

TKM COLLEGE OF ENGINEERING

(Government Aided and Autonomous)

Celebrating 60 years of excellence



ARCHITECTURE
B. Arch Curriculum 2023
&
First & Second Semester Syllabus

THANGAL KUNJU MUSALIAR COLLEGE OF ENGINEERING
(Government Aided and Autonomous)
KOLLAM-691005, KERALA

Abstract

TKMCE-Academics- B.Arch Curriculum & Syllabus S1& S2 2023 -orders issued

No: ACU3/654/2023

Date: 12/06/2023

Order

Read:

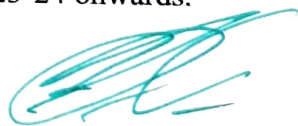
1. UGC order Ref: F. 22-1/2022(AC) dated 26th May 2022
2. U.O. No. KTU/ASST11(ADMIN)/3212/2022 dated 2nd September 2022
3. ACU3/1010/2022 dated 16th September 2022

The TKM College of Engineering was conferred with autonomous status by the UGC on 26th May 2022 vide Ref: 1 and the same was notified by the APJ Abdul Kalam Technological University, on 2nd September 2022, vide ref.2

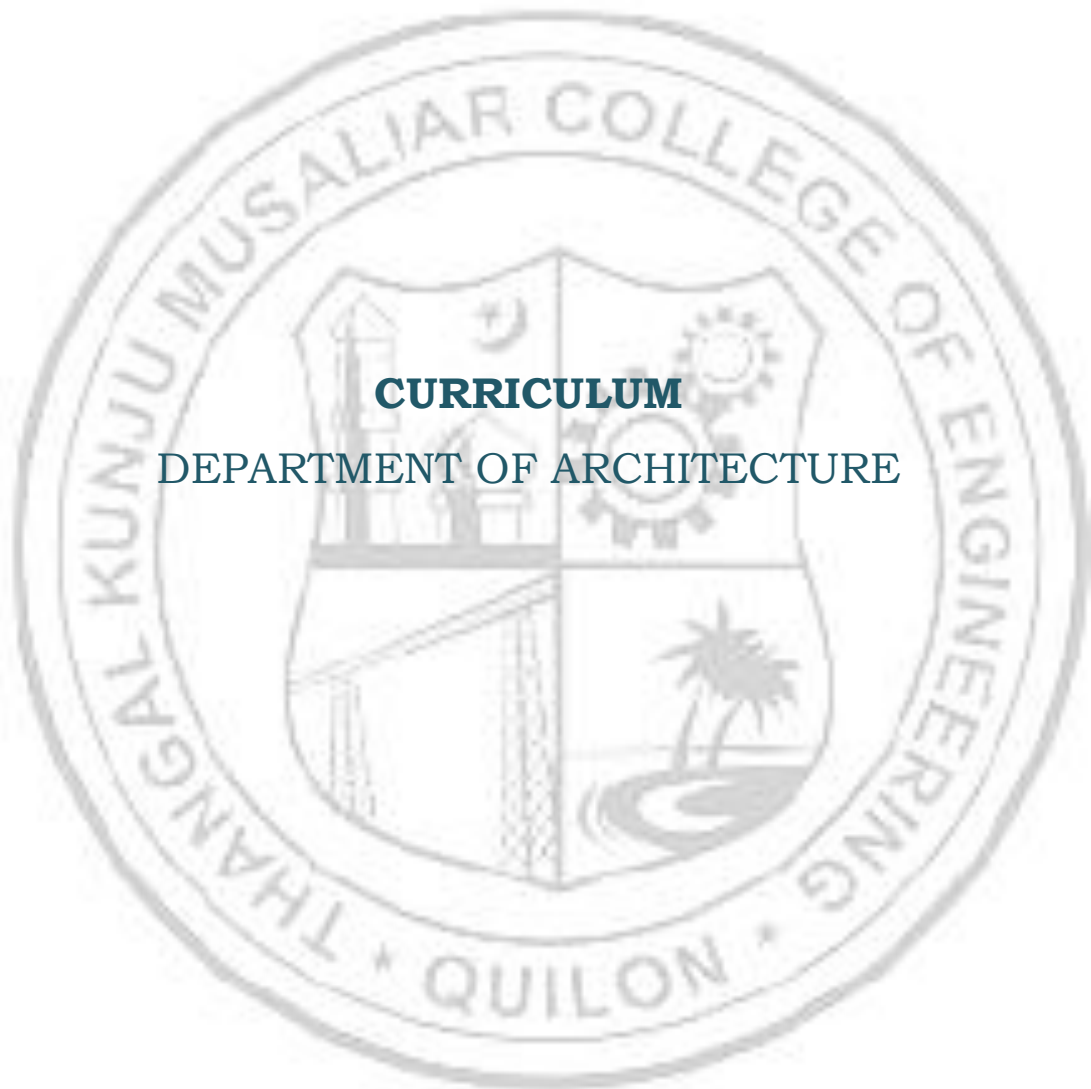
The first meeting of the Governing Body after the notification of autonomous status was held on 15th September 2022, authorized the Principal to constitute the Academic council as per the UGC (Conferment of Autonomous Status upon Colleges and Measures for Maintenance of Standards in Autonomous Colleges) Regulations, 2018. As per the resolution of the Governing Body, the Principal has constituted the Academic council on 16 September 2022 vide ref.3.

The third Academic council meeting held on 12th June 2023, approved the B.Arch Curriculum & First year (S1, S2) Syllabus for the academic year 2023-24 onwards.




PRINCIPAL
THANGAL KUNJU MUSALIAR
COLLEGE OF ENGINEERING
KOLLAM-5

Copy to: All HODs, Deans, IQAC, COE, AA, AO, SS, JS(A)



CURRICULUM

DEPARTMENT OF ARCHITECTURE

INTRODUCTION

Every course of B. Arch Program shall be placed in one of the five categories as listed in the table below:

Sl. No	Knowledge Segment	Category description	Code	Credits
1.	Professional Core Courses (PC)			140
1.a		Architectural Design	ARD	91
1.b		Architectural Studies Architectural Theory	ARS	49
2.	Building Science and Applied Engineering (BS)			62
2.a		Building Construction	ARB	30
2.b		Basic and Building Sciences Applied Engineering	ARC	32
3.	Elective Courses (EC)		ARE	24
4.	Professional Ability Enhancement Courses (PAC)		ARP	26
5.	Skill Enhancement Courses (SEC)		ARK	08
Total Mandatory Credits				260

PROFESSIONAL CORE COURSES (PC):

Architectural Design Courses: Basic Design, Architectural Design, Architectural Design Thesis.

Architectural Studies courses: Architectural Graphics and Visual Arts, Geometrical drawing, Carpentry and Model Making Workshop, Landscape design and Site Planning and Interior Design.

Architectural Theory Courses: Theory of Architecture, History of Architecture and Culture, Estimation and Valuation, Urban Design, Housing.

BUILDING SCIENCE AND APPLIED ENGINEERING (BS)

Building Construction Courses: Building Materials and Construction Techniques, and Working Drawing.

Basic and Building Sciences Courses: Mathematics for Architectural Applications, Climate and Built Form, Building Services

Applied Engineering Courses: Theory of Structures, Surveying and Levelling.

ELECTIVE COURSES (EC):

Professional Electives and Open Electives

PROFESSIONAL ABILITY ENHANCEMENT COURSES (PAC):

Internship or Practical Training, Material Study/ Critical Analysis/ Market survey,

Research Methodology, Professional Practice, Project Management, Seminar

SKILL ENHANCEMENT COURSES (SEC):

Communication Skills & Techniques for Architecture, Computer studio and digital art, Computer Applications I and II

STRUCTURE OF COURSE CODE:

Each course will be identified by a unique Course Code consisting of eight alpha numeric characters.

Table 1: Structure of Course Code

YYYARXSNN (for courses offered by Architecture Department)					
YY	AR	X		S	NN
Regulation Year	Department offering the course	Course category code C		Semester Number	Serial No. of course in a semester
23 for year 2023	Architecture	D – Architectural Design S – Architectural Studies B – Building Construction C – Basic Sciences and Applied Engineering E - Elective P – Professional Ability Enhancement course K- Skill Enhancement courses		1-10 etc.	01 02 03 etc.
YYAXCSNN (for courses offered by other departments)					
YY	A	X	C	S	NN
23 for year 2023	Architecture Department	X is department offering the course C- Civil E- Electrical M-Mechanical B- Humanities and Basic Sciences	C-Basic sciences and Applied Engineering K- Skill Enhancement Courses	1-10 etc.	01 02 03 etc.

E.g., 23ARS303; 23 is regulation year, AR is Architecture Department offering the course, S is category code for Architectural studies, 3 is third semester and 03 is the sequence of the subject in the semester.

e.g., 23ACC405 - 23 is regulation year, A is for Architecture department, C is for Civil Department offering the course, C is category code for Applied Engineering, 4 is fourth semester and 05 is the sequence of the subject in the semester.

