DEPARTMENT OF ARCHITECTURE





MINUTES OF 12TH BOARD OF STUDIES

CURRICULUM & SYLLABUS

FOR

B.Arch

(Bachelor of Architecture)

(Based on Outcome Based Education)

(I - X Semester)

REGULATIONS – 2020

Minutes of 12th board of Studies

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PERIYAR MANIAMMAI INSTITUTE OF SCIENCE AND TECHNOLOGY

Our institute is committed to the following Vision, Mission and core values, which guide us in carrying out our Architecture Department mission and realizing our vision:

INSTITUTION VISION

To be an Institution of global dynamism with excellence in knowledge and innovation ensuring social responsibility for creating an egalitarian society.

INSTITUTION MISSION

- **IM1** Offering well-balanced programmes with scholarly faculty and state-of-art facilities to impart a high level of knowledge.
- **IM2** Providing student-centered education and fostering their growth in critical thinking, creativity, entrepreneurship, problem solving and collaborative work.
- **IM3** Involving progressive and meaningful research with concern for sustainable development.

IM4 Enabling the students to acquire the skills for global competencies.

IM5 Inculcating Universal values, Self-respect, Gender equality, Dignity and Ethics.

INSTITUTION CORE VALUES

- Student-centric vocation
- Academic excellence
- Social Justice, equity, equality, diversity, empowerment, sustainability
- Skills and use of technology for global competency.
- Continual improvement
- Leadership qualities.
- Societal needs
- Learning, a life-long process
- Teamwork
- Entrepreneurship for men and women
- Rural development
- Basic, Societal, and applied research on Energy, Environment, and Empowerment.

DEPARTMENT OF ARCHITECTURE

DEPARTMENT VISION

To be a unique department in creating eminent architects with excellent creativity and sound technical knowledge, competent enough for adapting the changing trends and culture of mankind and in turn applying them for the societal needs with environmental consciousness.

DEPARTMENT MISSION

- **DM1** To produce Undergraduate, Postgraduate and Research scholars in Architecture at par with current global demands and trends.
- **DM2** To inspire and provide a challenging ambiance to evolve as leaders to advance in the field of Architecture.
- **DM3** To provide a platform for innovation, critical thinking and research in the field of architecture and allied disciplines
- **DM4** To serve as a reliable, highly capable resource for the profession, academia, and society.

Sl.No.	Name	Designation	Membership
1.	Ar. N.Ramesh Babu	AssociateProfessor &Head	Chairperson
		Dept. of Architecture, PMIST	
2.	Dr. C.V.Subramanian	Professor, Dean,	Member
		Faculty of Architecture and	
		Planning, PMIST	
3.	Ar.V.S.Kavitha	Associate Professor,	Member
		Dept. of Architecture, PMIST	
4.	Ar.K.Jasmine Vidhya	Associate Professor,	Member
		Dept. of Architecture, PMIST	
5.	Ar.Mullai.J	Associate Professor, BOS/In-	Member
		charge, Dept. of Architecture,	
		PMIST.	
6.	Ar.S.Pradeepa	Asst. Professor,	Member
		Dept. of Architecture, PMIST	
7.	Prof.S.Ravi	Professor (Design Chair),	Special Invitee
		MEASI Academy of Architecture,	Representing
		Royapettah, Chennai.	Academia
8.	Ar.P.Chandranesan	Principal Architect,	External
		PC Nesan Architects,	Member
		B-6, Shastri Road,	Representing
		Thillai Nagar, Trichy.	Industry
9.	Dr.R.Shanthi Priya	Professor,	External
		School of Architecture and Interior	Member
		SRM Institute of Science and	representing
		Technology,	Alumni
		Kattankulathur.	

MEMBERS OF THE BOARD OF STUDIES

The current Bachelor of Architecture (B.Arch) curriculum is undergoing its **Twelfth Board of studies on 08.05.2021**to tune the syllabus towards Outcome Based Education and meet the CoA recommendations (Regulation 2020) and in turn, the suggestions provided will be implemented in Regulations 2021-22. To produce architects on par with international standards and to accommodate the recent trends, it is felt that there is a need to modify the present curriculum with appropriate inclusions and deletions which will enhance the competency of the budding architects. As per recommandations given by Council of Architecture in its regulations 2020, the credits for Studio courses and Theory cum studio courses have been revised with the approval of BoS and Academic Council.

SCHO Periyar Phone Email b	OL. OF ARCHITECTURE Nagar, Vallam Thanjavur - 613 403, T 91 - 4362 - 264600 Fax: +91-43 eadarch @pmu.edu Web: ww	AND PLANNING amil Nadu, India 62 - 264660 w. pmu edu	Find the second	PERIYAR IANIAMMAI NIVERSITY
			NAAC Ace	eredited
		Twelfth Board of Studies Mee	ting	
			Date: 06.05.2 Venue: Goog	021 le meet
Agend	la:			
1.	Revision of course credit	5		
2.1	ntroduction of XAR206 -	Carpentry and model making w	orkshop course	
SLNo	Name	Designation	Position	Signature
1	Ar.N.Ramesh babu	Asso. Prof. & HOD	Chairperson	Rul
2	Dr.C.V.Subramanian	Professor & Dean	Permanent Invitee	Agreet
2	Prof. Joseph N	Professor	Member	Present
5	Fernando	and the second	and the second se	and the second sec
5	Fernando Ar.V.S.Kavitha	Asso. Prof.	Member .	Jonand For
5	Ar.V.S.Kavitha Ar.K.Jasmine Vidhya	Asso. Prof. Asso. Prof.	Member .	Jomment For
5 6 7.	Ar.V.S.Kavitha Ar.K.Jasmine Vidhya Ar.J.Mullai	Asso. Prof. Asso. Prof. Asso. Prof.	Member Member BoS i/c	Joney For BULS
5 6 7. 8.	Fernando Ar.V.S.Kavitha Ar.K.Jasmine Vidhya Ar.J.Mullai Ar.S.Pratheeba	Asso. Prof. Asso. Prof. Asso. Prof. Asst. Prof	Member Member BoS i/c Member	Format For Balls' Present
5 6 7. 8. 9	Fernando Ar.V.S.Kavitha Ar.K.Jasmine Vidhya Ar.J.Mullai Ar.S.Pratheeba Ar.P.Chandranesan	Asso. Prof. Asso. Prof. Asso. Prof. Asst. Prof Principal Architect, PC Nesan Architects, Trichy	Member Member BoS i/c Member Expert Member	Firment Far Balls' Present Prusent
5 6 7. 8. 9 10.	Fernando Ar.V.S.Kavitha Ar.K.Jasmine Vidhya Ar.J.Mullai Ar.S.Pratheeba Ar.P.Chandranesan Dr.R.Shanthi Priya	Asso. Prof. Asso. Prof. Asso. Prof. Asst. Prof Principal Architect, PC Nesan Architects, Trichy Professor, School of Architecture and Interior design, SRM Institute of Science and Technology, Kattankulathur.	Member Member BoS i/c Member Expert Member Alumni	Firment Far Balls Present Pousent Pousent

Student representative

Reg.Number	Student Name	Present
117011001597	Mughil P	present
117011001632	Lakshmi N	present
118011001683	Sriinithi K R	present
118011001702	Juwan JAFFER	present
119011001733	Haripriya R	present
119012001794	Srinath S	present
	Reg.Number 117011001597 117011001632 118011001683 118011001702 119011001733 119012001794	Reg.Number Student Name 117011001597 Mughil P 117011001632 Lakshmi N 118011001683 Sriinithi K R 118011001702 Juwan JAFFER 119011001733 Haripriya R 119012001794 Srinath S

Minutes of the meeting

1. New course XAR206 - Carpentry and model making workshop has been introduced

2.Over all Credits of the courses increased from 253 credits to 270 credits.

3.Introduced Agriculture is part of the syllabus in the XAR 407 Architectural design -III course as per COA minimum standard regulation 2020.

Head/Arch

Department - Vision and Mission Definition Process

The development of the vision and mission of the department is carried out as per the following steps.

Step: I	Brainstorming carried out at different levels							
	First level - Department faculty by the HOD							
	Second level – Current students by the faculty							
	Third level - Employers, alumni and academia and industry experts							
Step: II	Benchmarking with other Universities: Understanding the Vision and							
	Mission							
Step: III	Validation by the Board of studies and then Academic Council							
Step: IV	Wide publicity in the department and institution.							

The Institutevision is split up into small elements and verifies its compliance with Department Vision

INSTITUTE VISION	DEPARTMENT VISION
global dynamism	creating eminent architects
excellence in knowledge and innovation	excellent creativity and sound technical knowledge, competent enough for adapting the changing trends and culture of mankind
ensuring social responsibility Creating an egalitarian society	applying them for societal needs with environmental consciousness.

To accomplish the vision stated, a well-structured mission is established with consultation with administrators, faculty members and other officials.

INSTITUTE MISSION	DEPARTMENT MISSION
to impart a high level of knowledge	par with current global demands and trends.
student-centered education and foster their growth in critical thinking, creativity, entrepreneurship, problem solving and collaborative work.	A platform for innovation, critical thinking
progressive and meaningful research	research in the field of architecture and allied disciplines
Skills for global competencies.	To evolve as leaders to advance in the field of architecture.
Inculcating Universal values, Self- respect, Gender equality, Dignity and Ethics.	To serve as a reliable, highly capable resource for society, the profession, academia, and society.

	UM 1	UM 2	UM 3	UM 4	UM 5
DM 1	3	3	1	3	2
DM 2	3	3	1	1	1
DM 3	1	3	3	3	1
DM 4	2	1	2	2	3
	9	10	7	9	7
	-			-	

Table 1. Mapping of Institute Mission (UM) and Department Mission (DM)

1-Low 2- Medium 3 – High

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

Based on the mission of the department, the programme educational objectives are formulated as

- **PEO1** A successful professional to lead and coordinate the project team consisting of professionals from different disciplines in the design and execution of projects irrespective of the scale locally and globally.
- **PEO2** Able to understand the societal and individual's spatial needs and requirements with respect to the context, their culture and tradition and to come up with innovative unique and aesthetical design solutions.
- **PEO3** An environmentally and socially responsible person, able to design an optimum solution in terms of human, materials and energy resource utilization and take conscious efforts to transfer the essence of the past to the present and the future through his creations.
- **PEO4** Prepared for continued education in architecture or entry into the architectural field or the building industries.

PEO PROCESS ESTABLISHMENT

After a series of discussions with the faculty of the department of architecture, the set of PEOs is drafted. This will help us to assess the graduates a few years after graduation.



Figure 1. PEO process establishment

The framework for the review and revision of the PEOs at the departmental level involving all the faculty members comprised the following broad stages.

- 1. Using the keywords and phrases extracted from the mission statement of the institution and department to identify attributes to gauge graduates.
- 2. Capturing the distinction between the educational objective and the student outcomes.
- 3. Formulating each objective to be measurable.

The program educational objectives for the architecture program describe accomplishments that graduates are expected to attain within six years after graduation. Graduates might have applied their expertise to contemporary problem solving, be engaged professionally, and have continued to learn and adapt, and have contributed to their organizations through leadership and teamwork.

	DM 1	DM 2	DM3	DM 4
PEO 1	3	3	2	2
PEO 2	3	2	1	3
PEO 3	2	3	3	3
PEO 4	1	1	3	2
	9	9	9	10
1	- Low	2 - 1	Medium	3-High

 Table 2. Mapping of Program Educational Objectives (PEOs) with Department Mission (DM)

The development of vision, mission and programme educational objectives are tuned in line with the global and national standards and it is assured that the department's vision and mission will facilitate in meeting the vision and mission of the institute. The Program Educational Objectives (PEO) shall cover both technical and professional aspects of the expected achievement.

- Achievement in terms of technical skills required in the profession for which the program prepares students
- Achievements in terms of professional, ethical, and Communicational aspects required by the profession for which the program prepares students (teamwork, ethical behavior, effective communication, etc.)
- Achievements in terms of management and leadership skills (project managers, directors, CTOs, CEOs, etc.)
- Achievements in terms of life-long learning and continuous education (certifications, conferences and workshops attendance, etc.)
- Achievements in terms of advanced and graduate studies pursuing (graduate studies, research careers, etc.)
- Other aspects could be considered when defining educational objectives such as the ability to engage in entrepreneurship activities.

SUMMARY OF THE FEEDBACKS OBTAINED

Total number of feedbacks collected: 10

Observations from the feedback:

- 1. As per the Council of architecture newcourse XAR206 Carpentry and modelmaking workshop has been introduced.
- 2. Overall Credits of the courses increased from 253 credits to 270 credits.
- **3.** As per COA recommendationsstudy of Agriculture, related infrastructure topics is included in the course XAR 407 Architectural design -III, XAR905 dissertation and XAR1001 Thesis.

Targets were revised based on the result of Pos, COs attainment and stakeholders survey.

PROGRAMME OUTCOME (PO)

At the time of graduation, the competency of the student is measured through the attainment of programme outcomes. The quantification of programme outcomes attainment is measured through the assessment of established course outcomes for each course.

PROGRAMME OUTCOMES

- **PO 1** Ability to effectively use basic architectural theories and principles in the design process.
- **PO 2** Ability to understand and frame the design requirements considering the diverse points of view to reach well-reasoned conclusions based on the relevant criteria and standards.
- **PO 3** Ability to diagnostic survey record and analyze, interpret, apply, and develop a proposal at the individual building and urban level.
- **PO 4** Ability to prepare technically clear drawings writes outline estimation and specifications and prepare models illustrating and clarifying the assembly of materials, systems, and components appropriate for a building design.
- **PO 5** Ability to use traditional and digital media representational skills to analyze and convey essential design ideas at each stage of the design process.
- **PO 6** Understanding of the architect's responsibility to work in the public interest, to respect historic resources, and to improve the quality of life for local and global neighbours.
- **PO 7** Work collaboratively with teams of architects and various interdisciplinary design teams involved in the building industry, incorporating the financial implications, negotiating contracts, selecting service consultants.
- **PO 8** Ability to design a sustainable built environment to provide healthful environments and reduce environmental impacts.
- **PO 9** Sensitive enough to strictly adhere to the code of conduct prescribed by the competent authority to practice the profession in the country with respect to building codes and regulations, safety aspects and upheld the value of the

profession at its highest.

PO 10 Ability to upgrade required skills in the domain of construction technology, design process methods using software to meet the changing scenario.

PROGRAMME SPECIFIC OUTCOME

- **PSO1** Understand the concept of energy in buildings and the impact of energy crisis in building industry and ability to design energy-efficient buildings.
- **PSO2** Understand the planning aspects from the macro to the micro-level and ability to develop a planning, urban design proposal.

GRADUATE ATTRIBUTES

- 1. **Knowledge base on architecture:** Possess knowledge of fundamental architectural theories and sciences.
- 2. **Design analysis and solution:** Identify, formulate, analyze and provide architectural design solutions.
- 3. **Investigation skills:** Conduct investigation of complex issues, skills to conduct the investigation, interpret the observed data to provide appropriate solution.
- 4. Architectural communication Skills: Convey design ideas through drawings and reports by manual and digital tools.
- 5. **Modern tool usage:** Skills to operate and work with data manipulation, analytical tools.
- 6. Architect and society: Sensitive towards the culture, heritage and betterment of the society while planning and executing the project.
- 7. **Project & Finance Management:** Manage a diverse range of projects considering the available resources, technology and time frame.
- 8. Environment and sustainability: Possess knowledge of sustainable development principles sensitive enough to safeguard the environment.
- 9. **Professional Practice & Ethics:** Upheld ethical values, standards while working as an individual and group in the professional practice.
- 10. **Lifelong learning:** Update the required technical skills to upgrade the competency level in the fast-pacing challenging environment.

РО→	1	2	3	4	5	6	7	8	9	10	PSO1	PSO 2
PEO 1	3	1	3	1	1	2	3	1	1	1	3	3
PEO 2	3	3	3	1	1	3	1	2	1	1	3	2
PEO 3	1	2	2	2	3	3	1	3	3	3	3	3
PEO 4	1	1	1	3	2	2	2	2	2	2	1	1
	8	7	9	7	7	10	7	8	7	7	10	9
	1 - Low						2 – Medium 3 - Hi					

Table 3. Mapping of Program Educational Objectives (PEOs) with ProgramOutcomes (POs)

Table4. Mapping of Program Outcomes (POs) with Graduate Attributes (GAs)

	GA1	GA2	GA3	GA4	GA5	GA6	GA7	GA8	GA9	GA10
PO1	3	1	2	1	2	2	1	1	1	1
PO2	1	3	1	2	1	1	1	1	2	1
PO3	2	1	3	1	1	2	2	3	2	2
PO4	1	1	1	3	1	1	2	1	1	1
PO5	3	3	2	1	3	1	2	1	1	1
PO6	1	1	2	1	1	3	1	1	3	1
PO7	2	1	1	2	2	1	3	1	2	2
PO8	1	1	3	1	3	2	1	3	1	1
PO 9	1	2	2	1	2	1	2	1	3	1
PO10	1	2	1	1	1	3	1	1	2	3
PSO1	2	1	2	1	2	2	1	3	1	2
PSO2	1	1	1	2	3	1	2	1	2	1
	1- Sligl relat	htly ted		2 –	Suppor	tive	e 3 - Highly			

PO PROCESS ESTABLISHMENT



Figure 3. PO Process Establishment

CURRICULUM DEVELOPMENT

The Architecture curriculum is drawn to define the role of architects to meet the global challenges and equip them in designing and developing a project and provide sustainable solutions for PRACTICAL problems of society. In addition to their technical competencies, students must possess engagement skills, sustained learning and adapting, leadership, teamwork with good command in communication skills.

The faculty members have been allotted for developing the courses and their outcomes are given below. They in turn conducted frequent discussions with each other and with students in drafting the course content.

The curriculum development is ensured that students receive integrated, coherent learning experiences that contribute towards their personal, academic and professional learning and development.

Courses and topics were designed and developed within a framework which comprises a specified curriculum, specified assessment arrangements, and clearly identified educational aims and learning outcomes.

Sl.No	Code No.	COURSE NAME	FACULTY
1.	XAR101	History of Architecture – I	Ar. V.S.Kavitha
2.	XAR102	Theory of Architecture – I	Ar. R.Kalaivani/ Ar. K.Chithra
3.	XAR105	Architectural Graphics –I	Ar. R.Kalaivani/ Ar. K.Ashwin
			Prakash
4.	XAR106	Visual Arts	Ar. S.Booja Sri
5.	XAR107	Basic Design	Ar. V.S.Kavitha
6.	XAR201	History of Architecture – II	Ar. K.Jasmine Vidhya
7.	XAR202	Theory of Architecture – II	Ar. K.Edhaya
8.	XAR203	Mechanics of Structures – I	Er. R.Latha
9.	XAR204	Architectural Graphics –II	Ar. R.Kalaivani/ Ar. K.Ashwin
			Prakash
10.	XAR205	Materials and Construction –I	Ar. V.S.Kavitha
11.	XAR206	Carpentry and Model making	Ar. J.Mullai
		workshop	
12.	XAR207	Architectural Design – I	Ar. J.Mullai
13.	XAR301	History of Architecture – III	Ar. K.Jasmine Vidhya
14.	XAR302	Site Surveying and Planning	Ar. J.Mullai
15.	XAR303	Mechanics of Structures – II	Er. R.Latha
16.	XAR304	Building Services -I	Ar. N.Ramesh Babu/ Ar. S.Banazir
			Banu
17.	XAR305	Materials and Construction –II	Ar. V.S.Kavitha
18.	XAR306	Computer Applications in Architecture	Ar.K.Ashwin Prakash/
		- I	Ar.S.Vithya Lakshmi
19.	XAR307	Architectural Design – II	Ar. E.Uma Mouthiga
20.	XAR401	History of Architecture – IV	Ar. K.Jasmine Vidhya
21.	XAR402	Climate and Architecture	Ar.S.Vithya Lakshmi
22.	XAR403	Design of Structures – I	Er. R.Latha
23.	XAR404	Building Services -II	Ar. N.Ramesh Babu
24.	XAR405	Materials and Construction – III	Ar. J.Mullai
25.	XAR406	Architectural Design – III	Ar. V.S.Kavitha
26.	XAR501	Contemporary Architecture	Ar. E.UmaMouthiga
27.	XAR502	Environmental Sciences	Ar.M.Pavithra/ Ar.K.Ashwin
			Prakash

 Table 5. Faculty members assigned for course development

28.	XAR503	Design of Structures – II	Er. R.Latha
29.	XAR504	Building Services – III	Ar. N.Ramesh Babu /Ar.
			S.Suganthi
30.	XAR505	Materials and Construction- IV	Ar. K.Chithra/ Ar.S.Suganthi
31.	XAR506	Computer Applications in Architecture	Ar.K.Ashwin Prakash
		– II	
32.	XAR507	Architectural Design – IV	Ar. V.S.Kavitha
33.	XAR601	Vernacular Architecture	Ar. S.Bala Hari Krishnan
34.	XAR603	Estimation, Costing & Valuation	Er. R.Latha/Ar. K.Chithra
35.	XAR605	Materials and Construction – V	Ar. K.Chithra
36.	XAR606	Architectural Design – V	Ar. V.S.Kavitha
37.	XAR701	Human Settlement Planning	Ar. J.Mullai
38.	XAR702	Professional Practice & Ethics	Ar. S.Subramanian
39.	XAR704	Materials and Construction –VI	Ar. J.Mullai
40.	XAR705	Architectural Working Drawing and	Ar. S.Suganthi
		Specifications	
41.	XAR706	Architectural Design – VI	Ar. E.Kalaivani
42.	XAR801	Practical Training	Ar. V.S.Kavitha
43.	XAR901	Urban Design	Ar. E.UmaMouthiga
44.	XAR902	Project Management	Er. R.Latha
45.	XAR903	Housing	Ar. K.Jasmine Vidhya
46.	XAR904	Landscape Architecture	Ar. K.Edhaya/Ar.J.Mullai
47.	XAR906	Dissertation	Ar. E.UmaMouthiga
48.	XAR907	Architectural Design – VII	Ar. K.Edhaya
49.	XAR602A	Culture and Architecture	Ar. S.Banazir Banu
50.	XAR602B	Building Automation and	Ar. N.Ramesh Babu
		Management	
51.	XAR602C	Architecture and Structure	Ar. N.Ramesh Babu
52.	XAR602D	Architecture of South East Asia	Ar. J.Mullai
53.	XAR605A	Glass in Architecture	Ar. N.Ramesh Babu
54.	XAR605B	Steel in Architecture	Ar. N.Ramesh Babu
55.	XAR605C	Advanced Building Technology	Ar. S.Subramanian
56.	XAR605D	Digital Design Processes in	Ar.K.Ashwin
		Architecture	Prakash/Ar.M.Pavithra

57.	XAR703A	Disaster Resistance Architecture	Er. R.Latha
58.	XAR703B	Architectural Conservation	Ar. V.S.Kavitha
59.	XAR703C	Behavioural Studies in Built Environment	Ar. S.Bala Hari Krishnan
60.	XAR905A	Architectural Lighting and Acoustics	Ar. N.Ramesh Babu
61.	XAR905B	Interior Design	Ar.D.Aruna
62.	XAR905C	Energy Efficient Architecture	Ar. K.Edhaya
63.	XAR905D	Materials & Technologies for Sustainable Architecture	Ar. N.Ramesh Babu

COURSE DEVELOPMENT

The following elements were developed by the faculty involved after interaction and discussions.



Figure 4.Course Development

As per recommandations given by Council of Architecture in its regulations 2020, the courses offered to the degree programme are finalized based on the standard template finalized by the institute.

S.No	Category	Symbol
1.	Professional Core Courses	PC
2.	Building Science and Applied Engineering	BS & AE
3.	Professional Electives	PE
4.	Open Electives	OE
5.	Professional Ability Enhancement Compulsory Courses	PAECC
6.	Skill Enhancement Courses	SEC
7.	Mandatory Courses (UGC Mandatory)	MC
8.	Non-credit Course	ELS
9.	NCC/NSS/YRC/RRC/Sports	

Table 6. Distribution of Courses	to be included as i	per CoA. 1	UGC and NAAC
Tuble 0. Distribution of Courses	to be menuted as		

Table 7.	Table 7. SUMMARY OF CREDITS:												
CATEGORY	Ι	Π	III	1V	V	VI	VII	VIII	IX	X	Total	As suggested by CoA Model curriculum 2020	
PC	22	22	16	15	15	21	18	-	23	18	170	63%	
BS & AE	3	6	9	12	12	3	3	-	-	-	48	17.8%	
РЕ	-	-	-	-	-	6	3	-	3	-	12	4.4%	
OE	-	-	-	3	-	-	-	-	-	-	3	1.1%	
PAECC	-	-	-	-	-	-	3	16	6	-	25	9.3%	
SEC	3		3		3		3				12	4.4%	
мс	-	-	-	-	-	-	-	-	-	-	-	-	
ELS	-	-	-	-		-	-	-	-	-	-	-	
Total	28	28	28	30	30	30	30	16	32	18	270	260-300	



B. ARCH – CURRICULUM

REGULATIONS – 2020

(Applicable to the students admitted from the Academic year 2021-22)

Table 8. Curriculum for 10 semesters

		SEMESTER	– I					
S.No	Code No.	COURSE TITLE		L	Т	Р	н	С
1.	XAR101	History of Architecture – I	PC	3	-	-	3	3
2.	XAR102	Theory of Architecture – I	PC	3	-	-	3	3
3.	XAR103	Architectural Mathematics	BS&AE	3	-	-	3	3
4.	XAR104	Communication skills	SEC	2	1	-	3	3
		THEORY CUM STUDIO						
5.	XAR105	Architectural Graphics –I	PC	1	-	2	5	3
		STUDIO/ LAB/WORKSHOP						
б.	XAR106	Visual Arts	PC	-	-	3	6	3
		DESIGN PROJECT						
7.	XAR107	Basic Design	PC	-	-	10	10	10
		SUB TOTAL		12	1	15	33	28

		SEMESTER	– II							
Pre-rec	Pre-requisite: A pass is required in Basic Design									
Sl.No.	Code No.	COURSE TITLE		\mathbf{L}	Т	Р	Η	С		
Pre-rec	quisite: A pa	ss is required in Basic Design								
1.	XAR201	History of Architecture – II	PC	3	-	-	3	3		
2.	XAR202	Theory of Architecture – II	PC	3	-	-	3	3		
3.	XAR203	Mechanics of Structures – I	BS&AE	3	_	_	3	3		

		THEORY CUM STUDIO						
4.	XAR204	Architectural Graphics –II	PC	1	-	2	5	3
5.	XAR205	Materials and Construction –I	BS&AE	1	-	2	5	3
		STUDIO/						
		LAB/WORKSHOP						
6.	XAR206	Carpentry and Model making	PC	_	_	3	6	3
0.		workshop	10			U	U	U
		DESIGN PROJECT						
7.	XAR207	Architectural Design – I	PC	-	-	10	10	10
8.		Value-added course – I		М	linim	ım 30	hour	S
		SUB TOTAL		11	-	17	35	28

		SEMESTER –	III								
Sl. No	Code No.	COURSE TITLE		L	Т	Р	Н	С			
Pre-requisite: A pass is required in Architectural Design – I											
1.	XAR301	History of Architecture – III	PC	3	-	-	3	3			
2.	XAR302	Site Surveying and Planning	PC	3	-	-	3	3			
3.	XAR303	Mechanics of Structures – II	BS&AE	3	-	-	3	3			
THEORY CUM STUDIO											
4.	XAR304	Building Services –I	BS&AE	2	-	1	4	3			
5.	XAR305	Materials and Construction –II	BS&AE	1	-	2	5	3			
		STUDIO/ LAB/WORK	SHOP								
6.	XAR306	Computer Applications in Architecture – I	SEC	1	-	2	5	3			
		DESIGN PROJE	ECT								
7.	XAR307	Architectural Design – II	PC	-	-	10	1 0	10			
		SUB TOTAL		13	-	15	33	28			

		SEMESTER-	IV								
Sl.No	Code No.	COURSE TITLE		L	Т	Р	Н	С			
Pre-requisite: A pass is required in Architectural Design – II											
1.	XAR401	History of Architecture – IV	PC	3	-	-	3	3			
2.	XAR402	Climate and Architecture	BS&AE	3	-	-	3	3			
3.	XAR403	Design of Structures – I	BS&AE	3	-	-	3	3			
4.	XXXXX	Open Elective*	OE	3	-	-	3	3			
		THEORY CUM STU	DIO								
5	XAR404	Building Services –II	BS&AE	2	-	1	4	3			
6	XAR405	Materials and Construction – III	BS&AE	1	-	2	5	3			
		DESIGN PROJEC	СТ								
7	XAR406	Architectural Design – III	PC	-	-	12	12	12			
		Value added course – II		Μ	inimu	ım 30	hour	S			
		SUB TOTAL		15	-	15	33	30			

*(To be attended in another department).

		SEMESTER	V								
Sl.No	Code No.	COURSE TITLE		L	Т	Р	Н	С			
Pre-requisite: A pass is required in Architectural Design – III											
1.	XAR501	Contemporary Architecture	PC	3	-	-	3	3			
2.	XAR502	Environmental Sciences	BS&AE	3	-	-	3	3			
3.	XAR503	Design of Structures – II	BS&AE	3	-	-	3	3			
THEORY CUM STUDIO											
4.	XAR504	Building Services – III	BS&AE	2	-	1	4	3			
5.	XAR505	Materials and Construction- IV	BS&AE	1	-	2	5	3			

	STUDIO/ LAB/WORKSHOP										
б.	XAR506	Computer Applications in Architecture – II	SEC	1	-	2	5	3			
		DESIGN PROJECT									
7.	XAR507	Architectural Design – IV	PC	-	-	12	12	12			
		SUB TOTAL		13	-	17	35	30			

		SEMESTER	VI									
Sl.No	Code No.	COURSE TITLE		L	Т	Р	н	С				
	Pre-requisite: A pass is required in Architectural Design – IV											
1.	XAR601	Vernacular Architecture	PC	3	-	-	3	3				
2.	XAR602	Professional Elective – I	PE	3	-	-	3	3				
3.	XAR603	Estimation, Costing & Valuation	PC	3	-	-	3	3				
THEORY CUM STUDIO												
4.	XAR604	Professional Elective – II	PE	2	-	1	4	3				
5.	XAR605	Materials and Construction – V	BS&A E	1	-	2	5	3				
		DESIGN PROJEC	СТ									
6.	XAR606	Architectural Design – V	PC	-	-	15	15	15				
7.		Value-added course – III		Min	imum	30 ho	ours					
		SUB TOTAL		12	-	18	33	30				
		SEMESTER	II									
SLNo	Code No.	COURSE TITLE		L	Т	Р	Н	С				

SI.No	Code No.	COURSE TITLE		L	Т	P	Н	С
	Pre-req	quisite: A pass is required in Arc	hitectural D	esign	1 - V			
1.	XAR701	Human Settlement Planning	PC	3	-	-	3	3
2.	XAR702	Professional Practice & Ethics	PAECC	3	-	-	3	3
3.	XAR703	Professional Elective – III	PE	3	-	-	3	3

		THEORY CUM ST	UDIO							
4.	XAR70	4 Materials and Construction –VI	BS&AE	1	-	2	5	3		
STUDIO/ LAB/WORKSHOP										
5.	XAR70	5 Architectural Working Drawing and Specifications	SEC	1	-	2	5	3		
		DESIGN PROJE	СТ							
6.	XAR70	6 Architectural Design – VI	PC	-	-	15	15	15		
7.		Educational Tour	Around 2	2 weel	ks dur	ing th	e vaca	ation		
		SUB TOTAL		11	-	19	34	30		

		SEMESTER VIII					
Sl.No	Code No.	COURSE TITLE	L	Т	Р	Η	С
	Pre-rec	quisite: A pass is required in Architectural De	esig	n – V	I		
		PAECC					16
8.	XAR801	Practical Training -	-	-	-	-	

		SEMEST	FER IX						
Sl.No.	Code No.	COURSE TITLE		L	Т	Р	Н	С	
Pre-requisite: A pass is required in Practical Training									
1.	XAR901	Urban Design	PC	3	-	-	3	3	
2.	XAR902	Project Management	PAECC	3	-	-	3	3	
3.	XAR903	Housing	PC	3	-	-	3	3	
4.	XAR904	Landscape Architecture	PC	3	-	-	3	3	
		THEORY CUM STU	J DIO						
5.	XAR905	Professional Elective – IV	PE	2	-	1	4	3	
		STUDIO/ LAB/WORK	KSHOP						
6.	XAR906	Dissertation	PAECC	1	-	2	5	3	
		DESIGN PROJEC	CT						

7.	XAR907	Architectural Design – VII	PC	-	-	14	14	14
		SUB TOTAL		15	-	17	35	32

		SEMESTER	t X			
Sl.No	Code No.	COURSE TITLE	L	Т	Р	С
		Pre-requisite: A pass is required in	n Architectural	Desi	gn – V	II
1.	XAR1001	Thesis	-	-	-	18

ELECTIVES

Table 9. Curriculum of professional electives.

PROFESSIONAL ELECTIVE - I (Sixth Semester)													
Sl.No.	Code No.	COURSE TITLE	L	Т	Р	С							
1.	XAR602A	Culture and Architecture	3	-	-	3							
2.	XAR602B	Building Automation and Management	3	-	-	3							
3.	XAR602C	Architecture and Structure	3	-	-	3							
4.	XAR602D	Architecture of South East Asia	3	-	-	3							

PROF	ESSIONAL I	ELECTIVE- II (Sixth Semester)					
Sl.No.	Code No.	COURSE TITLE	L	Т	Р	С	
1.	XAR604A	Glass in Architecture	2	-	1	3	
2.	XAR604B	Steel in Architecture	2	-	1	3	
3.	XAR604C	Advanced Building Technology	2	-	1	3	
4.	XAR604D	Digital Design Processes in Architecture	2	-	1	3	

PROFESSIONAL ELECTIVE – III (Seventh Semester)											
Sl.No.	Code No.	COURSE TITLE	L	Т	Р	С					
1.	XAR703A	Disaster Resistance Architecture	3	-	-	3					
2.	XAR703B	Architectural Conservation	3	-	-	3					
3.	XAR703C	Behavioural Studies in Built Environment	3	-	-	3					
4.	XAR703D	Cyber Security System	3	-	-	3					
PROF	PROFESSIONAL ELECTIVE – IV (Ninth Semester)										
Sl.No.	Code No.	COURSE TITLE	L	Т	Р	С					
1.	VAD005A	A 11 17.1.1. 1.A									
	XAR905A	Architectural Lighting and Acoustics	2	-	1	3					
2.	XAR905A XAR905B	Architectural Lighting and Acoustics Interior Design	2 2	-	1 1	3 3					
2. 3.	XAR905A XAR905B XAR905C	Architectural Lighting and Acoustics Interior Design Energy Efficient Architecture	2 2 2	-	1 1 1	3 3 3					
2. 3. 4.	XAR905A XAR905B XAR905C XAR905D	Architectural Lighting and Acoustics Interior Design Energy Efficient Architecture Materials & Technologies for Sustainable Architecture	2 2 2 2 2	- - -	1 1 1	3 3 3 3					
2. 3. 4.	XAR905A XAR905B XAR905C XAR905D	Architectural Lighting and Acoustics Interior Design Energy Efficient Architecture Materials & Technologies for Sustainable Architecture Total no. o	2 2 2 2 f cred	- - its: 27	1 1 1 1 0	3 3 3					

B. ARCH – SYLLABUS

XAR101 – HISTORY OF ARCHITECTURE – I

3 - 0 - 0 - 3

Course Objectives:

- 1. To inform about the development of architecture in the Ancient Western World and the cultural and contextual determinants that produced that architecture.
- 2. To understand architecture as evolving within specific cultural contexts including aspects of politics, society, religion and climate.

Cours	se Out	come:		Domain Level						
On th	e succi	essful a	completion of the course, students will be able to		<u>+</u>					
CO1	Unde	erstand	the origin of architecture in the prehistoric age	Cognitiv	/e	Unc	lersta	and		
	in tł	ne we	stern world. Interpret the characteristics of							
	desig	ning of	temples and tombs by Egyptians,							
CO2	Unde	erstand	the construction techniques used by	Cognitiv	/e	Understand				
	Baby	lonians	, Mesopotamians. Persian and Assyrian.							
CO3	Кпоч	v the	importance of the history, relate to design	Cognitiv	/e	Kno	wlee	lge		
thinking of Greeks.				Unc	lersta	and				
					Applie			ion		
CO4	CO4 Understand the cultural aspiration, social needs, and the Cognit				/e	Unc	lersta	and		
	evolution of the built environment of Romans			Unc		nderstand				
						App	licat	ion		
CO5	Com	pare s	patial and stylistic qualities associated with	Affectiv	ive Analyz			ng		
	churc	h archi	tecture							
SUB	CODE	1	SUB NAME		L	Т	Р	C		
XAR	101		HISTORY OF ARCHITECTURE - I		3	0	0	3		
C.D.	٨		2 5.0.0 5		т	т	D	п		
C:F:/	A		2.5:0:0.5		L	1	Г	п		
					3	0	0	3		
UNII	UNIT – I PREHISTORIC & EGYPTIAN ARCHITECTURE					5				
		Old S	tone Age - the Agricultural revolution – The New	v Stone Age	- Natu	ire of	Art	and		
	Architecture - Factors influencing Architecture - Outline of Architectural Character,									

	Development of Shelter during the prehistoric age.						
	Factors influencing Egyptian Architecture -Outline of Architectural Character of						
	Egyptian architecture. Factors influencing Architecture. Example- Pyramid of Cheops,						
	Temple of Amman. Karnak						
						10	
UNIT-II	WEST ASIA	1				10	
	Evolution of	f Sumerian, Babyle	onian and Persi	an cultures - Factors	influen	cing	
	architecture - Outline of architectural character - Palace of Sargon, Khorsabad - Palace						
	at Persepolis.	. Ziggurats of Ur.					
UNIT-III	GREECE					10	
	Evolution a	rchitecture in the a	archaic and clas	sic periods – Factors	s influen	cing	
	architecture - Outline of architectural character – optical illusion in buildings, Orders in						
	architecture - Doric Ionic and Corinthian, Parthenon, Athens;						
UNIT–IV	ROME 10						
•	Factors influencing architecture - outline of architectural character; Colloseum Rome;						
	Pantheon, Rome, Thermae of Caracalla.						
UNIT-V	EARLY CHRISTIAN AND BYZANTINE10					10	
	Birth and spread of Christianity - Evolution of church forms - Factors influencing						
	architecture -	Outline of Architect	tural character - S	st. Sophia. Constantinop	le.		
			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				
		LECTURE	TUTORIAL	PRACTICAL	ΤΟΤΑ	L	
		45	0	0	45		
						i	
TEXT							
1. Sir Banister Fletcher – A History of the Architecture University of London, The Athlone Press							
2002	. 20 th edition.						

### REFERENCES

- Pier Luigi Nervi, General Editor History of World Architecture Series, Harry N.Abrams, Inc.Pub., New York, 1972.
- S.Lloyd and H.W.Muller, History of World Architecture Series, Faber and Faber Ltd., London, 1986. ISBN 10: 0571145752 ISBN 13: 9780571145751

Lond	don, 199	5.	liistory	01 71	enneet		Jetting		ituuis,	o niora		<i>cy</i> 1105
Table 10. Mapping of Cos with Pos:												
	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8	PO9	<b>PO10</b>	PSO1	PSO2
CO1	3					3	-	1	_	-	-	
CO2	3					3	-	3	-	-	3	
CO3	3					3	-	3	-	-	3	
CO4	2					3	-	1	-	-	-	
CO5	1					3	_	3	-	-	3	
Total	12					15	-	15	-	_	9	
Scaled Value	3	0	0	0	0	3	0	3	0	0	2	0
<b>Value</b> 1 – 5	$\frac{1}{5 \to 1, 6}$	$ $ $-10 \rightarrow$	• 2, 11 -	$-15 \rightarrow$	3							<u> </u>

3 Spiro Kostof - A History of Architecture - Setting and Rituals Oxford University Press

0 - No Relation, 1 - Low Relation, 2- Medium Relation, 3- High Relation.

## XAR102 – THEORY OF ARCHITECTURE – I

#### 3 - 0 - 0 - 3

## **Course Objectives:**

- 1. To understand what is architecture.
- 2. To understand the elements of architecture.
- 3. To understand the objectives and scope of architecture.

Course	e Outcome:	Domain	Level				
On the successful completion of the course, students will be able to							
CO1	To know the need for architecture and the services of architecture.	Cognitive	Knowledge				
CO2	Understand the relationship between form and function in architecture.	Cognitive	Understand				
CO3	Understand form, space, their relationship and evolution of new form.	Cognitive	Understand Apply				
CO4	Understand the elements and fundamentals of defining space.	Cognitive	Interpret				
CO5	Understand the principles of architecture.	Cognitive Affective	Understand Analyze				

SUBCODE	SUB NAME	L	Т	Р	С
XAR 102	THEORY OF ARCHITECTURE-I	3	0	0	3
C:P:A	3:0:0	L	Т	Р	Н
		3	0	0	3
UNIT – I	WHAT IS ARCHITECTURE?				5

Few definitions of architecture.

Objective, scope and need for architecture. Its applications.

# UNIT – II ARCHITECTURE IS A MULTIDISCIPLINARY FIELD 5 (OCCUPATION)

The functional and aesthetic components of the architecture - Relationship between architecture and technology- Relationship between architecture and fine

arts.Design process: Intuition vs analysis and synthesis (artistic vs scientific)

## UNIT – III AESTHETIC COMPONENT

Form & space: Unity of opposites, Shapes, visual and emotional effects of geometric forms - The sphere, the cube, the pyramid, the cylinder and cone and their derivatives, Subtractive & additive forms – linear, radial, centralized, clustered, grid.

## **UNIT – IV** ARCHITECTURAL SPACE

Space defining elements: Vertical, horizontal and curved elements. Spatial relationship: space within a space, interlocking spaces, adjacent spaces, spaces linked by common spaces.Spatial organization: influencing factors and their types: centralized, linear, radial, cluster, grid with examples.

### UNIT – V PRINCIPLES OF DESIGN

Proportion: Need for proportion, Golden Proportion, Modular. Indian proportion and Japanese Proportion.Scale: The need for scale, human scale and generic scale.Ordering Principles: Balance, Rhythm, Symmetry, datum, hierarchy, pattern and axis citing.

	LECTURE	TUTORIAL	PRACTICAL	TOTAL
	45	0	0	45
TEXT				

 V.S.Pramar, Design Fundamentals in Architecture, Samaiya Publications Private Ltd., New Delhi, 1997.

#### REFERENCES

- Paul Alan Johnson The Theory of Architecture Concepts and themes, Van Nostrand Reinhold Co., New York, 1994.
- 2. Francis D.K.Ching, Architecture-Form, Space and Order, Van Nostrand Reinhold Company, New York, 2014.
- 3. Helm Marie Evans and Caria David Dunneshil, An initiation to design, Macmillan Publishing Co. Inc., New York

10
Table 11. Mapping of COs with Pos												
	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8	PO9	PO10	PSO1	PSO2
CO1	3	2										1
CO2	3	2										1
CO3	3	3										1
CO4	3	3										1
CO5	3	3										1
Total	15	15										5
Scaled	3	3										1
Value												

1-5 =1, 6-10=2, 11-15=3, 0-No relation, 1 –Low Relation, 2 –Medium Relation, 3 –High

Relation.

## XAR 103 – ARCHITECTURAL MATHEMATICS

3 - 0 - 0 - 3

- 1. Understanding the simple and complex geometry and calculating the areas and volumes
- 2. Identifying practical problems to obtain solutions involving trigonometric and exponential functions.
- 3. Understanding the various proportioning systems and their applications.
- 4. Analyzing data collection and interpretation of results using statistical and computer tools

Course	Outcome:	Domain	Level
On the	successful completion of the course, students will be able to		
CO1	Find area and volumes of simple, complex and irregular	Cognitive	Remembering
	geometries using various rules.		
<b>CO2</b>	Apply Trigonometry on architectural elements	Affective	Applying
CO3	Demonstrate the appropriate role of the mathematical	Cognitive	Understanding
	concepts learned.		
<b>CO4</b>	Analyze Tally charts, Tables and graphs and statistical	Affective	Analyzing
	diagrams using for various types of data.		
CO5	Explain various architectural proportioning systems and	Cognitive	Understanding

calculate the same.

SUBCODE	SUB NAME	L	Т	Р	С
XAR 103	ARCHITECTURAL MATHEMATICS	3	0	0	3
C:P:A	1.8:0:1.2	L	Т	Р	Н
		3	0	0	3
LINIT I	ADEAS AND VOLUMES				0

#### UNIT – I AREAS AND VOLUMES

Surface areas and frustum of complex geometry consisting of primitives – cuboid, cylinder, cone, pyramid, and cylinder. Practical application of calculating areas of and building elements like floors, walls, staircase. Volumes of complex geometry consisting of primitives – cuboid, cylinder, cone, pyramid, and cylinder. Practical application of calculating Volumes rooms, staircases, walls, roof etc. Mid ordinate rule, Trapezoidal rule, Simpson's rule, Volume of irregular solids, Prismoidal rule.

# UNIT-II TRIGNOMETRY AND SETTING OUT

Trigonometrical ratios for 30°, 45°, 60°, Angle of elevation and depression, sine rule and cosine rule. Practical application of Trignometry on staircases, ramps and different kinds of sloping roofs. Setting out of simple building sites, Bay window and curved brickworks, Checking a building for square corners, Circular arches.

9

9

9

## UNIT-III STATISTICS

Tally charts, Tables and graphs, Types of data: Discrete, continuous, raw and group, Averages: Mean, mode and median, Statistical diagrams: Pictorial, bar chart, pie chart and line graphs. Histograms, Frequency distribution.

## UNIT-IV PROPORTIONS AND FIBONACCI NUMBERS

Golden mean ratio, algebraic relations and its application in Egyptian pyramids, Fibonacci series, Fibonacci rabbit experiment, Square root proportions, Modular proportions.

UNIT-V	COMPUTER TECHNIQUES	9
	Introduction to excel, creating formulas to solve problems based on the above	
	topics. Introduction to Matlab.	

LECTURE	TUTORIAL	PRACTICAL	TOTAL
45	0	0	45

# TEXT

- 1. I.H.Morris Geometrical Drawing for Art Students. Orient Longman Madras 1982
- Albert. O. Halse Architectural Rendering Techniques McGraw-Hill Book Co. New York 1972

## REFERENCES

- 1. Construction Mathematics, Surinder Singh Virdi and Roy T Baker, Elsevier, 2008
- 2. The Golden Ratio, Mario Livio, Broadway Books (2003)
- Architecture and Mathematics in Ancient Egypt, Corinna Rossi, Cambridge University Press, 2004. (Online pupblication date: February 2010)

## e- REFERENCES

- 1. http://www.cs.brown.edu
- 2. http://www.dtcc.edu/ document, project info Arch.dwg.

Table 12. Mapping of Cos with Pos:												
	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8	PO9	<b>PO10</b>	PSO1	PSO2
CO1			1	2								
CO2			1	1	<u> </u>							
CO3			1	2								
<b>CO4</b>			1	1								
CO5			1	1								
Total			5	7								
Scaled Value			1	2								

 $1-5 \rightarrow 1, 6-10 \rightarrow 2, 11-15 \rightarrow 30$  - No Relation, 1 - Low Relation, 2- Medium

Relation, 3- High Relation.

# XAR104 - COMMUNICATION SKILLS

#### **Objectives:**

• To enhance their communication skills in English by developing their listening, speaking, reading and writing skills.

C		Domain		Level		
On the st	uccessful completion of the course, students will be a	ble to				
CO1	Knowledge of the techniques and strategies of communication.		Kn	owle	dge	
CO2	Enhance their reading skills specifically journals, books.	Apply				
CO3	Develop the speaking skills specifically conversing with peers, presenting their works.	Affective	Analysis			
CO4	Understanding of listening and writing skills	Cognitive	Understand			
CO5	Learn to apply different strategies in writing a paper or proposal		Ap	ply		
SUBCO	DE SUB NAME	L	Т	Р	С	
XAR 104	4 COMMUNICATION SKILLS	2	1	0	3	
C:P:A	2.4:0:.6	L	Т	Р	H	
		2	1	0	3	

# UNIT - I INTRODUCTION

Listening- short talks, interviews and discussions from various media Speaking-negotiating meaning, convincing people- describing places Reading- texts on architecture, Writing process descriptions -Vocabulary Development-Abbreviations and Acronyms. Grammar - Suitable tenses to write descriptions and describe.

9

#### UNIT – II SPEAKING, READING AND WRITING

Listening –listen to talks for specific information.

Speaking- preparing a presentation using the computer, participating in small group discussion. Reading- lengthy articles related to architecture and construction

Writing- writing formal emails, vocabulary appropriate words to describe topics in architecture. Grammar- suitable grammar for writing a report.

# UNIT-III DESCRIPTIVE PRESENTATION

Listening- Descriptions of place, conversations and answering questions,

Speaking- making a powerpoint presentation on a given topic,

Reading- architecture manuals, Writing- writing a report, writing essaysdescriptive essays, Vocabulary- adjectives of comparison, Grammar collocations.

#### **UNIT – IV ANALYTICAL PRESENTATION**

Listening- TED talks, Speaking- participating in group discussions,

Reading- reading and interpreting visual information,

Writing- writing analytical essays and argumentative, Vocabulary- suitable words to be used in analytical and argumentative essays, Grammar - subject-verb agreement.

