors influencing Gothic Architecture in France, Italy and England- construction of domes and vault systems in churches	3
2.2	Regional variations with respect to materials and construction techniques- Main differences between the early- high and late Gothic period	3
2.3	Outline of Architectural character - Examples: Notre Dame, Paris.	2
2.4	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.	6
3	Renaissance Architecture.	20
3.1	Factors influencing in Renaissance architecture-The rise and spread of Renaissance	2
	Features of a typical Renaissance palace, eg. Palazzo Ricardi	2
3.2	Study of the contribution of the following architects: Brunelleschi, Michelangelo, Andrea Palladio, Example - St. Peter Rome, Villa capra in Vicenza,	6
3.3	French and English Renaissance - Introduction to Baroque architecture and its essence in interiors - Architectural character in the classical & Rococo period - Example – Chateau de Chambord, Louvre, Paris –	6
4	Domestic British architecture- Study of the works Sir Christopher Wren, & Inigo Jones, Example - St. Paul's Cathedral, London, Banqueting House, Whitehall.	4
	Total	43

Course Designers:

1	G.Balaji	gbarch@tce.edu
.		
2	S.Subhashini	ssarch@tce.edu
.	R.Snega	rsaarch@tce.edu
3		
.		

S	L	T	P	Credit
Cat ego ry				
PE	2	0	0	2

Preamble

This course is designed to understand the basic concepts of services in Highrise buildings which include service core, automation and optimization of all the services and equipment that provide services and manages the environment of the building concerned. It enhances the technical knowledge of Mechanical, electrical, plumbing and automation services in highrise buildings. The complexity involved in the safety and security aspects of highrise buildings is addressed.

Prerequisite

Nil

Course Outcomes

On the successful completion of the course,

- | | | |
|-------------|--|-----------------------|
| CO 1 | Understand the basic concepts of Services in High rise buildings, service core, energy management and automation of different services in highrise buildings | Remember & Understand |
| CO 2 | The students are exposed to services in vertical design and their applications of services in Architectural Design. | Apply |
| CO 3 | Analyze the relationship of service planning and evaluate highrise building with respect to the efficiency of its services. | 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
CO29.	-	-	-	-	-	-	-	-	S	-	-	-	-	M	-	M
CO30.	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
Evaluate	-	-
Create	-	-

Course Level Assessment Questions

Course Outcome 1 (CO1):

1. Define service core.
2. Explain the principles of services.

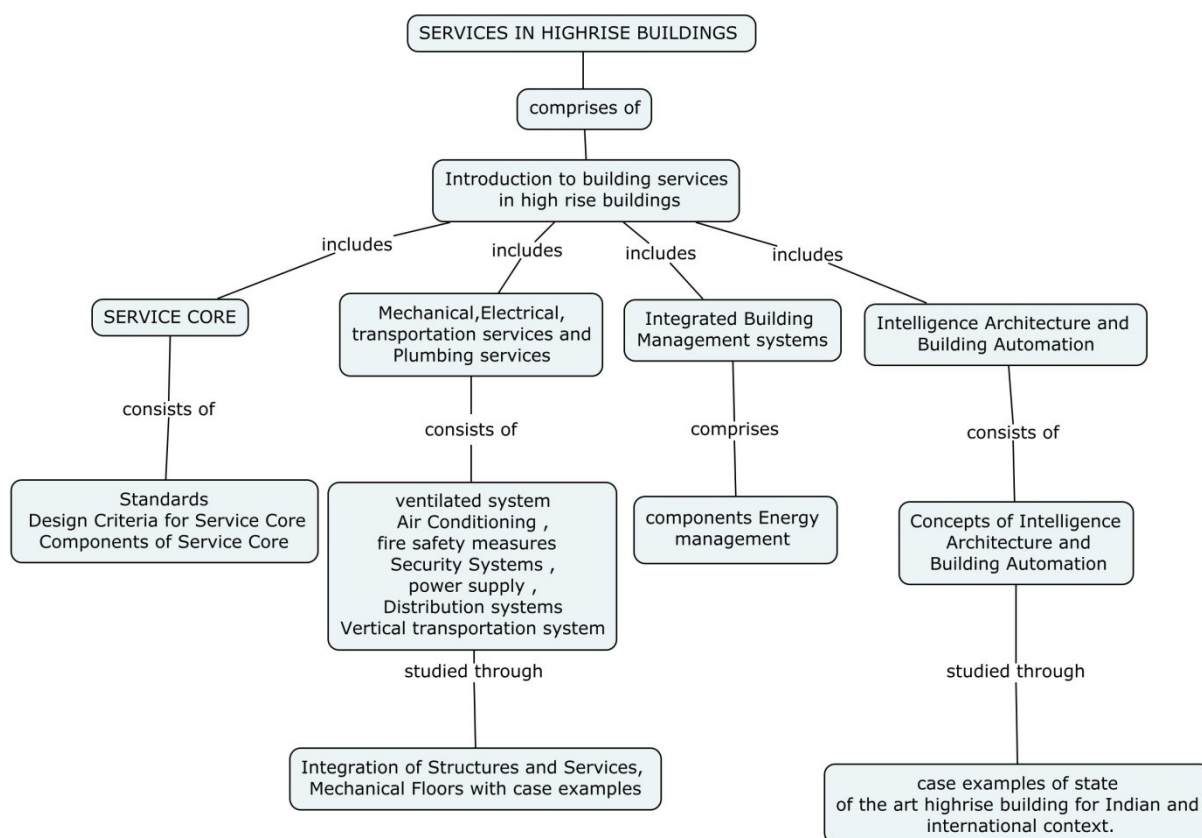
Course Outcome 2 (CO2)

1. Illustrate the role of fire fighting system in building management system.
2. Illustrate and explain automation services in high rise buildings.

Course Outcome 3 (CO3)

1. Analyse the vertical transportation in terms of services in a high rise buildings.

Concept Map



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

1. 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
5. Mechanical and Electrical Services for High Rise Buildings: Handbook by [Basem M. M.](#) (Author)

Reference Books

1. 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
Yahya Mohamad Yatim design and specification, Lambert Academic Publishing, 2011
4. Frank R. Dagostino, Mechanical and Electrical Systems in Construction and Architecture, Reston Publishing Company Inc., Reston, Virginia, 1978.
5. Ken Yeang, Ivor Richards, Bioclimatic Skyscrapers, Ellipsis, 1994.
6. Johann Eisele and Ellen Kloft, High-Rise Manual, Birkhäuser-Publishers for Architecture, 2003
7. Design and Application of Security/Fire Alarm system – Author: John E. Traister.

Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures
1.0	SERVICE CORE	5
1.1	Introduction to highrise building and its components: Indian Standards and Global Standards on High Rise Buildings - Introduction to services in high rise buildings.	1
1.2	Importance of Service Core Design - Design Criteria for Service Core, Components of Service Core, Various Service Core Configurations - Mechanical floor - tower parking systems.	2
1.3	Vertical and Horizontal Ducts for various services.	1
1.4	Chronology of High Rise Buildings and Skyscrapers	1

Module No.	Topic	No. of Lectures
2.0	VARIOUS SERVICE INSTALLATION IN HIGHRISE BUILDINGS	15
2.1	Mechanical services	5
	Naturally and Mechanically assisted Ventilation Systems for high rise buildings.	1
	Air Conditioning Systems for Multi-Zone, Multi-Storey Buildings.	1
	Designing fire safety measures in high rise buildings; Passive Fire Safety Standards for high rise buildings as per National Building Code of India.	1
	Planning and Design of Fire Detection, Fire Alarm Systems and fire Compartmentalization in structure.	1
	Security Systems at site level & building level: Perimeter protection & Access Control	1
2.2	Electrical and transportation services	3
	Planning and Location of Electrical Rooms and power supply Distribution systems-Power Back-Up Systems.	1
	Passive and Active Day Lighting Systems-Glass and Glazing system for natural lighting.	1
	Vertical transportation system-Planning and Designing of Elevator Systems and Services – Express & Local Elevators, Sky lobbies etc Escalators and Capsule elevators – Stairways & Ramps	1
2.3	Plumbing services	7
	Types of Water Storage and Distribution Systems in high rise buildings.	1
	Types of Sewage Collection Systems in high rise buildings-Standards of Sanitary Services in high rise buildings.	2
	Refuse Collection and Disposal-. Methods and types including solid waste collection and disposal.	2
2.4	Study on Mechanical Floors with case examples	2
3.0	Integrated Building Management systems	4
3.1	Introduction to Integrated Building Management systems(IBMS) various components of IBMS,List of utility, safety and security systems in general; Types of utility, safety and security systems and its installation. Energy management systems and building controls through IBMS.	2
3.2	Study on Works of Ken Yeang,Norman Foster	2
4.0	Intelligence Architecture and Building Automation	1
4.1	Concepts of Intelligence Architecture and Building Automation	1
5.0	Case Example	3
5.1	minimum three case examples of state of the art highrise building for Indian and international context.	3

Module No.	Topic	No. of Lectures
	TOTAL NO OF HOURS	28

Course Designers:

AR.S.SANTHANA IYYAPA
 SUNDARARAJ (services head)
 AR.S.THANGA LAVANYA
 AR.K.MADHIVADHANAI

pothi@tce.edu

lavanya_arch@tce.edu
kmarch@tce.edu

15ARFH0	HISTORY OF MODERN ARCHITECTURE- II	Categor y EFC	L 3	T 0	P 0	Credit 3
---------	------------------------------------	---------------------	--------	--------	--------	-------------

Preamble

The critical re-examination of modern architecture of the 20th Century led to Critical Regionalism. It is an approach in architecture that strives to counter lack of identity in Modern Architecture by utilizing the building's geographical context. The study of critical regionalism enables the student to understand the responses of various architects around the world to mediate the spectrum between universal civilization and the particularities of place. Similarly in the architecture of Post independence India the centre of attention shifted from religion and royal concerns to the common man, his environment and needs.

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	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
CO31.	-	S	S	-	M	L	-	-	L	-	M	M	-	-	-	-
CO32.	-	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
Apply	0	0
Analyse	30	30
Evaluate	30	30
Create	0	0

Course Level Assessment Questions

Course Outcome 1 (CO1):

1. Define the term “Critical Regionalism “.
2. List the various building construction techniques in the visitor centre of Auroville.

Course Outcome 2 (CO2)

1. Discuss about “Brise Soleil “.
2. Describe the vernacular concept in the design of Vidhan Bhavan , Bhopal

Course Outcome 3 (CO3)

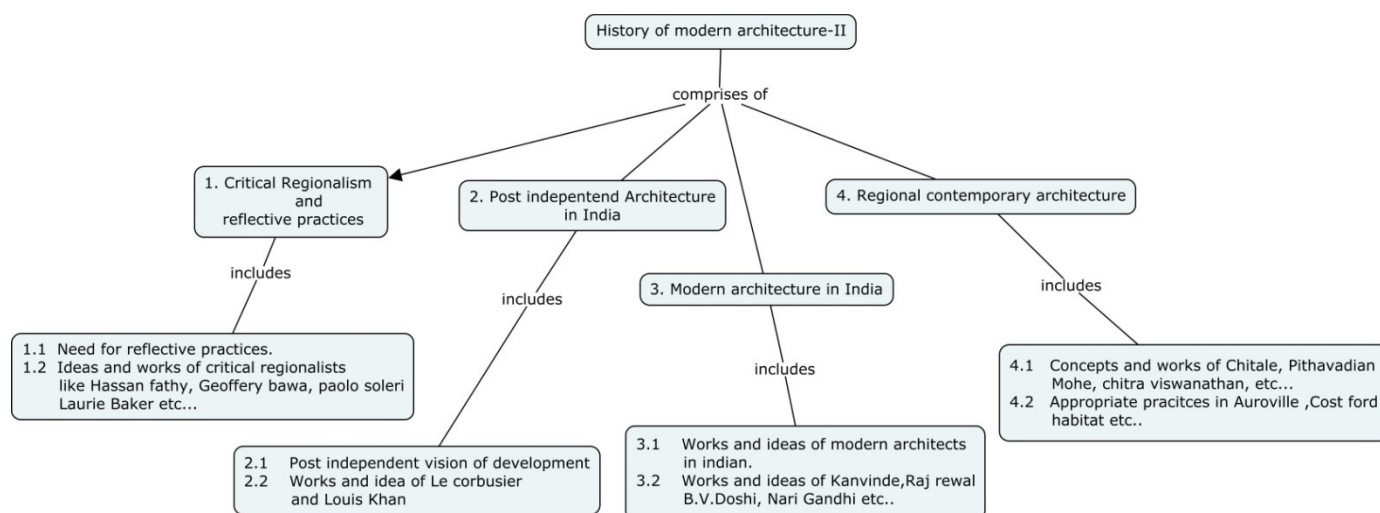
1. Analyze the proposal of Palao Soleri for a sustainable settlement , supporting with suitable sketches.
2. Analyze the character of spatial qualities achieved by Louis I Khan in the design of Indian Institute Of Management, Ahmadabad.

