

 SHIVAJI UNIVERISTY, KOLHAPUR-416 004. MAHARASHTRA

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 शिवाजी विद्यापीठ, कोल्हापूर – 416004.

 दुरध्वनी (ईपीएबीएक्स) २६०९००० (अभ्यास मंडळे विभाग– २६०९०९४)

 फॅक्स : ००९१-०२३१-२६९९५३३ व २६९२३३३.e-mail:bos@unishivaji.ac.in

No O 8 O 5 - Date: 23/09/2019

Ref.No. SU/BOS/Sci & Tech/

2 4 SEP 2013

The Principal, All affiliated Engineering College, Shivaji University, Kolhapur.

Subject:-Regarding minor changes in syllabus of Bachelor of Architecture (B. Arch.) CBCS Part-I (Sem I& II) Program under Faculty of Science & Technology.

Ref.:- SU/BOS/Sci & Tech/6591 dt. 28/06/2019

Sir/Madam,

To.

With reference to subject mentioned above, I am directed to inform you that University authorities has accepted and granted approval to the minor changes in syllabus of Bachelor of Architecture (B. Arch.) CBCS Part-I (Sem I& II) Program under Faculty of Science & Technology. The corrected syllabus is enclosed herewith.

A soft copy containing the syllabus is enclosed herewith and it is also made available on website www.unishivaji.ac.in (Online syllabus)

You are therefore, requested to bring this to the notice of all students and teachers concerned.

Thanking you,

Yours faithfully,

Deputy Registrar

Encl:- As above Copy to:

1	The Dean, Faculty of Science & Technology	7	Computer Centre
2	The Chairman, Respective Board of Studies	8	Affiliation Section (T.1)
3	Director, Examination and Evaluation	9	Affiliation Section (T.2)
4	Eligibility Section	10	P.G.Admission Section
5	O.E 4	11	P.G Seminar Section
6	Appointment Section	12	Meeting Section

SHIVAJI UNIVERSITY KOLHAPUR



Estd. 1962

NAAC 'A'Grade

Faculty of Science and Technology

Syllabus For

B. Arch. Part – I (Sem I & II)

(To be implemented from June 2019 onwards)

(Subject to the modifications that will be made from time to time)

											SEMEST	ER - I											
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G) ct se]	THEOR	Y		TU	TORIA	L		PRAC	CTICAL/ST	TUDIO		T	HEO	RY		VI	VA-VO	CE	TEI	RM WO)RK
Sr. No	Cours (Subje Title	Credits	No. of Lecture	Hours	Credits		No. of Lecture	Hours		Credits	No. of Studios	Hours	Hours	Mode	Marks	Total Marks	Min	Hours	Max	Min	Hours	Max	Min
1	PC - 101	1	1	1	-		-	-		1	3	3									3	100	50
2	PC - 102	1	1	1	-		-	I		1	3	3						lines			3	50	25
3	PC – 103 **	1	1	1	-		-	-		9	6	6						Guide	100	45	6	100	50
4	PC - 104 **	2	2	2	-		-	-					2	ESE	50	50	23	· BOS				50	25
5	BS & AE – 105	1	1	1	-		-	-		2	3	3	2	ESE	50	50	23	As per			3	50	25
6	BS & AE – 106 **	3	3	3	-		-	-					3	ESE	80	80	36					20	10
7	PC - 107	-	-	-	-		-	-		1	2	2		-	-	-	-				2	50	25
8	SEC - 108	2	2	2	-		-	-		-	-	-		-	-	-	-				-	50	25
9	SEC – 109	1	1	1	-		-	-		1	1	1		-	-	-	-				1	50	25
	TOTAL	10	10	10	-		-	-		17	20	20				180					20	520	260
						-		1			SEMEST	EK –11			1		1	-					
1	PC - 201	1	1	1	-		-	-		1	3	3									3	100	50
2	PC - 202	1	1	1	-		-	-		1	3	3	3	ESE	100	100	45				3	50	25
3	PC – 203 **	1	1	1	-		-	-		9	6	6							100	45	6	100	50
4	PC - 204 **	2	2	2	-		-	-					2	ESE	50	50	23					50	25
5	BS & AE – 205 *	1	1	1	-		-	-		2	3	3	3	ESE	100	100	45		100	45	3	50	25
6	BS & AE – 206 **	3	3	3	-		-	_					3	ESE	80	80	36					20	10

FIRST YEAR ARCHITECTURE ENGINEERING - CBCS PATTERN

2

7	PC - 207					-	-	-	1	2	2						2	50	25
8	SEC - 208	2	2	2		-	-	-	-	-	-					-		50	25
					_	-	-	-											
9	SEC - 209	1	1	1		-	-	-	1	1	1						1	50	25
	520 207	1	-														1	20	20
	TOTAL	10	10	10					17	20	20			330		300		520	260
	TOTAL	20	20	20					34	40	40			510		300		1040	

CIE- Continuous Internal Evaluation ESE – End Semester Examination

Candidate contact hours per week : 30 Hours(Minimum)	• Total Marks for B.ArchI;Sem I & II :1850											
• Theory/Tutorial Duration : 60 Minutes and Practical Duration :	• Total Credits for B.ArchI (Semester I & II) :54											
60 Minutes												
There shall be separate passing for theory and practical (term work)courses.												
• Sem I - SSC : Soft Skill Course : There shall be an additional computer	ulsory course of 2 Credits (Self Study)											
for a course of Democracy, Elections and Good Governance which w	ill not included in total Credits											
• Sem II - SSC : Soft Skill Course : Any one from following (i) to (v) (2 Credits) (SelfStudy)											
i) Business Communication & Presentation ii) Event manageme	nt iii) Personality Development, iv) Yoga & Physical Management v)											
Resume, Report & proposalwriting												

											SEMESTE	ER – III											
					Т	ΈA	CHING	SCHE	EME	£						EXAN	IINAT	ΓΙΟΝ	SCHE	ME			
G	se ect]	THEOR	Y		Τ	UTORIA	L	I	PRAC	CTICAL/ST	TUDIO		Т	THEO	RY		VI	VA-VO	CE	TEI	RM WO	ORK
Sr. No	Cours (Subje Title	Credits	No. of Lecture	Hours		Credits	No. of Lecture	Hours		Credits	No. of Lecture	Hours	Hours	Mode	Marks	Total Marks	Min	Hours	Max	Min	Hours	Max	Min
1	PC - 301	1	1	1						1	3	3									3	50	25
2	PE - 302	1	1	1						1	1	1						lines			1	100	50
3	PC - 303 **	1	1	1						9	6	6						Guidel	100	45	6	100	50
4	BS & AE – 304 *	1	1	1						2	3	3	3	ESE	80	80	36	BOS	100	45	3	70	35
5	BS & AE – 305 **	3	3	3									3	ESE	80	80	36	As per				20	10
6	PC - 306 **	1	1	1						1	2	2	3	ESE	80	80	36	Ą			2	20	10
7	BS & AE – 307	1	1	1						1	2	2	3	ESE	100	100	45				2	50	25
8	BS & AE – 308	2	2	2									2	ESE	50	50	23					50	25
9	BA & AE - 309	2	2	2																			
	TOTAL	13	13	13						15	17	17				390			200			460	
					_				_		SEMESTI	$\mathbf{S}\mathbf{R} - \mathbf{I}\mathbf{V}$											
1	PC - 401	1	1	1						1	3	3						delines			3	100	50
2	PE-402	1	1	1						1	1	1						S Guid			1	100	50
3	PC – 403 **	1	1	1						9	6	6	9	ESE	100	100	45	s per BO	100	45	6	100	50
4	BS & AE – 404 *	1	1	1						2	3	3	3	ESE	80	80	36	A	100	45	3	70	35

• SECOND YEAR ARCHITECTURE ENGINEERING – CBCSPATTERN

5	BS & AE – 405 **	3	3	3					3	ESE	80	80	36					20	10
6		1	1	1		1	2	2		CIE					50	23	2	50	25
	BS & AE – 406									ESE									
7	PC - 407 **	1	1	1		1	2	2	3	ESE	80	80	36		-		2	20	10
8	BS & AE – 408	2	2	2					2	ESE	50	50	23		-			50	25
9	BA & AE - 409	2	2	2					3	ESE	70	70	32	-	-			30	15
	TOTAL	13	13	13		15	17	17				460			250			540	
	TOTAL	26	26	26		30	34	34				850			450			1000	

CIE- Continuous Internal Evaluation

ESE – End Semester Examination

PROFESSIONAL ELECTIVE-I

Sr. No.	Name of the Subject	Name of the concern Branch
01	Art Appreciation - I	
02	Art in Architecture – I	
03	Graphic and Product Design - I	

PROFESSIONAL ELECTIVE-II

Sr. No.	Name of the Subject	Name of the concern Branch
01	Art Appreciation – II	
02	Art in Architecture – II	
03	Graphic and Product Design - II	

•	Candidate contact hours per week : 30 Hours(Minimum)	• Total Marks for B.ArchII;Sem III & IV :2300										
•	Theory/Tutorial Duration : 60 Minutes and Studio Duration : 60 Minutes	• Total Credits for B.ArchII (Semester III & IV) :56										
٠	There shall be separate passing for theory and practical (term work)courses.											

5

											SEMES	ΓER –V												
					TEA	CHIN	IG	SCHE	M	E							EXA	MINA	TION S	CHEM	IE			
C	se ect	J	THEOR	Y	T	UTOF	RIA	L		PRAC	CTICAL/ST	TUDIO			T	HEO	RY		VIV	A-VOC	CE	TEF	RM WO	ORK
Sr. No	Cours (Subje Title	Credits	No. of Lecture	Hours	Credits	No. of	recture	Hours		Credits	No. of Lecture	Hours		Hours	Mode	Marks	Total Marks	Min	Hours	Max	Min	Hours	Max	Min
1	PC - 501**	1	1	1						9	6	6								100	45	6	100	50
2	BS & AE – 502 *	1	1	1						2	3	3		3	ESE	80	80	36		100	45	3	70	35
3	BS & AE – 503 **	3	3	3										3	ESE	80	80	36	BOS ines				20	10
4	PC - 504 **	1	1	1						1	2	2		3	ESE	80	80	36	s per Juidel			2	20	10
5	PC - 505 **	1	1	1						1	2	2		3	ESE	80	80	36	A O			2	20	10
6	BS & AE – 506	1	1	1						1	2	2		2	ESE	50	50	23				2	50	25
7	PC - 507	1	1	1						2	3	3			-	-	-	-				3	50	25
8	PC - 508	1	1	1						1	2	2		2	ESE	50	50	23				2	50	25
	TOTAL	10	10	10						17	20	20					420			200			380	
						F			_		SEMEST	TER –VI	[I	F		F		[1			
1	PC - 601 **	1	1	1						9	6	6		12	ESE	100	100	45		100	45	6	100	50
2	BS & AE - 602 *	1	1	1						2	3	3		4	ESE	80	80	36	es	100	45	3	70	35
3	BS & AE - 603 **	3	3	3										3	ESE	80	80	36	idelin				20	10
4	PC - 604 **	1	1	1						1	2	2			ESE	80	80	36	os Gu			2	20	10
5	PC - 605 **	1	1	1						1	2	2			ESE	80	80	36	er BC			2	20	10
6	BS & AE - 606	1	1	1						1	2	2			ESE	50	50	23	As p			2	50	25
7	PC - 607	1	1	1			T		1	2	3	3								100	45	3	50	25

THIRD YEAR ARCHITECTURE ENGINEERING - CBCS PATTERN

е

8	PE - 608	1	1	1				2	2						50	23	2	50	25
9	BS & AE - 609	3	3	3							ESE	80	80	36				20	10
	TOTAL	13	13	13		1	7	20	20	1			550		350			400	
	TOTAL	23	23	23		3	4	40	40				970		550			780	

CIE- Continuous Internal Evaluation

 $ESE-End\ Semester\ Examination$

* Means combine passing for external oral & theory paper

** Means combine passing for internal term work & theory paper & external oral as applicable.

One lecture means period of One Hour (60 Minutes) and One Studio means studio period of One Hour (60 Minutes)

- One lecture means period of One Hour (60 Minutes) and One Studio means studio period of One Hour (60 Minutes)
- Per Semester Periods per week –30
- Total week 15 weeks per semester

Candidate contact hours per week : 30 Hours(Minimum)	• Total Marks for B.ArchIII;Sem V & VI :2300											
• Theory/Tutorial Duration : 60 Minutes and Practical Duration : 60 Minutes	• Total Credits for B.ArchIII (Semester V & VI):57											
	Minutes											
• There shall be separate passing for theory and practical (term work)co	ourses.											

	SEMESTER –VI											I												
					TF	EAC	HING	SCHE	ME								EXA	MINA	TION S	CHEN	ſE			
Sm	se ect	THEORY		Y		TUTORIAL			PR	ACT	TICAL/ST	UDIO			Т	HEO	RY		VIV	A-VO	CE	TEF	RM WC	ORK
Sr. No	Courr (Subje Title	Credits	No. of Lecture	Hours	Credits	J	Lecture	Hours	Credits		No. of Lecture	Hours		Hours	Mode	Marks	Total Marks	Min	Hours	Max	Min	Hours	Max	Min
1	PC – 701 **	1	1	1					9		6	6							nes	100	45	6	100	50
2	PC - 702	1	1	1					2		3	3							uideli	100	45	3	100	50
3	PC-703	1	1	1					2		3	3		3	ESE	100	100	45	OS G	50	23	3	50	25
4	BS & AE – 704	3	3	3										3	ESE	100	100	45	per B				50	25
5	PE – 705 **	1	1	1					1		2	2		3	ESE	100	100	45	As			2	50	25
6	PAECC - 706	1	1	1					1		2	2		2	ESE	50	50	23				2	50	25
7	PE - 707	1	1	1					1		2	2	[-	-	-	-		50	23	2	50	25
8	PE – 708	1 10	1	1		_			1	,	2	2	-				250			50	23	2	50	25
	IUIAL	10	10	10					1/		20 SEMESTI	20 FD VII	Т				350			350			500	
	PAECC -			- T	Т	т			1		SEMILST		.1											
1	801								15	5	90 work	ting								100	45		100	50
											Traini	ng												
	TOTAL								15	;		Ŭ								100			100	
						_				_														
	TOTAL	10	10	10					32	2							350			450			600	

FOURTH YEAR ARCHITECTURE ENGINEERING – CBCS PATTERN

* Means combine passing for external oral & theory paper

** Means combine passing for internal term work & theory paper & external oral as applicable.

One lecture means period of One Hour (60 Minutes) and One Studio means studio period of One Hour (60 Minutes)

- One lecture means period of One Hour (60 Minutes) and One Studio means studio period of One Hour (60 Minutes)
- Per Semester Periods per week –30
- Total week 15 weeks per semester

CIE- Continuous Internal Evaluation ESE – End Semester Examination

Candidate contact hours per week : 30 Hours(Minimum)	• Total Marks for B.ArchIV;Sem VII & VIII :1400
Theory/Tutorial Duration : 60 Minutes and Practical Duration : 60 Minutes	• Total Credits for B.ArchIV (Semester VI I& VIII) :42

• There shall be separate passing for theory and practical (term work)courses.

											SEMEST	TER –IX												
						TEA	CH	ING	SCHE	ME							EXA	MINA	TION S	SCHEN	IE			
G	se oct	THEORY				Т	TUTORIAL			PRAC	TICAL/ST	UDIO			J	THEO	RY		VIV	A-VO	CE	TEF	RM WO	ORK
Sr. No	Cours (Subje Title	Credits	No. of Lecture	Hours		Credits	No. of	Lecture	Hours	Credits	No. of Lecture	Hours		Hours	Mode	Marks	Total Marks	Min	Hours	Max	Min	Hours	Max	Min
1	PC – 901 **	1	1	1						9	6	6		18	ESE	100	100	45	elines	100	45	6	100	50
2	PC - 902	2	2	2						3	6	6							Guid	100	45	6	50	25
3	BS & AE - 903	3	3	3	Ī					-	-	-	ľ	3	ESE	100	100	45	BOS (50	25
4	PAECC – 904	3	3	3	Ī								ſ	3	ESE	100	100	45	s per l				50	25
5	BS & AE - 905	1	1	1						1	2	2		3	ESE	100	100	45	A				50	25
6	PE - 906	1	1	1						1	2	2								50	23	2	50	25
7	PE - 905	1	1	1						1	2	2								50	23	2	50	25
	TOTAL	12	12	12						15	18	18					400			300			400	
					_		1				SEMEST	$\Gamma \mathbf{ER} - \mathbf{X}$	_							[
1	PC - 1001	02	02	02						12	8	8							es	200	90	8	200	100
2	BS & AE - 1002	01	01	01						2	3	3		4	ESE	100	100	45	idelin	100	45	3	100	50
3	PE- 1003	01	01	01						1	3	3							os Gu	50	23	3	50	25
4	PE - 1004	01	01	01						1	3	3							er BC	50	23	3	50	25
5	SEC - 1005	02	02	02	Ī								ſ						As p	50	23		50	25
	TOTAL	07	07	07	ļ					16	17	17	ļ				100			450			450	
	TOTAL	19	19	19						31	35	35			~ .		500			750			850	

FINAL YEAR ARCHITECTURE ENGINEERING - CBCS PATTERN

CIE-Continuous Internal Evaluation ESE – End Semester Examination

10

* Means combine passing for external oral & theory paper

** Means combine passing for internal term work & theory paper & external oral as applicable.

One lecture means period of One Hour (60 Minutes) and One Studio means studio period of One Hour (60 Minutes)

- One lecture means period of One Hour (60 Minutes) and One Studio means studio period of One Hour (60 Minutes)
- Per Semester Periods per week –30
- Total week 15 weeks per semester

Candidate contact hours per week : 30 Hours(Minimum)	• Total Marks for B.ArchV;Sem IX & X :2100						
• Theory/Tutorial Duration : 60 Minutes and Practical Duration : 60 Minutes	• Total Credits for B.ArchV (Semester IX& X) :50						
• There shall be separate passing for theory and practical (term work)courses.							

COURSE CODE AND DEFINITION

Semester I

Sr. No	Code No.	Subject	Credits
1.	PC - 101	Aesthetics & visual arts – I	2
2.	PC - 102	Graphics – I	2
3.	PC - 103	**Architectural Design – I	10
4.	PC - 104	** Human Settlement & History of Civilization	2
5.	BS & AE – 105	Building Construction & Material – I	3
6.	BS & AE – 106	** Theory of Structure – I	3
7.	PC - 107	Workshop – I	1
8.	SEC - 108	Communication Skills – I	2
9.	SEC – 109	Computer Technology in Architecture - I	2

Semester II

Sr. No	Code No.	Subject	Credits
1.	PC - 201	Aesthetics & visual arts – II	2
2.	PC - 202	Graphics – II	2
3.	PC - 203	**Architectural Design – II	10
4.	PC - 204	** Human Settlement & History of Civilization	2
5.	BS & AE – 205	* Building Construction & Material – II	3
6.	BS & AE – 206	** Theory of Structure – II	3
7.	PC - 207	Workshop – II	1
8.	SEC - 208	Communication Skills – II	2
9.	SEC - 209	Computer Technology in Architecture - II	2

'Semester II	Ι
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Sr. No	Code No.	Subject	Credits
1.	PC - 301	Graphics – III	2
2.	PE - 302	Elective – I	2
3.	PC - 303	**Architectural Design – III	10
4.	BS & AE – 304	* Building Construction & Material – III	3
5.	BS & AE – 305	** Theory of Structure – III	3
6.	PC - 306	History of Architecture	2
7.	BS & AE – 307	Climatology & Architecture	2
8.	BS & AE – 308	Building Services – I	2
9.	BA & AE – 309	Environmental Studies	2

Semester IV

Sr. No	Code No.	Subject	Credits
1.	PC - 401	Graphics – IV	2
2.	PE-402	Elective – II	2
3.	PC - 403	**Architectural Design – IV	10
4.	BS & AE – 404	* Building Construction & Material – IV	3
5.	BS & AE – 405	** Theory of Structure – IV	3
6.	BS & AE – 406	Surveying & Leveling	2
7.	PC - 407	History of Architecture	2
8.	BS & AE – 408	Building Services – II	2
9.	BA & AE – 409	Environmental Studies	2

Semester V

Sr. No	Code No.	Subject	Credits
1.	PC - 501	** Architectural Design – IV	10
2.	BS & AE – 502	* Building Construction & Material – IV	3
3.	BS & AE – 503	** Theory of Structure – IV	3
4.	PC - 504	** History of Architecture – II	2
5.	PC - 505	** Estimation Costing & Specification – II	2
6.	BS & AE – 506	Building Services – IV	2
7	DC 507	Working Drawing – II	3
7.	PC = 307	Arch, Graphics & Drawing	
0	DC 509	Landscape Architecture	2
0.	PC - 308	Landscape Design	

Semester VI

Sr. No	Code No.	Subject	Credits
1.	PC - 601	** Architectural Design – VI	10
2.	BS & AE -602	* Building Construction & Material – VI	3
3.	BS & AE -603	** Theory of Structure –VI	3
4.	PC - 604	** History of Architecture – IV	2
5.	PC - 605	** Estimation Costing & Specification – II	2
6.	BS & AE – 606	Building Services – IV	2
7	DC 607	Working Drawing – II	3
7.	PC = 007	Arch, Graphics & Drawing	
8.	PE - 608	Interior Design	2
9.	BS & AE - 609	Acoustics	3

Semester VII

Sr. No	Code No.	Subject	Credits
1.	PC - 701	** Advanced Architectural Design - I	10
2.	PC-702	Environmental Planning & Urban Design	3
3.	DC 702	Advanced Building Specification Valuation and	3
	PC - 703	Project Management System	
Δ	BS & AE –	Advanced Structure – I	3
т.	704		
5.	PE-705	Urban and Regional Planning	2
6.	PAECC - 706	Research Methodology	2
7.	PE - 707	Elective – IV	2
8.	PE - 708	Elective - V	2

Semester VIII

Sr. No	Code No.	Subject	Credits
1.	PAECC - 801	Practical Training and Report	15

Semester IX

Sr. No	Code No.	Subject	Credits
1.	PC - 901	**Advanced Architectural Design - 2	10
2	DC 002	Architectural Project 1 + 2	5
۷.	PC - 902	(Synopsis, Literature Review, Data Collection)	
3.	BS & AE-903	Advanced Structures -II	3
4.	PAECC- 904	Professional Practice and Building Bye-Laws	3
5.	BS & AE-905	Advanced Services	2
6.	PE - 906	Elective – VI	2
7.	PE - 907	Elective - VII	2

Semester	Х
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Sr. No	Code No.	Subject	Credits
		Architectural Project III	14
1.	PC - 1001	Case Study/Site/Final Design and Presentation	
		Drawing / Report	
2.	BS & AE - 1002	Advanced Building Construction	3
3.	PE- 1003	Elective – VIII	2
4.	PE - 1004	Elective - IX	2
5.	SEC - 1006	Entrepreneurship Skills for Architects	2

ABBREVIATIONS :-

PC	PROFESSIONAL	CORE

BS&AE BUILDING SCIENCES AND APPLIED ENGINEERING

- **EC** ELECTIVE COURSE
- PE PROFESSIONAL ELECTIVE
- **OE** OPEN ELECTIVE
- PAECC PROFESSIONAL ABILITY ENHANCEMENT COMPULSORY COURSES
- SEC SKILL ENHANCEMENT COURSES

SHIVAJI UNIVERSITY, KOLHAPUR

SYLLABUS FOR FIRST SEM I - ARCHITECTURE DEGREE COURSE

(PC-101)

SUBJECT: AESTHETICS AND VISUAL ARTS – I

Lectures -	15	Paper-	-	Sessional Wo	ork (Int.)- 100
Studio-	45	Duration-	-	Oral (Ext.)	-
Total-	60			Theory	-
Total Credit points-	2			Total	100

COURSE OBJECTIVE:

To give an artistic orientation to the students to develop fundamental artistic skills.

COURSECONTENTS:

• Aesthetics as part of LIFE, relation of all fine arts like painting, sculpture, music dance etc. to each other in everyday life ,beauty in human activities and movements, good

,mediocre and bad taste expression of Artists personality.

- Understand and relationship of surface from space masses, point, line, light, and shade, aesthetics in motion, sound, touch and smell. Aesthetics as part of mind.
- Colour theory, colour circle, various colour schemes and their combinations, general psychological effects of colours.
- Elements of design such as line, form & shape, colour& texture, patterns etc.

Reference Books -

- 1) Architecture form, space and order; FRANCIS D.K. CHING; John Miley AndSons.
- 2) Architectural rendering; ALBERT O HALSE; Mcgraw-Hill BookCompany.
- 3) Design Fundamentals In Architecture; V.S.Parmar; Somaiya Publication Pvt.Ltd

(PC-102)

SUBJECT: GRAPHICS - I

SYLLABUS FOR FIRST SEM - ARCHITECTURE DEGREE COURSE

Lectures-	15	Paper -	-	Sessional Work (Int.) -5	50
Studio-	45	Duration-	-	Oral(Ext.) -	
Total-	60			Theory-	
Total Credit po	oints- 2			Total- 5	50

COURSE OBJECTIVE:

The purpose of this subject is to develop ability to present all the elements

of design in graphic forms to enhance the potential of a student in presenting

concepts and ideas in terms of drawing using different techniques.

COURSE CONTENTS:

• Introduction of drawing instruments such as drawing board set-squares tee-square french curve, stencils, different types of pencils and pens and their uses.

• Lettering, size and notation of drawing, symbolic representation of building elements and material, other features as per I.S.I and standard practice.

• Introduction of various media of drawing and presentation such as pencil, charcoal crayon, water colour, sketch pens, inks etc. and exercise using all these media.

• Freehand sketching using different media mentioned above.

• Scale drawing, construction of various metric scales, normally used scale, use of metric scale for various purposes.

- Introduction and understanding of plain elevation and section.
- Measured drawing of small objects, such as building elements, pieces of furniture and small built forms.

• Solid geometry to explain the need of solid geometry in architectural drawings such as techniques of presentingthreedimensionaldrawingintotwodimensionalobjects.Exerciseinvolvinggeometricalforms, presented in different positions of individual object and then ingroup.

• Principles of orthographic projection, projection on points, lines, planes, solids.

Reference Books

- 1. Ching Francis D.K.: ArchitecturalGraphics
- 2. Kelsey W. E.: Geometrical & BuildingDrawing
- 3. Leslie Martin: Architectural graphics
- 4. B. James: Essential ofDrafting
- 5. H. Joseph and Morris: Practical plane and solidgeometry
- 6. Gill Robert: Rendering with pen andink
- 7. Burden Ernest: ArchitecturalDelineation.

8. Burden Ernest: Architectural Delineation. Gill, Robert W.; Manual of Rendering with Pen andInk, Thames and Hudson,London,1997.

9.JaxThemier, B.W., "How to Paint and Draw", Thames and Hudson, 1985.

(PC-103**)

SUBJECT: ARCHITECTURE DESIGN - I

SYLLABUS FOR FIRST SEM - ARCHITECTURE DEGREE COURSE

Lectures-	15	Paper-	-	Sessional Work	(Int.) -100
Studio-	90	Duration-	-	Oral(Ext.) -	100
Total-	105			Theory-	-
Total Credit p	points- 10			Total-	200**

COURSE OBJECTIVES

- To introduce the students to the fundamentals and principles of basic design and toenable them to undertake design by application of basic design principles.
- To comprehend Design as a creative process of choice making and statement of intent.

COURSE CONTENTS

- What is architecture and what does an architect do? Scope of this activity. Types of services rendered by an Architect.
- Applicationofelementsofdesigntoachievedesignprinciplesandincreative work.
- ApproachtoDesignasacontinuousprocessthroughAesthetics,functionand Technology (construction) Basic components of a building and their functions.
- Principal of Design with reference to function, various activities and related spaces. Data collection, Environments, climate, orientation, site conditions, Circulation.
- Study of basic human Needs, Various requirements, standard measurements of Human activities and allocation of Spaces.
- Study & comparison of single units like living spaces, sleeping and cooking spaces, stalls, bus-stops, telephone booths etc. detailed design of single room for simple function, showing relationship with adjoining areas for other activities not more than 25 sq.mtrs.
- Role of interior design in planning and Architecture
- •

Reference Book s -

1) Time sever standards for building types - LatestEditions

2) Neufer- architects data – latest editions

3)Rendering with pen and ink / roberw.gill

4) Ching- fdkarchitecture form, van nostandreinhold staff, new york – latest editions

5)Time saver standards for landscape architecture- latestedition

(PC-104**)

SUBJECT : HUMAN SETTLEMENT AND HISTORY OF CIVILISATION - I

SYLLABUS FOR FRIST SEM - ARCHITECTURE DEGREE COURSE

Lectures-	30	Paper -	01	Sessional Work (Int.)) -50
Studio-	-	Duration-	2 hrs.	Oral(Ext.)-	-
Total-	30			Theory-	50
Total Credit poi	nts-2			Total-	100**

Note: Internal marks should be based on assignments, sketches, question bank & seminar.

COURSE OBJECTIVE:

To study the settlement and the History of Civilization from Prehistoric period and ancient civilization. Settlement pattern and architectural built from have the influence of geography, geology, climate, socio-climate and religious aspect of that particular place, which emphasis the context of specific planning and design approach is required. Comparative study of various civilizations will give the appropriate guideline for the study of settlement and architecture.

COURSE CONTENTS :

- Prehistoricperiod: Evolution of man, relation in between Man and environment, rise of culture and religion, Stone Age, Bronze Age, Iron Age, Culture and civilization.
- General features/influences of human settlement factor responsible for the development of humansettlement.
- Nile valleycivilization: Influences/aspects, architectural characters, Burial system, Egyptian temple, Egyptian city [city kahun] planning.
- Greek civilization: Influence/ aspects, architectural characters, Study of Greek cities in detail, cityAthens
- Roman civilization: influence /aspect, architectural characters, study of romancities, Roman Militarytown
- Mesopotamian civilization: Influence/aspects, architectural characters, city Babylon,city Ur ,ziggurat , Hanging Garden [Sumerian , Assyrian and Babylonian]
- A: Indus valley civilization- Influence/aspects, architectural characters, Mohenjo-Daro cityplanning
- B: Vedic civilization Vedicvillage

Reference books:

- 1. A History of World Civilization -By James EdgerSwain, Ph.D
- 2. Davies: An Outline history of the world-H. A. Davies, MA
- 3. Town Planning AbirBandopadhyay
- 4. Town Planning G. K.Hiraskar
- 5. The urban pattern city planning and Design-Arthur B. GallionFAIA Simon Eisner, AICP
- 6. Sir Banister Fletcher's- A history of architecture Revised by J. C.Palmes
- 7. The Great Ages Of World Architecture G. K.Hiraskar
- 8. Human settlement- A planning guide to beginners-K. R. Thooyavan
- 9. Indian architecture -Vedula V L NMurthy.

* Means combine passing for external oral & theory paper.

** Means combine passing for internal term work & theory paper & external oral as applicable

(BS&AE- 105) SUBJECT:- BUILDING CONSTRUCTION AND MATERIAL – I

SYLLABUS FOR FIRST SEM - ARCHITECTURE DEGREE COURSE

Lectures -	15	Paper -	01	Sessional Work (Int.)	-50
Studio -	45	Duration-	2 hrs.	Oral (Ext.) -	
Total -	60			Theory -	50
Total Credit po	oints- 3			Total -	100

Marks weightage: Materials 25%, construction 75% Note : For theory exams, Separate sections for materials and construction should be allotted (Materials 25%, construction 75%)

External examination (oral) will be conducted by the university.

COURSE OBJECTIVES

- To help students understand the basic building elements, their function and behavior Under various conditions with specific reference to load bearing construction.
- To help students to develop a clear understanding of the basic principles of construction And materials suitable for load bearing construction.
- To help students develop and analytical and logical sequence in thinking about structural aspects of architecture.
- To encourage a mix of classroom and field learning.