The L-T-P-S-C for each course indicates the number of hours delivered as Lecture (L), Tutorial (T), Practical/ Studio/ Drawing (P), Self-study hours (S) and the total instructional delivery indicated as Credits (C).

$$S = (L*1 + T*0 + P*1)$$

$$C = L + T + P$$

Table 2: Semester Wise Credit Distribution

Semester	1	2	3	4	5	6	7	8	9	10	Total
Credits	29	28	28	29	28	28	15	28	26	21	260

Table 3: Code for the Exam Slot of courses

Code	Description
A,B,C,D,E,F	End semester exams for theory subjects
S,T,U,V	Studio courses with Jury exam for Basic Design, Architectural Design and Thesis, Training or subjects evaluated by internal assessment (e.g., viva for workshop)

FIRST SEMESTER												
Sl. No.	Slot	Code	Category	Title	L	T	P	S	No. of Hours	Credits	Total Marks	
											CIA	ESE
1	S	23ARD101	PC	Basic Design – I	0	0	8	8	8	8	100	100
2	A	23ARS102	PC	Theory of Architecture - I	3	0	0	3	3	3	40	60
3	B	23ARS103	PC	Geometrical Drawing	0	0	3	3	3	3	50	50
4	C	23ARS104	PC	Architectural Graphics and Visual Arts - I	1	0	3	4	4	4	50	50
5	D	23ARB105	BS	Building Materials and Construction Techniques – I	1	0	2	3	3	3	50	50
6	E	23ACC106	BS	Theory of Structures – I	2	1	0	2	3	3	40	60
7	F	23ABC107	BS	Mathematics for Architectural Applications	2	1	0	2	3	3	40	60
8	T	23ABK108	SEC	Communication Skills and Techniques for Architecture	1	0	1	2	2	2	100	-
TOTAL								27	29	29		

PC-18; BS-9; EC-0; PAC- 0; SEC- 2

SECOND SEMESTER												
Sl. No.	Slot	Code	Category	Title	L	T	P	S	No. of Hours	Credits	Total Marks	
											CIA	ESE
1	S	23ARD201	PC	Architectural Design – I	0	0	8	8	8	8	100	100
2	A	23ARS202	PC	History of Architecture and Culture-I	3	0	0	3	3	3	40	60
3	B	23ARS203	PC	Theory of Architecture – II	3	0	0	3	3	3	40	60
4	C	23ARS204	PC	Architectural Graphics and Visual Arts II	1	0	3	4	4	4	50	50
5	D	23ARB205	BS	Building Materials and Construction Techniques – II	1	0	2	3	3	3	50	50
6	E	23ACC206	BS	Theory of Structures – II	2	1	0	2	3	3	40	60
7	T	23ARK207	SEC	Computer studio and digital art	0	0	2	2	2	2	100	-
8	U	23ARS208	PC	Carpentry and Model Making Workshop	0	0	2	2	2	2	100	-
TOTAL								27	28	28		

PC- 20; BS -6; EC- 0; PAC- 0; SEC-2

THIRD SEMESTER												
Sl. No.	Slot	Code	Category	Title	L	T	P	S	No. of Hours	Credits	Total Marks	
											CIA	ESE
1	S	23ARD301	PC	Architectural Design- II	0	0	8	8	8	8	100	100
2	A	23ARS302	PC	History of Architecture and Culture- II	3	0	0	3	3	3	40	60
3	B	23ARB303	BS	Building Materials and Construction Techniques- III	1	0	2	3	3	3	50	50
4	C	23ARB304	BS	Climate and Built form – I	2	0	2	4	4	4	40	60
5	D	23ACC305	BS	Theory of Structures - III	2	1	0	2	3	3	40	60
6	E	23ACC306	BS	Building Services - I	2	0	1	3	3	3	40	60
7	T	23ACC307	BS	Surveying and leveling	1	0	1	2	2	2	100	-
8	U	23ARK308	SEC	Computer Applications I	0	0	2	2	2	2	100	-
TOTAL								27	28	28		

PC- 11; BS -15; EC-0; PAC- 0; SEC-2

FOURTH SEMESTER												
Sl. No.	Slot	Code	Category	Title	L	T	P	S	No. of Hours	Credits	Total Marks	
											CIA	ESE
1	S	23ARD401	PC	Architectural Design - III	0	0	8	8	8	8	100	100
2	A	23ARS402	PC	History of Architecture and Culture-- III	3	0	0	3	3	3	40	60
3	B	23ARS403	PC	Landscape Design and Site Planning	2	0	2	4	4	4	50	50
4	C	23ARB404	BS	Building Materials and Construction Techniques- IV	1	0	2	3	3	3	50	50
5	D	23ARB405	BS	Climate and Built form – II	2	0	1	3	3	3	40	60
6	E	23ACC406	BS	Theory of Structures – IV	2	1	0	2	3	3	40	60
7	F	23AEC407	BS	Building Services –II	2	0	1	3	3	3	40	60
8	T	23ARK408	SEC	Computer Applications II	0	0	2	2	2	2	100	-
TOTAL								28	29	29		

PC- 15; BS -12; EC- 0; PAC- 0; SEC- 2

FIFTH SEMESTER												
Sl. No.	Slot	Code	Category	Title	L	T	P	S	No. of Hours	Credits	Total Marks	
											CIA	ESE
1	S	23ARD501	PC	Architectural Design- IV	0	0	9	9	9	9	100	100
2	A	23ARS502	PC	History of Architecture and Culture - IV	3	0	0	3	3	3	40	60
3	B	23ARS503	PC	Interior Design	1	0	1	2	2	2	50	50
4	C	23ARB504	BS	Building Materials and Construction Techniques- V	1	0	2	3	3	3	50	50
5	D	23ACC505	BS	Theory of Structures – V	2	1	0	2	3	3	40	60
6	E	23AMC506	BS	Building Services - III	2	0	1	3	3	3	40	60
7	F	23ARE507	EC	Elective I	3	0	0	3	3	3	40	60
8	T	23ARB508	BS	Working drawings	0	0	2	2	2	2	100	-
TOTAL								27	28	28		

PC- 14; BS -11; EC-3(PE- 3); PAC- 0; SEC- 0

SIXTH SEMESTER												
Sl. No.	Slot	Code	Category	Title	L	T	P	S	No. of Hours	Credits	Total Marks	
											CIA	ESE
1	S	23ARD601	PC	Architectural Design – V	0	0	10	10	10	10	100	100
2	A	23ARS602	PC	History of Architecture and Culture - V	3	0	0	3	3	3	40	60
3	B	23ARS603	PC	Estimation and Valuation	2	1	0	2	3	3	40	60
4	C	23ARB604	BS	Building Materials, Construction Techniques VI	1	0	2	3	3	3	50	50
5	D	23ARC605	BS	Building Services – IV (Acoustics)	2	0	1	3	3	3	40	60
6	E	23ACC606	BS	Theory of Structures – VI	2	1	0	2	3	3	40	60
7	F	23ARE607	EC	Elective – II	3	0	0	3	3	3	40	60
TOTAL								26	28	28		

PC- 16; BS -9; EC-3 (PE-3); PAC- 0; SEC- 0

SEVENTH SEMESTER												
Sl. No.	Slot	Code	Category	Title	L	T	P	S	No. of Hours	Credits	Total Marks	
											CIA	ESE
1	S	23ARP701	PAC	Internship or Practical Training	0	0	0	0	12	12	-	100
2	T	23ARP702	PAC	Critical Analysis, Material Study/ Market Survey	0	0	0	0	3	3	-	50
TOTAL									15	15		

PC- 0; BS -0; EC- 0; PAC- 15; SEC- 0

EIGHTH SEMESTER												
Sl. No.	Slot	Code	Category	Title	L	T	P	S	No. of Hours	Credits	Total Marks	
											CIA	ESE
1	S	23ARD801	PC	Architectural Design - VI	0	0	10	10	10	10	100	100
2	A	23ARS802	PC	Urban Design	3	0	0	3	3	3	40	60
3	B	23ARS803	PC	Housing	3	0	0	3	3	3	40	60
4	C	23ARE804	EC	Elective III	3	0	0	3	3	3	40	60
5	D	23ARE805	EC	Elective - IV	3	0	0	3	3	3	40	60
6	E	23ARP806	PAC	Professional Practice	3	0	0	3	3	3	40	60
7	F	23ARP807	PAC	Research Methodology	3	0	0	3	3	3	40	60
TOTAL									28	28	28	

PC- 16; BS -0; EC- 6(PE-6); PAC- 6; SEC- 0

NINTH SEMESTER													
Sl. No.	Slot	Code	Category	Title	L	T	P	S	No. of Hours	Credits	Total Marks		
											CIA	ESE	
1	S	23ARD901	PC	Architectural Design- VII	0	0	12	12	12	12	100	100	
2	A	23ARE902	EC	Elective V	3	0	0	3	3	3	40	60	
3	B	23ARE903	EC	Elective VI	3	0	0	3	3	3	40	60	
4	C	23ARE904	EC	Elective VII/ Management course/ Entrepreneur skills	3	0	0	3	3	3	40	60	
5	D	23ARP905	PAC	Project Management	3	0	0	3	3	3	40	60	
6	T	23ARP906	PAC	Seminar in Architecture	0	2	0	0	2	2	100	-	
TOTAL								24	26	26			