Course Outcome 4 (CO4)

1. Evaluate the role of Auroville in promoting a sustainable development with reference to energy efficient architecture.
2. Evaluate the various cost effective techniques practiced by COST FORD , with neat sketches and examples.

|

Concept Map



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 , Satyaprakash Varanasi - 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

Course Contents and Lecture Schedule

Module No.	Topic	No. of lectures
1	Critical Regionalism and reflective practices	9
1.1	The need of reflective practices – culture, climate local resources	1
1.2	Ideas and works of Hassan Fathy, Geoffrey Bawa and Alvar Aalto	4
1.3	Ideas and works of Paolo Soleri, Tadao Ando, Laurie Baker	4
2	Post independent Architecture in India	4
2.1	Implications of freedom – Post independence visions of development. Works of Le Corbusier and Louis Kahn in India	2
2.2	Works and ideas of Habib Rahman.	2
3	Modern architecture in India	16
3.1	Works and ideas of Kanvinde, Raje	4
3.2	Works and ideas of B.V. Doshi, Charles Correa	4
3.3	Works and ideas of Nari Gandhi, Raj Rewal	4
3.4	Works and ideas of Christopher Beninger, Stein, Hasmukh Patel.	4
4	Regional Contemporary architecture	14
4.1	Concepts and works Chitale, Pithavadian, CNR	4
4.2	Concepts and works – Jaism, Sanjay Mohe , Satyaprakash Varanasi	4
4.3	- Concepts and works – Chithra Viswanath, Benny Kuriakose, Anupama Kundoo	4
4.4	Appropriate practices –works in Auroville, COSTFORD, Habitat etc.	2
	TOTAL	43
	Schedule test -1	2
	Total Hours	45

Course Designers

P.Vivek
S.A.V.E Elanchezian
M.Shwetha

pvkarch@tce.edu
savearch@tce.edu
msaarch@tce.edu

		Cat ego ry	L	T	P	Cre dit
15ARFK1	ERGONOMICS	EFC	2	0	2	3

Preamble

To familiarize the students with the basic concepts of universal design, anthropometric and ergonomic standards for all ages, making them understand the importance of efficiency in their working environment. Also, to improve the observation skills of a student in relation to a built environment.

Prerequisite

Nil

Course Outcomes

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

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

CO 2 : Studying and applying the concepts of Universal Design & 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

CO	P	P	P	P	P	P	P	P	P	P	PO	PO	PO	PO	PO	PO	PO
----	---	---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----

s	O1	O2	O3	O4	O5	O6	O7	O8	O9	10	11	12	13	14	15	16
CO33.	S	L	M	L	S	L	L	L	M	L	L	L	L	L	L	L
CO34.	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	-	-

Course Level Assessment Questions

Course Outcome 1 (CO1):

1. What is Ergonomics? How is it different from Anthropometry?
2. What are the basic concepts of both Natural and Artificial lighting and ventilation systems?
3. What is an Ergonomic Check list?

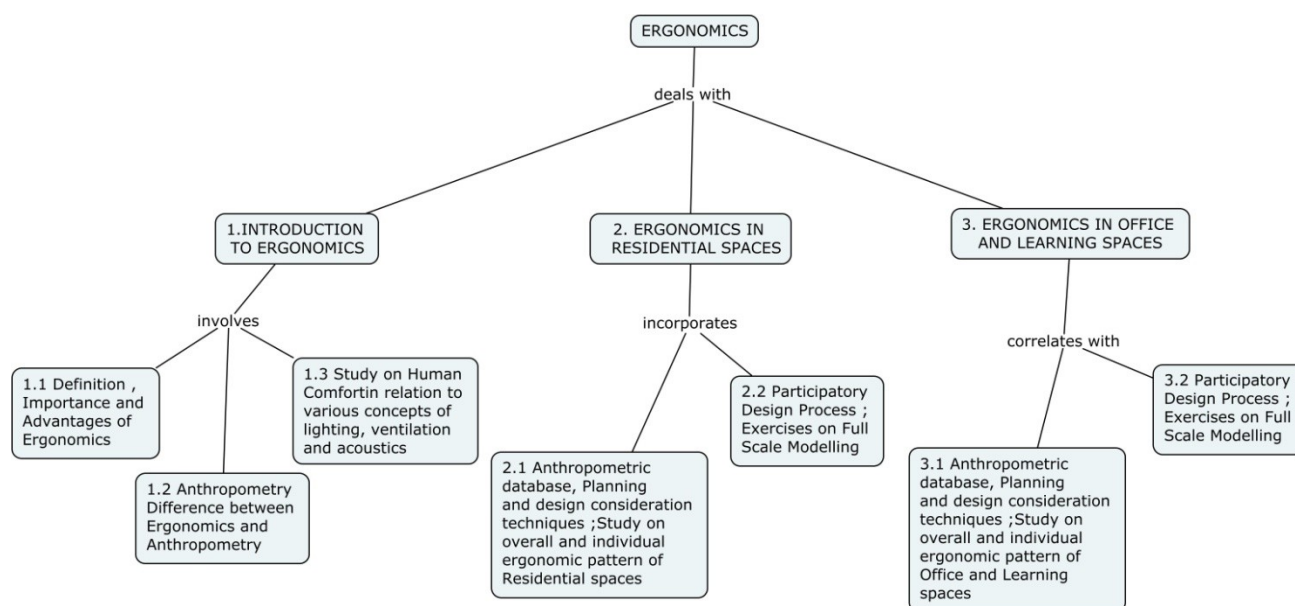
Course Outcome 2 (CO2)

- What are the planning and design consideration techniques in Residential spaces?
- What are the planning and design consideration techniques in Office spaces?
- What are the planning and design consideration techniques in Learning spaces?

Course Outcome 3 (CO3)

1. List out the anthropometric postures, motions and also the individual and overall ergonomic pattern involved in Kitchen.
2. List out the anthropometric postures, motions and also the individual and overall ergonomic pattern involved in a Workstation.
3. List out the anthropometric postures, motions and also the individual and overall ergonomic pattern involved in Toilet.

Concept Map



Syllabus

Introduction to Ergonomics-Definition , Importance and Advantages of Ergonomics- Introduction to Universal Design- Principles of Universal Design- Anthropometry – Definition , Anthropometric Data for Users of All Ages , 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 - Introduction to Participatory Design Techniques - Introduction to Full Scale Simulation Modelling- Methods and Tools - Introduction to Computer Aided Modelling- Methods and Tools- Exercises

-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., - Public Toilets - 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

Course Contents and Lecture Schedule

S.No.	Topic	No. of lectures
1	Introduction to Ergonomics	8
1.1	Definition , Importance and Advantages of Ergonomics-Introduction to Universal Design- Principles of Universal Design	2
1.2	Anthropometry – Definition , Anthropometric Data for Users of All Ages , Common Work Place Postures and Motion, Difference between Ergonomics and Anthropometry	2
1.3	A study on Human Comfort in relation to basic Concepts of Day Lighting, Artificial Lighting, Natural Ventilation , Mechanical Ventilation and Acoustics	2
1.4	Introduction to Ergonomics, Checklist – Discomfort Survey Checklist – Human Comfort and Good Practices - Introduction to Participatory Design Techniques - Introduction to Full Scale Simulation Modelling- Methods and Tools - Introduction to Computer Aided Modelling-Methods and Tools- Exercises	2
2	Ergonomics in Residential Spaces	22
2.1	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	8
2.2	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	14
3	Ergonomics in Office Spaces & Learning spaces	22
3.1	Anthropometric database, Planning and design consideration techniques in Work Stations in office, Classrooms , Laboratory ,Library, Toilets etc., -Public Toilets - Study on overall and individual ergonomic pattern in the above spaces, the anthropometric postures and motions	8
3.2	Exercises on above spaces to understand the ergonomics	14
TOTAL NO OF HOURS		56

Course Designers:

Ar. S.Santhana Iyyappa Sundararaj	- pothi@tce.edu	Category	L	T	P	Credit
Ar. S.Sangamithra	- ssaarch@tce.edu					
		EFC	2	0	2	3

15ARFM0 WORKING DRAWING FOR BUILDINGS

Preamble

This course is introduced to gain in-depth knowledge about the Architectural Working Drawings and details for execution of the building on site and to understand the components for statutory approvals. It familiarizes the student to read, understand, interpret and produce Architectural drawings in detail.

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	Remember and Apply

an Architectural project.

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.	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

Course Level Assessment Questions

Course Outcome 1 (CO1):

1. Elaborate the need of Working Drawings and explain the information expected, various components and functions through set of drawings.
2. Explain the structure of Working Drawing with the plan of work in consideration with various users of drawings.

Course Outcome 2 (CO2):

1. Brief Drawing conventions to be understood and applied while reading set of Working Drawings, explain by applying it in a simple residential / commercial plan with professional representation.

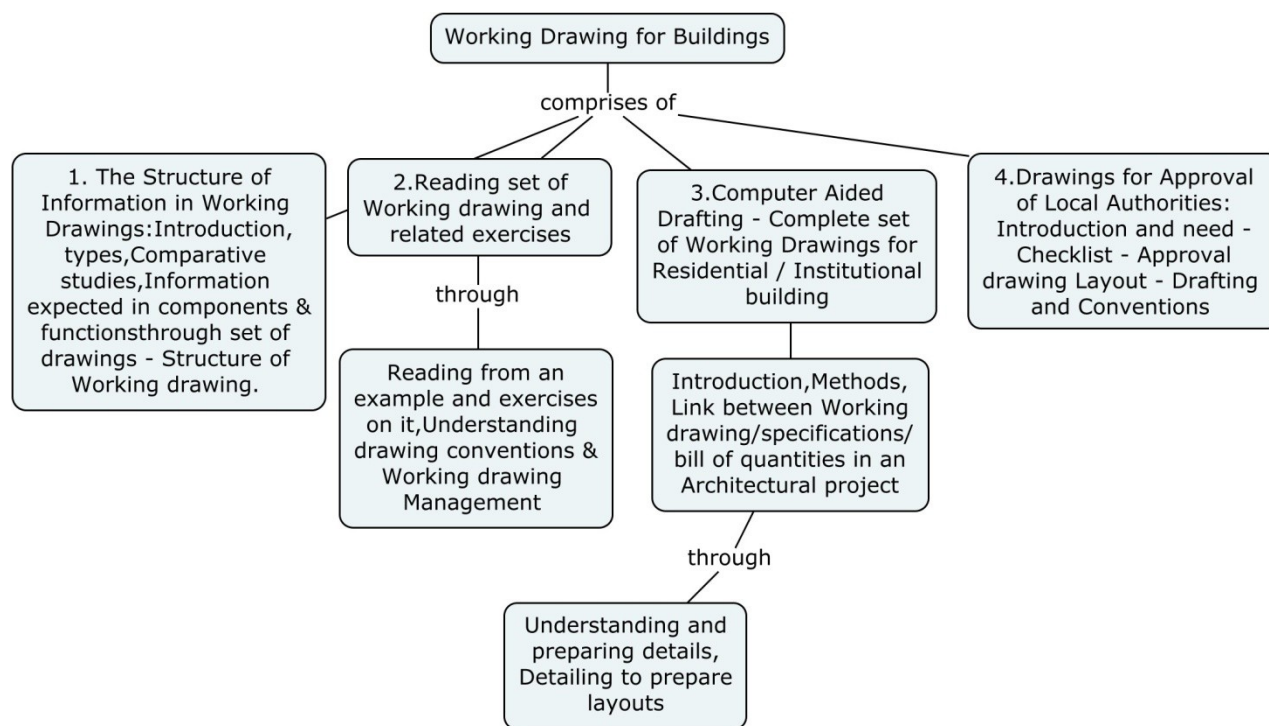
Course Outcome 3 (CO3):

1. Broaden Working Drawing Management process.
2. Abbreviate BIM and elaborate its comprehensive usage in today's Architectural set of Working Drawings preparation.

Course Outcome 4 (CO4):

1. Elaborate the need and relevance of Approval Drawings and the checklist of information expected, explain it with an example of residential / commercial building's approval drawing of local authorities such as CMDA, Municipality, etc.

Concept Map



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 - Correlation 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, Inc., 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.

Course Contents and Lecture Schedule

S.N o	Topic	No. of lectures
1	The Structure of Information in Working Drawings	2
1.1	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.	1
1.2	The plan of work, various users of drawings – Structure of working drawing, primary, secondary structuring.	1
2	Reading set of Working Drawings and related exercises	20
2.1	Reading of working drawing - Co-relation and cross-referencing in various technical projections like plans, elevations, sections, detailing etc.	2
2.1.1	<u>Exercise 1:</u> – 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.	16
2.1.2	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).	1
2.1.3	Working drawing management: Planning the working drawing set – Drawing programming, Drawing register, Status coding, Issuing drawings, Comprehending drawings of other consultants.	1
3	Computer Aided Drafting – Complete set of working drawings for residential / institutional building	26
3.1	Introduction to conventional method of preparing working drawings. Block libraries, Reference edit, drawing overlay methods, Model exchange method. Explaining the link between working drawings / specifications / bill of	2

	quantities in an Architectural project.	
3.2	Exercise 2: Understanding and preparing the details (Tutorial). Detailing for walls, roof and flooring, detailing of facades and details of carpentry, plumbing layouts, and electrical layouts.	4
3.3	Initial Drafting.	10
3.4	Final Drafting and lettering.	10
4	Drawings for approval of local authorities	10
4.1	Introduction to need and relevance of approval drawings – Checklist as a guide for information in a approval drawing.	2
4.2	Exercise 4: Approval Drawing Layout – Initial Drafting (Tutorial) Final Drafting, Lettering and Conventions	8
	TOTAL NO OF HOURS	58

Course Designers:**15ARFN0****3D MODELLING**

Category L.T.P. Credit

.Subashini.S

EFC 22.62.62

2.Sangamithra.S

3.Vigneshwar.K.K

ssarch@tce.edussaarch@tce.eduvigneshwararch@tce.edu[u](#)**Preamble**

This course will enable students to develop 3 Dimensional rendition of an architectural drawing exploring forms of varying dimensions and volumes through massing.