COURSE CONTENTS

MATERIALS :

- <u>Soil</u> : Different types and their origin, Physical properties and effect of weather, water, temperature etc. on different soil types, bearing capacity of commonly met soil and their role in buildingfoundations, angle of repose (introductory only)
- <u>Brick</u> : Composition of earths, standard market and I.S.I. size propertiesasperI.S.I.BrickmanufacturingProcesses,sundriedbrick, special types of bricks, Different uses of brick inconstruction.
- <u>Sand</u>: Pit, river sea sand, gravel, I.S.I. standards use in mortar and concrete, bulkage of stand, impurities insand their removal, different grades of sand with respective size and their application I.S.I. standard uses in construction

CONSTRUCTION:

General introduction: structure load bearing structure

<u>Foundation</u>: simple foundation for masonry load bearing walls, piers pillars;inbrickandstonesloadbearingfoundation;foundationinblack cotton soil; masonry retaining wall.

Superstructure

Brick masonry: tools and equipments bonding and its principles; types of brick like headers stretchers king and queen closer etc and theiruse, English and Flemish bond in straight line for stopped end, corner tee and cross junctions up to thickness on two brick thick wall and its combinations; attached and detached piers, buttresses, pilasters, brick on edge wall, sundried brick construction in mud mortar, soil-cement block, expansion joint in masonry compoundwall.

<u>Stone masonry</u> : various types of stone dressing, various types stone joint such as plain, beveled, rebated dowel, clamp joint monolithic construction of columns, quoins, header bond of through stones, various types of stone masonry

such as ashlars and rubble with their different types, composites wall in brick and stone, compound walls.

Introduction of Bamboo as a Building Element and its Construction details

Lintels and

Chajjas.Hollow, solid

<u>concreteblock</u>

wall.Brick andstone

paving

<u>Finishs</u>: plastering, sand faced, neeru finish and other finishing types, various types of pointing. Use of scaffolding, single and double scaffolding for masonry work, bamboo, timber and tubula scaffolding.

REFERENCE BOOKS:

Engg.Materials – K.S.Rangwala
 Engg.Materials – B.K.Agarwal
 Building.Materials –S.K.Duggal
 Building Construction Technology –R.Chudley Building
 Construction –Sushil Kumar
 Building Construction –W.B.Mackay
 Building Construction –BindraArora

(BS&AE-106**)

SUBJECT: THEORY OF STRUCTURE –I

SYLLABUS FOR FIRST SEM - ARCHITECTURE DEGREE COURSE

Lectures-	45	Paper-	01	Sessional Work (Int.) -20
Studio-	-	Duration-	03hrs.	Oral(Ext.) -	-
Total-	45			Theory-	80
Total Credit po	oints-03			Total-	100**

Note: The passing in this subject requires min. 45% marks for theory paper, 50% for internal assessment and combined 50% of Total internal and theory paper.

COURSE OBJECTIVES:

- To Introduce Applied Mechanics as an important Subject for Architecture.
- To Understand Different Systems of Forces and their Equilibrium and that a Building is a System of Forces in Equilibrium.
- To Introduce and Understand Concepts of Support, Support Reactions, Beams, Loads, Bending and Shear.

COURSE OUTLINE:

- Introduction: aim and object, scope of study.
- Concept of simple load bearing, framed structure & composite structure.
- Loads:Deadload,liveload,windload,snowload,seismicload,conceptualideaandtheir impact on building as a whole, relevant ISCode.
- Force:definition,characteristicsandclassificationofforces.Systemofforces,composition and resolution of forces. Resultant and equilibrant of coplanar concurrent and non concurrent force systems by analytical & graphical method.
- Moments: moment of force, moment of couple, effect of couple, concept of static equilibrium. Lami's theorem, Equations of static equilibrium, free body diagram.
- Supportreactions: Types of beams, Loading and support conditions and their significance.
- Friction: Types of friction, laws of dry friction, problems on block, wedge and ladder.

Sessional work: Minimum Six assignments based on above topics.

REFERANCEBOOKS:

- 1. Engineering Mechanics RK Bansal and Sanjay Bansal ,Laxmipublications, NewDelhi.
- 2. Engineering Mechanics F.L. Singer, HarperCollinspublications.

* Means combine passing for external oral & theory paper.

** Means combine passing for internal term work & theory paper & external oral as applicable

(PC-107)

SUBJECT:- WORKSHOP – I

SYLLABUS FOR FIRST SEM - ARCHITECTURE DEGREE COURSE

Lectures -	-	Paper -	-	Sessional Work(Int.)-	50
Studio-	30	Duration-	-	Oral(Ext.)-	-
Total-	30			Theory-	-
Total Credit poi	nts-01			Total-	50

COURSE OBJECTIVES:

• Introducing students to various materials and techniques used in making Architectural models.

• Enabling Students to make Architectural models for study and presentation.

COURSE CONTENTS

- Introduction of masonry tools.
- Demonstration of brickwork, stonework, demonstration of plaster and textured finishes. i) Mud ii) Cement iii)Lime.
- Study tours to sources of local building materials and to local building under construction to study their actual use.
- Models for basic design and Architecture design studio work.
- Introduction to modeling with paper, paper board, plastics, plaster of Paris, wood and clay.
- Basic model making technique, different types of material and their techniques.
- Introduction to modeling with paper, paper board, plastics, plaster of Paris, wood and clay.

RECOMMENDED BOOKS

- John Taylor, Model Building for Architects and Engineers
- Rolf Janke, Architectural Models

(SEC-108)

COMMUNICATION SKILLS - I SYLLABUS FOR FIRST SEM - ARCHITECTURE DEGREE COURSE

Lectures-	30	Paper -	-	Sessional Work(Int.)-	50
Studio-	-	Duration-	-	Oral(Ext.)-	-
Total-	30			Theory-	-
Total Credit poi	ints-02			Total-	50

COURSE OBJECTIVES:

- Introducing various communication skills in the society.
- Enabling Students to make presentation in front of mass communication.

COURSE CONTENTS

- 1) Communication
 - Introduction to Communication Definition, need & importance Process of Communication
 - Types of Communication Forms of Communication Barriers to Communication

2) Techniques of Communication

- A)Verbal Communication: Techniques of GD &Interview
- B) Non-Verbal Communication: Body Language

3) Essay Writing

- Descriptive (Current Topics)
- 4) Rapid Review of Grammar
 - Tenses
 - Active/Passivevoice
 - Direct–Indirect
 - Affirmative, Negative, Assertive, Exclamatory, Interrogative.
 - Q-Tag, Remove"too"

5) Correction of Common Errors

Note: The internal marks will be based on tutorials and individual performance.

(SEC-109)

SUBJECT: COMPUTER TECHNOLOGY IN ARCHITECTURE -1

Lectures– 15	Paper	Internal -50
Studio - 15	DurationHours	External
Total - 30		Theory
Total Credit Points- 2		Total -50

CAD AND ADVANCED APPLIATION

Creating and organizing 2-d drawing All 2 Dimensional drawing commands. All 2 Dimensional edit commands.

Inquiry commands.

Setting for drawing

Concept of layer, line types, Dimensions

Introduction to block and application Texts and fonts

Output of the drawing through printer or plotters Different setting of drawing snap modeetc.

Hatch its patterns.

Isometric drawing

Different types of styles e.g. dimension style, text, style, symbol library, drawing at different scales, composition of drawing at different scales e.g. municipal drawing (concept of paper space & model space).

Minimum one drawing showing plan, elevation., section of a project be submitted as sessional work.

SHIVAJI UNIVERSITY, KOLHAPUR

SYLLABUS FOR FIRST YEAR SEM II- ARCHITECTURE DEGREE COURSE

(PC 201)

SUBJECT: AESTHESTICS AND VISUAL ARTS-II

Lectures-	15	Paper-	-	Sessional Work	Sessional Work (Int.) -100	
Studio -	45	Duration-	-	Oral(Ext.) -	-	
Total-	60			Theory-	-	
Total Credit points- 2				Total-	100	

COURSE OBJECTIVE :

Thepurposeofthissubjectistocreateawarenessaboutprincipleofgooddesigntodevelop goodaesthetictasteunderstandofArchitectureanddifferentfineartsandtheirapplicationtostudy the principle of architecture, interior design, house design, advertising, city planning etc. In each of these fields, one works with sizes, shapes, colours and texture etc. which are created and arranged in accordance with the principles of aesthesis.

COURSE CONTENTS:

- Study of texture.
- Definition of design, functional and decorative design requirements of good design, principleofdesignsuchasharmony&unity,proportions,constast,scale,balance,rhythm, emphasis expression and character.
- Composition of group of objects, forms positive and negative spaces.
- Approach to architecture and design and space.
- Planning for different activities building for them.
- Function- planning form in side out.
- Forms development from the above.

The sessional work shall consist of study of models photographs.

Project report writing and seminar on any one selected projected based on this subject.

Reference Books -

- 1) Architecture form, space and order; FRANCIS D.K. CHING; John Miley AndSons.
- 2) Architectural rendering; ALBERT O HALSE; Mcgraw-Hill BookCompany.
- 3) Design Fundamentals In Architecture; V.S.Parmar; Somaiya Publication Pvt.Ltd

(PC 202)

SUBJECT: GRAPHICS II

Lectures-	15	Paper-	1	Sessional Work	Sessional Work (Int.) -50	
Studio -	45	Duration-	3 hrs.	Oral(Ext.) -	-	
Total-	60			Theory-	100	
Total Credit points-2				Total-	150	

COURSE OBJECTIVE :

To introduce the students to the fundamental techniques of Architectural drawings and to enhance their visualization skills.

COURSE CONTENTS:

PART –I

- Isometric and Axonometric projections.
- Interpenetration of geometric solids, forms and section of solids.
- Surface development of simple and complex objects.

PART –II

• Application of subject Computer - I in Graphics -I

Drafting of measured building elements / small building units using computer.

Isometric and axonometric views using computer.

Reference Books

- 1. Ching Francis D.K.: ArchitecturalGraphics
- 2. Kelsey W. E.: Geometrical & BuildingDrawing
- 3. Leslie Martin: Architecturalgraphics
- 4. B. James: Essential ofDrafting
- 5. H. Joseph and Morris: Practical plane and solid geometry
- 6. Gill Robert: Rendering with pen andink
- 7. Burden Ernest: Architectural Delineation.

8. Burden Ernest: Architectural Delineation. Gill, Robert W.; Manual of Rendering with Penand Ink, Thamesand

Hudson, London, 1997.

9. JaxThemier, B.W., "How to Paint and Draw", Thames and Hudson, 1985.

(PC-203**)

SUBJECT: ARCHITECTURE DESIGN II

Lectures-	15	Paper-	-	Sessional Work (Int.) -100	
Studio -	90	Duration-	-	Oral(Ext.) -	100
Total-	105			Theory-	-
Total Credit points- 10				Total-	200**

COURSE OBJECTIVE

- To introduce the students to the fundamentals and principles of basic design and to enable them to undertake design by application of basic design principles.
- To comprehend Design as a creative process of choice making and statement of intent.

COURSE CONTENTS

- Structure, types of structures and structures techniques
- Elementary, climatology and orientation
- Architecture as one of the visual arts and its inter-relationship with other arts.
- Conceptual sketches developments of above principles and disciplines.
- At the end of year the students should take review of his study of the subject and prepare summary sheet to explain the knowledge gained.
- Designproblemsdealingwithplanningforactivitiessuchasindividualliving, units shops, stalls, snacks bars, unilevel activities with three to four functions of total area up to 80 sq. mtrs.
- The students should be encouraged to collect their own data experiments and try various alternative before reaching final solution and should also be encouraged to express their ideas with the help of different media and materials.

Reference Book

1)Time Sever Standards For Building Types - Latest Editions

2)Neufer- Architects Data – Latest Editions

3) Rendering With Pen And Ink / RoberW.Gill

4) Ching- Fdk Architecture Form, Van Nostand Reinhold Staff , New York – Latest Editions

5) Time Saver Standards For Landscape Architecture- LatestEdition

(PC- 204**)

SUBJECT : HUMAN SETTLEMENT AND

HISTORY OF CIVILISATION - II

Lectures-	30	Paper-	01	Sessional Work (Int.) -50	
Studio-	-	Duration-	02 hrs.	Oral(Ext.) -	-
Total-	30			Theory-	50
Total Credit points-2				Total-	100**

Note: Internal marks should be based on assignments, sketches, question bank & seminar.

COURSE OBJECTIVE: To study of settlement of development of civilization from medieval period to modern period. Study should emphasize a development phases of civilization with reference to socio-cultural, religion, climate geography and geological aspect. Comparative study of various civilization

COURSE CONTENTS :

Medieval Period - Study of settlement in Europe and India, Medieval Cities [Indian and

western]

- Renaissance Period study of settlement in Europe and in India Renaissance city Jaipur, Baroque city planning city of Versailles
- Industrial Revolution: Impact of industrial revolution in development of transportation and communication, concept of factory town, City beautiful movement
- Plan for community Robert Owen, satellite town And Garden city,Gedian Triad and urban renewal, Theory of Dynapolis C.A.Doxiadis.
- Evolution ofcities
- Neighbourhood Planning Stein and Perry -Example- Radburnlayout
- Modern town planning in India
- Example Chandigarh and Gandhinagar.

Reference books:

- 1. A History of World Civilization -By James EdgerSwain, Ph.D
- 2. Davies: An Outline history of the world-H. A. Davies, MA
- 3. Town Planning AbirBandopadhyay
- 4. Town Planning G. K.Hiraskar

- 5. The urban pattern city planning and Design-Arthur B. GallionFAIA Simon Eisner, AICP
- 6. Sir Banister Fletcher's- A history of architecture Revised by J. C.Palmes
- 7. The Great Ages Of World Architecture G. K.Hiraskar
- 8. Human settlement- A planning guide to beginners-K. R. Thooyavan
- 9. Indian architecture -Vedula V L NMurthy
- * Means combine passing for external oral & theory paper.
- ** Means combine passing for internal term work & theory paper & external oral as applicable

(BS & AE-205) SUBJECT:- BUILDING CONSTRUCTION AND MATERIAL - II

Lectures-	15	Paper-	01	Sessional Work (Int.) - 50	
Studio -	45	Duration-	03 hrs.	Oral(Ext.) -	100
Total-	60			Theory-	100
Total Credit points- 3				Total-	250

External examination (oral) will be conducted by the university.

COURSE OBJECTIVES

- To help students understand the basic building elements, their function and behavior Under various conditions with specific reference to load bearing construction.
- To help students to develop a clear understanding of the basic principles of construction And materials suitable for load bearing construction.
- To help students develop and analytical and logical sequence in thinking about structural aspects of architecture.
- To encourage a mix of classroom and field learning.

COURSE CONTENTS MATERIALS :

- <u>Stones</u> : Building stones, types of rocks, method of quarrying origin and compositionofstones, properties of good stones natural bed, various types of stone dressings defects in stone, stones used in construction, uses in construction, aggregates.
- <u>Lime</u> : Lime ore stone, quarrying and collection composition and physical propertiesmethodofburningoflimeore,quicklime,fatlime,hydrauliclime mortar mix, method of preparation, neeru, plaster, efflorescence, peeling, flaking, blistering, use of surkhi, I.S.I. standards, lime wash, uses in construction.

CONSTRUCTION :

Types of Arches in bricks, stones construction method & centring for Arch.

Cornices, canopy and porch in brick and stones.

<u>Doors and windows</u> such as ledged, braced, battened, false paneled door, simple glazed and wooden paneled.

<u>Roof</u>:rooflayoutridge,hipvalley,gableeavesetc.typesofsimplepitchedroofsuch as lean to couple, close couple and ,collar and, material and details of roof covering such as thatch Mangalore and other patent tiles country tiles and shingles.

REFERENCE BOOKS:

1) Engg. Materials-K.S. Rangwala

2) Engg.Materials – B.K.Agarwal
3) Building.Materials –S.K.Duggal
4) Building Construction Technology –R.Chudley Building
5) Construction –Sushil Kumar
6) Building Construction –W.B.Mackay
7) Building Construction –Bindra Arora
(BS&AE-206**) SUBJECT : THEORY OF STRUCTURE –II

Lectures-	45	Paper-	01	Sessional Work (Int.)	-20
Studio-	-	Duration-	03 hrs.	Oral(Ext.) -	-
Total-	45			Theory-	80
Total Credit por	ints-3			Total-	100**

Note: The passing in this subject requires min. 45% marks for theory paper, 50% for internal assessment and combined 50% of Total internal and theory paper.

COURSE OBJECTIVES:

- To Introduce Applied Mechanics as an important Subject for Architecture.
- To Understand Different Systems of Forces and their Equilibrium and that a Building is a System of Forces in Equilibrium.
- To Introduce and Understand Concepts of Support, Support Reactions, Beams, Loads, Bending and Shear.

COURSE OUTLINE:

- Analysis of trusses: Definition of perfect, deficient & redundant trusses. Analysis of determinate trusses by method of joints, sections and graphical method.
- SimpleStressesandstrains:concept,definitions,units,typesofstressesandstrains.Stress strain curve, safe stresses, factor of safety, different types of safe stress as per ISI code for differentmaterialsliketimber,steel.Hook'slaw,typicalstressstrainbehaviorforsteeland concrete.
- Elasticconstants:modulusofelasticity,Poisson'sratio,modulusofrigidity,bulkmodulus, shears modulus and their relations.
- Properties of sections: centre of gravity, moment of inertia, modulus of section, radius of gyration of simple symmetrical and unsymmetrical sections including built up sections.
- Bending Moment & Shear force: concept of shear force and bending moment. BMD & SFD for statically determinate simply supported and cantilever beams subjected to combinations of concentrated, uniformly distributed, uniformly varying loads. Point of contra flexure in simply supported beams with overhang.

Sessional work: Minimum Six assignments based on above topics.

REFERANCE BOOKS:

- 1 Strength of Materials R.K. Bansal, Laxmi publications, NewDelhi.
- 2 Strength of Materials R.S. Khurmi, S. Chand & company , NewDelhi.

(PC-207)

SUBJECT:- WORKSHOP – II

Lectures -	-	Paper-	-	Sessional Work (Int.)	-50
Studio -	30	Duration-		Oral(Ext.) -	-
Total-	30			Theory-	-
Total Credit por	ints-1			Total-	50

COURSE OBJECTIVE :

To develop the ability to appreciate the three dimensional implications of design and to introduce the students to the techniques of model making.

COURSE CONTENTS

- Introduction of carpentry tools and machines.
- Different types of joints and their function.
- Clay work, brick, cob, wattle and daub, rammed earth Masonry construction- walls, arches and corbel.
- Marking of geometrical forms on the ground.
- Study tours to sources of local building materials and to local building under construction to study their actual use.
- Introduction to modeling with paper, paper board, plastics, plaster of Paris, wood and clay.

(SEC- 208) SUBJECT :- COMMUNICATION SKILL- II

Lectures-	30	Paper-	-	Sessional Work (Int.)	-50
Studio-	-	Duration-	-	Oral(Ext.)-	-
Total-	30			Theory-	-
Total Credit poi	ints-2			Total-	50

COURSE OBJECTIVES:

- Introducing various communication skills in the society.
- Enabling Students to make presentation in front of mass communication.

COURSE CONTENTS

- 1) Paragraph Writing
 - Techniques of Paragraph Writing

2) Soft Skills

- Definition, need & significance
- Types of Soft Skill

3) Techniques of Professional Correspondence

- Importance
- Techniques
- Types-Enquiry , Order, Complaint, & Invitation letters with replies
- Application Letters with Resume.
- 4) Precis Writing
 - Importance
 - Techniques
- 5) Presentation Skills

(SEC- 209)

SUBJECT: COMPUTER TECHNOLOGY IN ARCHITECTURE - IV

Lectures - 15	Paper	Internal - 50
Studio - 15	Duration	External
Total - 30		Theory
Total Credit Points- 1		Total - 50

COURSE OBJECTIVE

Different types of styles e.g. dimension style, text, style, symbol library, drawing at different scales, composition of drawing at different scales e.g. municipal drawing (concept of paper space & model space).

his course is an introduction to computational design using a range of techniques from NURBS modeling, simple programming and parametric modeling to basic digital fabrication using different types of software's.

COURSE CONTENTS

Concept of 3D modeling, Introduction to 3D Digital modeling. Study climatic aspect like shades and shadows of 3D Digital models.

Digital3DmodelofsmallscaleHistoricalBuilding/climateresponsivebuilding.Con cept of UCS 3 Dimensional drawings primitive mesh and surfaces. Viewing commands &viewpoints.

INTRODUCTION TO SHADING & RENDERING.

Rendering of the plans, sections, elevations, perspectives using different presentation Software's. Introduction to interactive multimedia technology for design presentation. Introduction to other drafting & presentation software's.

Developing skills in non-graphic applications on computer as required for architectural profession and office management such as Word processing, Spreadsheets, Power Point presentation, Databases etc.

Assessment:

- Drawing municipal drawing ofbunglow
- One 3d project of bunglow (min-2bhk) with rendered
- Symbollibrary



Estd. 1962 NAAC

'A'Grade

Faculty of Science and Technology

Syllabus For

B. Arch. Part – II (Sem III & IV)

(To be implemented from June 2020 onwards)

(Subject to the modifications that will be made from time to time)

SYLLABUS FOR THIRD SEM – ARCHITECTURE DEGREE COURSE (PC – 301) SUBJECT: GRAPHICS–III

Lectures -15	Paper -	Internal - 50
Studio - 45	Duration -	External -
Total -60		Theory -
Total Credit Points-L1 + S1=02		Total - 50

COURSE OBJECTIVE

The study of this subject is continuation of drafting skills, various techniques of presentation with knowledge of perspective. This is continuation and further development of basic course studied during first year.

COURSE CONTENTS

- Introduction of perspective drawings-relatively realistic way for presentation. Principles of one point and two point perspective of simple objects and building elements.
- Perspective of interiors and exteriors using different eye levels .
- Application of softwares such as Sketchup.

ASSESSMENT:-

- Drawings assignment on above topics
- Continuous assessment and marking system should be followed.
- Application of perspective and presentation, both 2d and 3d

RECOMMENDED BOOKS:

- * Holmes John M. : Applied Perspective
- * Themes and Hudson: Perspective for the Architect
- * Friedrich W. Capelle: Professional perspective drawing for Architects and Engineers
- * G-Sha:- Interior: Perspective in Architectural Design.
- * Japan Publishing Co: Modern Architectural Rendering best 180
- * Japan Publishing Co: Perspective Drawings of Modern Architecture
- * Japan Publishing Co: Air brushing in rendering Shankar Mulik: Perspective and Sciography
- * Basic rendering:Robert W.Gill
- * Rendering with pen + ink: Robert W.Gill

SYLLABUS FOR THIRD SEM – ARCHITECTURE DEGREE COURSE (PE – 302)

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Lectures - 15	Paper	Internal - 100
Studio - 15	Duration Hours	External -
Total - 30		Theory -
Total Credit Points - $L1 + S1 = 02$		Total - 100

SUBJECT: ART APPRECIATION - I

COURSE OBJECTIVE

The Course explores the relationships between architectural discourse and the visual arts from the historical avant-grade to the present. Architectural discourse will be considered as the intersection of diverse system of representation: buildings, projects, drawings, but also architectural theory and criticism, exhibitions, photographs, professional magazines, and the popular press. The course treats as visual arts not only painting and sculpture, but also photography, cinema, fashion, advertisements, and television.

COURSE CONTENTS

The content must stress on three areas:

- * Intellectual theoretic, discursive, analytic, critical aesthetics.
- Visual two and three dimensional, black and white &color, DVDs and CDs on art films, films on artists, even feature films known for excellence in the visual art.
- * Skill techniques, technology, skill of doing things by hand, traditional crafts etc.

Visits to museums and art galleries, exhibitions.

Create awareness of various types of arts, appreciation and understanding of their relationship with Architecture. Relationship between visual arts and performing Arts.

Assessment:

- 1. The sessional works shall consists of study of models, photographs.
- 2. Continuous assessment and marking system should be followed.
- 3. Documentation of these exercises will be done in A2 size portfolio.

SYLLABUS FOR THIRD SEM – ARCHITECTURE DEGREE COURSE (PC – 303**) SUBJECT:ARCHITECTURAL DESIGN-III

Lectures -15	Paper	Internal - 100
Studio - 90	Duration	External - 100
Total -105		Theory -
Total Credit Points - $L1 + S9 = 10$		Total - 200

NOTE:- (**)Means combine passing for internal term work & theory paper & external oral as applicable.

COURSE OBJECTIVE

The student will be confronted with progressively complex exercises involving spatial relations in two dimensions, three dimensions and time. Fundamental designs kills are taught in the context of the architect's wider responsibilities to society, culture and the environment. The course will stress experimentation while providing an analytical and creative framework to develop an understanding of principles of design, structure and materials, as well as necessary skills in drawing and model-making.

COURSE CONTENTS

Scope of design, considering methods of construction, structure, site conditions, socio-economic factors, form and shapes.

Study of planes, mass, forms and shapes

Study of climatic responsive techniques and its applications

Case study of typical small scale settlement in town or village, for understanding evolution of design, use of material, Built – form characters ,B.T. material and technology and natural /surrounding environment

Data collection and analysis including circulation, zoning ,activity distribution ,circulation and activity relationship ,study of building services.

Design problems of medium complex function, low rise buildings.

Sitevisits :Site visits to complete buildings pertaining to design problems, group discussions among students, special discussions shall also be arranged with senior students, students should also play roles of clients ,contractors and consultants.

Study of groups of objects forms, masses with basic geometric forms, their compositions ,for two and three dimensional study in relation with Basic Design.

ASSESSMENT:

Continuous assessment and marking system should be followed

Block models, preliminary models with site development ,human figures with using various model making materials and techniques.

Internal and External exams will be based on above understanding of topics.

REFERENCE BOOKS :

- 1. Time saver standards for building types latest edition
- 2. Neufert Architects data latest edition
- 3. Rendering with pen and ink/ Robert W. Gill

4. Ching – FDK architecture form, Van Nostrand Reinhold staff, New York - latest edition

5. Time saver standards for landscape architecture – latest edition

SYLLABUS FOR THIRD SEM – ARCHITECTURE DEGREE COURSE (BS & AE – 304*)

SUBJECT: BUILDING CONSTRUCTION AND MATERIAL-III

Lectures -15	Paper 80	Internal - 70
Studio - 45	Duration Hours - 3	External - 100
Total - 60		Theory - 80
Total Credit Points - $L1 + S2 = 03$		Total - 250*

NOTE:- (*) Means combined passing for External oral & Theory paper.

COURSE OBJECTIVE

This course introduces students to the art and science of building. Emphasis will be placed gaining an understanding of construction materials, methods and the process of translating design ideas into built form. Specific topics are introduced each week. These topics are then further dealt ,various design strategies, materials, fabrication techniques, and didactic built works are explored. As both a qualitative and a basic quantitative understanding of elementary systems are mastered, the curriculum shifts its focus onto increasingly complex systems serving entire buildings. The sequence's last two courses develop an understanding of how technical-utilitarian systems are resolved, integrated with other systems. The material in class requires students to have some experience and understanding of architectural design, drawings and details.

COURSE CONTENTS

MATERIALS: (Internal Marks 20)

Cement: Ingredients and properties of cement, Types of cement, Grades of cement, Initial and final setting time, Test of cements, ISI Standards, Pozolana material and its properties.

Mortar: Introduction to Mud, Lime and Surkhi Mortar, Cement Mortar-Ingredients, Properties, preparation, mixing and application.

Concrete: Cement concrete of different sizes of aggregate, proportion, strength. Concrete preparation, mixing, hoisting and depositing, shuttering and centering, types of reinforcement and its laying.

CONSTRUCTION: (InternalMarks-50)

Building structure: - Framed structure, composite structure, comparison with load bearing structure. Choice between the two.

Foundation: Excavation in various types of soil.

Footing, for R.C.C, and masonry columns, isolated footing, combined footing,

eccentric footing, strap beam,

Continuous strip footing, steel grill age foundation (shallow foundations in

hard strata)

SHORING single flying and double flying shore .

STAIRCASES: -Types of stairs. Tread, riser, flight, handrails, straight flight, doglegged, open well, quarter turn, triple flight, ramps, R.C.C. staircase.

FLOORING: R.C.C. slabs, One way, Two way cantilever, columns, beam types, details of reinforcement ,Thumb rules and I.S.I standards, form work, etc. Brick jack arch flooring, filler slab. Ribbed slabs etc Assessment:

- Drawing sheets and Notes based on the above topic.
- Continuous assessment and marking system should be followed Internal and External exams will be based on above understanding of topics.

REFERENCE BOOKS

- 1. Building Construction by DR B C Punmia / Er . Ashok Kumar Jain /DrArun Kumar Jain
- 2. Building construction by W B MckayVol -2 & 3
- 3. Building construction by R.ChudleyVol -1

SYLLABUS FOR THIRD SEM – ARCHITECTURE DEGREE COURSE

(BS & AE - 305**)

SUBJECT: THEORY OF STRUCTURE-III

Lectures - 45	Paper - 80 Marks	Internal - 20
Studio -	Duration Hours - 3	External
Total - 45		Theory - 80
Total Credit Points - $L3 + S0 = 03$		Total - 100**

NOTE:-(**) Means combine passing for internal term work & theory paper & external oral as applicable.

COURSE OBJECTIVES:

- To Introduce Theory of simple bending &shear stress concept in beams.
- To Understand Deflection of beams.

COURSE CONTENTS :

1. Theory of simple bending:-

Concept of bending stress, Assumptions in theory of simple bending, bending stress formula M/I=E/R=F/Y(derivation), neutral axis, moment of resistance, examples to cover rectangular, angle, channel. Tee and I sections.

2. Shear stress in beams:-

Concept of shear stress, theory of shear stress, distribution of shear stress on rectangular section(derivation),only formulas for other shapes(Circular, I, T)

and examples to cover above concepts.

3. Deflection of beams:-

Concept of deflection, limits of deflections, deflection by double integration method for simply supported beam with udl on full span, central point load, cantilever with full UDL and point load at free end cases.

- 4. Design of simple tension and compression member, use of IS800 and steel table.
- 5. **Composite beam**(flitched beam)concept, moment of resistance of flitched beams.

Assignment: Five assignments to cover above syllabus

REFERENCEBOOKS:

Strength of materials - S.P. Timoshenko / D.H. Young, R.S. Khurmi
Strength of materials - Andrew Pytel, F.L.Singer
Strength of materials - S. Ramamurtham
Strength of materials - R. Narayan
Strength of materials - B.K. Bansal
Theory of structure - S. Ramamurtham
Design of steel structure- Dr. Ram Chandra - S.K.Duggal

8. I.S. 800

9. Steel Table.

<u>SHIVAJI UNIVERSITY, KOLHAPUR</u> SYLLABUS FOR THIRD SEM – ARCHITECTURE DEGREE COURSE

(PC – 306**) SUBJECT: HISTORY OF ARCHITECTURE – I

Lectures - 15	Paper - 80 Marks	Internal - 20
Studio - 30	Duration Hours - 3	External
Total - 45		Theory - 80
Total Credit Points - $L1 + S1 = 02$		Total - 100**

NOTE:- (**) Means combine passing for internal Term work & Theory paper & External oral as applicable.

COURSE OBJECTIVE

Subject includes the study of various styles in Architecture mainly in Asian countries i.e. India and Indian subcontinent, East Asia and West Asia, through various ages from prehistoric period to colonial period.

The study can actively help in its preservation and evolution in design process.

COURSE CONTENTS

It is not only the study of building but also the effect of climate, religious, social and political conditions, technological development, material selection and aesthetical influence on the building design through various periods. It is not only the study of only monumental building but other building types, market places, and city planning etc.

Students will study in detail the History of Architecture of India, and a brief introduction of the History of Architecture in other countries as specified.