PC- 12; BS -0; EC – 9(PE-3, OE-6); PAC- 5; SEC- 0

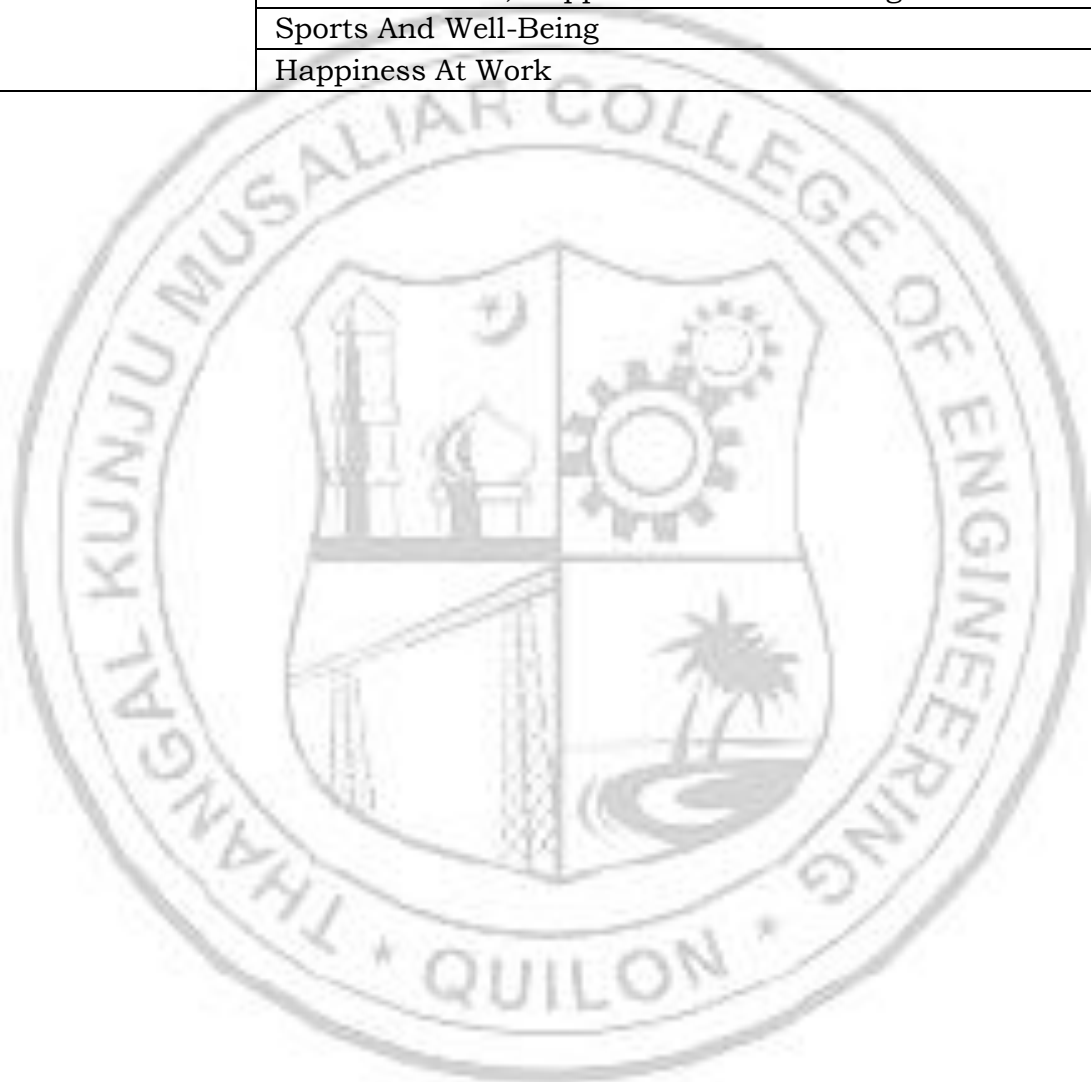
TENTH SEMESTER													
Sl. No.	Slot	Code	Category	Title	L	T	P	S	No. of Hours	Credits	Total Marks		
											CIA	ESE	
1	S	23ARD1001	PC	Architectural Thesis	0	0	18	18	18	18	250	250	
2	T	23ARE1002	EC	Elective VIII – MOOC*	To be completed successfully					3	100	-	
TOTAL								18	18	21			

PC- 18; BS -0; EC – 3(OE-3); PAC- 0; SEC- 0

List Of Electives_2023

Elective 1		GROUP 1 Humanities
SEM 5	23ARE507.1	Principles of Human settlements
	23ARE507.2	Appreciation of Art in Architecture
	23ARE507.3	Behavioral and Environmental Studies in Architecture
	23ARE507.4	Architectural Journalism
Elective 2		GROUP 2 Building Technology
SEM 6	23ARE607.1	Tropical Architecture
	23ARE607.2	Ergonomics and Product Design
	23ARE607.3	Glass Technologies in Architecture
	23ARE607.4	Industrial Architecture
Elective 3		Advanced Technology
SEM 8	23ARE804.1	Long-span Structures
	23ARE804.2	Modular Coordination
	23ARE804.3	Earthquake-resistant Buildings
	23ARE804.4	Construction Mechanization
	23ARE804.5	Appropriate Building Technologies
Elective 4		GROUP 3 Architectural Specialization
SEM 8	23ARE805.1	Traffic and Transportation Planning
	23ARE805.2	Architectural Conservation
	23ARE805.3	Urban Planning
	23ARE805.4	Hospital Design
	23ARE805.5	Campus Planning
	23ARE805.6	Tourism and Environment
	23ARE805.7	Architecture of South East Asia
	23ARE805.8	Services in high rise buildings
	23ARE805.9	Energy Conscious Architecture
Elective 5		OPEN Elective
SEM 9	23XXXXXX	
Elective 6		GROUP 4 Emerging Concerns
SEM 9	23ARE903.1	Parametric Design
	23ARE903.2	Bio-mimicry in Design
	23ARE903.3	Building Automation and Management Systems
	23ARE903.4	Urban Resilience
	23ARE903.5	Disaster Risk Management
	23ARE903.6	Real Estate management
	23ARE903.7	Remote Sensing and GIS in Planning
Elective 7		GROUP 5 Professional Practice/Management/MOOC
SEM 9	23ARE904.1	Management Information Systems
	23ARE904.2	Transforming Self to nurture leadership traits
	23ARE904.3	Entrepreneurship Skills for Architects
Elective 8		GROUP 6 MOOC
SEM 10	23ARE1002	Urban Governance and Development Management (NPTEL)
		Entrepreneurship Skills for Architects

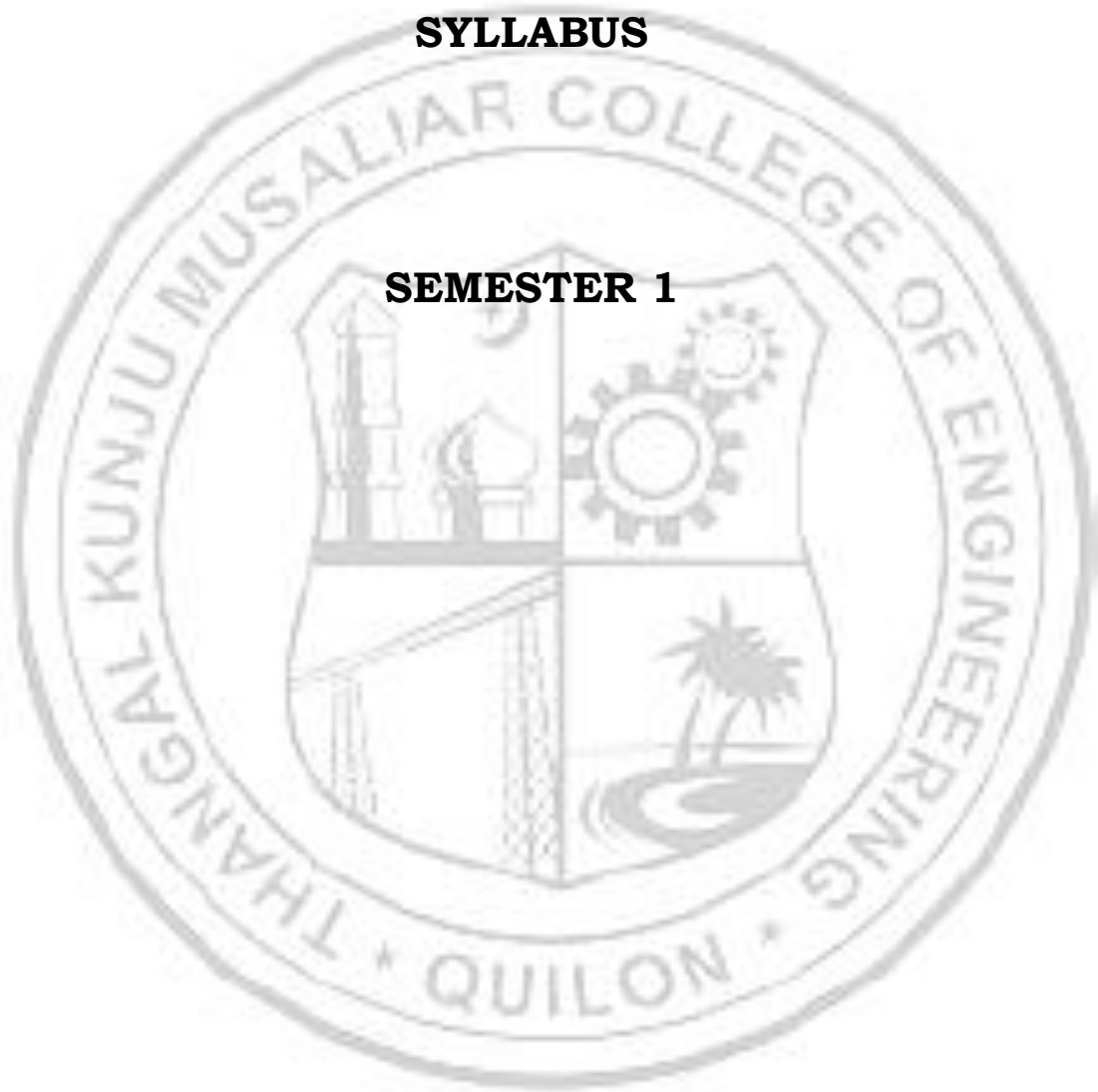
SEM 10	23ARE1002	Building Performance and Compliance
		Role of Craft and Technology in Interior (NPTEL)
		Urban Land Use and transportation planning (NPTEL)
		Structural System in Architecture (NPTEL)
		Culturally Responsive Built Environments (NPTEL)
		Building Materials and Composites (NPTEL)
OPEN ELECTIVES THAT MAY BE TAKEN BY ARCHITECTURE STUDENTS		
SEM 9 ELECTIVE 5		Introduction To Augmented Reality and Virtual Reality
		Safety Engineering and Management
		Communication, Happiness and Well-Being
		Sports And Well-Being
		Happiness At Work