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	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12	PO13	PO14	PO15	PO16
CO35.	S	-	-	M	L	-	-	-	-	-	-	L	-	-	-	-
CO36.	M	M	-	M	L	-	-	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
Analyse	-	-
Evaluate	-	-
Create	40	40

Course Level Assessment Questions

Course Outcome 1 (CO1):

Illustrate form making with bars with near sketches.
What are synclastic and anticlastic surfaces?

Course Outcome 2 (CO2):

1. Design massing for a 4 storey building facing east situated in a warm humid climate.
2. Design massing for a residence of area 1200 sq. Ft facing south located in a high rainfall region

Course Outcome 3 (CO3)

1. Function of a particular command, etc.
2. Explain few icons from the software interface.

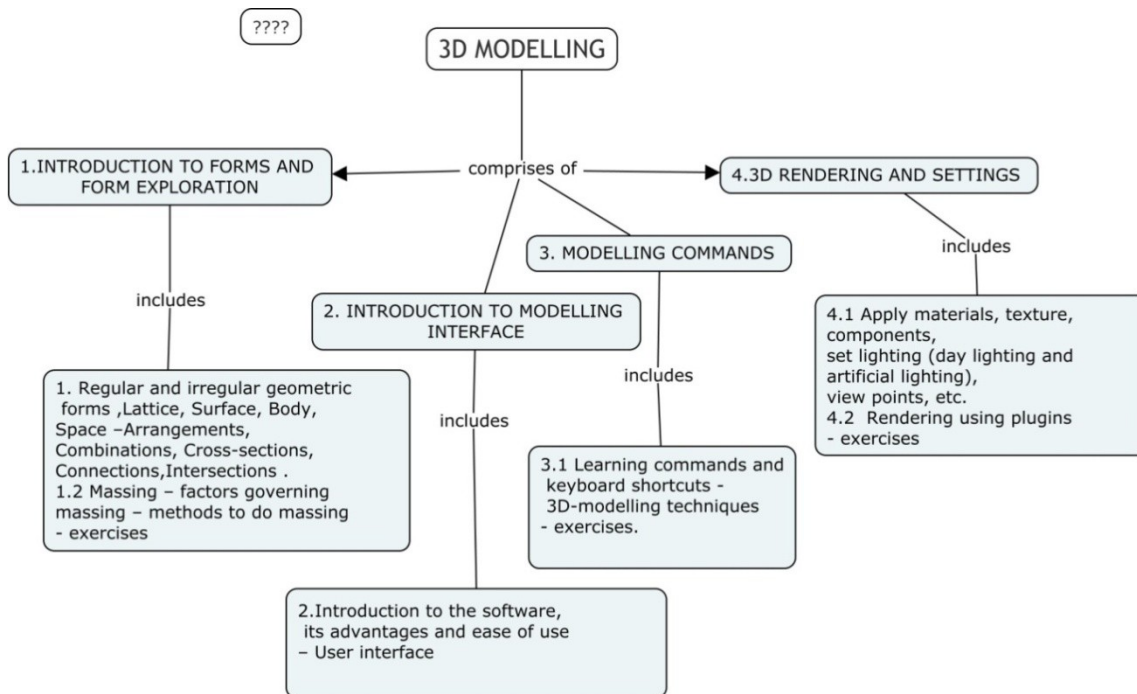
Course Outcome 4 (CO4)

1. Build a 3D model with the floor plan
2. Build a sculpture using synclastic and anticlastic shapes

Course Outcome 5 (CO5)

1. Render the model generated with the floor plan. Apply materials and texture to the elements in the model.
2. Generate views of a 3D model after applying materials, texture, components, etc.

Concept Map



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.

Course Contents and Lecture Schedule

S. No.	Topic	No. of Lectures
1	INTRODUCTION TO FORMS AND FORM EXPLORATION	10
1.1	Regular and irregular geometric forms – Arrangement and combinations.	2
1.2	Lattice, Surface, Body, Space – Arrangements, Combinations, Cross-sections, Connections, Intersections – to be explained with building examples.	4
1.3	Massing – factors governing massing – methods to do massing – exercises involving manual sketching to understand massing.	4
2	INTRODUCTION TO MODELLING INTERFACE	6
2.1	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	4
2.2	- Transparent overlays, hatching utilities, line type, line weight and colour. Multiline, Polyline, etc. Styles, blocks and symbol library.	2
3	MODELLING COMMANDS	28
3.1	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	4
3.2	Exercise to transform an architectural drawing into 3D model.	24
4	3D RENDERING AND SETTINGS	14
4.1	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,	6

S. No.	Topic	No. of Lectures
	understanding material mapping, environment setting and image filling.	
4.2	Exercise to identify and visualize a building using the above said utilities.	8
Total Working Hours		58

Course Designers:

1	Prof. P. Vivek	pvkarch@tce.edu
2	Prof. M. Dipika	ardipika@tce.edu
3	Prof. R. Snega	rsaarch@tce.edu

15ARFP
0

INTERIOR DESIGN AND PRACTICES

Category	L	T	P	Credit
EFC	2	0	2	3

Preamble

Architecture is about living spaces and Interior design addresses several issues in the living space. Interiors have to be treated distinctly based on the function, activity, gender, age etc. This course is designed to help the student to design interiors which would be responsive to the user and activity.

Prerequisite

Nil

Course Outcomes

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

CO 1	Retain knowledge about various factors that influence Interior detailing.	Remember
CO 2	Understand the functional and aesthetic aspects of architecture.	Understand
CO 3	Relate the principles of visual and spatial composition.	Apply
CO 4	Analyse the context and requirements for detailing the interiors.	Analyze
CO 5	Comprehend the architect's role in an interior design process.	Evaluate

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.	S	-	M	-	-	-	-	M	-	-	-	-	-	-	-	-
CO2.	S	-	M	-	-	-	-	S	-	M	-	-	-	M	-	-
CO3.	S	L	M	L	M	-	-	M	-	L	-	-	-	S	-	-
CO4.	S	L	L	L	L	-	-	M	-	L	-	-	-	S	-	-
CO5.	S	L	L	L	L	-	-	M	-	L	-	-	-	S	-	-

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	20	20
Evaluate	10	10
Create	0	0

Course Level Assessment Questions**Course Outcome 1 (CO1):**

1. List the advantages of using granite for flooring.
2. Name any two upholstery materials.

Course Outcome 2 (CO2):

1. What type of lighting is best suited for a cafe ?
2. Write about the advantages of Roof garden.

Course Outcome 3 (CO3):

1. Outline the Elements of Interior Design and its application in Interior Design.
2. Outline the elements of Interiorscaping and its application in Interior Design

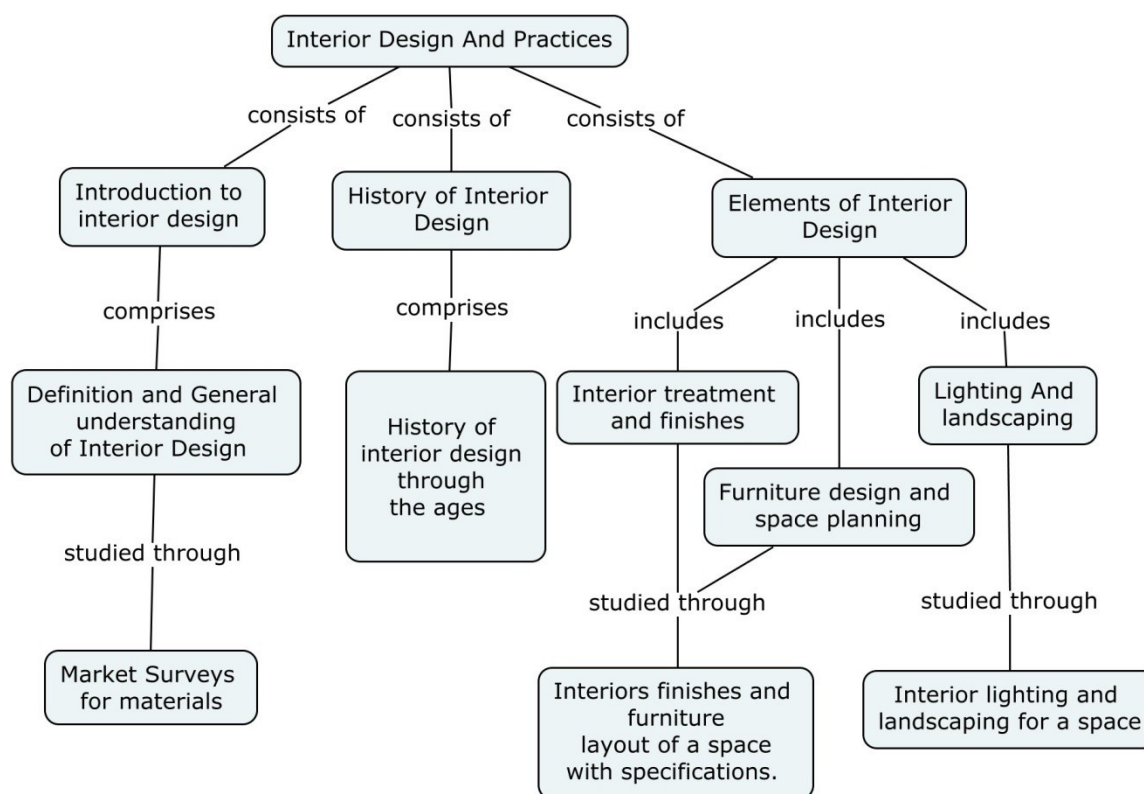
Course Outcome 3 (CO4):

1. Analyze the activity pattern in a design studio of size 40'x 60' and design the furniture layout. Student capacity -30
2. Analyze the importance of furniture design in relation to spaces and human comfort with examples.

Course Outcome 4 (CO5):

1. Design a TV cabinet for a living room. Specify the materials and give construction details.
2. Design a wall mural as a background for the reception area of a five star hotel lobby of size 10m x 10m and height 4m, applying the principles of interior design. Assume the necessary details and size of the mural. Specify and illustrate the materials and concept of your mural.

Concept Map



Syllabus

Introduction to interior design – Definition of interior design - General understanding of Interior Design and integration with architecture. Role of Interior Designer in a building project - vocabulary of interior design in terms of principles and elements - Introduction to the design of interior spaces as related to typology and function, themes and concepts. **History of Interior Design** Brief study of the history of interior design through the ages relating to historical context, design movements and ideas etc - overview of folk arts and crafts of India with reference to their role in interior decoration. **Elements of Interior Design-Interior treatment and finishes-** Treatments of components like floors, ceilings, walls, staircases, openings, interior service elements, incidental elements etc. in terms of their choice and design related to materials, methods of construction, colour, texture, etc., based on functional, aesthetic and psychological criteria. **Elements of Interior Design –Furniture design and space planning.** Introduction to ergonomics- Study of relationship of furniture to spaces and human movements furniture design as related to human comfort, function, materials and methods of construction, changing trends and lifestyles, innovations and design ideas. Types of furniture – Built in furniture – Movable furniture – Systems furniture – Specially Designed furniture – Readymade furniture – Modular, Knockdown & Economy Furniture. Traffic pattern and furniture layout for residence, commercial and office areas **Elements of Interior Design- Lighting & landscaping.** Study of interior lighting - different types of lighting - types of lighting fixtures- their effects and suitability in different contexts. Interior landscaping elements- Rock, Plants & Water-Properties and

Applications-Roof Gardens-Balcony Gardens-Vertical Gardens- Design Considerations for services and Interiorscaping in Projects such as Residences, Offices, Commercial Complexes, Hotels etc.

Text Books

1. Francis D.K.Ching, Interior Design Illustrated, V.N.R. Pub. NY 1987
2. Joseph DeChiara, Julius Panero, Martin Zelnik, "Time Saver's Standards for Interior Design", McGraw-Hill Professional 2001.
3. John F.Pile, "Interior Design", John Wiley and Sons 2004

Reference Books

1. Dr.Saranya Doshi, Editor, "The Impulse to adorn - Studies in traditional Indian Architecture", Marg Publications 1982.
2. Sam. F. Miller, Design process – a primer for Architectural and Interior Design, Van Nostrand Reinhold.
3. Gary Gordon, Interior lighting for designers, John Wiley & Sons Inc. 5. Harold Linton, Colour in Architecture, McGraw Hill

Course Contents and Lecture Schedule

Module No.	Topic	No. of lectures
1	Introduction to interior design	16
1.1	Definition of interior design - General understanding of Interior Design and integration with architecture. - Role of Interior Designer in a building project.	3
1.2	Vocabulary of interior design in terms of principles and elements - Introduction to the design of interior spaces as related to typology and function, themes and concepts.	3
1.3	Exercise: 1 Market Surveys To Be Conducted To Find Out The Commercial And Technical Names, Sizes, Wastages, BIS And Codes For Materials, Testing, Fabrication, Commercial Methods Of Pricing, Billing Etc. Comparative Analysis Report To Be Submitted.	10
2	History of Interior Design	8
2.1	Brief study of the history of interior design through the ages relating to historical context, design movements and ideas etc.	4
2.2	Overview of folk arts and crafts of India with reference to their role in interior decoration.	4
3	Elements of Interior Design-Interior treatment and finishes	4
3.1	Treatments of components like floors, ceilings, walls, staircases, openings, interior service elements, incidental elements etc. in terms of their choice and design related to materials, methods of construction, colour, texture, etc., based on functional, aesthetic and psychological criteria.	4
4	Elements of Interior Design –Furniture design and space planning	16
4.1	Introduction to ergonomics- Study of relationship of furniture to spaces and human movements furniture design as related to human comfort, function, materials and methods of construction, changing trends and lifestyles, innovations and design ideas.	4
4.2	Types of furniture – Built in furniture – Movable furniture – Systems furniture – Specially Designed furniture – Readymade furniture – Modular, Knockdown & Economy Furniture. Traffic pattern and furniture layout for residence, commercial and office areas.	4
4.3	Exercise: 2 Design the interiors finishes and furniture layout of a small space and give specifications for the Enclosing Elements and Finishes. Suggest the trade names of the materials - Estimation and Cost Analysis.	8
5	Elements of Interior Design- Lighting & landscaping	16
5.1	Study of interior lighting - different types of lighting - types of lighting fixtures- their effects and suitability in different contexts.	4
5.2	Interior landscaping elements- Rock, Plants & Water-Properties and Applications-Roof Gardens-Balcony Gardens-Vertical Gardens- case studies of interiors in Residences, Offices, Commercial Complexes, Hotels etc.	4
5.3	Exercises :3 Design interior lighting and landscaping for the given project.	8
Total Hours		58

Course Designers

S.Subashini

ssarch@tce.edu

S.Sangamithra

ssaarchi@tce.edu

M.Shwetha

msaarch@tce.edu

15ARFQ0

BUILDING SCIENCE I

Cat ego ry	L	T	P	Cre dit
EFC	3	0	0	3

Preamble

Building science is the collection of scientific knowledge and experience that focuses on the analysis and control of the physical phenomena affecting buildings and architecture. Building science I focus architectural design as a response to climate. It introduces the detailed process of climatic design to design various elements of a building to counter the constraints of climate – walls, roofs, and opening, shading devices as well as to blend with it to provide comfort conditions of living.