TOPICS

- 1. Pre historic Architecture (ancient period) in India and Mesopotamia, India-Vedic culture and Indus Valley civilization, Mesopotamia - Babylonian, Non Babylonian and Assyrian.
- 2. Detail study of Indian Architecture e.g. Buddhist, and Hindu period.

a. Buddhist and Hindu period

- Architecture during the rule of the Mouryan& Gupta dynasty.
- Ashoka and beginning of Buddhist period
- Buddhist Architecture in the Hinayan phase, Rock cut architecture
- Mahayana phase Buddhist monasteries of Gandhara
- Buddhist Rock cut Architecture of South India

- Chalukyan Architecture-Aihole, Badami&Pattadkal
- Dravidianstyle(early phase till Madura style)
- North Indian or Indo Aryan style early phase
- North Indian Orissa group
- North Indian Khajuraho group and central Indian group
- North Indian or Indo Aryan style of Gujarat
- The later Chalukyan style or Hoysala group
- The temple cities of Jain and Jain temples.

ASSESSMENT:

- Continuous assessment and marking system should be followed
- Common Question Bank should be prepared for the paper of this subject which will reviseafter every three exams of this semester.
- For internal assessment, each topic should be assessed on basis of sketches and tutorials

REFERENCEBOOKS:

- 1. Indian Architecture Buddhist & Hindu period by Percy Brown
- 2. History of Architecture by Sir Banister Fletcher
- 3. The Architecture of India Buddhist & Hindu period by Satish Grover The
- 4. History of Architecture in Indian by Christopher Tadgell
- 5. Buddhist stupas in Asia Forwarded by Robert AF Thurman (Lonely Planet Publication) History
- 6. of Architecture Ancient building Material by Satish Chandra
- 7. The Architecture of Indian Desert, Kulbhushan & Minakshi Jain
- 8. Architecture of word series (Hindu & Islamic Period) ED Heriri Stietin
- 9. The great ages of World Architecture G .K Hiraskar
- 10. Indian architecture hindu, buddhist, jain&islam- Vedula V.L.N urthy

<u>SHIVAJI UNIVERSITY, KOLHAPUR</u> SYLLABUS FOR THIRD SEM – ARCHITECTURE DEGREE COURSE (BS&AE – 307)

SUBJECT: CLIMATOLOGY AND ARCHITECTURE

Lectures - 15	Paper - 100 Marks	Internal - 50
Studio - 30	Duration Hours - 3	External -
Total - 45		Theory - 100
Total Credit Points - $L1 + S1 = 02$		Total - 150

COURSE OBJECTIVES:

To understand climate as a determinant of architectural design and to enable the students to evolve climate responsive design.

COURSE CONTENTS :

- The climate factor is one of the basic criteria in architecture design process. The application of knowledge of climate is useful in views of comfort and environment. The study includes climatology pertaining to architectural to planning and energy efficient architecture.
- Introduction to climate as a factor of human shelter, comfort and environment. Elements of climate in different regions at different altitudes and latitudes, macro and micro climate, study of effects of landscape elements and topography on micro climate.
- Study of solar radiation, temperature and their effects on architecture. sun movements, times, shading devices, effects of latitude on sun angles, design of shading devices and study of sciography on horizontal and vertical surfaces with shadow angle. Thermal comfort condition and their relation to overheated and under-heated periods. Relation of relative humidity, thermal comfort.
- Air movement due to natural and built forms, air moment through buildings, use of mechanical ventilation, thermally induced air currents- stack effect, venture effect, use of courtyards
- Effect of humidity in building, effect of large water bodies on humidity reading and preparation of various tables, charts prepared by department of Meteorology, etc. visit to nearest metrological station.
- Climate and design of buildings, design strategies in warm and humid climates, Hot and dry climate, Composite climate and tropical upland climate etc.

ASSESSMENT:

• Continuous assessment and marking system should be followed.

- Common Question Bank should be prepared.
- Internal exams will be based on above understanding of topics.

REFERENCE BOOKS:

- 1. Manual of Tropical Housing and Building Climatic Design. Author: O.H, Koenigsberger, T.G.Ingersill, Alan Mayhew, S.V.Szokolay.
- 2. Climate Responsive Architecture A Handbook for Energy Efficient Buildings. Editors: ArvindKrishan, SimosYannas, Nick Baker, S.Y.Szokolay.
- 3. General Climatology by Howard Critchfield
- 4. Controlling air movement A Manual for architects and builders by Terry S. Boutet
- 5. Wind in architectural and environmental design by Michele G Melarangno
- 6. Housing climate and comfort by Martin Envas , published by Architectural press London,

1980

7. Bureau of Indian standards IS 3792, Handbook on functional requirements of building other than industrial buildings part I to IV, New Delhi 1987

<u>SHIVAJI UNIVERSITY, KOLHAPUR</u> SYLLABUS FOR THIRD SEM – ARCHITECTUREDEGREECOURSE (BS & AE – 308) SUBJECT : BUILDING SERVICES – I (SANITATION)

Lectures - 30	Paper - 50 Marks	Internal - 50
Studio -	Duration Hours - 2	External
Total per week - 30		Theory - 50
Total Credit Points - $L2 + S0 = 02$		Total - 100

COURSE OBJECTIVE

Study the concepts of Drainage systems, layouts, different accessories, pipes, chambers, maintenance of systems etc.

COURSE CONTENTS :

Design of Drainage system at plot level , Inspection of Site , Locations of fittings. Sanitary

Fittings, classification and types of waste and soil fittings

Working, variations, fitting and connections of different soil and waste fittings, Space

requirement and accessories for different fittings, construction of these fittings. Traps of

various types, materials etc

Pipes of various types, fittings and accessories, workmanship, piping systems thru sunk and core cutting

Chambers and manholes of various types, construction, manhole covers.

Connection to central drainage, drops, alternate systems of digestion, Design of septic tanks, various

Materials, vertical SUBO septic tank, two pit toilets, biogas plants on night soil, calculations, constructiondetails, Soak pit construction,

Construction and maintenance of drains, testing of drains, equipments.

One pipe and two pipe systems, ventilation of drains.

Layouts of toilets (attached toilet, public toilets for gents and ladies, ventilation of toilets,

Assessment:

- Drawing sheets and Notes based on the above topic.
- Continuous assessment and marking system should be followed Internal assessment will be based on above understanding of topics.

REFERENCE BOOKS -

- 1. National Building Code 2016
- 2. Sanitation, Drainage and Water Supply-Mitchell.
- 3. Environment and Services-Peter Burberry
- 4. Building Construction by Rangwala.
- 5. Charanjit Shah, Water supply and sanitary engineering, Galgotia publishers.

SYLLABUS FOR THIRD SEM -ARCHITECTURE DEGREE COURSE (BS & AE – 309)

SUBJECT : ENVIRONMENTAL STUDIES – I

As a Compulsory Paper for all Undergraduate Courses

Lectures - 30	Paper -	Internal -
Studio -	Duration Hours -	External -
Totalperweek - 30		Theory -
Total Credit Points - $L2 + S0 = 02$		Total -

1. Nature of Environmental Studies: Definition, scope and importance. Multi disciplinary nature of environmental studies Need for public awareness.

- 2. Natural Resources and Associated Problems:
 - a) Forest resources: Use and over- exploitation, deforestation, dams and their effects on forests and tribal people.
 - b) Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, damsbenefits and problems.
 - c) Mineral resources: Usage and exploitation. Environmental effects of extracting and using mineral resources.
 - d) Food resources: World food problem, changes caused by agriculture effect of modern agriculture, fertilizer-pesticide problems.
 - e) Energy resources: Growing energy needs, renewable and non- renewable energy resources, use of alternate energy sources. Solar energy, Biomass energy, Nuclear energy,
 - e) Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.

Role of an individuals in conservation of natural resources.

- 3. Ecosystems: Concept of an ecosystem. Structure and function of an ecosystem. Producers, consumers and decomposers. Energy flow in the ecosystem. Ecological succession. Food chains, food webs and ecological pyramids. Introduction, types, characteristics features, structure and function of the following ecosystem :a) Forest ecosystem, b) Grassland ecosystem, c) Desert ecosystem, d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)
- 4. Biodiversity and its conservation: Introduction- Definition: genetic, species and ecosystem diversity. Bio-geographical classification of India. Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic

and option values. India as a mega- diversity nation. Western Ghatas a biodiversity region. Hot-spots of biodiversity. Threats to biodiversity habitat loss, poaching of wildlife, man- wildlife conflicts. Endangered and endemic species of India. Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

References :

- 1) Agarwal, K.C.2001, Environmental Biology, NidiPubi. Ltd., Bikaner.
- 2) BharuchaErach, The Biodiversity of India, Mapin Publishing pvt.Ltd., Ahmedabad 380013, India, Email:mapin@icenet.net (R)
- 3) Brunner R.C., 1989, Hazardous Waste Incineration, McGraw Hill Inc. 480p
- 4) Clank R.S. Marine Pollution, Clanderson Press Oxford(TB)
- 5) Cunningham, W.P. Cooper, T.H.Gorhani, E. & Hepworth,M.T.2001, Environmental Encyclopedia, Jaico Publ. Hpise, Mumbai,1196p
- 6) De A.K., Environmental Chemistry, Wiley WasternLtd.
- 7) Down to Earth , Cebtre fir Scuebce and Environment(R)
- Gleick, H.,1993, Water in crisis, Pacific Institute for studies in Dev., Environment & Security. Stockholm Env. Institute. Oxford Univ. Press 473p
- 9) Hawkins R.e., Encyclopedia of Indian Natural History, Bombay Natural History Society, Bombay(R)
- 10) Heywood, V.H.& Watson, R.T.1995, Global Biodiversity Assessment, Cmbridge Univ. Press1140p.
- 11) Jadhav, H.&Bhosale, V.M.1995, Environmental Protection and Laws, Himalaya Pub. Hcuse, Delhi284p.
- 12) Mickinney, M.L.& School. R.M.1196, Environmental Science Systems & Solutions, Web enhanced edition,639p.
- 13) Mhaskar A.K., Mastter Hazardous, Techno-Science Publications(TB)
- 14) Miller T.G.Jr., Environmental Science. Wadsworth Publications Co.(TB)
- 15) Odum, E.P.1971, Fundamentals of Ecology, W.B.Saunders Co. USA, 574p.
- 16) Rao M.N.&Datta, A.K.1987, Waste Water Treatment, Oxford & IBH Publ. Co. Pvt. Ltd.,345p
- 17) Sharma B.K., 2001, Environmental Chemistry, Gokel Publ. Hkouse, Meerut
- 18) Survey of the Environment, The Hindu(M)
- 19) Townsend C., Harper, J. and Michael Begon, Essentials of Ecology, Blackwell Science (TB)
- 20) Trivedi R.K. Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards, vol. I and II, Environmental Media(R)
- 21) Trivedi R.K. and P.K. Gokel, Intriduction to air pollution, Tecgbi-Science Publications(TB)
- 22) Wagner K.D., 1998, Environmental management, W.B. SaundersCo. Philadelphia, USA499p.
- 23) Paryavaranshastra GholapT.N.
- 24) ParyavaranSahastra –Gharapure (M)Magazine (R)Reference (TB)Textbook

<u>SHIVAJI UNIVERSITY, KOLHAPUR</u> SYLLABUS FOR FOURTH SEM – ARCHITECTURE DEGREE COURSE (PC – 401) SUBJECT: GRAPHICS-IV

Lectures -15	Paper -	Internal - 100
Studio - 45	Duration -	External -
Total -60		Theory -
Total Credit Points-L1 + S1=02		Total - 100

COURSE OBJECTIVE

Thestudy of this subject is continuation of drafting skills, various techniques of presentation with knowledge of perspective. This is continuation and further development of IIIS em.

COURSE CONTENTS

- Sciographyof individualanddifferentgeometrical objectsrepresenting2Dprojections.Applicationof sciographyin 3D projectionsof geometricalobjects.
- 3D sketching –Designoriented.
- Architecturalrendering techniquesusingmanualskills.
- Detailed rendering with vehicles, landscaping and people in action.
- Studiowork basedondesignproblem.Freehandsketchesofdesignprobleminperspective
- Application of software such as Sketchup

Assignment:-

Drawingsassignment onabovetopics.

Drawing sciography using Sketchup

REFERANCE BOOKS:

- 1. Holmes John M. : Applied Perspective
- 2. Themes and Hudson: Perspective for the Architect.
- 3. Friedrich W. Capelle: Professional perspective drawing for Architects and Engineers
- 4. G-Shah:Interiors: Perspective in Architectural Design.
- 5. Japan Publishing Co: Modern Architectural Rendering best 180
- 6. Japan Publishing Co: Perspective Drawings of Modern Architecture
- 7. Japan Publishing Co: Air brushing in rendering

- 8. Shankar Mulik: Perspective and Sciography
- 9. Basic rendering by Robert W.Gill
- 10. Rendering with pen+ ink by Robert W.Gill

SYLLABUS FOR FOURTH SEM – ARCHITECTURE DEGREE COURSE (PE – 402) SUBJECT: ART APPRECIATION –II

Lectures -15	Paper -	Internal - 100
Studio - 15	Duration -	External
Total -30		Theory
Total Credit Points-L1 + S1=02		Total - 100

COURSE OBJECTIVE

The course explores the relationships between architectural discourse and the visual arts from the historical avant-garde to the present. Architectural discourse will be considered as the intersection of diverse systems of representation: buildings, projects, drawings, but also architectural theory and criticism, exhibitions, photographs, professional magazines, and the popular press. The course treats as visual arts not only painting and sculpture, but also photography, cinema, fashion, advertisements, and television.

COURSE CONTENTS

The content must stress on three areas.

- Intellectual theoretic, discursive, analytic, critical aesthetics.
- Visual two and three dimensional, black and white &colour, DVDs and CDs on art films, films on artists, even feature films known for excellence in the visual.
- Skills techniques, technology, skills of doing things by hand, traditional crafts etc.

• History of Fine Arts, study of Isms.

Students work may be seen to build an "Art Thesis" of sort, after a series of works in studio, workshops, time problems, as well as collective efforts in installations etc. coupled with short theoretical assignments which improve the overall perception of arts. Programs should be both inside studios as well as out in the streets, chowks, bazaars, talavs, and other public spaces, not only for sketching but carrying out installations after studios.

Assessment:

The sessional works shall consist of 3D model and Project report writing and seminars on selected project based on the subject.

Reference Books -

- 1. Principles Of Element Design;Peter Rich,
- 2. Yvonne Dean; Butterworth-Heinemann
- 3. Design Fundamentals In Architecture; V.S.Parmar; Somaiyya Publications

5. Manual Of Rendering With Pen And Ink;Robert W. Gill;Thames And Hudson

Publication

$\begin{array}{l} \mbox{Syllabus for fourth sem} - \mbox{Architecture degree} \\ \mbox{Course} \\ \mbox{(PC} - 403^{**}) \end{array}$

Lectures -15	Paper	- 100	Internal	- 100
Studio -90	Duration	- 9 Hours	External	- 100
Total -105			Theory	- 100
Total Credit Points - L1 + S9=10			Total	- 300**

SUBJECT:ARCHITECTURALDESIGN-IV

NOTE:- (**) Means combine passing for internal term work & theory paper & external oral as applicable

COURSE OBJECTIVE

Incontinuation with sem. III the student will be confronted with progressively complex exercises involving spatial relations in two dimensions, three dimensions and time. Fundamental Design skills are taught in the context of the architect's wider responsibilities to society, culture and the environment. The course will stress experimentation while providing an analytical and creative framework to develop an understanding of principles of design, structure and materials as well as necessary skills in drawing and model - making.

COURSE CONTENTS

- ScopeofDesign,considering methodsofconstruction,structure,siteconditions,socio-economicfactors,form and shapes.
- Studyofplanes,mass,formsand shapes.
- Casestudy of typicalsmallscalesettlementin town orvillage,for understandingevolution of design, use of material.
- Datacollection and analysisincluding circulation, understanding movementpatterns
- Study of special needs of the people with physical disabilities
- Design problemsofmediumcomplexfunction, lowrise buildings.
- Study of building bylaws
- Conduct site analysis to formulate design proposal

- Sitevisits:Sitevisitstocompletebuildingspertainingtodesignproblems ,groupdiscussionsamongstudents,specialdiscussionsshallalsobearra ngedwithseniorstudents,students shouldalsoplayrolesofclients,contractorsandconsultants.
- Studyofgroupsofobjectsforms,masseswith basicgeometricforms,theircompositions,fortwoand threedimensionalstudyin relationwith BasicDesign.

Assessment:

Continuousassessmentand markingsystem should befollowed Blockmodels,preliminary modelswith sitedevelopment,humanfigureswith using variousmodelmakingmaterialsandtechniques. Internaland Externalexamswillbebasedon above topics.

REFERENCE BOOK:

- 1. Time saver standards for building types latest edition
- 2. Neufert Architects data latest edition
- 3. Rendering with pen and ink- Robert W. Gill
- 4. Ching FDK architecture form , Van Nostrand Reinhold staff ,New York latest edition
- 5. Time saver standards for landscape architecture latest edition

SYLLABUS FOR FOURTH SEM – ARCHITECTURE DEGREE COURSE (BS & $AE - 404^*$)

SUBJECT: BUILDINGCONSTRUCTIONANDMATERIAL-IV

Lectures -15	Paper - 80	Internal - 70
Studio -45	Duration - 3 Hours	External - 100
Total -60		Theory - 80
Total Credit Points-L1 + S2=03		Total - 250*

NOTE:-(*)Meanscombinedpassing forExternaloralandTheorypaper.

COURSE OBJECTIVE

Thiscourseintroducesstudentstheartandscienceofbuilding.Emphasiswillbeplacedgaininganunderstandingofconstructionmaterials,methodsandtheprocessoftranslatingdesignideasintobuiltform.Specifictopicsare

introduced each week. These topics are then further, various design strategies, materials, fabrication techniques, and didactic built works are explored. As both a qualitative and a basic quantitative understanding of elementary systems are mastered, the curriculum shifts

to

its focus onto increasingly complex systems serving entire buildings. These quence's last two courses develop an understanding of how technical-

utilitariansystemsareresolved, integrated with other systems. The material inclass requires st udents to have some experience and understanding of architectural design, drawings and detail s.

COURSE CONTENTS

Thesubjectshould bedealt with, keeping inmind the fact that construction is a process and understanding the process should be given importance.

MATERIALS: (InternalMarks -20)

- **Timber**:Buildingtimbertypesanditsproperties,Defectsintimber,Useandapplica tionoftimberinconstruction.
- **Processedwoods**:PlywoodandSyntheticboardspropertiesandapplication.Useofalternativematerialsassubstitutetowood.
- **Flooring:**Naturalstones,processedflooringmaterialscementbasedtiles,CeramicandVitrifiedtiles,Woodandrubberbased floorings,theirproperties,applicationandlayingmethods.
- **BitumenandwaterproofingMaterials:**AsphaltandBituminousmaterialspropertiesandapplication.UseofadmixturesandChemicalsforwaterproofing.

Note: Students should be exposed to onsite and Laboratory tests of above materials. Students should conduct markets urvey of above materials.

CONSTRUCTION-(Internal Marks-50)

Timberflooring:Ground and upperfloors, types, training of floors joinerydetailsthumbrules,etc.

Timberroofing:Trusses, king postandQueen postrooftruss,joinerydetails,roofcovering etc.

Cavitywalls: Types, constructions details, advantages and disadvantages

Doorandwindows:

T.W.panelleddoorsandwindows,types ,ventilators,detailsofjoinery,steelwindowsforres idencesand industrialpurpose,methodof fixing,ISIstandard,section,sizesetc.Ironmongery and fixturesofdoors,windows,materialstypesand function.

Thissubjectshould be dealtwithkeeping inmind thefactthatconstruction is approcess and understanding the process should be given importance.

Sitevisitsshould beconducted forbetterunderstanding of construction process. The different situations all for different construction method, techniques there method have certain limitations and advantages.

Assessment:

Drawing sheetsand Notes based on theabovetopic.Continuousassessmentand markingsystem should befollowed.

Internaland Externalexamswillbebasedon above understanding oftopics.

REFERANCEBOOKS

- 1. Building Construction by DR B C Punmia / Er . Ashok Kumar Jain /DrArun Kumar Jain
- 2. Building construction by W B MckayVol -2 & 3
- 3. Building construction by R.Chudleyvol -1

SYLLABUS FOR FOURTH SEM – ARCHITECTURE DEGREE COURSE $(PC - 405^{**})$

Lectures -45	Paper	- 80 Marks	Internal	-	20
Studio -	Duration	- 3 Hours	External	-	-
Total -45			Theory	-	80
Total Credit Points-L3 + S0=03			Total	-	100**

SUBJECT: THEORYOFSTRUCTURE-

IV

NOTE:- (**) Means combine passing for internal term work & theory paper & external oral as applicable

COURSE OBJECTIVE

1.Columnsand Struts: Concept of structuralbehavior of shortand long columns,

Determinationofbuckling loadon long column by Euler'sformulaforbothends hinged and itsextension to both endfixed, one end fixed other free, one end fixed and other hinged, support conditions.Limitations of Euler'sformula.Rankine'stheory,slendernessratio,effectivelength,examplesto coverabove.

- 2.**Rivetedandweldedjoints**: -Typeofrivetedjoints, failure of joints in riveted connections,strength of riveted joint(problems on single and double riveted lap and butt joint), Types of welded joints ,advantages and disadvantages of welded joints, design of welded connection for tension compression members (simple problems on strength of welded connection).
- 3. Designof loadbearing (brickand stone) masonry wallsandpiers(forbuildingsonly)

4.Soilmechanics:-

Importanceandapplicationsofsoilmechanics,SBCofsoil(definition and plateload test),ISItableforSBCofvarioustypesofsoils,sieve analysis,physicalpropertiesofsoil-soilasthreephasesystem, specific gravity,porosity, void ratio,water content,degree of saturation.(definitionsandconceptsand basicexamples related on above properties)

5.**Masonryretaining walls**for waterand earth pressure(withoutsurcharge),conditionsofstability of retaining walls.(Exampleson rectangularsectionand trapezoidalsectionwithretaining

facevertical).

Assessment:

FiveAssignmentstocover abovesyllabus.

REFERENCEBOOKS:

- 1. Strengthofmaterials S.P. Timoshenko & D.H. Young, R.S. Khurmi
- 2. Strengthofmaterials AndrewPytel, F.L. Singer
- 3. Strengthofmaterials S. Ramamurtam
- 4. Strengthofmaterials R. Narayan
- 5. Strengthofmaterials B.K. Bansal
- 6. Theory of structure S. Ramamurtam
- 7. Design of steel structure- Dr. Ram Chandra S.K.Duggal
- 8. Soil Mechanics Dr. B.C. Punamia& Jain Dr. K.R. Arora B.J. Kasamalkar
- 9. I.S. 800

10. Steel table

SYLLABUS FOR FOURTH SEM – ARCHITECTURE DEGREE COURSE (BS&AE – 406) SUBJECT:SURVEYINGANDLEVELING

Lectures -15	Paper -	Internal - 50
Studio/Practical - 30	Duration -	External - 50
Total -45		Theory
Total Credit Points-L1 + S1=02		Total- 100

COURSE OBJECTIVE

- 1. Introduction of survey: aims, objects & importance of subject.
- 2. Introduction toland recordsurvey, indexmap, top sheets.
- 3. Chain survey, triangulation & instruments for ranging, offsetting.
- 4. Calculationofareabymethodoftriangles,simponrule,byplan meter,digitalplan meter.
- 5. Introduction toprismaticcompass&itsuses. (theoreticalimportance)
- 6. Introduction topaintablesurvey(instruments&methods)
- 7. Levelinginstruments&methodstocalculationlevels,conceptofcontours& itsusesitscharacteristics&introduction totheodolite.
- 8. Uses of photographic surveying & concept of GPS.
- 9. Introduction toadvanceinstrumentslikedigital planmeter, digitaltheodolite,automaticlevel,radiation survey method,environmentalsurveyinstruments,digitaldistancemeter,etc
- 10. Lineoutof simpleresidentialbuilding plan

FIELDBOOK:-

- 1) Recording of chainsurvey
- 2) Application of prismatic compass

- 3) Sign conventionsforvariousobjects(symbols)
- 4) Areameasurementby plan meter
- 5) Leveling instruments
- 6) Application of the odolite.

DRAWINGSHEETS:-

- 1) Closetraversing of building by compass
- 2) Plan meter
- 3) Blockcontouring
- 4) Plain tablesurvey sheets

REFERENCEBOOKS:

- 1.Surveying (Vol.1&2) ----- Dr.Punmia and Jain
- 2. Surveying and Levelling----N.N.Basak
- 3. Advance Surveying-----P.som&B.N.Ghosh
- 4. Surveying and Levelling (Part-1)----T.P.Kanetkar&S.V.Kulkarni

SYLLABUS FOR FOURTH SEM – ARCHITECTURE DEGREE COURSE SUBJECT: $(PC - 407^{**})$ HISTORY OF ARCHITECTURE - II

Lectures -15	Paper	- 80	Internal -	20
Studio - 30	Duration	- 3 Hours	External -	-
Total - 45			Theory -	80
Total Credit Points-L1 + S1=02			Total -	100**

NOTE:- (**) Means combine passing for internal Term work & Theory paper & External oral as applicable.

COURSE OBJECTIVE

Subject includes the study of various styles in Architecture mainly in Asian countries i.e. India andIndian subcontinent, East Asia and West Asia, through various ages from prehistoric period tocolonial period. The study can actively help in its preservation and evolution in design process.

COURSE CONTENTS

It is not only the study of building but also the effect of climate, religious, social and political conditions, technological development, material selection and aesthetical influence on the building design through various periods. It is not only the study of only monumental building but other building types, market places, and city planning etc.

Students will study in detail the History of Architecture of India, and a brief introduction of the History of Architecture in other countries as specified.

Topics:

1)Study of Indian Islamic Architecture.

- Delhi Provincial style under Slave, Khilaji, Tughalaq&Lodhi dynasty Punjab provincial style
- Bengal and Jaunapur provincial style, Malwa and Gujarat provincial style
- Deccan provincial style Gulbarga, Bidar& Golconda Bijapur provincial style
- Mughal period under Babar &Humayun Mughal period under Akbar

• Mughal period under Jahangir and Shahajhan Mughal period under Aurangzeb and after

2) Brief introduction to the colonial Architecture in Indian sub continente.g.India, Pakistan, Sri Lanka and Bangladesh

- 3) Brief Introduction to the Architecture in China.
- 4) Brief Introduction to the Architecture in Japan

Assessment:

- Continuous assessment and marking system should be followed
- Common Question Bank should be prepared for the paper of this subject which will reviseafter every three exams of this semester.
- For internal assessment, each topic should be assessed on basis of sketches and tutorials

REFRANCE BOOKS -

- 1. Indian Architecture Islamic Period by Percy Brown
- 2. The Architecture of India Islamic period by Satish Grover
- 3. Architecture of Pakistan Kamil Khan Mumtaz
- 4. FatepurSikri Marg Publication
- 5. The sultanate Architecture Marg Publication
- 6. Indian Architecture Hindu, Buddhist ,Jain & Islam Vedula V L N Murthy

SYLLABUS FOR FOURTH SEM – ARCHITECTURE DEGREE COURSE (BS&AE - 408)

SUBJECT : BUILDING SERVICES – II (WATER SUPPLY & ELECT.)

Lectures -30	Paper	- 50	Internal	-	50
Studio -	Duration	- 2 Hours	External	-	-
Total -30			Theory	-	50
Total Credit Points-L 2+ S0=02			Total	-	100

COURSE OBJECTIVE

Study of different water sources ,supply sources

COURSE CONTENTS

Water supply

- Per capita quality and quantity of water supply, sources of water supply at plot level, Municipal water supply system, wells, deep well, shallow well, bore well, rooftop rainwater harvesting, recycling of water.
- Metering of water supply, connection to municipal main, water supply layout inside plot, sump and underground water storage tank, construction in various materials, connections, advantages and disadvantages of various types of tanks, Pump,
- Over head water storage tank, design, construction in different materials, variousconnections.
- Pipes of different types, materials, fittings, workmanship. Valves, taps.
- Layout of water supply inside toilets.
- Hot water supply, domestic water heaters of various types, hot water piping, materials, insulation to pipes, layout of hot water piping.

Electicity
- Generation of electricity, clean and green energy concepts, Small Generators, stand by
- systems and inverters, UPS etc
- Ampere, volts, A. C, D. C supply, three phase, Single phase etc, Supply of electricity to plot, sub
- station, H T panel and L T panel, Underground and overhead cabling, metering of
- Electricity.Electric supply at plot level.
- Bus Bar; Meter board, earthing, Distribution board, fuse, MCB ULCB etc, switch boards,
- switches, socket etc, wiring systems, wires and cables, lamps and luminaries, fans, domestic
- appliances, layout of electricity in a flat, residence

Assessment:

Drawing sheets and Notes based on the above topic.

Continuous assessment and marking system should be followed

Internal assessment will be based on above understanding of topics.

REFERENCE BOOKS

- 1. Plumbing Engineering by Dr.SubhashPatil
- 2. Mechanical and Electrical Equipment for Buildings by Walter T. Grondzik, Alison G. Kwok, Benjamin Stein
- 3. International Plumbing Code by Indian Code Council
- 4. Building Construction Illustrated by Dr. F.D.K Ching
- 5. Building Construction by Sushil Kumar
- 6. Building Construction by B.C Punmia
- 7. Building Construction by Rangwala
- 8. Building Construction by P.C Varghese

SHIVAJI UNIVERSITY, KOLHAPUR

SYLLABUS FOR FOURTH SEM – ARCHITECTURE DEGREE COURSE

(BS&AE-409)

SUBJECT: ENVIRONMENTAL STUDIES - II

Lectures -02	Paper	- 70	Internal	-	30
Studio	Duration	- 3 Hours	External	-	
Total - 02			Theory	-	70
Total Credit Points-L2 + S0=02			Total	-	100

As per the common syllabus provided by the Shivaji University, Kolhapur.

1. EnvironmentalPollution:

Definition: Causes, effects and control measures of: Air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution, Nuclear hazards.

Solid waste Management: Causes, effects and control measures of urban and industrial wastes.

Role of a individual in prevention of pollution.

2. Social Issues and theEnvironment:

Disastermanagement:floods,earthquake,cyclone,tsunamiandlandsli des Urban problems related toenergy.Water conservation, rain water harvesting, watershed management. Resettlement and rehabilitation of people; its problems and concerns. Environmental ethics: Issue and possible solutions.Global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust.Wasteland reclamation. Consumerism and waste products.

3. EnvironmentalProtection:

From Unsustainable to Sustainable development.Environmental Protection Act.Air (Prevention and Control of Pollution) Act.Water (Prevention and control of Pollution) Act.Wildlife Protection Act. Forest Conservation Act. Population Growth and Human Health, Human Rights.