#### UNIT – V PROJECT PROPOSAL PRESENTATION

Listening- ink talks and longer talks, Speaking- talking about one's project proposal,

Reading- reading essays on construction, buildings, different schools of architecture, Writing proposals, Vocabulary- related vocabulary, Grammar-Cohesive devices.

	LECTURE	TUTORIAL	PRACTICAL	TOTAL
	15	0	30	45
TEXT				
1 VD N C	(1 X7 XX7)		)	

1. V.R. Narayanaswamy, Strengthen Your Writing (Orient Longman)

9

9

9

- Jaya Sasikumar, Champa Tickoo, Writing With A Purpose, Published by Oxford University Press | Paper Back | Language – English
- 3. Freeman, Sarah: Study Strategies, New Delhi: Oxford University Press, 1979.
- 4. Paul Gunashekar M.L. Tickoo, Reading for Meaning, Published by S. Chand & Company Ltd. Sultan Chand & Company
  - Sharon Hendenreich Springer English for Architects and Civil Engineers -, 2014 ISBN 978-3-658-030-63.

2.	2. Table 13. Mapping of Cos with POs:													
	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	-	-	-	-	-	2	-	1	-	-	-	-	-
CO2	2	-	-	-	-	-	2	-	1	-	-	_	-	_
CO3	1	-	-	-	-	-	1	-	1	-	-	-	-	-
CO4	2	-	-	-	-	-	1	-	1	-	-	-	-	-
CO5	2						1		1					
Total	9	-	-	-	-	-	7	-	5	-	-	_	-	-
Scaled Value	2	_	-	_	-	-	2	-	1	_	-	-	-	
1 - 1		< 10		44 45	20		1	1 1	r r	1		1 		<u>l</u>

**1-5=1**, 6-10 = 2, 11-15 = 3, 0-No Relation, 1- Low Relation, 2 – Medium Relation,

3- High Relation.

## XAR 105 - ARCHITECTURAL GRAPHICS – I

1 - 0 - 2 - 3

- 1. To prepare students for three-dimensional visualization and representation of complex geometrical objects in the form of two and three-dimensional drawings.
- 2. To educate students with the basics of drafting tools and their application in the process of drawing preparation.
- 3. To educate students with concepts and fundamentals of architectural drawings.

Cours	e Outcome:	Domain	Level
On the	e successful completion of the course, students will be	e able to	
CO1	Understand the concepts of architectural drawings	Cognitive	Knowledge
CO2	Ability to represent complex geometrical forms in two-dimensional drawings of varied scales.	Psychomotor	Manipulate
CO3	Ability to draw Orthographic projections of the simple and complex form of a solid object in varied scales.	Psychomotor	Manipulate
CO4	To Draw Axonometric and Isometric views of three-dimensional objects in varied scales.	Psychomotor	Articulation
CO5	To create a 2D drawing with measurement.	Psychomotor	Naturalisation

SUBCODE	SUB NAME	L	Т	Р	C		
XAR105	ARCHITECTURAL GRAPHICS - I	1	0	2	3		
C:P:A	2.4:.6:0	L	Т	Р	H		
		1	0	2	5		
UNIT - I	INTRODUCTION TO GEOMETRICAL DR	AWIN	NG		15		
	Introduction to fundamentals of geometrical drawing - Construction of lines, line value, line types, lettering, dimensioning, representation, format for presentation, etc. Use of scales in drawing – plain, diagonal and comparative scales.						
UNIT - II	PLANE GEOMETRY				20		
	Construction of planar surfaces - square, circle, Projection of points, lines and planes.	curve,	polygon	etc,			
UNIT - III	ORTHOGRAPHIC PROJECTIONS				10		
	Orthographic Projection of solids – simple and complex solids, the section of solids, true shape of solids – intersection and interpenetration of solids.						

UNIT - IV	AXO	NOMETRIC PI	ROJECTIONS		10					
	Introduction to Axonometric projections – Isometric and Oblique projections. Construction of basic shapes and combination of shapes and solids in Isometric projections.									
UNIT - IV	MEA	MEASURED DRAWING 20								
Fundamentals of measured drawing – draw the plan, elevation and section of simple objects - furniture and building components using a suitable scale.										
	J	LECTURE	TUTORIAL	PRACTICAL	TOTAL					
		15	0	60	75					
TEXT										
1. H.Mor	ris – Ge	eometrical Draw	ing for Art Stude	nts. Orient Longman	– Madras 1982					
2. Albert. New Y	O. Ha ork 197	ilse – Architectu 72	ural Rendering T	echniques McGraw	-Hill Book Co.					
3. H.Mor	is, Geoi	metrical Drawing	g for Art Student	s; Universities Press	2012.					
4. Francis	5 D. K.	Ching, "Archited	ctural Graphics",	John Wiley and Son	s, 2009					
REFERENCE	ES									
WEBSITES										
1. http://ww	1. http://www.cs.brown.edu									
2. http://ww	ww.dtcc	.edu/ - documen	t, project info – A	Arch.dwg.						
3. https://np	otel.ac.i	n/courses/124/10	07/124107157/							

Table 1	14. Maj	pping	of CO	s with [	Pos							
	PO	РО	PO	PO	PO	PO	PO	РО	РО	<b>PO1</b>	PSO	PSO
	1	2	3	4	5	6	7	8	9	0	1	2
CO1				2	1							
CO2				3	3							
CO3				3	3							
CO4				3	3							
CO5			1	3	3							
Total			1	14	13							
Scale												
d Value			1	3	3							

1-5 =1, 6-10=2, 11-15=3

0-No relation, 1 –Low Relation, 2 –Medium Relation, 3 –High Relation.

## XAR106 - VISUAL ARTS

0 - 0 - 3 - 3

- 1. To understand that the basic design elements and principles are the important tools for creative designing.
- 2. To stimulate the creative thinking process by drawing inspirations from nature
- 3. To understand the basics of two and three-dimensional visual compositions.
- 4. To provide a practical understanding of design principles using studio exercises.
- 5. To gain art appreciation skills through visual arts

Cours	e Outcome:	Domain	Level
On the	e successful completion of the course, students will be able	to	
CO1	Express the knowledge on appreciation of paintings and other art forms.	Affective	Valuing
CO2	Draw the basic geometrical shapes, components of	Affective	Drawing
	scenes.		

- CO3 Demonstrate the knowledge of components of visual Cognitive Application composition.
- CO4 Develop and compose the natural scenes. Psychomotor Application
- **CO5** Design and develop scaled sketches

Psychomotor	Application
-------------	-------------

SUBCODE	SUB NAME			I	LT	' <u>]</u>	P	С
XAR 106	VISUAL ARTS			0	0 0		3	3
C:P:A	.6:1.2:1.2			I	LT	'	Р	Η
				C	0 0		3	6
UNIT – I	BASICS OF DRAV	WING			L	8		20
	Introduction to Hist	ory of Arts – A	rtists, Art move	ments.				
	Introduction to draw	ving tools – Qu	ality of lines an	d expressio	ons – p	en,	per	ncil,
	charcoal, marker, et	c. – Exercises	to explore the v	arious rend	dering	tech	niq	lues
	using various tools.							
UNIT – II	FREEHAND DRA	WING						20
	Seeing and drawing	– Still life and	natural objects	– explorin	ig the e	lem	ent	s of
	art – line, shape,	form, proporti	on, scale, text	ure, colo	our. Ex	erci	ises	s to
	develop visual perce	eption.						
UNIT –III	PAINTING							25
	Exercises with the	mes on princip	oles of art and	to explore	e vario	ous	co]	lour
	schemes using vari	ous mediums	– water colour,	poster co	olour, a	acry	lic,	oil
	paint, tools & techn	iques – brushes	s, knife, lumogra	aph pen, et	tc.			
UNIT– IV	RENDERING TEO	CHNIQUES						25
	Rendering techniqu	ues for archite	ectural drawing	s - buildi	ing pe	rspe	cti	ves,
	interior & exteriors	in various med	iums like penci	l, ink, past	tels, wa	aterc	colo	ours
	- opaque and transp	arent.				<b>.</b>		
		LECTURE	TUTORIAL	PRACTI	ICAL	T	DT	AL
		0	0	90			90	)

## TEXT

- Maitland Graves The Art of Colour and Design McGraw-Hill Book Company Inc. 1951
- 2. Albert O.Halse, Architectural Rendering, 1990.
- 3. Ching Francis, "Drawing a Creative Process", Van Nostrand Reinhold, New York, 1990.
- 4. Webb, Frank, "The Artist Guide to Composition", David & Charles, U.K, 1997.
- Arundell (Jan), Exploring Sculpture, Mills and Boon, London/Charles T.Branford Company, USA 1972
- HJKJK John W.Mills, The Technique of Sculpture, B.T.Batsford Ltd., New York Reinhold Publishing Corpn., London, 1966.

Table	15. Maj	pping	of COs	<b>with</b>	Pos							
	<b>DO1</b>	РО	PO	PO	PO	PO	PO	PO	PO	PO1	PSO	PSO
	FUI	2	3	4	5	6	7	8	9	0	1	2
<b>CO1</b>	3				1							
CO2	3				1	]						
CO3	3				1							
CO4	3				1							
CO5	3				1							
Total	15				5							
Scale												
d	3				1							
Valu	5											
e												
1-5 = 1	6-10=2	2.11-1	5=3	0-No	o relatio	on. 1 –	Low R	elatior	. 2 −M	ledium H	Relation.	3 –

High Relation.

#### **XAR107 - BASIC DESIGN**

#### 0 - 0 - 10 - 10

- To understand the elements and principles of Basic Design as the building blocks of creative design through exercises that will develop originality and developing skills.
- 2. To involve students in a number of exercises to understand the grammar of Design and creative thinking.

- 3. To enable the understanding of 3D Composition by involving students in a number of Visual compositions.
- 4. To understand architecture as a craft, of making and of putting together.
- 5. Exercises that will help the generation of a form from a two-dimensional/abstract idea.
- 6. To introduce Drawing as an analytical tool.
- 7. To draw inspiration and clues from nature. And working with them.

Cours	e Outcome:	Domain	Level
On the	e successful completion of the course, students will be ab	le to	
CO1	Understand the basic design elements and principles	Cognitive	Understand
CO2	Identify common design principles applicable to architecture	Psychomotor	Application
CO3	Develop the skills of art appreciation and sense of aesthetics by studying, correlating the basic design principles and works of master architects.	Affective	Analyze
CO4	Involve in practical exercises to apply the learned design principles.	Psychomotor	Application
CO5	Develop the skills of expressing the ideas visually through observation, analysis, abstractions, interpretation through models and drawings using different media.	Affective	Interpret

SUBCODE	SUB NAME	L	Т	Р	С
XAR 107	BASIC DESIGN	0	0	10	10
C:P:A	2:4:4	L	Т	Р	Н
		0	0	10	10
UNIT – I	INTRODUCTION TO DESIGN				15

Definition of design - Design Thinking - Design Process - Design problems and solutions. Exercises using points and lines.

#### UNIT – II PRINCIPLES OF VISUAL COMPOSITIONS

Principles of Design and its role in expression (architectural expression)

#### Introduction to principles of organization/composition

Repetition, Variety, Radiation, Rhythm, Gradation, Emphasis & Subordination, Proportion, Harmony, Balance, Focal point, Symmetry, Asymmetry, Background, Foreground, Sense of Direction – Exercises to explore the above principles - Symmetrical and asymmetrical compositions and patterns by the organization of shapes, expressing themes using geometrical or organic shapes.

#### UNIT –III STUDY OF COLOURS

Study of classification of colours with different hues, values, and shades. Exploring colour theories and applying them in visual composition – Example: Poster design

#### **UNIT – IV VISUAL PROPERTIES**

Study of Visual Properties - visual textures, optical illusion etc. and apply them in visual composition – Example: Collage

#### UNIT -V FORMS - GEOMETRIC / SCULPTURAL

Exploring the forms - Linear and Planar, fluid and plastic forms using simple material like Match stick, Mount Board, metal foil, wire string, thermocol, clay, plaster of Paris etc. Study of Solids and voids to evolve sculptural forms and spaces, Additive models using similar forms / dissimilar forms, subtractive models from a given geometric form - using various materials and mediums like casting, moulding, etc.,

	LECTURE	TUTORIAL	PRACTICAL	TOTAL
	0	0	150	150
ХТ				

- Maittand Graves The Art of Colour and Design McGraw-Hill Book company Inc. 1951
- 2. Albert O.Halse, Architectural Rendering F. W. Dodge; 1st edition (January 1, 1960.
- 3. Techniques of contemporary presentation McGraw HillBook Company, New York, 1

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Januay 2017.

- 4. Mulick Milind, Water colour, Jyotsna Prakasan, Mumbai 2017.
- Farey; A. Cyril, Architectural Drawing perspective and Rendering A Hand book for students and draftsmen January 1 1949.
- John W.Mills The Technique of Sculpture, B.T.Batsford Limited, New York -Reinhold PublishingCorporation, London, 1966. Elda Fezei, Henny Moore, Hamlyn, London, New York, Sydney, Toronto, 1972.
- C.Lawrence Bunchy Acrylic for Sculpture and Design, 450, West 33rd Street, New York, N.Y.10001, 1972. Orbid Publishing Ltd., Know how the complete course in Dit and Home Improvements No.22, Bed fordbury, London, W.C.2, 1981.

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- 1. Edward D.Mills Planning the Architects Hand Book Bitterworth, London, 1985.
- V.S.Pramar, Design fundamentals in Architecture, Somaiya Publications Pvt. Ltd., New Nelhi, 1997 3rd edition.
- Francis D.K.Ching Architecture Form Space and Order Van Nostrand Reinhold Co., (Canaa), 4th edition. John Wiley, Hoboken September 2014.

## WEBSITES

- 1. http://infinit.net elements of design
- 2. http://www.okino.com design, visualization, rendering system.
- 3. http://www.interface signage.com
- 4. http://www.design community.com arch rendering, 3D design.

Table	16. Maj	pping	of COs	s with ]	Pos							
	PO1	PO 2	PO 3	PO 4	РО 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PSO 1	PSO 2
CO1	3				1							
CO2	3				1							
CO3	3				1							
CO4	3		<u>I</u>	<u> </u>	1			<u> </u>	<u></u>			

3				1							
15				5							
3				1							
U				-							
	3 15 3	3 15 3	3 15 3	3	3     1       15     5       3     1	3     1       15     5       3     1	3     1       15     5       3     1	3     1       15     5       3     1	3     1     1       15     5       3     1	3     1     1       15     5       3     1	3     1           15     5           3     1

1-5 =1, 6-10=2, 11-15=3

# 0-No relation, 1 –Low Relation, 2 –Medium Relation, 3 –High Relation.

# XAR - 201 - HISTORY OF ARCHITECTURE - II3 - 0 - 0 - 3

- 1. To understand the architectural development in the Western world during the medieval period.
- 2. To understand the factors that influence the emergence or decline of any architectural style

Cours	se Outcome:	Domain	Level
On th	e successful completion of the course, students will be a	ble to	
CO1	Analyze the continuity between each style – the factors that connect each style		Analyze
CO2	Explain the architectural characters of Medieval Europe through selected examples.	Cognitive	Knowledge
CO3	Analyze the trend or the pattern of development of architectural styles.		Analyze
CO4	Understand the Gothic architectural style and its development leading to new styles.		Understand
CO5	Understand the works of Renaissance architects and implementing them as design ideas		Understand

SUBCODE	SUB NAME	L	T	Р	C
XAR 201	HISTORY OF ARCHITECTURE - II	3	0	0	3
C:P:A	3:0:0	L	Т	Р	H
		3	0	0	3
UNIT – I	ROMANESQUE	1	.1	1	10
	Architectural characters of Italy, France and England during	Roman	esqu	e per	riod
	- Examples: Pisa Complex, Italy- Abbay Aux Hommes, Caer	n, Franc	e - 7	Towe	r of
	London, London, England				
UNIT – II	GOTHIC			1	12
	Outline of Architectural character in Italy, France and Eng	gland d	uring	g Got	thic
	period - Examples: France - Notre Dame in Paris, Reims	Cathedr	al, F	Beauv	vais
	Cathedral, England- Westminster Abbey, Hampton Court Pa	lace, Lo	ondoi deve	n, Ita Ionm	ıly - Dent
	of structural systems.	ing and	ueve	lopin	icin
UNIT – III	RENAISSANCE			1	11
UNIT – III	<b>RENAISSANCE</b> The idea of rebirth and revival and sociological influences in	art and	arcl	1 hitect	11 ture
UNIT – III	<b>RENAISSANCE</b> The idea of rebirth and revival and sociological influences in - Emergence of merchant communities and their patronage.	art and Differe	arcl	1 hitect hases	11 ture s of
UNIT – III	<b>RENAISSANCE</b> The idea of rebirth and revival and sociological influences in - Emergence of merchant communities and their patronage. Renaissance style in Italy, England and France. Typical Ren	art and Differe aissance	l arcl ent p e stru	1 hitect hases	11 ture s of es -
UNIT – III	<b>RENAISSANCE</b> The idea of rebirth and revival and sociological influences in - Emergence of merchant communities and their patronage. Renaissance style in Italy, England and France. Typical Ren Palaces in Italy, Domestic Architecture in England and Chate	art and Differe aissance aux of H	l arcl ent p e stru Franc	hitect hases acture ce.	11 ture s of res -
UNIT – III UNIT – IV	<b>RENAISSANCE</b> The idea of rebirth and revival and sociological influences in - Emergence of merchant communities and their patronage. Renaissance style in Italy, England and France. Typical Ren Palaces in Italy, Domestic Architecture in England and Chate <b>RENAISSANCE ARCHITECTS</b>	art and Differe aissance aux of H	l arcl ent p e stru Franc	1 hitect hases ucture ce.	11 ture s of res - 12
UNIT – III UNIT – IV	<b>RENAISSANCE</b> The idea of rebirth and revival and sociological influences in - Emergence of merchant communities and their patronage. Renaissance style in Italy, England and France. Typical Ren Palaces in Italy, Domestic Architecture in England and Chate <b>RENAISSANCE ARCHITECTS</b> Study of life history, philosophy and contributions of the Re	art and Differe aissance aux of F enaissan	l arcl ent p e stru Franc ce a	1 hitect hases acture ce. 1 rchite	11 ture s of res - 12 ects
UNIT – III UNIT – IV	<b>RENAISSANCE</b> The idea of rebirth and revival and sociological influences in - Emergence of merchant communities and their patronage. Renaissance style in Italy, England and France. Typical Ren Palaces in Italy, Domestic Architecture in England and Chate. <b>RENAISSANCE ARCHITECTS</b> Study of life history, philosophy and contributions of the Re in Europe.	art and Differe aissance aux of H enaissan	l arcl ent p e stru Franc ce a	hitect hases acture ee.	11tures ofres -12ects
UNIT – III UNIT – IV	<b>RENAISSANCE</b> The idea of rebirth and revival and sociological influences in - Emergence of merchant communities and their patronage. Renaissance style in Italy, England and France. Typical Ren Palaces in Italy, Domestic Architecture in England and Chates <b>RENAISSANCE ARCHITECTS</b> Study of life history, philosophy and contributions of the Re in Europe.Italy- Brunelleschi, Donatello, Rapheal, Michelangelo and	art and Differe aissance aux of H enaissan	l arcl ent p e stru Franc ce a Pall	hitect hases acture ee. 1 rchite adio	11tures ofres -12ects
UNIT – III UNIT – IV	<b>RENAISSANCE</b> The idea of rebirth and revival and sociological influences in - Emergence of merchant communities and their patronage. Renaissance style in Italy, England and France. Typical Ren Palaces in Italy, Domestic Architecture in England and Chate. <b>RENAISSANCE ARCHITECTS</b> Study of life history, philosophy and contributions of the Re in Europe.Italy- Brunelleschi, Donatello, Rapheal, Michelangelo and England - Sir Christopher Wren, Inigo Jones and John Webbe	art and Differe aissance aux of H enaissan Andrea er	l arcl ent p e stru Franc ce a Pall	hitect hases acture ce.	11tures ofres -12ects
UNIT – III UNIT – IV	<b>RENAISSANCE</b> The idea of rebirth and revival and sociological influences in - Emergence of merchant communities and their patronage. Renaissance style in Italy, England and France. Typical Ren Palaces in Italy, Domestic Architecture in England and Chate. <b>RENAISSANCE ARCHITECTS</b> Study of life history, philosophy and contributions of the Re in Europe.ItalyItaly- Brunelleschi, Donatello, Rapheal, Michelangelo and England - Sir Christopher Wren, Inigo Jones and John Webbe France - Pierre Lescot, Philibert de l'Orme, and Jean Bullar	a art and Differe aissance aux of H enaissan Andrea er nt	l arcl ent p e stru Franc ce a Pall	hitect hases acture ee.	11tures ofres -12ects
UNIT – III UNIT – IV	RENAISSANCE         The idea of rebirth and revival and sociological influences in         - Emergence of merchant communities and their patronage.         Renaissance style in Italy, England and France. Typical Ren         Palaces in Italy, Domestic Architecture in England and Chates         RENAISSANCE ARCHITECTS         Study of life history, philosophy and contributions of the Rein Europe.         Italy       - Brunelleschi, Donatello, Rapheal, Michelangelo and England - Sir Christopher Wren, Inigo Jones and John Webbe         France       - Pierre Lescot, Philibert de l'Orme, and Jean Bullar         LECTURE       TUTORIAL       PRACTIC	art and Differe aissance aux of F enaissan Andrea er nt CAL	l arcl ent p e stru Franc ce a Pall	hitect hases acture ee. 1 rchite adio	11 ture s of res - 12 ects
UNIT – III UNIT – IV	RENAISSANCE         The idea of rebirth and revival and sociological influences in         - Emergence of merchant communities and their patronage.         Renaissance style in Italy, England and France. Typical Ren         Palaces in Italy, Domestic Architecture in England and Chate         RENAISSANCE ARCHITECTS         Study of life history, philosophy and contributions of the Rein Europe.         Italy       - Brunelleschi, Donatello, Rapheal, Michelangelo and England - Sir Christopher Wren, Inigo Jones and John Webbe         France       - Pierre Lescot, Philibert de l'Orme, and Jean Bullar         LECTURE       TUTORIAL       PRACTIC         45       0       0	art and Differe aissance aux of H enaissan Andrea er nt CAL	l arcl ent p e stru Franc ce a Pall	hitect hases acture e. 1 rchite adio	11         ture         s of         res -         12         ects

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 Sir Bannister Fletcher, A History of Architecture, University of London, The Antholone Press, 2002. 20th edition.

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- Pier Liugi Nervi, General Editor History of World Architecture Series, Harry N.Abrams, Inc.Pub., New York, 1972.
- S.Lloyd and H.W.Muller, History of World Architecture Series, Faber and Faber Ltd., London, 1986. ISBN 10: 0571145752, ISBN 13: 9780571145751.
- Spiro Kostof A History of Architecture Setting and Rituals, Oxford University Press, London, 1986. Gosta, E.Samdstrp, Man the Builder, McGraw-Hill Book Company, New York, 1970. second edition

Table I	/. Map	oping o		with P	US							
	PO1	PO2	PO3	<b>PO4</b>	PO5	PO6	<b>PO7</b>	<b>PO8</b>	PO9	PO10	PSO1	PSO2
CO1	2	-	1	-	-	-	-	-	-	1	-	-
CO2	2	-	1	-	-	-	-	-	-	1	-	-
CO3	2	-	1	-	-	-	-	-	-	1	-	-
CO4	2	-	1	-	-	-	-	-	-	1	-	-
CO5	2	-	1	-	-	-	-	-	-	1	-	-
Total	10	-	5	-	-	-	-	-	-	5	-	-
Scaled Value	2	_	1	-	_	-	_	_	-	1	_	-

1-5 =1, 6-10=2, 11-15=30 0-No relation, 1 –Low Relation, 2 –Medium Relation, 3 – High Relation.

## **XAR202 – THEORY OF ARCHITECTURE – II**

3 - 0 - 0 - 3

- 1. To impart knowledge about architecture, design and the various components involved in it.
- 2. Educate them about the fundamental principles and elements of architecture.

- 3. To understand the primary two-dimensional and three-dimensional elements in architecture.
- 4. Students will be equipped to design spaces and products applying the various principles of design for courses such as Architectural Design & Interior Design.

Cours	se Outcome:	Domain	Level						
On the	On the successful completion of the course, students will be able to								
CO1	<i>Understand</i> the factors that determine the size and shape of natural and man-made objects.	Cognitive	Remember Understand						
CO2	<i>Understand</i> the factors that determine the size and shape of various spaces	Cognitive	Remember Understand						
CO3	<i>Understand</i> the role played by climate and site conditions in modifying the form of the architectural spaces.	Cognitive	Understand Knowledge						
CO4	<i>Understand</i> the role played by the materials and structural system in architectural design.	Cognitive	Understand Knowledge						
CO5	<i>Know</i> the role played by socio-psychological aspects in architectural design	Cognitive	Understand Knowledge						

SUBCODE	SUB NAME	L	Т	Р	С
XAR 202	THEORY OF ARCHITECTURE - II	3	0	0	3
C:P:A	3:0:0	L	Т	Р	Н
		3	0	0	3

# UNIT – I FUNCTIONAL AND AESTHETIC ASPECTS

The relationship between form and function found in natural objects and their aesthetics. Example flowers, fruits etc.

10

The relationship between form and function found in man-made objects and their aesthetics. Example Knife, Chair etc.

The work of an architect: tackling functional aspects and aesthetic aspects.

Handling architectural projects: Planning, designing and execution.

#### UNIT – II ANTHROPOMETRICS AND ITS APPLICATION

Determining the size and shape of various activity spaces

# UNIT – III CLIMATE AND SITE

The impact of climatology on the design of spaces. Examples from the past and present.

The impact of site conditions on the design of spaces. Examples from past and present.

# UNIT - IVBUILDING MATERIALS AND STRUCTURAL SYSTEM10

The relationship between building materials and structural systems possible by them and the resultant forms. Examples from the past and present.

# UNIT – V SOCIO PSYCHOLOGICAL ASPECTS

Believes, values and the aspiration of the user and its impact on architecture. Examples from past and present.

LECTURE	TUTORIAL	PRACTICAL	TOTAL
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	45	0	0	45
TEXT				

- 1. V.S.Pramar, Design Fundamentals in Architecture, Somaiya Publication Pvt. Ltd, New Delhi, 1997.
- 2. Francis D.K.Ching, Architecture-Form, Space and Order, Wiley, USA, 4th edition (14 November 2014).

## REFERENCES

- Paul Alan Johnson The Theory of Architecture Concepts, Themes and Practices, Wiley, USA, First edition (1 January 2018).
- 2. Helm Marie Evans and Caria David Dunneshil, An initiation to design, Macmillan Publishing Co. Inc., New York.

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5

10

Table 1	8. Mappi	ng of (	COs wi	th Pos								
	PO1	PO2	PO3	PO4	PO5	<b>PO6</b>	<b>PO7</b>	PO8	PO9	<b>PO10</b>	PSO1	PSO2
CO1	2	1	1	-	-	-	-	-	-	-	-	1
CO2	2	1	1	-	-	-	-	-	-	-	-	1
CO3	2	1	1	-	-	-	-	2	-	-	2	1
CO4	2	1	1	2	-	-	-	-	-	-	-	1
CO5	2	1	1	-	-	-	-	-	-	-	-	1
Total	10	5	5	2	0	0	0	2	0	0	2	5
Scaled Value	2	1	1	1	0	0	0	1	0	0	1	1

**1-5 =1, 6-10=2, 11-15=3,** 0-No relation, 1 –Low Relation, 2 –Medium Relation, 3 –High Relation.

# XAR 203 -MECHANICS OF STRUCTURES - I

#### **Course Objectives:**

 To enable students to understand the effect of the action of forces on a body and the concept of equilibrium of the body through exercises.

3 - 0 - 0 - 3

- To educate the students to calculate the sectional properties (centroid, moment of inertia, section modulus and radius of gyration) for various sections by working out problems.
- To inculcate the students to study the stress-strain behaviors of steel and concrete due to axial loads and to determine the stresses and strains developed in solids due to external action through select problems.
- 4. To enhance students' ability to design by requiring the solution of open-ended problems.

Cours	se Outcome:	Domain	Level
Upon	successful completion of this course, it is expected that s	tudents will	be able to
CO1	<i>Relate</i> with basic engineering mechanics concepts required for analyzing static structures. To calculate the resultant of parallel forces	Cognitive	Remembering
CO2	<i>Identify</i> various types of loading and support conditions that act on structural systems and solve the problems	Cognitive	Apply
CO3	<b>Analyze</b> simply supported and cantilever trusses with different end conditions.	Cognitive	Understand Analyze
CO4	<i>Demonstrate</i> the relations for centroid and Center of Gravity and <i>Analyze</i> the moment of inertia for different sections	Cognitive	Understand Analyze
CO5	<i>Apply</i> the knowledge of stress and strain in the design of structural elements.	Cognitive	Apply

SUBCODE	SUB NAME	L	Т	Р	С
XAR 203	MECHANICS OF STRUCTURES - I	3	0	0	3
C: P: A	3:0:0	L	Т	Р	H
		3	0	0	3

UNIT - I	FORCES AND STRUCTURAL SYSTEMS	8
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Units of Measurement- Introduction to Scalar and Vector, Types of force systems - Resultant of parallel forces - law of mechanics – coplanar and non-coplanar forces - Resolution and Composition of forces.

#### UNIT - II EQUILIBRIUM OF RIGID BODIES

Principle of moments - the principle of equilibrium – Free body Diagram- simple problems, types of supports and their reactions – requirements of stable equilibrium

#### UNIT – III ANALYSIS OF PLANE TRUSSES

Introduction to Determinate and indeterminate plane trusses - Analysis of simply supported and cantilevered trusses by method of joints and method of sections.

## **UNIT – IV PROPERTIES OF SECTION**

TEVT

Centroid and Center of Gravity- Moment of Inertia- Polar Moment of Inertia-Product of Inertia- Introduction to Moment of Inertia of Masses with simple problems - Section modules – Radius of gyration - Theorem of perpendicular axis - Theorem of parallel axis

# UNIT –V ELASTIC PROPERTIES OF SOLIDS

Stress-strain diagram for mild steel, High tensile steel and concrete - Concept of axial and volumetric stresses and strains. Elastic constants - Relation between elastic constants - Application to problems.

LECTURE	TUTORIAL	PRACTICAL	TOTAL
45	0	0	45

ILAI	
1.	Paul W. McMullin, 'Jonathan S. Price, 'Introduction to Structures, Routledge, 2016.
2.	R.K. Bansal, 'A textbook on Strength of Materials', Lakshmi Publications, Delhi 2010.
3.	R.K. Bansal, 'A Textbook on Engineering Mechanics', Lakshmi Publications,
	Delhi,2008.
REFE	RENCES
1.	P.C. Punmia, 'Strength of Materials and Theory of Structures; Vol. I', Lakshmi
	Publications, Delhi 2018.

- 2. S. Ramamrutham, 'Strength of Materials', Dhanpatrai and Sons, Delhi, 2014
- 3. W.A. Nash, 'Strength of Materials', Schaums Series, McGraw Hill Book Company, 1989.

10

10

10

Table 1	Table 19. Mapping of COs with Pos											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	2	3	0	0	0	0	0	0	0	0	0	0
CO2	2	2	0	0	0	0	0	0	0	0	0	0
CO3	1	0	3	0	0	0	0	0	0	0	0	0
CO4	1	2	0	0	0	0	0	0	0	0	0	0
CO5	2	0	0	3	0	0	0	0	0	0	0	0
Total	8	7	3	3	0	0	0	0	0	0	0	0
Scaled Value	2	2	1	1	0	0	0	0	0	0	0	0

4. R.K. Rajput, 'Strength of Materials', S.K. Kataria and Sons, New Delhi, 2017.

1-5 =1, 6-10=2, 11-15=3 0-No relation, 1 –Low Relation, 2 –Medium Relation, 3 – High Relation.

# XAR 204 – ARCHITECTURAL GRAPHICS – II

1 - 0 - 2 - 3

- 1. To prepare students for three-dimensional visualization and representation of objects and buildings in the form of drawings.
- 2. To equip the students with appropriate skills, techniques and knowledge for preparing measured drawings, working drawings, design drawings in courses such as Materials and Construction and Architectural Design.

Course	Outcome:	Domain	Level								
On the successful completion of the course, students will be able to											
CO1	Measure and prepare scaled measured drawings of various objects and existing buildings/ structures.	cognitive	Application								

CO2	Prepare One-point views of objects, interior and exterior of buildings from given plans and elevations.	Psychomotor	Application						
CO3	Prepare Two-point perspective views of objects, interior and exterior of buildings from given plans and elevations.	Psychomotor	Application						
CO4	Draw the shade and shadows of basic geometric shapes, Psychomotor forms and buildings.								
CO5	To apply graphic principles in preparing construction drawings for complicated buildings.	Psychomotor		Crea	te				
SUBCC	DDE SUB NAME	L	Т	Р	С				
XAR 20	ARCHITECTURAL GRAPHICS – II	1	0	2	3				
C:P:A	0.6:2.4.:0	$\mathbf{L}$	Т	Р	Η				
	1								

# UNIT - I MEASURED DRAWING

Detailed measured drawing/documentation of historic and architectural monument or building of small scale. Complete documentation including the plan, section, elevation, details of building construction and technology.

25

30

20

# UNIT - II PERSPECTIVE

Characteristics of Perspective Drawings, Perspective systems and methods. Two-point perspective of simple objects, outdoor and indoor view of a building, etc. One-point and three-point perspective of interiors Perspective theory and practice using scientific methods and short cut methods. Applying rendering techniques.

## UNIT - III SCIOGRAPHY

Principles of shades and shadows - Shadows of geometrical shapes and solids – construction of sciography on buildings and Shadows of architectural elements, etc.

LECTURE	TUTORIAL	PRACTICAL	TOTAL
15	0	60	75

#### TEXT

1. Robert. W.Gill – Advanced perspective and Sciography Thames and Hudson London 2007

2. Claude Batley – Indian Architecture Taraporevale sons & co. Bombay.,2020

#### REFERENCES

- 1. William Kirby Lockard, Drawing as a Means to Architecture, Van Nostrand, Reinhold Company, New York.
- 2. George A.Dinsmore, Analytical Graphics D.Van Nostrand, Company Inc., Canada.
- 3. John M.Holmes, Applied Perspective, Sir Isaac, Piotman and Sons Ltd., London 1967.
- 4. Robert W.Gill, Basic Perspective, Thames and Hudson, London, 2007.
- 5. C.Leslie Martin, Architectural Graphics, The Macmillan Company, New York, 1970.
- 6. Francis Ching, Architectural Graphics, Van Nostrand and Reinhold Company, New York, 2009.
- 7. Ernest Norling, Perspective drawing, Walter Fostor Art Books, California, 1986.
- 8. Bernard Alkins 147, Architectural Rendering, Walter Foster Art Books, 1986.

# WEBSITES

- 1. http://www.cs.brown.edu
- 2. http://www.dtcc.edu/-document,projectinfo-Arch.dwg.

Table 20. Mapping of COs with Pos												
	<b>PO1</b>	<b>PO2</b>	PO3	<b>PO4</b>	PO5	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	PSO1	PSO2
<b>CO1</b>				3	2							
CO2				3	3							
CO3				3	2							
<b>CO4</b>				3	2							
CO5				3	3							
Total				15	12							
Scaled Value				3	3							
value												

1-5 =1, 6-10=2, 11-15=3 0-No relation, 1 –Low Relation, 2 –Medium Relation, 3 –High Relation.

## **XAR205 - MATERIALS AND CONSTRUCTION - I**

#### **Objectives:**

- 1. To have an understanding of the properties, characteristics, strength, manufacture, processing and application of materials such as soil, lime, rocks and stones.
- 2. To inform the properties, characteristics and use of bamboo, palm, straw, etc. and methods of preservation and treatment.
- **3.** To sensitize the students to the use of these naturally occurring materials in the context of creating a green architecture.

Cours	se Outcome:	Domain	Level
On th	e successful completion of the course, students will be a	ble to	
CO1	Understand the basics of structures, their type and draw the section of wall showing the various building components and list their functions.	Cognitive	Understand
CO2	Know the origin and formation of soil, its classification and its importance in building construction.	Cognitive	Knowledge
CO3	Know the origin, classifications, properties, testing, preservation methods and finishes and uses of stone as construction material.	Cognitive	Knowledge
CO4	Draw the detailed drawing of various building components and parts using stone as a building material.	Psychomotor	Application
CO5	Know the properties, process of manufacturing, of lime and its use in building construction.	Cognitive	Knowledge
CO6	Know about the properties, uses and treatment of rural construction materials.	Psychomotor	Application
C07	Design and draw the details of foundation, wall, roof trusses, flooring and plastering for rural structures using rural materials.	Psychomotor Affective	Application Analyze

SUBCODE	SUB NAME	L	Т	Р	С
XAR 205	MATERIALS AND CONSTRUCTION - I	1	0	2	3
C:P:A	1.5:1:0.5	L	Т	Р	Н
		1	0	2	5
UNIT – I	INTRODUCTION				25

Functional requirements of a building and its components - foundations, plinth, superstructure (framed and load-bearing), roofing. Role of soil in building construction – Formation - grain size distribution – soil classification systems.

**PLATES:** Section of a typical wall showing the various components of the building

**ASSIGNMENTS:** Drawing the various types of Foundations, Types of structure – load-bearing, framed

25

# UNIT-II STONE

Classification of rocks - Building stones - their uses –physical properties - brief study of tests for stone – deterioration - preservation of stone - various stone finishes - cutting and polishing of granites. Drawings of foundations - types of masonry - random rubble/Ashlar, etc. - cavity walls - flooring copings, sills, lintels, corbels, arches. **Plates & Assignments.** 

UNIT	– II LIME 5	5								
	Lime - fat/Hydraulic Limes - Their properties and uses – Manufacturing process - Mortar, functions – requirements - mix proportions.	Lime - fat/Hydraulic Limes - Their properties and uses – Manufacturing process - Mortar, functions – requirements - mix proportions.								
UNIT	- IV RURAL MATERIALS AND CONSTRUCTION 2	20								
	Mud as a building material - Soil stabilization, soil blocks - foundation types, S.S.Block – S.S. Cast in situ walls - flooring - roofing - plaster Bamboo, casuarinas coconut, palm, hay, coir, jute – properties - uses - retardant treatment termite proofing. Types of foundations - walls - sin roof trusses floors for rural structures. <b>Assignments</b>	ns - ing. fire nple								
	LECTURE TUTORIAL PRACTICAL TOTA	۱L								
	25 0 50 75	I								
TEXT										
1.	S.C.Rangwala – Engineering Materials Charotar Publishing House – Anand 2019									
2.	W.B.Mckay – Building Construction Vol. 1,2,3- Longmans U.K 2012.	Mckay – Building Construction Vol. 1,2,3- Longmans U.K 2012.								

#### REFERENCES

1. R.J.S.Spencke and D.J.Cook, Building Materials in Developing Countries, John

Wiley and Sons, 1983.

- 2. HUDCO All you want to know about soil stabilized mud blocks, HUDCO Pub, New Delhi,1989.
- 3. UNO Use of bamboo and reeds in construction UNO Publications. Rural Construction NBO, New Delhi

## WEBSITES

- 1. http://www.bamboo-Flooring.com
- 2. http://ag.avizona.edu/SWES
- 3. http://www/angelfite.com/in
- 4. http://www.idrc.ca/library/documents/104800/chapz-e.html
- 5. http://www/angelfite.com/inz/granite.

Table 21. Mapping of COs with Pos												
	<b>PO-1</b>	PO-2	PO-	PO-	PO-	<b>PO-6</b>	PO-7	PO-	PO-	PO-10	PSO1	PSO2
			3	4	5			8	9			
CO-1				3				1				
CO-2				1				1				
CO-3				1				1				
CO-4				3	3			3		2		
CO-5	<u> </u>			1				1				
<b>CO-6</b>				1		3		1				
CO-7				3	3			3		2	3	3
Total	<u> </u>			13		3		11		4	3	
Scaled value				2		1		3		1	1	

1-5 =1, 6-10=2, 11-15=3) 0-No relation, 1 –Low Relation, 2 –Medium Relation, 3 –High Relation.

# **Course Objectives:**

1. To equip students with the basic skills necessary to represent their ideas through models using different materials. To make students practice with various tools essential for making architectural models.

Course C	Outo	come:	Dom		Level							
On the successful completion of the course, students will be able to												
CO1	A	<i>bility</i> to understand and create various concepts of	Psychon	notor	Ap	Applicat						
	th	e model.										
CO2	T	o create 3d models using various materials	Psychoi	notor	Ap	plica	ation					
CO3	T	o create various joinery models using various	Psychon	notor	Ap	plica	ation					
	m	aterials										
CO4	U	nderstand the structural system and create the	notor	Ap	plica	ation						
	structural model.											
CO5	T	o create innovative models using various materials	Psychon	Application								
	ar	nd techniques.										
SUBCOI	DE	SUB NAME		L	Т	P	С					
XAR 206		CARPENTARY AND MODEL MAKING	0	0	3	3						
		WORKSHOP										
C:P:A		0:3:0		L	Т	Р	Н					
				0	0	3	6					
UNIT – I		INTRODUCTION TO MODEL MAKING		1		4	15					
		Need for architectural models, Role of scale-model	s in desig	n; Ge	neral	prac	tices					
		in model making; Types of models: block, deta	iled, con	structi	on &	t int	erior					
		models. Introduction to concepts of model making and various materials used										
		for model making.										

UNIT – II	BASE AND BLOC	K MODELLI	NG			15					
	Preparation of base	for models usin	g wood or board	s Introduction to	block						
	models of objects (3	D Composition	g wood of bound	involving the use	ne of						
	various materials lik		Soon/Way Door	da Clay ata	ge of						
			Soap/ wax, boar	us, Clay, etc.							
UNIT–III	DETAIL MODEL	LING				20					
	Making detailed mo	dels which inc	ludes the repres	sentation of variou	us build	ding					
	elements like Walls	s, Columns, Ste	eps, Windows/gl	azing, Sunshades,	, Handı	rails					
	using materials l	ike Mountboa	ard, Snow-whit	te board, acryl	ic she	eets;					
	Representing variou	us surface finis	shes like brick/	stone representati	ion, stu	JCCO					
	finish etc; Various site elements - Contour representation, Roads/Pavements,										
	Trees/Shrubs, Lawn, Water bodies, Street furniture, Fencing etc,										
UNIT– IV	JOINERY AND STRUCTURAL SYSTEMS MODEL 20										
	JOINERY Simple exercises in cutting, finishing and joinery with simple blocks;										
	Use of carpentry tools and making joints such as Dovetail joint, Mortise and										
	Tenon joint, Lap joi	nt, Butt joint, et	c. to be used for	making furniture.							
	MODELS OF STRU	JCTURAL SYS	STEMS								
	Making models of t	the various stru	ctural systems u	used in buildings	like; Sp	pace					
	frames – using Mat	ch sticks, wire	s; Different forn	ns of shell roofs u	using P	'OP,					
	Clay, Soap; Tensile	structures using	g fabric								
UNIT – V	INNOVATIVE ID	EAS, MATER	IAL AND TECI	HNIQUES		20					
	Flexible for the teac	her to decide a	ssignments for re	epresenting innov	ative id	leas,					
	and by using new m	aterials and tecl	hniques.								
		I	1	1							
		LECTURE	TUTORIAL	PRACTICAL	TOT	AL					
0 0 90 90											
TEXT BOO	OKS										
1. Models.3rd Ed. Hoboken : John Wiley & Sons.											
2. Kiera	nn, S. and Timberlake	, J. (2008). Lob	ollyHouse : Eler	ments of a New A	rchitect	ure.					
New	York : Princeton Arc	hitectural Press									

- Morgan, C. L. and Nouvel, J. (2002). The Elements of Architecture. London : Thames & Hudson.
- 4. Werner, M. (2011). Model Making. New York : Princeton Architectural Press
- 5. Elements of Workshop Technology, Vol. I", HajraChoudhury, HazraChoudhary and Nirjhar Roy, Media promoters and Publishers Pvt. Ltd., 2007.
- "Workshop Technology", W. A. J. Chapman, 1st South Asian Edition, Viva Book Pvt Ltd., 1998.
- 7. "Manufacturing Technology, Vol.1, 3rd Ed.", P.N. Rao, Tata McGraw Hill Publishing Company, 2009
- 8. Mills, Criss B., "Designing with Models", John Wiley & Sons, New Jersey,.
- Knoll, Wolfgang & Hechinger, Martin, "Architectural Models", J.Ross Publishing,2006.
- Watson, Don A., "Construction Materials and Processes", McGraw Hill Co., University of Michigan, 1972.
- 11. Mckay, W.B., "Building Construction", Vol.1, 2, 3 Longmans, U.K.1981.
- 12. Alanwerth, "Materials", The Mitchell Pub.Co.Ltd., London, 1986.
- 13. Chudley, R., "Building Construction Handbook", British Library Cataloguing in Publication Data, London, 1990.
- 14. Rangwala, S.C., "Engineering Materials", Charotar Pub. House, Gujarat, 1997.

Table22. Mapping of COs with Pos												
	<b>PO1</b>	PO2	PO3	PO4	PO5	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	PO9	PO10	PSO1	PSO2
CO1	3				1							
CO2	3				1							
CO3	3				1							
CO4	3				1							
CO5	3				1							
Total	15				5							
Scaled Value	3				1							

1-5 =1, 6-10=2, 11-15=3

0-No relation, 1 –Low Relation, 2 –Medium Relation, 3 –High Relation.

#### XAR207 - ARCHITECTURAL DESIGN - I

#### 0 - 0 - 10 - 10

- 1. To initiate the design thinking process by the conceptualization of form, space and structure through creative thinking.
- 2. To involve students in design projects that will involve simple space planning and the understanding of the functional and aesthetic aspects of good design.
- 3. To involve students in building case study by choosing appropriate examples to enable them to formulate and concretize their concepts.
- 4. To enable the presentation of concepts through various modes and techniques that will move constantly between 2D representation and 3D modeling.
- 5. To engage in discussion and analytical thinking by the conduct of seminars/ workshops.

Cours	e Outcome:	Domain	Level
On the	e successful completion of the course, students will be ab	ble to	
CO1	Demonstrate the knowledge on arriving spatial requirements for various human activities	Cognitive	Understand
CO2	Demonstrate knowledge of anthropometry and ergonomics in architectural design.	Psychomotor	Knowledge Application
CO3	Interpret the case study examples to develop knowledge on architectural design.	Affective	Analyze Apply
CO4	Design of single spaces with the understanding of structural, utility, aesthetics and material considerations.	Psychomotor	Create
CO5	Develop neat presentation drawings, scale models using various medium	Affective	Create, Manipulate Articulate

SUBCODE	SUB NAME	L	T	P	C
XAR 207	ARCHITECTURAL DESIGN - I	0	0	10	10
C:P:A	2:4:4	L	Т	Р	H
		0	0	10	10
UNIT – I	SUBTRACTIVE UTILITY SCULPTURE	I	1	1	20

Parameters of design, anthropometrics. Understating the relationship between the human activity, Interrelationship of architectural space to form, structure, and materials.

Design of Subtractive utility sculpture -A Play object for 4-6 years age children.

#### Areas of concern/ focus:

- Scale and proportion
- Activity analysis
- Appropriate materials and construction

#### Methodology:

Data collection, case studies, analysis and presentation of studies - Data

collection with respect to design and detailing for the users

#### **Presentation:**

Concepts and presentation of design with scaled models and rendered drawings.

20

30

# UNIT – II ADDITIVE UTILITY SCULPTURE

Design of Additive utility sculpture - Utility object

#### Areas of concern/ focus:

- Scale and proportion
- Activity analysis
- Appropriate materials and construction

#### Methodology:

Data collection, case studies, analysis and presentation of studies – Data collection with respect to design and detailing for the users

Presentation: Concepts and presentation of design with scaled models and

rendered drawings.

## UNIT –III STUDY

Study of Anthropometry details with freehand sketches and the study of the

relationship between form and function in man-made objects.

#### Areas of concern/ focus:

- scale and proportion
- Behavioral aspects
- Anthropometry details
- Application of Forms in construction

#### Methodology:

Study of Anthropometric details and applications of forms in buildings.

#### **Presentation:**

Study work has to be done outside the classroom.

## UNIT – IV DESIGN OF SPACE

30

Parameters of design, anthropometrics. Understating the relationship between the human activity and spatial, furniture requirements, Interrelationship of architectural space to form, structure, and materials.

Redesign of single space such as own room etc.

#### Areas of concern/ focus:

- Scale and proportion
- Activity analysis
- Appropriate materials and construction

#### Methodology:

Data collection, Measure drawing of own room/case studies, analysis and presentation of studies – Data collection with respect to design and detailing for the users.

#### **Presentation:**

Concepts and presentation of design with scaled models and rendered drawings.

# UNIT –V MULTIFUNCTIONAL SPACE

**50** 

The design problem shall take into consideration of activities and their relationship with space, function, scale and proportion, climate.

The project shall be Shop, Workshop, pavilions, snack bar, cafeteria

## Areas of concern/ focus:

- scale and proportion
- Behavioral aspects

- Site planning
- Appropriate materials and construction

#### Methodology:

Data collection, case studies, analysis and presentation of studies – Data collection with respect to design and detailing for the users

#### **Presentation:**

Concepts and presentation of design with scaled models and rendered drawings.