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
Apply

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

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
CO37	S				S			S		
CO38	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

Course Level Assessment Questions

Course Outcome 1 (CO1):

1. List few building materials for each climatic zone of India (As per NBC) that can counteract to the climate.
2. Define Time lag, decremental factor and U value.

Course Outcome 2 (CO2):

1. Illustrate the heat exchange process through buildings.
2. Explain the appropriate fenestration design, orientation, size and configuration.

Course Outcome 3 (CO3)

1. Illustrate the application of suitable passive design heating and cooling strategies for different climatic conditions.

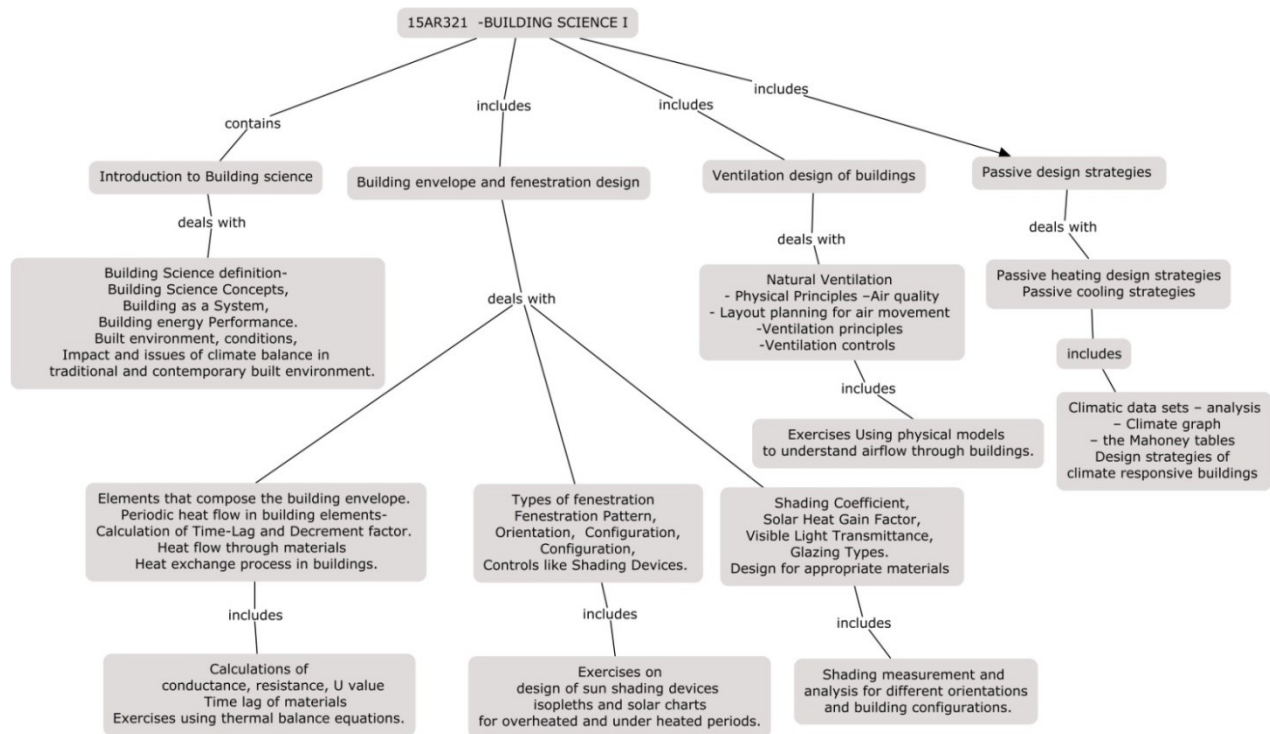
Course Outcome 4 (CO4)

1. Analyse the layout of buildings for optimum air circulation with suitable case examples.
2. Analyse various ventilation controls suiting different context.

Course Outcome 5 (CO5)

1. Evaluate the properties of different building materials for the envelop and fenestration of the buildings that help in attaining the required comfort zone.

Concept Map



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

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

Reference books

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

Course Contents and Lecture Schedule

S.No.	Topic	No of lectures
1	Introduction to Building science	
1.1	Building Science definition- Building Science Concepts, Building as a System, Building energy Performance.	3
1.2	Built environment, conditions, impact and issues of climate balance in traditional and contemporary built environment.	3
2	Building envelope and fenestration design	
2.1	Elements that compose the building envelope. Periodic heat flow in building elements- Calculation of Time-Lag and Decrement factor.	3
2.2	Heat flow through materials and its application in selection of appropriate materials for walls & roof. Heat exchange process in buildings.	
	<i>Calculations of conductance, resistance, U value and Time lag of materials - application in selection of building materials. Exercises using thermal balance equations.</i>	
2.3	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.	1
	<i>Exercises on design of sun shading devices for different orientations using shadow angle protractors, isopleths and solar charts for overheated and under heated periods.</i>	
2.4	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.	
3.	Ventilation design of buildings	2
3.1	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.	1
	<i>Exercises Using physical models to understand airflow through buildings.</i>	2
4	Passive design strategies	
4.1	Passive heating design strategies - heat loss control - passive solar heating - windows - glazed walls - roof space collectors - transitional spaces - glazed atriums	4
4.2	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.	
4.3	Climatic data sets – analysis – Climate graph– the Mahoney tables & its recommended specification as Design strategies of climate responsive buildings with different case studies.	4
TOTAL NUMBER OF PERIODS		40

Course Designers:

- | | |
|-------------------|-----------------|
| 4. R.ShanthiPriya | rsparch@tce.edu |
| 5. A.Madhumathi | madhu@tce.edu |
| 6. J.Vishnu Priya | jvaarch@tce.edu |

L T P Cre
dit

B

Cat
ego
ry
CFC 2 0 2 3

Preamble

The students will be exposed to various building materials and understands the properties and building applications. This learning will make the student proficient in various construction principles and hands-on-experience through preparation of drawings, market survey and site visits etc. This course involves the study of properties, applications and uses of smart materials, various building finishing and treatment. The basic knowledge of construction techniques and applications of building movement system. The learning will expose students to scientific principles and hands-on experience through preparation of drawings, model making, and site visits etc.

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	P O1	P O2	P O3	P O4	P O5	P O6	P O7	P O8	P O9	PO 10	PO 11	PO 12	PO 13	PO 14	PO 15	PO 16
CO3.	M	-	-	-	-	-	-	M	M	-	-	-	M	-	-	-
CO4.	M	-	-	-	-	-	-	S	-	-	-	-	-	-	-	-
CO 3.	-	-	-	-	-	-	-	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
Evaluate	-	-
Create	-	-

Course Level Assessment Questions**Course Outcome 1 (CO1):**

1. Give the various ingredients of paint?
2. Differentiate between damp and water proofing.
3. Name the various materials used for thermal insulation.
4. List two basic condition for sound insulation..

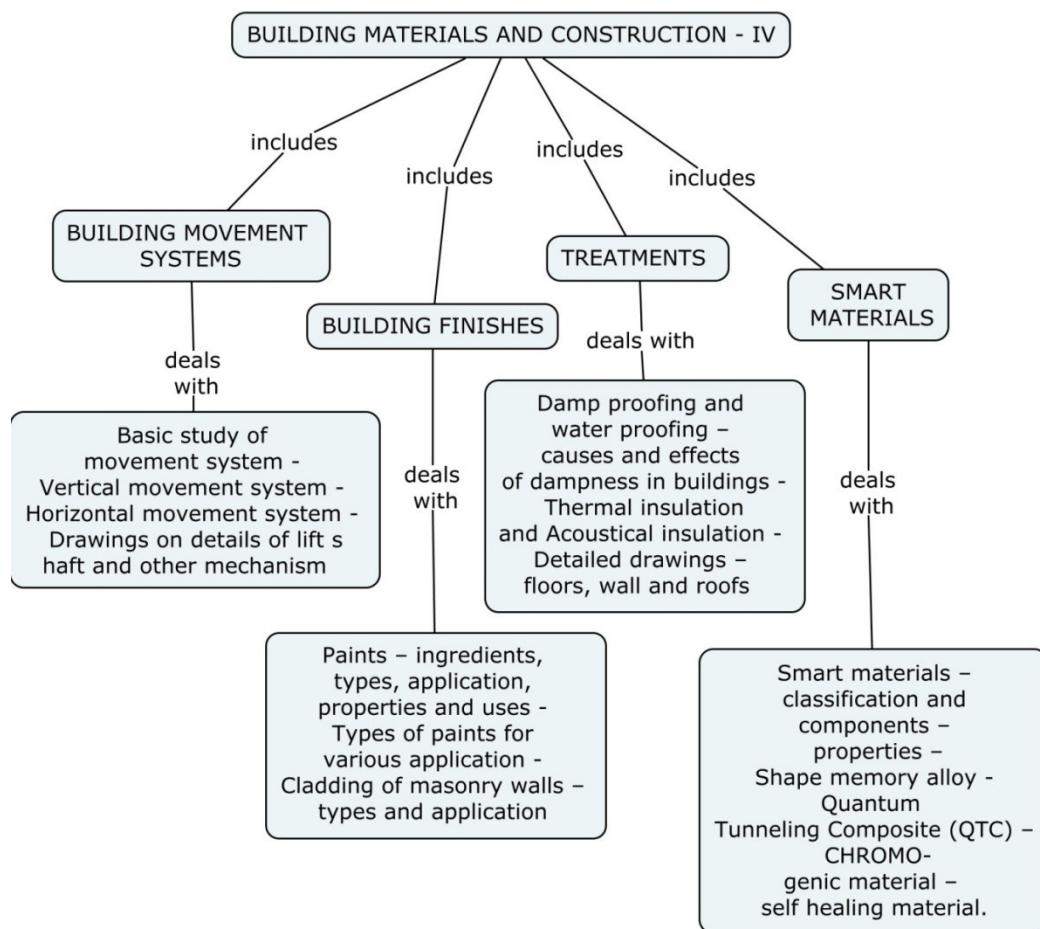
Course Outcome 2 (CO2):

1. What are the causes and defects of damp proofing in terraces?
1. What are the various materials used in thermal insulation ?
2. Explain the uses of movement system in multi-storey building?

Course Outcome 3 (CO3):

1. **Sketch the details** of lift shaft and other mechanism detailing lift for physically handicapped.
2. Draw the details of a swimming pool, assume suitable scale and other details.
3. Explain the construction details through drawings of acoustical insulation for a sound recording studio.

Concept Map



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 Construction', 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.

Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures
1.	BUILDING MOVEMENT SYSTEMS	22
1.1	Basic study of movement system - classification and components – properties.	2
1.2	Vertical movement system – Historical development of elevators or lifts - size, capacity, speed, mechanical safety method – position of core under planning grid.	4
1.3	Various types of elevators- Electric, hydraulic passenger, hospital, capital, freight and dumb waiters.	4
1.4	Drawings on details of lift shaft and other mechanism – detailing and lifting for physically handicapped.	4
1.5	Drawings of – types of elevators - parallel and criss cross.	4
1.6	Drawings of Horizontal movement system – moving walk ways, Conveyor system, travelators, etc.	4

Module No.	Topic	No. of Lectures
2.	BUILDING FINISHES	10
2.1	Paints – ingredients, types, application, properties and uses.	2
2.2	Types of paints for various application – painting defects – causes and remedies.	4
2.3	Coating of paints on masonry, steel and wooden surfaces	2
2.4	Cladding of masonry walls – types and application	2
3.	TREATMENTS	20
3.1	Damp proofing and water proofing – causes and effects of dampness in buildings – material used for Damp proof. Principles of DP	4
3.2	Detail study through drawing the application of damp proofing and water proofing for Basement floors, swimming pools and terraces.	4
3.3	Drawings of DPC at plinth, lintel and roofs.	2
3.4	Thermal insulation – materials used - construction details through drawings – floors, wall and roofs – cold storage.	4
3.5	Acoustical insulation - materials used - construction details through drawings – floors, wall and roofs – Sound Recording studio	6
4.	SMART MATERIALS	6
4.1	Smart materials – classification and components – properties – Shape memory alloy.	2
4.2	Quantum Tunneling Composite (QTC) – CHROMO-genic material – self healing material.	4
TOTAL NO OF HOURS		
58		

Course Designers:

1	Prof. S Karthikeya Raja	skrarch@tce.edu
.		
2	Prof. S Thanga Lavanya	lavanya_arch@tce.edu
.	Prof. M Sindhuja	crissindhu@tce.edu
3		
.		