4. FieldWork:

Visit to a local area to document environmental assets- River/forest/grassland/hill/mountain.

or

Visit to a local polluted site -

Urban/Rural/Industrial/Agricultural or Study of common plants, insects,birds. or Study of simple ecosystems - ponds, river, hill slopes, etc. (Field work is equal to 10 lecture hours)

References :

- 1) Agarwal, K.C.2001, Environmental Biology, NidiPubiLtd., Bikaner.
- 2) ErachBharucha, The Biodiversity of India, Mapin Publishing pvt.Ltd., Ahmedabad 380013, India, Email:mapin@icenet.net (R)
- Brunner R.C., 1989, Hazardous Waste Incineration, McGraw Hill Inc. 480p
- 4) Clank R.S. Marine Pollution, Clanderson Press Oxford(TB)
- 5) Cunningham, W.P. Cooper, T.H.Gorhani, E. & Hepworth, M.T.2001, Environmental Encyclopedia, Jaico Publ. Hpise, Mumbai, 1196p
- 6) Environmental Chemistry, Wiley EasternLtd.
- 7) Down to Earth , Cebtre fir Scuebce and Environment(R)
- Gleick, H.,1993, Water in crisis, Pacific Institute for studies in Dev., Environment & Security. Stockholm Env. Institute. Oxford Univ. Press 473p
- 9) Hawkins R.e., Encyclopedia of Indian Natural History, Bombay Natural History Society, Bombay(R)
- 10) Heywood, V.H.& Watson, R.T.1995, Global Biodiversity Assessment, Cambridge Univ. Press1140p.
- 11) Jadhav, H.&Bhosale, V.M.1995, Environmental Protection and Laws, Himalaya Pub. Hcuse, Delhi284p.
- 12) Mickinney, M.L.& School. R.M.1196, Environmental Science Systems & Solutions, Web enhanced edition,639p.
- 13) Mhaskar A.K., Mastter Hazardous, Techno-Science Publications(TB)
- 14) Miller T.G.Jr., Environmental Science. Wadsworth Publications Co.(TB)
- 15) Odum, E.P.1971, Fundamentals of Ecology, W.B.Saunders Co. USA, 574p.
- 16) Rao M.N.&Datta, A.K.1987, Waste Water Treatment, Oxford & IBH Publ. Co. Pvt. Ltd.,345p
- 17) Sharma B.K., 2001, Environmental Chemistry, Gokel Publ. Hkouse, Meerut
- 18) Survey of the Environment, The Hindu(M)

- 19) Townsend C., Harper, J. and Michael Begon, Essentials of Ecology, Blackwell Science (TB)
- 20) Trivedi R.K. Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards, vol. I anfd II, Environmental Media(R)
- 21) Trivedi R.K. and P.K. Gokel, Introduction to air pollution, Tecgbi-Science Publications(TB)
- 22) Wagner K.D.,1998, Environmental management, W.B. SaundersCo. Philadelphia, USA499p.
- 23) Paryavaranshastra GholapT.N.
- 24) ParyavaranSahastra –Gharapure (M)Magazine (R)Reference (TB)Textbook

Equivalence of subjects for SECOND YEAR B. ARCH.

Semester - III

Subject as j	per syllabus of 2010-11	Equivalence of subjects as per syllabus of CBCS Pattern 2019 -2020 onwards				
Subject code	Name of Subject	Subject code	Name of Subject			
AR03- 01	Graphics - III	PC - 301	Graphics – III			
AR03- 02	Art Appreciation - I	PE-302	Elective – I			
AR03- 03	Architectural Design - III	PC - 303	Architectural Design – III			
AR03- 04	Building Construction & Material - III	BS & AE - 304	Building Construction & Material – III			
AR03-05	Theory of Structure - III	BS & AE – 305	Theory of Structure – III			
AR03-06	History of Architecture - I	PC - 306	History of Architecture			
AR03- 07	Climatology & Architecture	BS & AE – 307	Climatology & Architecture			
AR03- 08	Building Services - I (Sanitation)	BS & AE - 308	Building Services – I			
AR03-09	Computer Technology & Architectural Presentation -I	PC - 301	Graphics – III			
AR03-10	Environmental Studies	BS & AE – 309	Environmental Studies			

Semester - IV

.

Subject as	per syllabus of 2010-11	Equivalence of subjects as per syllabus of CBCS Pattern 2019 -2020 onwards				
Subject code	Name of Subject	Subject code	Name of Subject			
AR04- 01	Graphics - IV	PC - 401	Graphics – IV			
AR04- 02	Art Appreciation - II	PE-402	Elective – II			
AR04- 03	Architectural Design - IV	PC - 403	Architectural Design - IV			
AR04- 04	Building Construction & Material - IV	BS & AE – 404	Building Construction & Material – IV			
AR04- 05	Theory of Structure - IV	BS & AE – 405	Theory of Structure – IV			
AR04- 06	Surveying & Leveling	BS & AE – 406	Surveying & Leveling			
AR04- 07	History of Architecture - II	PC - 407	History of Architecture			
AR04- 08	Building Services - II (Water Supply & Elect.)	BS & AE – 408	Building Services – II			
AR04- 09	Computer Technology & Architectural Presentation-II	PC - 401	Graphics – IV			
AR04-10	Environmental Studies	BS & AE – 409	Environmental Studies			

5HIVAJI UNIVERSITY KOLHAPUR



Estd. 1962

NAAC 'A' Grade

Faculty of Science and Technology

Syllabus For

B. Arch. Part – III (Sem V & II)

(To be implemented from June 2021 onwards)

(Subject to the modifications that will be made from time to time)

THIRD YEAR ARCHITECTURE ENGINEERING – CBCS PATTERN

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1	PC – 501**	1	1	1						9	6	6							70	100	45	6	100	50
2	BS & AE -502 *	1	1	1				_		45	3	3		3	ESE	80	80	36	ines	100	45	3	70	35
2	DS & AE 502	2	2	2					-			5		2	ESE	80	80	26	idel	100	15	5	20	10
5	DS & AE -305 **	3	5	5										3	ESE	80	80	50	Gui				20	10
4	PC - 504**	1	1	1						1	2	2		3	ESE	80	80	36	OS			2	20	10
5	PC - 505**	1	1	1						1	2	2		3	ESE	80	80	36	B			2	20	10
6	BS & AE – 506	1	1	1						1	2	2		2	ESE	50	50	23	реі			2	50	25
7	PC - 507	1	1	1						1.5	3	3			-	-	-	-	As			3	50	25
8	PC - 508	1	1	1						1	2	2		2	ESE	50	50	23				2	50	25
	TOTAL	10	10	10						19	20	20					420			200			380	
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2	BS & AE -602 *	1	1	1						4.5	3	3		4	ESE	80	80	36		100	45	3	70	35
3	BS & AE -603 **	3	3	3										3	ESE	80	80	36	SO				20	10
4	PC - 604 **	1	1	1						1	2	2			ESE	80	80	36	r B nes			2	20	10
5	PC - 605**	1	1	1						1	2	2			ESE	80	80	36	pe			2	20	10
6	BS & AE – 606	1	1	1						1	2	2			ESE	50	50	23	As Guid			2	50	25
7	PC - 607	1	1	1						1.5	3	3							Ŭ	100	45	3	50	25
8	PE - 608	1	1	1						1	2	2								50	23	2	50	25
9	BS & AE - 609	3	3	3											ESE	80	80	36					20	10
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CIE- Continuous Internal Evaluation ESE – End Semester

Examination

* Means combine passing for external oral & theory paper

** Means combine passing for internal term work & theory paper & external oral as applicable.

- One lecture means period of One Hour (60 Minutes) and One Studio means studio period of One Hour (60 Minutes)
- Per lecture Semester Periods per week -30
- Total week 15 weeks per semester

Candidate contact hours per week : 30 Hours(Minimum)	Total Marks for B.ArchIII;Sem V & VI :2300					
Theory/Tutorial Duration : 60 Minutes and Practical Duration : 60 Minutes	Total Credits for B.ArchIII (Semester V & VI): 61					
There shall be separate passing for theory and practical (term work)courses.						

Semester V					
Sr. No	Code No.	Subject	Credits	Distribution of Credits	
1.	PC - 501	** Architectural Design – V	10	(V) 5 + (TW) 5	
2.	BS & AE - 502	* Building Construction & Material – V	5.5	(T) 1.5 + (V) 1.5 + (TW) 2.5	
3.	BS & AE - 503	** Theory of Structure – V	3	(T) 1 + (TW) 2	
4.	PC - 504	** History of Architecture – II	2	(T) 1 + (TW) 1	
5.	PC - 505	** Estimation Costing & Specification – I	2	(T) 1 + (TW) 1	
6.	BS & AE – 506	Building Services – III	2	(T) 1 + (TW) 1	
7.	PC - 507	Working Drawing – I Arch, Graphics & Drawing	2.5	- + (TW) 2.5	
8.	PC - 508	Landscape Architecture	2	(T) 1 + (TW) 1	

Semester VI					
Sr. No	Code No.	Subject	Credits	Distribution of Credits	
1.	PC - 601	** Architectural Design – VI	10	(T) 3 + (V) 3 + (TW) 4	
2	BS & AE -602	* Building Construction & Material – VI	5.5	(T) 1.5 + (V) 1.5 + (TW) 2.5	
3.	BS & AE -603	** Theory of Structure –VI	3	(T) 1 + (TW) 2	
4.	PC - 604	** History of Architecture – III	2	(T) 1 + (TW) 1	
5.	PC - 605	** Estimation Costing & Specification – II	2	(T) 1 + (TW) 1	
6.	BS & AE – 606	Building Services – IV	2	(T) 1 + (TW) 1	
7.	PC - 607	Working Drawing – II Arch, Graphics & Drawing	2.5	(V)1.5 + (TW)1	
8.	PE-608	Interior Design	2	(T) 1 + (TW) 1	
9.	BS & AE - 609	Architectural Acoustics	3	(T) 2 + (TW) 1	

NOTE: Distribution of Credits: V- VIVA-VOCE ,T-THEORY, TW- TERM WORK

Course Title : ARCHITECTURAL DESIGN - V	
Course Code :PC – 501**	Semester : V
Teaching Scheme : L - 1hr + St - 6 hrs	Credits : $10 = (V) 5 + (TW) 5$
Examination Scheme : (V) 100 + (TW) 100	Total marks: 200

The students shall participate in designing of medium sized buildings with multi-levels & functional complexities. The student is expected to study works of renowned architects on similar design problems to understand their philosophy and design approach through actual case studies, book reviews and internet studies. The student must be aware of psychological and sociological aspects of the design problem.

Course Objectives:

- To understand the socio-cultural aspects on Architectural design.
- To understand the climatical considerations bearing on Architectural design.
- To be exposed to suitable building materials and construction technologies to evolve a design solution

Course Content

Unit No. 1 – (5%)

- Understanding and analysis of design requirements
- Analysis of proposed site

Unit No. 2 – (10%)

- Case study/ Book study/ Net study/ Site visits of similar design problem.
- Analysis and presentation of case studies.

Unit No. 3 – (10%)

- Data collection of the proposed design problem
- Site visits and site analysis i.e. Topography, Vegetation, etc.

Unit No. 4 – (45%)

• Conceptual design with understanding of circulation within functional spaces, structural systems, study of forms and spaces, building materials and techniques,

Unit No. 5 – (10%)

• Final design presentation with supporting sketches, models and views.

Unit No. 6 – (20%)

• **Time bond problem** – Conceptual design development and final drawings.

Sessional work:

- 1. Major design problem
 - Students should deal with one major design project with approximate built up area of 1000 sq.m
 - Design problem may include buildings of medium density and size.
- 2. Minor time bond design problem
 - Minor time bond design problem of approximate duration to guage the understanding and creative development of the student.

Notes: Design portfolio for major & minor project should be completed with the help of scaled drawings, processed drawings with supporting sketches, models and views.

- 1. Neuferts architects data The handbook of building types
- 2. Architecture: Form , Space & Order Francis DKching
- 1. The Local Building Byelaws
- 2. National Building Code of India 2016- Vol -1/2/3
- 3. Monologues of Eminent Architects
- 4. Books on Building Services
- 5. Books on Landscape Architecture

Course Title : Building Construction & Material – V						
Course Code : BS & $AE - 502^*$	Semester : V					
Teaching Scheme : L - 1hr + St - 3hrs	Credits : 5.5= (T) 1.5 +(V)1.5 + (TW) 2.5					
Examination Scheme : (T) 80 +(V)100 + (TW) 70	Total marks: 250					

The course intends to explore process of construction activities, supervision of construction, appropriate use of building materials and preparation of detailed drawings to be used for construction by understanding various structural concepts and properties of building materials. The course also includes site visits, case studies and measure drawings of various stages of construction.

Course Objectives -

- To introduce structural concepts of various parts of buildings
- To introduce construction techniques
- To explain construction details through case studies
- To explain process of construction and supervision

Course Content

Unit 1 - Foundations

• Foundations in loose soil

Pile foundations – different types of piles based on function and materials – bearing piles, friction piles, timber piles, steel piles, R.C.C. piles, cast-in-situ piles & precast piles, grouping of piles, Pile caps for two, three and multiple piles. Typical reinforcement details of R.C.C. piles and pile caps, Singly and doubly under reamed R.C.C. piles, Various pile driving methods. Need of dewatering of excavation trenches, various methods of dewatering.

Unit 2 – Retaining walls

• Masonry retaining walls – gravity retaining walls, mass retaining walls.

R.C.C. retaining walls – various types, reinforcement details, formwork details, construction joint, water bars, waterproofing details

Unit 3 – Staircases

 Timber staircase – joinery details at newel post & floor, stringer & newel post, tread-riser & stringer, handrail & newel post, trimmer-joist-wall-flooring planks etc. Types of finishes given to timber staircase.

- Steel staircase various types,
- R.C.C. staircase various types with waist slab, folded, cantilever step, with raker beam, central beam. Typical reinforcement details of all types. R.C.C. parapet details, baluster fixing & handrail details, tile fixing details on tread & risers.
- Composite staircase constructional details of staircase with composite materials steel & plywood/block board, wood, tile etc., R.C.C. and wood etc.

Unit 4 – Glass curtain walls and structural glazing

• Typical construction details of Glass curtain walls and structural glazing, spider fittings.

Unit 5 – Claddings

• Various cladding materials, Construction details of claddings in stone, brick, wood, tiles, aluminium composite panels (ACP), UPVC, porcelain

Unit 6 – Steel connections

 Market forms of steel, Steel stanchions, beams, castellated beam, built up stanchions, built up beams. Connection details of stanchion-foundation, stanchion-stanchion, stanchion-beam, beam-beam, flooring connections, haunched connection. Connections of steel sections with concrete.

MATERIALS

Course Content

Unit 1 – Ferrous materials

- Introduction, iron ores, selection of iron ores, variation of iron ores
- Pig iron Properties, types of pig iron
- Cast iron composition, types and properties.
- Wrought iron Properties, defects, uses.

Steel – Market forms of steel, magnetic properties of mild and hard steel, factors affecting physical properties, uses of steel.

Unit 2 – Non ferrous materials

- Aluminium Properties, types, uses.
- Zink Properties, types, uses
- Copper- Properties, types, uses
- Asbestos Properties, types, uses

Unit 3 – Alloys

• Aluminium alloys, copper alloys, their properties and uses.

Unit 4 – Thermal insulating materials

• Introduction, types and uses of thermal insulating materials.

Course Title : Theory of Structure V					
Course Code :BS & AE – 503**	Semester : V				
Teaching Scheme : L – 3hrs	Credits : $3 = (T) 1 + (TW) 2$				
Examination Scheme : (T) 80 + (TW) 20	Total marks: 100				

The courses Theory of structure V deal with use and application of tools and techniques required to study the behavior of various structural system and feasibility of different structural system. The course also includes limitations of forms ,spans . It also develops knowledge about choice of proper structural material, strength consideration, behavior and response of loads. The site visits will help students to understand the practical difficulties.

Course Objectives:

Student shall be able to understand the behavior of Structure systems, feasibility of different structure systems, limitation of forms, spans, choice of proper structural materials, strength consideration, behavior, and response of loads.

Course Content

Unit No. 1 – Fixed Beam

- Concept of fixed beam, advantages of fixed beam, limitations of fixed beam, concept of partial fixity and full fixity,Point of contra flexure.
- Derivations for calculation of positive and negative bending moment along with shear force for point load (central) and u.d.l cases.
- Analytical Calculations of positive and negative bending moments & drawing BMD, shear force calculations & drawing SFD for central point load, eccentric point load, uniformly distributed load and their combinations by direct application of formulas.

Unit No. 2 – Continuous beam

- Introduction to continuous beams, advantages and disadvantages of continuous beams, Theorem of Three moment.
- S.F.D. and B.M.D. for continuous beams with simple supports at ends
 - (2 to 4 spans), simple support at one end & fixed at other end (2 to 3 spans) and both ends fixed (2spans) or overhang.

Unit No. 3 – Design of steel columns

- Concept of axial loading on column, IS800, steel table, Slenderness ratio, Effective length of column.(for both end fixed, one end fixed one hinged, both end hinged, one end fixed one free.)
- Conceptual idea of limit state & working stress method for steel str.
- Design of axially loaded steel column by working stress method.
- Concept of built-up columns lacing and battening.
- Concept of columns subjected to uniaxial and biaxial eccentricity,
- Problems on analysis of stresses for eccentrically loaded columns (with uniaxial or biaxial eccentricity.).

Unit No. 4 – Steel roof truss

- Roof shapes and roofing materials, components of steel roof truss.
- Types of trusses and truss configurations for different spans (key elevations)
- Types of loads on trusses and load combinations for design.
- Design of steel purlin and design of steel truss members by working stress method.

Sessional work

- 3. 4 assignments each on one topic
- 4. Site visit report (For steel structures)

- 6. Strength of material by R.S.Khurmi
- 7. Strength of material by Ramamurtam.
- 8. Design of steel structures by S.K.Duggal.
- 9. Design of steel structures by L.S.Negi.

Course Title : HISTORY OF ARCHITECTURE-II					
Course Code : PC-504**	Semester : V				
Teaching Scheme : L - 1hrs + St - 2hrs	Credits : $2 = (T)1 + (TW)1$				
Examination Scheme : (T)80 + (TW)20	Total marks: 100				

Note: Weightage for each Topic or Unit for Theory Question Paper shall be as per marks mentioned in Course Content below.

Course description:

Focus shall be on the study of general architectural features or characteristics observed in particular era with the help of concerned building examples, market places, public spaces and contributions of pioneer architects relevant to that period

Course objective:

Subject includes introductory study of Architectural development in chronological manner in Europe or western countries. Objective is to expose the students to the evolution of different architectural solutions through historical periods within the restraints of prevalent social and religious customs, geography, climate, building materials and techniques, aesthetical influences, structural complexities and technology available at the time. The study shall actively help students in preservation of rich Architectural Culture in evolution of Design process.

Course Content

Unit 1: Egyptian (20 Marks):

- Detail study of architectural characteristics like types of columns, hieroglyphs, incised wall sculptures, trabeated style, sphinx and obelisks.
- Detail study of types of Tombs (types of Mastabas, Royal pyramids and stages involved in its development, Rock Hewn tombs) e.g. Mastaba K1 at Beit Khallaf, Mastaba at Gizeh, Mastaba of Thi-Sakkara, Great pyramid of Cheops-Gizeh, Step pyramid of Zoser Sakkara, Bent pyramid of Dashur, Tombs-Beni Hasan, Tombs of kings-Thebes.
- Detail study of types of Temples (mortuary temples and cult temples) e.g. temples at Der el-Bahari-Thebes, temple of Khons-Karnak, Temple of Amun, karnak, thebes, temple of Isis-Philae, temple of Horus-Edfu, and Great temple Abu Simbel.
- Brief study of dwellings and fortresses.

Unit 2: Greek (20 Marks):

- Detail study of Greek Orders-Doric, Ionic and Corinthian.
- Greek contribution towards Aesthetics or visual aspects: Brief study of optical corrections in architecture, method for column entasis and use of Golden Section (golden mean ratio) in proportioning Greek architecture.
- Detail study of Acropolis in Greek city (example: Acropolis in Athens: Parthenon, Propylae, Erectheum, Nike), Agora and Civic buildings (stoas, bouleuterion, tholos, theatre, hippodrome and dwellings)
- Brief study of classification of Greek temples.

Unit 3: Roman (20 Marks):

- Study of Column orders (Tuscan and Composite)
- Roman contribution towards Engineering: Study of construction of walls, arches, vaults (e.g. Barrel or Tunnel, Groin & Multi-Groin) and domes, Roads, Bridges (e.g. Pons Fabricius-Rome, Bridge of Augustus-Rimini, Trajan's Bridge, Alcantra), Aqueducts (e.g. Aqua Claudia-Rome) etc.
- Study of Temples e.g. temple of Juno Sospita-Lanuvium, Maison Carree:Nimes, Temple of Jupiter-Baalbek, The Pantheon-Rome.
- Study of public buildings like Theatre of Marcellus, Circus Maximus and Maxentius-Rome, Triumphal Arches: Arch of Tiberius, Titus & Constantine-Rome, Colosseum or flavian amphitheatre-Rome, Thermae or Public Baths: Baths of Caracalla-Rome, Baths & Gymnasium-Sardis, Imperial Fora-Rome and Basilica of Constantine-Rome.

Unit 4: Early Christian and Byzantine (10 Marks):

- Early Christian Architecture in Rome: study of parts of basilican churches, e.g. Basilica of S.Peter-Rome, S.Clemente-Rome.
- Byzantine Architecture in Constantinople: study of domical construction, methods of forming pendentives e.g. Hagia Sophia-Constantinople.

Unit 5: Romanesque (10 Marks):

• General architectural characteristics: articulation, structural division, Pier forms(columns), Triforium Gallery, Crossing, Wall Passages, Circumambulatory, Radiating Chapels, structural vaulting system, the evolution of new concepts in external massing a variety of independent forms was integrated in a single harmonious composition and an increasing mastery of architectural sculpture etc. e.g. Pisa Complex: Cathedral, Campanile, Baptistry.

Total of 5 Units: 80 Marks

ASSESSMENT:

- 1. For Sessional work (Internal) assessment each students work should be assessed on the basis of sketches, notes and group seminars of respective Topic or Unit as mentioned in Course Content above.
- 2. Continuous assessment and marking system should be followed.

REFRENCE BOOKS:

- 1. Sir Banister Fletcher, 'A *History of Architecture*', CBS Publications (Indian Edition), 20th Edition 2002.
- 2. J.C.Palms, 'History of World's Architecture'.
- 3. Doren Yarwood, 'A Chronology of western Architecture', Pover Publications Inc., NewYork, 2010.
- 4. Francis D. K. Ching, Mark M. Jarzombek, Vikramaditya Prakash, 'A Global History of Architecture', John Wiley & Sons, 2017.

Course Title : Estimation Costing & Specification-I					
Course Code : PC-505**	Semester : V				
Teaching Scheme : L-1hr + St-2hrs	Credits : $2 = (T)1 + (TW)1$				
Examination Scheme : (T)80 + (TW)20	Total Marks: 100				

The courses Estimation Costing & Specification - I & II deal with use and application of tools and techniques required for estimation and costing of construction projects and study of financial aspects of building constructions.

The course Estimation Costing & Specification – I, at Semester -V, covers aim and objects of estimation and costing and gives an idea to the students to prepare approximate estimates, preparation of outline specifications and detailed estimations of building components & simple buildings. Student shall undertake market survey to study market rates of various materials and labors. The intent of the syllabus is to explore concept of quantity & cost calculations with due relation to specifications.

Course Objectives:

To make the students' aware of the factors that affect the cost of construction.

To understand the concept of rate analysis for various items in building construction.

To create ability of taking out of quantities from drawings and to determine estimated cost of building projects as per standard procedures.

To inculcate habit of systematic recording of all the statistics concerned to estimating & costing

Course Content

- Aims and objects of the subject estimation, costing and specifications.
- **Types of estimates** Approximate estimate –purpose and their methods.
- Detailed estimate purpose and their types -
- Revised estimate, Supplementary estimate,
- Revised supplementary estimate & annual repairs and
- maintenance estimates.

Unit No. 2 –

- Listing of building **items**.
- Units(mode) of measurements. IS Code 1200
- Terms: Contingencies, Work Charge Establishment, Provisionalitems, Provisional quantities, Provisional sum, Spot items

Unit No. 3 –

- Principles of taking out **quantities**.
- Measurement form and Abstract form.
- Methods of taking out quantities Long Wall Short Wall method
- and Centre Line method.
- Rules of deductions.
- Recording MB, Preparing Abstract and Summary sheets.

Unit No. 4 –

 Principles of Rate analysis, factors affecting rate analysis, Market survey for current rates of materials and labors.
PWD-SSR, Lead Charges and Lift charges, Analysis of rates (based on SSR) for- Excavation, UCRM, BBM, Plaster, PCC and CC in RCC works.

Unit No. 5–

• **Specifications**- What is specification, Purposes of writing specifications, General & Brief specifications, Brief specifications for various building items.

Sessional works:

1). Preparing approximate estimate of a project designed by the students

in their S.Y. B.Arch. (Sem-III/IV) Design subject.

2). Detailed estimation of any one building components like -

water tank, septic tank, compound wall, rcc frame work, staircase etc.

- 3). Detailed estimation of 50 to 100Sq.mt. Load bearing type building.
- 4). Rate analysis for (any Five) building items.
- **5**). Short notes (minimum Five) based on above syllabus.

- 1. Estimating and Costing in Civil Engineering by B.N. Dutta
- 2. Estimating ,Costing, Specification & Valuation in Civil Engineering by M.Chakraborty
- 3. PWD-SSR
- 4. IS Code 1200

Course Title : BUILDING SERVICES – III	
Course Code : BS & AE - 506	Semester : V
Teaching Scheme : L - 1hr + St - 2hrs	Credits : $2 = (T)1 + (TW)1$
Examination Scheme : (T)50 + (TW)50	Total marks: 100

With the successful completion of the course, students will understand principles for designing of large scale electrical, illumination and mechanical services. They will be able to design vertical transportation and their execution in their building projects, execute building management and safety systems in construction projects. They will develop capability to interact technically with MEP experts. Students will be able to design services for architectural design project, allocate space for the same.

Course objective:

The objective of the subject is to enable students to understand and apply:

- The students should be able to a lot spaces in their design for the topics below.
- Electrical requirements for given situation, its calculations and design.
- Artificial Illumination and its application in buildings.
- Overview and introduction to heating, ventilation, and air conditioning focusing on different HVAC systems.
- Lift, escalator and travelator requirements for given situation
- Introduction to building's firefighting system, security system and pumps and water. Integrating natural and artificial illumination.

Course Content

Unit 1: Introduction to Electrical Services

Concept of earthing and lightening conductor at plot level, Power distribution system in city; function of substations; locational guidelines for substations, land and other infrastructural requirement for substation; power distribution system in locality. Norms and standards for site level transformers and layout of substations. Solar energy integrated electrical design of buildings and smart buildings. Strategies for low power consumption. Electrical panels, wiring systems, wires and cables, data cabling, broadband, switchboard, distribution board. Electrical layout of a residence.

Unit 2: Illumination (Lighting)

Type of Lighting according to building like in residential buildings, restaurants, offices, museums and art galleries, gardens. Types of lighting like ambient, task, focal and decorative, etc., Objectives of lighting, various terms like Luminous flux, Lumen, Candela, Lux, Reflection Factor, etc. Natural (day) lighting with concepts like direct solar illumination, sky radiation, sky component, external and internal reflected component, glare. Artificial lighting during the night

and day. Characteristics of lighting like intensity, uniformity, exposed brightness, direction, disruption of brightness. Garden lighting for trees, flowers, paths and drives, sundials, sculptures

Unit 3: Heating, Ventilation and Air Conditioning (HVAC) Systems

To understand the need and importance of mechanical services. Basic principles, laws and terminologies related to HVAC. Evaporative cooling systems of air conditioning, refrigerant cycle and its reversal. Components of mechanical vapour compression and refrigeration systems. To understand types of air conditioners such as window, split packaged, direct expansion, central etc. Natural and artificial ventilation. Heating for buildings, central and local heating, insulation, radiators, convectors.

Unit 4: Vertical Transport (Lifts, escalators, travelators, Automated parking)

Elevators – Components of elevators. Types of elevators-traction, sky lobby, lift lobby, provision of elevators for a building, planning considerations - location in building, recommendations of the National Building Code, etc. Safety features and codes. Service requirements: space and physical requirements, machine room spaces and their typical layout. Design of typical lift banks.

Escalators – Components of escalators. Advantages and disadvantages of escalator, design of escalator, application - location and arrangement in buildings. **Travelators -** space requirement, inclination.

Automated Parking System: Multi storage parking garage, an APS provider for parking.

Unit 5: Building Safety, Automation and Management system

Fire Fighting System - Causes of fire, Provision for corporate building, basic extinguishing components, Fire detectors-classification and types, Fire alarm system, control panel, external firefighting system, internal firefighting system, water and foam sprays, Sprinkler system – types and advantages.

Security Systems – Burglar system, CCTV system, intercom, Video doorbell, Surveillance system, Limited Access system, Data terminal equipment, discretionary Access control. Pumps: Classification of pumps like displacement pumps, velocity pumps, Buoyancy pump, impulse pumps, etc. Types of pumps like reciprocating pump, rotatory pump, centrifugal volute pump, turbine pump, jet pump, airlift pump, hydraulic ram, etc.

Sessional Work:

- 1. Drawing sheets and notes based on above topics
- 2. Continuous assessment and marking system should be followed
- 3. Internal assessment will be based on understanding of above topics

References:

- National Building Code of India: National Electrical Code.
- Kothari and Nagrath, Basic Electrical Engineering
- O.P. Gupta, Energy Technology
- John Mathew, Introduction to the Design and Analysis of Building Electrical System
- Gondzik, Mechanical and Electrical Equipment for Building
- Raina & Bhattacharya, Electrical Design Estimating and Costing.
- Keyoumars Ehteshami, Handbook of Fire Protection and Safety

- Kelly & Connell, Interior Lighting Design A Student's Guide.
- Sadhu Singh, Refrigeration and Air Conditioning
- National Building Code 2005
- Grondzik, Kwok, Stein, Mechanical and Electrical Equipment for Buildings
- Ananthanarayana, Basic Refrigeration and Air Conditioning

Course Title : WORKING DRAWING -I	
Course Code : PC - 507	Semester : V
Teaching Scheme : L - 1hr + St - 3hrs	Credits : (TW)2.5
Examination Scheme : (TW)50	Total marks: 50

The subject introduces the student to methodology of preparation of working drawing Based on the principles of visual communication interpretation and reading of drawing. These drawing should enable the site staff to transform the drawing into actual construction with help of sufficient dimensions and details.

Course Objective

Introduction of working drawing for composite construction based on design problem done in second year architecture which should include.

R.C.C. framed structure, steel framed structure and load bearing structure.

Course Content	
Unit- 1	
Building Permission Plan	
Unit-2	
• Location plan	
Centre line plan	
Excavation plan	
• Foundation plan	
Ground beam /plinth beam	
Unit-3	
• Floor plans	
• Lintel level plan all floors	
Shuttering plan all floors	
• Terrace plan	
Unit-4	
• Elevation of all sides	

Course Title : Landscape Architecture	
Course Code : PC - 508	Semester : V
Teaching Scheme : L - 1hr + St - 2hrs	Credits : $2 = (T)1 + (TW)1$
Examination Scheme : (T)50 + (TW)50	Total marks: 100

Note:

- Internal marks should be based on assignments, sketches, and Design etc.
- Assignments shall be completed individually which cover the modules- 1 to 6. Module 6 will be concerned with the individual drawings, 3d views, model (optional) explaining the concept, the landscape design process and detaining of it.

Course Description:

The course intends to make the students understand the concept of landscape architecture, different landscape styles in the world. Students will gain the knowledge of site analyse site with respect to its natural surrounding area. They will understand the basic design, details of hardscape and Softscapes in the landscape design.

Course objective:

The objective of the subject is to enable students to understand landscape design as an allied field of architecture; to introduce landscape architecture and the scope of it. It will create awareness regarding the process of landscape design for small and large buildings; Indoor and outdoor spaces.

Course Content

Unit 1: Introduction to Landscape Architecture

Introduction to landscape architecture, need and scope, aspects of landscape architecture from functional, socio-cultural, ecological, economical, aesthetical point of view. Study of landscape elements (natural/manmade) and study of landscape characters. Study of Landscape elements such as land, vegetation, water, earth & climate, Natural & manmade elements, etc. Principles of landscape design.

Unit 2: History of Landscape Architecture

Study of the evolution of the landscape history in the world from pre-history up to modern era, origin of garden concept, history of Landscape Architecture including natural & cultural factors of the place, development of landscape architecture through history in different parts of the world such as China, Japan, Italy, France, Spain, England, Persia, Egypt, Greece, Rome. Study of Landscape history of India; Ancient India and Mughal Period. Modern & contemporary Landscape architecture.

Unit 3: Introduction to modern landscape planning

Study planning of cities like Jaipur, Chandigarh, Delhi and colonial period etc. Study the concepts of streetscapes, waterfronts, green infrastructure, green roof, etc.

Unit 4: Hardscape and Softscapes elements

Hardscapes such as pergolas, garden furniture, fences, rocks, masonry, paving & surfacing, roads& parking lots, walks & plazas w.r.t. materials and **landscape construction details** through site visits. Softscapes such as plantation, turfing, water features. Design criteria for landscape design such as visual, functional, micro-climatic, ecological and aesthetic. Basic horticultural study of plants, plant selection, planting design and care of plants.