LECTURE	TUTORIAL	PRACTICAL	TOTAL
0	0	150	150

# TEXT

- De Chiara and Callender, Time Saver Standard for Building Types, McGraw-Hill Co., 2nd Edition, 1980.
- 2. Edward D.Mills, Planning The Architects Handbook 10th Edition, British Library Cataloguing in Publication Data, 1985.
- Andrew Alpern, Handbook of Speciality Elements in Architecture, McGraw-Hill Book Co., 1982.
- 4. Neufert Architect's Data, Rudolf Herg, Crosby Lockwood and Sons Ltd., 2012.

### REFERENCES

- 1. Edward D.Mills Planning the Architects Hand Book Bitterworth, London, 1985.
- Francis D.K.Ching Architecture Form Space and Order Van Nostrand Reinhold Co., (Canaa), 2007.

Table 23. Mapping of COs with Pos												
	PO1	PO2	PO3	PO4	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	PSO1	PSO2
CO1	1	-	3	2	1	3	2	1	1	1	-	-
CO2	1	2	3	-	-	-	-	-	-	-	-	-
CO3	-	-	3	3	2	-	-	2	2	2	2	-
CO4	3	3	-	2	2	2	3	3	2	2	2	-
CO5	3	3	-	2	2	2	2	3	2	2	-	-
Total	8	8	9	9	7	7	7	8	7	7	6	-
Scaled Value	3	3	3	3	3	3	3	3	3	3	3	3

1-5 =1, 6-10=2, 11-15=3 0-No relation, 1 –Low Relation, 2 –Medium Relation, 3 –

High Relation.

- 1. To understand architecture as evolving within specific cultural contexts including aspects of politics, society, religion and climate.
- 2. To gain knowledge on the development of architectural form with reference to Technology, Style and Character in the Indus Valley Civilization, Vedic period and the manifestation of Buddhist, Hindu and Islamic architecture in various parts of the country.

Cours	se Outcome:	Domain	Level							
On th	e successful completion of the course, students w	ill be able to								
CO1	<i>Understand</i> the origin of various civilizations and Architecture in India at different points of time.	Cognitive	Understand							
CO2	<i>Understanding</i> the architectural responses with respect to materials, technology, style and character in the Buddhist, Hindu Architecture	Cognitive	Understand							
CO3	<i>Understanding</i> the architecture as evolving within specific cultural contexts including aspects of politics, society, religion and climate.	Cognitive	Understand							
CO4	<i>Understanding</i> the architectural response of Dravidian Architecture	Cognitive	Understand							
CO5	<i>Gain knowledge</i> on the history related to design thinking, cultural aspiration, social needs, and the evolution of the built environment	Cognitive	Understand							
SUBCODE	SUB NAME	E L T								
----------	-----------------------------------------------------------------------	-----------------------------------------------------------------------------	----------	----------	-------	--	--	--	--	--
XAR 301	HISTORY OF ARCHITECTURE - III	3	0	0	3					
C:P:A	3:0:0	L	Т	Р	Н					
		3	0	0	3					
UNIT – I	ANCIENT INDIA				7					
	Indus Valley Civilization - Culture and pattern of	settlement.								
	Aryan civilization - Evolution of early Aryan arcl	ms - ori	igins of	early						
	Hinduism - Vedic culture									
	Vedic village and the rudimentary forms of bar	nboo and W	ooden	constru	ction					
	under the Mauryan rule - origins of Buddhism and	Jainism.								
UNIT–II	BUDDIST ARCHITECTURE			10						
	Hinayana and Mahayana Buddhism - Architectu	ral Production	on duri	ng Ash	oka's					
	rule - Ashokan Pillar. Salient features of a Chait	ya hall and V	/ihara-	Karli ,	Rani					
	Gumpha									
UNIT–III	HINDU ARCHITECTURE				8					
	Evolution of Hindu temple - Early shrines of the	Gupta and C	'haluky	an perio	ods –					
	Tigawa temple, Ladh Khan Aihole, Papana	tha and Vi	irupaks	ha tem	ples,					
	Pattadakal. A comparative study of the Buddhist a	nd Hindu styl	les							
UNIT-IV	DRAVIDIAN ARCHITECTURE			10	)					
•	Rock cut productions under Pallavas -Shore	re temple,	Mahat	allipura	m -					
	Kailasanathar temple & Vaikunthaperumal temple	, Kanchipura	m, Dra	vidian (	Order					
	- Evolution of Gopuram, city planning, Brit	nadeeswara	Гетрle	, Tanjo	ore -					
	Meenakshi temple, Madurai - Srirangam temple.									
UNIT–V	INDO ARYAN STYLE			10						
	Salient features of an Indo Aryan temple - Linga	lient features of an Indo Aryan temple - Lingaraja Temple- Bhuvaneswar, Sun								
	temple-Konarak. Kunds and Vavs – vav - Adalaj - Surya kund, Modhera –									
	Khandharia Mahadev temple, Khajuraho - D	hilwara tem	iple, N	At. Abı	1. A					
	comparative study of the Dravidian and Indo-Aryan styles.									

			LE	CTUR	E T	UTOR	IAL	PRAC	ГІСАІ	4	TOTA	L		
				45		0		(	)		45			
TEXT														
<ol> <li>Percy Brown, "Indian Architecture (Buddhist and Hindu Period)", Taraporevala and Sons, Bombay, 1983.</li> </ol>														
<ol> <li>Satish Grover, "The Architecture of India (Buddhist and Hindu Period)", Vikas Publishing Housing Pvt. Ltd., New Delhi, 2003.</li> </ol>														
3. Chr the	<ol> <li>Christoper Tadgell, "The History of Architecture in India from the Dawn of civilization to the End of the Raj", Longmon Group U.K.Ltd., London, 1990.</li> </ol>													
REFER	ENCE	S												
1. Geo	orge Mi	ichell, "	The H	indu Te	mple"	, BI Pu	b., Bom	bay, 19	77.					
2. Ste	lla Kraı	nrisch,	"The H	Hindu T	emple	", Moti	lal Bana	arsidass,	, 1976.					
3. Par	ameswa	aranpill	ai V.R	., "Tem	ple cul	ture of	south In	ndia", Iı	nter Ind	lia Publi	cations,			
4. Geo	orge Mi	ichell E	d, "Te	mple To	owns o	f Tamil	Nadu"	, Marg I	Pubs, 1	995.				
5. Rap	bhael D	., "Tem	ples of	f Tamil	Nadu	Works	of Art",	Fast Pr	int Ser	vice Pvt	Ltd., 19	96.		
Table 2	4. Map	ping of	f COs	with Po	)S									
	PO1	PO2	PO3	<b>PO4</b>	PO5	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	PO10	PSO1	PSO2		
<b>CO1</b>	3	1												
CO2	3	3	3											
CO3	3	3	2											
CO4 CO5	<u> </u>	1	1											
Total	12	9	9											
Scaled Value	3	CO5       1       1       1												

 $1-5 \rightarrow 1, 6-10 \rightarrow 2, 11-15 \rightarrow 30$  - No Relation, 1 - Low Relation, 2- Medium

Relation, 3- High Relation.

### XAR302 -SITE SURVEYING AND PLANNING

### **Course Objectives:**

- 1. To educate the students about the importance and relevance of site and its context in architectural design.
- 2. To gain knowledge on the various factors that influence the building environment and the methods of analyzing the same.
- 3. To teach the students various techniques of surveying.

Course	Outcome:	Domain	Level
On the	successful completion of the course, students will be	able to	<u>.</u>
CO1	<i>Understand</i> the types of surveying and survey a building.	Cognitive	Knowledge
CO2	<i>Analyze</i> the various site analyzing factors influencing the site planning.	Cognitive	Knowledge
CO3	Understand the various scientific and analytic site	Cognitive	Apply
	analysis techniques & Create a site plan for small-	Psychomotor	Create
	scale to large-scale projects.		
<b>CO4</b>	Understand the vehicular and pedestrian	Psychomotor	Create
	circulation and create a site plan.		
CO5	Able to read site drawings for Landscape	Cognitive	Apply
	Architecture, master plan and Urban design.		
SUBCO	DDE SUB NAME	L	T P C
XAR 3	02 SITE SURVEYING AND PLANNING	3	0 0 3
C:P:A	2:1:0	L	тр н
		3	0 0 3

### UNIT – I INTRODUCTION TO SURVEY AND ITS TECHNIQUES

Definition of plot, site, land and region, units of measurements, reconnaissance, and need for surveying. Chain survey and compass survey - Plane Table and Theodolite, total station surveys - various equipments used - simple field

surveys.

### UNIT-II SITE ANALYSIS

Importance of site analysis - factors involved – On-site and off-site factors; Analysis of natural, cultural and aesthetic factors – topography, hydrology, soils, vegetation, climate, surface drainage, accessibility, size and shape, infrastructures available - sources of water supply and means of the disposal system, visual aspects

### UNIT-III SITE ANALYSIS TECHNIQUES

Preparation of site analysis diagram. Study of microclimate:- vegetation, landforms and water as modifiers of microclimate. Study of landform;- contours, slope analysis, grading process, grading criteria, functional and aesthetic considerations – Architectural and visual aspects.

### UNIT-IV SITE PLANNING AND LAYOUT PRINCIPLES

Context of the site. Preparation of site plan drawing – incorporation of site analysis factors, Organization of vehicular and pedestrian circulation, types of roads, hierarchy of roads, networks, road widths and parking, regulations. Turning radii & street intersections

### UNIT-V ENVIRONMENTAL FACTORS

Man-made structures, sensuous qualities, cultural data, images and data correlation - vegetation – plant associations, types and distribution - preparation of ecological profile for an area, basic understanding of agencies related to environmental regulations.

				LECI	URE	TUT	ORIAL	PRA	CTICA	L	ΓΟΤΑL	
				4	5		0		0		45	
TEXT	ſ											
4	*** * * * *	1	т	<b>D1</b>	. т 1		0 0	TTO A	1000			

- 1. W.M. Marsh Landscape Planning, John Wilay& Sons, USA 1983.
- 2. B.C.Punmia Surveying Vol.I Standard Book House, New Delhi 2016.

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### REFERENCES

- 1. Kevin Lynch Site planning MIT Press, Cambridge, MA 1984.
- 2. Edward. T. Q., "Site Analysis", Architectural Media, 2014.
- 3. P.B.Shahani Text of surveying Vol. I, Oxford and IBH Publishing Co 2008
- 4. Joseph De.Chiarra and Lee Coppleman Planning Design Criteria Van Nostrand Reinhold Co.,New York 1982.
- 5. Beer R, Environmental Planning for Site development, Turner, Landscape Planning and environmental impact design.

Table 2	1 able 25. Mapping of Cos with Pos:													
	<b>PO1</b>	PO2	PO3	PO4	PO5	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	PSO1	PSO2		
CO1			3	3		-								
CO2			3	3										
CO3			3	3				_						
CO4			3	3				-			2	2		
CO5			3	3							3	3		
Total			15	15							5	5		
Scaled Value			3	3							2	2		

 $1-5 \rightarrow 1, 6-10 \rightarrow 2, 11-15 \rightarrow 30$  - No Relation, 1 - Low Relation, 2- Medium

Relation, 3- High Relation.

### XAR 303- MECHANICS OF STRUCTURES - II3 - 0 - 0 - 3

- 1. To determine the stresses in beams and strength of sections by working out problems.
- 2. To calculate the deflection of beams using methods.
- 3. To study the theory of columns by working out problems.
- 4. To understand the concept of indeterminate structure and its analysis.
- 5. Case studies and models wherever feasible.

Course	e Outcome	Domain	Level
CO1	<i>Understand</i> the concepts of shear force and bending moment.	Cognitive	Understand
CO2	<i>Apply</i> the bending theory in beams.	Cognitive	Apply
CO3	<i>Evaluate</i> the slope and deflection of beams	Cognitive	Evaluate
CO4	<i>Analyze</i> the long and short column for various loading condition	Cognitive	Analyse
CO5	<i>Understand</i> the behaviour of Indeterminate structures	Cognitive	Understand

SUBCODE	SUB NAME	L	Τ	Р	С
XAR 303	MECHANICS OF STRCUTURES - II	3	0	0	3
C:P:A	3:0:0	L	Т	Р	Н
		3	0	0	3

# UNIT – I SHEAR FORCE AND BENDING MOMENT

Concept of shearing forces and Bending Moments - shear force and bending Moment diagrams for cantilever and simply supported beams subjected to point load, uniformly distributed loads and their combinations.

### **UNIT - I I STRESSES IN BEAMS**

Theory of simple bending -bending stresses in beams, shear stresses in beams - examples on simple sections. Stress distribution diagrams.

### **UNIT – III DEFLECTION OF BEAMS**

Slope and deflection at a section - Double Integration and Macaulay's method for simply supported and cantilever beams for concentrated loads and uniformly distributed loads.

### UNIT-IV THEORY OF COLUMNS

Short and long columns - Euler's method and its limitations - Derivations of Euler's formula (for different end conditions) – Rankine's formula for columns (No derivations) – Application to simple problems.

9

9

9

### UNIT – V INTRODUCTION TO INDETERMINATE STRUCTURES

9

Concept in Analysis of continuous beams, fixed beams, and partial frames - Application to simple problems.

LECTURE	TUTORIAL	PRACTICAL	TOTAL
45	0	0	45

### TEXT

- M.M.Ratwani & V.N.Vazirani, Analysis of Structure, Vol.1, Khanna Publishers Delhi, 2017
- R.K. Bansal, 'A Text Book on Strength of Materials', 6 th Edition, Laxmi Publications, New Delhi, 2018.
- 3. Paul W. McMullin, Jonathan S. Price, 'Introduction to Structures, Routledge, 2016.
- B.C. Punmia et al, 'SMTS-I, Strength of Materials', 10th Edition, Laxmi Publications, 2018.
- M.M. Ratwani and V.N. Vazirani, 'Analysis of Structures, Vol. 1 ', Khanna Publishers, Delhi, 2015.
- Timoshenko, S.P. and D.H. Young, 'Elements of Strength of Materials', 5th edition, East West Press, 2011.
- A.R. Jain and B.K. Jain, 'Theory and Analysis of Structures', Vol. 1, Nemchand and Bros, Roorkee, 1987.
- 4. R.K. Rajput, 'Strength of Materials', S.Chand, 2015.

	PO -1	PO -2	PO- 3	PO- 4	PO- 5	PO- 6	PO- 7	PO- 8	PO- 9	PO- 10	PSO1	PSO2
CO-1	2	0	0	0	0	0	0	0	0	0	0	0
CO-2	2	0	0	0	0	0	0	0	0	0	0	0
CO-3	0	2	0	0	0	0	0	0	0	0	0	0
CO-4	0	2	0	0	0	0	0	0	0	0	0	0
CO-5	2	0	0	0	0	0	0	0	0	0	0	0
Total	6	4	0	0	0	0	0	0	0	0	0	0
Scaled to0,1,2, 3 scale	2	1	0	0	0	0	0	0	0	0	0	0

### Table 26. Mapping of Cos with Pos:

 $1-5 \rightarrow 1, 6-10 \rightarrow 2, 11-15 \rightarrow 30$  - No Relation, 1 - Low Relation, 2- Medium

Relation, 3- High Relation.

### XAR304 – BUILDING SERVICES – I

- 1. To Study Water supply, treatments, distribution and plumbing systems for all types of buildings.
- 2. To Study Wastewater treatments, Sewer lines for all types of buildings.
- 3. To Study Drainage systems for a Small Campus and a Residential neighbourhood.
- 4. To understand Refuse collections, disposal, composting, Landfill, Biogas for a Town and City
- 5. Applications of water supply and drainage system to a Building, Small Campus and a Residential neighbourhood.

Course Ou	tcome:	Dor	nain		Le	evel
On the succ	essful completion of the course, students wil	l be ab	le to			
CO1 - Outlesup	<i>ine</i> the sources, treatment of water, water ply and drainage systems	Cogi	nitive	Un	ders	standing
CO2 - Assea	ess the water supply requirements, storage sewage generated.	Psych	omoto r	E	lval	uating
CO3 - Sela	ect the pumps, water supply and drainage bes.	Affective Applying				
CO4 - Desi resi	<i>gn</i> the water supply and drainage layout of dential buildings.	Psych	omoto r	Creating		
CO5 - Illus an	<i>trate</i> the solid waste management concepts d systems.	Cogi	nitive	Un	ders	standing
SUBCOD E	SUB NAME	L	ן	ſ	Р	С
XAR 304	<b>BUILDING SERVICES - I</b>	2	(	)	1	3
C:P:A	1.2:1.2:.6	L	J	Г	Р	Η
		2	(	)	1	4
UNIT	WATER QUALITY, PURIFICATION A	ND TR	EATM	IENT		10

- I	
	Sources of water -Surface and groundwater sources. Water quality - nature of
	impurities, Water treatment methods - Aeration, sedimentation, filtration,
	sterilization, disinfection and softening.
	Water requirements for all types of residential, commercial, industrial
	buildings and the town.
UNIT–II	WATER DISTRIBUTION AND STORAGE16
	Distribution systems in small towns - Types of pipes used - Laying, jointing,
	testing - prevention of water wastage and reuse of water. Plumbing-Internal
	water supply layout in buildings, pipe size calculations, Planning and layout
	of water supply distribution in residences. Types of water supply pumps and
	their applications - mechanical equipment. Automation systems. Water
	heating systems, solar water heaters. Energy-efficient systems. Water
	requirements calculation and Water storage systems- Design and calculations
	of OHTs, UG Sumps and fire fighting storage.
	Understanding of service drawings. Site visits with documentation in the
	form of sketches/ drawings/ photos
	form of sketches/ drawings/ photos.
UNIT–III	STORMWATER DRAINAGE AND RAINWATER HARVESTING10
UNIT-III	STORMWATER DRAINAGE AND RAINWATER HARVESTING10         Basic principles of storm water drainage, Types of Drain pipes and pipe size
UNIT-III	<b>STORMWATER DRAINAGE AND RAINWATER HARVESTING10</b> Basic principles of storm water drainage, Types of Drain pipes and pipe size calculations, storm water gutter.
UNIT-III	STORMWATER DRAINAGE AND RAINWATER HARVESTING10         Basic principles of storm water drainage, Types of Drain pipes and pipe size calculations, storm water gutter.         Rainwater harvesting principles, rain water pipe calculation. Details of
UNIT-III	STORMWATER DRAINAGE AND RAINWATER HARVESTING10Basic principles of storm water drainage, Types of Drain pipes and pipe sizecalculations, storm water gutter.Rainwater harvesting principles, rain water pipe calculation. Details ofrainwater disposal - roof drain, systems of subsoil drainage. Different types
UNIT-III	STORMWATER DRAINAGE AND RAINWATER HARVESTING10         Basic principles of storm water drainage, Types of Drain pipes and pipe size calculations, storm water gutter.         Rainwater harvesting principles, rain water pipe calculation. Details of rainwater disposal - roof drain, systems of subsoil drainage. Different types of pavements and details for water percolation.
UNIT-III UNIT-IV	STORMWATER DRAINAGE AND RAINWATER HARVESTING10Basic principles of storm water drainage, Types of Drain pipes and pipe size calculations, storm water gutter.Rainwater harvesting principles, rain water pipe calculation. Details of rainwater disposal - roof drain, systems of subsoil drainage. Different types of pavements and details for water percolation.SEWERAGE AND SANITATION14
UNIT-III UNIT-IV	STORMWATER DRAINAGE AND RAINWATER HARVESTING10         Basic principles of storm water drainage, Types of Drain pipes and pipe size calculations, storm water gutter.         Rainwater harvesting principles, rain water pipe calculation. Details of rainwater disposal - roof drain, systems of subsoil drainage. Different types of pavements and details for water percolation.         SEWERAGE AND SANITATION       14         Sewerage, Sewer and sewage. Sewage - Their disposal, Primary treatment,       14
UNIT-III UNIT-IV	STORMWATER DRAINAGE AND RAINWATER HARVESTING10         Basic principles of storm water drainage, Types of Drain pipes and pipe size calculations, storm water gutter.         Rainwater harvesting principles, rain water pipe calculation. Details of rainwater disposal - roof drain, systems of subsoil drainage. Different types of pavements and details for water percolation.         SEWERAGE AND SANITATION         14         Sewerage, Sewer and sewage. Sewage - Their disposal, Primary treatment, secondary treatment. Biological treatment. Modern types of sewage treatment
UNIT-III UNIT-IV	STORMWATER DRAINAGE AND RAINWATER HARVESTING10         Basic principles of storm water drainage, Types of Drain pipes and pipe size calculations, storm water gutter.         Rainwater harvesting principles, rain water pipe calculation. Details of rainwater disposal - roof drain, systems of subsoil drainage. Different types of pavements and details for water percolation.         SEWERAGE AND SANITATION       14         Sewerage, Sewer and sewage. Sewage - Their disposal, Primary treatment, secondary treatment. Biological treatment. Modern types of sewage treatment plants.
UNIT-III UNIT-IV	STORMWATER DRAINAGE AND RAINWATER HARVESTING10         Basic principles of storm water drainage, Types of Drain pipes and pipe size calculations, storm water gutter.         Rainwater harvesting principles, rain water pipe calculation. Details of rainwater disposal - roof drain, systems of subsoil drainage. Different types of pavements and details for water percolation.         SEWERAGE AND SANITATION       14         Sewerage, Sewer and sewage. Sewage - Their disposal, Primary treatment, secondary treatment. Biological treatment. Modern types of sewage treatment plants.       14
UNIT-III UNIT-IV	STORMWATER DRAINAGE AND RAINWATER HARVESTING10         Basic principles of storm water drainage, Types of Drain pipes and pipe size calculations, storm water gutter.         Rainwater harvesting principles, rain water pipe calculation. Details of rainwater disposal - roof drain, systems of subsoil drainage. Different types of pavements and details for water percolation.         SEWERAGE AND SANITATION       14         Sewerage, Sewer and sewage. Sewage - Their disposal, Primary treatment, secondary treatment. Biological treatment. Modern types of sewage treatment plants.       14         Sewer -Types of sewer systems, Construction details of Sewer lines, gradients, manholes, inspection chambers, septic tanks, leach pits, traps for       14
UNIT-III UNIT-IV	STORMWATER DRAINAGE AND RAINWATER HARVESTING10         Basic principles of storm water drainage, Types of Drain pipes and pipe size calculations, storm water gutter.         Rainwater harvesting principles, rain water pipe calculation. Details of rainwater disposal - roof drain, systems of subsoil drainage. Different types of pavements and details for water percolation.         SEWERAGE AND SANITATION       14         Sewerage, Sewer and sewage. Sewage - Their disposal, Primary treatment, secondary treatment. Biological treatment. Modern types of sewage treatment plants.       14         Sewer -Types of sewer systems, Construction details of Sewer lines, gradients, manholes, inspection chambers, septic tanks, leach pits, traps for various types and its details.       14
UNIT-III UNIT-IV	STORMWATER DRAINAGE AND RAINWATER HARVESTING10         Basic principles of storm water drainage, Types of Drain pipes and pipe size calculations, storm water gutter.         Rainwater harvesting principles, rain water pipe calculation. Details of rainwater disposal - roof drain, systems of subsoil drainage. Different types of pavements and details for water percolation.         SEWERAGE AND SANITATION       14         Sewerage, Sewer and sewage. Sewage - Their disposal, Primary treatment, secondary treatment. Biological treatment. Modern types of sewage treatment plants.       14         Sewer -Types of sewer systems, Construction details of Sewer lines, gradients, manholes, inspection chambers, septic tanks, leach pits, traps for various types and its details.       5         Drainage and sanitation requirements for various private and public       14

	to	oilet an	d kitch	en fitti	ings. C	Connect	ion of	lines to	o fittin	gs. Cho	ice of p	umbing		
	s	systems. Planning and layout of sanitary fittings in residences. Understanding												
	0	of service drawings. Site visits with documentation in the form of sketches/												
	d	drawings/ photos.												
UNIT-V	V S	SOLID WASTE MANAGEMENT   10												
	S	Solid waste management concepts and systems, waste and resources,												
	re	recycling the solid waste in small and large buildings - Refuse collection,												
	d	disposal, Incinerator, Composting, Vermicomposting, Sanitary Landfilling,												
	Biogas system and Modern renewable energy system., equipment for													
	handling solid waste. Refuse chute, service core concepts.													
	LECTURE TUTORIAL PRACTICAL TOTAL													
		$\begin{array}{c ccccccccccccccccccccccccccccccccccc$												
		<i>5</i> 0 0 <i>3</i> 0 60												
TEXT											·			
1. S	S.C.Ra	ngwala	i, Wat	er Suj	pply a	und Sa	nitary	Engir	neering	g, Char	otar Pu	blishing		
H	House,	1989												
2. N	Vationa	al Build	ding Co	ode 20	16.									
3. I	ndian	Standa	rd Cod	e of Pr	actice	for Wa	ter Suj	oply in	Build	ings, IS	:2065 –	1983'.		
4. N	Mecha	nical	and	Electri	ical I	Equipn	nent	for t	ouildin	gs, Be	enjamin	Stein,		
J	ohn.S.	Reyno	lds, W	alter.T	Grono.	dzik, A	Alison.	G.Kwo	ok, 10	th edition	on, Johr	1 Wiley		
a	and So	ns, Lon	idon, 2	006.										
5. F	Punmia	а В.С.,	'Waste	Water	Engin	neering	, Laxn	ni Publ	licatior	ns, 2009	•			
REFER	ENCI	ES												
1. N	Manua	l on Se	ewerag	e and	Sewag	ge Trea	tment,	CPH	EEO, I	Ministry	of Wo	rks and		
H	Housin	g, New	^y Delhi	, 1980.										
2. H	Handbo	ook for	Buildi	ng Eng	gineers	in Me	tric sys	stems,	NBC,	New De	elhi, 196	8.		
Table 2	27. Ma	pping o	of Cos	with P	os:									
	PO	PO	PO	РО	РО	РО	РО	РО	PO	PO1	PSO	PSO		
1 2 3 4 5 6 7 8 9 0 1 2														
CO1				3		-		3			2			
CO2				3				3	2					

CO3			3			3				
<b>CO4</b>			3			3	2			
CO5			3			3			-	
Total			15			15	4			
Scale										
d			3			3	1		1	
Value										
$1-5 \rightarrow$	1, 6 – 1	$0 \rightarrow 2, 1$	$1 - 15 \rightarrow 3$	30 - No Re	lation, 1	- Low	Relation	on, 2- N	Iedium	
Relation	, 3- Hig	h Relatio	n							

# XARR305 – MATERIALS AND CONSTRUCTION – II

1 - 0 - 2 - 3

- 1. To inform the properties and characteristics of timber, its conversion, preservation and uses.
- 2. To inform of the various market forms of timber, their production, properties and application in the building industry.
- 3. To understand both in general and in detail the methods of construction by using basic materials such as brick; clay products, natural and man-made timber for both structural and nonstructural components.

Cours	se Outcome:	Domain	Level
On th	e successful completion of the course, students will	be able to	
CO1	<i>Understand</i> the properties, characteristics, strength, manufacture, processing and application of materials such as brick and other clay products.	Cognitive	Understanding
CO2	<i>Produce</i> 2D technical drawings of building components and structural elements for varying conditions using bricks and clay products.	Psychomotor	Manipulation
CO3	<i>Select</i> the timber and suggest suitable treatment process/preservation of timber.	Cognitive Affective	Understanding Justifying

<b>CO4</b>	Produ	uce drawings showing the details of timber	<i>uce</i> drawings showing the details of timber Affective Responding								
	applic	cations in construction.	notor	Manip	oulatio	on					
CO5	Unde	rstand the cost-effective technologies and	Psychor	notor	Create	e					
	produ	ce developed building components and			Manip	oulatio	on				
	drawi	ngs of the same.									
SUBC	CODE	SUB NAME		L	Т	Р	С				
XAR	305	MATERIALS AND CONSTRUCTION - I	I	1	0	2	3				
C:P:A	<b>A</b>	0.6:2:1.4		L	Т	Р	Η				
	1 0										
UNIT	' – I	BRICKS AND CLAY PRODUCTS					20				
		Drawings of brick foundations - buildings	in bricl	kwork,	bonds	s colu	mns,				
		corners -structural members in brickwork	. Reinfo	orced	brick 1	masor	nry -				
		Arches - Lintels - Corbels - copings. Ho	llow cla	y bloc	ks - f	or wa	alls -				
		partitions - roofs. Roofings - Flat Roofs of	r Terrace	e roofs	- Slop	oing r	oofs.				
		Plates & assignments									
UNIT	' – <b>II</b>	TIMBER AND ALLIED PRODUCTS					15				
		Softwood and hardwood - Physical pr	operties	and	uses -	De	fects,				
		Conversion, Seasoning, decay and preserva	ation of	timber	- Fire	e reta	rdant				
		treatment, anti-termite treatment. Industrial	timbers	- plyw	vood, b	lockb	oard,				
		particle board, fibre boards. Manufacture a	nd uses ·	- curre	nt deve	elopm	ents.				
		Assignments									
UNIT	– III	TIMBER JOINERY					30				
		Introduction to timber joinery, Details of tim	ıber joine	ery for	Windo	ws, d	oors,				
		ventilators. Timber partitions, paneling -	false ce	eiling,	fixed	partit	ions,				
		movable partitions. Timber staircases - Dest	igned sta	ircase	- timbe	er trus	sses -				
		Lean-to - close couple - Kingpost - Queen	post - T	russes	. Timb	er flo	ors -				
		timber built-infurniture. Plates through case	studies								

UNIT – IV	COST	COST-EFFECTIVE BUILDING TECHNOLOGY10										
	Drawin	gs of	fou	ndatio	ns – w	alling	g – R	oofs – p	artitions –	ceiling ]	oanel –	
	doors a	nd wi	ndov	vs. Mi	scellan	eous -	– Dra	wing of <b>E</b>	Brick jallies	, Screen	walls –	
	paveme	ent blo	ocks ·	– Ferro	ocemer	nt wat	er tan	ks. <b>Assig</b>	nments			
	I		Ι	LECT	URE	TUT	ORIA	L Pl	RACTICA	L TOI	AL	
				30	· · · · · ·		0		45		75	
TEXT												
1. S.C.Rangwala, Engineering Materials, Charotar Pub. House, Anand, 2015.												
2. W.B.M	<ol> <li>W.B.Mckay, 'Building Construction', Vol.1, 2, 3 Longmans, U.K. 2012.</li> </ol>											
REFERENC	REFERENCES											
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2. Alanwe	erth. Mat	erials.	The	Mitch	ell Pul	o. Co.	Ltd	London.	1986.			
2 D Chuc	100 'D	ilding		onstru	otion	Uand	book'	Dritich	Librory	Cotology	ing in	
J. K.Cliuc	neu, Du		g Co	2010		папа	DOOK,	DIIUSII	Library	Catalogu	ing in	
Publica	ation Dat	a, Loi	aon	, 2010	•							
WEBSITES												
1. http://v	vww.ibe	x-ibex	-intl	.com								
2. http://v	vww.inik	a.con	n/chi	tra								
3. http://v	vww.rou	tbdge.	com									
4. http://y	vww.ven	turain	dia.c	com								
T.11. 20 M	•	6.00	• 4	1.D								
PO	apping (	PO-	s wit PO-	n POS PO-		PO-	PO-					
1	2	3	<u>4</u>	5	<b>PO-6</b>	7	8	PO-9	PO-10	PSO1	PSO2	
CO-1 -		_	0	-	-		3	_	2	-	-	
<u>CO-2</u> -	-	-	3	-	-	-	3	-	2	-	-	
<u> </u>	-	-	2	-	-	-	2	_	2	-	-	
<b>CO-5</b> -	-	-	<del>-</del> 3	-	_	-	- 3	_	2	-	-	
Total -	_	-	8	-	-	_	11	-	10	-	-	
Scaled	Scaled 2 2											
value	-2 11 14	<u> </u>				<u> </u>	ļ		<u> </u>			

0-No relation, 1 –Low Relation, 2 –Medium Relation, 3 –High Relation.

# XAR 306 – COMPUTER APPLICATIONS IN ARCHITECTURE - I 1 - 0 - 2 - 3

# **Course Objectives:**

1. To educate students with the 3d and 3d drafting, graphical representations and rendering using the software.

Cours	e Outco	ome:	Don	nain		Lev	vel		
On the	e succes	sful completion of the course, students will b	be able to	0					
CO1	Unders	stand software to apply in the field of	Cogniti	ve	A	pply	ing		
	Archite	ecture.							
CO2	Produ	ce 2D technical drawings using AutoCAD	Psychon	notor	Ma	Manipulation			
CO3	Develo	p the 3D model of buildings & objects	Psychon	notor	Ar	ticula	ation		
	using A	AutoCAD and Sketch Up							
CO4	Recrea	<i>tte</i> realistic images of objects and buildings	Psychoi	notor	Ma	nipul	ation		
	by usir	ng presentation software.							
CO5	Sheet	set organization and plot/print drawing to	Affectiv	Organizing					
	the sca	le.							
SUBC	CODE	SUB NAME		L	Т	Р	C		
XAR	306	COMPUTER APPLICATIONS	IN	1	0	2	3		
		ARCHITECTURE - I							
C:P:A		0.5:2.0:0.5		L	Т	Р	H		
				1	0	2	5		
UNIT	– I	INTRODUCTION TO BASICS OF COM	IPUTEF	ł			4		
	Introduction to personal computers – hardware/software – operating sys								
	important DOS commands – Windows. Introduction to MS Word, Excel.								
UNIT	- II	BASIC OF AUTOCAD					8		
		Basic introduction to CAD packages. Settin	ng up & o	control	lling th	e Au	toCAD		
		drawing environment – Creating & Editing (	Commar	nds.					

UNIT– III	AUTOCAD 2	D DRAWIN	GS		2	20					
	Organizing a dr	awing with lay	yers – Advanced	geometry editing	– Creati	ing &					
	using Blocks,	Dynamic Bloc	cks. X –Referen	cing files. Inquir	y tools.	Text					
	annotation. C	reating &	Customizing	Hatch patterns.	Produ	uctive					
	Dimensioning -	- Defining Tex	t & Dimension S	Styles. Printing &	plotting	5					
UNIT – IV	AUTOCAD 3I	<b>MODELS</b>			1	16					
	Drawing utilities – importing/exporting files. Understanding 3D coordinate										
	system - Using Viewports – 3D drawing & Editing commands										
UNIT – V	RENDERING	RENDERING AND PRESENTATION 12									
	Introduction to	Introduction to rendering in 3D – Rendering process – Enhancing digital									
	images from C	CAD application	on using Adobe	e Photoshop, &	other gr	raphic					
	programs. Use of Sketch Up for modeling of buildings and presentation of										
	design projects as Photo realistic images and virtual architecture.										
		LECTURE	TUTORIAL	PRACTICAL	TOTA	L					
		0	0	60	60	0					
TEXT											
1. Deke I	McClelland, 'Phot	toshop 7 Bible	Professional Ed	ition', Wiley John	& Son I	INC,					
New Y	York, 2000.										
2. Aouad	l, 'Computer-Aid	ed Design Gui	de for Architect	2. Aouad, 'Computer-Aided Design Guide for Architecture, Engineering and							
construction', Spon process, 2012.											
2 Latest	adition?	cess, 2012.									
3. Latest 4. Omura	edition? George, "Master	cess, 2012.	) (Release 19)". 1	3PB Publications	New De	elhi					
<ol> <li>Latest</li> <li>Omura 2018.</li> </ol>	edition? George, "Master	cess, 2012. ring AutoCAD	9 (Release 19)", 1	3PB Publications,	New De	elhi,					
<ol> <li>Latest</li> <li>Omura 2018.</li> <li>Omura</li> </ol>	edition? George, "Master George, " AutoO	cess, 2012. ring AutoCAD CAD 2000", B	) (Release 19)", I PB Publications,	3PB Publications, New Delhi, 1997	New De	elhi,					
<ol> <li>Latest</li> <li>Omura 2018.</li> <li>Omura</li> <li>George</li> </ol>	edition, Spon prod edition? George, "Master George, " AutoC e Omura, Brian C	cess, 2012. ring AutoCAD CAD 2000", Bi 2. Benton, Auto	) (Release 19)", I PB Publications, DCAD 2019 and	3PB Publications, New Delhi, 1997 AutoCAD LT 201	New De	elhi, odesk					
<ol> <li>Latest</li> <li>Omura 2018.</li> <li>Omura</li> <li>George Officia</li> </ol>	edition? a George, "Master a George, " Auto e Omura, Brian C al Press (SYBEX)	cess, 2012. ring AutoCAD CAD 2000", B C. Benton, Auto	9 (Release 19)", l PB Publications, pCAD 2019 and	3PB Publications, New Delhi, 1997 AutoCAD LT 201	New De 19, Autoo	elhi, odesk					
<ol> <li>Latest</li> <li>Omura 2018.</li> <li>Omura</li> <li>George Officia</li> </ol>	edition, Spon prod edition? George, "Master George, " Auto e Omura, Brian C I Press (SYBEX)	cess, 2012. ring AutoCAD CAD 2000", B C. Benton, Auto	9 (Release 19)", I PB Publications, pCAD 2019 and	3PB Publications, New Delhi, 1997 AutoCAD LT 202	New De	elhi, odesk					
<ol> <li>Latest</li> <li>Omura 2018.</li> <li>Omura</li> <li>George Officia</li> </ol>	edition, Spon prod edition? George, "Master George, " Auto e Omura, Brian C ll Press (SYBEX)	cess, 2012. ring AutoCAD CAD 2000", B 2. Benton, Auto	9 (Release 19)", I PB Publications, DCAD 2019 and	3PB Publications, New Delhi, 1997 AutoCAD LT 201	New De	elhi, odesk					

Table 2	9. Mapj	ping of	COs	with	Pos							
	PO-1	PO- 2	РО- 3	РО- 4	РО- 5	PO-6	РО- 7	PO- 8	PO-9	PO-10	PSO1	PSO2
CO-1	- <u></u>			3	2					3		
CO-2				3	2					2		
CO-3				3	3					2		
<b>CO-4</b>				3	3					3		
CO-5	<u> </u>			3	2					0		
Total				15	12					10		
Scaled value	0	0	0	3	3	0	0	0	0	2	0	0

1-5 =1, 6-10=2, 11-15=3

## 0-No relation, 1 –Low Relation, 2 –Medium Relation, 3 –High Relation.

# XAR 307 – ARCHITECTURAL DESIGN - II

0 - 0 - 10 - 10

# **Course Objectives:**

1. To create an understanding of the interrelationships amongst various elements of architecture – form, function, space planning, user perception and behaviour.

Course	Outcome:	Domain	Level
On the	successful completion of the course, students will b	be able to	
CO1	<i>Understand</i> the characteristics of the site and the importance of site planning which includes built form and open space.	Cognitive	Understand
CO2	<i>Determine</i> spatial arrangements, circulation of buildings and the response of user groups through case studies.	Affective	Evaluate
CO3	<i>Learn</i> the process of design.	Cognitive	Knowledge

CO4	Able	Able to Design spaces with functional, aesthetics										
	and	and material considerations by applying the Psychomoto Creation consideration of the psychomoto creation of the psychomoto creati										
	knov	vledge gained in case studies.	r									
CO5	Enal	ble to present the concepts as drawings	Psycho	moto		Crooto						
	using	g various media and making scale models.	r			Create						
SUBCO	DE	SUB NAME		L	Т	Р	С					
XAR 30	)7	ARCHITECTURAL DESIGN – II		0	0	10	10					
C:P:A		2.0:5.0:2.0		L	Т	Р	Н					
				0	0	10	10					
UNIT –	Ι	I CONTENT										
							0					
		Projects involving single-level planning in s	mall sca	le, sma	all spar	n, horizo	ontal					
		movement and simple vertical movement.										
		Areas of concern/ focus:										
		• Form-space relationships										
		Spatial organization										
		Behavioral aspects especially those relating	g to child	lren								
		• Site planning aspects										
		• Appropriate materials and construction										
   		Suggestive Typologies/ projects:										
		Residential buildings, institutional building	gs: nurs	ery or	• prima	ry sch	ools,					
		schools for children with specific disabilitie	es, prima	ary he	alth ce	nter, ba	anks,					
		neighbourhood market, neighbourhood lib	rary, Ga	ate co	mplexe	s inclu	ding					
		security Kiosk and entry/ exit gates.										
		Methodology:										
		Data collection, case studies, analysis and pr collection with respect to design and detailin persons –	esentatio g for phy	on of s ysicall	tudies - y hand	– Data icappec	l					
		Presentation:										

	(	Concep Irawin	ots a gs.	nd p	resent	ation of	desi	ign w	vith sca	led models	and rea	ndered
				I	<b>ECT</b>	URE	TUT	ORIA	AL PI	RACTICAL	TOTA	<b>AL</b>
					(	)		0		150	1	50
TEXT				<u> </u>		I,					1	
1. Josep McGi	<ol> <li>Joseph De Chiara, Michael J Crosbie, "Time-Saver Standards for Building Types", McGraw Hill Professional, 2001.</li> </ol>											
2. Julius Panero, Martin Zelnik, "Human Dimension and Interior Space", Whitney Library of Design, 1975												
<ol> <li>Joseph De Chiara, Julius Panero, Martin Zelnik, "Time-Saver Standards for Interior Design and Space Planning", McGraw Hill, 2001.</li> </ol>												
4. Ernst	Neufe	erts, "A	Archi	tects	Data,'	' Blackw	ell, 2	002.				
5. Rams	ev et :	al "Ar	chite	ctura	l Grar	ohic Stan	dards	" Wi	lev 200	0		
	5. Kamsey et al, Architectural Graphic Standards, Wiley, 2000.											
REFERENCES												
1. Richa	ard P.	Dober	, "Ca	ampu	s Plar	nning" -	Socie	ty foi	r Colleg	e and Univer	sity Pla	nning,
1996.												
2 Achy	utKan	vinde	"Ca	mnus	desig	n in India	a" A1	meric	an vear	Book 1969 (	e - bool	< 2018
2. 11011	uti tuii	, mae,	Cu	npus	aesiB		• , • •		uii your	200m, 1909, (	0000	2010
3. Kevir	n Lync	ch, "Si	te pla	nning	g", M	IT Press,	Cam	bridge	e, 30 Ju	ine 2012.		
4. Sam l	F Mil	ler "D	esig	1 Proe	cess. /	A Primer	for A	rchite	ectural a	nd Interior D	esign"	Van
Nostr	and R	einhol	d. 19	95.							····B··· ,	
Table 30.	Map	ping of	f CO	s wit	h Pos		-					
	PO-	PO	PO	PO-	PO-	<b>PO-6</b>	PO	PO-	PO-9	PO-10	PSO	PSO
<u> </u>	1	-2	-3	4	5		-7	8		2	1	2
	3	3	2	-	3	-	-	2	-	2	3	-
CO-2	3	3	2	-	3 2	-	-	2	-	2	3	-
$\frac{10-3}{10-4}$	ר ג	- 3	ی -	-	د -	-		2 3	-	<u>ک</u>	3	-
CO-4 CO-5	-	-		3	_	-	-   _	-	_	3	-	_
Total	12	9	7	3	9	_	-	9	_	9	12	_
Scaled			-	-	-		1	-	-	2	3	
value	3	2	2	1	2	-	-	2			-	-

**1-5 =1, 6-10=2, 11-15=3** 

0-No relation, 1 –Low Relation, 2 –Medium Relation, 3 –High Relation.

### **XAR401 – HISTORY OF ARCHITECTURE – IV**

### **Course Objectives:**

- 1. To understand Islamic architecture as evolving within specific cultural contexts including aspects of politics, society, religion and climate.
- 2. To gain knowledge on the development of architectural form with reference to Technology, Style and Character in the Mughal rulers.

### **Course Outcome:**

### Domain Level

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

CO1	<i>Understanding</i> the architectural responses with respect to materials, technology, style and character.	Cognitive	Understand
CO2	Understand the characters of Islamic buildings	Cognitive	Understand
CO3	<i>Understand</i> the Islamic style followed in the imperial era and provinces.	Cognitive	Understand
CO4	<i>Understand</i> the evolution of Mughal Architecture in India at different points of time.	Cognitive	Understand
CO5	<i>Gain knowledge</i> on the history related to design thinking, cultural aspiration, social needs, and the evolution of the built environment during the colonial period.	Cognitive	Understand

SUBCODE	SUB NAME	L	Т	Р	С
XAR 401	HISTORY OF ARCHITECTURE - IV	3	0	0	3
C:P:A	3:0:0	L	Т	Р	Н
		3	0	0	3
UNIT – I	INTRODUCTION TO INDO ISLAMIC ARCHITE	ECTU	RE		8

# Advent of Islam into the Indian subcontinent and its impact - Factors Influencing Islamic Architecture- socio-cultural, political - Evolution of building types in terms of forms and functions - the Mosque, the Tomb, and

Minaret, the Madarasa, the Caravanserai.

Elements and character of Islamic architecture in terms of structure, materials and methods of construction. Elements of decoration, color, geometry, light.

### UNIT-II ISLAMIC ARCHITECTURE-IMPERIAL ERA

Evolution of architecture under the Slave kings – Khalji - Qutub mosque, Qutub Minar, Tomb of Nasir - ud - din - Mohammed shah, eg.: Alai Darwaya, Tughlaq - eg. Tomb of Ghiyas - ud - din Tughlaq, Kirki mosque, Delhi., Sayyid and Lodhi Dynasties – tombs in Punjab- eg.: Mothi - Ki -Masjid.

## UNIT-III ISLAMIC ARCHITECTURE - PROVINCES

Evolution of regional architecture and the factors influencing - geographic, cultural, political, etc., - Bengal – Adina mosque, Gujarat - earlier period – Mosque at Broach, Jami Masjid at Ahmedabad, middle period - Mosque at Champanir, Teen Darwaza, later period - Siddisayad mosque, Shah Alam Rauza, Adalaj - stepwell, Rani Rupavatis Mosque, Jaunpur- Jami Masjid of Jaunpur, Malwa - royal complex at Mandu, Kashmir – Jami Masjid, Srinagar, Deccan (Gulbarga, Bidar, Golconda and Bijapur)

### UNIT-IV MUGHAL ARCHITECTURE

Evolution of Mughal architecture - cities and gardens under the Mugal rulers Babur - eg. Humayun's Tomb – Delhi, Akbar - Agra fort, Fate-Pur-ikri - site planning, Jodhabais palace, Birbal palace, Diwan-e- khas, Salim Chisti's Tomb & Buland Darwaza; Jahangir - Akbar's mausoleum at Sikandra, Shahjahan - Red fort, Jami Masjid at Delhi, Taj - Mahal - Agra.

### UNIT-V COLONIALARCHITECTURE

Colonial Architecture-I – Early phase-Establishment of forts, warehouses etc-Building typologies and general architectural character of Colonial Indian Architecture.

Design of New Capital of Delhi- Contributions of Edward Lutyens, Herbert Baker(Rashtrapati Bhavan), Layout of New Delhi, Parliament House, North Block and South Block at Rashtrapathi Bhavan.

10

# 9

Monumental: Civic space-Rajpath, Janpath, India Gate etc.

Examples from Goa-Se Cathedral, Cathedral of Bom Jesus (Monumental Architecture). Architecture from Pondicherry-Indian and French Quarters(Domestic Architecture). Brief summary of Dutch and Danish settlements.

# LECTURE TUTORIAL PRACTICAL TOTAL 45 0 0 45

### TEXT

- 1. Percy Brown, "Indian Architecture (Islamic Period)", Taraporevala and Sons, Bombay, 1983.
- 2. Satish Grover, "Islamic Architecture of India", CBS Publishers, New Delhi, 2002.
- 3. Christoper Tadgell, "The History of Architecture in India from the Dawn of civilization to the End of the Raj", Longmon Group U.K.Ltd., London, 1990.

### REFERENCES

- 1. Christopher Tadgell, "The History of Architecture in India", Penguin Books (India) Ltd, New Delhi, 1990.
- 2. R.Nath, "History of Mughal Architecture", Vols I to III Abhinav Publications, New Delhi, 1985.
- 3. Catherine Asher, "Architecture of Mughal India", Cambridge University Press, 2001.
- 4. Monica Juneja, "Architecture in Medieval India: Forms, Contexts, Histories", New Delhi, Permanent Black, 2001

Table 3	31. Ma	pping	of Cos	s with ]	Pos:							
	PO	PO	PO	PO	PO	PO	PO	PO	PO	<b>PO1</b>	PSO	PSO
	1	2	3	4	5	6	7	8	9	0	1	2
<b>CO1</b>	3	1		-								
CO2	3	3	3									
<b>CO3</b>	2	1	2									
<b>CO4</b>	1	1	1									
CO5	2	2	2	-								
Total	11	10	9									
Scale							-					
d	3	2	2	0	0	0	0	0	0	0	0	0
Value												

 $1-5 \rightarrow 1, 6-10 \rightarrow 2, 11-15 \rightarrow 30$  - No Relation, 1 - Low Relation, 2- Medium Relation, 3- High Relation.

- 2. To educate the fundamentals of climate and human comfort.
- 3. To understand the movement of the sun and its impact on building design.
- 4. To understand various building materials and their thermal performance.
- 5. To inform about air patterns around buildings and the effect of wind on design and siting of Buildings.
- 6. To give exposure to various design strategies adopted in different climatic zones.