15ARFT0	BUILDING SCIENCE II	Cat ego ry	L	T	P	Cre dit
		EFC	3	0	0	3

Preamble

Building Science promotes a healthier, more energy efficient way to build which reduces negative environmental impacts and slows the depletion of natural resources. Building Science II deals with the aspects of day lighting and acoustics in a built environment and its integration in designing buildings of different context.

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
CO39	S				S			S		
CO40	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

Course Level Assessment Questions

Course Outcome 1 (CO1):

3. List few techniques to incorporate daylighting into a built space.
4. List few techniques to acoustically reinforce a built space.

Course Outcome 2 (CO2):

3. Compare and contrast the use of day light and artificial light into a built space.
4. Illustrate the acoustical requirements of different types of building and factors that contributes to achieve the same.

Course Outcome 3 (CO3)

3. Explain different parameters that are responsible to achieve proper day lighting into a built space.
4. Illustrate various control devices that optimizes the amount of light reaching the indoor of a space.

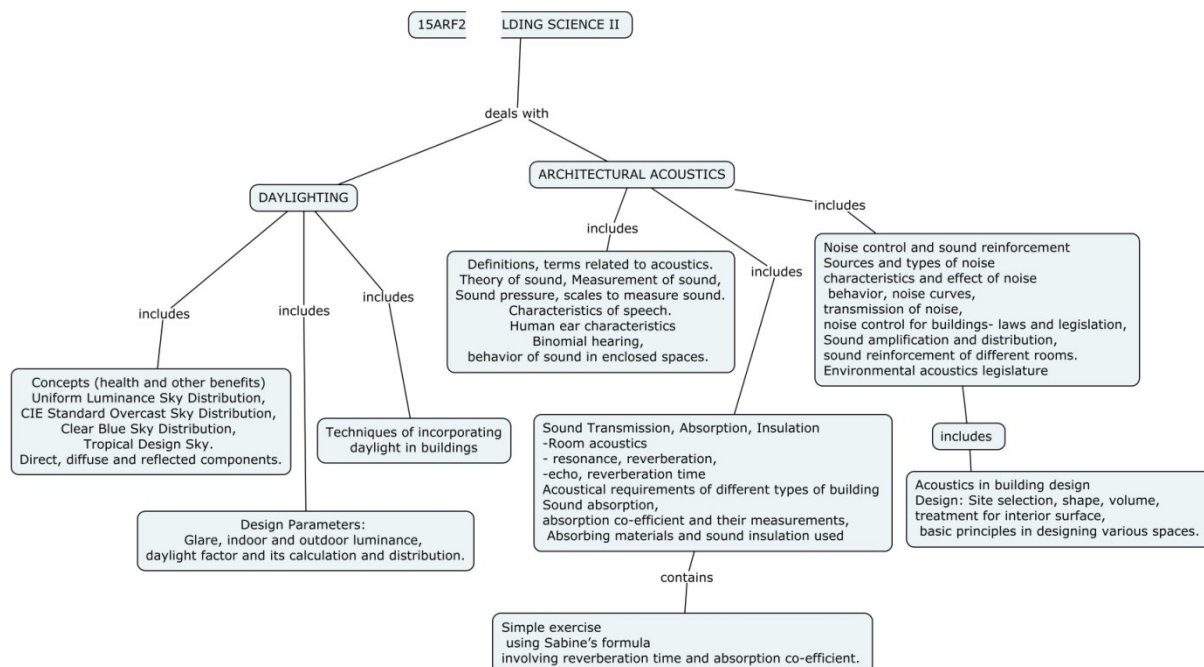
Course Outcome 4 (CO4)

2. Analyse the impacts of noise in human beings and design different noise control strategies to maintain optimum decibel level into the built space.

Course Outcome 5 (CO5)

2. Evaluate the purpose of different day lighting strategies that help in attaining the required comfort zone.
3. Evaluate the purpose of different acoustical treatments that help in attaining the required comfort zone.

Concept Map



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-through 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

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

Reference Books

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

Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures
1.	DAYLIGHTING:	18
1.1	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.	3

Module No.	Topic	No. of Lectures
1.2	Design Parameters: Glare, critical indoor and outdoor luminance, daylight factor and its calculation and distribution.	3
1.3	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-through components (membrane envelope), optical day lighting.	8
1.4	Control devices: conventional divisions, optical division, prismatic division, awnings, curtains, overhangs, light shelves, sills, fins, jallis, louvers and shutters, photo chromatic and film controls.	4
2.	ARCHITECTURAL ACOUSTICS	2
2.1	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.	2
3.	SOUND TRANSMISSION, ABSORPTION, INSULATION	7
3.1	Room acoustics- resonance, reverberation, echo, reverberation time, <i>Simple exercise using Sabine's formula.</i>	2
3.2	Acoustical requirements of different types of building Sound absorption, absorption co-efficient and their measurements, Absorbing materials and sound insulation used and their choices, <i>Exercises involving reverberation time and absorption co-efficient.</i>	5
4.	NOISE CONTROL AND SOUND REINFORCEMENT	8
4.1	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.	5
4.2	Sound amplification and distribution, sound reinforcement of different rooms.	1
4.3	Environmental acoustics legislature – related to transportation, examples- airports, railway stations, railway tracks, MRTS etc.	2
5.	ACOUSTICS IN BUILDING DESIGN	8
5.1	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.	8
TOTAL NO OF HOURS		43

Course Designers:

- | | |
|-------------------|-----------------|
| 7. R.ShanthiPriya | rsparch@tce.edu |
| 8. A.Madhumathi | madhu@tce.edu |
| 9. J.Vishnu Priya | jvaarch@tce.edu |

15AR32 1	PERFORMANCE EVALUATION OF BUILDINGS	Categor y	L	T	P	Credit
Preamble		PE	2	0	2	3
This course builds essential knowledge of building energy and provides necessary background to use building energy simulation software tools. The goal of this course is to introduce simulation strategies related to thermal / visual, embodied energy performance of different components, energy analysis using various evaluation techniques as an investigative tool for assessing the energy performance and to improve overall energy efficiency of the building.						
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	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
CO41.	S	-	-	-	-	-	-	-	S	-	-	-	S	-	-	-
CO42.	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

Course Level Assessment Questions

Course Outcome 1 (CO1):

1. Brief the importance of building performance evaluation.
2. List down the different criteria for evaluating the built space.

Course Outcome 2 (CO2):

1. Explain the different methods carried out to evaluate the thermal performance of a built space.
2. Explain the different methods carried out to evaluate the visual performance of a built space.

Course Outcome 3 (CO3):

1. Apply analytical method, mathematical calculation and simulation software to assess the thermal performance of your study area.
2. Apply analytical method, mathematical calculation and simulation software to assess the visual performance of your study area.

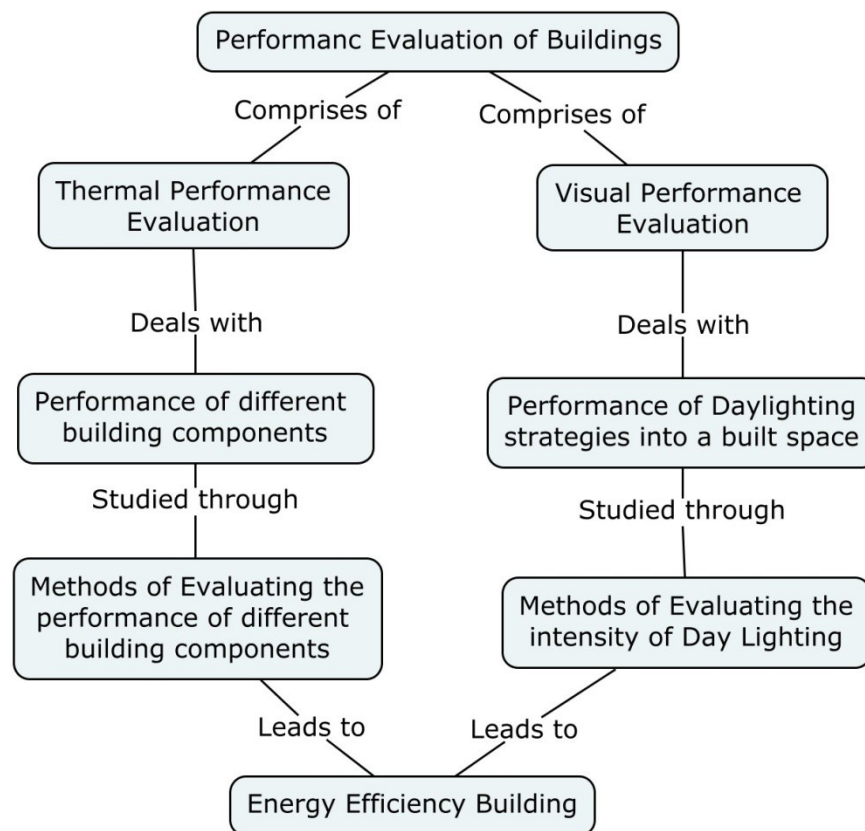
Course Outcome 4 (CO4):

1. Analyse the different thermal quantities which contribute to the thermal comfort of the built space.
2. Analyse the different visual quantities which contribute to the visual comfort of the built space.

Course Outcome 5 (CO5):

1. Evaluate the strategies that optimizing the comfort standards of different building typologies.

Concept Map



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

Course Contents and Lecture Schedule

Module No.	Topic	No. of lectures
1	Introduction to building performance evaluation	12

1.1	Need and importance for Building performance Evaluation – Terminology & metrics. Emerging role of performance evaluation in building design.	4
1.2	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.	4
1.3	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.	4
2	Thermal Performance Evaluation of Building	24
2.1	Building and building components - Mathematical models of heat and mass transfer phenomena through building components, comfort survey models, numerical models and simulation tools - the thermal performance assessment.	4
2.2	Post Occupancy Evaluation of Buildings	4
2.3	Current research in thermal performance evaluation and case studies - various thermal comfort survey methods, analytical methods,	2
2.4	<i>Exercise: Thermal Performance Assessment of Existing small scale Buildings.</i>	14
3	Visual Performance Evaluation of Building	22
3.1	Daylight Availability Metrics - use of daylight in space - Physical Model Building and Theory - Introduction to Heliodon.	2
3.2	Predicting day lighting performance in buildings based on the use of tools - Measurements hand calculations, graphic tools, physical modelling and simulations.	4
3.3	Current 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.	2
3.4	<i>Exercise: Visual Performance Assessment of Buildings.</i>	14
	Total Hours	58

Course Designers

R.Shanthipriya
I.Chandramathy
S.Santhana Iyappa Sundaraj
J.Vishnu Priya

rsparch@tce.edu
cmarch@tce.edu
pothi@tce.edu
jvaarch@tce.edu

	L	T	P	Cre dit
H				
Cat ego ry				
EFC	2	0	2	3

Preamble

This course is intended to expose the students about the housing scenario in the Indian Context and factors affecting housing design. It is imperative for the students to learn the Housing project formulation techniques and Housing Design strategies to be competent enough in the growing housing market.

Prerequisite

NIL

Course Outcomes

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

- | | |
|--|---------------------------|
| CO1. Sensitive approach Housing design. | (Remember and 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	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
CO43.	M	M	S	-	M	S	-	M	-	S	-	S	-	S	M	S
CO44.	-	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	-	-

Course Level Assessment Questions**Course Outcome 1 (CO1):**

1. List the different types of Urban housing.
2. What are the Emerging Issues of Housing in the Indian Context
3. List the objectives of National housing and habitat policy.

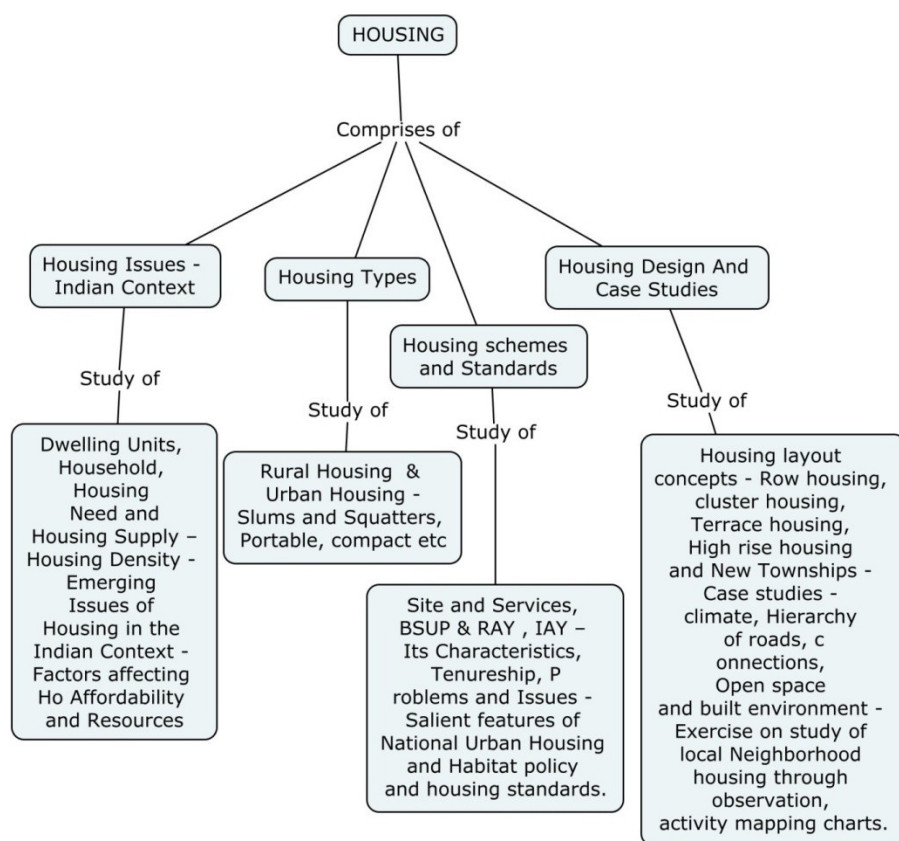
Course Outcome 2 (CO2):

4. What are the economical & cultural factors affecting housing design?
5. What are the characteristic of slums.
6. Simplify and list down the DCR and performance standards of Housing.