DEPARTMENT OF ARCHITECTURE

SYLLABUS

SEMESTER 1



23ARD101	BASIC DESIGN I					L	T	P	S	C	Year of Introduction		
						0	0	8	8	8	2023		
Preamble:													
The primary objective of this course is to familiarize students with their imaginative thinking and creativity and understand form, proportion, scale, etc. This also includes introduction to primary elements and basic principles of design, space articulation, and the use of drawing as a communication tool for design information.													
Prerequisite: NIL													
Course Outcomes: After the completion of the course the student will be able to													
CO1	Understand and gain a fundamental knowledge of design, its elements, and principles.												
CO2	Judge proportion, scale, and spatial relationships, understand principles of visual composition through field observation, anthropometrics, and experiment with them.												
CO3	Develop ability to assemble simple spatial elements in articulated constructs or design of an object or space and visually represent them through hand-made 2D drawings and 3D models.												
CO - PO MAPPING													
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	
CO1	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	
CO2	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	
CO3	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	
CO4	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	
Assessment Pattern													
Bloom's Category		Continuous Assessment Tools						End Semester Examination					
		Review 1			Review 2								
Remember													
Understand		✓			✓			✓					
Apply		✓			✓			✓					
Analyze		✓			✓			✓					
Evaluate		✓			✓			✓					
Create		✓			✓			✓					
Mark Distribution of CIA													
Course Structure [L-T-P]		Attendance	Studio [P]						Total Marks				
			Assignment or Reviews										
		10	90						100				
Total Mark distribution													
Total Marks		CIA (Marks)			ESE (Marks)			ESE Duration					
200		100			100			Jury					
End Semester Examination [ESE]: ESE will be the portfolio evaluation by a panel of jury.													

SYLLABUS

MODULE I : Introduction to basic elements and principles of design

Elements of Design: Point, Line, Shape, Plane, Volume, Forms etc. Principles of design and their application to quality to spaces and forms: unity, balance, symmetry, proportion, scale, hierarchy, rhythm, contrast, harmony, focus, figure and ground etc. Exercises: 2D and 3D compositions demonstrating principles of design.

MODULE II : Study of Forms

Solids and Voids, Planar, Fluid and Plastic Forms. Study of linear and Planar forms using simple material like Mount Board, metal foil, box boards, wire string, thermocol etc., Study of Solids and voids to evolves sculptural forms and spaces and explore the play of light and shade and application of color, Study of fluid and plastic forms using easily moldable materials like clay, plaster of paris etc. Study of texture and schemes of texture both applied and stimulated and their application, Analytical appraisal of building form in terms of visual character, play of light and shade, solids and voids etc.

MODULE III : Parameters of design, anthropometrics, human activity and the use of space

Parameters of design, anthropometrics, human activity and the use of space: Anthropometric studies – average measurements of human body in different postures, its proportion and graphic representation, application in design of simple household and street furniture. Basic human functions and their implications for space requirements. Minimum and optimum areas for various functions.

MODULE IV : Abstraction to Product Design

Abstraction to Product Design: Studying/ analyzing manmade and natural forms/ objects and copying or abstracting patterns and using the same to generate design for a product like chair, lampshade, pen stand etc.
Representation of ideas through sketches, diagrams, and drawings with application of line quality, thickness and intensity as appropriate to the intent.

Text books

1. Edward D.Mills–Planning the Architects HandBook–Bitterworth, London,1985.
2. Francis D.K. Ching– Architecture Form Space and Order Van Nostrand Reinhold Co.,(Canada),1979
3. Owen Cappleman & Michael Jack Kordan, Foundations in Architecture: An Annotated Anthology of beginning design projects, Van Nostrand Reinhold, New York.
4. Paul Laseau, Graphic Thinking for Architects and Designers, John Wiley & Sons, New York, 2001.
5. Wucius Wong, 'Principles of Two Dimensional Design', John Wiley and Sons Inc., New York, 1972.

Evaluation methods

- Books, research papers, e-books, videos etc. to be provided to the students by the faculty and ensure that they read it, by initiating discussions.
- Students are required to develop presentation skills.
- Students are required to understand the elements and principles of Basic Design as the building blocks of creative design through exercises that will develop the originality, expression, skill and creative thinking. Involve students in a number of exercises to understand the grammar of design and visual composition.
- Enable the understanding of 3D Composition by involving students in a number of exercises which will help generation of a form from a two dimensional / abstract idea.
- Students need to be equipped to understand the relationship between the grammar of design and architecture by involving the students in seminars/ workshops and simple exercises which will look at building form analytically.
- Each student should be encouraged to have a sketchbook with sketches of all the topics covered.

COURSE CONTENTS AND LECTURE SCHEDULE

No.		No. of Hours [104 hours]
MODULE 1 [24 hours]		
1.1	Introduction to basic elements and principles of design	4
1.2	Elements of Design: Point, Line, Shape, Plane, Volume, Forms etc.	4
1.3	Principles of design and their application to quality to spaces and forms	4
1.4	Unity, balance, symmetry, proportion, scale, hierarchy, rhythm, contrast, harmony, focus, figure and ground etc.	4
1.5	Exercises: 2D compositions demonstrating principles of design.	4
1.6	Exercises: 3D compositions demonstrating principles of design.	4
MODULE II [24 hours]		
2.1	Study of Forms	2
2.2	Solids and Voids, Planar, Fluid and Plastic Forms. Study of Solids and voids to evolves sculptural forms and spaces and explore the play of light and shade and application of color,	4
2.3	Study of linear and Planar forms using simple material like Mount Board, metal foil, box boards, wire string, thermocol etc.,	3
2.4	Study of Solids and voids to evolves sculptural forms and spaces and explore the play of light and shade and application of color	4

2.5	Study of fluid and plastic forms using easily moldable materials like clay, plaster of paris etc.	4
2.6	Study of texture and schemes of texture both applied and stimulated and their application,	3
2.7	Analytical appraisal of building form in terms of visual character	2
2.8	Play of light and shade, solids and voids etc.	2
MODULE III [24 hours]		
3.1	Parameters of design, anthropometrics, human activity and the use of space	3
3.2	Parameters of design, anthropometrics, human activity and the use of space	3
3.3	Anthropometric studies – average measurements of human body in different postures	3
3.4	Anthropometric studies - its proportion and graphic representation	3
3.5	Application in design of simple household and street furniture	3
3.6	Basic human functions and their implications for space requirements	3
3.7	Minimum and optimum areas for various functions	6
MODULE IV [32 hours]		
4.1	Abstraction to Product Design	3
4.2	Studying/analyzing man-made and natural forms/ objects	3
4.3	Copying or abstracting patterns	3
4.4	Using the same to generate design for a product like chair, lampshade, pen stand etc.	6
4.5	Representation of ideas through sketches, diagrams, and drawings	3
4.6	Representation of ideas through sketches	4
4.7	Representation of ideas through diagrams, and drawings	4
4.8	Representation of ideas through sketches, diagrams, and drawings with application of Line quality, thickness and intensity as appropriate to the intent.	6

23ARS102	THEORY OF ARCHITECTURE-I	L	T	P	S	C	Year of Introduction 2023
		3	0	0	3	3	

Preamble:

To enable the students to:

1. Comprehend foundation of architecture as a field of study
2. Develop an appropriate vocabulary for understanding and expressing architectural works.
3. Evaluate architectural work based on aesthetical and functional needs.