Cours	se Outc	ome: D	omain		Leve	el			
On the	e succe	ssful completion of the course, students will	be able	to					
CO1	Under appro	stand climatic types and design Co aches	gnitive	U	Inderst	and			
CO2	Analy design	ze the movement of sun and wind and a various types of shading devicesAf Psy	fective chomot or		Analyze Create				
CO3	Under variou	stand the thermal performance of Co s building materials	gnitive	U	Inderst	and			
CO4	Able 1	o design climatic conscious buildings Psy	chomot or		Creat	e			
CO5	Under humic climat	stand Design considerations for warmCoI, hot dry, composite and uplandes, Heavy rainfall regions	gnitive	U	Inderst	and			
SUBC	CODE	SUB NAME	L	Т	P	С			
XAR	402	CLIMATE AND ARCHITECTURE	3	0	0	3			
C:P:A	L	1.8:0.9:0.3	L	Т	Р	Η			
			3	0	0	3			
UNIT	– I	CLIMATE AND THERMAL SENSATIC	N			10			
	Factors that determine climate - Components of climate Characteristics of climate types, Building design Approaches- Bod heat balance - Effective temperature - Comfort zone. Exercises of								

	Mahone	y chart, Comfort	zone calculation	, etc.,						
UNIT – II	SOLAR	CONTROL			10					
	Solar ge	cometry - Solar	chart – Sun par	th diagram - Su	n angles and					
	shadow	angles. Design	of solar shadi	ng devices Stu	udy projects,					
	Shading	device study mo	dels, etc.,							
UNIT – III	HEAT I	<b>ELOW THROU</b>	GH BUILDING	G MATERIALS	7					
	Basic p	rinciples of Hea	at Transfer, Per	rformance and j	properties of					
	different	materials- calcu	lation of 'U' val	lue - Time lag ar	nd decrement					
	of buildi	ng elements-Stud	dy projects							
UNIT – IV	AIR MO	OVEMENT			8					
	Wind ro	ose - Wind sha	dows -The effe	ects of topograp	ohy on wind					
	patterns	- Air movement	around and throu	ugh buildings -Tł	ne use of fans					
	- Stack e	effect -Venturi eff	fect - Thermally	-induced Air curr	ents – Use of					
	courtyar	d.								
UNIT – V	SHELT	ER DESIGN IN	TROPICS		10					
	Design o	considerations for	r warm humid, ł	not dry, composit	e and upland					
	climates	, Heavy rainfall 1	regions. Landsc	ape and climatic	design. Mini					
	projects	in relation with A	Architectural Des	sign						
		LECTURE	TUTORIAL	PRACTICAL	TOTAL					
		45	0	0	45					
TEXT			L							
1. O.H. Ko	1. O.H. Koenigsberger and Others, "Manual of Tropical Housing and Building" –									
Part I -C	Part I -Climate design, Orient Longman, Madras, India, 2010.									
2. Bureau of Indian Standards IS 3792, "Hand book on Functional requirements of										
building	s other tha	n industrial build	lings", 1987.	1						
REFERENC										
	ES									
1. Galloe, S	<b>Salam and</b>	Sayigh A.M.M.,	"Architecture, (	Comfort and Ener	·gy",					

- 2. M.Evans- Housing, Climate and Comfort Architectural Press, London, 1980.
- 3. B.Givoni, Man, Climate and Architecture, Applied Science, Banking, Essex, 1998.
- Donald Watson and Kenneth Labs., Climatic Design McGraw Hill Book Company- New York - 1983.
- B. Givoni, "Passive and Low Energy Cooling of building", Van Nortrand Reinhold New York, USA, 1994.

### e- REFERENCES

- 1. http://www.envinst.conu.edu/~envinst/research/built.html
- 2. www.terin.org/
- 3. http://www.pge.com/pec/archives/w98 passi.html
- 4. http://solstice.crest.org/efficiency/index.shtml

### Table 29. Mapping of COs with Pos

	PO-1	PO -2	PO -3	PO -4	PO- 5	PO-6	PO -7	PO-8	PO- 9	PO-10	PSO1	PSO 2
CO-1	-	_	-	1	-	-	-	2	_	-	-	-
CO-2	-	-	-	-	-	-	-	2	-	-	-	-
CO-3	2	-	-	2	-	2	-	2	-	-	3	-
CO-4	2	-	-	2	-	2	-	3	-	-	3	-
CO-5	3	-	-	2	-	3	-	3	-	-	3	-
Total	7	-	-	6	-	7	-	12	-	-	9	-
Scaled value	2	0	0	2	0	2	0	3	0	0	2	0

1-5 =1, 6-10=2, 11-15=3

0-No relation, 1 -Low Relation, 2 -Medium Relation, 3 -High Relation.

# XAR403 – DESIGN OF STRUCTURES - I

- 1. To understand the different techniques for analysis of **structures**.
- 2. To learn the behavior and design of structural steel

Cours	se Outc	ome:	Don	nain		Leve	el			
On the	e succe	ssful completion of the course, students w	vill be	able t	0					
C01	Under structu	<i>rstand and Design</i> advanced concrete ures (prestress and Prefabricated ures).	Psycho or	omot	Cı	reatir	ıg			
CO2	Under to d efficie	rstand the differentsteel connections. esign steel joints for maximum ency and strength.	Cogni	tive	Understand					
CO3	Analy differe code I	<i>ze</i> to design tension members for ent support conditions by applying the provisions	Affec	tive	An	alyzi	ng			
CO4	Analy differe	<i>ze</i> to design compression members for ent conditions.	Affec	tive	Analyzing					
CO5	<b>Desig</b> and co	<i>n</i> a reinforced concrete circular slabs 1 oncrete wall	Psycho or	omot	Create					
SUBC	CODE	SUB NAME		L	Т	P	C			
XAR	403	DESIGN OF STRUCTURES – I		3	0	0	3			
C:P:A	<b>L</b>	0.6:1.2:1.2		L	Т	Р	Н			
				3	0	0	3			
UNIT	' – I	ADVANCED CONCRETE STRUCTU	URES			:	9			
		<ul> <li>Principles of Prestressing – Methods of Prestressing – Materials used –</li> <li>Analysis and Losses of prestressing, simple problems. Principles of</li> <li>Post-tensioning – Methods of Post-tensioning – Materials used –</li> <li>Analysis and Losses of Post-tensioning, simple problems.</li> <li>Prefabrication of structures – dimension analysis.</li> </ul>								

UNIT – II	STEEL SEC	CTIONS AN	D RIVETE	D, WELDED	&	9			
	DOLIED JU	/IN15							
	Properties of	rolled steel s	ections, rivete	d joints, Analysis	s and I	Design			
	of riveted join	nts (Excluding	eccentric Cor	nnections)					
	Types of w	elding, perm	nissible stress	es, Design of	fillet	welds			
	(excluding eco	centric connec	ctions) Design	of the bolt conne	ection.				
UNIT – III	TENSION M	IEMBERS				9			
	Introduction -	- Net section	al area – per	missible stresses	. Des	ign of			
	axially loaded	l Tension mer	nber – Lug an	gle – code provis	ion – t	ension			
	splice.		U	C 1					
	1								
UNIT – IV	COMPRESS	ION MEMB	ERS			9			
	Introduction -	- various secti	ons – built-up	section – Design	of colu	ımns			
	(excluding La	cing, Battenir	ng and other co	onnections)					
UNIT – V	DESIGN OF	CIRCULAR	R SLAB AND	CONCRETE		_			
	WALLS					9			
	Design of cor	ncrete walls –	Design of car	ntilever – Cantile	ever ret	aining			
	walls – Shear	wall. Classifi	cation of wall	s. Design of Simp	oly sup	ported			
	and fixed Circular slabs subjected to uniformly distributed loads								
		LECTUR	TUTORIA	PRACTICAL	ΤΟ	ГАТ			
		E	L						
			-	Λ		5			
		45	U	V	-				
TEXT		·		······					
1. 1. Ra	machandra S	Design of Ste	el Structures (	Oxford 2015					

- 2. "N. *Krishna Raju*". *Design* of Prestressed Concrete *Structures*Tata McGraw-Hi Education, 2015
- P. Dayarathnam, Design of Reinforced Concrete Structures, Oxford and IBH Publishing Co.,1 January 2017.

### REFERENCES

- M.R. Shiyekar, 'Limit State Design in Structural Steel', PHI Learning Private Limited, 2013
- 2. Dr. V. L. Shah and Prof.Veena Gore, 'Limit State Design of Steel Structures', Structures Publications, Pune, 2012.
- 3. S.S. Bhavikatti, 'Design of Steel Structures by Limit State Method as per IS800-2007',
- 4. I.K.International Publishing House Pvt, Ltd, 2012.
- IS 800 2007 Code of Practice for Use of Structural Steel in General Building Construction
- 6. SP6 IS Handbook for Structural Engineers.

	PO-1	PO -2	РО -3	PO -4	РО- 5	PO-6	PO -7	PO -8	PO-9	PO-10	PSO1	PSC 2
CO-1	-	-	2	-	-	-	-	-	1	-	-	-
CO-2	-	_	-	-	-	-	-	-	2	-	-	-
CO-3	-	_	-	2	0	0	-	-	2	-	-	-
CO-4	-	-	_	-	-	-	-	-	1	-	-	-
CO-5	-	-	-	-	-	-	-	-	1	-	-	-
Total	_	_	4	2	-	-	-	-	7	-	-	-
Scaled value	-	_	1	1	-	-	-	-	2	-	_	-

### Table 29. Mapping of COs with Pos

1-5 =1, 6-10=2, 11-15=3

0-No relation, 1 – Low Relation, 2 – Medium Relation, 3 – High Relation.

# XXXXXX OPEN ELECTIVE *

• To be attended in another department.

### XAR404 – BUILDING SERVICES - II

2 - 0 - 1 - 3

3 - 0 - 0 - 3

- 1. To teach the fundamentals of lighting systems in buildings.
- 2. To give exposure to the methods of designing the electrical and wiring systems in buildings.

C	ourse O	utcome:			Do	omain	Lev	vel	
0	n the su	ccessful co	ompletion of the course, students wil	l be d	able to				
C	01	Explain	the basics of electrical, lighting and	the	Co	gnitive	Rer	nemberir	ıg
		compone	ents.						
C	02	Illustrat	e the fundamentals of lighting and		Co	gnitive	Understanding		
		prepare	lighting drawings.		Psyc	homotor	Creating		
C	03	<i>Outline</i> solutions	gnitive	Understanding					
C	04	Underst	gnitive	Understanding					
C	05	Analyze	fective	Analyzing					
		and Solv	<i>e</i> simple Acoustical problems		Psyc	homotor	Cre	ate	
	SUBC	ODE	SUB NAME	L		Т	P	С	
ľ	XAR 4	04	BUILDING SERVICES – I I	2		0	1	3	
	C:P:A		2.1:0.6:0.3	L		Т	Р	H	
				2		0	1	4	
U	NIT – I	ELECT	FRICAL SYSTEMS					•	
		Basics	of Electricity, Units of Electricity, Di	strib	ution, A	AC, DC, S	Singl	e	

	phase, three-phase supply, protective devices, earthing, electrical	
	installations, Switches, Loading calculations, Symbols and notations in	
	drawings, power requirement for various appliances, location of	
	installations, Typical electrical layout for residences.	
UNIT – II	LIGHTING AND ILLUMINATION	1
		2
	Lighting basics, Elements of lighting, units of lighting-luminous flux,	
	luminous intensity, illuminance and luminance, colour temperature,	
	beam angle and field angle, Lighting level for different uses in outdoor	
	and indoor environments. Daylighting - Daylight Considerations for	
	designing with daylight - typology, room dimensions, openings.	
	Daylight Factor.Artificial Lighting -concepts –lighting layers,	
	techniques, Lighting sources-lamps and luminaries, control devices,	
	Case study: Office lighting design.	
UNIT–III	ENERGY-EFFICIENT LIGHTING	1
		4
	Energy afficient technologies and design approaches collection of	
	Energy-enclent technologies and design approaches –selection of	
	luminaries, lighting controls and daylighting, glare from lamps,	
	luminaries, lighting controls and daylighting, glare from lamps, Reducing electric loads, installation and maintenance – LEED	
	luminaries, lighting controls and daylighting, glare from lamps, Reducing electric loads, installation and maintenance – LEED certification & energy-efficient lighting, energy audit for lighting	
	Liefgy-efficient technologies and design approaches –selection of luminaries, lighting controls and daylighting, glare from lamps, Reducing electric loads, installation and maintenance – LEED certification & energy-efficient lighting, energy audit for lighting performance. Solar energy systems for lighting – Photovoltaic systems	
	Energy-efficient technologies and design approaches –selection of luminaries, lighting controls and daylighting, glare from lamps, Reducing electric loads, installation and maintenance – LEED certification & energy-efficient lighting, energy audit for lighting performance. Solar energy systems for lighting – Photovoltaic systems for Residential/Commercial buildings. Case studies and exercises	
	Energy-efficient technologies and design approaches –selection of luminaries, lighting controls and daylighting, glare from lamps, Reducing electric loads, installation and maintenance – LEED certification & energy-efficient lighting, energy audit for lighting performance. Solar energy systems for lighting – Photovoltaic systems for Residential/Commercial buildings. Case studies and exercises involved in the above.	
UNIT-IV	Energy-efficient technologies and design approaches –selection of luminaries, lighting controls and daylighting, glare from lamps, Reducing electric loads, installation and maintenance – LEED certification & energy-efficient lighting, energy audit for lighting performance. Solar energy systems for lighting – Photovoltaic systems for Residential/Commercial buildings. Case studies and exercises involved in the above. <b>FUNDAMENTALS OF ACOUSTICS</b>	
UNIT-IV	<ul> <li>Energy-efficient technologies and design approaches –selection of luminaries, lighting controls and daylighting, glare from lamps, Reducing electric loads, installation and maintenance – LEED certification &amp; energy-efficient lighting, energy audit for lighting performance. Solar energy systems for lighting – Photovoltaic systems for Residential/Commercial buildings. Case studies and exercises involved in the above.</li> <li>FUNDAMENTALS OF ACOUSTICS</li> <li>Fundamentals – sound waves, wavelength, frequency, intensity,</li> </ul>	
UNIT-IV	<ul> <li>Energy-efficient technologies and design approaches –selection of luminaries, lighting controls and daylighting, glare from lamps, Reducing electric loads, installation and maintenance – LEED certification &amp; energy-efficient lighting, energy audit for lighting performance. Solar energy systems for lighting – Photovoltaic systems for Residential/Commercial buildings. Case studies and exercises involved in the above.</li> <li>FUNDAMENTALS OF ACOUSTICS</li> <li>Fundamentals – sound waves, wavelength, frequency, intensity, Octave, the measure of sound, decibel scale, speech and music</li> </ul>	
UNIT-IV	<ul> <li>Energy-efficient technologies and design approaches –selection of luminaries, lighting controls and daylighting, glare from lamps, Reducing electric loads, installation and maintenance – LEED certification &amp; energy-efficient lighting, energy audit for lighting performance. Solar energy systems for lighting – Photovoltaic systems for Residential/Commercial buildings. Case studies and exercises involved in the above.</li> <li>FUNDAMENTALS OF ACOUSTICS</li> <li>Fundamentals – sound waves, wavelength, frequency, intensity, Octave, the measure of sound, decibel scale, speech and music frequencies, NC curves. Indoor Acoustics -Material property -</li> </ul>	
UNIT-IV	<ul> <li>Energy-enhcient technologies and design approaches –selection of luminaries, lighting controls and daylighting, glare from lamps, Reducing electric loads, installation and maintenance – LEED certification &amp; energy-efficient lighting, energy audit for lighting performance. Solar energy systems for lighting – Photovoltaic systems for Residential/Commercial buildings. Case studies and exercises involved in the above.</li> <li>FUNDAMENTALS OF ACOUSTICS</li> <li>Fundamentals – sound waves, wavelength,frequency, intensity, Octave, the measure of sound, decibel scale, speech and music frequencies, NC curves. Indoor Acoustics -Material property - absorption, reflection, scattering, diffusion, transmission. Absorption</li> </ul>	
UNIT-IV	<ul> <li>Energy-efficient technologies and design approaches –selection of luminaries, lighting controls and daylighting, glare from lamps, Reducing electric loads, installation and maintenance – LEED certification &amp; energy-efficient lighting, energy audit for lighting performance. Solar energy systems for lighting – Photovoltaic systems for Residential/Commercial buildings. Case studies and exercises involved in the above.</li> <li>FUNDAMENTALS OF ACOUSTICS</li> <li>Fundamentals – sound waves, wavelength, frequency, intensity, Octave, the measure of sound, decibel scale, speech and music frequencies, NC curves. Indoor Acoustics -Material property - absorption, reflection, scattering, diffusion, transmission. Absorption coefficient, NRC. Sound Transmission – Airborne, Structure borne,</li> </ul>	
UNIT-IV	<ul> <li>Energy-efficient technologies and design approaches –selection of luminaries, lighting controls and daylighting, glare from lamps, Reducing electric loads, installation and maintenance – LEED certification &amp; energy-efficient lighting, energy audit for lighting performance. Solar energy systems for lighting – Photovoltaic systems for Residential/Commercial buildings. Case studies and exercises involved in the above.</li> <li>FUNDAMENTALS OF ACOUSTICS</li> <li>Fundamentals – sound waves, wavelength,frequency, intensity, Octave, the measure of sound, decibel scale, speech and music frequencies, NC curves. Indoor Acoustics -Material property - absorption, reflection, scattering, diffusion, transmission. Absorption coefficient, NRC. Sound Transmission – Airborne, Structure borne, Sound Transmission Class (STC), Impact Insulation Class (IIC).</li> </ul>	

	absorbers.											
UNIT –V	INDOOR AND ENVIRONMENTAL ACOUSTICS											
	Acoustical criteria	for various spa	ces – conference	rooms, lecture								
	halls, recording s	studios, Open-	air theatres and	auditoriums.								
	Importance of shap	be volume, trea	tment for interior	surfaces, etc.								
	Indoor Acoustics - Reverberation time, optimum reverberation time,											
	echo, early decay time. Environmental Acoustics –Types of noise and											
	its control at site le	evel -and urban	level-geometrical	changes, noise								
	barriers. Structure b	porne and airbo	rne noise control.	Site selection.								
	Simple problems	based on reve	erberation time a	absorption								
	coefficients. Acoust	ic design for sir	nple and small pro	ojects including								
	planning.											
	LECTURE TUTORIAL PRACTICAL TOTAL											
	30	0	30	60								
TEXT												
1. M.K.I	Halpeth, T.Senthil Kur	mar, G.Harikum	ar "Light Right", T	ERI								
public	cations,2004											
2. Jason	Livingston, "Designin	ng with light",W	viley, 2014									
3. Philip	s, "Lighting in Archite	ectural Design",	McGraw Hill. New	w York, 1964								
REFEREN	ICES											
1. Handl	book of Building Engi	neers in metric s	systems, NBO(Indi	a), 1968.								
2. Nation	nal Building Code of I	India, 2016 (NB	C 2016)									
3. Mech	anical and Electrical E	Equipment for B	uildings, Benjamin	Stein, John.S.Reynolds,								
Walte	Walter.T.Grondzik, Alison.G.Kwok, 10th edition, John Wiley and Sons, London, 2006.											
4. 'The Li	4. 'The Lighting Handbook', IES, 2011.											
5. R.G.	Hopkenson & J. D. K	ay, "The lighting	g of Buildings", Fa	ber & Faber, London, 1969.								

Table 3	84. Map	ping of	COs wit	th Pos	I	1	1				1
	PO1	PO2	PO3	PO4	РО 5	PO 6	PO 7	PO8	PO9	PO10	PSO1
CO1				3							
CO2				3							
CO3				3			3				
CO4		<b> </b>		3	 	<u> </u>	3				
CO5				3							1
Total				15							
Scaled Value				3			4				1

1-5 =1, 6-10=2, 11-15=3

0-No relation, 1 – Low Relation, 2 – Medium, Relation, 3 – High Relation.

### XAR405 – MATERIALS AND CONSTRUCTION – III

1 - 0 - 2 - 3

- 1. To provide knowledge about the principles, methods of construction and applications of metals for structural and non-structural building components.
- 2. To enable design and detail the various components of buildings using metals and glass.

Course C	outcome:	Domain
On the su	ccessful completion of the course, students will be able to	
CO1	<i>Identify</i> the appropriate Ferrous materials in	Cognitive
	construction.	
CO2	Ability to design and detail drawings of structural and	Psychomotor
	non-structural building components using Ferrous and	
	Glass	
CO3	Identify the appropriate non Ferrous materials in	Cognitive
	construction	
<b>CO4</b>	Ability to design and detail drawings of structural and	Psychomotor
	non-structural building components using Non-Ferrous	

and Glass.

*Ability* to use metals and glass innovatively in Affective Evaluat buildings

CO5

XAR 405	MATERIALS AND CONSTRUCTION – III	1	0	2	3
C:P:A	1.2:1.2:0.6	L	Т	Р	H
		1	0	2	5

### UNIT – I FERROUS METALS

Introduction to Ferrous metals, Types of Ferrous metals, its properties and applications, Manufacturing process by the blast furnace, oxygen furnace and production of structural shapes, cast steel, hot-rolled, cold-rolled steel, Heat treatment of steel, Coated steel.

6

30

5

28

### **UNIT – II** STEEL CONSTRUCTION

Joining of Steel members, Details of steel framing, Stabilization of steel frames structures, Metal Doors and windows assembly, Steel staircases, Lattice Truss, Beam, Portal Frame and Flat roof Structures, Fireproofing of steel framings. Design and construction parameters developed by INSDAG. Typical Plates: Metal windows, Metal doors, Steel Staircase, Lattice steel roof truss, Tubular Steel roof truss, Steel space frame for flat roof.

### UNIT –III NON FERROUS METALS

Introduction to Aluminum, Physical properties, Manufacture of extruded sections and flat products, Finishes for Aluminum, Fabrication process and connections, Introduction to Copper, Manufacture, Grades and Sizes of Copper, Patina and corrosion, protective coatings, Copper alloys: Bronze, Brass. Titanium – Manufacture, Properties and Uses, Titanium alloys.

### UNIT –IV CONSTRUCTION USING NON-FERROUS METALS

Aluminum doors and windows, Ironmongery, Aluminum glass framing systems, Curtain walls and structural glazing, Exterior wall claddings, Skylights, Interior drywall partition, False ceiling. Application of gaskets, caulking and sealants.

Typical Plates: Aluminium windows, doors, shopfront curtain walls, structural glazing

### systems and aluminum composite panel cladding

UNIT -VGLASS6Introduction to glass, Composition and forming process, Extruded section and cast<br/>glass blocks, Types of glass, Strength of glass, Fire-resistant glass, Insulation glass,<br/>Energy conservation and solar control glass, Acoustic properties of glass.<br/>Typical Plates: Showroom glass wall systems, Glass staircase, Balustrade and glass<br/>partition systems, installation details of glass.

LECTURE	TUTORIAL	PRACTICAL	TOTAL
15	0	60	75

### TEXT

- 1. S.C.Rangwala, Engineering Materials, Charotar Publishing House, India, 43rd edition 2019.
- 2. W.B.Mckay Building Construction, Longmans, U.K.30 December 2013.
- 3. Fundamentals of Building Construction, John Wiley & Sons Inc, 19 March 2020.
- 4. Materials for Architects and Builders, Elsevier, 2010

### REFERENCES

- B.C.Punmia, Building Construction, Laxmi Publications Pvt. Ltd., New Delhi, 2016. Arthur Lyons - Materials for Architects and Builders - An Introduction - Arnold, London, ISBN 9780815363392, Published September 6, 2019, by Routledge.
- 2. Harold B.Olin, Construction Principles Materials and Methods, The Institute of Financial Education, Chicago, 1980.
- 3. Time-Saver Standards for Architectural Design Data, Calendar JH, McGraw-Hill, 1974.
- 4. Don A. Watson, Construction Materials and Processes, McGraw Hill Co., 1972.

### e- REFERENCES

- 1. http://www.britmetfed.org.uk/frmedu.html
- 2. http://www.indiabussinessonline.com
- 3. http://www.nrwas.com
- 4. http://www.arcadiaproducts.com
- 5. http://www.sail.com.in

Table 35. Mapping of COs with Pos												
	PO1	PO 2	PO 3	PO4	PO5	PO 6	РО 7	PO8	PO9	PO10	PSO1	PSO2
CO1		-		3	3							
CO2		-		3	3							
CO3		-		3	3							
<b>CO4</b>				3	3							
CO5				3	3						3	
Total				15	15						3	
Scale d Valu e				3	3						3	

1-5 =1, 6-10=2, 11-15=3

0-No relation, 1 –Low Relation, 2 –Medium Relation, 3 –High Relation.

# XAR406– ARCHITECTURAL DESIGN – III

0 - 0 - 12 - 12

- 1. To develop skills for designing functional and aesthetical spaces
- 2. To develop skills to study, analyze and provide design solutions
- 3. To apply the basic design principles in medium-scale built forms.
- 4. To develop skills such as presentation drawings, rendering, visualizing and expressing ideas through scale models.

Course	Outcome:	Domain	Level							
On the successful completion of the course, students will be able to										
CO1	<b>Understand</b> the space and furniture's required for various human activities and their influences in arriving with the circulation patterns	Cognitive	Knowledge							
CO2	<i>Design</i> of medium-scale public buildings with structural, utility, aesthetics and material	Psychomotor	Create							

	considerations by applying the knowledge gained										
	in case studies.										
CO3	Ability toStudy & Analyze the existing rural	Cognitive	Analyze &								
	settlements and identify the need and demand	Affective	Apply								
	and give solutions.										
CO4	Ability to provide design proposals for rural	Psychomotor		Crea	te						
	settlement.										
CO5	Ability to represent design ideologies as 2 and 3-	Psychomotor	Application								
	dimensional drawings, views and models	Affective	Create								
	inappropriate scale.										
SUBCO	DE SUB NAME	L	Т	Р	С						
XAR 40	6 ARCHITECTURAL DESIGN – III	0	0	12	12						
C:P:A	3.4:5.2:3.4	L	Т	Р	Η						
		0	0	12	12						
UNIT –	I DESIGN STUDIO				70						

#### UNIT – I **DESIGN STUDIO**

Problem-related to multi-room, single-use, small span - multiple story, Horizontal and vertical movement, Active cum passive energy, conventional and frame type buildings.

Examples: Department store, Library, higher secondary school, campus students' center, etc. The projects will consciously provide for movement and use by the physically handicapped and elderly.

#### UNIT – II **DESIGN STUDIO - RURAL PROJECT**

Problems related to Rural Housing - Visits to selected village - surveys on socio-economic, physical, housing and surveys, etc. to study existing conditions - analysis of survey data - preparation of report and presentation in a seminar - identifying the need and demand of the society - preparation of design solutions for housing and community facilities.

# LECTURE TUTORIAL PRACTICAL TOTAL

0 0 180 180

### TEXT

 Quentin Pickard RIBA - The Architects' Hand Book - Bladewell Science Ltd. -2002

# REFERENCES

- De Chiara and Callender, Time-Saver Standard for Building Types, McGraw-Hill Co., 2nd Edition, 1980.
- 2. P&D Act 1995.
- Edward D.Mills, Planning The Architects Handbook 10th Edition, British Library Cataloguing in Publication Data, 1985.
- 4. AndrewAlpern, Handbook of Speciality Elements in Architecture, McGraw-Hill Book Co., 1982.
- 5. Neufert Architect's Data, Rudolf Herg, Crosby Lockwood and Sons Ltd., 1970.

Table 3	Table 36. Mapping of COs with Pos											
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PSO 1	PSO 2
CO1	3	3	2		2		-	3	-	-	3	3
CO2	3	3	2	3	3	3	-	3	-	-	3	3
CO3	3	3	3	3	3	3	-	3	-	-	3	3
CO4	3	3	3	3	3	3	-	3	-	-	3	3
CO5	3	3	3	3	3	3		3	-	-	3	3
Total	15	15	13	12	14	12	-	15	-	-	15	15
Scale d Value	3	3	3	3	3	3	-	3	-	-	3	3

1-5 =1, 6-10=2, 11-15=3

0-No relation, 1 – Low Relation, 2 – Medium Relation, 3 – High Relation.
### **XAR - 501 - CONTEMPORARY ARCHITECTURE**

# 3 - 0 - 0 - 3

#### **Course objectives:**

- 1. To understand the evolution of important styles and their chronological order
- 2. To understand the factors that helped cause the various styles
- 3. To understand the origin of modern architecture
- 4. To understand the application of various design philosophies.

Course	Outcome:	Domain	Level
On the	successful completion of the course, students will be able t	0	
CO1	<i>Differentiate</i> the chronological development of architectural style in relation to material development and cultural change.	Cognitive	Analyze
CO2	<i>Interpret</i> the spatial configuration and three- dimensional articulation of master architects works.	Cognitive	Apply
CO3	<i>Examine</i> the contextual design solution, Spatial organization and spatial qualities of different typologies of buildings.	Cognitive	Analyze
CO4	<i>Develop</i> the knowledge towards logical design development.	Cognitive	Create
CO5	<i>Understand</i> the characteristics of international styles and alternatives.	Cognitive	Analyze

SUBCODE	SUB NAME	L	Т	Р	С
XAR 501	CONTEMPORARY ARCHITECTURE	3	0	0	3
C:P:A	3:0:0	L	Т	Р	Н
		3	0	0	3
UNIT – I	NEO CLASSICAL ARCHITECTURE				5

#### UNIT – I **NEO CLASSICAL ARCHITECTURE**

Chronological order of developments that led to Neo-Classical Architecture. The works of Boulle: Cenotaph of Isaac Newton, The works of Ledoux: Theatre at Beseneon.

### UNIT – II INDUSTRIAL REVOLUTION AND ITS IMPACT

Industrial revolution: Definition, factors caused it, its impact on building industry and city. Discovery of new materials: Cast iron (later Steel) sheet glass and cement and their impact on building industries, the discovery of new Services: Lift, Telephone, Room heating, Waste disposal, etc. and their impact.

Crystal Palace, London by Joseph Paxton, Arts and craft movement: Principle and factors caused it.

Art- Noveau movement: Principles and factors caused it, Chicago school of Architects: their principles and work, Example: Louis Sullivan and his skyscrapers, Principles of Gaudi and works: Casa Balto

Principles of Mackintosh and works: Glasco School of Arts

### UNIT – III DEVELOPMENT UPTO 1920

Early principles and work of FL Wright (Winslow house, Robi House, Le Corbusier (Ron Champ) principles of Adolf Loos with one example. Design philosophies: manifested of Futurist Architecture By Antonio Sant' Eliya, Cubish, Destijl, constructivism (with an example each) expressionism (Ex Mendelson's, Einstein's tower) Peter Behrens and his contributions to Werkbund with examples (Turbinen Fabric Building Berlin) Walter Gropius and his contribution to Bauhaus institute and his works( ex. Bauhaus Building at Dessau)

The contribution made by the Bauhaus institute to modern architecture

#### UNIT – IV DEVELOPMENT UPTO 1950

Later works of F.L.Wright and Le Corbusier( Ex. Museum of Modern Art, New York, Villa Savoy, united habitat, Marsalis)

Evolution of International Style: works of Mies Vander Rohn and Eero Saarinen Alternative theories: Louis Khan, Alvar alto and Paul Rudolph with one example each.

# UNIT-V INTERNATIONAL STYLE AND ALTERNATIVES

6

12

13

9

International Style – General Characteristics and trends of Team-X and its Manifesto. Its influence: the works of Aldo Van Eyck, Ralph Erskin and Lousien Kroll with one example each. Alternative theories.

TUTORIAL

PRACTICAL TOTAL

	45	0	0	45
ГЕХТ				

**LECTURE** 

- 1. Willam J.Curtis, Modern Architecture Since 27 June 1996.
- 2. Bill Risebero, Modern Architecture and Design 1 January 1983.
- 3. Kenneth Frampton, Modern Architecture: A Critical History, Thames and Hudson, London, 28 August 2007.

#### REFERENCES

- 1. Thomas Metcalf, An Imperial Vision, Faber and Faber, London, 2002.
- Manfredo Taferi / Francesco dal co., Modern Architecture, Faber and Faber/Electa, 15 Jul 1991.
- 3. Sigfried Giedion, Space-Time and Architecture: The Growth of a New Tradition, Harva University Press, 1978.

Table 3	Table 37. Mapping of COs with POs												
	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	<b>PO8</b>	PO9	PO10	PSO1	PSO2	
CO1	3	1		-	-	-	-	-	-	-	-	-	
CO2	3	3	3	-	-	-	-	-	-	-	-	-	
CO3	3	2	2	-	-	-	-	-	-	-	-	-	
CO4	3	3	3	-	-	-	-	-	-	-	-	-	
Total	12	9	8	-	-	-	-	-	-	-	-	-	
Scaled Value	3	2	2	-	_	_	-	-	-	-	-	-	

1-5 =1, 6-10=2, 11-15=30

0-No relation, 1 – Low Relation, 2 – Medium Relation, 3 – High Relation.

#### **XAR - 502 - ENVIRONMENTAL SCIENCES**

#### **Course objectives:**

1. To understand the evolution of important styles and their chronological order.

Cours	se Outcome:	Domain	Level
On th	e successful completion of the course, students will be abl	e to	
CO1	<i>Describe</i> the significance of natural resources and <i>explain</i> anthropogenic impacts.	Cognitive	Remember & Understand
CO2	<i>Illustrate</i> the significance of ecosystem, biodiversity and natural geo biochemical cycles for maintaining ecological balance.	Cognitive	Understand
CO3	<i>Identify</i> the facts, consequences, preventive measures of major pollutions and <i>recognize</i> the disaster phenomenon	Cognitive & Affective	Understand & Receiving
CO4	<i>Explain</i> the socio-economic, policy dynamics and <i>practice</i> the control measures of global issues for sustainable development	Cognitive	Understand Analyze
CO5	<i>Recognize</i> the impact of population and the concept of various welfare programs, and <i>apply</i> modern technology towards environmental protection.	Cognitive	Understand Application

SUBCOD	SUB NAME	L	Т	Р	С
Ε					
XAR 502	ENVIRONMENTAL SCIENCES	3	0	0	3
C:P:A	2.5:0:.5	L	Т	Р	Н
		3	0	0	3

# UNIT – I INTRODUCTION TO ENVIRONMENTAL STUDIES AND 12 ENERGY

Definition, scope and importance – Need for public awareness – Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people – Water resources: Use and over-utilization of surface and groundwater, flood,

drought, conflicts over water, dams-benefits and problems – Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies - Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, waterlogging, salinity, case studies – Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources, case studies - Land resources: Land as a resource, land degradation, man-induced landslides, soil erosion and desertification – Role of an individual in conservation of natural resources – Equitable use of resources for sustainable lifestyles.

7

10

10

#### UNIT – ECOSYSTEMS AND BIODIVERSITY

Π

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, characteristic features, structure and function of the (a) Forest ecosystem (b) Grassland ecosystem (c) Desert ecosystem (d) Aquatic ecosystem (ponds, streams, lakes, rivers, oceans, estuaries) – Introduction to Biodiversity - Definition: genetic, species and ecosystem diversity -Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

#### UNIT -**ENVIRONMENTAL POLLUTION**

Ш

Definition – Causes, effects and control measures of (a) Air pollution (b) Water pollution (c) Soil pollution (d) Marine pollution (e) Noise pollution (f) Thermal pollution (g) Nuclear hazards - Solid waste management: Causes, effects and control measures of urban and industrial wastes - Role of an individual in prevention of pollution - Pollution case studies - Disaster management: flood, earthquake, cyclone and landslide.

#### UNIT – SOCIAL ISSUES AND THE ENVIRONMENT

IV

Urban problems related to energy – Water conservation, rainwater harvesting,

watershed management – Resettlement and rehabilitation of people; its problems and concerns, climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust, Wasteland reclamation – Consumerism and waste products – Environment Protection Act – Air (Prevention and Control of Pollution) Act – Water (Prevention and Control of Pollution) Act – Water (Prevention Act – Issues involved in the enforcement of environmental legislation – Public awareness.

#### UNIT-V HUMAN POPULATION AND THE ENVIRONMENT

Population growth, variation among nations – Population explosion – Family welfare programme – Environment and human health – Human rights – Value education - HIV / AIDS – Women and Child welfare programme– Role of Information Technology in Environment and human health – Case studies.

LECTURE	TUTORIA	PRACTICAL	TOTAL
	L		
45	0	0	45

6

#### TEXT

- 1. Miller T.G. Jr., Environmental Science, Wadsworth Publishing Co, USA, 2000.
- Townsend C., Harper J and Michael Begon, Essentials of Ecology, Blackwer Science, UK, August 2014.
- Trivedi R.K and P.K.Goel, Introduction to Air pollution, Techno Science Publication India,6 September 2016.
- Disaster mitigation, Preparedness, Recovery and Response, SBS Publishers & Distributors Pvt. Ltd, New Delhi, 2006.
- 5. Introduction to International disaster management, Butterworth Heinemann, 2015.
- 6. Gilbert M.Masters, Introduction to Environmental Engineering and Science, Pearson Education Pvt., Ltd., Second Edition, New Delhi, 2004.

#### REFERENCES

- 1. Trivedi R.K., Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards, Vol. I and II, Enviro Media, India, 2009.
- Cunningham, W.P.Cooper, T.H.Gorhani, Environmental Encyclopedia, Jaico Publ., House, Mumbai, 2001.

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- 3. https://www.free-ebooks.net/ebook/What-is-Biodiversity
- 4. https://www.learner.org/courses/envsci/unit/unit_vis.php?unit=4
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- 6. http://www.e-booksdirectory.com/details.php?ebook=8557
- 7. http://www.e-booksdirectory.com/details.php?ebook=6804
- 8. http://bookboon.com/en/atmospheric-pollution-ebook
- 9. http://www.e-booksdirectory.com/details.php?ebook=3749
- 10. http://www.e-booksdirectory.com/details.php?ebook=2604
- 11. http://www.e-booksdirectory.com/details.php?ebook=2116
- 12. http://www.e-booksdirectory.com/details.php?ebook=1026
- 13. http://www.faadooengineers.com/threads/7894-Environmental-Science.

Table 3	Table 38. Mapping of COs with POs											
	PO	PO	PO	PO	PO	PO	PO	PO	PO	<b>PO1</b>	DCO1	PSO
	1	2	3	4	5	6	7	8	9	0	<b>F501</b>	2
<b>CO1</b>			•						1		3	
CO2			0					3	1		3	
CO3		Ī	Ī					3	1		3	
CO4								3	1		3	
CO5								3	1		3	
Total								12	5		15	
Scale												
d	0	0	0	0	0	0		3	1	0	3	0
Value												

1-5 =1, 6-10=2, 11-15=30

0-No relation, 1 – Low Relation, 2 – Medium Relation, 3 – High Relation.

# XAR503 – DESIGN OF STRUCTURES - II

3 - 0 - 0 - 3

# **Course Objectives:**

- 1. To teach the fundamentals of reinforced concrete design with emphasis on the design of RCC structural elements through working stress and limit state methods.
- 2. Analyze and design reinforced concrete structural members under bending, shear, and /or axial loads according to IS code provisions

COUS	SE CODE		L	Т	P	С		
COUS	SE NAME	DESIGN OF STRUCTURES - II		3	0	0	3	
PRER	EQUISITES	NIL		L	Т	P	Η	
C:P:A		C:P:A = 3:0:0		3	0	0	3	
COUF	RSE OUTCON	IES	DOMA	IN	LEVEL			
CO1	Understand	the concepts of working stress	Cogniti	ve	Unde	rstan	ıd	
	method of des	ign						
CO2	Design reinfor	Cogniti	ve	Creat	ive			
CO3	Design rectan	ve	Creat	ive				
<b>CO4</b>	Design colum	ive Creative						
CO5	Design shallov	ve	Creative					
UNIT	– I PROPER	TIES OF CONCRETE & WORKI	NG STRE	ESS M	IETHO	)D	9	
OF DI	ESIGN							
Structu	ural properties	of concrete - Grades and Strengt	h of conc	erete -	– Dura	abilit	у –	
Reinfo	orcing steel – C	ode Provisions of concrete and steel -	- Introduct	ion to	worki	ng st	ress	
metho	d – Design of re	ectangular beams for bending and shea	ar.					
UNIT – III LIMIT STATE DESIGN OF BEAM 9								
Limit state design of beam - Design of rectangular and Flanged beams for bending and								
shear								
UNIT – II LIMIT STATE DESIGN – INTRODUCTION & DESIGN OF 9								
SLAB								

Introduction to the Limit state method – partial safety factor - Limit state design of slab – Design of one-way slab – Two-way slab using IS Code for various edge conditions - Design of Flat slabs.

UNIT –	- IV DI	ESIGN	OF C	COLUN	MN AN	ND ST	AIRC	ASE				9
Limit st	ate desi	gn of c	column	- Desi	ign of a	axially	loaded	l short	and lo	ng colu	mns –	
Eccentr	ically lo	aded c	olumn	- Stai	rcase a	nd its	types -	Desig	n of do	og-legge	ed stairca	ise.
UNIT -	-V DE	SIGN	OF FO	DUND	ATIO	NS						9
Foundat	tion and	its typ	bes – I	Design	of Iso	lated F	Footing	– Cor	nbined	rectang	gular foo	ting
				LEC	ΓURE	TUI	ORIA	L P	RACT	ICAL	TO	ΓAL
HOUR	S			4	5		0		0		4	5
TEXT			I									
REFER	RENCE	S										
<ol> <li>1.</li> <li>2.</li> <li>3.</li> <li>4.</li> <li>5.</li> <li>1999</li> <li>6.</li> <li>Table 3</li> </ol>	S.N. Sir P.Dayar Dr. B.C Delhi, 1 N. Krisl Distribu P.C.Var IS 456-2 Bureau	nha, Re atnam, Punm 994 nna Ra itors, 2 ghese, 2000, 'I of Indi	einforce , 'Desią hiya, R ju, 'De 2016. Limit Indian ian Sta <b>f COs</b>	ed Con gn of R einforc esign o State I Standa undards with F	crete E ceinforc ced Cor f Reinfo Design urd, Pla c, 2000. <b>Pos</b>	Design ced Co ncrete forced of Re in and	Tata M oncrete Structu Concre inforce Reinfo	IcGrav Struct ires, st ite Stru d Con	w-Hill, ures', N andard actures acrete, Concret	New D Medtech Laxmi ', CBS Prentice te, Code	elhi 200 n, 2017. Publicat Publishe e Hall of e of Prac	7. ion, rs and f India- tice',
	PO.	PINg 0	PO.	PO-	PO-	PO.	PO.	PO.	PO-	PO.	PSO1	PSO2
	1	2	3	4	5	6	7	8	9	10	1501	150
CO-1	0	0	0	2	0	0	0	0	0	0	0	0
<b>CO-2</b>	0	2	0	0	0	0	0	0	0	0	0	0
<b>CO-3</b>	0	0	0	2	0	0	0	0	0	0	0	0
<b>CO-4</b>	0	0	2	0	0	0	0	0	0	0	0	0
CO-5	0	0	0	0	0	0	0	0	0	2	0	0
Total	0	2	2	4	0	0	0	0	0	0	0	0
Scaled												

Value

0-No relation, 1 –Low Relation, 2 –Medium Relation, 3 –High Relation.

#### **Course Objectives:**

- 1. To teach the fundamentals of HVAC systems in buildings.
- 2. To give exposure to the methods of providing safety and security systems in buildings.

Cours	se Outcome:	Domain	Level				
On th	e successful completion of the course, students w	ill be able to					
CO1	<i>Illustrate</i> the basics of Refrigeration, components and installations and <i>prepare</i> electrical layout.	Cognitive	Understanding				
CO2	<i>Compare</i> the various systems of HVAC and their applications.	Cognitive	Understanding				
CO3	Classify the various vertical circulation	Cognitive	Understanding				
	components and <i>design</i> them.	Psychomotor	Creating				
CO4	<i>Understand</i> the fire safety requirements of buildings	Cognitive	Understanding				
CO5	<i>Identify</i> fire detection and fire fighting systems	Cognitive	Understanding				
	for buildings and <i>prepare</i> fire escape plans.	Psychomotor	Creating				
SUBC	CODE SUB NAME	L	ТРС				
XAR	504 BUILDING SERVICES – III	2	0 1 3				
C:P:A	<b>A</b> 2.4:0.6:0	L	ТРН				
		2	0 1 4				

# UNIT – I REFRIGERATION PRINCIPLES AND COMPONENTS

10

Thermodynamics. Transfer of heat. Refrigeration cycle components. Vapor compression cycle. Refrigerant, Compressor, condenser, evaporator, refrigerant control devices, electric motors, air handling units, fan coil unit,

chillers, chiller pumps, cooling towers.

#### UNIT – II HVAC SYSTEMS

Local and Central Air conditioning systems and their applications- window type, split system, package unit, direct expansion system, VRF, chilled water system, district cooling systems. Energy-efficient systems, environmental aspects and latest innovations.

Understanding of HVAC Ducting and piping layout drawings.

### UNIT -III VERTICAL CIRCULATION SYSTEMS

Elevators and escalators – types, applications and components. Conveyors, travelators, dumb waiters. Standards for all. Latest technologies in vertical transport systems. Integration of lifts and escalators with building automation systems. Understanding all the above through product catalogues/ field visits. Design exercise on the above through choice, calculations, layout and drawings.

#### UNIT -IV FIRE SAFETY - GENERAL PROVISIONS

Fire, causes of fire and spread of fire. Fire protection, standards - safety regulations - NBC - Planning considerations in buildings like Non-combustible materials, staircases and lift lobbies, general guidelines for egress design, Fire drills, refuge areas.

#### UNIT –V FIRE DETECTION AND FIRE FIGHTING

**Detectors and Alarms -** Types of detectors and usage Heat detectors, smoke detectors, photoelectric detectors, Control panel, buzzer etc.,

**Extinguishing Systems -** Fire fighting: various types of Extinguishers, Pumps, Fire tank (static capacity) Dry and wet risers, Automatic sprinklers. Preparation of Means of Egress layouts.

	LECTURE	TUTORIAL	PRACTICAL	TOTAL
	30	0	30	60
TEXT				

1. National Building Code of India, 2016 (NBC 2016)

14

10

- 2. 'ISHRAE Handbook for Refrigeration', 2015.
- William H. Severns and Julian R Fellows, 'Air conditioning and Refrigeration', John Wiley and

Sons, London, 1988.

4. George R. Strakosch (Editor), Robert S. Caporale, 'The Vertical Transportation Handbook' 4th Edition, Wiley and Sons, 2010.

# REFERENCES

- Mechanical and Electrical Equipment for Buildings, Benjamin Stein, John.S.Reynolds, Walter.T.Grondzik, Alison.G.Kwok, 10th edition, John Wiley and Sons, London, 2006.
- 2. Andrew H Buchanan; 'Structural Design for Fire Safety', Wiley, 2001.
- Swenson S. Don, 'Heating, Ventilating and Air Conditioning', American Technical Publishers, 1995.
- 4. CIBSE Guide D, 'Transportation Systems in Buildings',2010.
- 5. A.K.Mittal, 'Electrical and Mechanical Services in High Rise Building: Design and Estimation
- 6. Manual', CBS, 2009.

Table 4	0. Map	oping o	f COs	with P	os							
	PO1	PO2	PO3	PO4	PO5	<b>PO6</b>	<b>PO7</b>	PO8	<b>PO9</b>	PO10	PSO1	PSO2
CO1	-	-	-	3	-	-	-	-	-	-	-	-
CO2	-	-	-	3	-	-	-	-	-	-	-	-
CO3	-	-	-	3	-	-	2	-	-	-	-	-
CO4	-	-	-	3	-	-	2	-	-	-	-	-
CO5	-	-	-	3	-	-	-	-	-	-	3	-
Total	-	-	-	15	-	-	4	-	-	-	3	-
Scaled Value	-	-	-	3	-	-	1	-	-	-	1	-

1-5 =1, 6-10=2, 11-15=3

0-No relation, 1 – Low Relation, 2 – Medium Relation, 3 – High Relation.

#### XAR 505 – MATERIALS AND CONSTRUCTION - IV 1 - 0 - 2 - 3

#### **Course Objectives:**

- 1. To have an understanding of the properties, characteristics, strength, manufacture, processing and application of cement and cement concrete.
- 2. To understand the specific application of concrete in various building components.
- 3. To Design and detail various concrete staircases.

Course	Outcome:	Domain	Level					
On the	successful completion of the course, students will be	able to						
CO1	<i>Explain</i> the composition, properties, and tests cement <i>Summarize</i> the ingredients properties out	for Cognitive	Understand					
	control of Concrete and its construction process.							
CO2	Understand thev.arious Application of Concret	te in Cognitive	Understand					
	footing, lintels, beams and slabs, and <i>Execute</i> det	ailed Psychomotor	Manipulation					
	drawings of the same.							
CO3	Compare various Processes of Pre-cast concrete,	Post Cognitive	Analyze					
	& Pre tension concrete in construction.							
<b>CO4</b>	Ability to provide specific details of var	rious Cognitive	Understand					
	components of an RCC staircase.	Psychomotor	Manipulation					
	<i>Execute</i> detailed drawings of RCC staircases.							
CO5	Ability to understand the applications of formw	orks Affective	Evaluate					
	and scaffolding in concrete constructions.							
SUBCO	DDE SUB NAME	L	ТРС					
XAR 50	95 MATERIALS AND CONSTRUCTION - IV	1	0 2 3					
C:P:A	1.5:1.5:1.0	L	ТРН					
		1	0 2 5					

#### UNIT – I CEMENT & CONCRETE - INGREDIENTS AND PROPERTIES

12

Varieties of cement, composition, properties and uses - tests for cement - mortar for various works.