Unit 5: Site planning and site analysis

Study of factors affecting landscape design, i.e. context, climate w.r.t. surrounding environment. Introduction to **sustainable site planning and sustainable Landscape design.** Site analysis includes study of physical and socio-cultural context, topography, hydrology and vegetation.

Unit 6: Landscape design and Services

Macro, micro-climatic and contextual considerations in landscape architecture. Landscape Services like electrical, surface water drainage, irrigation, soil management techniques etc. Landscape design of a small residential unit or a small public area. Conceptualization with creative thinking with landscape design details showing indoor-outdoor relationship between built and unbuilt spaces.

Reference books:

Time saver standards for landscape architecture Landscape architecture a manual of site planning and design – Symonds Residential landscape architecture, Norman. K. Booth Visual analysis of landscape development, peter Jacobs and Douglas way Landscape planning and energy conservation. Gary. o. Robinette (ed), Van-Nostrand reinhold Introduction to landscape architecture, Michael Laurie National building code 2016 The landscape of man, Geoffrey and Susan Jellicoe, Thames and Hudson

Course Title : ARCHITECTURAL DESIGN - VI	
Course Code :PC – 601**	Semester : VI
Teaching Scheme : L – 1hr + St - 6hrs	Credits : $10 = (T) 3 + (V) 3 + (TW) 4$
Examination Scheme : (T)100 +(V)100 + (TW)100	Total marks: 300

The students shall participate in designing of medium sized buildings with multi-levels & functional complexities. The student should be exposed to connection of indoor and outdoor spaces- landscape elements in architectural design, different services like Electrical, Plumbing, Ventilation, etc.

Student should also be aware of the local building bye laws and National Building Code.

Course Objectives:

- To understand the visual interaction between indoor outdoor spaces and landscape elements.
- To understand the spatial and structural implications of basic services involved
- To be aware of the local building bye laws.

Contents

Unit No. 1 – (5%)

- Understanding and analysis of design requirements
- Analysis of proposed site
- Understanding the local building bye laws.

Unit No. 2 – (10%)

- Case study/ Book study/ Net study/ Site visits of similar design problem.
- Analysis and presentation of case studies.

Unit No. 3 – (10%)

- Data collection of the proposed design problem
- Site visits and site analysis i.e. Topography, Vegetation, etc.
- Implication of the local building bye laws.

Unit No. 4 – (45%)

• Conceptual design and design development with understanding of Building services and landscape elements.

Unit No. 5 – (10%)

• Final design presentation with supporting sketches, models and views.

Unit No. 6 – (20%)

- Layout of building services.
- Report on the local building bye laws.

Sessional work:

- 1. Major design problem
 - Students should deal with one major design project with approximate built up area of 1000 sq.m
- 2. Study of local building bye laws and services.

Notes: Design portfolio must include Architectural design problem, Building services (Layout drawings - Conceptual) and Report of local building bye laws.

- 3. Neuferts architects data The handbook of building types
- 4. Architecture: Form, Space & Order Francis DKching
- 5. The Local Building Byelaws
- 6. National Building Code of India 2016- Vol -1/2/3
- 7. Monologues of Eminent Architects
- 8. Books on Building Services
- 9. Books on Landscape Architecture

Course Title : Building Construction & Material – VI	
Course Code :BS & AE - 602*	Semester : VI
Teaching Scheme : L - 1hrs + St - 3hrs	Credits : 5.5= (T) 1.5 +(V)1.5 + (TW) 2.5
Examination Scheme : (T) 80 +(V)100 + (TW) 70	Total marks: 250

The course intends to explore process of construction activities, supervision of construction, appropriate use of building materials and preparation of detailed drawings to be used for construction by understanding various structural concepts and properties of building materials. The course also includes site visits, case studies and measure drawings of various stages of construction.

Course Objectives:

- To introduce structural concepts of various parts of buildings
- To introduce construction techniques
- To explain construction details through case studies
- To explain process of construction and supervision

Course Content

Unit 1- Doors and Windows

- Sliding doors in M. S., Aluminium and T. W.
- T. W. Sliding and folding door with detail
- Pivoted glazed door
- Aluminium sliding and hinged windows, various options for sliding windows 2T2S

3T3S, 2T4S. Various finishes of aluminium windows.

• UPVC windows

Unit 2 - M. S. Roofing

Different types of M. S. roof trusses for span up to 25 meters with roofing materials

North light roof truss

Roof covering materials : straight with curved

Roof covering materials – G.I., A.C. aluminium, galvalum sheets, accessories of roof coverings.

Unit 3 - M. S. Sliding and hinged Gates

- Rolling shutter
- Different types of M. S grills for balcony and staircase
- Different types of S. S. railing for balcony and staircase

Unit 4 – Precast construction components

• Precast Construction Components for Columns, Beams, Staircase, flooring, Partitions, Doors and Window Frames, Compound Wall

Unit 5 – Partitions

• Partitions : Removable and Folding in timber and aluminium, modular aluminium partitions.

Unit 6 – Ferro cement

• Introduction of Ferro cement, casting techniques, uses.

MATERIALS - VI

Contents Unit 1 - Ceramics, various clay products • Tile manufacturing characteristics and types • Terracotta manufacturing process, Terracotta use, Advantages and disadvantages of Terracotta • Earthenware • Stoneware • Porcelain • Vitrified tiles Clay blocks Unit 2 - Glass • Classification, composition and properties of glass, Different types of glass, Coloured glass, Available size and thickness of glass, Name of the companies which manufacture the glass. Unit 3 - Plastics • Historical background, Composition, polymerization, classification, different type of resins, moulding, compound fabrication properties and uses, Application in Building Industry. **Unit 4 – Sound insulation materials**

• Introduction, types and uses of sound insulating materials.

- Advanced Construction Technology by Roy Chudley
- Building Construction by S P Arora, S P Bindra
- Building Materials & Construction by Punmia
- Building Construction by S C Rangwala

Course Title : Theory of structure VI	
Course Code :BS & AE -603**	Semester : VI
Teaching Scheme : L - 3hrs	Credits : $3 = (T) 1 + (TW) 2$
Examination Scheme : (T) 80 + (TW) 20	Total marks: 100

The courses Theory of structure V deal with use and application of tools and techniques required to study the behavior of various structural system and feasibility of different structural system. The course also includes Design process for RCC members. It also develops knowledge about choice of proper section, strength consideration, behavior and response of loads. The site visits will help students to understand the practical difficulties.

Course Objectives:

Student shall be able to understand the behavior of RCC Structural systems, feasibility of different structure systems, limitation of forms, spans, choice of proper structural section, strength consideration, behavior, and response of loads. Students are able to select proper structural section with concept of factor of safety, characteristic strength of material.

Course Content

Unit No. 1 – Introduction to RCC

• Definition , advantages of RCC , Types of load combinations , limit state method of design , characteristic strength of materials , factor of safety ,practical knowledge about compressive strength of concrete and tensile strength of steel (laboratory experiment observations expected)

Unit No. 2 – Design of singly reinforced beam

- Limit state of collapse, assumptions, stress-strain relationship, strain diagram, stress block diagram for singly reinforced beam.
- Design parameters, neutral axis, lever arm, total tensile and compressive force.
- Types of sections, balanced section, under-reinforced section, over-reinforced section, design and analysis of singly reinforced section.

Unit No. 3 – Design of shear reinforcement

- Concept of shear, bond and development length.
- Design of shear reinforcement.
- Site visit to study the reinforcement.

Unit No. 4 – Design of short axially loaded RC column

- Design of short axially loaded RC columns (circular, rectangular, square)
- Analysis of RCC columns

Unit No. 5 – Simply supported slab and cantilever slab

- Concept of one-way and two-way slab.
- Design of one-way simply supported slab.
- Design of cantilever slab.

Unit No. 6 – Design of axially loaded RCC footing

- Structural action of foundation.
- Design of axially loaded RCC footing.

Sessional work

- 5. 6 assignments each on one topic
- 6. Site visit report .

- 10. Strength of material by R.S.Khurmi
- 11. Strength of material by Ramamurtam.
- 12. Design of steel structures by S.K.Duggal.
- 13. Design of steel structures by L.S.Negi.

Course Title : HISTORY OF ARCHITECTURE-III	
Course Code : PC – 604**	Semester : V
Teaching Scheme : L - 1hr + St - 2hrs	Credits : $2 = (T)1 + (TW)1$
Examination Scheme: (T)80 + (TW)20	Total marks: 100

Note: Weightage for each Topic or Unit for Theory Question Paper shall be as per marks mentioned in Course Content below.

Course Description:

Focus shall be on the study of general architectural features or characteristics observed in following periods with the help of concerned building examples, market places, public spaces and contributions of pioneer architects relevant to that period:

Course objective:

Subject includes the study of various styles in Architecture mainly of Europe, America and India through various ages of Renaissance, Gothic, Industrial revolution and Modern period. Objective is to expose the students to the evolution of different architectural solutions through historical periods within the restraints of prevalent social and religious customs, geography, climate, building materials and techniques, aesthetical influences, structural complexities and technology available at the time. More emphasis is given to know the evolution of architecture in India after Independence. The study shall actively help students in preservation of rich Architectural Culture in evolution of Design process.

Course Content

Unit 1: Gothic (15 Marks):

- Introduction to Architectural development under Gothic period in the countries France, Britain, Spain, Italy and central Europe.
- Detail study of architectural characteristics like pointed arch, vaulting, flying buttresses, window tracery, ornamental features etc.
- e.g. Abbey church-St. Denis, Notre Dame de Paris, Laon cathedral, Rheims cathedral, Chartres cathedral, Amiens cathedral-France, Salisbury Cathedral-England, S. Elizabeth, Marburge cathedral-Germany

Unit 2: Renaissance (15 Marks):

- Introduction to Architectural development under Renaissance period in the countries Italy, France, Britain, Spain, Portugal, central Europe and Russia. Study of stylistic phases under Renaissance period with religious churches and secular Palazzos and Villas: Early Renaissance (Brunelleschi-churches, Alberti-facades), High Renaissance (Bramante-Tempietto, Gallo-palazzo Farnese), Late Rennaissance (Palladio-villas), Mannerism, Boroque and Rococo and Neo-Classical.
- e.g. St. Peter-Rome, St. Paul's Cathedral-London, Basilica of San Lorenzo, Florence cathedral, Church of San Andrea, Palazzo Rucellai, Palazzo Pitti-Florence (Italy), Palazzo Ricardi/ Medici Palalce- Florence(Italy), Villa Rotunda-Vicenza, Chateau de Chambord (France), Chateau De

Maisons near Paris(France), Whitehall Palace- London.

• Contribution of Leonardo Da Vinci, Michelangelo, Andrea Palladio in Italian Renaissance and Inigo Jones, Christopher Wren in English Renaissance and Francois Mansart in French Renaissance.

Unit 3: Effect of Industrial Revolution in Europe and America (10 Marks):

- Introduction, technological development, effect on Architecture and town planning, Industrial Architecture.
- e.g. Factory Towns- city of Manchester and City of Lowell Massachusetts, Port-Albert Dock-Liverpool, Panoptic Prison-Pentonville prison, Workhouse- Bridge Street workhouse-Manchester

Unit 4: Introduction of Modernism in Europe and non European countries. (20 Marks)

- Introduction of Modernism and its influence in different countries like England, Germany, United States, Brazil etc. Brief study of different styles, 'ism's and movements associated with it. Study of philosophies developed by schools like Bauhaus and Chicago school (Introduction with few examples). Study of emergence of new materials like steel, concrete and glass and its effect on Architecture.
- Contribution by pioneering Architects like Le Corbusier, Mies van der Rohe, Frank Lloyd Wright, Walter Gropius, Louis Sullivan, Louis I Kahn, Philip Johnson, Alvar Aalto, Oscar Neimeyer, Gerrit Rietveld, Richard Neutra, Peter Behren, Josep Lluis Sert, Antonio Gaudi, Buckminster Fuller, Pier Luigi Nervi, Kenzo Tange, I M Pei, Frank O Gehry, Tadao Ando, Zaha M. Hadid, Rem Koolhaas, Daniel Libeskind, Bernard Tschumi, Santiago Calatrava, Hassan Fathy, Moshe Safdie, Geoffrey Bawa, Mario Botta, Luis Barragan etc. (Introduction with few examples)

Unit 5: Evolution of Architecture in India after Independence (20 Marks):

- Introduction to Architectural development and emergence of Modernism in India after Independence under various Architects. Study of contribution by international architects like Le Corbusier and Louis I Kahn in cities like Chandigarh and Ahmedabad.
- Contribution of pioneering Architects like Achyut Kanvinde, Shiv Nath Prasad, B.V. Doshi, Charles Correa, Raj Rewal, Joseph Allen Stein, Laurie Baker, Nari Gandhi, Anant Raje, Hasmukh Patel, Ranjit Sabikhi, Kuldip Singh, Habib Rahman, Uttam Jain, Ajoy Choudhury, Satish Gujral, P.T.Krishnan, Christopher Beninger, Krishnarao Jaisim, I.M. Kadri, Prem Nath, Sen Kapadia, Sanjay Mohe, Hafeez Contractor, Rahul Mehrotra, Brinda Somaya, Anupama Kundoo, Revathi Kamat, Soumitro Ghosh. (Introduction, Contribution, study of Design Philosophy with Architectural Examples)

Total of 5 Units: 80 Marks

Assessment:

- 1. For Sessional work (Internal) assessment each students work should be assessed on the basis of sketches, notes and group seminars of respective Topic or Unit as mentioned in Course Content above.
- 2. Continuous assessment and marking system should be followed.

- 1. Sir Banister Fletcher, 'A History of Architecture', CBS Publications (Indian Edition), 20th Edition 2002.
- 2. J.C.Palms, 'History of World's Architecture'.
- 3. Lang, J.T (2002). 'A Concise History of Modern Architecture in India.'

- 4. Bhatt and Scriver, 'Contemporary Indian Architecture-After the Masters', University of Washington Press, 1991
- 5. Francis D. K. Ching, Mark M. Jarzombek, Vikramaditya Prakash, 'A Global History of Architecture', John Wiley & Sons, 2017.
- 6. Ar. Vedula VLN Murthy, 'Modern, Post Modern Architecture and Pioneer Architects'

Course Title : Estimation Costing & Specification - II	
Course Code : PC-605**	Semester : VI
Teaching Scheme : L-1hr + ST-2hrs	Credits : $2 = (T) 1 + (TW) 1$
Examination Scheme : (T) 80 + (TW) 20	Total Marks: 100

The courses Estimation Costing & Specification - I & II deal with use and application of tools and techniques required for estimation and costing of construction projects and study of financial aspects of building constructions.

The course Estimation Costing & Specification – I, at Semester -V, covers aim and objects of estimation and costing and gives an idea to the students to prepare approximate estimates, preparation of outline specifications and detailed estimations of building components & simple buildings. Student shall undertake market survey to study market rates of various materials and labors. The intent of the syllabus is to explore concept of quantity & cost calculations with due relation to specifications.

Course Objectives:

To make the students' aware of the factors that affect the cost of construction. To understand the concept of rate analysis for various items in building construction. To create ability of taking out of quantities from drawings and to determine estimated cost of building projects as per standard procedures. To inculcate habit of systematic recording of all the statistics concerned to estimating & costing

Prerequisite: Student should have internalized knowledge of the courses – Building Construction and Technology, Knowledge of Construction Materials and Reading skills of working drawings from their previous semester's syllabi.

Course Content

Unit No. 1 –

- Listing of building items for a framed structure type building.
- Preparing detailed estimation of a RCC framed building.
- Preparing abstract with brief specifications based on SSR.
- Preparing summary sheet.
- Application of computers in estimation & costing etc.

Unit No. 2 –

• Calculating quantity of reinforcement in RCC elements with reference to detailed RCC drawings of footing, column, beam, slabs, Staircase etc.

Unit No. 3 –

• Calculating structural steel quantity of a M.S. Fabricated structure With reference to detailed structural drawing of a truss.

Unit No. 4 –

• Calculating wood work quantity of a Door, Window, Wooden roof truss etc. With reference to detailed drawing.

Unit No. 5–

• Principles of writing specifications, Types of specifications, Writing detailed specifications for – Excavation, PCC, BBM, UCRM, Plastering, Pointing, Concrete in RCC works, reinforcement steel.

Sessional works:

1). Preparing detailed estimation of (G+1) RCC framed

building having area 100 to 200Sq.Mt. built-up area.

2). Detailed reinforcement quantity calculation of any two RCC elements.

3). Detailed structural steel quantity of any one item.

4). Writing detailed specification for building items

(Minimum Five Items)

- 1. Estimating and Costing in Civil Engineering by B.N. Dutta
- 2. Estimating, Costing, Specification & Valuation in Civil Engineering by M.Chakraborty
- 3. PWD-SSR
- 4. IS Code 1200
| Course Title : BUILDING SERVICES – IV | |
|---------------------------------------|------------------------------|
| Course Code : BS & AE - 606 | Semester : VI |
| Teaching Scheme : L - 1hr + St - 2hrs | Credits : $2 = (T)1 + (TW)1$ |
| Examination Scheme : (T)50 + (TW)50 | Total marks: 100 |

With the successful completion of the course, students will understand principles for designing of large scale electrical, illumination and mechanical services. They will be able to design vertical transportation and their execution in their building projects, execute building management and safety systems in construction projects. They will develop capability to interact technically with MEP experts. Students will be able to design services for architectural design project, allocate space for the same.

Course objective:

The objective of the subject is to enable students to understand and apply in design knowledge about: Hot water supply design in hospitals and hotels, Hospital services like CSSD, hospital gases and incinerators, Community kitchens, laundry and housekeeping services, Swimming pools, Sustainable Services for hospitals and hotels, Solar electrical panels for electricity generation, Water treatment plant for hospitals and hotels. (STP / ETP).

Course Content

Unit 1: Hot Water Supply

Energy for heating, Types and classification of Geysers and Heaters, Hot water systems in Luxury Hotels and Hospitals and buildings in cold climatic conditions, Market survey and study of hot water pipes, systems in use, fuels in use, deviation from theoretical systems.Solar and electrical hot water supply- decentralised.

Unit 2: Hospital Gases, CSSD

Hospital Gases: Types of gases needed for hospitals, Centralized and decentralized system of hospital gases.

CSSD (**Central Sterile Supply Department**): Purpose and function of Central Sterile Supply Department, advantages of CSSD, equipment in CSSD, material flow process in CSSD, methods of sterilization and disinfection, essentials of the department, movement of personnel, tentative plan and planning of CSSD.

Unit 3: Laundry, Community Kitchens, House Keeping Services

Laundry: Need of laundryfor hotels and hospitals, working of Hotel laundry and hospital laundry, advantages of laundry, Types of laundry like manual laundry and mechanical laundry, types of laundry management viz. in-house, contractual and rental, advantages and disadvantages of each type, Location of laundry in building and its space requirements, flow process chart for industrial laundering, Factors to be considered while designing laundry

operation, Laundry process, planning, location, space requirement, etc.

Kitchens: Kitchen for hotel restaurant and diet kitchens for hospitals, Function, planning and utility management.

House Keeping Services: Housekeeping in Hotels, Function of housekeeping, importance of housekeeping, coordination of housekeeping with other departments, housekeeping services, flow chart for housekeeping personnel.

• Housekeeping in hospitals, introduction, present scenario, interdepartmental relationship, responsibilities of housekeeping department of hospital.

Unit 4: Swimming Pools

Services required for swimming pool, types of swimming pools public, private and domestic swimming pool, design of swimming pools, filtration plant, balancing tank, water strainers, water heating, underwater lighting, changing cubicles and toilets, organic or naturalistic swimming pools.

Unit 5: Bio-medical waste and Incinerator

Definition and classification and bio medical waste in hospitals, biomedical generation, segregation, collection, treatment and disposal.

Unit 6: Sustainable services for hospitals and hotels:

- i) Photovoltaic panels on roof tops of hospitals and hotels for electrical/lighting needs.
- ii) Sewage/Effluent water treatment plant for hospitals and hotels in order to reuse the water for toilet flushing or gardening.

- 1. Hotel Housekeeping Operations Management by g. Raghubalan and Smritee Raghubalan.
- 2. Medical Gases- an Introduction by Marian Lucas
- 3. Handbook for CSSD by Joan Losper.
- 4. Linen and Laundry service by Dr. Sharad Gajuryal
- 5. Swimming Pools: design and Construction by Philip H. Perkins.
- 6. Medical Waste Incineration and Pollution Prevention by Alex S. Green.
- 7. The Solar Electricity handbook by Michael Boxwell.
- 8. An Applied guide to Water and Effluent treatment Plant Design by Sean Moran.

Course Title : WORKING DRAWING -II	
Course Code : PC - 607	Semester : VI
Teaching Scheme : L - 1hr + St - 3hrs	Credits : $2.5 = (V)1.5 + (TW)1$
Examination Scheme: (V)100 + (TW)50	Total marks: 150

The subject introduces the student to methodology of preparation of working drawing Based on the principles of visual communication interpretation and reading of drawing. These drawing should enable the site staff to transform the drawing into actual construction with help of sufficient dimensions and details.

Course Objective

Introduction of working drawing for composite construction based on design problem done in second year architecture which should include.

R.C.C. framed structure, steel framed structure and load bearing structure.

Course Content
Unit- 1 1- Section –Sufficient number
Unit-2 – Details A) Toilet details B) Plumbing drainage water disposal
Unit-3 -Doors and Window Door 1) Wooden door / Flush door /Glass doors etc. Window 1) Wooden window
 Aluminium window Aluminium window UPVC window
Unit – 4 1) Kitchen Platform 2) Railing details 3) Staircase details
Unit – 5 1) Site development 2) Compound wall 3) Landscape

Course Title : INTERIOR DESIGN	
Course Code : PE - 608	Semester : VI
Teaching Scheme : L - 1hr + St - 2hrs	Credits : $2 = (V)1 + (TW)1$
Examination Scheme: (V)50 + (TW)50	Total marks: 100

Individual College may offer topics depending upon the availability of experts and resource material. The colleges will have the opportunity to focus on a particular group of topics according to the overall philosophy and mission statement of the College.

The probable Interior Design elective topics are – [the list is only suggestive and individual colleges can frame newer topics which meet the course objectives]. Exhibition Design, Set Design , Commercial & Office Space Design, Residential Interiors, Specialized interiors – Hospitals, Laboratories, Auditoriums, Gymnasiums, Furniture Design, Product Design, etc. With the successful completion of the course student will understand the intricacies of interior space planning and its historical background, the modern trends in the field. Student will be capable to carry out small and medium sized interior design projects with material specification and sample and one project estimate completed.

Course objectives:

To enable students to comprehend relationship between Architecture and Interior Design as a Space making disciplines. • To evolve understanding about thoughtful design of interior spaces & how it can increase efficiency and add depth and meaning to the built environment. • To enable students to comprehend the connection that the subject of Interior design has with other Design Disciplines like Conservation, Preservation, Restoration, Sustainability, Art, Product design and Graphic design.

Basics of interior design such as interior spaces, its types and various components, treatments, finishes, etc. Indoor lighting, furniture design materials selection for different environments.

Course Content

Unit 1:

Introduction Definitions, concepts, themes and types of interior spaces. Behavioral psychology, perception and the related role of interior spaces.

Unit 2: History A historical overview of the influence of various design movements on interior design. Interior decoration and crafts of various indigenous tribes and communities of the subcontinent.

Unit 3: Elements of Interior Design - Interior Treatment and Finishes Treatment methods, finishes, material selection, design options for floor, ceiling, walls, staircase, openings, interior services elements, etc. in order to achieve certain functional and/or aesthetical demands of the space.

Unit 4: Elements of Interior Design-Lighting a types, fixtures, enhancement accessories, selection for different contexts. Interior elements and significance in enhancing environment visuals and inducing moods; rocks, plants, water, flower, artifacts etc.

Unit 5: Furniture Design & Interior Layouts and Planning Human comfort, lifestyle aspirations, and function as context to design of furniture, interior spaces. Office and residential interior design layouts and furniture. Interiors and furniture of various age groups.

Unit 6 : Estimate & analyses cost & rates, prepare bill of quantities specifications & tender. Practice professional ethics while fulfilling various duties in interior design

Unit 7: introduction to leed and griha rating in interior design

Sessional work:

The faculty is expected to set out the broad contour and sub aspects (including basic principles, case studies, application in building projects etc.) of the particular subject and conduct input and demonstration interactions and define the nature of the sessional work to be done by the students.

- 1. Francis D.K.Ching, Interior Design Illustrated
- 2. Syanne Slesin and Stafford Ceiff, Indian Style
- 3. Gary Gordon, Interior Lighting For Designers
- 4. Steprt Devan Kness, Logan and Szebely, Introduction to Interior Design
- 5. Ahmed Kasu, Interior design

Course Title : ARCHITECTURAL ACOUSTICS	
Course Code : BS & AE - 609	Semester : VI
Teaching Scheme : L - 3hrs	Credits : $3 = (T)2 + (TW)1$
Examination Scheme : (T)80 + (TW)20	Total marks: 100

Note: Internal marks should be based on assignments, sketches, question bank, etc.

Course Description:

The course intends to make students understand the basics of acoustics, develop capability to apply the fundamentals of acoustics in the design of building and communicate with technical accuracy in a professional and an academic environment.

Course objective:

The objective of the subject is to enable students to understand and apply:

- 1. Basic laws and terminologies related to Acoustics, Acoustical requirements of a given activity, its calculations and designing of the space.
- 2. Urban noise control and its application at site and building level.

Course Content

Unit 1: Introduction to Acoustics

The history of Acoustics, definition and functions of acoustics, various key concepts such as origin of sound, propagation, spherical wave front, wave length, amplitude, velocity, intensity and intensity levels with Decibel scale, properties of sound, characteristics of sound like sound absorption, sound reflection, and sound transmission, defects of sound like sound resonance, Sound reverberation, sound echo, etc. and their remedies; phenomenon in acoustics like directional sound, sound and distance.

Unit 2: Behaviour of sound in open and enclosed spaces

Sound refraction, sound diffraction, first order reflection, inverse square law. Understanding near field, free field, and reverberant field. Studying absorptive and reflective materials. Design considerations for good an acoustical design such as shape, size, occupancy, purpose, geometry for open air amphitheatre, auditorium, recording studios, etc. Defects like sound shadow, dead spots, whispering galleries or sound creep and their remedies.

Unit 3: Noise Control and Sound Reinforcement Systems

To understand noise, its psychological and physiological effects. Transmission of sound (air borne and structure borne), sources and methods of insulation of indoor noise, control measures for mechanical noise and its vibrations, Outdoor noise sources such as traffic noise and their control methods, various types of sound absorbent materials, hollow and composite wall construction, floors and ceilings. Characteristics and components of a good Sound reinforcing system such as microphones, amplifiers and speakers

Unit 4: Acoustical Design Principles and Factors

Case studies and at least one design exercise of an auditorium, cinema hall, conference room or recording studio, Discotheque, karaoke bars, home theatre, lecture halls/classrooms.

Site selection and planning, shape, dimensions, occupancy and seating arrangement, treatment of interior surface, desired reverberation time. Exercise output shall be in the in the form of plan, section, construction details and calculation sheets.

Unit 5: Acoustical materials types

Sound absorbing materials like foam panels, fabric panels, underlayment, partitions, mineral wool, curtains, hanging baffles, acoustic tiles, cotton batts. Sound reflecting materials like marble, granite, clay brick, ceramic tile, smooth concrete, plaster, metal, glass. Absorption and reflection coefficient. Use of materials to reduce, elevate, absorb and divert sound.

- 1. Catalogues of leading Audio equipment's companies
- 2. Egan, Architectural Acoustics
- 3. Kandaswamy, Architectural Acoustics and Noise Control □J.E. Moore, Design for Good Acoustics and Noise Control.
- 4. National Building Code 2005
- 5. Templeton, D., Acoustics in the Built Environment.
- 6. A.B. Wood, A Text book of sound.
- 7. Yarwood, T.M., Acoustics.



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SHIVAJI UNIVERSITY,

KOLHAPUR

REVISED SYLLABUS AND STRUCTURE (CBCS) Fourth Year (Sem VII & VIII)

IN

B. Architecture.

To be introduced from the academic year 2022-23(w. e.

f. July 2022) onwards

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FOURTH YEAR ARCHITECTURE ENGINEERING – CBCS PATTERN

	SEMESTER –VII																						
			TEACHING SCHEME									EXAMINATION SCHEME											
Sr.	rse ject (e)]	THEOR	Y		TUT	OR	IAL		PRACTICAL/STUDIO				THEORY					VIVA-VOCE			TERM WORK	
No	Cou (Sub ₎ Titl	Credits	No. of Lecture	Hours	Credits	J. J.	No. of L'ecture	Hours	_	Credits	No. of Lecture		Hours	Hours	Mode	Marks	Total Marks	Min	Hours	Max	Min	Max	Min
1	PC – 701 ** Adv. Arch. Design	1	1	1						9	6		6							100	45	100	50
2	PC – 702 Env.Plan ning & Urban Design	1	1	1						2	3		3							100	45	100	50
3	PC-703 Adv. Bldg .Specificat ion ,Valuation and Project Managem ent System	1	1	1						2	3		3	3	ESE	100	100	45	delines	50	23	50	25
4	BS & AE 704 Adv. Structure – I	3	3	3										3	ESE	100	100	45	per BOS Gui			50	25
5	PE – 705 ** Urban and Regional Planning	1	1	1						1	2		2	3	ESE	100	100	45	As			50	25

6	PAECC – 706 Research Methodol ogy	1	1	1		1	2	2		2	ESE	50	50	23			50	25
7	PE – 707 Elective – IV	1	1	1		1	2	2			-	-	-	-	50	23	50	25
8	PE – 708 Elective – V	1	1	1		1	2	2							50	23	50	25
	TOTAL	10	10	10		17	20	20					350		350		500	
							SEMEST	ER-VI	Ι									
1	PAECC –801 Practica Training And					15	90 worki day Train g	ing s iin							100	45	100	50
	Report																	
	Report TOTAL					15									100		100	
	Report TOTAL					15			-						100		100	

* Means combine passing for external oral & theory paper

** Means combine passing for internal term work & theory paper & external oral as applicable.

One lecture means period of One Hour (60 Minutes) and One Studio means studio period of One Hour (60 Minutes)

- One lecture means period of One Hour (60 Minutes) and One Studio means studio period of One Hour (60Minutes)
- Per Semester Periods per week –30
- Total week 15 weeks per semester

CIE- Continuous Internal Evaluation ESE – End Semester Examination

• Candidate contact hours per week : 30 Hours(Minimum)	• Total Marks for B.ArchIV;Sem VII & VIII :1400
• Theory/Tutorial Duration : 60 Minutes and Practical Duration : 60 Minutes	 Total Credits for B.ArchIV (Semester VI I& VIII) :42
• There shall be separate passing for theory and	practical (term work)courses.

Semester V	VII

Sr. No	Code No.	Subject	Credits
1.	PC - 701	** Advanced Architectural Design - I	10
2.	PC-702	Environmental Planning & Urban Design	3
3.	PC - 703	Advanced Building Specification Valuation and Project Management System	3
4.	BS & AE – 704	Advanced Structure – I	3
5.	PE - 705	** Urban and Regional Planning	2
6.	PAECC – 706	Research Methodology	2
	PE – 707 I	Elective – IV	2
7.	PE-707-A	Project Management	
	PE - 707-B	Vernacular Architecture	
	PE – 708 I	Elective - V	2
8.	PE – 708 - A	Architectural Conservation	
	PE – 708 - B	Road safety & Civic Sense	

Course Title : Advanced Architecture Design - I	
Course Code : PC 701**	Semester : VII
Teaching Scheme : L:01 St:09 Total : 10	Credits : 10
Examination Scheme : Term Work - 100 Marks	Total marks: 200
Viva-Voce - 100 Marks	

To familiarize students with large scale Architectural building projects with emphasis on Horizontal and Vertical Planning along with building services & systems, architectural controls and building bye laws.