Prerequisite: NIL

Course Outcomes: After the completion of the course the student will be able to

CO1 Define architecture from various perspectives

CO2 Identify and evaluate the basic elements of design and architecture

CO3 Analyze the various visual principles of composition

CO4 Evaluate the relationship of form and space in architecture

CO5 Appreciate the importance of circulation in architecture

CO - PO MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	✓	✓	✓									
CO2	✓	✓	✓		✓							
CO3	✓	✓	✓		✓							
CO4	✓	✓	✓		✓							
CO5	✓	✓	✓		✓							

Assessment Pattern

Bloom's Category	Continuous Assessment Tools			End Semester Examination
	Test1	Test2	Other tools	
Remember	✓	✓	✓	✓
Understand	✓	✓	✓	✓
Apply			✓	
Analyze	✓	✓	✓	✓
Evaluate			✓	
Create				

Mark Distribution of CIA

Course Structure [L-T-P]	Attendance	Theory [L]			Total Marks
		Assignment	Test-1	Test-2	
	4	12	12	12	40

Total Mark distribution

Total Marks	CIA (Marks)	ESE (Marks)	ESE Duration
100	40	60	3 hours

End Semester Examination [ESE]: Pattern

PATTERN	PART A	PART B	ESE Marks
PATTERN 1	5 questions with one question from each module, with 4 marks for each question. Answer all questions in Part A. Marks: (5x4 =20 marks)	10 questions with 2 questions from each module, of which the student should answer any one from each module Each question carries 8 marks. One or two questions can have subdivisions. Marks: (5x8 = 40 marks) Time: 3 hours	60
	Total Marks: 20	Total Marks: [5x8 = 40 marks]	

SYLLABUS**MODULE I: Introduction**

Origin of Architecture, Etymology of the Word 'Architecture', Definition of Architecture and Understanding Architecture as Identification of Place, Natural and Man-made form, Architecture and culture—aspects of culture that influence architecture

MODULE II: Elements of Design and Architecture

Basic elements of design - point, line, plane, volume and their architectural expressions. Basic elements of Architecture, Modifying elements of Architecture, Gestalt principles of visual perception

MODULE III: Principles of Composition

Proportion and scale in architecture, Proportioning systems and their role in establishing visual relationship.
Ordering principles- Axis, symmetry, balance, hierarchy, datum, rhythm, repetition, pattern, transformation, harmony, contrast, unity, dominance, emphasis

MODULE IV: Form and Space

Evolution, Transformation and Articulation of form, Geometry in Architecture
Elements defining spaces- spatial relationships-spatial organization-centralized, linear, radial, clustered, grid-built form and open space relationships with architectural examples

MODULE V: Circulation

Experiencing architecture through movement in space, Relationship between architectural form and circulation- Types of circulation- Building approach and entrance, path configuration and form, path space relationship, orientation with architectural examples.

Text books

1. Francis D.K. Ching, 'Architecture Form, Space and Order', Van Nostrand Reinhold Company, New York, 2007.
2. John Beverly Robinson, 'Principles of Architectural Composition', Wentworth Press, 2016
3. Kurt Koffka, 'Principles of Gestalt Psychology, Mimesis International, 2014
4. Pramara V.S., 'Design Fundamentals in Architecture', Somaiya Publications Private Ltd., NewDelhi,1973.
5. Simon Unwin, 'Analysing Architecture', Roulledge, London, 2003.

Reference books

1. Bryan Lawson, 'The Language of Space', Architectural Press, 2001.
2. James C. Snyder, 'Introduction to Architecture', McGraw-Hill, 1979
3. Lel and M Roth; 'Understanding Architecture: Its Elements, History and Meaning', Craftsman House, 1994.
4. Wucius Wong, 'Principles of two Dimensional Design', Wiley, 2009
5. Yatin Pandya, 'Elements of Space making', Mapin 2007.

COURSE CONTENTS AND LECTURE SCHEDULE

No.		No. of Hours [36 hours]
MODULE 1 [6 hours]		
1.1	Origin of Architecture	1
1.2	Etymology of the Word 'Architecture'	1
1.3	Definition of Architecture, Natural and Man-made form	1
1.4	Understanding Architecture as Identification of Place	1
1.5	Architecture and culture – aspects of culture that influence architecture	2
MODULE II [9 hours]		
2.1	Basic elements of design-point and their architectural expressions.	1
2.2	Basic elements of design-Line and their architectural expressions.	1
2.3	Basic elements of design-plane and their architectural expressions.	1
2.4	Basic elements of design-Volume and their architectural expressions.	1
2.5	Basic elements of Architecture	1
2.6	Modifying elements of Architecture	2
2.7	Gestalt principles of visual perception	2
MODULE III [9 hours]		

3.1	Proportion and scale in architecture	2
3.2	Proportioning systems	1
3.3	Their role in establishing visual relationship	2
3.4	Ordering principles -Axis, symmetry, balance, hierarchy, datum,	1
3.5	Rhythm, repetition, pattern	1
3.6	Transformation, harmony, contrast	1
3.7	Unity, dominance, emphasis	1
MODULE IV [9 hours]		
4.1	Form and Space-Evolution	1
4.2	Transformation and Articulation of form,	2
4.3	Geometry in Architecture	2
4.4	Elements defining spaces	1
4.5	Spatial relationships	1
4.6	Spatial organization- centralized, linear, radial, clustered, grid	1
4.7	Built form and open space relationships with architectural examples	1
MODULE V [6 hours]		
5.1	Circulation-Experiencing architecture through movement in space	1
5.2	Relationship between architectural form and circulation	1
5.3	Types of circulation	1
5.4	Building approach and entrance	1
5.5	Path configuration and form	1
5.6	Path space relationship, orientation with architectural examples.	1

23ARS103	GEOMETRICAL DRAWING					L	T	P	S	C	Year of Introduction 2023		
						0	0	3	3	3			
Preamble: To introduce students to the fundamentals of technical drawings.													
Prerequisite: NIL													
Course Outcomes: After the completion of the course the student will be able to													
CO1	Summarize the basic principles of technical drawing. Understanding												
CO2	Draw orthographic projections of simple solids. Applying												
CO3	Develop surfaces of small objects. Applying												
CO - PO MAPPING													
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	
CO1	✓		✓						✓		✓	✓	
CO2	✓		✓		✓							✓	
CO3		✓		✓					✓			✓	
Assessment Pattern													
Bloom's Category		Continuous Assessment Tools						End Semester Examination					
		Test1			Test2								
Remember		✓			✓			✓					
Understand		✓			✓			✓					
Apply		✓			✓			✓					
Analyze													
Evaluate													
Create													
Mark Distribution of CIA													
Course Structure [L-T-P]		Drawing [P]									Total Marks		
		Attendance	Assignment			Test-1		Test-2					
		5	30			7.5		7.5				50	

Total Mark distribution			
Total Marks	CIA (Marks)	ESE (Marks)	ESE Duration
100	50	50	3 hours
End Semester Examination [ESE]: Pattern			
PATTERN	PART A	PART B	ESE Marks
PATTERN 1	Module 1: 2 Questions, Answer any 1 (10 Marks) Module 2: 2 Questions, Answer any 1 (10 Marks) Module 3: 2 Questions, Answer any 1 (10 Marks) Marks: (10x3 =30 marks)	Module 4: 2 Questions, Answer any 1 (20 Marks)	50
	Total Marks: 30	Total Marks: 20 marks	
SYLLABUS			
MODULE I: Scale			
Introduction to scales. Graphical scale and plain scale.			
Drawings:			
Construction of scales			
MODULE II: Introduction to projections			
Projection, types of projections and classification of projections			
Orthographic projections			
Projections of points, lines and planes. True and apparent lengths and angles. Traces			
Drawings:			
Projection of lines			
MODULE III: Projection of solids			
Projection of solids in simple position inclined to one of the planes and inclined to both planes. (Prisms, pyramids, cylinders and cones)			
Drawings:			
Projection of solids (prisms, pyramids, cylinders and cones)			
MODULE IV: Sections of solids			
Introduction to sections and relevance of sections in drawings. Sections of solids (prisms, pyramids, cylinders and cones) True shapes of sections. Concept of auxiliary projection (for true shapes)			
Development of surfaces			
Development of simple solids. Relevance in architectural model making. Development of a simple hipped roof.			
Drawing			
Sections of solids Development of surfaces of solids and			

Development of a simple hipped roof

Text books

1. Ching, Francis D. K., Architectural Graphics, Hoboken, New Jersey: John Wiley & Sons, 2015
2. Ching, Francis D. K., Design Drawing, Hoboken, New Jersey: John Wiley & Sons, 2010
3. Norling. Earnest R., Perspective Made Easy, New York: Dover Publications, Inc., 1999