Ingredients - suitability requirements for aggregates, grading of aggregates - water mix in concrete - reinforcement - admixtures - properties of concrete. Concreting process - mix proportioning - batching, mixing, transporting, placing, compaction, curing, formwork - quality control - tests for concrete - joints in concrete - concrete finishes. Types of concrete. Ferro cement, FRP, FRC and its applications.

#### UNIT – II CONCRETE CONSTRUCTION – I

Introduction to framed structures. Concrete in foundations - types of footings - isolated, combined, continuous, strap Concrete floors (PCC), walls and partitions. Concrete lintels, sunshades. Concrete beams and columns and slabs – one-way and two-way slabs.

# UNIT -III CONCRETE CONSTRUCTION - II

Pre-cast concrete wall, cast in situ wall, pre cast building elements, pre stressed concrete and its applications. Post & Pre tension concrete.

#### UNIT -IV CONCRETE STAIRCASES

Factors involving staircase design - types of staircases like straight flight, doglegged, quarter turn, bifurcated, spiral helical, etc. - different support conditions like inclined slab, cranked slab, continuous, cantilever – foundations, finishes for staircases - detailing out of handrails and balusters. Designing and detailing for physically handicapped.

#### UNIT –V FORMWORKS & SCAFFOLDING

Fundamentals of formworks and scaffolding. Different types and their applications. Case studies and examples.

LECTURE	TUTORIAL	PRACTICAL	TOTAL
30	0	45	75

#### TEXT

- 1. Dr.B.C.Punmia, Building Construction, Laxmi Publications Pvt. Ltd., New Delhi, 2016.
- 2. Francis D.K.Ching, Building Construction Illustrated VNR, 2008.

### REFERENCES

- 1. S.C.Rangwala, Engineering Materials, Charotar Publishing House, India, 2016.
- 2. Alan Banc, Stairs, Steps and Ramps, Butter worth Heinemann Ltd, 2001.

15

- 3. M.S.Shetty, Concrete Technology, S.Chand & Co. Ltd., New Delhi, 2013.
- 4. W.B.Mckay Building Construction, Longmans, UK, 2013.

	<b>PO1</b>	PO2	PO3	PO4	PO5	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	PO9	PO10	PSO1	PSO2
CO1	-	-		0	-	-	-	-	-	2	-	-
CO2	-	-		3	-	-	-	-	-	2	-	-
CO3	-	_		0	-	-	-	_	-	2	-	-
<b>CO4</b>	-	_	-	3	3	_	-	-	-	1	-	-
CO5	-	-	-	1	3	-	-	-	-	2	-	-
Total	-	_	_	7	6	-	-	-	-	9	-	_
Scaled	_	_		2	2	_	_	_	_	2	_	_
Value				2						2		

0-No relation, 1 – Low Relation, 2 – Medium Relation, 3 – High Relation.

# XAR 506 – COMPUTER APPLICATIONS IN ARCHTECTURE - II 1 - 0 - 2 - 3

# **Course Objectives:**

1. To develop the skill & knowledge in 3D Modelling & Animation.

Cours	e Outcome:				Domain	Level
On the	successful comp	eletion of the d	course, s	tudents will	be able to	
CO1	<i>Ability</i> to use ideas of design	3d modeling	esenting the	Psychomotor	Manipulation	
CO2	Ability to assig scale projects	n lighting for	Psychomotor	Articulation		
CO3	Ability to assign scale to large-set	n material an cale projects.	d textur	e for small-	Psychomotor	Articulation
CO4	<i>Ability</i> to	produce	3d	animated	Psychomotor	Articulation

	video	s/walkthroughs of buildings							
CO5	<i>Recre</i> buildi	<i>tate</i> realistic images of objects and Psyceness by using presentation software.	chorr	notor	M	anipu	lation		
SUBCO	ODE	SUB NAME		L	Т	Р	С		
XAR 5	06	COMPUTERAPPLICATIONSARCHITECTURE - II	IN	1	0	2	3		
C:P:A		0:3:0		L	Т	Р	H		
		1 0 2							
UNIT -	- I	INTRODUCTION							
		<ul> <li>Definition of Computer-based Animation, Basic Types of Animation: Real-Time, Non-real-time, Definition of Modelling, Creation of 3D objects.</li> <li>Exploring the Max Interface, Controlling &amp; Configuring the Viewports, Customizing the Max Interface &amp; Setting Preferences, Working with Files, Setting Object Properties &amp; Duplicating Objects, Creating &amp; Editing Standard Primitive &amp; extended Primitives objects, Transforming objects</li> </ul>							
UNIT -	- II	2D SPLINES & SHAPES & COMPOUND OF	BJEO	CT			8		
		Understanding 2D Splines & shape, Extrude & Understanding Loft & terrain, Modeling simp Understanding morph, scatter, conform, con blobmesh, Boolean, Proboolean & procutter com	& Be ole 4 nnect poun	ovel 2 objec con dobje	D ob ets w npout ect.	vith spind o	to 3D, plines, bjects,		
UNIT–	III	3DMODELLING					20		
		Modeling with Polygons, using the graphite, working with XRefs, Building simple scenes, Building complex scenes with XRefs, using assets tracking, deforming surfaces & using the mesh modifiers, modeling with patches & NURBS							
UNIT -	- IV	<b>KEYFRAME ANIMATION</b>					8		
		Creating Keyframes, Auto Keyframes, Move & Scale Keyframe on the timeline, Animating with constraints & simple controllers, animation Modifiers & complex controllers, function curves in the track view, motion							

	mixer etc.								
UNIT – V	SIMULATIC	N & EFFECT	ГS			12			
	Bind to Space	Warp object,	Gravity, wind, d	lisplace force obje	ect, deflec	tors,			
	FFD space wa	arp, wave, ripp	ole, bomb, Crea	ting particle syste	em throug	gh p-			
	array, underst	tanding partic	le flow user ir	nterface, how to	particle	flow			
	works, hair &	fur modifier, c	cloth & garment	maker modifiers	etc.				
UNIT – VI	LIGHTING8	<b>&amp; CAMERA</b>				8			
	Configuring d	& Aiming Car	meras, camera	motion blur, can	nera dept	h of			
	field, camera	tracking, using	g basic lights &	t lighting Technic	ques, wor	king			
	with advanced	d lighting, Lig	tht Tracing, Ra	diosity, video pos	st, mental	l ray			
	lighting etc.								
UNIT– VII	TEXTURING	G WITH MAY	K			7			
	Using the material editor & the material explorer, creating & applying								
	standard materials, adding material details with maps, creating compound								
	materials & m	aterial modifie	ers, unwrapping	UVs & mapping	texture, u	ısing			
	atmospheric &	k render effects	s etc.						
UNIT – V	RENDERING	G WITH V-R	AY			8			
	V-ray light set	tup, V-ray renc	lering settings, I	HDRI Illuminatio	n, Fine-tu	ining			
	shadows, Fina	l render setting	g etc.						
	Į	LECTURE	TUTORIAL	PRACTICAL	TOTAL				
		30	0	45	75				
TEXT		1							
1. TedBo	1. TedBoardman, 3dsmax7 Fundamentals, Techmedia 16 March 2005.								
2. Micha	el E. Mortensor	n, 3D Modellin	g, Animation, a	nd Rendering, Cro	eatespace	22			
Augus	t 2010.								

Table 4	Table 42. Mapping of COs with Pos											
	PO- 1	PO- 2	PO- 3	PO- 4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PSO1	PSO2
CO-1	-	-	-	3	2	-	-	-	-	3	-	-
CO-2	-	_	-	3	2	-	-	-	-	2	-	-
CO-3	_	_	-	3	3	-	-	-	-	2	-	-
CO-4	-	-	-	3	3	-	-	-	-	3	-	-
CO-5	-	-	-	3	3	-	-	-	-	3	-	-
Total	-	-	-	15	13	-	-	-	-	13	-	-
Scaled value	-	-	-	3	3	-	-	-	-	3	-	-

0-No relation, 1 – Low Relation, 2 – Medium Relation, 3 – High Relation.

# XAR 507 – ARCHTECTURAL DESIGN – IV

0 - 0 - 12 - 12

- 1. To address the socio- cultural & economic needs of contemporary urban society in the process of building design.
- 2. To emphasize the importance of spatial planning by considering the Development Regulations in force for urban areas.
- 3. To emphasize the importance of understanding the relationship between open space and built form, built form to built form and site planning principles involving landscaping circulation network and parking.

Course	Outcome:		
On the s be able t	uccessful completion of the course, students will o	Domain	Level
CO1	<i>Demonstrate</i> the concept of passive design in a built environment.	Cognitive	understanding
CO2	<i>Analyze</i> the impact of spatial configuration at the building level and at site level on passive design.	Affective	Analyzing

CO3	Analyze and interpret different case buildings.	Affective	Analyzing
CO4	<b>Design</b> and development of energy-efficient buildings.	Psychomotor	Creating
CO5	<i>Develop</i> working drawings and models displaying energy-efficient and green building technologies.	Psychomotor	Creating

SUBCODE	SUB NAME	L	Т	Р	С		
XAR 507	ARCHITECTURAL DESIGN - IV	0	0	12	12		
C:P:A	2.4:4.8:4.8	L	Т	Р	Н		
		0	0	12	12		
UNIT – I DESIGN STUDIO							

**Scale and Complexity:** Buildings and small complexes that address the social and cultural needs of contemporary urban life (residential. commercial, institutional); multi bayed, multiple storeys, circulation intensive; passive and active energy

# Areas of concern/ focus

- Socio-cultural and economic aspects
- Designing for the differently abled
- Building byelaws and rules
- Appropriate materials and construction techniques, detailing

# **Design Examples:**

The building project shall be of housing typologies – detached, attached, group housing and so on.

Shopping centers (Commercial) Home for aged, apartments (residential) Health centers, Nursing homes (institutional) etc.

Introduction to three-dimensional modeling of spaces using Computer. Construction and manipulation of three-dimensional building databases, Rendering 3D images and Presentation techniques.

 LECTURE	TUTORIAL	PRACTICAL	TOTAL
0	0	180	18

# TEXT

- Joseph De Chiara, Michael J Crosbie, Time Saver Standards for Building Types, McGraw Hill Professional 2001.
- 2. Ernst Neuferts Architects Data, Blackwell 2002.

# REFERENCES

- 1. Edward D.Mills, Planning, 4 volumes, Newnes, Butterworths, London, 1976.
- 2. Planning & Development Act 2007.
- 3. E and O.E. Planning. Liffee Books Ltd., London, 1973.
- 4. National Building Code and Bureau of Indian standard publications 14 Decceber 2018.

Table 4	Table 43. Mapping of COs with Pos											
	PO-1	РО- 2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PSO1	PSO2
CO-1	3	3	3	3	-	-	-	3	-	-	3	1
CO-2	3	3	3	3	3	2	2	3	3	3	3	1
CO-3	3	3	3	3	3	1	2	3	3	-	3	2
CO-4	3	3	-	3	3	2	2	3	3	3	3	1
CO5	3	3		3	3			3	3		3	2
Total	15	15	-	15	12	5	6	15	12	6	15	8
Scaled value	3	3	2	3	3	2	3	3	3	2	3	2

1-5 =1, 6-10=2, 11-15=3

0 - No relation, 1 – Low Relation, 2 – Medium Relation, 3 – High Relation.

# XAR 601 - VERNACULAR ARCHITECTURE

- 1. To provide an overview of the various approaches and concepts to the study of vernacular architecture.
- 2. To study the various vernacular architecture forms in the various regions of the country.

Course	Outcome	Domain	Level
CO1	Exposed to an overview of the various approaches and concepts to the study of vernacular architecture.	Cognitive	Understand
CO2	Aware of vernacular architecture as a process and not a product.	Cognitive	Knowledge
CO3	Understand the impact of colonial rule on vernacular architecture in India	Cognitive	Knowledge
CO4	Exposure to various vernacular architectural forms in various regions	Psychomotor	Application
CO5	Understanding on the study of Indian vernacular architecture as a process and also toprovide an overview of various approaches and concepts	Cognitive	Knowledge

SUBCODE	SUB NAME	L	Т	P	C					
XAR601	VERNACULAR ARCHITECTURE	3	0	0	3					
C:P:A	2.5:0.5:0	L	Р	H						
	3 0									
UNIT – I	INTRODUCTION	1	<u> </u>		7					
	Definition and classification of Vernacular architecture – Vernacular architecture as a process – Survey and study of vernacular architecture: methodology- Cultural and contextual responsiveness of vernacular architecture: an overview									
UNIT – II	APPROACHES AND CONCEPTS				10					
	Different approaches and concepts to the study of vernacu over view – Aesthetic, Architectural and anthropological s	lar aro studie:	chitec s in d	cture etail	: an					
UNIT – III	VERNACULAR ARCHITECTURE OF THE WES NORTHERN REGIONS OF INDIA	TER	N A	ND	12					

	Forms spatial plann	ning, cultural as	spects, symbolis	sm, colour, art, m	aterials of				
	construction and co	onstruction tech	nnique of the ve	rnacular architec	ture of the				
	following: - Desert	ts of Kutch and	d Rajasthan; Ha	avelis of Rajasth	an - Rural				
	and urban Gujarat	t; wooden ma	ansions (Haveli	s); Havelis of t	the Bohra				
	Muslims - Geograp	hical regions o	of Kashmir; hous	se boats.					
UNIT – IV	VERNACULAR A	ARCHITECT	URE OF SOUT	TH INDIA	10				
	Forms, spatial planning, cultural aspects, symbolism, art, colour, materials of construction and construction technique, proportioning systems, religious beliefs and practices in the vernacular architecture of the following: - Kerala: Houses of the Nair &Namboothri community; Koothambalam, Padmanabhapuram palace Tamil Nadu: Houses and palaces of the Chettinad region; Agraharams.								
UNIT – V	WESTERN	INFLUENCE	ES ON	VERNACU	LAR 6				
	ARCHITECTUR	E OF INDIA							
	Colonial influences on the Tradition Goan house - Evolution of the								
	Bungalow from the	e traditional Ba	ngla, Victoria V	/illas – Planning	principles				
	and materials and	methods of co	onstruction. Set	tlement pattern	and house				
	typologies in Pondi	cherry and Coo	chin.						
		LECTURE	TUTORIAL	PRACTICAL	TOTAL				
		45	0	0	45				
TEXT		-							
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Univers	sity Press, 1997.								
2. Amos I	Rapoport, House, For	rm & Culture, l	Prentice Hall Ind	c. 1969.					
3. R W B	runskill: Illustrated H	landbook on V	ernacular Archi	tecture, 1987.					
REFERENC	CES								
1. V.S. Pa	armar, Haveli – Woo	oden Houses ar	nd Mansions of	Gujarat, Mapin I	Publishing				
Pvt. Lto	d., Ahmedabad, 19	89.							
2. Kulbus	hanshan Jain and M	Iinakshi Jain -	- Mud Architec	ture of the India	an Desert,				
Aadi C	entre, Ahmedabad 19	992.63							
3. G.H.R.	Tillotsum – The tra	dition of India	an Architecture	Continuity, Con	troversy –				
Change	e since 1850, Oxford	University Pre	ss, Delhi, 1989.						
4. Carmer	n Kagal, VISTARA	– The Archite	cture of India, l	Pub: The Festiva	l of India,				
1986.									

l

5. S.	5. S. Muthiah and others: The Chettiar Heritage; Chettiar Heritage 2000											
Table 4	Table 44. Mapping of COs with POs											
	PO-1	PO- 2	РО- 3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PSO1	PSO2
CO-1	2		2	1		2		2		2	3	3
CO-2	1		2	1		2		2		2	3	3
CO-3	3		2	1		2		2		2	3	3
CO-4	2		2	1		2		2		2	3	3
CO-5	2		2	1		2		2		2	3	3
Total	10		10	5		10		10		10	15	15
Scaled value	3	0	3	2	0	3	0	3	0	3	3	3

0-No relation, 1 – Low Relation, 2 – Medium Relation, 3 – High Relation.

#### XAR 603 - ESTIMATION, COSTING AND VALUATION

3 - 0 - 0 - 3

- 1. To know the various methods of quantity surveying, rate analysis of building and valuation for different materials used.
- 2. To explore the techniques of estimating and costing related to building construction
- 3. To emphasis the importance of specification in the building activities and method of drafting specification with importance to the correct order and sequence, avoid duplication and ambiguity, specification by negation and affirmation.
- 4. Use of Indian standard specification and PWD handbook, for reference only specifications affecting cost.

Course	Outcome	Domain	Level
CO1	Understand the unit measurement of materials.	Cognitive	Understand
CO2	<i>Understand</i> the techniques of estimating and costing related to building construction.	Cognitive	Understand
CO3	Apply and understand the various methods of	Cognitive	Understand

	quantity surveying, rate analysis of building and	Affective	Apply
	valuation for different materials used. Calculate		
	material cost of given component/product.		
CO4	<i>Know</i> about Specification for basic building material and apply the same for another example	Cognitive Psychomotor	Understand Create
CO5	<i>Understand andprepare the</i> valuation for various scale projects.	Cognitive	Understand

SUBCODE	SUB NAME	L	T	P	C						
XAR 603	ESTIMATION, COSTING AND VALUATION	3	0	0	3						
C:P:A	1.875:0.375:0.75	L	Т	Р	H						
		3	0	3							
UNIT – I	INTRODUCTION TO ESTIMATION				5						
	Definition, Aim and object, Scope and importance of the	e subj	ect. 7	Гуре	s of						
	Estimates - Approximate and detailed. Units of measurement for different										
	items.										
UNIT – II	METHODS OF ESTIMATION				11						
	Preparation of data and analysis of Rates for Civil Wo	ork ite	ems -	– as	per						
	Municipal or P. W. D. Schedule Rates and Current mark	ket ra	tes, I	Units	for						
	rates. Taking of Quantities for Civil Work of Load Bear	ring V	Vall s	struct	ture						
	and preparation of abstract. Taking of Quantities of Civil	Work	ts of	R. C	. C.						
	Frame Building, and preparation of abstract.										
UNIT – III	COST ESTIMATION				11						
	Preparation of data and analysis of Rates for Civil Wo	ork ite	ems -	– as	per						
	Municipal or P. W. D. Schedule Rates and Current mark	ket ra	tes, I	Jnits	for						
	rates. Taking of Quantities for Civil Work of Load Bear	ring V	Vall s	struct	ture						
	and preparation of abstract. Taking of Quantities of Civil	Work	s of	R. C	. C.						

	Frame Building, and	Frame Building, and preparation of abstract.										
UNIT – I	IV RATE ANALYSIS	5			10							
	Analysis of rates	– using sta	ndard data an	d schedule of	rates for							
	conventional items	– principles of	pricing for new	items.								
UNIT – V	V VALUATION				8							
	Necessity – basics of valuation – capitalized value – depreciation –											
	escalation – value of property – calculation of Standard rent – Report											
	proparation.	IFCTURE	TUTORIAI	PRACTICAL	ΤΟΤΑΙ							
		A5			101AL 45							
		45	U	U	45							
TEXT												
1. S	.C. Rangwala, Elements	of Estimating	and Costing, C	Charoter Publishing	ng House,							
lr	ndia. 1984.											
2. B	.N. Dutta, 'Estimating an	d Costing' UB	S Publishers and	d Distributors,20	16							
3. G р	Furcharan Singh and Jago	lish Singh, 'Es	timating Costin	g and Valuation'	, Standard							
	I Chakraborthi 'Estimat	ting Costing	Specification	and Valuation	in Civil							
E	ngineering, Chakraborth	i, 2010	Speemention		in Civii							
REFERI	ENCES											
1 'T	S 1200 1068 Mathada at	Magguramont	a of Duildings	nd Civil Enginee	rina							
1. 1. W	orks	Measurement	s of Dundnigs a		nng							
2. La	atest schedule of rates of	P.W.D										
3. T.	N.Building Practice, Vo	l.1, Civil, Gov	t. Publication.									
4. P.	W.D. Standard specifica	tions, Govt. Pı	ublication.									
5. La	atest Data book of P.W.D	<b>)</b> .										

Table 4	5. MA	PPIN	G of C	Os wit	h POs	:						
	PO-1	PO-	PO-	PO-	PO-	PO-	<b>PO-7</b>	PO-	<b>PO-9</b>	PO-	PSO1	PSO2
		2	3	4	5	6		8		10		
CO-1	0	0	0	2	0	0	0	0	0	0	0	0
CO-2	0	0	0	2	0	0	0	0	0	0	0	0
CO-3	0	0	0	2	0	0	0	0	0	0	0	0
CO-4	0	0	0	0	0	0	2	0	2	0	0	0
CO-5	0	0	0	0	0	0	2	0	0	0	0	0
Total	0	0	0	6	0	0	4	0	2	0	0	0
Scaled to 0,1,2,3 scale	0	0	0	2	0	0	1	0	1	0	0	0

0-No relation, 1 – Low Relation, 2 – Medium Relation, 3 – High Relation.

# XAR 604– PROFESSIONAL ELECTIVE -II

2 - 0 - 1 - 3

# XAR 605–MATERIALS AND CONSTRUCTION - V 1-0-2-3

- 1. Expose the students to various Research organizations, which involve them in material and technology research.
- 2. Students know about various deep foundations.
- 3. To make the student to understand vertical circulation elements

Course Ou	itcome	Domain	Level
CO1	<i>Understand</i> the activities carried out by research organizations.	Cognitive	Understand
CO2	<i>Understand</i> the various methods and types of deep foundation.	Cognitive	Understand

CO3	<i>Exposed</i> to the vertical movement equipment in buildings.	Cognitive		Know	ledg	je			
CO4	Understand the types and working principle of Escalator and Elevator.	Cognitive	Understand			d			
CO5	<i>Gain</i> Knowledge of the various advanced building structure.	Affective		Illustrate					
SUBCODI	E SUB NAME		L	Т	Р	C			
XAR 605	MATERIALS AND CONSTRUCTION -	V	1 0 2 3						
C:P:A	2.4:0:0.6		L	Τ	Р	H			
					2	5			
UNIT – I	CONSTRUCTION SYSTEMS DEVELO ORGANISATION	OPED BY	RES	EAR	CH	6			
CBRI, NBO, SERC, etc. Floor, wall and roofing systems. F properties, uses and application in building construction techniques of preparation, casting, curing, etc.						its the			
UNIT – II	FOUNDATIONS					30			
	Pile foundation, different types of piles, reinforcement details for different types of jointing of precast piles and columns.	precast and grids, detail	cast s of	in si pile c	tu w cappi	/ith ng,			
UNIT – II	<b>VERTICAL MOVEMENT EQUIPMENT</b>	'S IN BUILD	ING	S		5			
	Elevators - Historical development of elev capacity, speed, mechanical safety method, planning grid. Types of elevators - Electric, capsule, freight, etc. Dumb waiters, de mechanisms. Detailing and fitting for physic drives – speed converters. Fire lift tower – So	Elevators - Historical development of elevators or lifts. Elevators - size, capacity, speed, mechanical safety method, positioning of the core under planning grid. Types of elevators - Electric, hydraulic - passenger, hospital, capsule, freight, etc. Dumb waiters, details of lift shaft and other mechanisms. Detailing and fitting for physically handicapped. Regenerative drives – speed converters. Fire lift tower – Solae							
UNIT – IV	ESCALATORS AND CONVEYORS					28			
	Escalator types - Parallel and criss-cro conveyors, horizontal moving walkway	ss escalators s - concern	s, ho n fo	orizon or ph	tal l ysica	oelt ally			

	handicapped mechanical safety systems and automatic control. Speed											
		governors – cables – sky lobby. Elevator Research										
UNIT – V		MISCELLANEOUS STRUCTURES 6										
		Shell	structu	ires, c	lomes,	space	frame	e, shel	l barr	el vaul	t, folde	d plate
	structures, tensile structures, pneumatic structures, and etc											
	LECTURE TUTORIAL PRACTICAL TOTAL											OTAL
					1	5	_	0		60		75
TEXT	TEXT											
1. J.H.	Calle	nder, 7	Гime S	aver S	Standar	d for A	Archite	ctural	Desig	n Data,	McGrav	v- Hill,
1994	4.											
2. Jam	es Ai	mbrose	, Build	ling C	onstruc	ction, S	Service	System	ns, Va	in No st	trand Re	einhold,
New Y	York,	1992.										
1 H.A	CES Thiri	ivanan	thapura	am – I	Hand B	look oi	ı Elev	ators –	Printi	ng and ]	Publishi	ng co –
1997	7.		p									
2. Unite	d Tec	hnolog	ries –O	TIS –	Tell me	e Abou	t Escal	ators –	Printe	d in US	A – 199	0.
			,105 0				N.D.O.	GED				
3. Pampi	nets s	upplied	and of	ther lit	erature	s from	N.B.O	., SER	C, CBI	KI, 1970	) onwar	ds.
4. RC	hudle	y, Con	structi	on Te	chnolog	gy, Rio	chard (	Clay (C	Chauce	er Press	) Ltd., S	Suffolk,
198.	/.											
Table 46. M	<b>IAP</b>	PING o	f COs	with l	POs:	-					1	1
	<b>PO-</b> 1	1 PO- 2	<b>PO-3</b>	PO- 4	PO-5	PO- 6	<b>PO-7</b>	PO- 8	PO- 9	PO-10	PSO1	PSO2
CO-1		1	2	2		, v			2			
CO-2		1	2	3					2			
CO-3		<b>_</b>	2	3			3		3			
<u> </u>		-	-	3					2			
CO-4		•	2	5					2			
CO-5			2	3	<u> </u>		3		2			
Total			10	14			6		11			
Scaled to 0,1,2,3	0	0	2	3	0	0	2	0	3	0	0	0
scale	<b>)_7</b> 1	  1_15_?	3	<u> </u>		]	<u> </u>			<u> </u>		

0 - No relation, 1 – Low Relation, 2 – Medium Relation, 3 – High Relation.

# XAR 606 - ARCHITECTURAL DESIGN - V

- 1. To understand the design and form of building typologies that are the result of pressure on urban lands with a thrust on issues like urban land economics, technology and ecology.
- 2. To inculcate the importance of services integration and construction in spatial planning in the context of the design of High-rise buildings and service-intensive buildings.

Course	Outcome	Domain	Level
CO1	<b>Understand</b> issues in buildings with respect to density, services and energy consumption as well as make the right choices in design situations involving these issues.	Cognitive	Understand
CO2	<i>Understand</i> Green Building concepts and basic principles of the sustainable built environment.	Affective	Evaluate
CO3	<i>Integrating</i> the services in the design	Affective	Apply
CO4	Designing larger-scale projects using green concepts.	Psychomotor	Create
CO5	<i>Produce</i> computer-aided presentation drawings and make scale models	Psychomotor	Create

SUBCODE	SUB NAME	L	Τ	Р	C
XAR606	ARCHITECTURAL DESIGN - V	0	0	15	15
<b>C:P:A</b> =	3:6:6	L	Т	Р	Н
		0	0	15	15
UNIT – I	DESIGN STUDIO				225
	Design of large structures - Multiuse, multi-span, multil	evel -	build	ing t	ypes
	involving technology and services - Concentrating in t	he inte	erior o	desig	ning
	- Design and detailing for movement and use by pl	nysica	lly cl	nallei	nged

		people within and	around the b	uilding. Design	of green and s	ustainable				
		buildings.								
		Areas of concern/fe	ocus:							
		Exploring the relationship between building, space, landscape and								
		movement in a context involving diverse user groups.								
		Examples: College	e, office buil	ldings (Institut	ional) Large Co	ommercial				
		Complex (Commerc	cial) Resorts							
	(Recreational) - Mixed Residential Developments (Residential) etc.									
	Working drawings for any one design Using Computer for presentation									
		Skills.								
			LECTURE	TUTORIAL	PRACTICAL	TOTAL				
			0	0	225	225				
TEXI	Г		0	0	225	225				
<b>TEX</b> 1	Г Quent	tin Pickard RIBA - T	0 he Architects'	<b>0</b> Hand Book - Bl	225 adewell Science	225 Ltd				
<b>TEX1</b> 1.	C Quent 2002	tin Pickard RIBA - T	0 he Architects'	<b>0</b> Hand Book - Bl	225 adewell Science	225 Ltd				
<b>TEX1</b> 1. 2.	C Quent 2002 De C	tin Pickard RIBA - T hiara Callender, Tir	0 he Architects' ne-Saver Stan	0 Hand Book - Bl ndard for Build	225 adewell Science ing Types, McC	225 Ltd Graw-Hills				
<b>TEX1</b> 1. 2.	Г Quent 2002 De C Co., 1	tin Pickard RIBA - T hiara Callender, Tir 973.	0 he Architects' ne-Saver Stan	0 Hand Book - Bl ndard for Build	225 adewell Science ing Types, McC	225 Ltd Graw-Hills				
<b>TEX1</b> 1. 2. <b>REFF</b>	Γ Quent 2002 De C Co., 1 ERENC	tin Pickard RIBA - T hiara Callender, Tir 973. <b>ES</b>	0 he Architects' ne-Saver Stan	0 Hand Book - Bl	225 adewell Science ing Types, McC	225 Ltd Graw-Hills				
<b>TEX1</b> 1. 2. <b>REFF</b> 1.	Γ Quent 2002 De C Co., 1 ERENC Edwa	tin Pickard RIBA - T hiara Callender, Tir 973. <b>ES</b> rd D.Mills, Planning,	0 he Architects' ne-Saver Stan 4 volumes, N	0 Hand Book - Bl adard for Build ewnes, Butterwa	225 adewell Science ing Types, McC	225 Ltd Graw-Hills				
<b>TEX1</b> 1. 2. <b>REFH</b> 1. 2.	Γ Quent 2002 De C Co., 1 ERENC Edwa P&D	tin Pickard RIBA - T hiara Callender, Tir 973. <b>ES</b> rd D.Mills, Planning, Act 1995.	0 he Architects' ne-Saver Stan 4 volumes, N	0 Hand Book - Bl adard for Build ewnes, Butterwa	225 adewell Science ing Types, McC	225 Ltd Graw-Hills				
<b>TEXT</b> 1. 2. <b>REFF</b> 1. 2. 3.	Γ Quent 2002 De C Co., 1 ERENC Edwa P&D E and	tin Pickard RIBA - T hiara Callender, Tir 973. <b>ES</b> rd D.Mills, Planning, Act 1995. O.E. Planning. Lliffe	0 he Architects' ne-Saver Stan 4 volumes, N ee Books Ltd.,	0 Hand Book - Bl adard for Build ewnes, Butterwa London, 1963.	225 adewell Science ing Types, McC	225 Ltd Graw-Hills				
TEXT 1. 2. <b>REFF</b> 1. 2. 3. 4.	Γ Quent 2002 De C Co., 1 ERENC Edwa P&D E and Natio	tin Pickard RIBA - T hiara Callender, Tir 973. <b>ES</b> rd D.Mills, Planning, Act 1995. O.E. Planning. Lliffe nal Building Code an	0 he Architects' ne-Saver Stan 4 volumes, N ee Books Ltd., nd Bureau of J	0 Hand Book - Bl adard for Build ewnes, Butterwa London, 1963. Indian standard	225 adewell Science ing Types, McC orths, London, 19 publications 14 1	225 Ltd Graw-Hills 076. December				

Table 4	Table 47. Mapping of COs with Pos											
	PO-1	<b>PO-2</b>	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PSO1	PSO2
CO-1	3	3	2	2	3	2	-	_	-	2	-	2
CO-2	3	2	1	3	2	1	-	-	-	2	3	-
CO-3	2	3	2	2	3	1	-	-	-	3	_	2
<b>CO-4</b>	2	2	1	1	1	3	-	-	-	3	-	3
CO5	3	3	3	3	3	3				3	3	3
Total	13	13	8	11	12	10	-	-	-	13	6	10
Scaled value	3	3	2	3	3	2	0	0	0	3	2	2

0-No relation, 1 –Low Relation, 2 –Medium Relation, 3 –High Relation.

# XAR 701 – HUMAN SETTLEMENTS PLANNING

3 - 0 - 0 - 3

- 1. To give an introduction to the discipline of Urban and Regional planning.
- 2. To understand the factors that determined the form and structure of human settlements in the modern age.

Course	e Outcome	Domain	Level
CO1	<i>Understand</i> the origin, evolution and growth of settlements.	Cognitive	Understand
CO2	<i>Learn</i> about planning theories by prominent planners.	Cognitive	Understand
CO3	<i>Understand</i> the dynamics of Urban Form and various Human Settlements pattern	Cognitive	Understand
CO4	<i>Understand</i> Planning process and techniques adopted at various levels.	Cognitive	Understand
CO5	<i>Study</i> the planning concepts in planned cities.	Cognitive	Understand

SUBCODE	SUB NAME	L	T	Р	C						
XAR 701	HUMAN SETTLEMENT PLANNING	3	0	0	3						
C:P:A	3:0:0	L	Т	Р	H						
		3	0	0	3						
UNIT – I	INTRODUCTION TO HUMAN SETTLEMENTS	L		<u> </u>	8						
	Elements of human settlement. Forms of human settlement, Growth factors of human settlement – functions, linkages, networks. Anatomy & classification of human settlements. Characteristics of human settlement at various phases of its growth stage.										
UNIT – II	INTRODUCTION TO PLANNING AND CONCEPTS	PLA	NNI	NG	10						
	history – town planning in ancient India, Greek, Ro Urban forms and patterns. Planning concepts prop Howard, Patric Geddes, Lewis Mumford, CA Perry, le of Jane Jacobs.	man oosed Corbi	and r by ] usier.	nedie Eben Writ	eval. ezer ings						
UNIT – III	COMPONENTS OF PLANNING				12						
	Various aspects of planning - Land use planning, trans environmental planning, infrastructure planning. The fu- use planning, Zoning principles and the basis for the f laws. Growth management system, infrastructure (In Water supply, Sanitation, Solid Waste Disposal) maintenance - Forecasting infrastructure needs of the to parameters such as population and size of trend.Development Control Regulations and bye-laws, India. Critical analysis of standards. ICT in city manager	sporta indan forma nfrastr deve own b the stand nent.	tion of tion of tion of tructur elopm based city, ards,	plann s of 1 of zon e, Ra ent on se gro CZI	ing, land ning oad, and et of owth R in						

UNIT – IV	URBAN PLANN	ING AND UR	RBAN RENEW	AL	10				
	Tools and techniq	ues utilized at	the local, region	onal, and state lev	vel –master				
	plan, structure pla	n, and zonal p	lan. Local Gov	ernance and Adm	ninistration:				
	Objectives, Functi	ions, Responsi	bilities and Org	ganizational struc	cture of: (i)				
	Village Panchaya	ts (ii) Munici	palities (iii) C	orporations and	(iv) Urban				
	Development Aut	horities.Urban	Renewal Plan	– Meaning, Rede	evelopment,				
	Rehabilitation and Conservation – Govt. schemes – case studies.								
UNIT – V	<b>CITIES -PARAD</b>	OIGM OF SO	CIO POLITIC	AL EXPRESSIO	)N 5				
	Self sustained communities – SEZ – transit development – integrated								
	townships – case	e studies.Citie	es as symbolic	e expressions of	f power –				
	Chandigarh, Delhi, Bhubaneshwar, Brasilia, Regulations and standards in								
	India. Critical analysis of standards.								
	<u> </u>	LECTURE	TUTORIAL	PRACTICAL	TOTAL				
		45	0	0	45				
TEXT									
1. Gallio	on Arthur B &Eisna	a Simon, The	Urban Pattern:	City Planning an	nd Housing				
2005.									
2. UDPI	FI guidelines 2014.								
3. Town	and Country Plann	ing Act 1971w	with amendment	S.					
4. John	Radcliffe, An Introc	luction to Tow	n and Country l	Planning 28 Febru	uary 1992.				
RI	FERENCES								
1. C.L	Doxiadis, Ekistics,	"An Introduc	tion to the Scie	nce of Human Se	ettlements",				
Hut	chinson, London, 1	968.							
2. Gov	vernment of India,	"Report of th	e National Con	nmission on Url	panisation",				
198	8.								
3. And	lroD.Thomas, "'Ho	using and Ur	ban Renewal",	George Allen a	ind Unwin,				
Syd	ney, 1986.								
4. Roc	lwin, Lloyd, ed.,	1987. Shelter	r, Settlements	and Developme	ent (Hemel				
Her	npstead, United Kin	ngdom, Unwin	Hyman Ltd.)						
5. Tov	vn and country plan	ning Act 1971	with amendme	nts					
6. S.	B. Golahit, 'Rural	Development	Programmes In	n India', Neha Pu	ublishers &				

Distributors, 2010.

- 7. CMDA Second Master Plan for Chennai Metropolitan Area 2026: Vision, Strategies and Action Plans (Vol.I, II &III)', Chennai, India, 2008.
- V. Nath, 'Regional Development And Planning In India', Neha Publishers & Distributors, 2009.
- Government of India, 'Report of the National Commission on Urbanisation', 1988.
- 10. Hansen N., 'Regional Policy and Regional Integration', Edward Elgar, UK, 1996.

Table 48. Mapping of COs with Pos												
	PO-1	PO- 2	РО- 3	РО- 4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PSO1	PSO2
CO-1	-	-	3	-	-	3	-	-	-	-	-	2
CO-2	-	-	3	-	-	3	-	-	-	-	-	2
CO-3	-	-	3	-	-	3	-	-	-	-	-	2
CO-4	-	-	3	-	_		-	-	-	2	-	2
CO-5	_	-	3	-	-	2	-	-	-	-	-	2
Total	0	0	15	0	0	11	0	0	0	2	0	10
Scaled value	0	0	3	0	0	3	0	0	0	1	0	2

1-5 =1, 6-10=2, 11-15=3

0-No relation, 1 –Low Relation, 2 –Medium Relation, 3 –High Relation.

# XAR 702–PROFESSIONAL PRACTICE AND ETHICS3 – 0 – 0 – 3

- 1. To give an introduction to the students about the architectural profession and the role of professional bodies and statutory bodies.
- 2. To sensitize the students about the importance of code of conduct and ethics in professional practice and the mandatory provisions as per Architects Act 1972.
- 3. To expose the students to some of the important legal aspects and legislations which have a bearing on the practice of the architectural profession.
- 4. To enable the students to grasp the advanced issues concerning professional practice such as tendering, contracting including alternative practices in project execution and project management.
- 5. To facilitate practical exposure to students about the Approval Process, Team work with consultants, Project management, certifications etc.

Course	Outcome	Domain	Level
CO1	Relate the responsibility of the architect towards the society.	Cognitive	Infer.
CO2	Illustrate the building rules and regulations essentials for practice.	Cognitive	Illustrate
CO3	Know the ethics to be followed while practicing the profession	Cognitive	Interpret
CO4	Develop tenders and contract documents.	Cognitive	Apply
CO5	Develop the office, work with allied professionals as a team in accordance with the architect's act 1972	Cognitive	Apply

SUBCODE	SUB NAME	L	Т	Р	C					
XAR 702	PROFESSIONAL PRACTICE AND ETHICS	3	0	0	3					
<b>C:P:A</b> =	3:0:0		Т	Р	Η					
		3	0	0	3					
UNIT – I	INTRODUCTION TO ARCHITECTURAL PROFES OF CONDUCT AND ETHICS	SION	CO	DE	9					
	Importance of Architectural Profession and Role of Architectural Profession and Role of Architectary Registration of Architects – Architect's office and it organizational structure - Infrastructure requirement, elementary accounts – Tax liabilities- Setting up Architectary of the Indian Institute of Architects – Architectary accounts – Tax liabilities- Setting up Architectary objectives, provisions with regard to architectural practice Architecture (role and functions) – Importance of ethi practice – Code of conduct for architects, punitive action misconduct of an architect A visit to Architectural Prijoint discussion with IIA Chapter/Centre.	s ma s kil ural F Act 1 ice) - cs in on for actice	in So nager Ils re Practio 972 - Cou profe in C	nent equir ce. R (into uncil essio city	y – –, ed, ole ent, of onal - A					
UNIT – II	ARCHITECT'S SERVICES, SCALE OF COMPETITIONS	FEF	ŻS	&	9					
	Mode of engaging an architect – Comprehensive services, partial services and specialized services – Scope of work of an architect – Schedule of services – Scale of fees (Council of Architecture norms) – Mode of payment – Terms and conditions of engagement – Letter of appointment. Importance of Architectural competitions – Types of competitions (open, limited, ideas competition) – Single and two-stage competitions – Council of Architecture guidelines for conducting Architectural competitions – National and International Competitions – Case studies.									
UNIT – III	<b>PROJECT MANAGEMENT - TENDER &amp; CONTRA</b> Tender -Definition - Types of Tenders - Open and	CT close	ed te	nder	<b>12</b> s -					
		45	0	0	45					
-----------	-----------------------	---------------------------------------------------------------------------	--------------------	---------------------	-------------	--	--	--	--	
		LECTURE	TUTORIAL	PRACTICAL	TOTAL					
	Project manager – A	Architectural jo	ournalism – Arc	nitectural photog	rapny.					
	specializations in t	he field of A	architecture – A	Architect as cons	struction /					
	Technology and	its impact	on architectu	aral practice.	Emerging					
	International practic	ce – Entry of	Foreign archite	cts in India – In	formation					
	Globalization and in	ts impact on a	rchitectural pro	fession – Prepare	edness for					
	Barrier-Free Enviro	onment – Co	astal Regulatio	on Zone – Heri	tage Act.					
	visit Chennai Corpo	oration) Factor	ries Act – Perso	ons with Disabili	ties Act –					
	study Chennai Corr	poration Build	ing Rules 1972	– (A visit to CM	DA and a					
	for CMA- Building	g Rules emer	ging from Nati	onal Building C	ode- case					
	2nd master plan CN	MDA- Develo	pment Regulation	ons in Second M	aster Plan					
	Planning Parameter	s evolving fro	om the master r	plan of a city – c	case study					
UNIT – V	IMPORTANT LE	GISLATION	S AND CURRI	ENT TRENDS	9					
	responsibility towar	ds his clients).								
	in the architectural	profession) Co	onsumer Protect	tion Act (Intent, A	Architects					
	Copyrights and pate	enting – (provi	sions of copyrig	ght acts in India,	copy right					
	the architect, excep	the architect, excepted matters) Easement - (meaning, types of easements,								
	Role of umpires, A	ward – Arbitra	ation clause in o	contract agreemen	nt (role of					
	Arbitration (Definit	ion, Advantag	es of arbitration	, Sole and joint a	rbitrators,					
UNIT – IV	LEGAL ASPECTS	S			6					
		~ ~ ~			- ·					
	stage (A visit to ma	jor project site	and interaction	with Project man	agers).					
	(BOT. DBOT. BOI	(BOT. DBOT. BOLT. BOO. etc.) - Role of Architect in Project execution								
	stages. New trends	in project for	mulation and d	ifferent types of	execution					
	and specifications	Appendix) – (	Pertification of (	Contractors Bills	at various					
	Contents (Articles (	$\Delta c_{1} = Definition$	Terms and Cor	ditions Bills of (	Ouantities					
	conditions) Contr	– WORK ORD	er - E-tenderin	g (advantages, j	procedure,					
	EMD - Submissio	on of tender	- Tender scru	tiny - Tender a	nalysis –					
	Conditions of tende	er – Tender I	Notice - Tender	documents - C	oncept of					

## TEXT

- 1. Architects Act 1972.
- 2. Publications of Council of Architecture-Architects (Professional Conduct) Regulations 1989, Architectural Competition guidelines.
- 3. Roshan Namavati, Professional practice, Lakhani Book Depot, Mumbai 2016.
- 4. Ar. V.S. Apte, Architectural Practice and Procedure, Mrs. Padmaja Bhide, 2008.
- 5. Madhav Deobhakta, Architectural Practice in India, CoA; 2007

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- Development Regulations of Second Master Plan for Chennai Metropolitan Area -2026. (Second Master plan of CMA).
- 3. Chennai City Corporation Building Rules 1972.
- 4. T.N.D.M. Buildings rules, 1972.
- 5. Consumer Protection Act, 1986.
- 6. Arbitration Act, 1996.
- 7. Factories Act, 1948.

Table 4	Table 49. Mapping of COs with Pos											
	<b>PO-1</b>	РО- 2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PSO1	PSO2
CO-1	-	-	-	-	-	3	2	-	3	-	-	-
CO-2	-	-	-	-	-	3	2	-	3	-	-	-
CO-3	_	-	-	-	-	3	2	-	3	-	-	-
CO-4	-	-	-	-	-	3	2	-	3	-	-	-
CO-5	-	-	-	-	-	3	2	-	3	-	-	-
Total	0	0	0	0	0	15	10	0	15	0	0	0
Scaled value	0	0	0	0	0	3	2	0	3	0	0	0

1-5 =1, 6-10=2, 11-15=3

## XAR 703–PROFESSIONAL ELECTIVE-III

# XAR704 MATERIALS AND CONSTRUCTION - VI 1-0-2-3

### **Course Objectives**

1. To teach the various types of treatment methods and finishes to achieve the required comfort.

Course of	outcomes	Domain	Level
On the s	uccessful completion of the course, students will be	e able to	
CO1	Able to <i>list</i> and <i>describe</i> various damp and	Cognitive	Knowledge
	waterproofing materials, and their applications.	Affective	Receiving
CO2	Able to Explain and name various types of	Cognitive	Understand
	thermal insulation and acoustical insulation materials and their applications in various	Affective	Receiving
	components of the building.		
CO3	Able to list floor and wall coverings and able to	Cognitive	Understand
	<i>describe</i> protective and decorative coats based on their properties and uses.	Affective	Receiving
CO4	Able to <i>produce</i> detailed drawings	Psychomotor	Guided
			response
CO5	Able to <i>demonstrate</i> construction techniques through models.	Psychomotor	Mechanism

3-0-0-3

SUBCODE	SUB NAME	L	Т	P	C				
XAR 704	MATERIALS AND CONSTRUCTION – VI	1	0	2	3				
C:P:A	1.1:.8:1.1	L	Т	Р	H				
		1	0	2	5				
	DAMD AND WATED DDOOFING				15				
$\bigcup N \Pi = I$	DAMP AND WATER PROOFING				15				
	Damp proofing materials - Asphalt, Bentonite clays, buty	l rubb	er, si	licor	ies,				
	vinyls, Epoxy resins and metallic sheets - properties, use	s. W	Vaterp	proof	ing				
	materials - rug, asbestos, glass, felt - plastic and synthetic rubber -vinyls,								
	butyl rubber, neoprene polyvinyl chloride (PVC) - prefabricated membranes -								
	sheet lead, asphalt - properties and uses, Expanded polystyrene roof								
	insulation and extruded polystyrene foam insulation.								
	Application of the above under various situations - basement floors,								
	swimming pools, terraces, etc – plates and assignments								
UNIT - II	THERMAL INSULATION				15				
	Heat transfer – Heat gain and heat loss by materials – T	Types	of in	sulat	ion				
	materials - vapour barriers and rigid insulation. Bla	ınket,	pour	red	and				
	reflective insulation - properties and uses of fiberglass, fe	oamed	d glas	ss, co	ork,				
	vegetable fibers, mineral fibers, foamed plastics and verm	niculit	e. Gy	ypsu	m -				
	manufacture, properties and uses, Plaster of Paris and a	unhydi	ride g	gypsi	ım.				
	Foam-based insulation. Internal wall insulation and EFIS	– Ex	terna	l faç	ade				
	insulation system.								
	Construction details of the material application of floors,	walls	and	roof	š –				
	Cold storages- Detailing for physically handicapped.								
				Т	1 -				
UNIT - III	ACOUSTIC INSULATION				15				
	Porous, Baffle and perforated materials such as plastic, aco	ustic	tiles,	W00	d,				
	particleboard, fibreboard, cork, quilts and mats - Brief stud	y on p	oropei	rties					
	and uses of the above - current developments.								