Course Objectives :

- To understand the planning aspects of large scale Architectural Buildings
- To study planning aspects of Vertical Buildings.
- To understand the Bye Laws deeply processed on Architectural design.
- To be exposed to suitable building materials and construction technologies to evolve a design solution
- How to meet socio-economic demands in design.
- Parameters like, role of population density, user-satisfaction, participative architecture
- To take design decisions in a comprehensive manner, understanding their implications in the complex typology of the project.

Course Outcomes(COs):

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

- Understand the typologies of Architectural Design projects in Urban area.
- Understand aspects of Campus Planning along with Contemporary Architectural Practices.
- Understand planning aspects of Vertical Buildings.
- Understand Bye-laws and planning guidelines with respect to design typology.
- Understand and implement in design assignment, various architectural services such as sewage & sullage disposal, water supply, Electricity, Air-conditioning, fire fighting, Acoustics and CCTC Surveillance related to the interior layout of the concerned building.

Course Content
Unit No. 1 – (5%)
 Understanding and analysis of design requirements
Analysis of site proximities
• Understanding the local building bye laws
Unit No. 2 – (5%)
 Case study/ Book study/ Net study/ Site visits of similar design
• Problem.
Analysis and presentation of case studies
Unit No. 3 – (5%)
• Data collection of the proposed design problem
• Site visits and site analysis i.e. Tonegraphy Vegetation sta

Site visits and site analysis i.e. Topography, Vegetation, etc.

• Implication of the local building bye laws

Unit No. 4 – (25%)

- Conceptual design and design development with considerations of Building services ,climatic and landscape elements
- Application of Advance Materials
- Application on design strategies

Unit No. 5 – (20%)

• Final design presentation with supporting sketches ,detailing, models and views.

Unit No. 6 – (40%)

- Layout of building services.
- Detailing of required services
- Services support calculations.

Sessional work:

Major Project (First) :

Housing projects, Institutional building projects, Educational campuses, Hospitals, Shopping complexes, Concert hall, Museum & Art galleries involving campus planning and various categories of Vertical Buildings etc. It should have built up area in the range of 5000 sq.m. to 6000sq.m. This project will have 60 % weightage of marks.

Minor Project (Second):

Detailing of various services and layouts ,along with support calculations. Separate portfolio of layout of Architectural services is expected. It will have 40 % weightage of marks.

Expected Presentations Outputs:

Design portfolio must include presentations of pre stage design .Architectural Drawings of post stage design along with detailed services .Supported with 3D views and models.

- Neufert architects data The handbook of building types
- Architecture: Form , Space & Order Francis DKching
- The Local Building Byelaws
- National Building Code of India 2016- Vol -1/2/3
- Monologues of Eminent Architects 8. Books on Building Services
- Books on Landscape Architecture
- Planning Guidelines

Course Title : Environmental Planning and Ur	ban Design
Course Code : PC-702	Semester : VII
Teaching Scheme : L: 01 St :02 Total:03	Credits : 3
Examination Scheme : Term Work - 100 Marks	Total marks: 200 Marks
Viva-Voce - 100 Marks	

Environmental Planning

The rapid and haphazard growth of towns and cities and associated problems of the environment, it is important to understand the macro and micro issues that connect the environment and human habitat. This course looks at the relationship between the built environment with the overall environment. Our ancient traditional wisdom has been able to create a built environment that was responsive to climatic and other local conditions and also aesthetically pleasing. Most of the human habitat that one comes across in villages are built on sustainable design principles. Thus, this course looks at strategies that have been in use since historical times to create sustainable neighborhoods. At the same time, it looks at how modern technology can be used to achieve goals of sustainable development.

Urban Design

Introducing Urban Design is important to understand the city as a context to architecture. Any building impacts the street and public space and is, in turn, constrained by the framework of urban building regulations. Designing the transition of the private space into the public realm and its articulation, determining the overall volume of built space and its form require an understanding of the complex urban fabric. The course is designed to explain the complex urban fabric through different environmental dimensions. The subject will be taught in congruence with the Design studio, and assignments for the subject will be linked to the design exercises to achieve higher level of learning and understanding the practical application of the same.

Course Objectives :

- Developing student consciousness to understand all environmental aspects at the urban scale.
- Developing an understanding of factors effecting built and open spaces at urban scale and methods not only to study user patterns, perceptions and behavior, but also record, document and analyze them.
- Developing techniques to understand movement systems, activity patterns, visual and physical linkages.
- Studying land use, building uses, social, physical and perceptual context and behavior. User patterns, perceptions and behavior.

Course Outcomes(COs):

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

• Work in a team to undertake studies related to neighborhood planning and large area Development and present the documentation before a group of experts.

- Demonstrate understanding of campus planning, sustainable settlement planning, landscape design, and the statutory framework related to waste management, environmental protection, and sustainability through a large-scale urban design project/Housing case study. (Case studies, International/National)
- Apply vernacular as well as modern urban design strategies that can mitigate the negative impacts of urban climate.
- Appreciate the role of efficient resource (water, waste, materials, energy) management in the development of a sustainable neighborhood and Demonstrate an understanding of the concepts of Urban renewal, different government schemes of slum Upgradation.
- Understand and implement URDPFI guidelines.

Course Content
Unit No. 1 – (10 %)
• Environmental planning - types of planning - planning processes and tools - indicators of sustainability in planning and development of vernacular settlements, natural resource utilization and optimization
• Environmental approaches to the site planning, design, and development of a built environment (Various factors like Physiography, Soil, Geology, Vegetation, Microclimate, etc. will be explained concerning the urban design project/ Housing case studies or independent case studies)
Unit No. 2 – (30 %)
 Neighborhood as a major constituent of the City Plan, Traditional and modern approaches to neighborhood planning, planning and design standards for area distribution, density, development controls and building byelaws, UDPFI guidelines, NBC provisions. Sustainable Infrastructure for neighborhoods. Energy generation, water and waste management.
Unit No. 3 – (20 %)
• Introduction To Urban Design, Importance of Urban Design, Elements of Urban Design, Terminology of Urban Design
• Introduce basic concepts of urban design, reading the city, understanding urban issues with the intent of resolving the interface of buildings with each other and with the urban space they help to define between them.
Unit No. 4 – (20 %)
• Impact of built density, building footprint, the urban form including height and geometry, the orientation of streets, etc. on microclimate, especially light, ventilation, and temperature.
• Improving environmental quality, energy efficiency, efficient resource management (soil, water, waste, and materials) through appropriate site selection, effective neighborhood planning and Urban design strategies; road networking- hierarchy of roads, land-use zoning strategies, landscape design, etc.
 Unit No. 5 – (20 %) Image of the City – Elements of Urban Design to define imageability –Reading the city-
Study changes in image through eras of Settlement/ Neighbourhood. Principles of Urban

Design – Urban Scale, Urban Mass, Urban space,

• Activity and circulation, Identify and analysis of principles in your study area.

- Ian Mcharg, Design with Nature
- Kevin Lynch, Site planning
- Edward. T. Q, Site Analysis
- J.O. Simmonds, Site Planning
- W. Peterman, Neighbourhood planning and community-based development
- Norman Foster, Solar Power
- Relph Edward, Place and Placelessness Kostof S, Castillo G, Tobias R. The city assembled: The elements of urban form through history.
- Eisner Simon, Gallion, Arthur Eisner, Stanley. The Urban Pattern
- Kostof Spiro. The City Shaped: Urban Patterns and Meanings through History
- URDPFI Guidelines Vol I-2014 (http://moud.gov.in/URDPFI)
- URDPFI Guidelines II A-II B-2014 (<u>http://moud.gov.in/URDPFI</u>)
- Unified Development Control And Promotion Regulations for Maharashtra State.

Course Title : Advanced Building Specification, Valuation and Project Management System

Course Code : PC-703	Semester : VII
Teaching Scheme : L: 01 St :03 Total:04	Credits : 3
Examination Scheme : Theory- 100 Marks	Total marks: 200
Term Work - 50 Marks	
Viva-Voce - 50 Marks	

Course Description:

Aim and object of the course Advanced Building Specification, Valuation and Project Management is to make the students to learn different methods of framing specifications for construction materials and building items, to understand methods of land and building valuation and also to understand tools and techniques of construction project management and construction equipments.

Course Objectives :

- To make the students to understand importance of specifications.
- To develop the ability in students to draft specifications for building materials & Items.
- To make the students understand the basic concepts of Land & Building valuation.
- To make the students understand the different approaches of valuation.
- To develop the ability of students to understand the concept of depreciation.
- To develop the ability to prepare Valuation Reports.
- To understand the organization structure in construction industries.
- To Know the activities of the project and schedule it effectively considering the duration with resources available,
- To organize efficiently for successful completion of the project.

Course Outcomes(COs):

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

- Students are able to **Understand** methods of framing detailed specifications forbuilding projects
- Students are able to **Prepare** valuation of buildings by different approaches
- Students are able to Use scheduling Techniques in construction projects
- Students are able to **Develop** insight to discover and create entrepreneurial opportunities and the expertise to successfully launch, manage, and grow their own venture.

Prerequisite: Student should have internalized knowledge of the courses –Building Construction and Technology, Knowledge of Construction Materials and Estimating Costing ,Reading skills of workingdrawings from previous years subjects

Course Content
Unit No. 1 – (5%)
• What is Specification? What is necessity of Specifications?
• What is importance of Specifications in building construction?
• Types of Specifications (a) General (b) Detailed
Open specification, advantages and disadvantages
 Restricted specifications Standard Specification, Special Specification Unit No. 2 – (5%)
• How to write the specifications?
 Use of Indian standards and "Red Book" for drafting specifications (Only Introduction) Specifications for basic building materials like brick, stone, sand, aggregate, water, timber, lime, cement, steel etc. Unit No. 3 - (5%)
• Specifications for construction items like Excavation, Brick work, Stone work, Plain
Cement Concrete, Reinforced Cement Concrete, Reinforcement Steel, Structural steel,
Cement plaster, Cement pointing, Wooden or metal doors / Windows, Mangalore tile
roofing, Sheet Roofing, Waterproofing, Construction Chemicals, Painting etc.
Unit No. 4 – (25%)
• What is valuation?
Differentiate between Cost, Price and Value
 What are Purposes of Valuation? What are types of Values?
Unit No. $5 - (20\%)$
• Different approaches of valuation: Direct comparison Approach, Income
Approach,Cost Approach.
 Methods of valuation: Rental method, Depreciation & Sinking Fund methods, Direct Comparison with capital value, Valuation based on profit, Valuation based on cost and Development method of valuation,
Unit No. 6 – (40%)
Reversionary vale of Land, Belting method of land valuation
Valuation Tables
Valuation Questionnaire
Case StudyValuation Reports.

Unit No. 7 – (40%)

- Introduction and need of Project Management. Its goal and objectives
- Fundamentals of Project Management planning (Programming) Scheduling (Work breakdown, time scheduling) controlling and reviewing.

Unit No.8

- Introduction to Bar chart or Gantt chart advantages of Bar chart, Limitations of Bar chart
- Introduction to the CPM and PERT, its historical background, advantages of CPM / PERT Network, elements of network, Network rules and preparation of CPM AND PERT Network and problems based on it.

Unit No.9

- Introduction to the construction equipments and their use. Standard and Special equipments and its classifications selection of construction equipment itscost of owing and operations (Only introduction).
- Introduction study of excavation equipments and their ideal output, earth cutting and haulingequipment.

Sessional work

- Minimum five short notes on units no.1 to 3.
- Detailed specification of any five building materials.
- Detailed specification of any five building items.
- Minimum five short notes on units no.4 to 6.
- Problems on calculation of Land/Building valuation (minimum two)
- One case study with data collection and preparation of valuation report,
- Minimum five short notes on units no.7 to 9.
- Work break down structure for a building project.
- Preparing Bar Chart for a small building project.

- Estimating and Costing in Civil Engineering (Including Specifications & Valuation) by B.N. Datta
- PWD Red Book
- Theory and Practice of valuation By Roshan Namavati
- Valuation of Real Properties by Rangwala
- Construction Project management by Kumar Neeraj Jha
- Construction Management and Equipment by Sourabh Kumar Soni

Course Title : Advanced Structures-I	
Course Code : BS & AE-704	Semester : VII
Teaching Scheme : L: 03 Total:03	Credits : 3
Examination Scheme : Theory - 100 Marks	Total marks: 150
Term Work - 50Marks	

The course Advanced Structures - I, Aim and object of this subject is to make the students to learn conceptual structural design aspects of advanced structural systems and components, their structural behavior and structural detailing for advanced foundation systems, slabs, stairs, retaining walls, water tanks, concrete mix design, precast, prestressed and prefab construction methods.

The course Advanced Structures-I, at Semester -VII, aims to give an idea to the students to understand concepts behind modern structural systems and economics in structural design systems. The intent of the syllabus is to explore the Students to investigate the structural behavior of various structural systems and elements through design exercises, case studies, and site visits etc.

Course Objectives :

- To make the students to understand structural behavior.
- To become familiar with conceptual designs of various structural components.
- To create ability to design two-way slabs.
- To detail reinforcement in RCC structural members based on their structural behavior and Detailing in structural steel.

Course Outcomes(COs):

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

- Students are able to Understand structural behavior of advanced structural components.
- Students are able to Analyze& Conceptually Design advanced structural components
- Students are able to Detail reinforcement in structural members
- Students are able to Prepare structural layouts of projects

Prerequisite: Student should have internalized knowledge of the courses -Building Construction and Technology, Knowledge of Construction Materials and Reading skills of working drawings from their previous semesters syllabi.

Course Content

Unit No. 1 – (5%)

- Special types of Shallow Foundations: Combined Foundations, types, concepts, structural behavior and reinforcement detailing. Raft Foundation, Concept, types & structural behavior reinforcement details
- Deep foundations: Pile foundations Types of piles based on materials types based on structural behavior like friction piles , end bearing piles etc., group of piles , pile cap

Unit No. 2 – (5%)

Slabs:

- Two way slab- concept, design steps, design problems
- Flat slab- concept, advantages, disadvantages, elements
- Grid/waffle/Coffer Slab concept ,code provisions
- Hollow block slab, Filler slab- concept and advantages

Unit No. 3 – (5%)

Stairs: Structural behavior and reinforcement detailing of following types of slab

- Waist slab
- Cantilever
- Folded plate/slabs
- Stringer beam type
- Circular & semicircular
- Helical
- Freestanding
- For the above types detailing in steel material also

Unit No. 4 – (25%)

Retaining Walls: Elements, structural behavior & reinforcement details of

- Cantilever retaining wall
- Counter fort type
- Buttress type
- Advantages & Disadvantages

Unit No. 5 – (20%)

Water Tanks: Structural behavior and reinforcement detailing of following types:

- Underground water tank(UGWT),
- water tank resting on ground,
- Elevated Service Reservoir (ESR),
- Shapes in plan: square, rectangular, circular, advantage and disadvantages,
- Aesthetical forms of E.S.R.

Unit No. 6 – (40%)

Concrete Mix Design:

- Parameters for mix design, Water cement ratio,
- Test for wet & hardened concrete
- Concept of ready Mix Concrete (RMC)
- Self-Compacting Concrete. (SCC)
- High strength concrete (HSC)

Unit No. 7 – (40%)

Constructional Methodology:

- Precast Concrete elements- advantages & disadvantages
- Prefabricated steel works- advantages & disadvantages
- Prestressed concrete structure- Concept, Pre-tensioning & post tensioning, advantages & disadvantages

Sessional work:

- Reinforcement detailing of Combined footing or Raft foundation or Pile & pile cap.
- Design of two-way slab, draw plan & section with reinforcement detailing.
- Structural detailing of any one type of staircase.
- Reinforcement detailing of any one type of Water tank or Retaining wall.
- Short notes (minimum Five) based on above syllabus.

- Design of Reinforced Concrete structures by S.Ramamrutham.
- Reinforced Concrete Structures by Dr.I.C.Syal Dr.A.K.Goel
- RCC Designs by Dr.B.C.Punmia Ashok Kumar Jain Arun Kumar Jain
- IS Code 456

Course Title : Urban and Regional Planning	
Course Code : PE-705 **	Semester : VII
Teaching Scheme : L: 01 St :02 Total:03	Credits : 2
Examination Scheme : Term work : 50	Total marks: 150
Theory : 100	

The course Urban and Regional Planning deals with different concepts of Town planning/Settlements through timeline from ancient till 20th century. Course touches the journey of Town planning from Ancient till today with reference to India and rest of the world. Course Urban and Regional planning gives the basic idea about the Urban, Regional and Rural planning and how these are playing an important role with each other in the development. It gives the brief idea about city building and how it relates with Architecture.Course describes the current scenario of Indian planning approach with the introduction of various Acts, Rules, Regulations and laws. Course touches the basic topics which will help students in conceptual and technical understanding. For conceptual understanding course describes the basic ideas about the evolution of cities and settlements, why study of history is important for any contemporary approach of town planning, idea about Neighborhood, Housing, Rural Planning, various issues with application of various concepts, methods to improve urban condition. For technical understanding, brief outline of topics like survey, zoning, legislation in planning. Course gives the brief outline about the Transport land use.

Course Objectives :

- Main objective of the subject is to give an introduction and overview of Urban and Regional Planning and its dynamics with Architecture.
- Course maintains contact with Architectural profession and help to enhance the Architectural profession.
- This course helps students in order to encourage allied professional opportunities.
- Course helps students to encourage experience in planning and related areas.

Course Outcomes(COs):

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

- Students will understand the basic terminologies with reference to Urban and Regional planning.
- Students will understand the urban processes involved in urban planning and development.
- Students will able to understand different town planning concepts which will help them to understand the role of planning in Architecture.
- Students will able to understand the technical part of architectural practice through the perception of urban and regional planning.
- Prerequisite: Student should have internalized knowledge of the course –Urban and Regional Planning.

Course Content

Unit No. 1

• Understanding the terms Urban, Rural and Regional. Basic idea about Urban planning, Rural planning and Regional Planning. Aim, objectives and Principles of Town planning.

Unit No. 2

- General understanding of Town planning concepts/ideas/principles which have evolved through ages (Ancient, Medieval, Renaissance-Neo Classical, etc.) outside India. Countries like Egypt, Greece, Roman towns, Sumerian cities.
- General understanding of Town planning concepts/ideas/principles which have evolved through ages (Ancient, Medieval, Renaissance-Neo Classical, etc.) with reference to India. Examples Mohenjo-Daro, Mauryan Town planning and regional planning, Jaipur.
- Industrial revolution, Impact of industrial revolution on towns/cities. (Transportation, communication, factory town)

Unit No. 3

- Study of various different ideas/ concepts of town planning in 18th, 19th and 20thcentury – City beautiful Movement, concept of Robert Owen, Model towns, Garden city, Satellite town, Philosophy of Petrick Geddes – Geddian Triad, Urban renewal.
- Utopian solutions Tony Garnier, Soriya Mata, F.L.Wright, Le Courbusier, Lewis Mumfod, C.A. Doxiadis
- Evolution of cities Ecopolis to Nekropolis
- Classification of towns with reference to population and function, density.

Unit No. 4

- Survey, Zoning
- Survey Definition, Necessity, types, methods to collect data
- Zoning Definition, Classification
- Neighborhood, Housing
- Neighborhood Definition, ideas of Neighborhood by Stein and Perry- Radburn Idea, Engelhardt, Jose Sert
- Housing Concept, Types, Agencies for Housing schemes
- Slum

Unit No. 5

- Transport Planning
- Introduction, Network characteristics The form, classification and hierarchy -Road patterns, Intercity roads, Intra city roads, other roads.
- Definition of terms ROW, C/W, Kerb, roundabouts
- Grade separators, Junctions
- Mode characteristics Modal split
- Transport survey
- Traffic survey, Parking survey
- Parking on street and off-street parking
- Street lighting
- •

Unit No. 6

- Legislation in planning
- Evolution of planning legislation in India, Bombay Town planning act, Model town planning act, M.R.T.P. Act 1966, Land acquisition act.
- M.R.T.P. Act 1966 provisions,
- Development plan procedure of preparation, content of Development plan
- Regional plan procedure of preparation, content of regional plan
- Draft development plan, Interim development plan
- Eminent domain, Police power
- Development control, Building Bye laws

Unit No. 7

- Village Planning
- Necessity, objectives, various means in the various five-year plans, Problems in Rural Housing, Rural housing schemes.

- Town planning by Abir Bandyopadhyay
- Fundamentals of Town planning by G.K. Hiraskar
- The Urban Pattern City planning and Design by Arthur Gallion, Simon Eisner
- M.R.T.P.Act 1966

Course Title : Research Methodology	
Course Code : PAECC-706	Semester : VII
Teaching Scheme : L: 01 St :02 Total:03	Credits : 02
Examination Scheme : Theory - 50 Marks	Total marks: 100
Term Work - 50 Marks	

The course Research Methodology deals with architecture as a bridge in between theoretical knowledge and practical application. Research Methodology refers to a search for knowledge. Research Methodology is a scientific investigation or inquiry specially for new facts in any branch of knowledge. Research comprises defining and redefining problems, formulating hypothesis or suggested solutions, collecting, organizing and evaluating data, making deductions and reaching conclusions and after carefully testing the conclusions application in practice. Study of this course serve the purpose, the search for knowledge through objective and systematic method of finding solution to a problem. The course is designed to arouse in the student a sense of curiosity to discover answers to questions through application of scientific procedures.

Course Objectives :

- To introduce the significance of research in architecture and to aware the students the relation in between theoretical and practical knowledge with each other how they are co related.
- The students will be aware about the importance of critical inquiry as a way of gaining knowledge and adding to it through research. To aid the students in adopting skills in writing.

Course Outcomes(COs):

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

- Students are able to **comprehend** the relationship between the practical and theoretical aspects in Architecture.
- Students are able to **formulate** a project topic at the level of an undergraduate level.
- Students are able to **structure** a chosen topic in the context of a research.
- Students are able to **acquaint** with the terms and principles of architectural research and to strengthen their knowledge in Architecture.

Prerequisite: Student should have internalized knowledge of all areas of architecture so that they can start their work of research on a particular topic to come up with specific outcome.

Course Content

Unit No. 1 – (5%)

Introduction to Research, Meaning of research, its significance in Architecture, Relationship between Design and Research, Types of research in Architecture

Unit No. 2 – (10%)

Research Design – Components of research Design, Formulating Research questions, Hypothesis, Methods of Data collection, analyzing the data.

Defining scope and limitations

Significance of research outcome

Formulating Aim and objectives for research

Unit No. 3 – (25%)

Literature study and research

Significance of literature study in research, different sources of information such as books, journals, newspapers, internet, magazines, audio recordings, etc.

Referencing and documenting the bibliography

Unit No. 4 – (25%)

Writing Research papers – Abstract writing

Structure of paper – introduction, methods and conclusion

Unit No. 5 – (25%)

Report Writing – Significance of report writing, Different steps in report writing, layout of Research report, Types of reports, Different sections of report, technical writing and language, formatting of report, Plagiarism.

Sessional work:

- Synopsis writing
- Conference paper/Research paper writing
- Notes based on units

- Research Methodology: Methods and Techniques by Kothari, C.R. Kothari, Gaurav Garg, 2019, New Age International Limited, Publishers London -New Delhi- Nairobi
- Architectural Research Methods-Second Edition, Linda Groat and David Wang, 2018, Wiley India Pvt. Ltd, New Delhi
- Research Methodology A step by step guide for beginner 3rd edition, Sage Publications, 2011
- Research Design: Qualitative, quantitative and mixed methods approaches by Creswell, J.W.2nd Edition 2003, Thousand Oaks:Sage

Course Title : Project Management	
Course Code : PE-707-A	Semester : VII
Teaching Scheme : L: 01 St :02 Total:03	Credits : 02
Examination Scheme : Theory - 50 Marks	Total marks: 100
Term Work - 50 Marks	

The courses Project Management deals with Introduction & necessity of Project Management, Purpose, goal & objectives of project management. The course Project Management, includes different management techniques suitable for planning and constructional projects. The course will develop an understanding of the management system for accomplishing the task efficiently in terms of both time and cost. The role of Project Management in an Architect's professional life can be multifarious depending upon type of consultancy, owner ship of firm etc. The most common ones are as follows:

Office Management: Managing his / her own office and field staff; staffing, allocating space, funds, equipment, etc. and establishing, managing and promoting ones business.

Design Management: Coordinating with all the stakeholders, consultants and others having a say in design processing order to arrive at a final program in a timely and efficient manner. *Project Management:* The scope of activities will depend upon the Project Delivery Method deployed but broadly deals with all the activities concerned with the implementation process subsequent to the preparation of design and construction drawings.

Course Objectives :

- The student will under stand different management techniques suitable for planning and Constructional Projects.
- To understand the management system to overcome the problems like Cost overruns, missed deadlines, quality/safety issues and lack of planning by construction firms leading to loss of return sand customers / share holders' trust.

Course Outcomes(COs):

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

- Enumerate the attributes of a project, phases in project cycle, stake holders in volved and their management.
- Prepare project schedule through identification of critical tasks and path in a project.
- Discuss the tools and skill-sets required for managing office set-ups.

Course Content
 Unit No.1- Introduction To Project Management Project management concepts-objectives, Planning, Scheduling, Controlling andReviewing. Role of decision in project management. Purpose, goal &objectives of project management. Phases involved in Project lifecycle i.e. from inception phase to the Post-construction phase. Project Delivery Methods. Various stakeholders in construction industry and the roles and responsibilities. Traditional management system, Gantt's /Bar and Load chart. Development of bar chart, Merits and Demerits. Unit No. 2 – Introduction To Modern Management System Introduction to Critical path method Network, Concept of event, activity, time estimates, float and slack. PERT network, introduction to the theory of probability and statistics. Probabilistic time
 estimation for the activities for the activities of PERT Network. Difference between CPM & PERT technique.
 Unit No. 3 – Managing safety in construction Introduction to construction site conditions in India. Guidelines for construction safety. Site Layout for construction Works, Site office &management. Types of Construction Equipment(Introductory): standard versus special equipment - earth moving(JCB, tractors, excavators, drag line, trenching equipment, etc.,) transporting (various types of trucks), spreading and compacting (motor graders and various types of rollers) and concreting equipment (including concrete mixers, transporting and pumping equipment),hoisting machines, formwork, shoring material etc. Unit No. 4 – Computerized project management :(Introductory)
 ApplicationofComputersinProjectmanagementforcalculationofmaterialrequirementandlab ourrequirementUsingAbstractSheetoftypical project.
Defence and

- Construction project management :a practical guide to field Construction Management by S. KeokiSears, Richard Hudson Clough, Glenn A. Sears.
- Construction Project Management: Planning, Scheduling and Controlling by K. K. Chitkara.
- S.P. Mukhopadhay, "Project Management for architects and Civil Engineers", IIT, Kharagpur, 1974.
- Jerome D.Wiestand Ferdinand K. Levy, "A Management Guide to PERT/CPM", prentice hall of Indian pub. Ltd. New Delhi1982.
- SR. A. Burgessand G.White, "Building production and project management", the construction press, London1979.
- The A to Z of Practical Building Construction and its Management by Sandeep Mantri.

Course Title : Vernacular Architecture	
Course Code : PE-707-B	Semester : VII
Teaching Scheme : L-01 St-02 Total:03	Credits : 2
Examination Scheme : Term work: 50	Total marks: 100
External: 50	

Vernacular architecture is architecture for the local needs using local materials and construction techniques expressing culture and local traditions. The aim of the course is to study the various vernacular architecture forms in the various regions of India & World.

Course Objectives :

- Identify and conserve the untapped values and principles of vernacular architecture in the evolution of new architectural theories
- Study various aspects of vernacular building, to analyze and apply the findings in contemporary buildings.

Course Outcomes(COs):

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

- Understand the aspects of vernacular architecture
- Apply theories of vernacular aspect in contemporary architectural designs.

Prerequisite: Student should have internalized knowledge of the basics of vernacular architecture

Course Content

Unit No. 1

Introduction to Vernacular architecture it's nature, purpose and scope. With respect to traditional wisdom of building analytical review, classification, salient features and important contributions in evolving sustainable practice solutions.

Unit No. 2

Study of examples of Vernacular architecture in history of world architecture (outside Indian subcontinent) to understand evolution of building forms based on functions, building materials and construction techniques, art & crafts, the local conditions, traditions, climate & geography, religion & culture in the period when they were built.

Unit No. 3

Case studies of works of architects in contemporary world architecture (outside Indian subcontinent) whose works are influenced by the Vernacular Architecture of the region.

Unit No. 4

Study of examples of Vernacular architecture in history of architecture in Indian subcontinent; to understand evolution of building forms based on functions, building materials and construction techniques, art & crafts, the local conditions, traditions, climate &geography, religion & culture in the period when they were built.

Unit No. 5

Case studies of works of architects in contemporary Indian architecture, whose works are influenced by the Vernacular Architecture of the region.

Design assignment based on vernacular characteristics & principles, having built up area between 200 - 250 sq.m.

- Vernacular Architecture: An Illustrated Handbook By R.W. Brunskill 4th ed 2000 Publisher Faber and Faber
- Architecture Without Architects: A Short Introduction to Non-pedigreed Architecture by Bernard Rudofsky
- Bhatia, Gautam, Laurie Baker, Life, Work, Writings, New Delhi, India, 1994 Publisher Penguin Books
- Voluntary Agencies and Housing: A Report on Some Voluntary Agencies Working in the Field of Housing in India, by MadhaoAchwal. Published 1979 UNICEF
- Handmade Houses and Other Buildings The World of Vernacular Architecture By John May 2010 Thames & Hudson
- Hassan Fathy- Architectural Monographs, By James Steele 1988 St. Martin's Press

Course Title : Architectural Conservation	
Course Code : PC -708 - A	Semester : VII
Teaching Scheme : L-01St-02Total:03	Credits : 2
Examination Scheme : Term work: 50	Total marks: 100
External: 50	

The aim of the course is to introduce the various issues and practices of Conservation, to familiarize the students with the status of conservation in India. To give a brief introduction of various agencies involved in the field of conservation worldwide and the policies. Students shall be briefed with the outline of the status of conservation and restoration practice in the country and the various guidelines for the preservation, conservation and restoration of buildings.

Course Objectives :

- To provide an overview of built heritage, its conservation and documentation.
- To study the principles of heritage conservation and documentation

Course Outcomes(COs):

- Understand the concept of heritage conservation of historical buildings, their values, architectural characteristics, and the theory and practice of architectural conservation in India and abroad.
- Develop a sensitivity towards the heritage and its conservation.
- Assignments shall be completed in the group work to cover the main objectives along with the individual understanding of the concept of architectural conservation with proper conclusions.

Course Content
Unit No. 1 Introduction To Architectural Conservation
• Introduction to architectural conservation, understanding the heritage values, definitions and ethics in conservation.
• Introduction to architectural conservation-movements, agencies, various charters and the principles derived by – ICCROM, ICOMOS, UNESCO, etc.
• Understand the emerging concepts in the Heritage conservation- Living Heritage and
Cultural Landscape
• Understand the concept of building conservation, area conservation, urban conservation
Unit No. 2 Conservation Legislations
• Guidelines followed for the conservation procedure, study of various acts, central and state government policies, legislations, role of ASI, SDA, INTACH in architectural conservation.
Unit No. 3 Preparatory Procedure For The Conservation, Methods And Techniques
• Conservation procedure in India, Understand the listing or grading of heritage structures, basic principles in conservation, ethics and values in conservation of historic buildings, documentation of heritage structures, degrees of intervention, the conservation team, inspection of historic structures, structural aspects of the historic buildings, understand the causes of decay in materials and structure

Unit No. 4 Methodology Of Conservation Procedure

- Initial inspection and study of further documentation of a heritage structure.
- Preparation of report
- Unit No. 5 Appraisal of Heritage building
 - Make an appraisal of a medium size heritage building w.r.t. above aspects and suggest the adaptive reuse of that structure and conservation management strategy

- Conservation of Historic Buildings, Third edition, Bernard M. Feilden, Architectural Press Publications
- Approach to Conservation and restoration Specific Focus on Cultural Heritage of Shimla, Saumya Sharma
- Conservation and Reuse Proposals for Heritage Buildings, MisirlisoyDamla
- Conservation Of Cultural Property, Ranjeet Pratap Singh
- Heritage Conservation: Preservation and Restoration of Monuments, by <u>N.L. Batra</u>
- Protection, Conservation and Preservation of Indian Monuments by Shanti Lal Nagar
- Conservation of Cultural Heritage by <u>A K Jain</u>
- Conservation and Management of Cultural Heritage, D. Dayalan, Aryan Books International
- INTACH Journal of Heritage Studies Approaches to Conservation in India (Volume 1 2015)
- Conservation Briefs, Identification and Documentation of Built Heritage in India, Divya Gupta

Course Title : Road safety & Civic Sense	
Course Code : PC -708 -B	Semester : VII
Teaching Scheme : L : 01 St : 02 Total:3	Credits : 3
Examination Scheme : Term work: 50	Total marks: 100
External: 50	

To familiarize students with large scale Architectural building projects with emphasis on Horizontal and Vertical Planning along with building services & systems, architectural controls and building by laws.