Course Outcome 3 (CO3):

1. Contrast the aspects of layout planning, occupancy, ownership and other characteristics of a villa and an apartment with an example.
2. Categorize the characteristics of different housing schemes including BSUP, RAY, IAY.
3. Examine the different layout of cluster housing based on their hierarchy of road, street and open spaces with an example.

Concept Map



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.

Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures
1.	Housing Issues - Indian Context	8
1.1	Definitions – Dwelling Units, Household, Housing Need and Housing Supply – Housing Density.	2
1.2	Emerging Issues of Housing in the Indian Context.	2
1.3	Role of Housing agencies in the Housing development in the Post Independence era.	4
2.	Housing Types	4
2.1	Urban Housing - Villa, Apartments, Condominium, Core Housing, Cooperative housing, Employee Quarters	2
2.2	Slums and Squatters, Portable, compact etc	2
3.	Housing schemes and Standards	10
3.1	Site and Services, BSUP & RAY , IAY – Its Characteristics, Tenureship, Problems and Issues.	4
3.2	Salient features of National Urban Housing and Habitat policy and housing standards.	4
3.3	DCR relevant to Housing- Special Building rules- Performance standards.	2
4.	Housing Design and Case Studies	1

Module No.	Topic	No. of Lectures
		4
4.1	Case studies for Traditional Housing- its characteristics, tenure ship problems and issues.	4
4.2	Case studies – Charles Correa, B V Doshi, Rajrewal – Neighbourhood level – street level – cluster level- street and House interface.	4
4.3	Exercise on analysis of Housing Case studies	6
5.	Housing Design Methodology	20
5.1	Factors affecting Housing Design Socio- Economical and Cultural- Affordability - Resources	2
5.2	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.	4
5.3	Housing Management	2
5.4	Community Participation	2
5.5	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.	10
TOTAL NO OF HOURS		56

Course Designers:

- | | | |
|---|------------------|--------------------|
| 1 | Dr. R Shanthi | rsparch@tce.edu |
| . | Priya | |
| 2 | Prof. M Sindhuja | crissindhu@tce.edu |
| . | | |

	L	T	P	Cre
A				dit

Cat
ego

ry

EFC 2 0 2 3

Preamble

Architectural Conservation being a domain of architecture trains the student to understand the essence of architectural space formation in heritage structures. This enables and sensitizes them toward the significance and values of architectural heritage components. In a way the course guides the student in assessing a built form and enhances the critical evaluation capability in a student. The course offers the student a unique ideology towards the architectural heritage it's tangible and intangible aspects through various methods and means of building diagnosis.

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	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	-	S	M	M	M	L	-	-	S	S	M	-	-
CO46.	-	-	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

Course Level Assessment Questions

Course Outcome 1 (CO1):

- Define the term Temple.
- Explain the Term Adaptation.

Course Outcome 2 (CO2):

- 3. What is the role of Sculptor in Temple architecture
- 4. What is the purpose of Documentation?

Course Outcome 3 (CO3)

- 3. Write an essay on Indian temples with any one example?
- 4. Write any one successful case studies of conservation in India?

Course Outcome 4 (CO4)

- 1. Explain the process of listing with examples sketches?
- 2. Prepare an inventory format for any one architectural building.

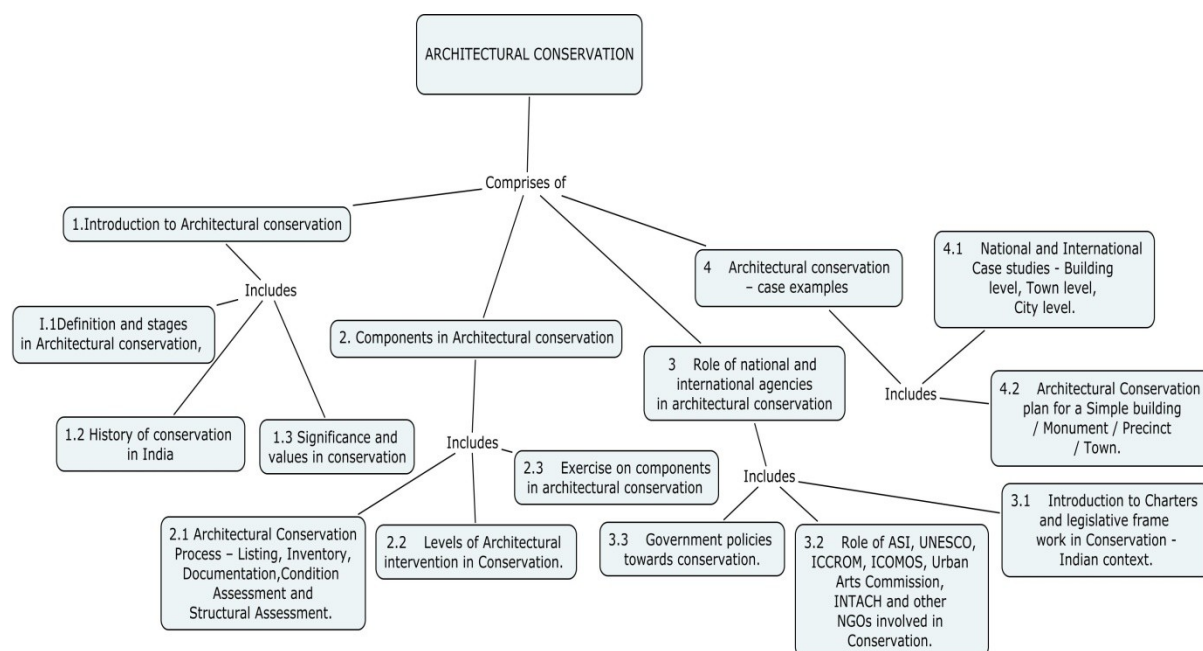
Course Outcome 5 (CO5)

- 1. What are the roles and responsibilities of a common man in protecting Temple?
- 2. Write about legislation regarding Heritage in India?

Course Outcome 6 (CO6)

- 1. Design an interior for historic places.
- 2. Create guidelines for adaptive reuse in heritage structures.

Concept Map



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.

Course Contents and Lecture Schedule

S. No.	Topic	No. of Lectures
1	Introduction to architectural conservation	20
1.1	Definition of the term Conservation with respect to Heritage, Culture and Architecture.	4
1.2	Various stages in Conservation such as Preservation, Renovation, Restoration, Rehabilitation and Consolidation.	6
1.3	History of conservation movement in India.	4
1.4	Significance and Values of Heritage such as Architectural, cultural, material, social, anthropological etc.	6
2	Components in architectural conservation	10
2.1	Architectural Conservation Process – Listing, Inventory, Documentation, Condition Assessment and Structural Assessment.	6
2.2	Levels of Architectural intervention in Conservation.	4
3	Role of national and international agencies in architectural conservation	28
3.1	Introduction to Charters and legislative frame work in Conservation - Indian context.	6
3.2	Role of ASI, UNESCO, ICCROM, ICOMOS, Urban Arts Commission, INTACH and other NGOs involved in Conservation.	6
3.3	Government policies towards conservation.	4
4	Architectural conservation – case examples	
4.1	National and International Case studies - Building level, Town level, City level.	12
Total Working Hours		58

Course Designers:

1	Prof. G. Balaji	gbarch@tce.edu
2	Prof. M. Dipika	ardipika@tce.edu
3	Prof. K.Madhivadhani	kmarch@tce.edu

15ARFY	DISSERTATION	Category	L	T	P	Credit
O		EFC	2	0	8	6

Preamble

Dissertation offers an opportunity to understand architecture, history and design primarily through research. It is also intended to enlighten students on the fundamentals of research in Architecture and its significance in Architectural Practice. Further the course provides an opportunity for the student to carry out investigations on the selected area of study covering various aspects related to architecture and built environment.

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

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

Course Designers

Prof. R. Shanthipriya rsparch@tce.edu

A.Madhumathi madhu@tce.edu

B	L	T	P	Cre dit
Cat ego ry EFC		3 0	2	4

Preamble

Building services are the essential services provided in the buildings for improving functioning of the buildings in efficient manner for the desired use of the building. The mechanical, electrical and plumbing services such as air conditioning, lighting, ventilation, fire protection, water supply, sanitary services, as well as elevators, escalators services such as, etc. have become most essential services for residential, industrial, high rise and hotel buildings. No building can be put into effective utilization without all these services. It is therefore necessary for architecture students to understand the basic principles, installations, operations and maintenance of building services.

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	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
CO47	S	-	-	-	M	-	-	-	S	L	-	-	-	M	-	L
CO48	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	-	-

Course Level Assessment Questions

Course Outcome 1 (CO1):

1. What are the various roles of service systems in a building and its uses?
2. Explain the implication of various service systems in architectural design process.

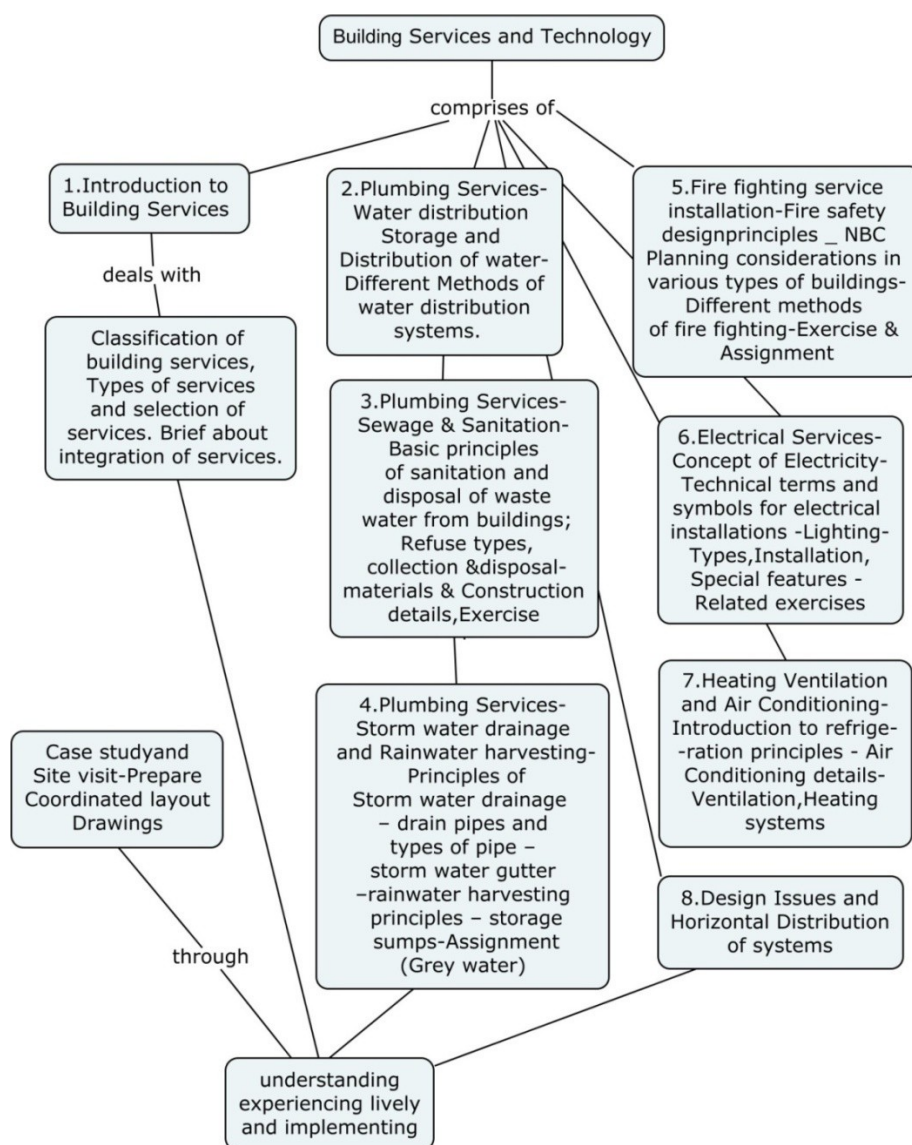
Course Outcome 2 (CO2)

1. Compare services in buildings and high rise buildings .
2. Illustrate and explain automation services in high rise buildings.