UNIT- IV	FLOOR AND WA	LL COVERI	NGS		15						
	Floor coverings -	flooring - s	oftwood, hardw	vood - Resilient	t flooring						
	-Linoleum, Asphalt	tile, vinyl, rub	ober, cork tiles ·	terrazzo - prope	erties, uses						
	and laying. Walle	coverings - ce	ment fiber boa	rd's Porcelain,	enameled						
	metal, wood veneer	r, Vinyl, plasti	c surfaced pane	ling - properties	, uses and						
	laying. Wall and	floor tiles - Ce	eramic glazed, 1	nosaic, quarry ai	nd cement						
	tiles - properties,	uses and layin	ng. Timber flo	oring. Details of	f wet and						
	Drywall cladding s	ystem. Detaili	ng for physicall	y handicapped. C	alculation						
	of materials for selected wall and floor coverings.										
UNIT - V	<b>PROTECTIVE AN</b>	ND DECORA'	<b>FIVE COATIN</b>	GS	15						
	Preparation of wall	for painting,	Putty,Paints- E	namels, distempe	ers, plastic						
	emulsions, cement-	based paints -	properties, uses	and applications	- Painting						
	on different surfaces - defects in painting. Clear coatings and strains -										
	Varnishes, Lacque	er, Wax Polis	sh and Strains	- Properties,	uses and						
	applications.Special	l purpose pain	ts - Bituminous	s, Luminous, fire	retardant						
	and resisting paint	ts - properties	s, uses and ap	plications. Calcu	ulation of						
	quantity of paints for	or selected proj	ects.								
		LECTURE	TUTORIAL	PRACTICAL	TOTAL						
		15	0	60	75						
TEXT			<u></u>		l						
1. S.C.	Rangwala, Building	Construction	(Sixteenth Edit	ion) Charotar F	Publishing						
Hou	se, Anand, India, 1997										
2. Arth	ur R.Llons, Materials	s for architects	s and builders	- An introductio	n, Holder						
Head	lline group, Great Brit	ain, 1997.									
3. Jack	M.Launders, Constru	ction Materials	, Methods, care	ers pub., J.Hollan	d, Illinois						
Wilc	ox Co., Inc. 1983.				Wilcox Co., Inc. 1983.						
4. W.B	4. W.B. Mckay, Building construction, Longman, U.K 1 January 2013.										
5. Don.A.Watson, Construction Materials and Processes, McGraw Hill Book Co. 1											
5. Don	. Mckay, Building cor A.Watson, Construct	struction, Long	gman, U.K 1 Jar and Processes,	nuary 2013. McGraw Hill Bo	ook Co. 1						
5. Don. Marc	. Mckay, Building cor A.Watson, Construct h 1978.	ion Materials	gman, U.K 1 Jar and Processes,	nuary 2013. McGraw Hill Bo	ook Co. 1						
5. Don. Marc <b>REFEREN</b>	. Mckay, Building cor A.Watson, Construct h 1978. C <b>ES</b>	ion Materials	gman, U.K 1 Jar and Processes,	nuary 2013. McGraw Hill Bo	ook Co. 1						

- 2. Edward. T. Q., "Site Analysis", Architectural Media, 1983.
- 3. P.B.Shahani Text of surveying Vol. I, Oxford and IBH Publishing Co 1980
- 4. Joseph De.Chiarra and Lee Coppleman Planning Design Criteria Van Nostrand Reinhold Co., New York - 1968.
- 5. Beer R, Environmental Planning for Site Development, Turner, Landscape Planning and environmental impact design.

Table 50. Mapping of COs with Pos												
	<b>PO-1</b>	PO- 2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PSO1	PSO2
CO-1	-	-	-	3	1	-	-	2	-	3	2	-
CO-2	-	-	-	3	1	-	-	2	-	3	2	-
CO-3	-	-	-	3	1	-	-	2	-	3	2	-
CO-4	-	-	-	3	1	-	-	2	-	3	2	-
CO-5	-	-	_	3	1	-	-	2	-	3	2	-
Total	-	-	_	15	5	-	-	10	-	15	10	-
Scaled value	0	0	0	3	1	0	0	3	0	3	3	0

# 1-5 = 1, 6-10 = 2, 11-15 = 3

# XAR 705– ARCHITECTURAL WORKING DRAWING AND SPECIFICATIONS 1 -0-2-3

## **Course Objectives:**

1. To get familiarized in the drafting (either manual or computer) of working drawings that are required for the construction of buildings.

Course	Outcome	Domain	Level
CO1	<i>Demonstrate</i> an understanding of construction drawings of allied disciplines.	Cognitive	Understand
CO2	<i>Demonstrate</i> an understanding of the relation of working drawing with specifications and Bill of quantities.	Cognitive	Understand
CO3	<i>Apply</i> the standard conventions in a working drawing.	Affective	Apply
CO4	Writing Specificccation for simple residential building & commercial building.	Psychomotor	Create
CO5	<i>Develop</i> a set of Working drawings for a project.	Psychomotor	Create

SUBCODE	SUB NAME	L	Т	Р	C		
XAR705	ARCHITECTURAL WORKING DRAWING AND SPECIFICATIONS	1	0	2	3		
<b>C:P:A</b> =	P:A = 1:0.5:0.5						
		1	0	4	5		
UNIT – I	ARCHITECTURAL WORKING DRAWING			4	45		
	RIBA stages of work, Tender documentation, Structure of Information,						
	Primary structuring and secondary structuring of Working drawing, drawing						
	numbering systems. Construction drawings of allied disc	ipline	– sti	ructu	ral,		

	Mechanical, electrical and Plumbing.							
	Preparation of Wo	orking drawing	g for a residen	tial, commercial	project -			
	Foundation plans, C	Centreline plan	ns, all floor plan	s, Elevations and	Sections,			
	Door window schedules, Part Wall Sections, Blown up details, Staircase							
	details, Kitchen det	ails, Toilet and	l Bath details, aj	oproval drawing.				
IINIT _ II	SPECIFICATION	WRITING			30			
	SIECIFICATION							
	Necessity of specification, importance of specification, - How to write							
	specification, - Types of Specification, -Principles of Specification writing, -							
	Important aspects of the design of specification – sources of information –							
	Classification of Specification.							
	Detailed specification for earthwork excavation, plain cement concrete,							
	Reinforced concret	e, first-class a	and second clas	ss brickwork, Da	mp proof			
	course, ceramic ti	les/marble flo	oring and dad	oo, woodwork f	for doors,			
	windows frames a	nd shutters, c	ement plasterir	ng, painting & w	veathering			
	course in the terrace	е.	-		-			
	Specification writ	ting of simp	le residential	building & co	mmercial			
	building.	-		-				
	<u> </u>	LECTURE	TUTORIAL	PRACTICAL	TOTAL			
		30	0	45	75			
TEXT		1	1					
1. The l	Professional Practice	Of Architectu	ral Working Dr	awings, Osamu A	A. Wakita;			
Richard M. Linde, Wiley 2002.								
REFERENCES								
<b>1.</b> .Wor	<b>1.</b> .Working Drawing Handbook, Keith Styles, Architectural Press 1995.							
<u> </u>								

Table 5	Table 51. Mapping of COs with Pos											
	PO-1	PO-2	PO-3	РО- 4	PO-5	PO- 6	PO-7	PO-8	PO-9	PO-10	PSO1	PSO2
CO-1	-	-	_	3	-	-	3	-	-	-	-	-
CO-2	-	-	-	3	-	-	3	-	-	_	-	-
CO-3	-	-	-	3	-	-	3	-	-	-	-	-
CO-4	-	-	-	3	-	-	3	-	-	3	-	-
CO-5	-	-	-	3	-	-	3	-	-	3	-	-
Total	-	-	-	15	-	-	15	-	-	6	-	-
Scaled value	0	0	0	3	0	0	3	0	0	2	0	0

1-5 =1, 6-10=2, 11-15=3

0-No relation, 1 –Low Relation, 2 –Medium Relation, 3 –High Relation.

## XAR 706 – ARCHITECTURAL DESIGN - VI 0– 0 – 16 – 16

### **Course Objectives:**

1. The course is design to expose the students to the design of energy efficient and green building technologies at the large scale projects.

Course	Outcome	Domain	Level
CO1	<i>Understand</i> the concept of energy-efficient design & green building technologies.	Cognitive	Knowledge
CO2	<i>Understand</i> the impact of spatial configuration at site level and building level	Cognitive	Perception
CO3	Analyze and interpret different buildings.	Psychomotor	Guided response

			Mechanism
CO4	<i>Design</i> and develop energy-efficient buildings.	Affective	Organization
CO5	Develop working drawings and models displaying energy-efficient and green building technologies.	Affective	Organization

SUBCODE	SUB NAME				L	Т	P	C		
XAR 706	ARCHITECTUR	AL DESIGN	-VI		0	0	16	16		
C:P:A =	6.4:3.2:6.4				L	Т	Р	Н		
			2	-	-					
			0	0	16	16				
UNIT – I	DESIGN STUDI	0						240		
	Areas of concern/focus: Relationship between building, space, landscape									
	and movement in a context involving diverse user groups. Appropriate									
	architecture and exploration of architectural form towards the desired ideal									
	for a given context of time and place. Examples: Five-star hotel, airports,									
	cultural centers, museum and exhibition complex, neighborhood design,									
	housing projects, e	etc								
		LECTURE	TUTORIAL	PRAC	ГІСА	L ′	гот	AL		
		0	0	24	<b>10</b>		24	0		
TEXT										
1. D	. Gosling and Maitl	and, Urban De	sign, St. Martin	s Press,	1984.					
2. Ia	n Bentley, Respon	sive Environm	nent: A manual	for De	signer	, Arc	hitec	ture		
P	ress, London, 1985.									
3. D	e Chiara and Cal	lender, Time-	Saver Standard	d for B	uildin	g Ty	vpes,	4th		
E	dition, McGraw-Hil	l Co., 2001.								
4. A	ndrew Alpern, Har	dbook of Spe	ciality Element	s in Arc	hitect	ure, l	McG	raw-		
Н	ill Book Co., 1982.									
5. E	rnst Neufert, Neufer	t Architect's E	Data, 5th Editior	n, Wiley	Black	well,	2019	)		
6.										

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- 2. P&D Act 1995.
- 3. Edward D.Mills, Planning The Architects Handbook 10th Edition, British Library Cataloguing in Publication Data, 1985.
- 4. Gordon Cullen the concise Townscape The Architectural press

Table 5	Table 52. Mapping of COs with Pos											
	РО- 1	РО- 2	PO- 3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PSO1	PSO2
CO-1	3	2	2	-	-	-	-	-	-	-	3	1
CO-2	3	3	2	2	2	2	2	3	2	3	3	1
CO-3	1	1	3	2	2	1	2	2	1	-	3	2
CO-4	3	2	-	3	3	2	2	3	1	3	3	1
CO-5	-	-	-	3	3	-	2	2	2	-	3	3
Total	10	8	7	10	10	5	8	10	6	6	15	8
Scaled value	2	2	2	2	2	1	2	2	2	2	3	2

1-5 =1, 6-10=2, 11-15=3

0-No relation, 1 –Low Relation, 2 –Medium Relation, 3 –High Relation.

#### XAR 801 - PRACTICAL TRAINING

0 - 0 - 0 - 16

**OBJECTIVE**: The aim of the training semester is to provide structured work-based learning in industry in order to enhance learning and employability skills and Assimilation and application of theoretical knowledge in the practical world.

Course	Outcome:	Domain	Level							
On the successful completion of the course, students will be able to										
C01	Demonstratean understanding ofthe designphilosophy, or vision of the architectural office andits implementation in the project/s	Cognitive	Illustrate							
CO2	<i>Interpret</i> the architectural design process evolves when structural and service issues are integrated to	Cognitive	Infer							

	create the final product.		
CO3	Draw the architectural drawing like conceptual, working drawing, structural and services drawing.	Psychomotor	Apply / Build
CO4	<i>Demonstrate</i> Knowledge on how the Drawings are used at the site and an insight into the relationship between the site and drawing.	Cognitive	Analysis.
CO5	<i>Develop</i> an office and run the office successfully	Psychomotor	Apply / Build

SUBCODE	SUB NAME	L	Т	Р	С
XAR 801	PRACTICAL TRAINING	0	0	0	16
C:P:A	9.6:6.4:0	L	Т	Р	Η
		0	0	0	100
					days
CONTENT					

## CONTENT

The Practical Training would be done in offices/firms in India empanelled by the Institution in which the principal architect is registered with the Council of Architecture if the firm is in India or in an internationally reputed firm established abroad.

The progress of practical training shall be assessed internally through the submission of logbooks supported by visual documents maintained by students every month along with the progress report from the employer/s of trainees.

The students would be evaluated based on the following criteria:

- 1. Adherence to time schedule, Discipline.
- 2. Ability to carry out the instructions on preparation of schematic drawings, presentation drawings, working drawings.
- 3. Ability to work as part of a team in an office.
- 4. Ability to participate in client meetings and discussions

5. Involvement in supervision at the project site.

At the end of the Practical Training, a portfolio of work done during the period of internship along with certification from the offices is to be submitted for evaluation by a viva voce examination. This will evaluate the understanding of the students about the drawings, detailing, materials, construction method and service integration and the knowledge gained during client meetings, consultant meetings and site visits.

LECTURE	TUTORIAL	PRACTICAL	TOTAL
	0	0	100 days

Table 5	Table 53. Mapping of COs with Pos											
	PO-1	PO-2	PO-3	РО- 4	PO-5	PO- 6	PO-7	PO-8	PO-9	PO-10	PSO1	PSO2
CO-1	1	-	3	2	1	3	2	1	1	1	1	3
CO-2	1	2	3	-	-	-	-	-	-	-	2	3
CO-3	-	-	3	3	2	-	-	2	2	2	2	3
CO-4	3	3	-	2	2	2	3	3	2	2	2	3
CO-5	3	3	-	2	2	2	2	3	2	2	2	3
Total	8	8	9	9	7	7	7	8	7	7	9	15
Scaled value	2	2	2	2	2	2	2	2	2	2	2	3

1-5 =1, 6-10=2, 11-15=3

#### XAR 901– URBAN DESIGN

### **Course Objectives:**

- 1. To understand the scope and nature of urban design as a discipline.
- 2. To introduce the components of a city and their interdependent roles.
- 3. To understand the evolution of historic urban form.
- 4. To learn to interpret the city in different ways and layers.
- 5. To create awareness of contemporary urban issues as well as learn about possible ways to address them.

Course	Outcome	Domain	Level
On the	successful completion of the course, students will be a	ble to	
CO1	<i>Demonstrate</i> the knowledge of Urban design as a discipline, and its role in understanding and interpreting a city	Cognitive	knowledge
CO2	<i>Illustrate</i> the role of imageability in urban areas.	Cognitive	Understand
CO3	Analyze the Contemporary Issues related to Urban Area	Cognitive	Analyze
CO4	<i>Prepare</i> the sketches and design based on the above study	Psychomotor	Analysis & perception
CO5	<i>Ability</i> to study contemporary issues and design the buildings	Cognitive	Apply

SUBCODE	URBAN DESIGN	L	Τ	P	С
XAR 901	URBAN DESIGN	3	0	0	3
<b>C:P:A</b> =	2.4:0.6:0	L	Т	Р	Η
		3	0	0	3
UNIT – I	INTRODUCTION TO URBAN DESIGN				06
	Introduction to cities, Components of urban space such neighborhood, streets, etc and their interdependencies aspects of urban space and articulation of the need scope and objectives of urban design as a discipline.	as blo - outli for u	cks, c ne of rban	lensi issu desig	ty, es/ gn-

UNIT –	II	HISTORIC URBAN FORM	10						
		Overview of rise and fall of various river civilizations. Detailed study	of						
		urban development throughout the globe. Western: Morphology of ea	rly						
		cities - Greek agora - Roman forum - Medieval towns-Renaissance plac	ce-						
		making - ideal cities – Industrialization and city growth - the eighteen	th-						
		century city builders Garnier's industrial city - the American g	rid						
		planning- anti urbanism and the picturesque- cite Industrielle- ci	itte						
		Nuovo-radiant city.							
		<b>Indian:</b> Evolution of urbanism in India- Temple towns - Mughal c	ity						
		form- medieval cities -colonial urbanism- urban spaces in modern	nist						
		cities: Chandigarh, Bhuvaneshwar and Gandhi Nagar subseque	ent						
		directions – case studies.							
UNIT –	III	THEORIES AND ILLUSTRATIONS OF URBAN DESIGN	9						
		To understand urban design thru reading and illustrations. Ideas of Ima	ıge						
		ability and townscape: Cullen, Lynch- place and genius loci - collection	ive						
		memory historic reading of the city and its artifacts: Rossi- social aspects							
		of urban space: life on streets and between buildings, lifestyle, gender a	ınd						
		class, Jane Jacobs, William Whyte. Contemporary theories in Urbanis	m,						
		New Urbanism concepts.							
UNIT –	IV	URBAN DESIGN AND URBAN ANALYSIS	10						
		Understanding various tools thru which an urban setting could	be						
		perceived - maps, sketches, photo documentations, reading, da	ata						
		collections, transects etc. Students to have a broad knowledge of vario	ous						
		techniques to read a city. The various aspects of urban growth esp.	in						
		Asian cities, city limits/boundaries, urban structure, urban architectu	re,						
		typologies as well as infrastructural planning, parcellation, public spa	ace						
		and design guidelines will be introduced. The critical role th	hat						
		transportation plays in structuring the city will also be examined.							
UNIT –	V	SUSTAINABLE URBAN DESIGN AND DEVELOPMENT	10						
		Overview of urban ecology. Contemporary issues of urban ecology in	the						
		Asian context and its articulation towards urban design. Urban sustainab	ility						

focuses on forms and flows of urban, industrial and natural systems. Two main categories of spatial typologies and ecological flows are to be studied through case studies from western as well as eastern parts of the globe. The sessions conclude with the discussion of urban and environmental design that is essential to the professional practices of ecologically sound urban and environmental design.

 LECTURE	TUTORIAL	PRACTICAL	TOTAL
45	0	0	45

## TEXT

- A.E.J. Morris, "History of Urban Form before the Industrial Revolution", PrenticeHall, 1996.
- 2. Edmund Bacon, "Design of Cities", Penguin, 20 May 1976.
- 3. Gordon Cullen, "The Concise Townscape", The Architectural Press, 1978.
- 4. Michelle Provoost et al., Dutchtown, NAI Publishers, Rotterdam, 1999.
- 5. "Time Saver Standards for Urban Design", Donald Natson, McGraw Hill, 2003.
- 6. Kevin Lynch, "The Image of the City", MIT Press, 1960.
- Rithchie. A, "Sustainable Urban Design: An Environmental Approach", Taylor & Francis, 2000.

#### REFERENCES

- 1. Jonathan Barnett, "An Introduction to Urban Design", Harper Row, 1982.
- 2. Lawrence Halprin, "Cities", Reinhold Publishing Corporation, New York, 1964.
- 3. Gosling and Maitland, "Urban Design", St. Martin's Press, 1984.
- 4. Malcolm Moor, "Urban Design Futures", Routledge, 2006.
- Geoffrey Broadbent, "Emerging Concepts in Urban Space Design", Taylor & Francis, 2003

Table 5	Table 54. Mapping of COs with Pos											
	PO-1	PO-2	PO-3	PO- 4	PO-5	PO- 6	PO-7	PO-8	PO-9	PO-10	PSO1	PSO2
CO-1	2	3	3	-	-	1	-	2	-	3	-	3
CO-2	2	2	3	-	-	2	_	3	2	1	-	3
CO-3	-	-	3	2	2	3	_	3	3	3	3	3
CO-4	2	2	2	1	-	3	2	2	3	-	2	3
CO-5	3	2	2	3	3	3	3	3	3	2	2	3
Total	9	9	13	6	5	12	5	13	11	9	7	15
Scaled value	2	2	3	2	1	3	2	3	3	2	2	3

1-5 =1, 6-10=2, 11-15=3, 0-No relation, 1 –Low Relation, 2 –Medium Relation, 3 –

High Relation.

## XAR 902 – PROJECT MANAGEMENT

3 - 0 - 0 - 3

## **Course Objectives:**

1. The course is designed to enable the students to learn different management techniques suitable for planning and constructional Projects in terms of cost and time.

Course	e Outcome	Domain	Level
On the	successful completion of the course, students will b	e able to	
CO1	<i>Demonstrate</i> the knowledge of traditional and contemporary project management techniques	Cognitive	Knowledge
CO2	<i>Demonstrate</i> the understanding of the management system for accomplishing the task efficiently in terms of time and cost.	Cognitive	comprehension
CO3	<i>Apply</i> the techniques of project management in solving constructional problems efficiently.	Affective	Knowledge Application

CO4	Work with the interdisciplinary design team in		
	accordance with the project management	Affective	Application
	schedule.		
CO5	Use the related software for project management.	Affective	Application

SUBCODE	SUB NAME	L	Т	P	С
XAR 902	PROJECT MANAGEMENT	3	0	0	3
<b>C:P:A</b> =	1.2:1.8:0	L	Т	Р	Н
		3	0	0	3
UNIT – I	INTRODUCTION TO PROJECT MANAGEMENT			<u></u>	5
	Project management concepts-objectives, planning, sche and role of the decision in project management. Tradit system, Gantt's approach, Load chart. Progress Chart, D chat, Merits and Demerits.	duling ional eveloj	g Cor mana pmen	ntroll ngem t of	ing ient bar
UNIT – II	PROJECT PROGRAMMING AND ANALYSIS				15
	Project Network-Events Activity, Dummy, Network Guidelines for Network, Numbering the events, Cycles Network-planning for Network Construction, Mod construction, steps in the development of Network. W Structure, hierarchies. Concepts: critical path method-pro- estimate, Earliest Event time, Latest allowable Occurren finish time of activity, float, critical activity and critical p- model-Project cost, direct cost, indirect cost, slope curve, optimum duration contracting the network for cost opti cost optimization, updating, resource allocation-reso resource-leveling.	Rule , Dev lels /ork ocess, nce tin ath pr Total mizat ource	s, Gr velopi of N Break activ me, s oblen proje ion. S smo	raphi ment Jetw C Do ity ti tart a ns. C ect co Steps pothi	ical of ork own ime and cost ost, ; in ing,
UNIT – III	PROGRAMMING EVALUATION REVIEW TECHN	IQUI	E		10
	PERT network, introduction to the theory of probabi	lity a	nd st	atist	ics.

	Probabilistic time es	stimation for	the activities	of the activities	of PE	RT
	Network.					
UNIT – IV	COMPUTERIZED	PROJECT	MANAGEME	NT		10
	Introduction: Creatin	g a New pro	ject, building ta	sk. Creating reso	ources	and
	assessing costs, Ref	fining your	project. Project	t Tracking-Unde	erstand	ling
	tracking, recording	actual. Repo	orting on prog	gress. Analyzing	finan	cial
	progress					
UNIT – V	TOTAL QUALITY	MANAGEN	MENT			5
	Introduction to TQM	principles, T	TQM tools, SPC	tools and quality	systen	ns -
	Definition of Quality	y, Dimensio	ns of Quality,	Quality Planning	g, Qua	lity
	costs - Need for IS	O 9000 and	Other Quality	Systems, ISO 9	9000:20	000
	Quality System –	Elements,	Implementation	on of Quality	Syste	em,
	Documentation, Qua	ality Auditir	ng, TS16949,	ISO 14000 –	Conce	pts,
	Requirements and Be	enefits				
	]	LECTURE	TUTORIAL	PRACTICAL	ТОТ	AL
	]	LECTURE 45	TUTORIAL 0	PRACTICAL 0	TOT 45	AL
TEXT	]	LECTURE 45	TUTORIAL 0	PRACTICAL 0	TOT 45	AL
<b>TEXT</b> 1. Elain	e Marmel, 'Microsoft F	LECTURE 45 Project 2016 I	<b>TUTORIAL</b> <b>0</b> Bible', Prentice	PRACTICAL 0 Hall, 2016	TOT 45	AL 5
TEXT 1. Elain 2. K.K	e Marmel, 'Microsoft F C.Chikkara, Constructio	<b>LECTURE</b> <b>45</b> Project 2016 I on Project M	<b>TUTORIAL</b> <b>0</b> Bible', Prentice	PRACTICAL 0 Hall, 2016 cGraw Hill Educ	TOT 45 ation;	AL 5 3rd
<b>TEXT</b> 1. Elain 2. K.K edition (9	e Marmel, 'Microsoft F C.Chikkara, Construction June 2014).	<b>LECTURE</b> <b>45</b> Project 2016 I on Project M	<b>TUTORIAL</b> <b>0</b> Bible', Prentice	PRACTICAL 0 Hall, 2016 cGraw Hill Educ	TOT 45 ation;	AL 3rd
TEXT 1. Elain 2. K.k edition (9 3. U.1	e Marmel, 'Microsoft F Chikkara, Constructio June 2014). K.Srivastava, published	<b>LECTURE</b> <b>45</b> Project 2016 I on Project M d by Galgotia	TUTORIAL   0   Bible', Prentice   Ianagement, Management, M	PRACTICAL 0 Hall, 2016 cGraw Hill Educ	TOT 45 ation;	AL 5
TEXT 1. Elaine 2. K.k edition (9 3. U.J REFERENC	e Marmel, 'Microsoft F C.Chikkara, Constructio June 2014). K.Srivastava, published	LECTURE 45 Project 2016 I on Project M d by Galgotia	TUTORIAL 0 Bible', Prentice Ianagement, Ma	PRACTICAL 0 Hall, 2016 cGraw Hill Educ vt Ltd in 2000	TOT 45 ation;	AL 3rd
TEXT 1. Elain 2. K.K edition (9 3. U.J REFERENC 1. Dr. B	e Marmel, 'Microsoft F C.Chikkara, Constructio June 2014). C.Srivastava, published CES . C. Punmia (Author),	LECTURE 45 Project 2016 I on Project M d by Galgotia K. K. Khande	TUTORIAL 0 Bible', Prentice Ianagement, Ma Publications Press elwal Project Pl	PRACTICAL 0 Hall, 2016 cGraw Hill Educ vt Ltd in 2000	TOT 45 ation;	AL 3rd
TEXT 1. Elain 2. K.K edition (9 3. U.) REFERENC 1. Dr. B PERT	e Marmel, 'Microsoft F C.Chikkara, Construction June 2014). C.Srivastava, published CES C. Punmia (Author), Cand CPM, Laxmi Published	LECTURE 45 Project 2016 I on Project M d by Galgotia K. K. Khande olications Pvt	TUTORIAL   0   Bible', Prentice   Ianagement, Main   Publications Press   elwal Project Place   Ltd; 4th edition	PRACTICAL 0 Hall, 2016 cGraw Hill Educ vt Ltd in 2000 anning and contro	TOT 45 ation; ol with 2017)	AL 3rd
TEXT 1. Elain 2. K.K edition (9 3. U.) REFERENC 1. Dr. B PERT 2. K.G.	Marmel, 'Microsoft F Chikkara, Construction June 2014). CSrivastava, published ES C. Punmia (Author), and CPM, Laxmi Pub Krishnamurthy (Autho	LECTURE 45 Project 2016 I on Project M d by Galgotia K. K. Khando blications Pvt or), S.V. Ravi	TUTORIAL   0   Bible', Prentice   Ianagement, Main   Publications Press   elwal Project Place   Ltd; 4th edition   indra, Construct	PRACTICAL 0 Hall, 2016 cGraw Hill Educ vt Ltd in 2000 anning and contro n (10 September 2 ion and Project	TOT 45 ation; ol with 2017)	AL 3rd
TEXT 1. Elaino 2. K.K edition (9 3. U.) REFERENC 1. Dr. B PERT 2. K.G. Mana	e Marmel, 'Microsoft F C.Chikkara, Construction June 2014). C.Srivastava, published CES C. Punmia (Author), and CPM, Laxmi Published Krishnamurthy (Author)	LECTURE 45 Project 2016 I on Project M d by Galgotia K. K. Khando blications Pvt or), S.V. Ravi ers and Distri	TUTORIAL   0   Bible', Prentice   Ianagement, Mail   Publications Press   elwal Project Place   Ltd; 4th edition   indra, Construct   ibutors PVT LT	PRACTICAL 0 Hall, 2016 cGraw Hill Educ vt Ltd in 2000 anning and contro n (10 September 2 ion and Project D; 2nd edition (2)	TOT 45 ation; ol with 2017)	AL 3rd
TEXT 1. Elain 2. K.K edition (9 3. U.I REFERENC 1. Dr. B PERT 2. K.G. Mana Febru	e Marmel, 'Microsoft F Chikkara, Construction June 2014). CSrivastava, published <b>ES</b> C. Punmia (Author), and CPM, Laxmi Published Krishnamurthy (Author gement CBS Published ary 2017)	LECTURE 45 Project 2016 I on Project M d by Galgotia K. K. Khande olications Pvt or), S.V. Ravi ers and Distri	TUTORIAL 0 Bible', Prentice Ianagement, Ma Publications Pu elwal Project Pl Ltd; 4th edition indra, Construct ibutors PVT LT	PRACTICAL 0 Hall, 2016 cGraw Hill Educ vt Ltd in 2000 anning and contro n (10 September 2 ion and Project D; 2nd edition (2)	TOT 45 ation; ol with 2017) 8	AL 3rd
TEXT 1. Elaino 2. K.K edition (9 3. U.) REFERENC 1. Dr. B PERT 2. K.G. Mana Febru 3. Kuma	e Marmel, 'Microsoft F Chikkara, Construction June 2014). CSrivastava, published ES C. Punmia (Author), and CPM, Laxmi Published Krishnamurthy (Author) gement CBS Published ary 2017) r Neeraj Jha, Construct	LECTURE 45 Project 2016 I on Project M d by Galgotia K. K. Khanda olications Pvt or), S.V. Ravi ers and Distri	TUTORIAL   0   Bible', Prentice   Ianagement, Management, Management, Management, T	PRACTICAL 0 Hall, 2016 cGraw Hill Educ vt Ltd in 2000 anning and contro n (10 September 2 ion and Project D; 2nd edition (2 heory and	TOT 45 ation; ol with 2017) 8	AL 3rd
TEXT 1. Elaino 2. K.K edition (9 3. U.1 REFERENC 1. Dr. B PERT 2. K.G. Mana Febru 3. Kuma Practi	Marmel, 'Microsoft F Chikkara, Construction June 2014). CSrivastava, published ES C. Punmia (Author), and CPM, Laxmi Published Krishnamurthy (Author gement CBS Published ary 2017) ar Neeraj Jha, Construct cesPearson Education;	LECTURE 45 Project 2016 I on Project M d by Galgotia K. K. Khando blications Pvt or), S.V. Ravi ers and Distri ction Project I ; 2nd edition	TUTORIAL   0   Bible', Prentice   Ianagement, Management, Management, Management, T   (30 November 2)	PRACTICAL 0 Hall, 2016 cGraw Hill Educ vt Ltd in 2000 anning and contro n (10 September 2 ion and Project D; 2nd edition (2 heory and 2014)	TOT 45 ation; ol with 2017) 8	AL 3rd

Table 5	5. Map	oping of	f COs	with P	Pos							
	PO-1	PO- 2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PSO1	PSO2
CO-1										3	-	-
CO-2										3	-	-
CO-3			3	3			3	3		3	-	-
CO-4			3	3		3				3	-	-
CO-5					3		3			3	-	-
Total	-	-	6	6	3	3	6	3	-	15	-	-
Scaled value	0	0	2	2	2	0	2	1	0	3	0	0

1-5 =1, 6-10=2, 11-15=3 0-No relation, 1 –Low Relation, 2 –Medium Relation, 3 –High

## Relation.

XAR 903–HOUSING 3–0–0–3

#### **Course Objectives:**

- 1. To introduce housing in the Indian context and the various agencies involved in the production of housing.
- 2. To outline factors, aspects and standards related to housing.
- 3. To inform about the various housing design typologies and the processes involves in housing project development.
- 4. To inform about current issues and aspects in housing.

Course	e Outcome	Domain	Level
On the	successful completion of the course, students will b	e able to	
CO1	<b>Knowledge</b> of various issues concerning housing & housing development in India & global context covering a cross-section of income groups.	Cognitive	Analyzing
CO2	Ability to appreciate socio-economic aspects in	Cognitive	Applying

	housing		
CO3	Understanding of housing standards and applying	Cognitive	Understanding
	it in design	Affective	Perception
CO4	Understanding of Site planning, housing	Cognitive	TT 1 4 1
	concepts and types.	Psychomotor	Understanding
CO5	<i>Understand</i> the current Issues and various design principles and apply it in Design	Cognitive	Understanding
		Psychomotor	Applying

SUBCODE	SUB NAME	L	T	P	C
XAR 903	HOUSING	3	0	0	3
<b>C:P:A</b> =	2.1:0.6:0.3	L	Т	Р	H
		3	0	0	3
UNIT – I	INTRODUCTION TO HOUSING AND HOUSING	ISSU	JES	IN	9
	INDIA				
	Housing and its importance in architecture its	relatio	nshi	n w	vith
	neighborhood and city planning. Housing demand and	supr	lv N	P " Natio	nal
	Housing Dollary Housing according and their role in housing	supp	1y. 1	vatio	1141
	Housing Policy. Housing agencies and their role in hous	sing (		opme	ent.
	Impact of lifestyle. Rural Housing. Public and private sector	or hou	ising	•	
UNIT – II	SOCIO-ECONOMIC ASPECTS				9
	Economics of housing. Social-economic factors infl	luenci	ing	hous	ing
	affordability. Formal and informal sector. Equity in house	sing c	level	opme	ent.
	Sites and services. Slum housing, up-gradation and rede	evelop	omen	t. Lo	OW-
	Cost Housing. Health principles in housing. Legisla	tion	for	hous	ing
	development. Cost-effective materials and technologies	for h	ousin	g. C	ase

	studies in India a	and developing	countries.		
UNIT – III	HOUSING STA	NDARDS			8
	URDPFI guideli	nes, standards	and regulations.	DCR. Performanc	e standards
	for housing.				
UNIT – IV	SITE PLANNIN	NG AND HOU	<b>ISING DESIGN</b>	I	1
					1
	Site Planning for	or housing. Sel	lection of site f	or housing, consi	deration of
	physical charact	eristics of the	site, location	factors, orientation	on, climate,
	topography, lan	dscaping. Inte	gration of serv	vices and parking	g. Housing
	design relating	to Indian situ	ations – traditi	onal housing, ro	w housing,
	cluster housing,	apartments, hi	gh-rise housing.	Case studies in l	India of the
	various types.				
UNIT – V	CURRENT AS	PECTS AND I	ISSUES IN HO	USING	8
	Green building a	nd sustainable	practices. Disas	ter resistance and	mitigation.
	Prefabrication, C	Community part	ticipation.		
	Į	LECTURE	TUTORIAL	PRACTICAL	TOTAL
		45	0	0	45
TEXT			<u>I</u>		
1. Christop	oher Alexander, 'A	A Pattern Lang	guage', Oxford	University press,	New York
1977. Ed	dition: Illustrated,	23 February 20	)15		
2. Leuris S	, 'Front to back:	A Design Age	nda for Urban H	Iousing', Architec	tural Press,
2006.					
3. S.K.Sha	rma, 'Mane A	New Initia	tive in Publi	ic Housing', H	lousing &
UrbanDe	evelopmentCorpor	ration, 1991.			
REFERENC	CES				
1. Rich	ard Kindermann a	nd Robert Sma	ll, 'Site Planning	g for Cluster Hous	ing', Van
Nost	rand Reinhold Co	mpany, Londor	n/New York, 19	77. ISBN-13 - 97	8-

0442288228

 Joseph de Chiara et al, 'Time-Saver Standards for Housing and Residential Development', McGraw Hill Co, New York, 1995. Second edition

Table 5	56. Map	oping of	f COs	with <b>H</b>	Pos							
	PO-1	PO-2	PO-3	РО- 4	PO-5	PO- 6	PO-7	PO-8	PO-9	PO-10	PSO1	PSO2
CO1	-	-	-	2	-	-	-	-	1	3	-	-
CO2	-	-	-	3	-	-	-	-	-	3	-	-
CO3	-	-	3	3	-	-	3	-	3	-	-	-
CO4	_	-	-	3	-	-	-	-	3	-	-	-
CO5	-	-	-	3	-	-	-		3	-	-	-
Total	0	0	3	14	0	0	3	0	10	6	0	0
Scaled value	0	0	3	3	0	0	0	0	2	2	0	0

1-5 =1, 6-10=2, 11-15=3

## XAR904–LANDSCAPE ARCHITECTURE

## **Course Objectives:**

1. To familiarize students with the various elements, principle of landscape architecture and develop competency in dealing with the analytic, artistic and technical aspects of landscape design.

Course	Outo	come Do	mair	1	]	Level	
<u>CO1</u>	C (	hand and interest the invest of Court			V	.1.1.	
COI	Stu	by of ecology and interpret the impact of Cogni	tive		Knov	vieag	e
	hun	nan activities on the environment and the					
	role	of the architect in mitigating it.					
	TT		••		TZ.	1 1	
CO2	Un	derstanding the characteristics of plants and Cogni	tive		Knov	viedg	e
	thei	r application.					
CO3	Der	nonstrate the knowledge of elements and Cogn	tive		Knov	vledg	e
000	scol	a of landscape architecture			1110,	, ieag	•
	scor	pe of fandscape areintecture.					
CO4	Ana	lyze and application of History of Cogni	tive		Knov	vledg	e
	Lan	dscape.					
		Psych	omot	or	Creat	e	
C05	Dec	ign and develop a landscape proposal for Psych	omol	or	Creat	Δ	
005	Des	In and develop a landscape proposal for resystem	01101	.01	Cica	.C	
	sma	in and medium scale projects.					
	Dev	elop a detailed drawing and use digital tools					
	to p	resent a landscape proposal.					
SUBCO	DF	SUD NAME		Т	T	D	С
XAR90	4	LANDSCAPE ARCHITECTURE		<b>L</b> 3	0	0	<u> </u>
C.D.A		2.1.0		т	Т	D	п
CIT:A		2:1:0		L	I	Г	<b>П</b>
				3	0	0	3
UNIT –	I	INTRODUCTION		L	L		8
		Introduction to Landscape, Categories	and	1	Mater	ials	in
		Landscape, Objective and Professional Scope of La	andsc	ape.	Basic	conc	epts
		of ecology and the impact of human activities on t	hem.	Bio	, Geo,	chen	nical
		cycles including the water cycle, carrying cap	acity	of	an e	cosys	tem.
		Environmental impact assessment. Reclamation a	nd re	stora	ation c	of der	elict
		*					

3-0-0-3

	lands.
IINIT – II	ELEMENTS IN LANDSCAPE DESIGN 9
	Introduction to hard and soft landscape elements. Different types of hard
	landscape elements. Plant materials. Plants as design elements-
	classification structural characteristics of plants – visual characteristics of
	plant viz. line, form, texture, colour, etc. – basic data for plant selection.
	water and landform - classification, characteristics, use and application in
	landscape design.
UNIT – III	GARDENS 9
	Catagories of the garden, Indian, Japan, Spanish, Chinese, English French,
	Italian, Mugal Garden (TajMahal) Japanese gardens: Italian Renaissance
	gardens, Outline of landscape and garden design in Indian history. Gardens
	depicted in Sanskrit literature, Nandavanams and residential gardens of
	South India. Mughul gardens. Public parks and residential gardens of the
	colonial period. Contemporary public landscape projects. Study of notable
	examples. Spatial development in landscape design.
UNIT – IV	PLANTING DESIGN 9
UNIT – IV	PLANTING DESIGN9Behavioral principles, landform design, Landscape character – Landscape
UNIT – IV	PLANTING DESIGN9Behavioral principles, landform design, Landscape character – LandscapeComposition – Plant Association– Landscape effects-Organisation of
UNIT – IV	PLANTING DESIGN9Behavioral principles, landform design, Landscape character – LandscapeComposition – Plant Association– Landscape effects-Organisation of spaces- circulation, built form and open spaces- exercises on planning for
UNIT – IV	PLANTING DESIGN9Behavioral principles, landform design, Landscape character – LandscapeComposition – Plant Association– Landscape effects-Organisation of spaces- circulation, built form and open spaces- exercises on planning for neighbourhood parks and campus developments.
UNIT – IV UNIT – V	PLANTING DESIGN9Behavioral principles, landform design, Landscape character – LandscapeComposition – Plant Association– Landscape effects-Organisation of spaces- circulation, built form and open spaces- exercises on planning for neighbourhood parks and campus developments.LANDSCAPE DESIGN OF FUNCTIONAL AREAS / /PUBLIC10
UNIT – IV UNIT – V	PLANTING DESIGN9Behavioral principles, landform design, Landscape character – LandscapeComposition – Plant Association– Landscape effects-Organisation of spaces- circulation, built form and open spaces- exercises on planning for neighbourhood parks and campus developments.LANDSCAPE DESIGN OF FUNCTIONAL AREAS / /PUBLIC OPEN SPACES10
UNIT – IV UNIT – V	PLANTING DESIGN9Behavioral principles, landform design, Landscape character – LandscapeComposition – Plant Association– Landscape effects-Organisation of spaces- circulation, built form and open spaces- exercises on planning for neighbourhood parks and campus developments.LANDSCAPE DESIGN OF FUNCTIONAL AREAS / /PUBLIC OPEN SPACES10Urban open spaces and principles of the urban landscape. Street
UNIT – IV UNIT – V	PLANTING DESIGN9Behavioral principles, landform design, Landscape character – LandscapeComposition – Plant Association– Landscape effects-Organisation of spaces- circulation, built form and open spaces- exercises on planning for neighbourhood parks and campus developments.LANDSCAPE DESIGN OF FUNCTIONAL AREAS / /PUBLIC OPEN SPACES10Urban open spaces and principles of the urban landscape. Street 
UNIT – IV UNIT – V	PLANTING DESIGN9Behavioral principles, landform design, Landscape character – LandscapeComposition – Plant Association– Landscape effects-Organisation ofspaces- circulation, built form and open spaces- exercises on planning forneighbourhood parks and campus developments.LANDSCAPE DESIGN OF FUNCTIONAL AREAS / /PUBLICOPEN SPACESUrban open spaces and principles of the urban landscape. Streetlandscaping, landscape design for waterfront areas and functional areas inurban centres like squares, plazas. Green infrastructure including green roofs
UNIT – IV UNIT – V	PLANTING DESIGN9Behavioral principles, landform design, Landscape character – LandscapeComposition – Plant Association– Landscape effects-Organisation of spaces- circulation, built form and open spaces- exercises on planning for neighbourhood parks and campus developments.LANDSCAPE DESIGN OF FUNCTIONAL AREAS / /PUBLIC OPEN SPACES10Urban open spaces and principles of the urban landscape. Street landscaping, landscape design for waterfront areas and functional areas in urban centres like squares, plazas. Green infrastructure including green roofs and walls Landscaping for residential layout – recreational facilities, like
UNIT – IV UNIT – V	PLANTING DESIGN9Behavioral principles, landform design, Landscape character – LandscapeComposition – Plant Association– Landscape effects-Organisation ofspaces- circulation, built form and open spaces- exercises on planning forneighbourhood parks and campus developments.LANDSCAPE DESIGN OF FUNCTIONAL AREAS / /PUBLICOPEN SPACESUrban open spaces and principles of the urban landscape. Streetlandscaping, landscape design for waterfront areas and functional areas inurban centres like squares, plazas. Green infrastructure including green roofsand walls Landscaping for residential layout – recreational facilities, likeparks, playfields- waterfront areas – hill areas, Consideration and key
UNIT – IV UNIT – V	PLANTING DESIGN9Behavioral principles, landform design, Landscape character – LandscapeComposition – Plant Association– Landscape effects-Organisation of spaces- circulation, built form and open spaces- exercises on planning for neighbourhood parks and campus developments.LANDSCAPE DESIGN OF FUNCTIONAL AREAS / /PUBLIC OPEN SPACES10Urban open spaces and principles of the urban landscape. Street landscaping, landscape design for waterfront areas and functional areas in urban centres like squares, plazas. Green infrastructure including green roofs and walls Landscaping for residential layout – recreational facilities, like 
UNIT – IV UNIT – V	PLANTING DESIGN9Behavioral principles, landform design, Landscape character – LandscapeComposition – Plant Association– Landscape effects-Organisation ofspaces- circulation, built form and open spaces- exercises on planning forneighbourhood parks and campus developments.LANDSCAPE DESIGN OF FUNCTIONAL AREAS / /PUBLIC10OPEN SPACESUrban open spaces and principles of the urban landscape. Streetlandscaping, landscape design for waterfront areas and functional areas inurban centres like squares, plazas. Green infrastructure including green roofsand walls Landscaping for residential layout – recreational facilities, likeparks, playfields- waterfront areas – hill areas, Consideration and keyfactors to landscaping of above context.Design Assignment: landscape proposal and Drawing preparation for
UNIT – IV UNIT – V	PLANTING DESIGN9Behavioral principles, landform design, Landscape character – LandscapeComposition – Plant Association– Landscape effects-Organisation of spaces- circulation, built form and open spaces- exercises on planning for neighbourhood parks and campus developments.10LANDSCAPE DESIGN OF FUNCTIONAL AREAS / /PUBLIC OPEN SPACES10Urban open spaces and principles of the urban landscape. Street landscaping, landscape design for waterfront areas and functional areas in urban centres like squares, plazas. Green infrastructure including green roofs and walls Landscaping for residential layout – recreational facilities, like 

					LEC	TURE	E <b>TU</b>	ΓORIA	LPF	RACTICA	AL T	OTAL	
					4	45		0		0		45	
TEXT													
1.	Landsca	ipe Arc	chitec	ture –	John	Omsbe	esimo	nds 16	August	, 2006.			
2.	Planting	g Desig	gn – 7	Theod	ore D	Walke	r.						
3.	Motloc	h, J.L.,	, 'An ]	[ntrod	uction	to Lar	ndscape	e Desig	n', US:	John Wil	ey and S	ons,	
	2001.												
4.	Michael	Lauri	e, 'Int	roduc	tion to	Lands	cape A	architec	ture', E	lsevier, 1	986.		
5.	5. Sauter D; 'Landscape Construction', Delmar Publishers; 2000.												
. 6. Geoffrey And Susan Jellico, 'The Landscape of Man', Thames And Hudson, 1987													
REFE	EFERENCES												
	1. Introduction to landscape design – John L.Motloch.												
2.	Planting design Handbook – Nick Robinson.												
3.	3. Site planning Standards – Joseph dechiara Lee E. Koppelman.												
4.	4. Hand Book of Urban Landscape, The Architectural Press, London, 1973, Cliff												
	Tandy.												
5.	5. T S S for Landscape Architecture, McGraw Hill, Inc, 1995												
6.	Landsc	ape pla	anning	g and	Enviro	nment	al Imp	act Des	ign , Ti	urner			
7.	Landsc	ape de	tailing	g , Lit	tle woo	ods							
8.	Landsc	ape de	sign ,	Park	C.								
Table :	57. Map	oping	of CC	<b>)</b> s wit	h Pos								
	<b>DO 1</b>	PO-	PO-	PO-	DO 5		DO 7			<b>DO 10</b>	DCO1	DEO2	
	PO-1	2	3	4	PO-5	PO-0	PO-/	PO-8	PO-9	PO-10	PS01	PS02	
CO-1	2	3	3	-	-	-	-	-	-	-	_	-	
CO-2	-	-	-	-	-	-	-	3	-	-	_	-	
CO-3	-	-	-	-	-	-	-	-	3	3	3	3	
CO-4	-	-	-	3	2	1	-	-	-	-	-	-	
CO-5	-	-	-	-	-	-	3	-	-	-	1	2	
Total	2	3	3	3	2	1	3	3	3	3	4	5	
Scaled	1	1	1	1	1	1	1	1	1	1	1	1	
value		•		•	•	•	*	*	*	*	*	•	

1-5 =1, 6-10=2, 11-15=3

## XAR 906–DISSERTATION

## 1 - 0 - 2 - 3

2 - 0 - 1 - 3

### **Course Objectives:**

1. To motivate students to involve in individual research and methodology.

Course	Outo	come	Domain	l	L	evel	
On the s	succe	ssful completion of the course, students will be	e able to				
CO1	Unc	dertake the research systematically on a	Cognitiv	e	Knov	wled	ge
	cho	sen topic.					
CO2	Illu	strate the various methods available for the	Cognitiv	e	Iı	nfer	
	coll	ection of information.					
CO3	And	ulyses and interpret the information obtained	Cognitiv	e	An	alysi	S
	from	n the study.					
CO4	Org	anize the collected information graphically.	Cognitiv	e	Appl	icati	on
CO5	Dev	<i>elop</i> a report of the analyzed information with	Psychomo	tor	Evaluate		
	logi	cal reasoning and a conclusion.	-				
SUBCC	DE	SUB NAME	<u>I</u>	L	Т	P	C
XAR90	6	DISSERTATION		1	0	2	3
C:P:A =	=	2.4:.6:0		L	Т	Р	H
				1	0	2	5
UNIT –	Ι	TOPICS OF STUDY			<b>i</b>		
		The main areas of study and research can in	nclude adva	ince	d archi	itectu	ıral
		design, including contemporary design	processes,	u	rban	desi	gn,
		environmental design, conservation and her	itage preci	ncts,	, hous	ing (	etc.
		However, the specific thrust should be the ar	chitectural	desi	gn of t	he b	uilt
		environment. Preparation of presentation drav	wings and a	repo	rts are	part	of
		the requirements for submission.					
		METHOD OF SUBMISSION					

The Dissertat	The Dissertation shall be submitted in the form of drawings, project reports,										
CDs and repo	CDs and reports.										
	LECTURE TUTORIAL PRACTICAL TOTAL										
	15 0 60 75										

Table 5	Table 58. Mapping of COs with Pos												
	PO-1	PO-2	PO-3	PO- 4	PO-5	PO- 6	PO-7	PO-8	PO-9	PO-10	PSO1	PSO2	
CO-1	3	1	-	-	-	-	-	1	1	2	1	2	
CO-2	-	-	3	-	-	-	-	-	-	2	2	2	
CO-3	3	3	3	-	-	3	_	2	-	-	2	2	
CO-4	-	-	-	3	3	-	-	-	-	-	1	3	
CO-5	-	-	-	3	-	-	3	-	-	-	2	3	
Total	6	4	6	6	3	3	3	3	1	4	8	12	
Scaled to 0,1,2,3 scale	3	2	3	3	2	2	2	2	1	2	3	3	
1-5 =1,	6-10=2	2, 11-15:	=3		0-No 1	relatio	on, 1 –	Low R	Relatio	n, 2 – M	edium		

**Relation**, **3**–High Relation.

# $XAR907 - ARCHITECTURAL \ DESIGN - VII \quad 0 - 0 - 14 - 14$

## **Course Objectives:**

1. To understand the city under study, read the issues in a given area after a methodical analysis and propose housing /urban design/ campus design solutions.