Course Objectives :

- To introduce the concepts Principles tools and aids of Road Safety and Civic Sense to the students of B.Arch.
- To acquaint them with the design and safety standards for roads. Also inculcate the practice of safe road behavior and civic sense among them.

Course Outcomes(COs):

• Understand typologies Introduction to Road Safety, Typology of Roads : Components and Design, Intersections, Pedestrian Circulation and Barrier Free Design, Traffic signs and Road Markings, Traffic Signals Traffic Control Aids Street Lighting etc. and implement them in Urban design & Advanced Design studio work.

Course Content

Unit No. 1 – (20 %)

Introduction to Road Safety

Road as an active space, Types of Users, User Behavior, Sensory Factors like Vision and Hearing in User Behavior.

Types of Vehicles: Heavy Vehicles, Light Motor Vehicle, Two Wheelres, Auto Rickshaw, Bicycles and Cycle Rickshaw, Non-Motorised Vehicles.

Vehicle Characteristics: Dimensions, Weight, Turning Radil, Braking Distance, Lighting System, Tyres etc.

Unit No. 2 – (20 %)

Typology of Roads : Components and Design

Road Classification : National Highways, State Highways, Disttrict Roads, (MDR and ODR) Village Roads Urban Road Classification : Expressways Arterial Sub-Arterial Collector Local Service Roads One-way, Two way etc Mountainous Roads, Speed Limits of the Road types. Design of Roads : Cross Sectional Elements Right of Way Carriageway, Median Shoulders, Sidewalk Lanes Cycling Track Green Strip Curbs, Camber etc. Spatial Standards for the Cross-Section Design. Relationship between Road Design and Road Safety. Unit No. 3 -(20 %)

Intersections Types of Road Intersections: Basic Forms of at-grade Junctions (T.Y. Staggered skewed Cross Scissors Rotary etc. Grade Separated Junctions (with or without interchange) Three Leg, Four Leg, Multi-Leg etc.

Design of Intersections : Design and Spatial Standards for Traffic Islands, Turns, Turning Radii, Directional Lanes, Pedestrian Crossings Median Openings Traffic Calming Components like Speed Breakers and Table Top Crossings etc.

Design Considerations for Diverging Merging and Weaving Traffic. Location abd Design for Traffic Signals.

Unit No. 4 – (20 %)

Pedestrian Circulation and Barrier Free Design

Requirement of Pedestrian Infrastructure : Sidewalks and Footpaths, Recommended Sidewalk Widths, Pedestrian Crossings Pedestrian Bridges Subways Cycle Tracks etc.

Barrier Free Design : Location and Design Standards for Ramps for Wheel Chair Access, Other Provisions like Tactile for Visually Challenged etc.

Safety Provisions : Pedestrian , Anti Skid Flooring Pedestrian Signal Walk Button etc.

Unit No. 5 – (20 %)

Traffic signs and Road Markings

Types of Traffic Signs : Principles and Types of Traffic Signs Danger Signs Prohibitory Signs Mandatory Signs Informatory Signs Indication Signs Direction Signs Place Identification Signs Route Marker Signs, Etc. Reflective Signs LED Signs Static and Dynamic Signs

Types of Road Markings : Centre Lines Traffic Lane Lines Pavement Edge Lines No Overtaking Zone Markings Speed Speed Markings Hazard Markings Stop Lines Pedestrian Crossings Cyclist Crossings Route Material Colour and Typography of the Markings.

Unit No. 6 – (10 %)

Traffic Signals Traffic Control Aids Street Lighting

Traffic Signals : Introduction Advantages and Disadvantages

Signal Indications, Vehicular Pedestrian and Location of the Signals.

Signal Face, Illustration of the Signals Red Amber Green Signals and its Significance Flashing Signals Warrant of Signals Co-ordinate Control of Signals.

References :

1. Urban & Regional Planning - Fourth Edition by peter Hal.

2. Fundamentals of TownPlanning by GK hiraskar

- 3. Textbook of Town planning by Abir Bandopadhyay
- 4. The Urban Pattern city planning and Design by Gallion Arthur.

FOURTH YEAR ARCHITECTURE ENGINEERING – CBCS PATTERN


*Means combine passing for external oral & theory paper

** Means combine passing for internal term work & theory paper & external oral as applicable.

Candidate contact hours per week : 30	Total Marks for B.ArchIV;Sem VII & VIII
Hours(Minimum)	:1400
Theory/Tutorial Duration : 60 Minutes and	Total Credits for B.ArchIV (Semester VI
Practical Duration : 60 Minutes	I& VIII) : 42

There shall be separate passing for theory and practical (term work)courses.

lecture means period of One Hour (60 Minutes) and One Studio means studio period of One Hour (60 Minutes)

- One lecture means period of One Hour (60 Minutes) and One Studio means studio period of One Hour (60Minutes)
- Per Semester Periods per week –30
- Total week 15 weeks per semester

CIE- Continuous Internal Evaluation ESE – End Semester Examination.

Course Title : Practical Training and Report	
Course Code : PAECC - 801	Semester : VIII
Teaching Scheme : 90 working days Training	Credits : 15
Examination Scheme : TH :0 TW:100 Viva:100	Total marks: 100

Course Description

- All students who have appeared for Fourth Year B. Arch. Semester VII Exam will proceed for Final Year B-Arch Semester VIII Practical Training
- The candidate will enroll himself at the college by paying his full fees and obtain permission to join for practical Training.
- The students will have to complete practical training under a registered architect in Private

Office Corporate office / Government Organizations under mentorship of an architect having experience of at least 5 years with the permission and approval of the Principal HOD/Director of the college. The period of practical training shall be of one semester of 16 weeks /96 working days.

- Training in Foreign Country shall be done under the Registered Architect of that Country and to be approved and monitored by the Head of the University or Institution
- At the end of each Semester the candidate will have to submit to the department, the training report is stipulated format with drawings) along with the certificate by the employer to the effect that he/she has completed training satisfactorily for the stipulated period.
- The Student has to appear for the internal & external viva examination as per the exam schedule announced by the University at the end of the Semester
- The student should attend the office regularly and work full-time and should follow the discipline and days/ hours of the organization. He is also expected to keep his eyes open and observe general working of the office whole. His minimum attendance in the office should be 96 full working days.
- During this period, the student will maintain a log-book as prescribed and it shall counter signed by Principal of that office alongwith the professor-in-charge. The candidate is expected to work in an office or on work site during this period, in accordance with the discipline of the organization where he is working. The student should send a fortnightly report on his training, counter signed by the Principal of the office to the institution. The candidate will enroll himself at the college by paying his full fees and the successful completion of his period will be certified by the Principal of the College based on his recorded in his log-book.
- If a student feels that he is not getting proper training in an office, then with the permission of the Head of the Department, he may go for training in some other office without break and give due intimation of at least a fortnight to the original office.

Course Objective

• The purpose of the practical training is to expose the students to practical field of design and construction understand the application of academic knowledge acquired in the college.

Course Outcomes (COs):

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

- Gain practical knowledge of all the theory courses dealt in earlier semester.
- Acquire skill sets required for working of an Architect's Office.

Content Students are able to understand Day-to-day working of an Architect's Office and Correspondence. Students are able to understand Prelimnary approval drawings &Presentation techniques. Students are able to understand Municipal approval Drawings and detailed drawings. Students are able to understand Working Drawings and detailed drawings in terms of construction , materials used & services. Students are able to understand Preparing estimates, checking of contractor's bills. Students are able to understand Site visit for Supervision of the work.

- Students are able to understand Item rates, labor rates and cost of standard materials available in the market.
- Students are able to appreciate Historic &Vernacular buildings



REVISED SYLLABUS ARCHITECTURE DEGREE COURSE (CBCS) FINAL YEAR (SEM IX & X)

IN

B. Architecture.

To be introduced from the academic year 2023-24 (w.e.f. July 2023) onwards.

SYLLABUS FOR NINTH SEM-ARCHITECTURE DEGREE COURSE

(PC-901**)

SUBJECT:-

**ADVANCED ARCHITECTURAL DESIGN-II

Course Code : PC-901	Semester : IX
Teaching Scheme : L : 01 S : 06 Total : 07	Credits : 10
Examination Scheme : Term Work - 100 Marks	Total marks: 300
Viva-Voce - 100 Marks	
Theory paper – 100 marks	

Note:

1. (**) Means combine passing for internal Term work &Theory paper &External oral as applicable.

COURSE DESCRIPTION:

It includes design and planning of a campus for large scale projects in Urban Areas such as publicamenities, civic areas, merchant buildings, and transportation and sports facilities.

COURSE OBJECTIVE:

During the course following objectives shall be considered to process the design of large scale urbanprojects:

- To review and do comparative analyses required to formulate design program withunderstanding of a wide range of related issues in urban context.
- To understand design of complex buildings and planning of campuses involving analytical study of building spaces with consideration of sociological, economic, cultural and climatic factors.
- To be exposed to appropriate material and construction technology to deal with large scalepublic projects.
- To understand socio economic demands, parameters like role of population density, usersatisfaction, participative architecture, pedestrian safety and vehicular movement, easy evacuation in panic situation etc.
- To take design decisions in a comprehensive manner, understanding their implications in theoverall planning.
- To be aware of prevailing rules and regulations along with standards and technical aspects required for better planning of assembly buildings and special type of campuses. Also to know norms related to provisions made for differently abled ('Divyang') persons in designing public buildings and campus planning.

COURSE OUTCOMES (COs):

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

• Understand campus planning for large scale project in Urban Areas along with contemporary architectural practices.

- Understand Bye-laws and planning guidelines with respect design typology.
- Understand and implement in design assignments, structural aspects for large scale building
- Understand and implement in design assignments, various architectural services such as Electrical, Plumbing, Drainage, HVAC, Waste disposal, Firefighting, Acoustics, CCTV surveillance etc.
- Understand and implement in design assignments Interior design and Landscape planning.
- Understand technical aspects and standards required for special projects such as projects related to transportation and sports etc.

COURSE CONTENT:

Unit no. 1.(5%)		
• Understanding analysis of design requirements.		
• Analysis of site proximities		
 Understanding the local building byelaws 		
Unit no. 2-(5%)		
• Case study, literature reviews, internet reviews, site visits of similar design		
project		
Comparative analysis and presentation of case studies		
Unit no. 3-(5%)		
• Data collection of the proposed design project		
• Site visit and site analysis i.e. topography, vegetation, surrounding,		
contour levels, accessibility etc.		
• Implication of local bye-laws, standards, rules regulations if any.		
Unit no. 4-(30%)		
 Design development process from concept to final solution, campus 		
planning considering aspects for building services, structural aspects,		
climatic factors, firefighting provisions, parking requirement, internal		
road network, provisions for differently able ('Divyang') persons,		
landscape considerations etc.		
• Application of advance material and construction technology.		
Unit no. 5-(25%)		
• Final design presentation with supporting details, sketches, 3D views, models		
etc.		
Unit no. 6-(30%)		
• Detail design of related area of Major project with interior design, fire safety		
layouts, services and landscape layouts etc.		

SESSIONAL WORK:

- 1. Minor Project (First): Including Survey/analysis, individual urban inserts. This project willhave 30% weightage of Marks. Sessional work includes detailed Architectural drawings portfolio including 3D Views, models, walkthroughs, etc.
- 2. Major Project (Second): Projects involving Architectural design solutions in Urban areas suchas Transportation hub, Amenity Space, Urban Centre, Institutional Projects, Recreational Projects, Residential Projects, Mix use projects, Religious projects, Redevelopment projects, etc. It shall have minimum built up area in the range of 7000 Sqm& above. This project willhave 70% weightage of Marks.

Sessional work includes Architectural drawings portfolio including 3D Views, models, walkthroughs and supporting details etc. and also the detail design of related area of Major project with interior design, fire safety layouts, services and landscape layouts etc.

EXPECTED PRESENTATION OUTPUTS:

Design Portfolio must include 1) graphical presentations for pre stage design work like concept formation work, site analysis, zoning and other planning strategies etc. 2) Architectural drawings forpost stage design with required details and services layouts as mentioned above supported with 3DViews, Models, Walkthroughs etc. to explain complete scheme of design project.

REFRENCES:

- 1. Achyut Kanvinde& H. James Miller, 'Campus Design in India- Experience of DevelopingNation'.
- 2. National Building Code of India, Relevant Local Building Bye-Laws (Development controlregulations), Master or Development Plans.
- 3. Technical manuals, standards and Planning norms for special projects under transportation and sports category issued by Government.
- 4. Monologues of eminent architects
- 5. Books on Building Services, Interior and Landscape design and large span structures
- 6. Neufert Architects Data and Time Saver Standardsfor building types and landscape architecture

SYLLABUS FOR NINTH SEM-ARCHITECTURE DEGREE COURSE

(PC-902)

SUBJECT:

Architectural Project 1 + 2 (Synopsis, Literature Review, Data Collection, case study analysis and conclusions)

Course Code: PC -902	Semester: IX
Teaching Scheme: L : 02 St: 06	Credits: 5
Total:8	
Examination Scheme: Term work: 50	Total marks: 150
External: 100	

COURSE DESCRIPTION:

Students of Architecture pursue their undergraduate Architectural project thesis as Designthrough research. The whole course is divided into two semesters of final year B.Arch. in (Sem. 9 & Sem. 10)

Architectural Project 1+2 gives the core idea about the topic of how the research will lead to the design. The whole course is divided into three parts.

- 1. Synopsis, literature review, framing project, and research methodology.
- 2. Case study analysis and conclusions
- 3. Data collection

COURSE OBJECTIVES:

- To prepare a student to independently handle all aspects of Architectural design from its evolution to the final outcome.
- To understand the evolutionary stages of design, process, importance etc. through rigorous literature review.
- To justify the whole project from topic selection to design outcome by practical and research approach.
- To deal the project through analysis, investigation and thoughtful synthesis of whole study.

COURSE OUTCOMES (COS):

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

- To prepare a proposal which include introduction, need of the study, scope and limitations, Aim and objectives and project methodology.
- To Study, analyze, compile the data, information which is already available in the realm of Architecture.
- To enrich the knowledge through thoughtful Synthetization of literature review, casestudy conclusion and data collection in the form of design program.

Course Content

Unit No. 1 – literature review (14)

- Area of interest
- Topic selection Evolutionary journey/timeframe about topic
- Relevant examples, cases
- Identify the gap in contemporary

• Any other relevant literature useful for progress of project

Unit No. 2 – Writing proposal (Synopsis) (14)

- Introduction
- Need/relevance of the project
- Literature review
- Scope and limitations
- Aim
- Objectives
- Project methodology
- Bibliography/ references

Note – At the mid of 9th semester Principal should final the Title of the Project and takethe Approval from Board of Studies - Chairman.

Unit No. 3 – Data Collection (10)

Primary, secondary or by Tertiary sources (Survey, interviews, government norms, rules, regulations, etc.)

Unit No. 4 – Case study analysis and comparative conclusion (12)

- One live case study
- Two net/book case studies
- Comparative analysis of the all-case studies with overall conclusion

Unit No. 5 – Design program

Prepare design program based on Synthetization of literature review, case study conclusions and data collection (Matrix of all heads)

SESSIONAL WORK:

Synopsis (A4 Size)Sheets

- Graphical presentation of literature review, project methodology, aim, objectives, etc.
- Case study analysis and comparative conclusions

Report in spiral bound format includes chapters -

- Introduction
- Literature review
- Project methodology
- Case study analysis and conclusions
- Bibliography

REFERENCES

Thesis manual for Bachelor of Architecture – A handbook of requirements and suggestions, Navneet Mounoth, Mahafuzuar Rahman Barbhuiya.

SYLLABUS FOR NINTH SEM-ARCHITECTURE DEGREE COURSE

(BS &AE-903)

SUBJECT:-

Advanced Structure- II

Course Code :BS & AE-903	Semester : IX
Teaching Scheme : L-3Hr per Week	Credits : 3
Examination Scheme:	
Theory - 100 Marks(3Hrs)	Total Marks:150
Term Work - 50 Marks	

COURSE DESCRIPTION:

The course **Advanced Structures - II**, Aim and object of this subject is to make the students to learn conceptual structural design aspects of advanced structural systems and components, their structural behavior and structural detailing for Industrial Buildings, Various types of Girders, Earthquake Resistant Structures , Portal frames, Composite structures, Shells, Geodesic domes, Space frames, Pneumatic & Tensile structures, Introduction to application of computers in structural analysis & design.

The course Advanced Structures–II, at Semester -IX, aims to give an idea to the students to understand concepts behind modern structural systems and economics in structural design systems. The intent of the syllabus is to explore the Students to investigate the structural behavior of various structural systems and elements through design exercises, case studies, and site visits etc.

COURSE OBJECTIVES:

To make the students to understand structural behavior of advanced structural systems. To become familiar with conceptual designs of various structural systems & components. To create ability to visualize structural shapes, forms, approximate structural sizes etc. To detail reinforcement in RCC structural members based on their structural behavior and To detail steel structures.

COURSE OUTCOMES (COS):

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

Students are able to understand structural behavior of advanced structural systems & their components, choice & suitability of different structural systems. Students are able to Analyze & Conceptually Design advanced structural components Students are able to Detail reinforcement in structural members Students are able to Prepare structural layouts of their projects

Prerequisite: Student should have internalized knowledge of the courses –Building Construction and Technology, Knowledge of Construction Materials and Reading skills of working drawings from their previous semesters syllabi.

Contents		
Unit No. 1 – INDUSTRIA	AL BUILDING:	
•	Concept & structural behavior of Industrial Buildings	
•	• Planning and designing of bays, ht. of columns etc.	
•	Different types of trusses for large Span $> 15m$,	
•	Pre Engineered Building Systems (PEB),	
●	Concept of truss less roofing.	
Unit No. 2 – GIRDERS:		
•	Gantry Girder- span, crane girder, cab, various forces	
	acting on gantry girders, different cross section of gantry girders	
•	Concept of plate girder. Different elements and	
•	• Concept of plate girder, Different elements and their functions. Curtailment of flange plate	
•	Concept of Virendell girder	
•	Concept of castellated girder	
Unit No. 3 – EARTHQU	AKE RESISTANT STRUCTURES:	
•	Precautions in planning, different shapes in plan Aspect ratio, Separation Joint.	
•	Behavior of Buildings for EQ forces.	
•	Earth quake resistant Detailing of load bearing	
	structures.	
•	Earth quake resisting Detailing of framed structures.	
•	Ductile detaining, IS Code 1893 and IS Code 13920.	
•	Concept of Base isolation techniques.	
•	Use of dampers in EQ resistant structures.	
Unit No. 4 – COMPOSIT	E STRUCTURE:	
•	Concept & detailing, Multistoried load bearing and	
	non-load bearing structures.	
Unit No. 5 – ADVANCE	D STRUCTURAL SYSTEMS:	
•	Fixed and hinged portal frames in RCC & steel structure.	
•	 Shells & Folded plates: Concept of Shells & Folded plate 	
	Hyperboloids, Paraboloids, Geodesic dome.	
 Concept of space frames and Pneumatic structures. 		
•	Concept of Tensile structures.	
Unit No.6 - APPLICATION OF COMPUTERS IN STRUCTURES:		
•	• Introduction to advanced analysis of building,	
•	Advantages & Limitations of computer applications.	
•	• Introduction of different software's used in analysis	
	and design of structures	

SESSIONAL WORKS:

- 1. Prepare structural Layout of and Industrial structures withKey elevations.
- 2. Sketches showing Structural behavior, Arrangements & Components of any two Girders.
- 3. Sketches showing detailing for earthquake resistant detailing of Load Bearing & Framed structures.
- **4** . Sketches showing Structural behavior, Arrangements & Components of any two Advanced structural systems.
- **5**. Short notes (minimum Five) based on above syllabus.

REFERENCE BOOKS:

Design of Reinforced Concrete structures by S.Ramamrutham. Advanced Reinforced Concrete Design by N.Krishnaraju. Space Structures by Subramanian Narayanan. Design of Steel structures by Dr.P.Dayaratnam. IS Code 1893 & 13920

SYLLABUS FOR NINTH SEM-ARCHITECTURE DEGREE COURSE

(PAECC-904)

SUBJECT:-

Professional Practice and Building Bye-Laws

Course Code : PAECC-904	Semester : IX
Teaching Scheme : L:02 St : 02 Total: 04	Credits : 3
Examination Scheme : Theory- 100MarksTerm Work - 50 MarksViva-Voce	Total marks: 150

COURSE DESCRIPTION:

To familiarize students with architectural practice, its nature, opportunities and scope of

Architectural profession. At the end itmay raise thinking about the career of students as an architect.

COURSE OBJECTIVES:

The purpose of the course is to introduce student toward theprofessional Liabilities, duties and behavior. It will also guide them towardsopportunities in Architectural profession.

COURSE OUTCOMES (COS):

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

- Gain clear aspect towards Architectural practice
- Develop their vision towards nature of practice

Prerequisite: Student should have internalized knowledge of the course – Professionalduties, liabilities and sound knowledge of building bye laws for practice.

COURSE CONTENT	
 Unit No. 1 – Introduction & Office Administrator – (20%) Council of Architecture Relationship between Client, Professional Brothers, Community, Employees, Associates& Consultants. How to Secure Client. Option on Entering the Profession. 	
 Office & Its Management. Structure of An Architect's Office. General Accounting (Balance Sheet, Assets, Liabilities, Profit & Loss Account, Petty Cash Book, Cash Book, Ledger) 	

Unit No. 2 – Code of Conducts And Fees - (15%)

- The Code of Professional Conduct.
- Scale of Professional Fees and Charges.
- Conditions of Agreement.
- Standard Terms.
- Architectural Dwg.
- Execution of the Assignment.
- Schedule of Payment.
- Arbitration (Including Arbitrator Act)

Unit No. 3 - PROFESSIONAL PRACTICE - (20%)

- Introduction to Title
- Duties And Liabilities As Per The Architect Act.-1972
- What Is The Architect Act 1972
- Professional conduct
- Process towards Architects Registration.
- Architect's Services.
- Architect's Rights and Contractor Duties.

Unit No. 4 – Architectural Competition - (15%)

- Eligibility to compete
- Registration method
- Type of Competition (Open, Limited or Competition by Invitation, Special, Regional)
- Conditions for Conducting Architectural Competition.
- Duties of Assessors in Competitions.
- Architectural Copyright.
- Essential Characteristics of Copyrights.
- Copy Right and Right of Ownership in Competition.

Unit No. 5 – Tender - (15%)

- Invitation Of Tender (Private, Public, Negotiation)
- Nature of Tender.
- Earnest Money.
- Security Deposit.
- Retention Amount.
- Mobilization Fund.
- Tender Documents.
- Tender Notice and Tendering Process.
- Essential Characteristics of a Tender Notice.

Unit No. 6 – Introduction to Building Bye –Laws - (15%)

- UDCPR Chapter 01 To 06 (Definitions, Submission Requirements, Land Use And Classification, Dwg. Requirement, Set Back, F.S.I, Type of Buildings.)
- NBC (Part-I Definitions (Introductions), (Part-II Fire Fighting)
- Environmental Clearance (Introduction, Title, Applicable, Preparation or Requirement)

SESSIONAL WORK:

- i) Notes based on units
- ii) Data collection on Bye laws
- iii) Professional document formats to be studied w.r.t. professional act
- iv) Unit no.6 only for sessional work should be excluded from theorypaper.

REFERENCES:

- Professional Practice by Roshan Namavati.
- UDCPR
- NBC
- Handbook of Council of Architecture

SYLLABUS FOR NINTH SEM-ARCHITECTURE DEGREE COURSE

(BS &AE-905)

SUBJECT:-

Advance Services

Course Code : BS & AE-905	Semester : IX
Teaching Scheme : L: 01, St :03, Total:04	Credits : 02
Examination Scheme : Theory - 100 Marks	Total marks: 150
Term Work - 50 Marks	

COURSE DESCRIPTION:

This course is designed to give architects an overview and introduction to domestic and Industrial water supply and drainage systems; solid waste management system for large area such as city and rural level, Architectural considerations and their coordination with other services in architectural designs should be incorporated at the preliminary stage of planning and design.

COURSE OBJECTIVES:

To understand the need and importance of building services.

To understand the water supply system at urban and rural level.

To apply knowledge gained on water supply system in small, medium and large multi-story buildings.

To design water supply system in a residential commercial and Industrial building.

To understand components of water supply and sewage systems.

To understand the sewage water system at urban and rural level.

To design sewage system for a multistoried building, a colony and city level.

To design rain water disposal system for a residential building.

COURSE OUTCOMES (COS):

Discuss the active and passive components of water supply, sewage and refuse disposal system.

Develop understanding and design of water supply system at town, city and rural area level. Design rain and waste water system in domestic building

Design of water-sewer system in buildings (except hydraulics design calculation parts) and understand refuse disposal system.

Develop an understanding of domestic gas and its design parameters.

Course Content

Unit No.1- Water Supply at city and township level—35%

- Sources of water supply, Water demand, Quality of water, Standards for hard, soft and potable water; standards for different uses of water
- Basic principles of water purification system (Introduction only)
- Distribution of water
- Water Purification system and plant, Purification of water
- Water Distribution and methods of distribution of water- advance systems.
- Distribution for single and multistoried buildings and Industrial projects, and rural area

- Appurtenances in the distribution system
- Water buy principles and implementations.

Unit No. 2- Sewage disposal of large areas (Introductory only)-35%

- Sewage disposal system for housing colony, small and medium sized project, for smaller, bigger towns and in rural areas.
- Methods and pattern of sewage collection, Quantity of sewage collection.
- Design of sewers and drains
- Sewer Appurtenances-connections of large complexes to Municipal sewers and ventilation of sewers to public sewerage system.
- Sewage disposal -relevant norms to be referred.
- Sewage disposal methods
- Sewage treatment plants and types
- Bye products
- Drainage systems of multistoried building.
- Rural sanitation

Unit No. 3- Refuse Disposal system --20%

- Refuse disposal system for a small house, colony and town.
- Refuse types, collection & transportation system, disposal problems and methods of disposal.
- Municipal solid waste
- Refuse disposal in multistoried buildings.
- Solid waste management rule & regulations,
- Composting, bio-methenation, Vermiculture.

Unit No. 4- Gas Plant and Distribution (Introductory only)--10%

- Gas plant, laying of pipes, controls, security measure and fire hazard precautions, metering,
- Energy supply with special reference to piped gas (manifold), its utility, integration and management at building and site level, safety measures.

REFERENCES:

- Plumbing Engineering by Dr. Subhash Patil
- International Plumbing Code by Indian Code Council
- Modern Plumbing by E. Keith Blankerbaker
- Plumbing Basics byDr. Rick Peters
- Building Construction Illustrated by Dr. F.D.K Ching
- Building Construction by Sushil Kumar
- Building Construction by B.C.Punmia
- Building Construction by Rangwala
- Mechanical and Electrical Equipment for Building by Walter T. Gondzik
- Building Construction by P.C Varghese

SYLLABUS FOR NINTH SEM-ARCHITECTURE DEGREE COURSE

(PE-906A)

SUBJECT:-

Elective – VI Graphic and Product Design

Course Code: PE - 906	Semester : IX
Teaching Scheme : L : 01 P: 01 Total : 02	Credits : 02
Examination Scheme : Term Work – 50 Marks	Total Marks : 100
Viva Voce – 50 Marks	

COURSE DESCRIPTION:

• The course will focus on the principles, techniques, and processes involved in product designing through graphics to create functional and aesthetic appealing designs.

COURSE OBJECTIVES:

- To understand the fundamentals of Graphics and Product Design.
- To understand and apply the elements of design in product design.
- To introduce various digital design tools, techniques and various materials in product design.

COURSE OUTCOMES (COS) :

The students to develop a comprehensive understanding of graphics and product design, enabling them to apply their knowledge effectively in creating innovative and user- friendly product designs.

COURSE OUTLINE

The course outline for architectural journalism may vary based on the expertise and available resources at individual colleges. Each college has theflexibility to select topics that align with their overall philosophy and mission statement.

COURSE CONTENT

Unit No. 1 Introduction to the fundamentals of Graphics and Product Design

Unit No. 2 Elements of Design

Unit No. 3 Digital Design Tools and various materials

SESSIONAL WORK:

- Individual 2-assignments based on above 2 units. •
- Group assignment based on any 1 unit. •
- The students can take any product from there thesis and can design it. •

REFERENCE BOOKS:

- 1. The Fundamentals of Product Design by Richard Morris
- 2. The Indian Smart Product Design by Sendpoints
- 3. The Design of Everyday Things by Don Norman
- 4. Basics Product Design 02: Material Thoughts by David Bramston.
- 5. Product Design by Alex Milton
- 6. Elements of Design by Anderson, Donald M. Holt Rinehart and Winston, New York (1961)
- 7. Graphic Design School: A Foundation Course for Graphic, by David Dabner and Sandra Stewart, Thames & Hudson
- 8. Product Design and Development, by Karl Ulrich and Steven D. Eppinger, McGraw-Hill Education (India) Pvt. Limited.
- 9. Ergonomics in Product Design, Send points Publishing Company Limited.
- 10. Kathy Baxter and Catherine courage, Understanding your users: A Practical guide to user requirements methods, tools.
- 11. How to use graphic design to sell things, explain things, make things look better, make people laugh, make people cry, and (every once in a while) change the worldby Michael

Bierut, Thames & Hudson.

12 The design of everyday things' by Don Norman, Basic Books; 2nd edition

SYLLABUS FOR NINTH SEM-ARCHITECTURE DEGREE COURSE

(PE-906B)

SUBJECT:-

Elective VI Architectural Journalism

Course Code : PE – 906	Semester : IX
Teaching Scheme : L : 01 P : 01 Total : 02	Credits : 2
Examination Scheme : Term Work - 50 Marks Viva-Voce - 50 Marks	Total marks: 100

COURSE DESCRIPTION:

To understand the basic ideas and principles of architectural journalism, and learn how to analyze, interpret, and share architectural information effectively.

To help students develop their skills in architectural journalism, and providing them with the necessary knowledge, practical experience so that they can take it as potential career.

COURSE OBJECTIVES:

To understand the basic ideas and principles of architectural journalism, and toanalyze, interpret, and share architectural information effectively.

To understand documentation and technical writing.

To introduce and make students aware about new age journalism and technology.

COURSE OUTCOMES:

To make students understand key concepts of architectural journalism.

To help students to develop their skills in architectural journalism, and providing themwith the necessary knowledge, practical experience so that they can take it as potential career.

COURSE CONTENT:

The course outline for architectural journalism may vary based on the expertise and available Resources at individual colleges. Each college has the flexibility to select topics that align with their overall philosophy and mission statement.

UNIT I

INTRODUCTION TO JOURNALISM: Introduction, key concepts and objectives of journalism. Overview of different Journals in architecture. Outline of journalism skills: research, reporting, writing, editing, photography, columnists, public relationships, criticism. Introduction to copyright, code of ethics.