Reference books

1. Ching, Francis D. K., Architectural Graphics, Hoboken, New Jersey: John Wiley & Sons, 2015
2. Ching, Francis D. K., Design Drawing, Hoboken, New Jersey: John Wiley & Sons, 2010

COURSE CONTENTS AND LECTURE SCHEDULE

No.		No. of Hours [36 hours]
MODULE 1 [4 hours]		
1.1	Scale Introduction to scales.	1
1.2	Graphical scale and plain scale.	1
1.3	Drawings: Construction of scales	2
MODULE II [8 hours]		
2.1	Introduction to projection	1
2.2	Projection	1
2.3	Types of projections	1
2.4	Classification of projections	1
2.5	Orthographic projections Projections of points, lines and planes.	1
2.6	True and apparent lengths and angles. Traces	1
2.7	Drawings: Projection of lines	2
MODULE III [12 hours]		
3.1	Projection of solids in simple position inclined to one of the planes	2
3.2	Projection of solids inclined to both planes.	2
3.3	Prisms, pyramids,	2
3.4	Cylinders and cones	2

3.5	Drawings: Projection of solids (prisms, pyramids)	2
3.6	Drawings: Projection of solids (cylinders and cones)	2
MODULE IV [15 hours]		
4.1	Sections of solids- Introduction to sections and True shapes of sections.	2
4.2	Relevance of sections in drawings	1
4.3	Sections of solids- (prisms, pyramids, cylinders and cones)	1
4.4	Sections of solids -(cylinders and cones)	1
4.5	Concept of auxiliary projection (for true shapes)	2
4.6	Drawing Sections of solids	2
4.7	Development of surfaces - Developments of simple solids.	1
4.8	Relevance in architectural model making.	1
4.9	Development of a simple hipped roof.	1
4.10	Drawing Development of surfaces of solids and Development of a simple hipped roof	2
4.11	Drawing Development of a simple hipped roof	1

23ARS104	ARCHITECTURAL GRAPHICS AND VISUAL ARTS I	L	T	P	S	C	Year of Introduction 2023
		1	0	3	4	4	

Preamble:

To introduce students to the fundamentals of technical drawings and to familiarize students with the grammar of art by involving them in a series of free hand exercises both indoor and outdoor to enhance their imaginative thinking and creativity and appreciate form, proportion, scale, etc.

Prerequisite: NIL

Course Outcomes: After the completion of the course the student will be able to

CO1 Summarize the basic principles of visual presentation and architectural graphics.

CO2 Draw in various media and materials, to implement in design studio projects.

CO3 Draw shades and shadows and apply rendering techniques

CO4 Draw measured drawings of small objects.

CO - PO MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	✓	✓							✓	✓		✓
CO2	✓	✓	✓		✓				✓			✓
CO3	✓	✓		✓					✓			✓
CO4	✓	✓	✓		✓				✓			✓

Assessment Pattern

Bloom's Category	Continuous Assessment Tools		End Semester Examination
	Test1	Test 2 (Viva)	
Remember	✓	✓	✓
Understand	✓	✓	✓
Apply	✓	✓	✓
Analyze			
Evaluate			
Create			

Mark Distribution of CIA

Course Structure [L-T-P]	Attendance	Theory and drawing [L - P]			Total Marks
		Assignment	Test-1	Test-2 (Portfolio and viva)	
	5	30	7.5	7.5	50

Total Mark distribution			
Total Marks	CIA (Marks)	ESE (Marks)	ESE Duration
100	50	50	3 hours
End Semester Examination [ESE]: Pattern			
PATTERN	PART A	ESE Marks	
PATTERN 1	There will be one question from Module 4 with sub divisions which will have applications from all the other three modules. (50 marks)	50	
	Total Marks: 50		
SYLLABUS			
MODULE I: Introduction to Architectural Graphics			
Familiarizing architectural drawing equipment. Architectural lettering, Sheet layouts, Drawing and rendering materials: Pencils, colored pencils, markers, chalks, crayons, oilpastels, char coals, drawing pen ,water color, ink and brush etc			
MODULE II: Visual presentation for Architecture			
Indoor and outdoor sketching: An experience of live drawing in various contexts in pencil and pen/ink, Free-hand perspective drawing and rendering of imagined objects, in pencil and pen /ink. Architectural rendering: rendering dots, lines, geometry and forms using pencils, pens and brush and ink. Exercises using different mediums. Free hand line sketching and drawing of natural and manmade. Study of shades and shadows, Sketching of historic or new built- up structures of Architectural importance using different mediums.			
MODULE III: Color theory			
Exploring color scheme based on principles of harmony and contrast and degree of chromatism, light and shade. Exercises using different mediums. Study of shades and shadows, coloring, rendering with various color materials.			
MODULE IV: Measured Drawing			
Orthographic projection of small furniture like stools, chairs and tables (plans, elevations and sections) Drafting techniques, graphical symbols and annotations Dimensioning, labeling and representation of materials, Composing the drawing sheet Drawings: Measured drawing of furniture			
Text books			
<ol style="list-style-type: none"> 1. Cleaver, D.G., Art an Introduction 2. Mumford, L., Art & Techniques 3. Ching, Francis D.K., Architectural Graphics, Hoboken, NewJersey: John Wiley & Sons, 2015 			

4. Bhatt, N. D., Engineering Drawing, Anand, Charotar Publishing House, 2012
5. Webb, Frank, "The Artist guide to Composition", David & Charles, U.K., 1994.
6. Drawing a Creative Process", Ching Francis, Van Nostrand Reinhold, New York, 1990.
7. Gardener's Art through Ages by Fred S. Kleiner, 12th Edition, 2005, Wadsworth, Inc.
8. Caldwell Peter, "Pen and Ink Sketching", B.T. Bats ford Ltd., London, 1995.
9. Charles Wallschlaeger & Synthia Basic Snyder, Basic Visual Concepts & Principles for artists, architects & designers, McGraw hill, USA, 1992.
10. Edward D.Mills-Planning the Architects Hand Book Bitterworth, London, 1985.
11. Francis D.K. Ching -Architecture Form Space and Order Nostrand Reinhold (Canada),1979
12. Owen Cappelman & Michael Jack Kordan, Foundations in Architecture: An Annotated Anthology of Beginning design projects, Van Nostrand Reinhold, New York.
13. Paul Laseau, Graphic Thinking for Architects and Designers, John Wiley & Sons, New York, 2001.
14. Wucius Wong, 'Principles of Two-Dimensional Design', John Wiley and Sons Inc., New York, 1972.

COURSE CONTENTS AND LECTURE SCHEDULE

No.		No. of Hours [42 hours]
MODULE 1 [4 hours]		
1.1	Introduction to Architectural Graphics: Familiarizing architectural drawing equipment.	1
1.2	Architectural lettering, Sheet layouts	1
1.3	Introduction to Drawing with different rendering materials: Pencils, colored pencils, markers, chalks,	1
1.4	Drawing and rendering with different materials: crayons, oil pastels, charcoals, drawing pen, Watercolor, ink and brush etc.	1
MODULE II [20 hours]		
2.1	Visual presentation for architecture: Indoor and outdoor sketching: An experience of live drawing in various contexts in pencil and pen/ink,	2
2.2	Free-hand perspective drawing and rendering of imagined objects, in pencil and pen/ink.	2
2.3	Architectural rendering: rendering dots, lines, geometry	2
2.4	Architectural rendering: forms using pencils, pens and brush and ink.	2
2.5	Exercises using different mediums. Free hand line sketching	2
2.6	Free hand line sketching and drawing of natural and manmade objects	2
2.7	Study of shades and shadows,	2

2.8	Sketching of Historic or new built-up structures of Architectural importance using different mediums.	2
2.9	Exercises using different painting mediums. Outdoor sketching	2
2.10	Outdoor sketching – with different medium	2
MODULE III [12 hours]		
3.1	Color theory	1
3.2	Exploring color schemes based on principles of harmony and contrast	1
3.3	Degree of chromatism	1
3.4	Light and shade	1
3.5	Exercises using different mediums - sciography	2
3.6	Study of shades and shadows	2
3.7	Coloring	2
3.8	Rendering with various color materials	2
MODULE IV[16 hours]		
4.1	Measured Drawing - Introduction	1
4.2	Ortho graphic projection of small furniture like stools, chairs and tables	2
4.3	Plans, elevations and sections	3
4.4	Drafting techniques	2
4.5	Graphical symbols and annotations	1
4.6	Dimensioning, labeling and representation of materials.	2
4.7	Composing the drawing sheet	1
4.8	Drawings: Measured drawing of small furniture	4

23ARB105	BUILDING MATERIALS AND CONSTRUCTION TECHNIQUES-I	L	T	P	S	C	Year of Introduction 2023
		1	0	2	3	3	

Preamble:

The goal of this course is to expose the students to elementary building materials and their applications. It aims to familiarize students to contemporary as well as vernacular and traditional building materials. After this course, the students will be able to recognize materials in the market and use them in their design visualization.