Course	Outcome	Domain	Level
On the	successful completion of the course, students will be a	ible to	
CO1	<i>Undertake</i> a study to identify existing issues related to urban design in the built environment.	Cognitive	Illustrate

CO2	<i>Identify</i> various factors that are responsible for urban conditions.	Cognitive	Infer
CO3	<i>Gather</i> , <i>correlate</i> and <i>interpret</i> the data that are required for design proposals at historic cities.	Affective	Analyze
CO4	<i>Develop</i> an urban renewal proposal for a city.	Psychomotor	Create
CO5	<i>Develop</i> a design proposal for the urban issues relating to the built environment	Psychomotor	Create

SUBCODE	SUB NAME	L	T	Р	C
XAR907	ARCHITECTURAL DESIGN – VII	0	0	14	14
C:P:A	5.6:5.6:2.8	L	Т	Р	Η
		0	0	14	14
UNIT – I	STUDIO	i	<u>.</u>		210
	Projects pertaining to Urban Design including Url	oan I	Rene	wal	and
	Redevelopment -Involving intensive study of visual	and o	other	sen	sory
	relationships between people and their environment, pr	oblen	ns co	oncer	ning
	both preservation and development based on correlation	of so	cio-	econo	omic
	and physical state and problems pertaining to traffic – D	esign	and	deta	iling
	for differently-abled at the city/street/building scale.				
	Examples: Any part of a city exploring specific urban de	sign t	ypol	ogies	and
	alternatives for revitalization. The studio exercise could	invol	ve tł	ne de	sign
	of a group of buildings in the urban context. This cou	ld be	a gi	reenf	ïeld/
	brownfield development, redevelopment or revitalizat	ion p	rojec	ct in	the
	context of the city under study, Conservation and	Re-	deve	elopn	nent,
	revitalization of the historic core, etc. Emphasis shall be	on th	e de	sign	with
	relation to the contextual environment, heritage, traffic	, plan	ning	con	trols
	and impact analysis. An understanding of the architectu	ral in	nplic	atior	ns of
	such a development scheme should lead to insights into	the f	ormı	ılatio	on of
	urban design controls and urban planning policy				

		LECTURE	TUTORIAL	PRACTICAL	TOTAL
		0	0	210	210
TEXT					
1.	D. Gosling and Mai	tland, 'Urban	Design' - St.	Martins Press, (1	l February
	1985)				
2.	Ian Bentley, 'Respon	sive Environn	nent - A manua	l for Designer',	Routledge,
	1985.				
REFE	RENCES				
1.	E and OE planning life Bo	ooks Ltd, Lond	lon 1973.		
2.	P&D Act 1995.				
3.	Edward D Mills, 'Plannin	ng - Buildings	for Habitation	, Commerce and	Industry',
	Newnes, London, 1976.				
4.	Gordon Cullen, 'Concise'	Townscape', A	Architectural Pre	ess; 1st edition (1	December
	1961).				

_____

Table 5	Table 59. Mapping of COs with Pos													
	PO-1	PO- 2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PSO1	PSO2		
CO-1	1	-	3	2	1	3	2	1	1	1	1	3		
CO-2	1	2	3	-	-	-	-	_	-	-	2	3		
CO-3	-	-	3	3	2	-	-	2	2	2	2	3		
CO-4	3	3	-	2	2	2	3	3	2	2	2	3		
CO-5	3	3	-	2	2	2	2	3	2	2	2	3		
Total	8	8	9	9	7	7	7	8	7	7	9	15		
Scaled to 0,1,2,3 scale	2	2	2	2	2	2	2	2	2	2	2	3		

1-5 =1, 6-10=2, 11-15=3

# **Course Objectives:**

Course	Outo	come	Domain		Ι	Level				
On the s	succe	ssful completion of the course, students will l	be able to	<u> </u>						
CO1	For	mulate design projects independently by	Cognitive	2	illu	ıstrat	e			
	ider	ntifying the issues at the individual building								
	leve	el and urban level.								
CO2	Det	ermine the requirements and other relevant	Cognitive	?	1	Infer				
	information for chosen projects.									
CO3	Pla	<i>n</i> Undertake a study, analyze and identify	Affective		Aı	nalyz	e			
	the	issues in the chosen area of interest								
<b>CO4</b>	Den	nonstrate design skills and expertise through	Psychomot	or	С	reate	;			
	ima	ginative approach in designing the built								
	env	ironment								
CO5	Eff	ectively communicate design ideas through	Psychomot	or	С	reate	;			
	a se	t of detailed technical drawings, models and								
	oral	presentations								
SUBCC	DE	SUB NAME		L	Τ	Р	C			
XAR10	01	THESIS		0	0	18	18			
<b>C:P:A</b> =	=	7.2:3.6:7.2		L	T	Р	Н			
				0	0	18	18			
UNIT –	Ι	TOPICS OF STUDY		<u> </u>		[	270			
		The main areas of study and research shall	be Architect	ure, I	Urbar	n Des	sign,			
		Urban renewal, urban and rural housing a	and settleme	nts, l	Envir	onme	ental			
		Design, Conservation, Landscape Design, et	tc. However,	the	speci	fic th	nrust			
		shall be on architectural design and en	nvironment	conte	ext v	with	full			
		understanding.								

# PRESENTATION REQUIREMENTS

The Thesis Project shall be submitted in the form of drawings, project reports, models, Slides, C.D's and reports, as required for the project

J	LECTURE	TUTORIAL	PRACTICAL	TOTAL
	0	0	270	270
ТЕХТ				
As per requirement of Topic and	as suggested b	by the superviso	r of Thesis	
REFERENCES				
As per requirement of Topic and	as suggested b	y the supervisor	r of Thesis	

Table 6	Table 60. Mapping of COs with Pos													
	PO-1	PO-2	PO-3	РО- 4	PO-5	PO- 6	PO-7	PO-8	PO-9	PO-10	PSO1	PSO2		
CO-1	2	2	3	-	-	-	-	2	2	2	3	3		
CO-2	2	3	-	-	2	1	1	2	1	2	3	3		
CO-3	-	-	3	-	2	1	-	3	2	2	3	3		
CO-4	3	3	-	2	2	2	2	3	3	2	3	3		
CO-5	2	-	-	3	3	-	-	3	2	1	3	3		
Total	9	8	6	5	9	4	3	13	10	9	15	15		
Scaled to 0,1,2,3 scale	2	2	2	1	2	1	1	2	2	2	3	3		

1-5 =1, 6-10=2, 11-15=3

### XAR 602A – CULTURE AND ARCHITECTURE

#### 3 - 0 - 0 - 3

## **Course Objectives:**

- 1. To provide an overview of the relationship between culture and the built environment.
- 2. To expose the components of culture and the factors influencing culture.
- 3. To study the evolution of built forms in different regions.
- 4. To know about the factors that influence the architecture of a particular region.
- 5. To understand Architecture, as the expression of Culture.

Course Outcome Domain					Level					
On the s	succe	ssful completion of the course, students will be	able to	<u>l</u>						
CO1	Understandthe significance of Anthropology in Architecture.Cognitive						Understanding			
CO2	Ass in o part	<i>tess</i> the role of different components of culture deciding and shaping the architecture of a icular region.	Cognitive		Evaluate					
CO3	Analyze the stages of evolution of built forms in different regions as a continuous process Cognitive					Analyzing				
CO4	<i>Out</i> of a toda	<i>line</i> the factors that influence the architecture a particular region during different periods till ay.	Cognitive		Understanding					
CO5	CO5 <i>Identify</i> the impact of Culture on Architecture as Cognitia a whole.			>		App	lying	, ,		
SUBCODE SUB NAME				L		Т	Р	C		
XAR60	2A	A CULTURE AND ARCHITECTURE					0	3		
<b>C:P:A</b> =	=	3:0:0		L		T	Р	H		
						0	0	3		

UNIT – I	INTRODUCTION				10					
	History of civilizations - Evolution of first societies - Relationship between									
	man, nature and built forms - Built forms as expressions of culture.									
UNIT – II	RELATIONSHIP	BETWEEN N	AAN, NATURI	E AND SOCIET	TY 7					
	Introduction to Sociology, an overview of Social Institutions Underlying									
	values of relationships between Man, Nature and Society. Role of Family									
	structure, privacy, religion and occupation, the status of women etc.									
	Settlements and their locations- river banks, valleys, fertile soils.									
UNIT – III	ROLE OF CULTU	URE IN ARCI	HITECTURE			8				
	Introduction to culture and architecture. Relationship between culture and									
	climate. Effect of socio-cultural factors in architecture. Impact of tangible									
	and non-tangible elements on spatial design.									
UNIT – IV	ANTHROPOLOG	Y OF TRAD	TIONAL ARC	CHITECTURE		10				
	Architecture as a Process – kinship and house societies – perceptions of built									
	form - conceptions of space - symbolism and technology - study of the									
	above through case	study of tradit	ional architectu	re in India.						
UNIT – V	ALTERNATE TH	EORIES OF	HOUSE FORM	Л		10				
	Evolution of built for	orms - influen	cing factors. Co	onstraining and de	termin	iing				
	factors – Climate,	material reso	urces, construc	tion and technol	logy, s	site,				
	defense, economics,	religion, sym	bols and meanir	ıgs.						
		LECTURE	TUTORIAL	PRACTICAL	тот	AL				
	45 0 0 45									
TEXT										
1. A	mos Rapoport, " Hou	se Form and C	Culture", 1969.							
2. A	mos Rapoport, "Cultu	ure, Architectu	re and Design",	, 2005.						
REFERENC	ES									
1. Amos	1. Amos Rapoport, "The meaning of the Built Environment", 1982.									
2. Paul	2. Paul Oliver, Encyclopedia of Vernacular Architecture of the world, Cambridge									
Unive	University Press, 1997.									

Table (	Table 61. Mapping of COs with Pos											
	PO-1	PO- 2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PSO1	PSO2
CO-1	2	2	-	-	_	1	-	1	-	-	-	1
CO-2	2	1	-	-	_	1	-	1	-	-	-	1
CO-3	1	2	-	-	-	1	-	3	-	-	-	1
CO-4	2	2	-	-	-	2	-	2	-	-	-	1
CO-5	2	1	-	-	-	1	-	1	-	-	-	1
Total	9	8	-	-	-	6	-	8	-	-	-	5
Scaled to 0,1,2,3 scale	2	2	0	0	2	2	0	2	0	0	0	3

 Paul Oliver's "Built to meet needs - Cultural Issues in Vernacular Architecture", 2006.

1-5 =1, 6-10=2, 11-15=3

0-No relation, 1 –Low Relation, 2 –Medium Relation, 3 –High Relation.

#### XAR 602B– BUILDING AUTOMATION AND MANAGEMENT 3 – 0 – 0 – 3

**Course Objectives:** 

1. This course enables the students to attain a comprehensive knowledge of Building Automation and Management systems in Buildings in line with the technological growth and innovations in this Industry.

Course	Outcome	Domain	Level
On the s	successful completion of the course, students will b	e able to	
CO1	<i>Learn</i> the basics of building management systems, the scope of BMS and its importance.	Cognitive	Understand

CO2	<i>Understand</i> the basics of BIM and Controllers.	Cognitive	Understand
CO3	<i>Understand</i> all the aspects of BMS and its application in buildings.	Affective	Knowledge
CO4	<i>Identify</i> the components of BMS and its application in buildings with respect to energy conservation and safety	Affective	Knowledge
C05	<i>Enable</i> the students to explore the various technological advancements, current trends in BMS	Affective	Knowledge

SUBCODE	SUB NAME	L	Т	P	C						
XAR602B	BUILDING AUTOMATION AND MANAGEMENT	3	0	0	3						
<b>C:P:A</b> =	1.2:0:1.8	L	Т	Р	Η						
		3	0	0	3						
UNIT – I	INTRODUCTION				5						
	Introduction to Basics of Building Management Systems	(BMS	5), In	tegra	ted						
	Building Management Systems (IBMS), Building Info	rmatio	on M	lodel	ing						
	(BIM) and Building Automation System (BAS). Scope and Importance of										
	Building Management Systems										
UNIT – II	BUILDING INFORMATION MODELLIN	G	A	ND	10						
	CONTROLLERS										
	Importance of Building Information Modeling (BIM), Tools used in BIM										
	facility operation using BIM. Controllers -Types and functions, Occupancy,										
	Integration using Internet protocol.										
UNIT – III	ASPECTS OF BUILDING MANAGEMENT SYSTEM 10										
	HVAC management - Central plant, Chillers, Cooling towers, VAV, AHU,										
	Exhaust systems, Lighting management, Electrical systems management,										
	Plumbing and Fire fighting systems management - detectors and alarm										
	system integration with BMS. Energy management systems. Case study										
	examples. Designing and drawing a small building by applying the HVAC										
		systems.									
-----------------------------------------------------------------------	-----------------------------------------------------------------------------	-----------------------	------------------	--------------------	-------------------	-----------	----	--	--	--	--
UNIT -	- IV	SAFETY AND SE	CURITY SYS	STEMS		1	10				
		Access control syst	ems, Closed-ci	ircuit television,	, Intruder Alarm,	Perimete	er				
		protection, Safety s	ystem integrati	ion with BMS.							
UNIT -	- V	ADVANCEMENT	S IN BUILDI	ING MANAGE	CMENT SYSTEM	М 1	10				
Advancements in the field of Building Management Systems. Intelligent											
		buildings, Role of	BMS in energ	gy efficiency an	nd maintenance of	cost. Cas	se				
	study examples.										
		i	LECTURE	TUTORIAL	PRACTICAL	TOTA	L				
			45	0	0	45					
TEXT											
REFEI	RENC	CES									
1.	James	5 M Sinopoli, Smart	Buildings Sys	stems for Archi	tects, Owners an	d					
	Build	ers 9 November 200	9.								
2.	Sheng	gwei Wang, Intelli	gent Building	s and Buildin	g Automation	4					
	Nove	mber 2009.									
3.	D. Co	les, G. Bailey, R E C	Calvert, Introdu	ction to Buildin	ng Management 1	8 May					
	1995.										
4.	4. G. J. Levermore, Building Energy Management Systems: Application to Low-										
	Energ	y HVAC and Natura	l Ventilation C	Control January	2013.						
5.	Quen	tin Wells, Smart grid	home March,	2012.							

Table 6	Table 62. Mapping of COs with Pos											
	PO-1	РО- 2	PO-3	PO-4	PO-5	PO-6	PO-7	<b>PO-8</b>	PO-9	PO-10	PSO1	PSO2
CO-1	-	-	-	3	-	-	1	-	-	3	2	-
CO-2	-	-	-	1	-		1	-	-	3	2	-
CO-3	-	-	-	1	-		3	-	-	3	2	-
<b>CO-4</b>	-	-	-	-	2	-	3	3	2	3	3	-
CO-5	-	-	-	1	-	-	3	3	2	3	3	-
Total	-	-	-	6	2	-	11	6	4	15	12	-
Scaled to 0,1,2,3 scale	0	0	0	2	1	0	3	2	1	3	3	0

### 0 - No relation, 1 – Low Relation, 2 – Medium Relation, 3 – High Relation.

#### **XAR 602C – ARCHITECTURE AND STRUCTURE**

3 - 0 - 0 - 3

#### **Course Objectives:**

- 1. To study the evolution of structural systems through history.
- 2. To familiarise the students with concepts of structural design through works of architects/engineers.
- 3. To study architectural expression through its structure.
- 4. To analyze and understand the relationship between form & structure through seminars.

Course	Outo	come	Domain			Lev	vel	
On the	succe	essful completion of the course, students will l	be able to					
CO1	Ur thr	nderstand the evolution of structural systems rough history	Cognitive		Un	der	stan	d
CO2	Ex thr	pose to the concepts of structural design rough works of architects/ engineers	Cognitive		Kn	owl	ledg	;e
CO3	Ar the his	halyze the concepts of structural design and eir impact on the architectural design of storic and contemporary buildings.	Cognitive		Kn	ow]	ledg	;e
CO4	Int rel rel	erpret the architectural expression, its ation between form and structure through evant case studies.	Psychomoto	or	Application			n
CO5	Cognitive Psychomoto	or	Kn Ap	owl plic	ledg atic	je on		
SUBCO	DDE	SUB NAME	<u>.</u>	L	T		P	С
XAR 6	02C	ARCHITECTURE AND STRUCTURE		3	0		0	3

<b>C:P:A</b> =	2:1:0	L	Т	Р	H
		3	0	0	3
UNIT – I	HISTORY OF STRUCTURAL DESIGN IN	THE	; PI	RE	8
	INDUSTRIAL ERA			1 (	1
	Development of monolithic and rock-cut structu	res -	• tra	beat	ed nd
	masted structures and bridges through ancient and medie	resses	s - ter	its a	na
	masted structures and or luges through ancient and medic	vai m	story.	•	
UNIT – II	HISTORY OF STRUCTURAL DESIGN IN T	THE	POS	5 <b>T</b> -	8
	INDUSTRIAL				
	Post Industrial modular construction of large span	and	susp	ensi	on
	structures in steel and Concrete - projects of Pier Nuig	i Nerv	vi, M	ailla	rt,
	Candella, Buckminster Fuller and Eero Saariner	n. St	ructu	re	in
	Deconstructivism – Structure and aesthetics.				
UNIT – III	CONTEMPORARY STRUCTURAL EXPRESSIO	N			10
	THROUGH CASE STUDY – I				
	The select case studies could include KCR Terminal at	Hung	Hon	ı, Ho	ong
	Kong, B3 Offices in Stockley Park, Sainsbury Centr	e for	Visu	ial 4	Art,
	Renault Centre and Swindon UK by Normal Foster and	Stand	lsted	Airp	port
	Terminal, London, UK by Fosters/Arup British Pavil	lion I	EXPC	) 19	92,
	Seville, Spain and Waterloo International Terminal by Nic	cholas	Grin	nshav	W.
UNIT – IV	CONTEMPORARY STRUCTURAL EX	PRES	<b>SSIO</b>	N	10
	THROUGH CASE STUDY – II				
	The select case studies could include Inmos Microchip	Fact	ory, (	Cent	re
	Commercial St. Herbtain, PA Technology, Princeton	and	Fleet	guar	d,
	Quimper UK by Richard Rogers Athens Olympic Stad	ium a	nd V	illag	e,
	Bridges and Public Bus Stop in St. Gallen, Railway Stati	on, L <u>y</u>	yon, I	Franc	ce
	and Stadelhofen Railway station, Zurich Schweiz by Sa	intiago	o Cal	atrav	/a
	Kansai International Airport, UNESCO Workshop,	the	Jean-	Mar	ie
	Tjibaou Cultural Center, Menil Museum, Thomson O	ptroni	cs Fa	ctor	у,
	IBM Traveling Exhibition Pavilion, Columbus Internat	ional	Expo	sitio	n,

	Genoa Italy and Lowara Officers, Montecchio Maggiore Italia by Reno										
	Piano Building W	orkshop.									
UNIT – V	SEMINAR				9						
	Seminar to preser	nt a study of are	chitectural form	and structural ex	pression						
	through select cas	es which will a	id understandin	g of structural ph	ilosophy						
	and analysis, build	ding envelope a	and services and	construction seq	uence.						
		LECTURE	TUTORIAL	PRACTICAL	TOTAL						
		45	0	0	45						
TEXT		.1									
1. Shig	geru Ban, McQuaid, M	latilda, Enginee	ering and Archit	ecture: Building	the						
Japa	an Pavilion, Phaidon P	ress Ltd, UK, 2	2008.								
2. Cox	Architects, The imag	es publishing g	roup, Australia,	2000.							
3. Mas	sted structures in archi	tecture, James	B Harris, archite	ect: Kevin Pui-K	Li,						
Oxf	ord Boston: Architect	ural Press, 2003	3								
REFEREN	ICES										
1. Mai	torell, Bohigas& Mac	kay, Pavilion o	f the Future, Ex	po 92, Seville							
(	MBM),1992.										
2. CO	X Architects Millenniu	um; Images; 20	00.								
3. Enr	icMiralle& Carme Pin	os, Olympic A	rchery Building	, 857072 COH.							
4. Prac	la Aoyama Tokyo Hei	rzog & De Meu	ron. Milan,IT:	Progetto Prada An	rteSrl,						
2	.003.										
5. Chr	istopher Beorkrem, M	aterial Strategie	es in Digital Fab	prication, Routled	lge,						
Та	ylor & Francis Group,	2013.									
6. Ang	gus J. Macdonald, Stru	cture and Arch	itecture, Archite	ectural Press, 200	1						
(	available online).										

Table 6	Table 63. Mapping of COs with Pos											
	PO-1	PO- 2	РО- 3	РО- 4	PO-5	РО- 6	PO-7	PO-8	PO-9	PO-10	PSO1	PSO2
CO-1	1	3	-	-	-	2	-	-	-	-	-	-
CO-2	1	3	-	-	-	2	-	-	-	-	-	-
CO-3	1	3				3						
CO-4	1	3				3						
CO-5	1	3				3						
Total	5	15	-	-	-	10	-	-	-	-	-	-
Scaled to 0,1,2,3 scale	1	3	0	0	0	3	0	-	0	0	0	-

0-No relation, 1 – Low Relation, 2 – Medium Relation, 3 – High Relation.

# **XAR602D – ARCHITECTURE OF SOUTH EAST ASIA**

3-0-0-3

#### **Course Objectives:**

- 1. To understand the Socio-Political, Economic, Geography, Geology of the Southeast Asian Countries.
- 2. To Understand the Style, Character, Technology Of The Southeast Asian Country Architectural Structures.

Cours	se Outcome:	Domain	Level
On the	e successful completion of the course, students will be a	able to	
CO1	Understand the evolution of the southeast Asian countries	Cognitive	Understand
CO2	Understand the architecture style, technology,	Cognitive	Understand

	character of China & Japanese	Analyze				
CO3	Understand the architecture style, technology, character of Indonesia & Malaysia	Uı A	nders Analy	tand ze		
CO4	Understand the architecture style, technology, character of Thailand & Cambodia	Uı A	nders Analy	tand ze		
CO5	Understand the architecture style, technology, character of Burma &Sri Lanka	Understand Analyze				
SUBC	CODE SUB NAME	L	Т	Р	С	
XAR6	<b>502D ARCHITECTURE OF SOUTH EAST ASIA</b>	3	0	0	3	
C:P:A	3:0:0	L	Т	Р	Н	
		3	0	0	3	
					-	

#### INTRODUCTION UNIT - I

Origin and evolution of the southeast Asian countries. Study about geography, geology, politics, social, economic value of that countries.

#### UNIT – II **HISTORY OF CHINA & JAPAN**

History of China and Japan in the context of culture including aspects of politics, society, religion, climate; geography and geology and Development of architectural form with reference to Technology, Style and Character illustrated with examples.

China: the forbidden city Beijing(1406-), Tiananmen, the main gate of the imperial city, Meridian gate, Hall of Tahedian (1406-20AD), The Summer Palace Beijing(1750,1888, 1903 AD), Typical Temple: Kaiyuan Temple Pagoda QuanzhouJapan -Temple: Toshodaiji, Kiyomizudeva Honda, Residence: Yoshijima house Takayama city.

#### **UNIT –III HISTORY OF INDONESIA & MALAYSIA**

History of Indonesia and Malaysia in the context of culture including aspects of politics, society, religion, climate; geography and geology and development of architectural form with reference to Technology, Style and Character illustrated

10

10

with examples.

#### UNIT -IV HISTORY OF THAILAND AND CAMBODIA

History of Thailand and Cambodia in the context of culture including aspects of politics, society, religion, climate; geography and geology and Development of architectural form with reference to Technology, Style and Character illustrated with examples-Angkor Wat, The City And The Temple Mountain

#### UNIT –V HISTORY OF MYANMAR and SRI LANKA

History of Srilanka in the context of culture including aspects of politics, society, religion, climate; geography and geology and Development of architectural form with reference to Technology, Style and Character illustrated with examples- Burma:Shive Dagon , pagoda (stupa) Rangoon (500-600AD), Ananda Temple, Pagan (1100AD) Srilanka: Stupa: Ruwanwelisaya stupa, Anuradhapura, Srilanka 2nd century B.C, Temple and Stupa: Vata dage, Polonnaruwa, Srilanka (1100 Ad )

#### LECTURE TUTORIAL PRACTICAL TOTAL

10

10

		45	0	0	45
TEXT					
1.	A history of southeast Asia by Ar	thur Cotterell 17	7 October, 2014.		
2.	A History Of Architecture Sir Ba	anister Of Fletch	er's 1 January 19	99.	

3. A History Of Southeast Asia, Anthony Reid 8 May 2015.

#### REFERENCES

- 1. THE TORANA In Indian And Southeast Asian Architecture Parul Pandiya Dhar
- 2. Chinese houses of Southeast Asia. Ronald G.Knapp.

Table 6	4. Map	oping o	f COs	with Po	DS							
	<b>PO1</b>	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	<b>PO8</b>	PO9	PO10	PSO1	PSO2
CO1	3		3									
CO2	3		3									
CO3	3		3									
CO4	3		3									
CO5	3		3									
Total	15		15									
Scaled Value	3		2									

0-No relation, 1 –Low Relation, 2 –Medium Relation, 3 –High Relation.

# XAR 604A – GLASS IN ARCHITECTURE

2 - 0 - 1 - 3

## **Course Objectives:**

1. The course is designed to enable the students to learn advanced building technology available for construction.

Course	e Outcome	Domain	Level		
On the	successful completion of the course, students will	be able to			
CO1	<i>Understand</i> glass and its potential application in contemporary Architecture	Cognitive	Understanding		
CO2	<i>Outline</i> the appropriate usage of glass.	Cognitive Understa			
CO3	Assess the role of glass in green architecture	Affective	Evaluating		
CO4	<i>Understanding</i> of tools and software currently in practice with respect to the use of glass in buildings.	Cognitive	Understanding		
CO5	<i>Summarize</i> the various technological advancements, current trends in Glass	Cognitive	Understanding		

SUBCODE	SUB NAME	L	Т	P	C
XAR 604A	GLASS IN ARCHITECTURE	2	0	1	3
<b>C:P:A</b> =	2:0:1	L	Т	Р	H
		2	0	1	4
UNIT – I	INTRODUCTION	<u> </u>	I		10
	Evolution & importance of glass in modern architecture	. App	licati	ons	of
	glass in buildings (façade/interior applications). Ur	ndersta	andin	g	the
	production & properties of glass. Value additions in	ncludi	ng c	oati	ing
	technology (importance & necessity) and processing	(temp	ering	, h	eat
	strengthening, DGU, laminated, ceramic fritting). Types	of Gl	ass- :	mirr	or,
	lacquered, fire-resistant. Modern glass with different applied	cation	s. Gl	ass	for
	hospitals, green homes, airports, offices, other buildings.	Glass	and	hum	nan
	safety compliances. Role of glass in fire safety considerati	ons -	Class	s E,	EI
	& EW. Role of glass in acoustics. International sta	ndard	s &	co	dal
	provisions.				
UNIT – II	GLASS AND GREEN ARCHITECTURE				10
	Building Physics. Theory of electromagnetic radiation.	Under	stand	ing	of
	internal and external reflections. Day-lighting in Buildin	gs - i	ntroc	lucti	ion
	and basic concepts (VLT). Solar Control and thermal ins	ulatio	n (Sl	F, U	ν,
	SHGC). Need for green Buildings. Energy-efficient buil	dings.	Acł	nievi	ing
	energy efficiency using glass. Factors of energy-efficient r	nateria	al sel	ecti	on.
	Performance parameters. Energy codes and Green ratings	- EC	BC,	IGE	BC,
	GRIHA. Approaches of energy efficiency - prescriptive i	metho	d, tra	ade-	off
	method. Accommodating passive architecture. whole build	ung o	mu	alio	11.
UNIT – III	CASE STUDY				10
	Case study of the green building designed predominan	tly w	ith e	nerg	gy-
	efficient materials. Calculations involving basic factors	in gl	ass o	lesi	gn.
	Optimization of Glass - for wastage reduction and st	andar	dizat	ion	of
	Design. Construction site/ green building visit report.				

UNIT – IV	DESIGN WORKS	HOP 1			15								
	Analyzing and creating buildings using interactive modeling. Analyzing of												
	the sun path, solar (	the sun path, solar exposure building orientation, daylight, acoustics, site											
	shadow analysis.	shadow analysis.											
	·												
UNIT – V	DESIGN WORKSH	OP 2			15								
	Analysis of thickne	Analysis of thickness for safety, consideration of aesthetics, economy, optimization and wastage airconditioning load calculations and payback											
	optimization and wastage, airconditioning load calculations and payback												
	analysis.												
		LECTURE	TUTORIAL	PRACTICAL	TOTAL								
		30	0	30	60								
TEXT													
1. Christ	tian Schittich, 'Glass Co	onstruction Ma	nual', Birkhause	er Basel, 2007.									
2. Archi	tectural Glass Guide', F	Federation of S	afety Glass, 201	13.									
REFERENC	TES												
1 'LEEI	D 2011 For India - G	reen Building	Rating System	n' Indian Green	Ruilding								
r. ELE	cil 2011	Teen Dunume	, Rating System		Dunung								
2 DEmo	Concernation Duil	l'an Cada II	Cuidal Dua	of Enonan E									
2. ZEller	gy Conservation build	ling Code. Us	ser Guide, Bur	eau of Energy E	Ifficiency,								
2003.				~ ' 1 1/1									
3. 'IS 87	75 (Part -3) Reattirmed	d 1997. Code	of Practice for	Design loads', I	Bureau of								
Indiai	n Standards, 1998.												
4. 'IS 78	383. Code of Practice	for the Use of	of Glass in Bu	ildings', Bureau	of Indian								
Stand	ards, 2013.												
E-REFEREN	NCES												
1. Train	ing Manuals & E-Learr	ning, Glass Aca	ademy.										

Table 6	Table 65. Mapping of COs with Pos													
	PO-1	PO- 2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PSO1	PSO2		
CO-1	-	-	-	2	-	-	1	1	1	3	-	-		
CO-2	-	-	-	3	-	-	2	2	-	3	-	-		
CO-3	_	-	-	3	-	-	2	3	3	3	-	_		
CO-4	-	-	-	1	-	-	2	-	3	3	-	-		
CO-5	-	-	-	2	-	-	2	1	3	3				
Total	-	-	-	11	-	-	9	7	9	15	-	-		
Scaled to 0,1,2,3 scale	1	0	0	3	0	0	2	2	2	3	0	0		

0-No relation, 1 – Low Relation, 2 – Medium Relation, 3 – High Relation.

# XAR 604B – STEEL IN ARCHITECTURE

2 - 0 - 1 - 3

## **Course Objectives:**

 To make the students aware of the recent trends in the built environment using Steel as a structural and non-structural and decorative material.

Cours	e Outcome	Domain	Level
On the	e successful completion of the course, students will l	be able to	
CO1	<i>Understand</i> the history of the development of steel in Architecture.	Cognitive	Understanding
CO2	<i>Understand</i> the potential usage of steel in contemporary Architecture.	Cognitive	Understanding
CO3	<i>Knowledge</i> of technical details of AESS	Cognitive	Understanding
CO4	<i>Knowledge</i> of technical details of steel in curtain walls and advanced framing systems	Cognitive	Understanding

CO5	<b>Outline</b> t	the	fabrication	and	erection	of	steel	Cognitive	Understanding
	members								

SUBCODE	SUB NAME	L	Τ	P	C								
XAR 604 E	S STEEL IN ARCHITECTURE	2	0	1	3								
C:P:A	2.0: 0:0	L	Т	Р	H								
		2	0	1	4								
UNIT – I	INTRODUCTION												
	Materiality of steel, structural properties of steel, advantages of steel in												
	construction. History of metal in construction - Iron t	o Ste	el. St	eel	and								
	tension. Industrialization and mass fabrication of steel.	Castin	g of	stee	l in								
	historic and contemporary examples. Invention of hollow	struct	ural s	sectio	ons.								
	Hot rolled steel shapes, various hollow structural sections.												
UNIT– II	STEEL IN HIGH TECH MOVEMENT, CONT	EMP	ORA	RY	12								
	ARCHITECTURE12												
	Introduction to High Tech movement. Understanding of various typologies of												
	high tech movement - Extruded, Grid/Bay, Diagrid	s, arc	ched/	cur	ved								
	structures, tensile. Advantages of diagrids over standard frames. Curved steel												
	-creating curves in steel buildings, limitations in curving steel. Evolution of												
	AESS (architecturally exposed structural steel) through Hig	gh Tec	h mo	veme	ent.								
UNIT–	STRUCTURAL EXPRESSION OF STEEL	STRUCTURAL EXPRESSION OF STEEL											
III													
	Introduction to AESS (architecturally exposed structur	al ste	el), s	stand	lard								
	structural steel versus AESS. Factors that define AESS.	Chara	cteris	tics	and								
	categories of AESS. Connection types for AESS - bolted, well												
	connections. Member types for AESS - Tubular and s												
	Various steel frame design, basic connection strategies, basic understandin												
	of steel floor systems, truss systems and bracing systems												
UNIT–	SUSTAINABILITY, STEEL AND OTHER MATERIA	LS			12								
IV													

Introduction to steel as a sustainable material. Recycled, reused and adaptive reuse of steel. Steel and glazing systems, support systems for glazing. Technical aspects of combining steel with glass. Various steel and glass envelope systems - curtain wall system, wind braced support systems, cable net walls, spider steel connections with structural glass, simple and complex cable systems. Handling curves and lattice shell construction. Advanced framing system – Steel and Timber. Low carbon design strategies.

# UNIT-V FABRICATIONS, ERECTION AND IMPLICATIONS ON 12 DESIGN

Study on the transformation of architectural design into fabricated elements. Study of process profile through case studies. Role of physical and digital models in fabrication. Steel in temporary/ exhibit buildings. Need for corrosion and fire protection. Various finishes and coating systems of steel. Detailed study on corrosion protection and fire protection systems. Transportation, site issues and erection on site. Erection of beams and columns. Effects of climate and weather on erections. Other issues relating to practical implication of design on site.

 LECTURE	TUTORIAL	PRACTICAL	TOTAL
30	0	30	60

# TEXT

- 1. Terrimeyer Buake, 'Architectural Design in Steel', SPON, 2004.
- 2. Peter Silver et al, 'Structural Engineering for Architects', Laurence King, 2013.

#### REFERENCES

- 3. Victoria Ballard Bell & Patrick J Rand; 'Materials for Architectural Design', Lawrence King, 2006
- 4. Ettinger J. Van et all(Editors), 'Modern Steel Construction in Europe', Elsevier,1963.
- Leonardo Benevolo, 'History of Modern Architecture Vol 1 & 2', Reprint, MIT Press, 1 January 1985.
- 6. 'Handbook of Steel Construction', Canadian Institute of Steel Construction, 2010.
- 7. John Leckie, 'Steel and Other Materials', Canadian Institute of Steel Construction,

2007.

8. INSDAG Publications and Brochures.

Table 66.	Table 66. Mapping of COs with Pos													
	PO-	PO-	PO-	PO-	PO-	PO-	PO-	PO-	PO-0	PO_10	PSO1	PSO2		
	1	2	3	4	5	6	7	8	10-7	10-10	1501	1502		
CO-1	2		-	-	-	-	-	-	-	-	3	-		
CO-2	-	1	-	-	-	-	-	-	-	-	3	-		
CO-3	3	-	-	-	-	-	-	-	-	-	3	-		
CO-4	2	-	-	-	-	-	-	-	-	-	3	-		
CO-5	2	-	-	-	-	2	-	-	-	-	3	-		
Total	9	1	-	-	-	2	-	-	-	-	15	-		
Scaled to														
0,1,2,3	2	1	0	0	0	1	0	0	0	0	3	0		
scale							<u> </u>							

1-5 =1, 6-10=2, 11-15=3

0-No relation, 1 – Low Relation, 2 – Medium Relation, 3 – High Relation.

# XAR 604C – ADVANCED BUILDING TECHNOLOGY 2 – 0 – 1–3

### **Course Objectives:**

1. The course is designed to enable the students to learn advanced building technology available for construction.

Course	Outcome	Domain	Level
On the	successful completion of the course, students will be a	able to	
CO1	<i>Expose</i> to the latest construction materials and global trends in construction methods.	Cognitive	Knowledge
CO2	<i>Identify</i> the suitable construction methods.	Cognitive	Knowledge
CO3	<i>Identify</i> the suitable construction techniques to be employed for a given situation.	Affective	Application
CO4	<i>Understand</i> various aspects involved in the demolition of buildings and safety aspects.	Affective	Application

CO5	Understand	the	various	aspects	safety	aspects	Cognitive	Apply
	involved in th	ne co	onstructio	n.			Cognitive	Аррту

SUBCODE	SUB NAME	L	Τ	P	C								
XAR 604C	ADVANCED BUILDING TECHNOLOGY	2	0	1	3								
C:P:A =	1.8:0:1.2	L	Т	Р	н								
		-											
		2	0	1	4								
UNIT – I	MODERN MATERIALS		<u> </u>	<u> </u>	10								
	Drywall construction, Special Use of waste products and industria												
	products in concrete making- smart materials- Geot	extiles	s an	d g	eo-								
	synthetics – nanomaterials.												
UNIT – II	MODERN CONSTRUCTION METHODS												
	Tall buildings structural systems – Rigid frames – Brace	d fran	nes –	- Sh	ear								
	Tall buildings structural systems – Rigid frames – Braced frames – Shea wall – Buildings – Wall frame buildings – Tubular buildings – Tube-it												
	tube buildings – Wall frame buildings – Tubular buildings – Tube-11 tube buildings – Outrigger braced system – Types – single, double												
	&multilayered grids – two way & three-way space grids, o	conne	ctors	, Gr	ids								
	– Domes - various forms. examples of tensile membrane s	structu	ires -	– tyj	pes								
	of pneumatic structures. Biomimetics - Definition, Re	plicat	ing	natu	ral								
	manufacturing methods as in the production of chemica	l con	npou	nds	by								
	plants and animals; Mimicking mechanisms found in	nature	e, In	nitat	ing								
	organizational principles from social behavior of organ	isms;	Exa	mpl	es:								
	Spider-silk as a substitute for steel, Lotus effect in sel	f-clea	ning	gla	lss,								
	Dinosaur spine in bridge design, Lily pad structure, termit	e mou	und c	cool	ing								
	system, swarm theory, aerodynamic structures etc.												
UNIT – III	PREFABR1CATION AND CONSTRUCTION TECH	INIQ	UES		15								
	Modular coordination, standardization and toler	ances	-syst	em	of								
	prefabrication. Pre-cast concrete manufacturing techn	iques,	Mo	ould	s –								
	construction design, maintenance and repair - Pre-cas	ting	techr	niqu	es -								
	Planning, analysis and design considerations Joints -	Curing	g tec	chnie	ques								
	including accelerated curing such as steam curing, hot air l	olowii	ng et	c., -	Test								

		on precast element	s - skeletal a	nd large panel	constructions -	Industrial							
		structures. Pre-cast	and pre-fabric	cating technolo	gy for low-cost	and mass							
		housingschemes. Sr	nall pre-cast p	roducts like do	or frames, shutte	ers, Ferro-							
		cement in housing -	- Water tank so	ervice core unit	. Quality control	- Repairs							
		and economical aspe	ects of prefabri	cation									
UNIT -	- IV	DEMOLITION				10							
		Advanced techniqu	ies and seque	nce in demolit	tion and disman	tling of							
		buildings.											
UNIT	<b>V</b> 7	SAFETV ASDECT				10							
UNII -	- <b>v</b>	SAFETT ASFECT				10							
		Construction acci	dents - Co	onstruction S	afety Managen	nent: -							
		Environmental issu	es in constru	ction - occupat	tional and safety	/ hazard							
		assessment. Safety	Programmes -	Job - site asse	essment - Safety	in hand							
		tools- Safety in grir	nding- Hoisting	g apparatus and	conveyors- Safe	ty in the							
		use of mobile cran	se of mobile cranes-Manual handling- Asbestos cement roofs-Safety in										
		demolition work- T	demolition work- Trusses, girders and beams- First- aid- Fire hazards and										
		preventing methods	- fire accidents	- earthquake d	esign of building	s.							
			LECTURE	TUTORIAL	PRACTICAL	TOTAL							
			30	0	30	60							
TEXT			<u> </u>										
1.	Peuri	fov. R.L., Ledbette.	W.B., Constru	ction Planning.	Equipment and	Methods.							
	McG	raw Hill Co. 2000			-1	,							
2	Jimm	v W. Hinze, Construc	ction Safety. P	entice Hall Inc.	1997								
REFEI	RENC	TES			,								
1	Richa	rd I Coble Jimmie	Hinze and T	Theo C Haupt	Construction S	afety and							
1.	Healt	h Management Prent	tice Hall Inc.	2001	, construction 5	alety and							
2	Uond	Pook on Constructio	n Safaty Draat	6001.	2001								
2.		Koushika Enargy E	Book on Construction Safety Practices, SP 70, BIS 2001.										
5.	N.D.	Nausilika, Ellergy, Ed	cology and Env	fronment, Capi	tai Publishing Co	mpany,							
	INCW												
4.	John	Fernandez, Material	Architecture, A	rchitectural Pre	ess, UK.								

Table (	67. Maj	oping o	of COs	s with	Pos							
	PO-1	PO- 2	PO- 3	РО- 4	PO- 5	PO-6	PO-7	PO-8	PO-9	PO-10	PSO1	PSO2
CO-1	-	-	-	2	-	-	1	1	1	3	-	-
CO-2	-	-	-	3	-	-	2	2	-	3	-	-
CO-3	-	-	-	3	-	-	2	3	3	3	-	-
CO-4	-	-	-	1	-	-	2	-	3	3	-	-
CO-5	-	-	-	1	-	-	2	-	3	3	-	-
Total	-	-	-	10	-	-	9	7	10	12	-	-
Scaled to 0,1,2,3 scale	1	0	0	3	0	0	2	2	3	3	0	0

0-No relation, 1 -Low Relation, 2 -Medium Relation, 3 -High Relation.

# XAR 604D– DIGITAL DESIGN PROCESSES IN ARCHITECTURE 2–0–1–3

## **Course Objectives:**

1. To introduce theories of media and its influence on perception of space

Course O	Dutcome	Domain	Level								
On the su	On the successful completion of the course, students will be able to										
CO1	<i>Understand</i> the digital design process and theories and their relation to computation.	Cognitive	Understanding								
CO2	<i>Understand</i> the specific aspects of contemporary processes appropriate to a design situation.	Cognitive	Evaluate								

CO3	Able to explore architectural form through contemporary processes     Cognitive     Create									
CO4	Able to processes of generating architectural       psychomoto         form through smalldesign exercises	or	Cre	eate						
CO5	Able to understand the various aspects of the cognitive       Cognitive       Apply         contemporary and digital design process.									
SUBCOD	E SUB NAME	L	Т	Р	C					
XAR604I	DIGITAL DESIGN PROCESSES IN	2	0	1	3					
	ARCHITECTURE									
<b>C:P:A</b> =	3:0:0	L	T	Р	H					
		2	0	1	4					
UNIT – I	INTRODUCTION				8					
	Investigation of contemporary theories of media and the perception of space and architecture. Digital technology and	ir inf nd ar	fluence	on ure.	the					
UNIT – II	ASPECT OF DIGITAL ARCHITECTURE				12					
	Design and computation. Difference between digital des	ign	proces	ses a	and					
	non-digital processes. Architecture and cyberspaces. Qual	ities	ofnew	v spa	ice.					
	IncreasedAutomation and its influence.									
UNIT – I	I CONTEMPORARY PROCESSES				12					
	Emerging phenomena such as increasing formal and function	tiona	l abstr	actic	ons.					
	Diagrams and diagrammatic reasoning. Diagrams and	desi	gn pro	oces	ses.					
	Animation and design.									
UNIT – I	Image: C - IVGEOMETRIES AND SURFACES1414									
	Fractal geometry. Shape grammar. Hypersurface. Li	quid	archi	tecti	ure.					
	Responsive architecture.									

UNIT – V	CONTEMPORA	RY PROCESS	5		14					
	Ideas and works of Architects - Greg Lynn, Reiser, Umemetto, Lars									
	Spuybroek, NOX Architects, UN Studio, Diller Scofidio, Dominic Perrault,									
	Decoi, Marcos Novak, Asymptote, Herzog and De Meuron, Neil Denari,									
	Serie Architects, B	IG Architects.								
		LECTUDE	ΤΙΤΟΡΙΑΙ		TOTAL					
		LECIURE	IUIORIAL	PRACTICAL	IOIAL					
		30	0	30	60					
TEXT										
1. V	Valter Benjamin, "Tl	he Work of Ar	t in the Age of	Mechanical Repro	oduction",					
ir	Illuminations Schoo	cken Books, N	ew York, 2008.							
2. A	li Rahim, "Conter	mporary proc	esses in Arch	itecture", John	Wiley &					
S	ons,2000									
3. C	contemporary Techni	ques in Archit	ecture, Halsted	Press, 2002						
4. G	rey Lynn, The Folde	ed, The Pliant a	and The Supple,	Animate form						
5. N	larcos Novak, invisi	ible Architectu	re: An Installat	ion for the Greek	Pavilion,					
V	enice Biennale,2000	)								
REFERENC	CES									
1. Gillian Hunt, "Architecture in the Cyberspace II", John Wiley & sons,2001.										
2. Jane	Burry, Mark Bur	ry, The New	Mathematics	of Architecture,	, Thames					
&Hu	dson, 2012									
3. Mark	Garcia, The Diagram	ms of Architec	ture, Wiley 201	0						

Table 6	Table 68. Mapping of COs with Pos											
	<b>PO-1</b>	РО- 2	PO-3	РО- 4	PO-5	PO- 6	PO-7	PO-8	PO-9	PO-10	PSO1	PSO2
CO-1	2	2	-	-	-	1	-	1	-	-	-	1
CO-2	2	1	-	-	-	1	-	1	-	-	-	1
CO-3	1	2	-	-	-	1	-	3	-	-	-	1
CO-4	2	2	-	-	-	2	-	2	-	-	-	1
CO-5	2	1	-	-	-	1	_	1	-	-	-	1
Total	9	8	-	-	-	6	_	8	-	-	_	5
Scaled to 0,1,2,3 scale	2	2	0	0	2	2	0	2	0	0	0	3

0-No relation, 1 -Low Relation, 2 -Medium Relation, 3 -High Relation.

#### XAR 703A – DISASTER RESISTANCE IN ARCHITECTURE 3 – 0 – 0 – 3

**Course Objectives:** To understand the fundamental of Earthquakes and the basic terminology.

- 1. To provide basic knowledge of earthquake-resistant design concepts.
- 2. To inform the performance of ground and buildings.
- 3. To familiarize the students with design codes and building configuration
- 4. To understand the various types of construction details to be adopted in a disasterprone area.