Course Outcome 3 (CO3)

1. Identify various service layouts adopted in a building with sketches and casestudies.

Concept Map



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
5. Handbook of building Engineers in metric systems, New Delhi 1968
6. 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 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 Iano
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

Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures
1.	INTRODUCTION TO BUILDING SERVICES (2)	
1.1.	Classification of building services, Types of services and selection of services. Brief about integration of services.	2
2.	PLUMBING SERVICES - Water Supply (4)	
2.1.	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.	4
3	PLUMBING SERVICES – Sanitation (4)	

Module No.	Topic	No. of Lectures
3.1.	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.	4
4	PLUMBING SERVICES – Storm water drainage and Rainwater harvesting (14)	
4.1.	Basic principles of Storm Water Drainage and Rainwater Harvesting Systems for Residential Buildings, Institutional Buildings, Public Buildings, Industrial Buildings etc. with relevant case examples.	4
4.2.	<u>Drawing Exercise 1:</u> Undertake a live Case study/Site visit to understand Water supply and Plumbing services for a Residential building and prepare a detailed documentation report.	10
5	FIREFIGHTING SERVICES (4)	
5.1.	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.	4
6.	ELECTRICAL SERVICES & HVAC (16)	
6.1.	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.	4
6.2.	<u>Drawing Exercise 2:</u> 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.	10
6.3.	Horizontal Distribution Systems – Design Principles with relevant case examples	2

No.	Practical Exercise	Hours
1.	Select a design of the student from the previous semester and prepare semester and prepare Coordination layout drawings for a small Commercial / Residential Building.	16

TOTAL NO OF HOURS**60****Course Designers:**

- | | | |
|----|-------------------------------|--|
| 1. | S.Santhana Iyyappa Sundararaj | pothi@tce.edu |
| 2. | P.Muthukumar | pmkarch13@tce.edu |
| 3. | J.Vishnupriya | jvp@tce.edu |
| 4. | K.K.Vigneshwar | vigneshwararch@tce.edu |

15ARF30

Preamble

The main purpose of this course is to understand the perception of structure as an integral element of architecture. The course will enable students to understand the basic concepts of Structure involved in architectural form making.

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	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.	-	L	-	S	M	M	-	S	-	-	-	-	-	-	-	-
CO50.	-	-	-	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	-	-

Course Level Assessment Questions

Course Outcome 1 (CO1):

1. Discuss the effective use of curvature forms.
2. What are factors affecting structural stability

Course Outcome 2 (CO2)

1. Explain the importance of lateral stability and its resistance to various environmental conditions.

Course Outcome 3 (CO3)

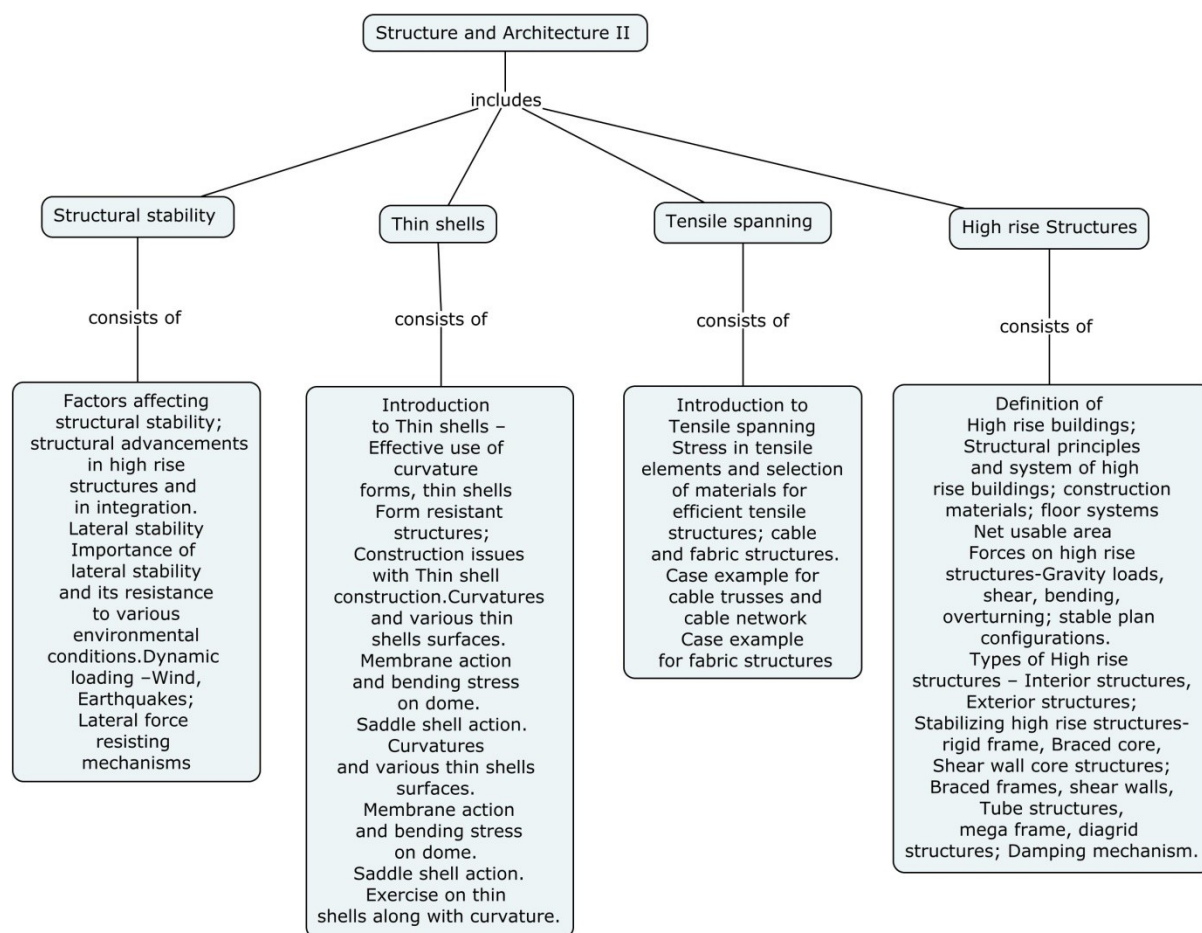
1. Identify the various thin shells surfaces and Curvatures

Course Outcome 4 (CO4)

1. Analyse the system of high rise buildings and its construction materials with sketches.
2. Analyse the Interior structures and Exterior structures in High rise structures.
- 3.

Concept Map





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

2. "Structure and architecture-second edition" Angus J. Macdonald
7. "Building structures illustrated", Francis D.K Ching, Barryonouye, Douglas zuberbuhler
8. "Architectural structures" wayne place
9. "Structure for architects", Ramsey dabby
10. Structural Elements for Architects and Builders, Jonathan Ochshorn

Reference Books

1. "Structure and architecture-second edition" Angus 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

Course Contents and Lecture Schedule

Module No.	Topic	No.of lectures
1.	Structural Stability	6
1.1	Factors affecting structural stability; structural advancements in high rise structures and in integration.	2
1.2	Lateral stability : Importance of lateral stability and its resistance to various environmental conditions.	2
1.3	Dynamic loading –Wind, Earthquakes; Lateral force resisting mechanisms.	2
2	Thin shells	11
2.1	Introduction to Thin shells – Effective use of curvature forms, thin shells	3
2.2	Form resistant structures; Construction issues with Thin shell construction.	3
2.3	Curvatures and various thin shells surfaces. Membrane action and bending stress on dome. Saddle shell action.	3
2.4	Exercise on thin shells along with curvature.	2
3	Tensile spanning structures	14
3.1	Introduction to Tensile spanning structures : Stress in tensile elements and selection of materials for efficient tensile structures; cable and fabric structures.	2
3.2	Case example for cable trusses and cable network	6
3.3	Case example for fabric structures	6
4	High rise building	12
4.1	Definition of High rise buildings; Structural principles and system of high rise buildings; construction materials; floor systems; Net usable area.	3
4.2	Forces on high rise structures-Gravity loads, shear, bending, overturning; stable plan configurations.	3
4.3	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.	6
	Total Hours	43
	Scheduled Test	2
TOTAL HOURS		45

Course Designers

Dr.J.Jinu Louishidha
Kitchley

hodarch@tce.edu

M.Shanmathi

msiarch@tce.edu

15ARF40 HUMAN SETTLEMENTS PLANNING

Category	L	T	P	Credit
EFC	3	0	0	3

Preamble

Planning is a process to achieve the goals and objectives of development through the rational and efficient use of available resources. Human settlement planning must seek to improve the quality of the life of people with full respect to indigenous, cultural and social needs. This course is intended to create awareness of the physical aspects of a settlement and the forces that shape it.

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	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
CO51.	M	M	L	-	L	-	-	-	S	M	-	M	-	L	-	-
CO52.	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	-	-

Course Level Assessment Questions

Course Outcome 1 (CO1):

- Explain about the strategies and guidelines for planning.
- Discuss about the CA.Perry's important contribution to planning.
- Summarize the purpose of Zonal development plan.

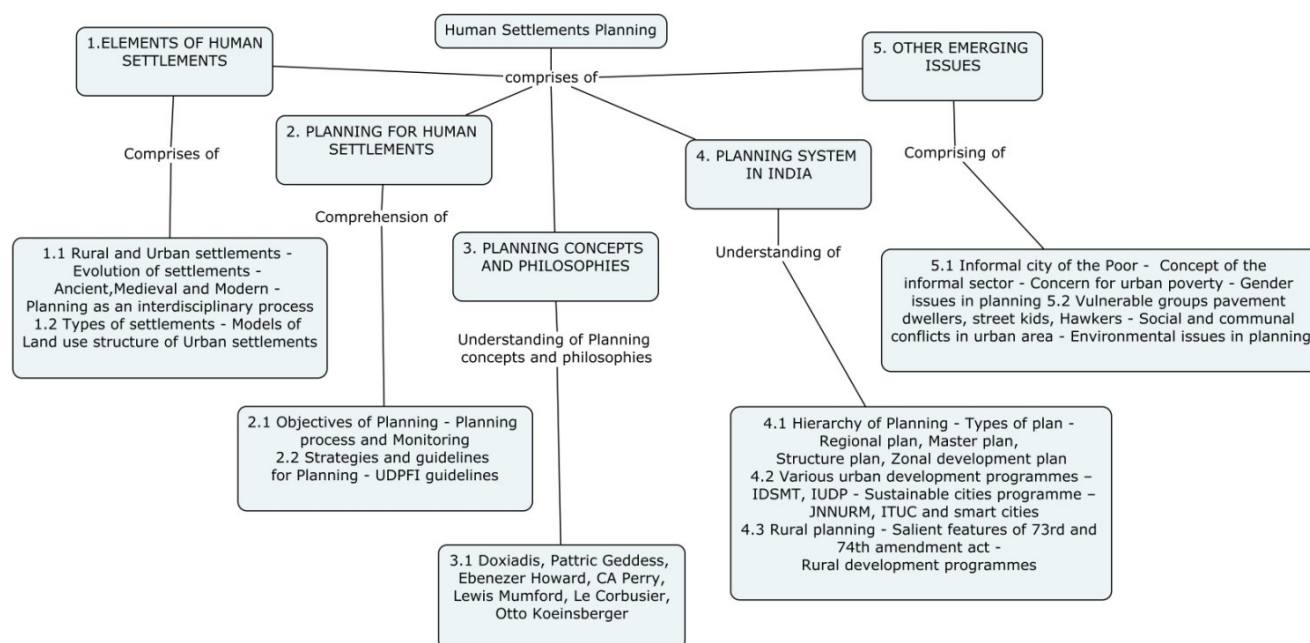
Course Outcome 2 (CO2)

- Analyze the important milestones in the evolution of settlements quoting example from ancient, medieval and modern settlements.
- Determine the settlement process, planning concepts and philosophies of Le Corbusier.

Course Outcome 3 (CO3)

- List the objectives of JNNURM.
- List any four millennium development goals.
- Name any two Urban and Rural development schemes.
- Define the hierarchy of settlement.

Concept Map



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, Patric Geddes, 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, 'Fundamentals 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.

Course Contents and Lecture Schedule

Module No.	Topic	No. of lectures
1.0	ELEMENTS OF HUMAN SETTLEMENTS	8
1.1	Rural and Urban settlements – Evolution of settlements – Ancient, Medieval and Modern - Planning as an interdisciplinary process.	4
1.2	Types of settlements – Models of land use structures of Urban settlements.	4
2.0	PLANNING FOR HUMAN SETTLEMENTS	4
2.1	Objective of Planning – Planning process and Monitoring.	2
2.2	Strategies and guidelines for planning – UDPFI guidelines.	2
3.0	PLANNING CONCEPTS AND PHILOSOPHIES	8
3.1	Planning concepts and philosophies of Doxiadis, Patric Geddes, Ebenezer Howard, CA Perry, Lewis Mumford, Le Corbusier, Otto Koeinsberger.	8
4.0	PLANNING SYSTEM IN INDIA	12
4.1	Hierarchy of planning – Types of plan – Regional plan, Master plan, Structure plan, Zonal development plan.	5
4.2	Various Urban development Programmes – IDSMT, IUDP, Sustainable Cities Programme, JNNURM, ITUC and Smart Cities.	4
4.3	Rural planning – salient features of 73 rd and 74 th amendment act – Rural development programmes.	3
5.0	OTHER EMERGING ISSUES	11
5.1	Informal city of the poor – Concept of the informal sector – concern for urban poverty – gender issues in planning.	5
5.2	Vulnerable groups pavement dwellers – street kids, hawkers – social and communal conflicts in urban area – Environmental issues in planning.	6
	Total Hours	43

Course Designers

1. Prof. R. Shanthipriya
- Prof. S.Thanga Lavanya

rsparch@tce.edu
lavanya_arch@tce.edu

15ARF60 ENVIRONMENT BEHAVIOUR STUDIES

Categor y	L	T	P	Credit
EFC	3	0	0	3

Preamble

Environmental behaviour, in the context of architectural design, includes systematic examination of relationships between the built environment and human behaviour and its application in the

design process. An understanding of environment and human behaviour will help the students to enhance their design skill encompassing functional and visual aspects.