Prerequisite: NIL

Course Outcomes: After the completion of the course the student will be able to

CO1	Understand the properties, use and relate to all general aspects of elementary building materials.
CO2	Understand and illustrate various construction techniques in building industry.
CO3	Discover the methods of construction through site visits, practical exercises and drawing preparation.
CO4	Understand and illustrate various structural systems using bricks.

CO - PO MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	✓	✓										✓
CO2	✓	✓			✓							✓
CO3	✓	✓	✓		✓					✓		✓
CO4	✓	✓			✓							✓

Assessment Pattern

Bloom's Category	Continuous Assessment Tools		End Semester Examination
	Test1	Test2	
Remember	✓	✓	✓
Understand	✓	✓	✓
Apply	✓	✓	✓
Analyze			
Evaluate			
Create			

Mark Distribution of CIA

Course Structure [L-T-P]	Attendance	Theory with drawing [L- P]			Total Marks
		Assignment	Test-1	Test-2 (Portfolio and Viva)	
	5	30	7.5	7.5	50

Total Mark distribution				
Total Marks	CIA (Marks)	ESE (Marks)	ESE Duration	
100	50	50	3 hours	
End Semester Examination [ESE]: Pattern				
PATTERN	PART A	PART B	Part C	ESE Marks
PATTERN1	Contains 6 questions with at least one question from each module, having 2.5 marks for each question. Students should answer all the questions. Marks: (6x 2.5 =15 marks)	Contains 4 questions with 2 questions from each theory-based module, of which the student should answer any one from each module. Each question carries 7.5marks. Marks: (2x 7.5 =15 marks)	Contains two drawing questions (may have sub questions), from the two drawing-based modules, of which the student should answer any one. Marks: (1x 20=20 marks)	50
	Total Marks: 15	Total Marks: 15 marks	Total Marks: 20 marks	
SYLLABUS				
MODULE I: Introduction to building materials and construction				
<p>Introduction to building materials and construction Building Structure and components- Sub structure, Super structure, frame, load bearing etc. Properties, Types, Application, Specification and Standards of elementary building materials like Stone, Clay, Mud, Mortar, Brick, rubble, concrete, wood, metals, glass, plastics, tiles, paint etc. Clay and mud as building material Clay, availability, properties, processing, clay products, application etc Mud, availability, properties, processing, products, application, mud construction. Exercise: <i>Site Visit with emphasis on clay and mud.</i> <i>Illustrations on mud construction techniques (Adobe, Wattle & Daub, Rammed Earth Construction).</i></p>				
MODULE II: Stone Masonry				
<p>Introduction to Building Stones & Stone masonry, General terminologies. Classification of building stones. Properties, Characteristic features& uses of Marble, Granite & Laterite Stone Masonry and its classification. Exercise: <i>Site Visit with emphasis on stone construction. Illustration of various types of stone masonry.</i></p>				

MODULE III: Brick Masonry

Brick as a building material- properties, types and available sizes. General terminologies related to brick & Brick masonry.

Various types of brick bonds and its characteristic features.

Terracotta as a building material - properties and its use as flooring and roofing material.

Exercise: *Drawing of Brick Closers, Bats & various types' of brick bonds.*

Site Visit with emphasis on Brick Masonry.

MODULE IV: Introduction to structural systems using bricks**Introduction to structural systems using bricks**

Various structural members in brick work of Arches, Vaults, T junction & Cross walls.

Exercise: Drawings of semicircular, segmental arch & Brick footing.

Illustrations of vaults cross walls and T junctions

Text books

1. P.C. Varghese, 'Building Materials', Prentice hall of India Pvt Ltd, New Delhi, 2005
2. S.S. Bhavikatti, Building Materials & Construction, Vikas Publishing House.
3. B. C. Punmia, Ashok Kr. Jain, Arun Kr. Jain, Building Construction, Laxmi Publications Pvt Limited, 2008.
4. S. C. Rangwala, 2009, Building Construction, Charotar Publishing House Pvt. Limited, 2009
5. Arora S. P., Bindra S. P., Building Construction, Dhanpat Rai and Sons · 1984

Reference books

1. H. Leslie Simmons, 'Construction – Principles, Material & Methods', 7th edition, John Wiley & Sons Inc., New York, 2001.
2. Relevant BIS codes.
3. Rosen Harold J, Construction materials for Architecture, Krieger PubCo, 1992
4. Doran, David; Cather, Bob; Doran, D.K; Cather, R– Construction materials reference book, Routledge, 2013

COURSE CONTENTS AND LECTURE SCHEDULE

No.		No. of Hours [36 hours]
MODULE 1 [9 hours]		
1.1	Building Structure and components-Substructure, structure, frame, load bearing etc.	1
1.2	Properties, Types, Application,	1
1.3	Specification and Standards of elementary building materials like Stone, Clay, Mud, Mortar, Brick, rubble, concrete, wood, metals, glass, plastics, tiles, paint etc.	1
1.4	Clay, availability, properties, processing, clay products, application etc	1
1.5	Mud, availability, properties, processing, products, application, mud construction.	1
1.6	Exercise: <i>Site Visit with emphasis on clay and mud.</i>	2

1.7	<i>Illustrations on mud construction techniques (Adobe, Wattle & Daub, Rammed Earth Construction).</i>	2
MODULE II [9 hours]		
2.1	Introduction to Building Stones & Stone masonry, General terminologies.	1
2.2	Classification of building stones.	1
2.3	Properties, Characteristic features& uses of Marble, Granite & Laterite	1
2.4	Stone Masonry and its classification.	2
2.5	Exercise: <i>Site Visit with emphasis on stone construction.</i>	2
2.6	<i>Illustration of various types of stonemasonry.</i>	2
MODULE III [12 hours]		
3.1	Brick as building material- properties, type sand available sizes. General terminologies related to brick & Brick masonry.	1
3.2	Terracotta as a building material-properties and its use as flooring and roofing material.	1
3.3	Exercise: <i>Drawing of Brick Closers & Bats.</i>	1
3.4	Various types of brick bonds and Its characteristic features.	2
3.5	<i>Drawing of various types of brick bonds.</i>	2
3.6	<i>Site Visit with emphasis on Brick Masonry.</i>	5
MODULE IV [9 hours]		
4.1	Various structural members in brick work.	1
4.2	General aspects of Arches, Vaults, Footings, T junction & Cross walls.	2
4.3	Illustrations of vaults, cross walls and T junctions.	2
4.4	Drawings of semicircular, segmental arches	2
4.5	Drawings of Brick footing.	2

23ACC106	THEORY OF STRUCTURES I	L	T	P	S	C	Year of Introduction 2023
		2	1	0	3	3	

Preamble:

The goal of this course is to expose the students to the fundamental concepts of mechanics and enhance their problem-solving skills. It introduces students the sectional properties and influence of applied force systems on stationary rigid bodies. After this course, the students will be able to recognize similar problems in real world situations and respond accordingly.

Prerequisite: NIL

Course Outcomes: After the completion of the course the student will be able to

- CO1** Identify the components of system of forces acting on rigid bodies
- CO2** Calculate the sectional properties of simple and compound plane sections
- CO3** Apply the conditions of equilibrium to find reactions in rigid bodies and axial forces in simple plane trusses
- CO4** Compute the resultant of different force systems using basic principles of mechanics

CO - PO MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	✓											
CO2	✓	✓	✓	✓								
CO3	✓	✓	✓	✓								
CO4	✓	✓	✓	✓								

Assessment Pattern

Bloom's Category	Continuous Assessment Tools		End Semester Examination
	Test1	Test2	
Remember	✓	✓	✓
Understand	✓	✓	✓
Apply	✓	✓	✓
Analyze			
Evaluate			
Create			

Mark Distribution of CIA

Course Structure [L-T-P]	Attendance	Theory with drawing [L- T]			Total Marks
		Assignment	Test-1	Test-2	
	4	12	12	12	40

Total Mark distribution

Total Marks	CIA (Marks)	ESE (Marks)	ESE Duration
100	40	60	3 hours

End Semester Examination [ESE]: Pattern

PATTERN	PART A	PART B	ESE Marks
PATTERN 1	5 questions with one question from each module, with 4 marks for each question. Answer all questions in Part A. Marks: (5x4 =20 marks)	10 questions with 2 questions from each module, of which the student should answer any one from each module. Each question carries 8 marks. One or two questions can have subdivisions. Marks: (5x8 = 40 marks) Time: 3 hours	60
	Total Marks: 20	Total Marks: 40 marks	Total Marks: 60 marks

SYLLABUS**MODULE I : Introduction to Engineering Mechanics**

Introduction to Engineering Mechanics –Statics – Basic principles of statics – Parallelogram law, Law of action and reaction (Review)
 Concept of rigid body – Practical examples Force concepts – Characteristics of a force Principle of transmissibility and super position
 Various force systems – Practical examples
 Resolution of forces – Resultant of co planar concurrent force system – Methods of projections – Numerical exercise
 Co planar concurrent force system – Principle of resolved parts– Numerical exercise
 Equilibrium of concurrent forces – Laws of equilibrium – Free body diagrams – Exercises for free body diagram preparation –Numerical exercise on analysis of single body
 Analysis of concurrent force systems – Numerical exercises on analysis of bodies in contact

MODULE II:

Moment of a force –Review
 Introduction to non-concurrent force systems, Parallel force system, couple, Varignon's theorem – Derivation not required, Resultant of parallel forces Resultant of non concurrent force system –Numerical exercise
 Introduction to beams – types of beams – Support conditions – Load types – Point load, Uniformly distributed and Varying loads – Practical examples
 Computation of support reactions of cantilever and simply supported beams subjected to concentrated and distributed loads – Numerical exercise

MODULE III: Centroid

Centre of gravity – Centre of mass- Centroid – Concept and definition – Practical examples, Centroid of thin uniform wire bend in to semi-circular arc
 Centroid of simple plane areas – Integration method – Numerical exercise
 Centroid of composite areas – Numerical exercise

MODULE IV: Inertia

Moment of inertia –Concept and practical significance, Parallel axis theorem, Moment of inertia of basic shapes- rectangle, triangle, circle, semi-circle, quadrant of a circle –Derivation Perpendicular axis theorem, Polar moment of inertia, Radius of gyration.