Course	Outcome	Domain	Level
CO1	<i>Identify</i> the natural and manmade disasters.	Affective	Understand Knowledge
CO2	Understand and apply the disaster-resistant	Psychomotor	Apply

	design.		Knowledge
CO3	<i>Understand and apply</i> the Earthquake resistant design.	Psychomotor	Apply Knowledge
CO4	<i>Understand</i> the formation and causes of Earthquakes and factors to be considered in the design of buildings and services to resist earthquakes.	Affective	Knowledge
CO5	<i>Apply</i> the knowledge gained in an architectural design assignment.	Cognitive	Apply

SUBCODE	SUB NAME	L	T	P	C
XAR703A	DISASTER RESISTANCE IN ARCHITECTURE	3	0	0	3
<b>C:P:A</b> =	.6:1.2:1.2	L	T	Р	Η
		3	0	0	3
UNIT – I	NATURAL HAZARDS AND MAN MADE HAZAR	DS			7
	Introduction to Disaster Management – Contemporar made Disasters- Natural Hazards – Fundamentals Factors of Disasters, Poverty, Population Growth, Transitions in Cultural Practices, Environmental Degra Strife - brief description on cause and formation earthquake, Tsunami and Landslides. Zoning and cla state government organizations. Geologic Hazards an how to recognize and avoid them – hazards of faulting foundations. Man-made hazards – fire, gas and chemic and health hazards, manmade disasters – vulnerabili assessment	y, Na of D Rapid dation of ssifica d Nat – haz al lea ity ar	atural isaste d Url n, Wa flood ation cural ards c kages nalysi	and ars, 0 baniz r and , cy by 0 disas of ge s, po s an	Man- Causal zation, d Civil cclone, ccenter/ sters – cologic llution d risk

UNIT – II	CONCEPTS FOR DISASTER-RESISTANT DESIGN	8					
	Vernacular and historical experiences – case studies. Site selection and	site					
	development – building forms – Effects of the cyclone, tsunami, hurricanes						
	and seismic forces related to building configuration – spatial aspects –						
	contemporary/ international approaches for low rise, mid-rise and high i	rise					
	buildings. Innovations and selection of appropriate materials – IS co	ode					
	provisions for buildings – disaster-resistant construction details.						
UNIT – III	FUNDAMENTALS OF EARTHQUAKE AND BUILDING	10					
	CONFIGURATION						
	Fundamentals of earthquakes - Earth's structure, seismic waves, pl	late					
	tectonics theory, the origin of continents, seismic zones in Inc	lia-					
	Predictability, intensity and measurement of earthquake - Basic terms- fa	ault					
	line, focus, epicenter, focal depth etc. Site planning, the performance	of					
	ground and buildings - Historical experience, site selection and developm	ent					
	- Earthquake effects on the ground, soil rupture, liquefaction, landslid	les-					
	Behaviour of various types of building structures, equipments, lifeling	ies,					
	collapse patterns - Behaviour of non-structural elements like service	ces,					
	fixtures in earthquake-prone zones Seismic design codes and build	ing					
	configuration - Seismic design code provisions - Introduction to Ind	lian					
	codes- Building configuration- the scale of the building, size and horizon	ntal					
	and vertical plane, building proportions, symmetry of building- torsion,	re-					
	entrant corners, irregularities in buildings- like short stories, short colum	nns					
	etc.						
UNIT – IV	EARTHQUAKE RESISTANT DESIGN	10					
	Various types of construction details a) Seismic design and detailing of n	on-					
	engineered construction- masonry structures, wood structures, earth	hen					
	structures. b) Seismic design and detailing of RC and steel buildings	; c)					
	Design of non-structural elements- Architectural elements, water supp	ply,					
	drainage, electrical and mechanical components.	-					
UNIT – IV	<ul> <li>Behaviour of various types of building structures, equipments, lifelin collapse patterns - Behaviour of non-structural elements like service fixtures in earthquake-prone zones Seismic design codes and build configuration - Seismic design code provisions – Introduction to Ind codes- Building configuration- the scale of the building, size and horizon and vertical plane, building proportions, symmetry of building- torsion, entrant corners, irregularities in buildings- like short stories, short columetc.</li> <li>EARTHQUAKE RESISTANT DESIGN</li> <li>Various types of construction details a) Seismic design and detailing of mengineered construction- masonry structures, wood structures, earth structures. b) Seismic design and detailing of RC and steel buildings Design of non-structural elements- Architectural elements, water suppdrainage, electrical and mechanical components.</li> </ul>	nes, ces, ing lian ntal re- nns <b>10</b> on- hen ; c) ply,					

UNIT – V	POSTOPERATIV	E MEAS	SURES F	OR DISAS	<b>TER</b> 10							
	MANAGEMENT											
	Methods to minimize damage to utilities – plaster/wallboards/furnishings/											
	swimming pools/antennas / free-standing retaining masonry walls other											
	remedies and post-	operative meas	ures – cyclone	and earthquake ir	surance –							
	training for before	and after nat	ural hazards an	d ways to prote	ct family,							
	property and onese	lf from natural	calamities. Ro	le of internationa	l, national							
	and state bodies -	- CBRI NBO	) and NGOs i	n disaster mitig	ation and							
	and state boules	CDRI, NDC		in disaster mitig	ation and							
	community particip	ation.										
	<u>]</u>	LECTURE	TUTORIAL	PRACTICAL	TOTAL							
		45	0	0	45							
TEXT												
1. Guide	1. Guidelines for earthquake resistant non-engineered construction, National											
Information center of earthquake engineering (NICEE, IIT Kanpur, India), 2004.												
2. C.V.I	R Murthy, Andrew	Charlson. "Ea	arthquake desig	n concepts", NI	CEE, IIT							
Kanp	ur, 2006.											

3. Agarwal.P, Earthquake Resistant Design, Prentice Hall of India, 2006.

### REFERENCES

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- 2. Socio-economic developmental record- Vol.12, No.1, 2005
- 3. Mary C. Comerio, Luigia Binda, "Learning from Practice- A review of Architectural design and construction experience after recent earthquakes" - Joint USA-Italy workshop, Oct.18-23, 1992, Orvieto, Italy.
- 4. Tushar Bhattacharya, 'Disaster Science and Management, McGraw Hill India Education Pvt. Ltd., 2012.

Table 69. Mapping of COs with Pos												
	PO-1	PO- 2	PO- 3	РО- 4	PO-5	РО- 6	PO-7	PO-8	PO-9	PO-10	PSO1	PSO2
CO-1	0	2	0	0	0	0	0	0	0	0	0	0
CO-2	0	0	0	0	2	0	0	0	0	0	0	0
CO-3	0	0	0	0	0	2	0	0	3	0	0	0
CO-4	0	0	0	0	0	0	0	0	3	3	0	0
CO-5	0	0	0	0	0	0	0	0	0	3	0	0
Total	0	2	0	0	2	2	0	0	6	6	0	0
Scaled to 0,1,2,3 scale	0	1	0	0	1	1	0	0	2	2	0	0
1-5 =1.	6-10=2	2. 11-15	=3									

0-No relation, 1 – Low Relation, 2 – Medium Relation, 3 – High Relation.

# XAR 703B – ARCHITECTURAL CONSERVATION

3 - 0 - 0 - 3

### **Course Objectives**

1. To inform the students about the character and issues in our heritage towns through case studies

Course	e Outcome	Domain	Level
CO1	<i>Understand</i> the various issues and practices of Conservation	Cognitive	Understand
CO2	<i>Expose</i> the status of conservation in India and the various agencies involved in the field of conservation worldwide and their policies	Cognitive	Knowledge
CO3	<i>Understand</i> the various acts, rules and	Cognitive	Knowledge

	guidelines for the preservation, conservation and restoration of buildings		
CO4	<i>Understand</i> the importance of heritage, issues and practices of conservation through case studies.	Psychomotor	Application
CO5	<i>Understanding</i> of historic materials and their properties various technologies for investigating masonry, foundation and also traditional and modern repair methods.	Cognitive	Knowledge

SUBCODE	SUB NAME	L	Τ	P	C					
XAR 703B	ARCHITECTURAL CONSERVATION	3	0	0	3					
<b>C:P:A</b> =	0.6:2.4:0	L	Т	Р	H					
		2	0	0	3					
UNIT – I	INTRODUCTION TO CONSERVATION				9					
	Understanding Heritage. Types of Heritage. Heritage co	onserv	ation	- Ne	ed,					
	Debate and purpose. Defining Conservation, Preservation and Adaptive									
	reuse. The distinction between Architectural and Urb	oan C	Conse	rvati	on.					
	International agencies like ICCROM, UNESCO ar	d th	eir 1	ole	in					
	Conservation.									
UNIT _ II	CONSERVATION IN INDIA				0					
	Museum concernation monument concernation of	nd t	ho "		) of					
	Museum conservation – monument conservation a				01					
	Archeological Survey of India – role of INTACH –	Centr	al ar	ia si	ate					
	government policies and legislations – inventories and pr	ojects	s- sele	ect c	ase					
	studies of sites such as Hampi, Golconda, Mahabalipura	n - cr	aft Is	sues	of					
	conservation.									
UNIT – III	CONSERVATION PRACTICE				9					
	Listing of monuments- documentation of historic structure	ucture	es- as	ssess	ing					
	architectural character – historic structure report-	gui	idelin	es	for					
	preservation, rehabilitation and adaptive re-use of histori	c stru	cture	s- C	ase					

	studies of Palaces in Rajasthan, Chettinad and Swamimalai dwellings,									
	seismic retrofit and	disabled acces	ss/ services add	itions to historic	buildings-					
	heritage site manage	ement.								
UNIT – IV	URBAN CONSER	VATION			9					
	Overview of the ur	Overview of the urban history of India and Tamil Nadu- understanding the								
	character and issue	es of historic	cities – select of	case studies of t	owns like					
	Srirangaram, Kumb	akonam and l	Kanchipuramhis	toric districts and	d heritage					
	precincts. Exercise on Documentation & conservation proposals for a									
	heritage / historic / monumental building.									
UNIT – V	CONSERVATION	N PLANNING	r		9					
	Conservation as a	planning tool.	financial ince	entives and plan	ning tools					
	such as Transferal	ble Developm	ent Right(TDR	a)-urban conserv	ation and					
	heritage tourism-cas	se studies of si	ites like Cochin,	Pondichery Fren	ch town					
	conservation project	t management								
		INCOMP			montr					
		LECIURE								
			ÎCIORIIL	INACTICAL						
		45	0	0	45					
TEXT		45	0	0	45					
<b>TEXT</b> 1. Dona	ld Appleyard, "The C	45 Conservation of	0 f European Citie	0 es", M.I.T. Press,	45					
<b>TEXT</b> 1. Dona Mass	ld Appleyard, "The C achusetts, 20 Decemb	45 Conservation of per 2011.	0 f European Citie	0 es", M.I.T. Press,	45					
TEXT 1. Dona Mass 2. James	ld Appleyard, "The C achusetts, 20 Decemb s M. Fitch, " Historic	45 Conservation of per 2011. Preservation:	0 f European Citie Curatorial Mana	0 es", M.I.T. Press,	<b>45</b>					
TEXT 1. Dona Mass 2. Jame Worle	ld Appleyard, "The C achusetts, 20 Decemb s M. Fitch, " Historic d" University Press o	45 Conservation of per 2011. Preservation: f Virginia; Rep	f European Citie Curatorial Mana print edition, 199	0 es", M.I.T. Press, agement of the Bu	45					
TEXT 1. Dona Mass 2. Jame Work 3. Robe	ld Appleyard, "The C achusetts, 20 Decemb s M. Fitch, " Historic d" University Press o rt E. Stipe, A Richer 1	45 Conservation of per 2011. Preservation: f Virginia; Rep Heritage: Histo	f European Citie Curatorial Mana print edition, 199	0 es", M.I.T. Press, agement of the Bu 90 n in the Twenty-F	45 Lilt					
TEXT 1. Dona Mass 2. Jame Work 3. Robe Centu	ld Appleyard, "The C achusetts, 20 Decemb s M. Fitch, " Historic d" University Press o rt E. Stipe, A Richer I ury", Univ. of North C	45 Conservation of per 2011. Preservation: f Virginia; Rep Heritage: Histo Caroling press,	0 f European Citie Curatorial Mana print edition, 19 pric Preservation , 2003.	0 es", M.I.T. Press, agement of the Bu 90 n in the Twenty-F	45 ailt First					
TEXT 1. Dona Mass 2. Jame Work 3. Robe Centu 4. Cons	ld Appleyard, "The C achusetts, 20 Decemb s M. Fitch, " Historic d" University Press o rt E. Stipe, A Richer I ary", Univ. of North C ervation Manual, Be	45 Conservation of per 2011. Preservation: f Virginia; Rep Heritage: Histo Caroling press, ernard Fielde		0 es", M.I.T. Press, agement of the Bu 90 n in the Twenty-F ablication, 1989.	45 uilt					
TEXT 1. Dona Mass 2. Jame Work 3. Robe Centu 4. Cons REFERENC	ld Appleyard, "The C achusetts, 20 Decemb s M. Fitch, " Historic d" University Press o rt E. Stipe, A Richer I ary", Univ. of North C ervation Manual, Be	45 Conservation of per 2011. Preservation: f Virginia; Rep Heritage: Histo Caroling press, ernard Fielder	0 f European Citie Curatorial Mana print edition, 199 oric Preservation , 2003. n; INTACH Pu	0 es", M.I.T. Press, agement of the Bu 90 n in the Twenty-F ablication, 1989.	45 uilt First					
TEXT 1. Dona Mass 2. Jame Work 3. Robe Centu 4. Cons REFERENC 1. B.K.	ld Appleyard, "The C achusetts, 20 Decemb s M. Fitch, " Historic d" University Press o rt E. Stipe, A Richer I ary", Univ. of North C ervation Manual, Be CES Singh, "State and Cul	45 Conservation of per 2011. Preservation: f Virginia; Rep Heritage: Histo Caroling press, ernard Fielder	0 f European Citie Curatorial Mana print edition, 199 oric Preservation , 2003. n; INTACH Pu	0 es", M.I.T. Press, agement of the Bu 90 n in the Twenty-F ablication, 1989.	45 Lilt First					
TEXT 1. Dona Mass 2. Jame Work 3. Robe Centu 4. Cons REFERENC 1. B.K. 2. A.G.	ld Appleyard, "The C achusetts, 20 Decemb s M. Fitch, " Historic d" University Press o rt E. Stipe, A Richer I ary", Univ. of North C ervation Manual, Be CES Singh, "State and Cul K. Menon ed. "Conse	45 Conservation of Imi	0 f European Citie Curatorial Mana print edition, 199 oric Preservation , 2003. n; INTACH Pu , New Delhi movable Sites",	0 es", M.I.T. Press, agement of the Bu 90 n in the Twenty-F ablication, 1989.	45 ailt First					
TEXT 1. Dona Mass 2. Jame Work 3. Robe Centu 4. Cons REFERENC 1. B.K. 2. A.G. N.De	ld Appleyard, "The C achusetts, 20 Decemb s M. Fitch, " Historic d" University Press o rt E. Stipe, A Richer I ary", Univ. of North C ervation Manual, Be CES Singh, "State and Cul K. Menon ed. "Conse lhi., 1988	45 Conservation of Important of the servation of the servation: f Virginia; Rep Heritage: Histo Caroling press, ernard Fielder Iture", Oxford, ervation of Imp	0 f European Citie Curatorial Mana print edition, 199 oric Preservation , 2003. n; INTACH Pu , New Delhi movable Sites",	0 es", M.I.T. Press, agement of the Bu 90 n in the Twenty-F ablication, 1989.	45 ailt First					
TEXT 1. Dona Mass 2. Jame Work 3. Robe Centu 4. Cons REFERENC 1. B.K. 2. A.G. N.De 3. Semin	ld Appleyard, "The C achusetts, 20 Decemb s M. Fitch, " Historic d" University Press o rt E. Stipe, A Richer I ary", Univ. of North C ervation Manual, Be CES Singh, "State and Cul K. Menon ed. "Conse lhi., 1988 nar Issue on Urban Co	45 Conservation of Important of Conservation of Conservation: per 2011. Preservation: f Virginia; Rep Heritage: Histo Caroling press, ernard Fielder Iture", Oxford, ervation of Important	0 f European Citie Curatorial Mana print edition, 199 oric Preservation , 2003. n; INTACH Pu , New Delhi movable Sites",	0 es", M.I.T. Press, agement of the Bu 90 a in the Twenty-F ablication, 1989.	45 ailt First					
TEXT1. Dona Mass2. Jame Work3. Robe Centa4. ConsREFERENC1. B.K. 2. A.G. N.De 3. Semin	ld Appleyard, "The C achusetts, 20 Decemb s M. Fitch, " Historic d" University Press o rt E. Stipe, A Richer I ary", Univ. of North C ervation Manual, Be CES Singh, "State and Cul K. Menon ed. "Conse lhi., 1988 nar Issue on Urban Co	45 Conservation of Der 2011. Preservation: f Virginia; Rep Heritage: Histo Caroling press, ernard Fielder Iture", Oxford, ervation of Imm onservation.	0 f European Citie Curatorial Mana print edition, 19 oric Preservation , 2003. n; INTACH Pu , New Delhi movable Sites",	0 es", M.I.T. Press, agement of the Bu 90 n in the Twenty-F ablication, 1989.	45 ailt First					
TEXT 1. Dona Mass 2. Jame Work 3. Robe Centu 4. Cons REFERENC 1. B.K. 2. A.G. N.De 3. Semi	ld Appleyard, "The C achusetts, 20 Decemb s M. Fitch, " Historic d" University Press o rt E. Stipe, A Richer I ary", Univ. of North C ervation Manual, Be CES Singh, "State and Cul K. Menon ed. "Conse lhi., 1988 nar Issue on Urban Co	45 Conservation of per 2011. Preservation: f Virginia; Rep Heritage: Histo Caroling press, ernard Fielder Iture", Oxford, ervation of Imi onservation.	0 f European Citie Curatorial Mana print edition, 199 oric Preservation , 2003. n; INTACH Pu , New Delhi movable Sites",	0 es", M.I.T. Press, agement of the Bu 90 n in the Twenty-F <b>Iblication, 1989.</b> INTACH Publica	45 ailt					

Table 7	Table 70. Mapping of COs with Pos											
	PO-1	PO- 2	РО- 3	РО- 4	PO-5	PO- 6	РО- 7	PO-8	PO-9	PO-10	PSO1	PSO2
CO-1	2	-	3	-	-	3	-	2	-	-	2	-
CO-2	-	1	3	-	-	3	-	2	-	-	2	-
CO-3	3	-	3	-	-	3	-	2	3	-	2	-
CO-4	2	-	3	-	-	3	-	2	3	-	2	-
CO-5	2	-	3	-	-	3	-	2	3	-	2	-
Total	9	1	15	-	-	15	-	10	9	-	10	-
Scaled to 0,1,2,3 scale	2	1	3	0	0	3	0	2	2	0	2	0

0-No relation, 1 –Low Relation, 2 –Medium Relation, 3 –High Relation.

## XAR 703 C – BEHAVIORAL STUDIES IN BUILT ENVIRONMENT 3–0–0–3

### **Course Objectives:**

- 1. To make the students to understand concepts and concerns of perception.
- 2. To create awareness about built environment and perception.

Course	Outcome	Domain	Level
CO1	<i>Identify</i> concepts and concerns of perception.	Cognitive	Apply Understand
CO2	<i>Identify</i> and develop the sensitivity to the needs of users and clients	Affective	Apply
CO3	<b>Understanding</b> the designing and planning for urban quality	Affective	Evaluate
CO4	<b>Identify</b> and <i>apply</i> the micro and macro built environment and behavioral aspects	Psychomotor	Apply
CO5	Analyze the relationship between built - environment and perception	Cognitive	Apply

SUBCODE	SUB NAME	L	Т	P	C					
703 C	BEHAVIORAL STUDIES IN BUILT	3	0	0	3					
	ENVIRONMENT									
<b>C:P:A</b> =	1.2:.6:1.2	L	Т	Р	H					
		3	0	0	3					
		5	v		5					
UNIT – I	CONCEPTS AND CONCERNS OF PERCEPTION		<u>I</u>	_l	6					
	Definition - Visual perception - perceptual constancy, ob	jectiv	e and	d spa	tial					
	vision, attention and awareness, methods of visual percept	ion ar	nd sci	ience	•					
UNIT – II	DEVELOPING SENSITIVITY TO THE NEEDS OF	USEF	RS A	ND	10					
	CLIENTS									
	Architectural assumptions and Environmental Designs, Designs and social									
	practices, involvement of clients and users in D	esigns	s an	d b	uilt					
	environment, realities of clients and public their impact pr	ojects	and	desig	gns					
UNIT – III	DESIGNING AND PLANNING FOR URBAN QUALI	TY			10					
	Quality of urban environment and living - past, present and	d futu	re tre	ends,	the					
	role of urban design in the urban environment, planning for	or qua	ılity l	living	g in					
	urban areas.									
UNIT – IV	MICRO AND MACRO BUILT ENVIRONM	ENT	A	ND	10					
	BEHAVIORAL ASPECTS									
	Relationship of the built environment to society, spatial a	elatio	nship	p wit	hin					
	built - environment, the influence of physical enviro	nmen	t on	hun	nan					
	behavior, influences of the built environment on human be	havio	r.							
UNIT – V	<b>BUILT - ENVIRONMENT AND PERCEPTION</b>				9					
	Case studies of tall buildings, low raised neighborhoods, in	nterio	r and							
	exterior elegance of built environment, local and regional	level l	ands	cape	•					

					LECT	URE	TUT	'ORIA	L PI	RACTIC	CAL []	FOTAL
					4	5		0		0		45
TEXT												
1. ]	Parfeet	M and I	Power	G, Pla	nning	for urt	oan qua	ality, R	ent lec	lge, Lon	don 23	July
,	2014.											
2	Johatha	n Barne	tt - Ur	ban De	esign a	is publ	ic pole	ody - H	axper	and row	Publica	ations
]	New York,1983.											
REFER	ENCE	'S										
1	Visualı	percenti	on Psy	veholo	gy Pre	ess Phi	iladeln	hia Ya	ntis S	2001		
2	Changi	ng Arch	itectur	al edu	cation	- Tow	ards ne	w prof	fessior	, 2001. Jalism N	fical D	and
2.	Dilling	S Spor	Drass	Lond	on Se	ntemb	ar 20	2020	055101	iaiisiii, 14		and
3	F and F	N Spon	Lond	on Fr	ov H	1000	ci 20,	2020.				
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4.	1000	g r laces	, mean	lating	power	III UUI	it ioiii	i, Kein	leuge,	London	, Dove	у К,
	1999.											
Table 7	<b>1. Ma</b>	pping o	f COs	with I	Pos							
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PSO1	PSO2
CO-1	2	2	1	_	-	-	-	2	-	-	-	-
<b>CO-2</b>	2	2	1	_	_	_	_	2	-	_	_	_
	_	_						_				
CO-3	2	1	2	-	-	2	-	2	-	-	-	-
CO-4	2	1	2	_	-	1	-	2	-	-	-	-
CO-5	2	1	3		_	2	_	3	-	_	_	_
	- 10											
Total	10	7	9	-	-	5	-	11	-	-	-	-
Scaled												
to	2	2	2	0	0	1	0	3	0	0	0	0
0,1,2,3												
scale												

0-No relation, 1 –Low Relation, 2 –Medium Relation, 3 –High Relation.

# XAR 905A – ARCHITECURAL LIGHTING AND ACOUSTICS 2-0-1-3

#### **Course Objectives:**

1. To enable the student to understand the development of Architectural Lighting Design, its evolution and the principles of application in Practice by perceiving the various physical factors of lighting and light sources.

Course	Outcome	Domain	Level
CO1	Understand and Apply the basics of Acoustics	Cognitive	Apply Understand
CO2	<i>Understand</i> the evolution of architectural lighting design and current practice of the same.	Psychomotor	Apply
CO3	<i>Understand</i> the inter-relationship between Light and Human factors	Affective	Knowledge
CO4	<i>Understanding</i> of the Basic Physics involved in Architectural Lighting Design	Affective	Knowledge
CO5	<i>Evaluate</i> the various lighting sources both natural and artificial, with their application principles.	Cognitive	Evaluate
CO6	<i>Propose and Design</i> the various Lighting concepts and Lighting layouts in Practice.	Psychomotor	Apply Understand

SUBCODE	SUB NAME	L	Т	P	C				
XAR905A	ARCHITECURAL LIGHTING AND ACOUSTICS	2	0	1	3				
<b>C:P:A</b> =	1: 1:1	L	Т	Р	Η				
		2	0	1	4				
UNIT – I	ACOUSTICS				12				
	Fundamentals - Sound waves, frequency, intensity, wavelength, the measure								
	of sound, decibel scale, speech and music frequencies,	and I	Rever	berat	ion				
	time. Acoustics and building design-site selection, shape	volu	me, tı	eatm	ent				
	for interior surfaces, basic principles in designing open-air	r thea	tres, o	cinen	nas,				
	broadcasting studios, concert halls, classrooms, lectu	re ha	alls,	scho	ols,				
	residences, office buildings including construction me	asure	s and	d so	und				
	reinforcement systems for building types – case studies								

UNIT – II	INTRODUCTION TO LIGHTING	13								
	An overview of the history of architectural lighting design - Impac	t of								
	Lighting design over the composition of Architectural & Interior space	ès –								
	Quality of light, brightness, colour and glare - Impact of finishes	and								
	Materials - The psychology of light and space - The impact of light	on								
	health and human behavior.									
UNIT – III	LIGHT CONTROL SYSTEMS	10								
	Optical systems - Principles of controlling light (reflection/refract	ion)								
	eflectors & lenses - Types of luminaires - Luminaire evaluation,									
	components, features and accessories - Electronic Controls - Basic									
	dimming/control logic and equipment - Specifications - The lighting									
	specification process, various specification formats and written									
	specifications.	pecifications.								
UNIT – IV	DESIGN APPLICATIONS	ESIGN APPLICATIONS 15								
	Lighting Principles - Concepts and guidelines for general lighting, w	all-								
	washing, floodlighting, orientation lighting and beam angle studies	for								
	accent lighting - Design Concepts - Geographic context and client prog	ram								
	requirements; visualization, communication techniques (hand ske	tch,								
	computer modeling and/or rendering), lighting simulations, mock-up	and								
	lighting design narrative - Layout and documentation - Basics	of								
	architectural drawings, lighting drawings, reflected ceiling plans, lumin	aire								
	schedule, specifications and typical lighting details.									
UNIT – V	ENERGY EFFICIENT LIGHTING DESIGN	10								
	Understanding of Sustainable design issues related to energy usage in									
	lighting - Energy Codes & requirements - Light level guidelines &									
	standards of practice – CFL - LED lighting technology.									
	LECTURE TUTORIAL PRACTICAL TOT	'AL								
	30 0 30 60	)								
TEXT										
1. Worl	of Architecture in the Age of Mechanical Reproduction, Differences MIT									
press	, 8 January 2021.									
2. Pete	r Eisenman, Vision Unfolding, Architecture in the Age of Electronic Media	ι,								
1992										

- William J Mitchell, the Logic of Architecture: Design, Computation and Cognition. MIT Press, Cambridge, 1995
- 4. Ali Rahim, "Contemporary Process in Architecture", John Wiley & Sons, 2000
- 5. Contemporary Techniques in Architecture", Halsted Press, 2002.

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- Sarah Chaplin, "Cyberspace Lingering on the Threshold", (architecture, postmodernism and difference, Architectural Design Profile No. 118: Architects in Cyberspace, 32-35, London: Academy Edition, 1995
- Rob Shields (ed.), "Cultures of the internet: Virtual Spaces, Real Histories, Living bodies", Sage, London, 1996
- 4. John Beckman, The Virtual Dimension, Architecture, Representation and Crash Culture, Princeton Architecture Press, 1998.
- William J Mitchell, "City of Bits: Space, Place and the Infobahn". MIT Press, Cambridge, 1995.

Table 72. Mapping of COs with Pos												
	<b>PO-1</b>	<b>PO-2</b>	PO-3	<b>PO-4</b>	<b>PO-5</b>	PO-6	<b>PO-7</b>	<b>PO-8</b>	PO-9	PO-10	PSO1	PSO2
CO-1				3								
CO-2				2								
CO-3				2								
<b>CO-4</b>				2			3	2	1			
CO-5				3			3	3	1			
<b>CO-6</b>							3	3	2			
Total	-	-	-	12	-	-	9	8	5	-	-	-
Scaled												
to	_	_	0	3	_	_	3	2	1	_	_	_
0,1,2,3		-	U	5	-	_	5	~	1	_	-	-
scale												

1-5 =1, 6-10=2, 11-15=3

0-No relation, 1 – Low Relation, 2 – Medium Relation, 3 – High Relation.

# XAR 905B- INTERIOR DESIGN

# **Course Objectives:**

1. To introduce the vocabulary of interior design with an overview of interior and furniture design and other components.

Course	Outcome	Domain	Level
CO1	Relate various theories and factors that are to be	Cognitive	Comprehension
	considered in interior design		
CO2	Demonstrate knowledge on the relationship between	Cognitive	Comprehension
	the ergonomics, function, psychological aspects of		
	aesthetics.		
CO3	Able to propose a theme-oriented interior design.	Psychomotor	Design
CO4	Able to develop a specification and estimation report	Cognitive	Analysis
	for an interior project.		
CO5	Able to develop a set of required working drawings	Cognitive	Synthesis
	& visuals for an interior design project using		
	traditional and digital rendering techniques.		

SUBCODE	SUB NAME	L	Т	P	C
XAR905B	INTERIOR DESIGN	2	0	1	3
<b>C:P:A</b> =	2.0:1:0	L	Т	Р	Η
		2	0	2	4
UNIT – I	INTRODUCTION TO INTERIOR DESIGN				10
	Definition of interior design - Interior design process - Vo	cabul	ary o	f des	sign
	in terms of principles and elements - Introduction to the	desig	gn of	inte	rior
	and design. Influence of historical styles, folk arts in interio	or des	ign	- 51	udy
UNIT – II	ELEMENTS OF INTERIOR DESIGN - E ELEMENTS	NCL	OSII	NG	15
	Concept & Theme Development: Enclosures & envelops	s to f	ormu	late	the

2 - 0 - 1 - 3

	volumes, response to functional spaces; Functionality: Spatial organization &							
	Planning; different treatment methods for walls, floor, ceilings, services.							
	Derivation of the quantitative aspect of spaces based on User - Activity							
	Analysis, furniture/equipment, Anthropometry, Ergonomics, Layout,							
	Circulation, etc.; qualitative aspects based on ambiance.							
UNIT – III	ELEMENTS OF INTERIOR DESIGN– LIGHTING 15							
	ACCESSORIES & I	<b>NTERIOR L</b> A	ANDSCAPIN	G				
	Technical decisions -Constructional details &Material specification -							
	Exploration & selection responding to functionality & aesthetics; Decisions							
	for aesthetics: Color, textures, patterns, surface finishes, ornamentation,							
	furnishings, accessories, lighting, interior Landscaping, etc. with reference to							
	visual comfort & ambiance in the interiors.							
UNIT – IV	ELEMENTS OF INTERIOR DESIGN – FURNITURE DESIGN & 10							
	SPACE PLANNIN	G						
	Study of the relationship between furniture and spaces - human movements							
	& furniture design as	& furniture design as related to human comfort - Function, materials and						
	methods of construction Study on furniture for specific types of interiors							
	like office furniture, children's furniture, residential furniture, display							
	systems, etc Design Projects on Residential, Commercial and Office							
	Interiors.							
UNIT – V	INTERIOR DESIGN	PROJECTS				10		
	Develop a working dra	awing for interi	or design deta	iling for office s	paces.			
	hotel lobbies etc. Residential/ commercial / Retails / Offices / Institutional /							
	Hospitality / Recreational / Sports / Healthcare / Others Site extent: Ranges							
	from 200 m ² to 600 m ² .							
		LECTURE	TUTORIA	PRACTICA	ΤΟΤ	AL		
			L	L				
		30	0	30	6	)		
TEXT								
1. Franc	1. Francis .D.K. Ching, Interior Design Illustrated, V.N.R. Pub., NY 1987.							
2. Julius Penero and Martin Zelnik, Human Dimensions and Interior space Whitney								

Library of Design, NY 1979

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- 2. Inca / Interior Design Register, Inca Publications, Chennai, 1989.
- **3.** Kathryn .B. Hiesinger and George H.Marcus, *Landmarks of Twentieth-Century Design*; Abbey Ville Press, 1993.
- 4. Syanne Slesin and Stafford Ceiff Indian Style, Clarkson N. Potter, Newyork, 1990.
- 5. History of Interior design & furniture, Blakemore.R
- 6. T.S.S. for Interior design & spaces, Chiara joseph
- 7. Interior Design Illustrated, Ching D.K.
- 8. Interior Design and Decoration, Premavathy seetharaman, CBS Publication January 2009.

Table 73. Mapping of COs with Pos												
	PO-1	PO-2	PO-3	PO- 4	PO-5	PO- 6	PO-7	PO-8	PO-9	PO-10	PSO1	PSO2
CO-1	3	2	3								3	
CO-2	3	3	3								3	
CO-3	3	3	3			3		3	3	3	3	3
CO-4		2	2	3	2		2		2	2	2	
CO-5		1	1	3	3		2		1	1	2	
Total	9	11	12	6	5	3	4	3	6	6	16	3
Scaled to 0,1,2,3 scale	3	3	3	2	2	1	1	1	2	2	3	1

1-5 =1, 6-10=2, 11-15= 3 0 - No Relation, 1 – Low Relation, 2 – Medium Relation, 3 – High Relation.

# XAR 905C – ENERGY EFFICIENT ARCHITECTURE

# **Course Objectives:**

1. To make the students aware of the future trends in creating a sustainable built environment

Course	e Outcome	Domain	Level				
On the successful completion of the course, students will be able to							
CO1	<i>Know</i> about the need to use alternative sources of energy in view of the depleting resources and climate change.	Cognitive	Understand				
CO2	<i>Exposed</i> to simple and passive heating strategies	Cognitive	Knowledge				
CO3	<i>Exposed</i> to simple and passive cooling strategies	Cognitive	Knowledge				
CO4	<i>Understand</i> the day lighting and natural ventilation in design.	Cognitive Psychomotor	Understand & Application				
CO5	<i>Exposed</i> recent and future trends in creating a sustainable built environment	Psychomotor	Application				

SUBCODE	SUB NAME	L	T	P	C							
XAR 905C	ENERGY EFFICIENT ARCHITECTURE	2	0	1	3							
C:P:A	2.0:1.0:0	L	T	Р	H							
		2	0	1	4							
UNIT – I	PASSIVE DESIGN 10											
	Significance of Energy Efficiency in the contemporary context, Simple											
	passive design considerations involving Site Conditions, Building Orientation,											
	Plan form and Building Envelope - Heat transfer and Thermal Performance of											
	Walls and Roofs.											
					1							
UNIT – II	ADVANCED PASSIVE ARCHITECTURE- PASSIVE	HEA	TIN	Ĵ	10							
	Direct Gain Thermal Storage of Wall and Roof - Roo	of Rac	liatio	n Tra	up -							
	Solarium - Isolated Gain.											
UNIT-	-III	PASSIVE COOLI	NG				15					
--------	--------------------------------------------------------------------------------	-----------------------------------------------------------------------------	-------------------	-------------------	--------------------	---------	-------	--	--	--	--	--
		Evaporative Coolin	ng - Nocturnal	Radiation co	oling - Passive	Desico	cant					
		Cooling – Induced	Ventilation - E	arth Sheltering	- Wind Tower -	· Earth	Air					
		Tunnels. Exercise: d	lesign a buildin	g with passive c	ooling technique	S						
UNIT-	- IV	DAY LIGHTING	AND NATURA	AL VENTILAT	TION		15					
		Daylight Factor - Daylight Analysis - Daylight and Shading Devices - Types										
		of Ventilation - Ventilation and Building Design. Exercises: Design a small										
		building to achieve natural ventilation										
UNIT ·	$-\mathbf{V}$	CONTEMPORAR	Y AND FUTU	<b>RE TRENDS</b>			10					
		Areas for innovatio	on in improving	g energy efficie	ncy such as Pho	oto Vol	ltaic					
		Cells, Battery Tech	nology, Therma	al Energy Stora	ge, Recycled and	1 Reusa	able					
		Building materials,	Nanotechnolog	gy, smart mate	rials and the fut	ure of	the					
		built environment, E	Energy Conserv	ation Building c	code.							
			LECTURE	TUTORIAL	PRACTICAL	ТОТ	AL					
			30	0	30	60	)					
TEXT												
1.	Manu	al on Solar Passive A	architecture, IIT	Mumbai and M	lines New Delhi,	1999						
2.	Arvin	d Krishnan & Others	, "Climate Resp	oonsive Archited	cture", A Design	Handb	ook					
	for Er	nergy Efficient Buildi	ings, McGraw H	Hill Education; 1	st edition (1 July	7 2017)	•					
3.	Maju	mdar M, "Energy-ef	fficient Buildin	g in India", T	he Energy and	Resou	rces					
	Institu	ite, TERI (28 Februar	ry 2009).									
4.	Givor	ii .B, "Passive and L	low Energy Co	oling of Buildi	ngs", Wiley; 1st	edition	n (1					
	July 1	994)										
REFE	RENC	CES										
1.	Fuller	Moore, "Environn	nental Control	Systems: Hea	ating, Cooling,	Lighti	ng",					
	McGr	aw Hill INC, 1993.										
2.	Sophi	a and Stefan Behlir	ng, "Sol powe	r: The Evolution	on of Solar Arc	hitectu	re",					
	Preste	el, New York, 1996.										
3.	Patrick Waterfield, "The Energy Efficient Home: A Complete Guide", The Crowood											
	Press	Ltd; New edition (31	May 2011).									
4.	Dean	Hawkes, "Energy	Efficient Bu	uildings: Archi	tecture, Engine	ering	and					
	Envir	onment", W. W. Nor	ton & Company	v (5 March 2003	).	-						

# David Johnson, Scott Gibson, "Green from the Ground Up Sustainable, Healthy and Energy-efficient home construction", Taunton; Illustrated edition (1 April 2008)

Table 74. Mapping of COs with Pos												
	PO-1	PO- 2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PSO1	PSO2
CO-1	2	-	-	-	-	-	-	3	-	-	3	_
CO-2	2	-	-	-	-	-	-	3	-	-	3	-
CO-3	2	-	-	-	-	-	-	3	-	-	3	-
CO-4	2	-	-	-	-	-	-	3	-	-	3	-
CO-5	2	-	-	-	-	-	-	3	-	-	3	-
Total	10	-	-	-	-	-	-	15	-	-	15	-
Scaled to 0,1,2,3 scale	2	0	0	0	0	0	0	3	0	0	3	0

-5 =1, 6-10=2, 11-15= 3 0 - No Relation, 1 – Low Relation, 2 – Medium Relation,

3 – High Relation.

## XAR 905D – MATERIAL AND TECHNOLOGIES FOR SUSTAINABLE 2-0-1-3 ARCHITECTURE

#### **Course Objectives:**

1. The course is designed to enable the students to learn different management techniques suitable for planning and constructional Projects in terms of cost and time.

Course	Outcome	Domain	Level
CO1	Understand the various aspects of sustainability	Cognitive	Knowledge
CO2	<i>Demonstrate</i> knowledge of material properties and their impact on construction.	Cognitive	comprehension
CO3	<i>Work</i> with various building codes, regulations	Affective	Knowledge

	related to sustainable construction		Application
CO4	<i>Select</i> the suitable construction methods to achieve sustainable design.	Affective	Application
CO5	<i>Analyze</i> the given condition and arrive at an appropriate sustainable construction solution	Affective	Application

SUBCODE	SUB NAME	L	Т	Р	C
XAR905D	MATERIAL AND TECHNOLOGIES FOR	2	0	1	3
	SUSTAINABLE ARCHITECTURE				
C:P:A =	1.2.0:0.0:1.8	L	Т	Р	н
				_	
		2	0	1	4
UNIT – I	INTRODUCTION		1	·	10
	Architecture and the survival of the planet- Ass	essin	g patt	erns	of
	consumption and their alternatives- Profit and politic	s- Na	atural	build	ling
	movement – new context for codes and regulations				
UNIT – II	DESIGN PRINCIPLES				15
	Principle 1: Conserving energy; Principle 2: Work	king	with <b>(</b>	Clim	ate;
	Principle 3: Minimizing new resources; Principle 4:	resp	ect fo	r us	ers;
	Principle 5: Respect for site; Principle 6: holism- Illustra	ated v	with exa	ampl	es
UNIT – III	SUSTAINABLE CONSTRUCTION				15
	Design issues relating to sustainable development	inclu	ding s	ite	and
	ecology, community and culture, health, materials,	energ	y, and	wa	ter-
	Domestic and Community buildings using self-h	elp	technic	lues	of
	construction; adaptation, repair and managementporta	ble a	rchitect	ure	
UNIT – IV	SYSTEMS MATERIALS AND APPLICATIONS				10
	Adobe- Cob- Rammed Earth- Modular contained	eartl	n- ligł	nt c	lay-
	Strawbale- bamboo- earthen finishes, etc their sustair	abilit	y; ada	ptabi	lity
	to climate; engineering considerations, and construction	n metl	hods; V	Vaste	e as
	a resource Portable architecture to Applications thr	ough	specif	fic c	ase
	studies				

UNIT – V	CASE STUDIES FROM THE CONTEMPORARY SCENARIO 10												
	Ranging from sm	all dwellings t	o large commerc	cial buildings, dra	wn from a								
	range of countrie	s to demonstrat	te the best current	nt practice									
	-1	LECTURE	TUTORIAL	PRACTICAL	TOTAL								
		30	0	30	60								
TEXT					•								
1. S.C.F	angwala, Elements	s of Estimating	g and Costing, C	Charoter Publishin	ng House,								
India Janu	ary 2017.												
REFERENC	ES												
1. Brend	a and Robert Val	e; Green Arch	nitecture: Desig	n for a sustainab	ole future;								
Tham	es and Hudson;199	6											
2. Lynne	e Elizabeth and Ca	ssandra Adam	s; Alternative C	Construction: Con	temporary								
Natur	al Building Method	ls 15 April, 200	)5.										
3. Victor	r Papanek; The Gre	en Imperative;	Thames and Hu	dson 5 August 20	21.								
4. Steve	n Harris and Deb	oorah Berke;	Architecture of	f the Everyday;	Princeton								
Archi	Architectural Press; 1997												
5. Pilar	5. Pilar Echavarria; Portable Architecture- and unpredictable surroundings; Page One												
Publishing Pvt. Ltd, 1 Sepetember 2005													

Table 75. Mapping of COs with Pos												
	PO-1	PO-2	PO-3	PO- 4	PO-5	PO- 6	PO-7	PO-8	PO-9	PO-10	PSO1	PSO2
CO-1	-	-	_	2	-	-	-	-	1	3	-	-
CO-2	-	-	-	3	-	-	_	-	-	3	-	-
CO-3	-	-	3	3	-	-	3	-	3	-	-	-
CO-4	-	-	-	3	-	-	-	-	3	-	-	-
CO-5	-	-	-	1	3	-	3	-	3	-	-	-
Total	-	-	3	12	3	-	6	-	10	6	-	-
Scaled to 0,1,2,3 scale	0	0	0	0	0	0	0	0	0	0	0	0
1-5 =1,	6-10=2	, 11-15	=3									

0-No relation, 1 - Low Relation, 2 - Medium Relation, 3 - High Relation.

	С	Р	Α	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8	PO9	<b>PO10</b>	PSO1	PSO2	L:T:P:C
XAR101				-	-	-	-	3	-	3	-	-	2	-	3:0:0:3
XAR102				3										1	3:0:0:3
XAR103	$\checkmark$		$\checkmark$			1	2								3:0:0:3
XAR104				-	-	-	-	-	2	-	1	-	-	-	3:0:0:3
XAR105		$\checkmark$				1	3	3							2:0:1:3
XAR106	V	$\checkmark$	V	3				1							0:0:3:3
XAR107	$\checkmark$	$\checkmark$		3				1							0:0:10:10
XAR201	$\checkmark$			2	-	1	-	-	-	-	-	-	1	-	3:0:0:3
XAR202	V			2	1	1	1	0	0	0	1	0	0	1	3:0:0:3
XAR203	V			2	2	1	1	0	0	0	0	0	0	0	3:0:0:3
XAR204							3	3							1:0:2:3
XAR205		$\checkmark$					2		1		3		1	1	1:0:2:3
XAR206		$\checkmark$		3				1							0:0:3:3
XAR207				3	3	3	3	3	3	3	3	3	3	3	0:0:10:10
XAR301				3	2	2	0	0	0	0	0	0	0	0	3:0:0:3
XAR302	$\checkmark$	$\checkmark$				3	3							2	3:0:0:3
XAR303	V			2	1	0	0	0	0	0	0	0	0	0	3:0:0:3
XAR304		$\checkmark$					3				3	1		1	2:0:1:3
XAR305				-	-	-	2	-	-	-	3	-	2	-	1:0:2:3
XAR306							3	3				2			1:0:2:3

XAR307		$\checkmark$		3	2	2	1	2	-	-	2	-	2	3	0:0:10:10
XAR401				3	2	2	0	0	0	0	0	0	0	0	3:0:0:3
XAR402	$\checkmark$	$\checkmark$	$\checkmark$	2	-	-	2	-	2	-	3	-	-	2	3:0:0:3
XAR403		$\checkmark$	$\checkmark$	-	-	-	1	-	-	-	-	2	-	-	3:0:0:3
XXXXXX	$\checkmark$	$\checkmark$	$\checkmark$	-	-	-	1	-	-	-	-	2	-	-	3:0:0:3
XAR404	$\checkmark$	$\checkmark$					3			4				1	2:0:1:3
XAR405							3	3						3	1:0:2:3
XAR406				2	2	2	2	1	2	2	2	2	3	2	0:0:12:12
XAR501	$\checkmark$			3	2	2	-	-	-	-	-	-	-	-	3:0:0:3
XAR502				-	-	-	-	-	-		3	1	-	3	3:0:0:3
XAR503				-	1	1	2	-	-	-	-	-	1	-	3:0:0:3
XAR504		$\checkmark$		-	-	-	3	-	-	1	-	-	-	1	2:0:1:3
XAR505	$\checkmark$	$\checkmark$		-	-	-	2	2	-	-	-	-	2	-	1:0:2:3
XAR506		$\checkmark$		-	-	-	3	3	-	-	-	-	3	-	1:0:2:3
XAR507				3	3	2	3	3	2	3	3	3	2	3	0:0:12:12
XAR601	$\checkmark$	V		3	-	3	2	-	3	-	3	-	3	3	3:0:0:3
XAR602					3	2		3		3		3	3	3	3:0:0:3
XAR603	$\checkmark$	$\checkmark$	$\checkmark$	0	0	0	2	0	0	1	0	1	0	0	3:0:0:3
XAR604				3		2						2		2	2:0:1:3
XAR605	$\checkmark$		$\checkmark$	-	-	2	3	-	-	2	0	3	-	-	1:0:2:3

XAR606		$\checkmark$	$\checkmark$	3	3	2	3	3	2	-	-	-	3	2	0:0:15:15
XAR701			$\checkmark$	-	-	3	-	-	3	-	-	-	1	-	3:0:0:3
XAR702	$\checkmark$	$\checkmark$	$\checkmark$	-	-	-	-	-	3	2	-	3	-	-	3:0:0:3
XAR703					2	2	1		2			3			3:0:0:3
XAR704	$\checkmark$		V	-	-	-	3	1	-	-	3	-	3	3	1:0:2:3
XAR705				-	-	-	3	-	-	3	-	-	1	-	1:0:2:3
XAR706	$\checkmark$	$\checkmark$	$\checkmark$	2	2	2	2	2	1	2	2	2	2	3	0:0:15:15
XAR801	$\checkmark$			2	2	2	2	2	2	2	2	2	2	3	0:0:0:16
XAR901	$\checkmark$	$\checkmark$		2	2	3	2	1	3	2	3	3	2	2	3:0:0:3
XAR902	$\checkmark$		$\checkmark$	2		3	2						3		3:0:0:3
XAR903	$\checkmark$	V	$\checkmark$	-	-	3	3	-	-	-	-	2	2	-	3:0:0:3
XAR904	$\checkmark$			1	1	1	1	1	1	1	1	1	1	1	3:0:0:3
XAR905				3	3	2	2	1	1	1	2	2	3	1	2:0:1:3
XAR906	$\checkmark$			1	2	2	1	1	1	1	1	1	2	3	1:0:2:3
XAR907	$\checkmark$	$\checkmark$		2	2	2	2	2	2	2	2	2	2	3	0:0:14:14
XAR1001				2	2	1	2	1	1	3	2	2	3	3	0:0:18:18
				70	45	61	88	44	35	40	47	49	56	59	

### **Guidelines for B.Arch Curriculum 2021-22**

### Curriculum Structure for B.Arch. Degree Programme offered by PMIST

S. No.	Category	COA/UGC Recomme ndation %	PMU adoption %	PMU credits	Deviation %	Number of courses
1.	Humanities including communication English, Management;	5%	1.1 %	3	3.9%	1
2.	Basic Sciences(BS& ES) including Mathematics, Architectural drawing and graphics, Structural mechanics and theory of structures, surveying and leveling, building services and equipments, Estimation and costing.	20%	16.7 %	45	3.3%	15
4.	Professional Subjects-Core (PC), relevant to the chosen specialization/branch;	50%	63%	170	-13%	27
5.	Professional Subjects – Electives (PE), relevant to the chosen specialization/ branch;	10%	4.4 %	12	5.6%	4
	Open Electives	5%	1.1.%	3	3.9%	1
6.	PAEC- Seminar and/or Internship in Industry or elsewhere	10 %	9.3 %	25	0.70%	4
7.	Skill enhancement courses	5%	3.3%	9	0%	3
8.	Mandatory Courses (UGC Mandatory)	10 %	1.1 %	3	8.9%	1
9.	Non-credit Course	-	-	-	-	-
10.	NCC/NSS/YRC/RRC/Sports	-	-	-	-	-
			100%	270		56

<u>Summary of the credits and hours</u> Architectural drawing and graphics, Structural mechanics and theory of structures, surveying and leveling, building services and equipment, Estimation and costing.

Semester	<b>Total Credits</b>	Total Hours / Week	No. of courses
Ι	28	33	7
II	28	35	7
III	28	33	7
IV	30	33	7
V	30	35	7
VI	30	33	6
VII	30	34	6
VIII	16	100 days	1
IX	32	35	7
X	18	35	1
I - X	270Credits	-	56

#### The salient features of this curriculum are as follows.

- 1. For B.Arch. programme 270 credits are considered and mandatory credits are 260 -300 mentionedin CoA.
- 2. The average load per semester is about 27 credits.
- 3. The Practical training is in the 8th Semester with 16 credits and 18 credits for the thesis in the 10th Semester.
- 4. The credit distribution is followed as per the guidelines given by CoA

Course type	Credits				Contact Hours			
	L	Т	Р	Total	L	Т	Р	Total
Theory course	3	0	0	3	3	0	0	3
Theory + Studiocourse	1	0	2	3	1	0	4	5
	2	0	1	3	2	0	2	4
Studio/ Lab/Workshop	0	0	3	3	0	0	6	6
	1	0	2	3	1	0	4	5
Studio course	0	0	10	10	0	0	10	10
	0	0	12	12	0	0	12	12
	0	0	14	14	0	0	14	14
	0	0	15	15	0	0	15	15

Note: Evaluation and Assessment must be done for all non-credit courses.

- 1. Apart from academic workload, the following academic sessions shall be included in the timetable to maintain 35 hours/week. Counseling 1 hour, Academic mentor 1 hour, Library 1 hour.
- 2. The course teacher should maintain records for Models, Sheet submissions, Assignments, etc.