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	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
CO53.	M	L	-	-	S	M	-	-	-	-	L	L	-	-	-	-
CO54.	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	-	-

Course Level Assessment Questions

Course Outcome 1 (CO1):

Define territoriality.

Mention any four factors that affect behaviour.

Course Outcome 2 (CO2)

How does personal space vary among different groups?
What is the need of behavioural studies in architecture?

Course Outcome 3 (CO3)

Discuss about micro and meso space behaviour.
Explain in detail the rural environments with examples.

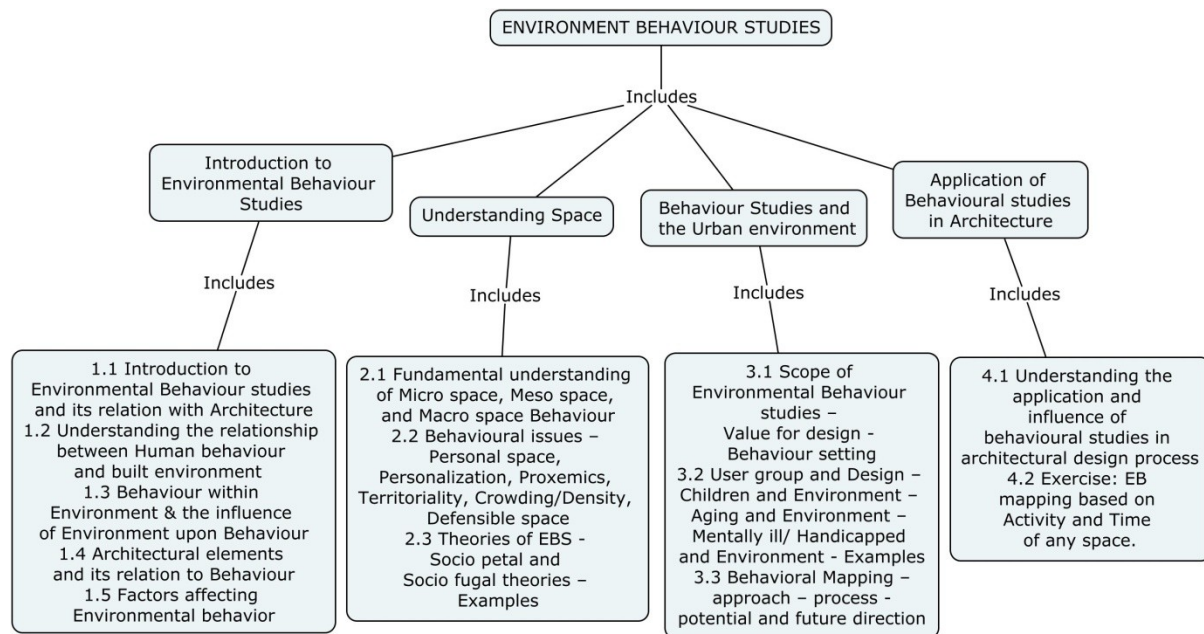
Course Outcome 4 (CO4)

Analyse different parameters to be considered for designing parks within the city.
Analyse the relationship between density and human behaviour with examples.

Course Outcome 5 (CO5)

Justify the need of studying Environmental Behaviour study in architectural design.
Criticize about behaviour setting and explain its characteristics.

Concept Map



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.

Course Contents and Lecture Schedule

Module No.	Topic	No. of lectures
1.0	Introduction to Environmental Behaviour Studies	9
1.1	Introduction to Environmental Behaviour studies and its relation with Architecture	1
1.2	Understanding the relationship between Human behaviour and built environment	2
1.3	Behaviour within Environment & the influence of Environment upon Behaviour	2
1.4	Architectural elements and its relation to Behaviour	2
1.5	Factors affecting Environmental behavior	2
2.0	Understanding Space	11
2.1	Fundamental understanding of Micro space, Meso space, and Macro space Behaviour	3
2.2	Behavioural issues – Personal space, Personalization, Proxemics, Territoriality, Crowding/Density, Defensible space	6
2.3	Theories of EBS - Socio petal and Socio fugal theories – Examples	2
3.0	Behaviour Studies and the Urban environment	12
3.1	Scope of Environmental Behaviour studies – Value for design - Behaviour setting: Fits and Misfits – Anthropometry, Orientation/ Way finding, Sense of a place	4
3.2	User group and Design – Children and Environment – Aging and Environment – Mentally ill/ Handicapped and Environment - Examples	4
3.3	Behavioral Mapping – approach – process - potential and future direction	4
4.0	Application of Behavioural studies in Architecture	11
4.1	Understanding the application and influence of behavioural studies in architectural design process	4
4.2	<i>Exercise: Environmental Behavior mapping based on Activity and Time of any space.</i>	7
	Total Working Hours	43

Course Designers

- | | | |
|----|------------------------|----------------------|
| 1. | Prof. R. Shanthipriya | rsparch@tce.edu |
| 2. | Prof. S.Thanga Lavanya | lavanya_arch@tce.edu |
| 3. | Prof. M.Dipika | ardipika@tce.edu |

	L	T	P	Cre dit
A				
Cat ego ry				
PC	0	0	12	6

Preamble

This COURSE aims at improving the sensitivity of the designer to the aspect of Empathy in a Community/ Macro Space design. The student shall comprehend the significance of Characteristics of a built environment THAT influences human behaviour. The studio focuses primarily on Physiological Response to context like Social and Cultural Aspects, Response to context - site , climate (physiological), Relationship between built environment and human response (psychological), Relationship between Being, Space (Physical), Identity / Image of a building, Structure , Services and Technology, - Economic aspects, Relationship between architecture and urban space

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

Course Contents and Lecture Schedule**S.No****Topic****Design****Drawings****Example****No of PRACTICAL HOURS**

1

Traditional settlement study. Study of a village

Documentation drawings– Master Plan, Individual house Plan, Elevation and Section. (of each building typology) Isometric and Perspective views.

Any RURAL SETTLEMENT HAVING A POPULATION OF 150 FAMILIES/
DEWELLINGS

144

2

Context based Architectural design in the same settlement with innovation

Multiple user

Multiple space

Simple Structure

Location Plan, Plan, Elevation, Section.

Banks, nursery or primary school, primary health centre, neighborhood market

36

Use of basic 2D computer aided drafting in Architectural Design project

Course Designers:

Jinu Kitchley	Loushidha			jinu
R.ShanthiPriya				rspa
S.Karthikeyaraja				skra
P.Vivek				pvarch@tce.edu
S.Sangamithra				ssaarch@tce.edu

	L	T	P	Cre dit
A				
Cat ego ry				
PC	0	0	12	6

Preamble

This Architectural design studio aims at improving the creativity of the student. The student shall comprehend the significance of Characteristics of a built environment influencing human behaviour. The studio focuses primarily on identity of the building- the knowledge of scale, proportion, articulation to create an image for the building, Structure, Response to context - Social, Cultural aspects, site, climate (physiological), Relationship between built environment and human response (psychological), Relationship between Being, Space (Physical), Services and Technology, Response to context - Economic aspects, Relationship between architecture and urban space

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

Contents and Lecture Schedule

S.-No

Topic

Design

Drawings

Example

No of PRACTICALS

1

Study focusing on identity and image of buildings - Design with Creative explorations in design

process, spatial experience, form, material etc

Simple Multilevel planning

Complex circulation

Site Plan, Floor Plans, Elevation and Section. 3D digital model

Learning campus, museums, Shopping Malls

144

Conceptual and basic Massing studies using 3D computer applications.

2

Exploration and Application of structures in the design

Large span structures

Complex site planning

Working drawings and Structural drawings.

Design and Drawings for structures in design project

36

Course Designers:

Jinu Kitchley	Loushidha			jinu.j
R.ShanthiPriya				rspa
S.Karthikeyaraja				skra
P.Vivek			pvarch@tce.edu	
S.Sangamithra			ssaarch@tce.edu	

	L	T	P	Cre dit
A				
Cat ego ry PC		0 0	12	6

Preamble

This Architectural design studio aims at improving the versatility of the student to the aspect of integrating of building and site services through a Multi-disciplinary approach to architecture .To develop the basics knowledge of Function of a student to integrate services and technology from preliminary stage of design process. The student shall comprehend the significance of Characteristics of a built environment influencing human behaviour. The studio focuses primarily on Services and Technology, Identity of the building, Structure, Response to context - Social, Cultural aspects - site , climate (physiological) Relationship between built environment and human response (psychological), Relationship between Being, Space (Physical), - Economic aspects, Relationship between architecture and urban space

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

S.No	Topic	Design	Drawings	Example	No of lectures
1	Study focusing on Multi-disciplinary approach to architecture - Design of Intense function buildings with complex circulation and service	Multiple user Multiple space Complex Multi-storey planning	Site level Plan, Individual Floor Plans, Elevation and Section. 3D digital model	Hospital 5 B.Arch Degree Programme - Star Hotel	144 2015 - 16
Use of 2D computer aided drafting in architectural design project and detailing					
2	Application of Services in the design	Site planning for services	Site level plan indicating every possible service layout	Design and Drawings for services in design project	36

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.

Course Contents and Lecture Schedule

Course Designers:

Jinu Loushidha Kitchley

R.ShanthiPriya
S.Karthikeyaraja

P.Vivek
S.Sangamithra

pvarch@tce.edu
ssaarch@tce.edu

	L	T	S	Cre dit
P				
Cat ego ry				
PC**	0	0	26	13

Preamble

To expose the students to professional practice and get hands-on training under the guidance of an architect who is actively engaged in architectural practice which will help them in gaining practical knowledge in office and on site as well.

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	P O1	P O2	P O3	P O4	P O5	P O6	P O7	P O8	P O9	P O10	P O11	P O12	P O13	P O14	P O15	P O16
CO55	S	-	-	M	M	M	M	L	L	L	L	L	L	S	-	-
CO56	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

Course Level Assessment Questions

NOT APPLICABLE

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 Practical

Training 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.

Course Designers:

1	C Sam	Charles	scharles@tce.edu
.	Devanand		pothi@tce.edu
2	S Santhana	Iyyappa	pmkarch13@tce.edu
.	Sundararaj		
3	P Muthukumar		
.			

15AR830

ARCHITECTURAL DESIGN - VI

Cat	L	T	P	Cre
ego				dit
ry				
PC		0 0	12 6	

Preamble

This Architectural design studio aims at improving the analytical qualities of the designer. The student shall comprehend the significance of Characteristics of a built environment influencing human behaviour. The studio focuses primarily ON THE Response to context- Economic aspects, Services and Technology, Identity / image of a building , Structure , - Social, Cultural aspects , - site , climate (physiological) , Relationship between built environment and human response (psychological) , Relationship between Being, Space (Physical) , Relationship between architecture and urban space

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

Course Contents and Lecture Schedule

S. No	Topic	Design	Drawings	Example	No of PRACT
1	Study of Developments of various densities, uses, building standards, mass construction etc and Study based Project formulation		Conceptual Project Formulation	Residential development, commercial development, mixed use development, large Institutional campus	144
2	Design of developments focusing on density, quality and economic value	Multiple densities Multiple uses and economic values	Master plan,		36

Course Designers:

Jinu Loushidha Kitchley
R.ShanthiPriya
S.Karthikeyaraja
P.Vivek
S.Sangamithra

jinujoshua@tce.edu
rsparch@tce.edu
skrarch@tce.edu
pvarch@tce.edu
ssaarch@tce.edu

	L	T	P	Cre dit
A				
Cat ego				

ry

PC 0 0 12 6

Preamble

This Architectural design studio aims at improving the analytical qualities of the designer. The student shall comprehend the significance of Characteristics of a built environment influencing human behaviour. The studio focuses primarily on the factors influencing an urban setting and response to it, the relationship between architecture and urban space, Response To Context - Economic Aspects, Services And Technology, Identity / image of a building , Structure , Social, Cultural aspects , site , climate (physiological) , Relationship between built environment and human response (psychological), Relationship between Being, Space (Physical)

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.

Course Contents and Lecture Schedule

S. No	Topic	Design	Drawings	Example	No of lectures
1	Public space in urban setting - Complex circulation	Project formulation for the given urban context	Documentation drawings of the urban setting	An Urban space	144
2	Complex planning of built and open spaces	Design of public spaces based on study and project formulated	Site level Plan, Individual Floor Plans, Elevation and Section. 3D digital model	Transit stations, Stadiums, urban hubs, Urban recreation spaces, Whole sale Market,	36

				Hyper Mall etc	
--	--	--	--	----------------	--

Course Designers:

Jinu Loushidha Kitchley
R.ShanthiPriya
S.Karthikeyaraja
P.Vivek
S.Sangamithra

jinujoshua@tce.edu
rsparch@tce.edu
skrarch@tce.edu
pvarch@tce.edu
ssaarch@tce.edu

	L	T	S	Cre dit
A				
Cat ego ry				
PC**	0	0	28	14

Preamble

To give students the opportunity to utilize knowledge and skills they have acquired during the previous design studios and to engage the interests and skills the student bring with them to the program in order to allow them to become an authority in their chosen area of study.

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

CO57	S	-	-	M	M	M	M	L	L	L	L	L	L	S	-	-
CO58	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

Course Level Assessment Questions

NOT APPLICABLE

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 Jellicoe, "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

Course Designers:

1	C Sam	Charles	scharles@tce.edu
.	Devanand		pothi@tce.edu
2	S Santhana	Iyyappa	pmkarch13@tce.edu
.	Sundararaj		
3	P Muthukumar		
.			