UNIT II

ARCHITECTURAL JOURNALISM: Types of architectural journals. Works of key architectural journalists. Public discourse on the internet. Mass media and public opinion. Analyze

Unit III

TECHNOLOGY AND MEDIA: Introduction to software needed in journalism. Understanding the individual demands in the context of newspapers, radio, film, and television. Multimedia/ online journalism and digital developments.

SESSIONAL WORK:

Notes based on above each units.

Assignments:

Unit 01- Synopsis writing of their architectural project, Literature review writing. Unit 02: Article writing for newspaper/ short film, radio news etc. related to architectural subjects. Article for college magazine.

Unit03: Research paper on their architectural project/conference paper/ write report on works of architectural journalist/own architectural design project.

REFERENCES:

- Architecture and the Journalism of Ideas by Bender, Thomas
- Architectural Criticism and Journalism by Mohammad al-Asad w/ Majd Musa
- Niemen Reports: Architectural Criticism: Dead or Alive by Blair Kamin.
- The Failures of Architecture Criticism, by Lance Hosey in the Huffington Post.
- Edward Jay Friedlander and John Lee, 'Feature Writing for Newspapers and Magazines', 4th edition, Longman, 2000.
- James Foust, 'Online Journalism Principles and Practices of News for the Web', Holcomb Hathaway Publishers, Scottsdale, AZ, 2005.
- Wiseman, Carter (2014), "Writing Architecture: A Practical Guide to Clear Communication about the Built Environment", Trinity University Press
- Lange, Alexandra (2012), "Writing About Architecture: Mastering the Language of Buildings and Cities", Princeton Architectural Press
- Schmalz, Bill 92014), "The Architect's Guide to Writing: For Design andConstruction Professionals", Images Publishing Dist Ac
- Sykes, A. Krista (2007), "The Architecture Reader: Essential Writings from Vitruvius to the Present", George Braziller Inc.

SYLLABUS FOR NINTH SEM-ARCHITECTURE DEGREE COURSE

(PE-907A)

SUBJECT:

Elective VII Disaster mitigation and management

Course Code : PE – 907 A	Semester : IX
Teaching Scheme : L : 01 S : 02 Total : 03	Credits : 2
Examination Scheme : Term Work - 50 Marks Viva-Voce - 50 Marks	Total marks: 100

COURSE OBJECTIVE

- To understand the concept of Disaster and its causes
- To Learn the hazard maps of India & legal framework of India regarding disaster management
- To understand impacts of Disaster on human lives and mitigation strategies by case study method

COURSE OUTCOMES:

- Knowledge of types of Disasters: Students will acquire a comprehensive understanding of various types of disasters and its causes
- Students will be able to understand hazard maps of India with respect to mitigation strategies of disaster management
- Students will be able to understand mitigation strategies with respect to chosen case study

COURSE CONTENTS

UNIT-1-INTRODUCTION

Definition & classification of Disasters Natural Disasters Manmade Disasters Disaster Management Act 2005 Hazard maps of India- discussion only **UNIT 2**

Case Study of natural disaster or manmade disaster

UNIT 3

Analysis of case study with respect disaster mitigation management

SESSIONAL WORK:

- Written assignments on unit 1 Definition and classification of disasters, National Disaster Management Authority brief commentary on disaster management Act 2005,
- Presentation Case study of natural or manmade disaster (any one)- unit 2
- Presentation Analysis of case study and disaster mitigation management -unit 3

REFERENCE STUDY MATERIAL:

- 1. Disaster Management by Kumar N., Alfa Publications, New Delhi
- 2. Disaster Management by Ghosh G. K., A.P.H Publishing Corporation, New Delhi
- 3. Disaster Management by Goel, S.L., Deep & Deep Publication Pvt. Ltd., New Delhi
- 4. Disaster Management by R Subramanian Vikas Publishing House Pvt Ltd, New Delhi
- 5. Annual Reports by National Disaster Management Authority
- 6. Website: National Disaster Management Authority

SYLLABUS FOR NINTH SEM-ARCHITECTURE DEGREE COURSE

(PE-907B)

SUBJECT:

Elective VII Services in Tall Building

Course Code : PE – 907 B	Semester : IX
Teaching Scheme : L : 01 S : 02 Total : 03	Credits : 2
Examination Scheme : Term Work - 50 Marks	Total marks: 100
Viva-Voce - 50 Marks	

COURSE OBJECTIVE

- To understand the concept of tall buildings and their development
- To understand various services related to tall buildings.
- To understand water supply services in tall buildings
- To understand the Drainage & Sanitation in Tall Building

COURSE OUTCOME:

- Introduction to tall buildings: Students will understand necessity, evolution, planningstrategies of tall buildings
- Students will acquire a comprehensive understanding of services required in tall buildingsStudents will develop the skills necessary to conceptualize water supply and drainage services effectively in tall buildings.
- Students will gain knowledge of relevant building codes, standards, and regulationsgoverning tall buildings services.
- By achieving these course outcomes, students will be equipped with the necessary knowledge, skills, and attitudes to contribute effectively to understanding services in tallbuildings.

COURSE CONTENTS

UNIT-1

Definition & classification of tall buildings

Overview of Tall Buildings and their unique architectural & Engineering Challenges. Evolution of tall buildings Planning strategies of tall building, importance of core in tall building

Introduction to various services, and their significance with regard to tall buildings planning of service ducts

UNIT-2

Water supply in Tall Building

Water Storage & Distribution by a) Gravity b) Pumping c) Hydro-pneumatic) Water supply sources. (e.g. Municipal water supply)

Alternative water sources such as rainwater harvesting & grey water reuse.

Calculating Water requirement for tall building considering domestic use and firefighting

Selection of plumbing fixtures & piping & in a tall building

Sprinkler provision for tall buildings

Relevant NBC recommendation

UNIT-3

Drainage & Sanitation in Tall buildings and its challenges Selection of proper piping systems for wastewater

SESSIONAL WORK:

Written assignments Case study and presentations Class participation and discussions Expected Presentations Outputs: (In sheets or presentation format individual or ingroup)

REFERENCE BOOKS:

Services in High-Rise Buildings by M.Y.H. Bangash and A.H. Sheikh Building Services for High-Rise Buildings in India by S.K. Singh Tall Building Systems and Concepts: Planning, Design, and Services by S.K. Jain and A.K.Jain Design of Services in High-Rise Buildings by S.S. Gupta Development in tall building 1983 CTBUH- by Lynn S. Beedle Advances in Tall Buildings CTBUH - by Lynn S. Beedle Highrise manual- by Johann Eisele, Elen Klotz Skyscraper-By Eric Howeler Best Tall Buildings- CTBUH International Award-winning projects Relevant NBC 2016

SYLLABUS FOR 10th SEM-ARCHITECTURE DEGREE COURSE

SYLLABUS FOR TENTH SEM-ARCHITECTURE DEGREE COURSE

(PC-1001)

SUBJECT:

Architectural Project III (Design program/Site/selection /Final Design and Presentation Drawing / Report)

Course Code: PC -1001	Semester: X
Teaching Scheme: L: 02 St: 08 Total:10	Credits: 14
Examination Scheme: Term work: 200	Total marks: 400
External: 200	

COURSE DESCRIPTION:

Students of Architecture pursue their undergraduate Architectural project thesis as Designthrough research. The whole course is divided into two semesters of final year B.Arch. in (Sem. 9 & Sem. 10)

Based on Architectural Project 1+2 study outcome the student will proceed for Architectural Project III.

Architectural Project III leads for finalization of design program, site selection and analysis, concept and zoning and whole architectural drawing set with technical and services details as well as in the form of report.

COURSE OBJECTIVES:

- To maintain the correlation of each stage and complete the chain process of whole architectural project.
- To enrich the knowledge through thoughtful Synthetization of whole study.
- To develop student's ability to handle specific strategy/aspect which is relevant to the topic.

COURSE OUTCOMES (COS):

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

- To reflect the knowledge gained from all the course undertaken by the student in all previous semesters.
- To comprehend the design philosophy, theories, analysis, Synthetization of wholestudy to define final outcome of the project.

COURSE CONTENT

Unit No. 1 – Design program

Prepare design program based on Synthetization of literature review, case study conclusions and data collection (Matrix of all heads)

Unit No. 2 – Site selection and site analysis

- Based on design program selection of site
- Site analysis

Macro level – National, state, Regional, City level analysis to justify the level, need and scale of project

Micro level – Area analysis, study of site surroundings, and actual site analysis with geography, geology, climate, etc.

Unit No. 3 – Concept and zoning

Based on overall site analysis and the whole journey of project (1,2 &3) define zoning and concept

Site and building zoning in correlation with each other in the schematic 3D

Unit No. 4 –

Drawing sheets of the whole study includes Architectural project 1 +2 Final set of Architectural drawing

- Types of site plans required as per project
- Other drawings required to define design approach
- All building plans, elevations and sections
- Calculations
- All site and building services as per each project requirement
- Technical details

Unit No. 5 – Report

Technical format of report as per ideal guidelines.

SESSIONAL WORK:

Synopsis (A4 Size)

Report hard bounds in two copiesSheets -

Drawing sheets of the whole study includes Architectural project 1 +2Final set of Architectural drawing

- Types of site plans required as per project
- Other drawings required to define design approach
- All building plans, elevations and sections
- Calculations
- All site and building services as per each project requirement
- Technical details

REFERENCES

Thesis manual for Bachelor of Architecture – A handbook of requirements and suggestions, Navneet Mounoth, Mahafuzuar Rahman Barbhuiya

SYLLABUS FOR TENTH SEM-ARCHITECTURE DEGREE COURSE

(BS&AE-1002)

SUBJECT:-

Advance Building Construction

Course Code : BS & AE - 1002	Semester : X
Teaching Scheme : L : 01 P : 03 Total : 04	Credits : 3
Examination Scheme : Term Work- 100 Marks	Total marks: 300
Theory - 100 Marks	
Viva-Voce-100 Marks	

COURSE DESCRIPTION:

To familiarize students with construction methods for large scale construction projects with emphasis on construction methods, reinforcement details, joint details etc.

COURSE OBJECTIVES:

- To introduce potentials of various building materials.
- To introduce special foundations for High rise structures.
- To introduce special structures like cold storage &swimming pool.
- To introduce the structural systems for long span roofs.
- To introduce earthquake resistant structural systems.
- To introduce methods of waterproofing of basements.

COURSE OUTCOMES (COS):

At the end of the course the student are able to:

- 1. Identify the potentials and properties of construction materials.
- 2. **Select** the appropriate type of foundation for High-rise structures.
- 3. **Understand** the Structural systems of Long span roofs, Special structures & Earthquake resisting structures.
- 4. Prepare construction details of basement waterproofing.
- 5. **Design** earthquake resistant buildings.

COURSE CONTENT

Advance Building Materials (20%)

Unit No. 1 - Paints And Varnishes- (5%)

Unit No. 2 – Sound And Thermal Insulating Materials (5%)

Unit No. 3 – Epoxy Materials – (5%)

Unit No. 4 - Mastic Sealants And Adhesive (5%)

Advance Building Construction (80%)

Unit No. 1- Foundation – (20%)

- Understanding methods of construction of special types of foundations for Mid-rise and High- rise structures (Piled Raft foundation, Cellular Raft foundation).
- Understanding the methods of Underpinning for foundation(Pit method, Pile method, Mass concrete stripe foundation, Needle and pile Underpinning, Jack Pile underpinning).

Unit No. 2 – Special Structures – (20%)

- Understanding constructional details of cold storage (Multi-chamber Layout, Detail plan of single chamber with internal details).
- Understanding dimensional and constructional details of Olympic size swimming pool. (Wall& floor joint, Deck and skimmer details, water circulation Layout).
- Understanding methods of Demolition of structures(Manual demolition ,Wrecking Ball demolition method, Pusher arm demolition method, Controlled demolition, Chemical demolition).

Unit No. 3 – Structural systems for long span roof – (20%)

- Understanding basic concepts of Portal frames and its types.
- Understanding basic concepts of Shell roof and its types.
- Understanding basic concepts of Space frame and its types.
- Understanding basic concepts of Geodesic dome and Long span vault.
- Understanding basic concepts of Pneumatic structure.

Unit No. 4 – Earthquake resisting structure– (10%)

- Overview of Earthquake resisting structural systems for Load bearing structure, RCC. framed structure.
- Overview of Earthquake resisting structural systems for High-rise structures (Moment resisting frames, Cross-braced frames and Shear walls. (Introductory)

Unit No. 5 – Waterproofing– (10%)

- Understanding methods of basement waterproofing.(Internal tanking, Externaltanking, &Drained cavity system).
- Types of Lifts and construction details of Passenger lift.

SESSIONAL WORK:

- Notebook for Advance Building Materials.
- Hand drafted sheets on units 1,2 and5 to cover all the aspects of course outline with sufficient details; (5-6 sheets)
- Freehand sketches with nomenclature, on units 3 and 4 including notes. (2-3 sheets)
- Market survey for Advance building materials. (Report)

REFERENCES :

Dr. B.C Punmia (2012) Building Construction (10th edition) Laxmi Publications. S. C.

Rangwala (2013) Engineering materials (Fortieth edition), Charotar Publishing pvt. ltd.

S.K. Duggal (2016) Building materials (4th edition) – New age international publishers.

W.B. Mckay (2015) Building construction

National Building Code of India 2016 (Volume 1) and relevant I.S.I. Specifications.

SYLLABUS FOR TENTH SEM-ARCHITECTURE DEGREE COURSE

(PC-1003A)

SUBJECT:

Elective- VIII Green Building

Course Title : Green Building	
Course Code : PE -1003 A	Semester : X
Teaching Scheme : L : 02 St : 02 Total : 4	Credits : 3
Examination Scheme : Term Work - 50 Marks Viva-Voce - 50 Marks	Total marks: 100

COURSE DESCRIPTION:

This course enables students to understand the fundamentals of Green building for better present and future along with environmental, social and economical living aspects. Through theoretical assignments, practical applications, and presentations.

COURSE OBJECTIVES:

- To understand the Global Environmental Scenario.
- To study introduction and need of Green Building.
- To discuss the green building materials.
- To study different concepts of green building
- To understand the green technical standards and certification systems.

COURSE OUTCOMES (COS):

At the end of the course the student should be able to aware of the Global Scenario of environmental crises, how construction industry has part in this Global destruction, how GreenBuildings can help by reducing the negative impact and to make students realize their responsibilities as Architects.

COURSE CONTENT

Unit No. 1 – Environmental Crises– (15%) (Introduction, Theory lectures supported by presentations)

- Basic concepts of environment Environment, ecosystem, Food Chain, Energy Chain, Carbon Cycle
- Environmental Crises (Ozone layer depletion, Loss of bio diversity, Global warming) Definition, Causes and impacts.
- Carbon footprint Global efforts to reduce carbon emissions

 Unit No. 2 – Introduction to Green Building – (30%) (Theory lectures with detailed presentations, class participation & discussion) Definition of Resources, different types of Resources (Land, Water, Energy, Fuels, Waste) – Global Scenario, Challenges and Opportunities, Onsite Sources and Sinks Introduction to Green Building -Definition, concept & objectives - What is Green Building, Why to go for Green Building, Benefits of Green Buildings, Green Building Materials and Equipment in India, What are key Requisites for Constructing a Green Building, Important Sustainable features for GreenBuilding, Green buildings as a Solution – Environmental benefits, Economic Benefits, Social Benefits
 Unit No. 3 – Green Building Materials – (10%) (Introduction & discussion) Green building Construction Measure Uses of different types of materials and their availability Embodied energy & Environmental issues related to quarrying of building materials Listing of various Green building materials & life cycle analysis.
 Unit No. 4 –Concepts of Green Building –(15%) (Introduction & discussion) Definition, concept & objectives Various concepts of Green Buildings for Green Infrastructure (Green roof, greenfaçade, Active and Passive design strategies, Energy Efficiency, Water Conservation, Waste Management, and Indoor Environmental Quality)
 Unit No. 5 – Green building rating systems – (30%) (Lectures supported with presentationsand Case studies of different green rated buildings for term work, class participation & discussion) Indian Green Building Council, Green Building Moment in India, Benefits Experienced in Green Buildings, Launch of Green Building Rating Systems, Residential Sector, Market Transformation; Green Building Opportunities And Benefits: Opportunities of Green Building, Green Building Features, Material and Resources, Water Efficiency, Optimum Energy Efficiency, Typical Energy Saving Approach in Buildings, LEED India Rating System and Energy Efficiency, Various rating systems worldwide, LEED, GRIHA, IGBC, BREEM etc.

SESSIONAL WORK:

S Written assignments

Case study and presentations

Class participation and discussions

Expected Presentations Outputs: (In sheets or presentation format individual orin group)

- Study of current global environmental crisis (Unit -01)
- Presentations on introduction to Green Building (Unit -02)
- Study of Different green Building Materials (Unit -03)
- Study of Different energy and water conservation strategies, waste management strategies, Building Monitoring systems. (Unit -04)
- Case studies different green rated buildings. (Individual) (Unit-0

REFERENCES:

Text Books:

- 1. GRIHA Manual Volume -01, Version 2019
- 2. Green Building Hand Book by Tomwoolley and Samkimings, 2009.

Recommended References:

- Manual of tropical housing- Otto koenigs berger
- Complete Guide to Green Buildings by Trish riley
- Standard for the design for High Performance Green Buildings by Kent Peterson, 2009
- IGBC new building rating system manual

SYLLABUS FOR TENTH SEM-ARCHITECTURE DEGREE COURSE

(PE-1003B)

SUBJECT:-

Elective VIII Barrier free Architecture

Course Code : PE -1003B	Semester : X
Teaching Scheme : L: 02 St: 02 Total : 4	Credits : 3
Examination Scheme : Term Work - 50 Marks Viva-Voce - 50 Marks	Total marks: 100

COURSE DESCRIPTION:

This course enables students to understand the fundamentals of Barrier-Free Environment in Architecture which enables people with disabilities and elderly to move about safely andfreely and to use the facilities within the built environment.

COURSE OBJECTIVES:

- To study Barrier-Free Architecture for people with disabilities to move about safelyand freely and to use the facilities within the built environment.
- To study the environment that supports the elderly people and people with disabilities with functioning of individuals without assistance, in everyday activities.

COURSE OUTCOMES (COS):

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

Sensitize towards the needs of individuals with disabilities in architectural spaces.

Apply universal design principles in creating inclusive environments.

Incorporate design elements for accessible external spaces.

Implement guidelines and space standards for barrier-free built environments.

Analyse case studies of successful barrier-free elements in public buildings.

Design interior elements and site plans with a focus on accessibility for all.

Communicate effectively barrier-free architecture concepts through graphical presentations.

COURSE CONTENT		
Unit No. 1 - Introduction to Barrier Free Architecture – (10%)		
 Definition of barrier free design, Need for barrier free concepts in architecture, Concepts of universal design and types of disabilities. Design principles for barrier free architecture and accessibility for all 		
Unit No. 2 - Barrier free elements in Interior Architectural Design spaces and Urban Designspaces		
and Urban Planning $-(10\%)$		

• Study of design elements inside and outside the building like curb ramps, pedestrian crossing, public toilets, and parking, signage, flooring and street furniture.

Unit No. 3 - Standards for barrier- free built Environment - (20%)

• Guidelines and space standards for barrier- free built Environment for disabled and elderly persons in various buildings such as institutes, hospitals, public spaces, shopping complexes and office buildings etc.

Unit No. 4 - Case Study- Analysis, Presentation & Study of design elements - (20%)

- Barrier free architecture in Public Buildings dimensions and standards.
- Case Study analysis of Barrier free elements in Public buildings along with photographic documentation and Presentation.

Unit No. 5 - Design elements within buildings and in Site planning-(40%)

Students should design following elements at a conceptual level which will be interpreted in their Architectural design project such as-

- Parking, approach to plinth levels, corridors, entrance and exit, windows, stairways, lifts, toilets, signage, guiding and warning systems.
- Floor materials, Design elements outside the buildings curb at footpath, road crossing, public toilet, bus stop, toilet booths, and signage.
- Provisions for residential buildings and public buildings and places like auditorium, parks, restaurants, railway station.

SESSIONAL WORK:

- Theory Assignments
- Application of graphical presentation to explain the concept of barrier-freearchitecture.

REFERENCES:

• Guidelines and Space Standards for Barrier Free Built Environment for Disabled and Elderly Persons – Central Public Works Department, Ministry of Urban Affairs & Employment, India, 1998

• IS – 4963 (1987), Recommendations for buildings and facilities for Physically Handicapped

• Barrier-Free Design: Principles Planning, Examples, by Oliver Heiss, Christine Degenhardt, Johann Ebe (Birkhauser Architecture, 2010)
SHIVAJI UNIVERSITY, KOLHAPUR SYLLABUS FOR TENTH SEM-ARCHITECTURE DEGREE COURSE

(PE-1004A)

SUBJECT:-

Elective IX A Sustainable Cities and Communities

Course Code : PE-1004 A	Semester : X
Teaching Scheme : L: 01 St :03 Total:04	Credits : 2
Examination Scheme : Term Work - 50 Marks Viva-Voce - 50 Marks	Total marks: 100 Marks

COURSE DESCRIPTION:

This course aims to provide undergraduate architecture students with a comprehensive understanding of sustainable cities and communities. It focuses on the integration of social, environmental, and economic factors in urban development, with an emphasis on the role of architecture in creating sustainable built environments. It explores the principles, strategies, and design approaches required to create environmentally, socially, and economically sustainable built environments. Students will critically examine the challenges and opportunities associated with urban development and explore innovative solutions to create sustainable cities and communities.

COURSE OBJECTIVES:

- Understand the concept of sustainable cities and communities and its significance in addressing contemporary urban challenges.
- Explore the social, environmental, and economic dimensions of sustainability in urban design and architecture.
- Analyze and evaluate successful examples of sustainable cities and communities worldwide.
- Develop skills to integrate sustainability principles in architectural design projects.
- Gain knowledge of sustainable urban infrastructure systems, transportation, energy, and waste management.
- Recognize the importance of community engagement and participatory design in sustainable urban development.
- Foster critical thinking and problem-solving skills through case studies and design exercises.

COURSE OUTCOMES (COS):

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

Understand the principles, concepts, and theories related to sustainable urban development and its significance in contemporary architecture.

Develop critical thinking and problem-solving skills, enabling them to identify challenges and propose sustainable solutions in the context of urban development and architecture. Gain knowledge and understanding of current trend and needs through Sustainable Development

Enhance their communication skills through presentations, case-studies, written assignments, and class discussions, effectively articulating concepts, ideas, and design proposals related to sustainable cities and communities.

COUDCE
COUKSE
Unit No. 1 Introduction to Sustainable Cities and Communities (20%)
 Definition and key concents of sustainable urban development
 Definition and key concepts of sustainable urban development Historical perspectives on urban sustainability
 Instance perspectives on urban sustainability Sustainable development goals and their relevance to sitilat and communities, with a
• Sustainable development goals and then relevance to chies and communities, with a focus on Cool 11
Iocus on Goal II Heit Ne. 2. History Decision and Discoving for Superscriptshillter (10.0%)
Unit No. 2 – Urban Design and Planning for Sustainability (10 %)
• Principles of sustainable urban design
• Urban planning strategies for sustainable cities
Mixed-use development and compact city concepts
Unit No. 3 – Green Infrastructure, Urban Biodiversity, Sustainable Transportation
and Mobility (20%)
• Importance of green spaces and urban biodiversity
• Sustainable landscaping and urban greening
• Storm water management and sustainable drainage systems
Sustainable transportation planning
• Non-motorized transportation and pedestrian-friendly designs
• Integration of public transit systems in urban areas
Unit No. 4 – Social Sustainability in Cities and Communities (10%)
 Social equity and inclusivity in urban design
• Affordable housing and community development
• Community engagement and participatory design approaches
Unit No. 5 – Resilient Cities and Climate Change Adaptation (introduction only) (10 %)
Climate change impacts on cities and communities
• Designing resilient infrastructure and buildings
Urban resilience strategies and disaster preparedness
Unit No. 6 - Case Studies and Best Practices (30 %)
• Analysis of sustainable cities and communities around the world
• Examination of exemplary sustainable architecture projects
• Lessons learned and best practices in sustainable urban development
* *

SESSIONAL WORK

- Written assignments/tutorials /presentations to be conducted in group/individual.
- Case study with critical analysis and presentations
- Class participation and discussions in groups.

REFERENCES:

- Green Cities: Urban Growth and the Environment by Matthew E. Kahn
- Sustainable Urban Development Reader edited by Stephen M. Wheeler and Timothy Beatley
- Designing the Sustainable Site: Integrated Design Strategies for Small-Scale Sites and Residential Landscapes by Heather L. Venhaus
- Ecological Urbanism edited by Mohsen Mostafavi and Gareth Doherty
- Sustainable Cities in India: Challenges and Future Perspectives edited by Poonam Sharma and Sumita Saxena
- From Poverty, Inequality to Smart City- Proceedings of National conference on sustainable built environment edited by Fumihiko Seta, Joy Sen, Arindam Biswas, Ajay Khare
- Urbanism in the Age of Climate Change by Peter Calthorpe and William Fulton
- Eco cities of Tomorrow: Insights from the Eco city World Summit 2017 editedby Sujata Govada and Samarth Das
- Indian Cities in Transition edited by Darshini Mahadevia
- Planning Sustainable Cities: Policy, Practice, and Design edited by Vinayak Bharne and Michael W. Meh

SHIVAJI UNIVERSITY, KOLHAPUR

SYLLABUS FOR TENTH SEM-ARCHITECTURE DEGREE COURSE

(PE-1004B))

SUBJECT:-

Elective IX Intelligent Building

Course Code : PE-1004 B	Semester : X
Teaching Scheme : L: 01 St :03 Total:04	Credits : 2
Examination Scheme : Term Work - 50 Marks Viva-Voce - 50 Marks	Total marks: 100 Marks

COURSE DESCRIPTION:

The course "Intelligent Building in Architecture" explores the integration of technology, automation, and smart systems in the design and operation of buildings. It provides students with an understanding of the principles, technologies, and strategies involved in creating intelligent and responsive built environments. The course emphasizes the role of architecture in leveraging technology to enhance the performance, efficiency, and user experience of buildings. It covers topics such as building automation, sensor networks, energy management, occupant comfort, and data-driven design.

COURSE OBJECTIVES:

- To introduce students to the concept of intelligent buildings and their significance in contemporary architecture.
- To explore the various technologies and systems used in intelligent building Design.
- To understand the role of automation and smart systems in improving building performance and user comfort.
- To analyze the social, economic, and environmental impacts of intelligent buildings.
- To develop critical thinking and problem-solving skills related to the integration of technology in architectural design.

COURSE OUTCOMES (COS):

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

- Understand the concept of intelligent buildings and their significance in contemporary architecture, including their potential to enhance building performance, energy efficiency, and user comfort.
- Understand the role of automation and smart systems in improving building performance and occupant comfort, including the integration of HVAC controls, lighting systems, security systems, and occupant feedback mechanisms.
- Enhance their communication skills by effectively conveying intelligent building concepts, technologies, and their implications through presentations, reports, and design projects.

COURSE		
CONTENT		
Unit No. 1 – Introduction to Intelligent Buildings (20 %)		
• Definition and key concepts of intelligent buildings		
Historical perspectives on smart building design		
Benefits and challenges of intelligent buildings		
Unit No. 2 – Building Automation Systems (10 %)		
• Fundamentals of building automation and control		
• Integration of HVAC, lighting, and security systems		
Building management systems and protocols		
Unit No. 3 – Energy Management and Sustainability and Data-Driven Design and		
Performance Optimization (20 %)		
• Energy-efficient building systems and equipment		
 Smart metering and monitoring for energy optimization 		
 Integration of renewable energy systems in intelligent buildings 		
• Building information modeling (BIM) for intelligent design		
 Tools for performance simulation and optimization 		
 Post-occupancy evaluation and feedback mechanisms 		
Unit No. 4 – Indoor Environmental Quality, Occupant Comfort and Integration of Smart		
Technologies (20%)		
• Intelligent lighting and day-lighting systems		
• HVAC controls for thermal comfort and air quality		
Acoustic control and noise reduction strategies		
• Integration of smart devices and wearable technology in buildings		
• User interface design for smart building applications		
Human-centric design and user experience considerations		
Unit No. 5 – Case Studies and Best Practices (30 %)		
 Analysis of intelligent building projects around the world 		
• Examination of exemplary smart systems and technologies		
• Market Survey of the Automation systems available locally		

SESSIONAL WORK

- Written assignments/presentations to be done in group or individually.
- Any one Case study of intelligent building with critical analysis and presentations of same.
- Market Survey of the Automation systems available locally to be done in groups /individual.

REFERENCES:

- "Intelligent Buildings: Design, Management and Operation" by Derek Clements-Croome
- "Smart Buildings: Advanced Materials and Nanotechnology to Improve Energy-Efficiency and Environmental Performance" by Marco Casini
- "Intelligent Building Systems" by G. D. Tiwari and S. M. Shiva Nagendra "Building Automation: Communication Systems with EIB/KNX, LON and BACnet" by Hermann Merz
- "Smart Buildings Systems for Architects, Owners, and Builders" by James M. Sinopoli

SHIVAJI UNIVERSITY, KOLHAPUR

SYLLABUS FOR TENTH SEM-ARCHITECTURE DEGREE COURSE

(SEC-1005)

SUBJECT:-

Entrepreneurship Skills for Architects

Course Code : SEC-1005	Semester : X
Teaching Scheme : L : 02 St : 00 Total :02	Credits : 02
Examination Scheme : Term Work- 50 Marks Viva-Voce- 50 Marks	Total marks: 100

COURSE OBJECTIVE

The course "Entrepreneurship for Architects" aims to equip architects with the necessary knowledge and skills to succeed in the dynamic and competitive business environment of the architectural industry. Many architectural firms have grown beyond traditional small or medium-sized businesses, requiring architects to develop entrepreneurial and business management skills to thrive in this evolving landscape.

The curriculum of this course integrates principles and practices from the field of entrepreneurship with the specific needs and challenges faced by architects. It emphasizes the development of an entrepreneurial mindset and provides practical guidance on various aspects of starting, managing, and growing an architectural firm.

COURSE OUTCOME:

UNIT 1 Introduction to Entrepreneurship Unit 2 Opportunity Recognition and Idea Generation focus on equipping architects with technique Unit 3 Legal and Ethical Responsibilities Unit 4 Marketing and Branding Unit 5 Innovation and Technology

COURSE CONTENT:

Unit No. 1 – Introduction to Entrepreneurship – (10 marks) Meaning of entrepreneur. Concept of entrepreneurship. Role of entrepreneurship in economic development. Management and future of entrepreneurship. The skills required to be an entrepreneur Unit 2: Opportunity Recognition and Idea Generation focus on equippingarchitects with Technique – (10 marks) Market Research

Trend Analysis
Client Segmentation
Competitive Analysis
Unit 3: Legal and Ethical Responsibilities – (10 marks)
Legal Structures and Contracts
Professional Liability and Insurance
Ethical Responsibilities
Client Relationships and Communication
Regulatory Compliance
Professional Ethics in Design
Unit 4: Marketing and Branding – (10 marks)
Understanding Architectural Branding:
Target Market Identification
Developing a Marketing Strategy
Online Presence and Website Development
Social Media Marketing
Content Marketing and Thought Leadership
Client Relationship Management
Unit 5: Innovation and Technology – (10 marks)
Introduction to Innovation in Architecture
Parametric Design and Computational Architecture
Digital Fabrication and 3D Printing
Virtual and Augmented Reality (VR/AR
Emerging Technologies

SESSIONAL WORK:

It will be a compilation of study notes with respect to each unit's content. The support documentation file is to be compiled to support understanding.

BOOKS:

Architect and Entrepreneur: A Field Guide to Building, Branding, and Marketing Your Startup Design Business- by Eric Reinholdt

Architect's Essentials of Starting, Assessing, and Transitioning a Design Firm- by Peter Piven Design Professional's Guide to Business Development: Practical Strategies for Architects, Engineers, and Environmental Consultants- by Sylvia Montgomery and David H. Maister.