Moment of inertia of composite areas – Numerical exercise

MODULE V : Truss

Concept of truss – Applications – properties– Different configurations, Conditions for a stable, determinate truss – Examples

Assumptions in the analysis of truss – Different methods of truss analysis

Analysis of cantilever and simply supported trusses – Graphical method and Method of joints

Text books

1. S. Timoshenko, D. H. Young, J. V. Rao, Sukumar Pati, Engineering mechanics, Mc Graw Hill Education
2. R.C. Hibbler, “Engineering Mechanics”, Pearson Education, Asia Pvt. Ltd.
3. F.P.Beer & E.R.Johnston, “Vector Mechanics for Engineers”, Tata McGraw Hill

Reference books

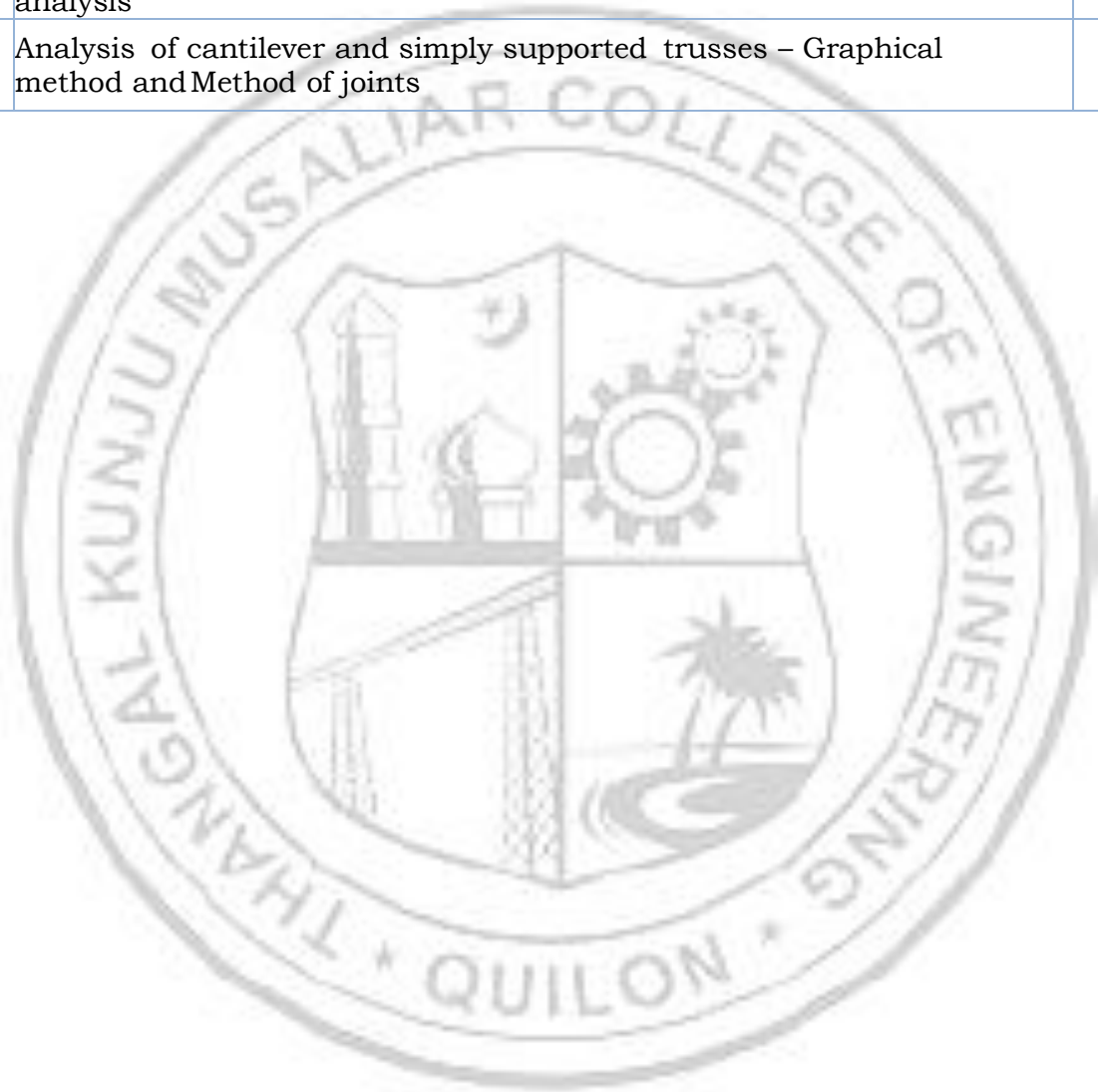
1. Henry J., Covan, Architectural structures: An introduction to structural mechanics, Pitman Publishing
2. Philip Garrison, Basic structures for engineers and architects, Wiley – Blackwell publishers
3. Francis D. K. Ching, Barry S. Onouye, Douglas Zuberbuhler, building structures illustrated, Wiley Publishers
4. Babu, J., Engineering Mechanics, Pearson Prentice Hall
5. Benjamin J., Engineering Mechanics, Pentex Book Publishers and Distributors
6. Bhavikkatti, S. S., Engineering Mechanics, New Age International Publishers
7. J.L. Meriam &L.G. Kraige, “Engineering Mechanics”, John Wiley and Sons
8. Kumar, K. L., Engineering Mechanics, Tata McGraw Hill Publishing Company Limited
9. R.K Bansal., Engineering Mechanics, Lakshmi Publications Pvt Ltd
10. R.K Bansal., Strength of Materials, Lakshmi Publications Pvt Ltd
11. R.S.Khurmi &N. Khurmi, Principles of Engineering Mechanics, S. Chand Publishing
12. Rajasekaran S. and Sankarasubramanian, G., Engineering Mechanics, Vikas Publishing House Private Limited
13. S. Ramamrutham., Strength of Materials, Dhanpat Rai Publishing Company Pvt.

COURSE CONTENTS AND LECTURE SCHEDULE

No.		No. of Hours [36 hours]
MODULE 1 [8 hours]		
1.1	Introduction to Engineering Mechanics –Statics – Basic principles of statics –Parallelogram law, Law of action and reaction (Review) Concept of rigid body – Practical examples Force concepts –	2

	Characteristics of a force	
1.2	Principle of transmissibility and super position Various force systems – Practicalexamples Resolution of forces – Resultant of co planar concurrent force system – Methods of projections – Numerical exercise	2
1.3	Co planar concurrent force system – Principle of resolved parts– Numerical exercise Equilibrium of concurrent forces – Laws of equilibrium – Free body diagrams	2
1.4	Exercises for free body diagram preparation –Numerical exercise on analysis ofsingle body Analysis of concurrent force systems – Numerical exercises on analysis of bodies in contact	2
MODULE II [8 hours]		
2.1	Moment of a force –Review Introduction to non-concurrent force systems, Parallel force system, couple	1
2.2	Varignon’s theorem – Derivation not required Resultant of parallel forces Resultant of non-concurrent force system – Numerical exercise	3
2.3	Introduction to beams – types of beams – Support conditions – Load types – Pointload, Uniformly distributed and Varying loads – Practical examples	2
2.4	Computation of support reactions of cantilever and simply supported beams subjected to concentrated and distributed loads – Numerical exercise	2
MODULE III [8 hours]		
3.1	Centre of gravity – Centre of mass- Centroid – Concept and definition – Practicalexamples Centroid of thin uniform wire bend in to semi-circular arc	4
3.2	Centroid of simple plane areas – Integration method – Numerical exercise Centroid of composite areas – Numerical exercise	4
MODULE IV [8 hours]		
4.1	Moment of inertia –Concept and practical significance Parallel axis theorem	1
4.2	Moment of inertia of basic shapes- rectangle, triangle, circle, semi-circle, quadrant of a circle – Derivation	2
4.3	Perpendicular axis theorem, Polar moment of inertia, Radius of gyration	2

4.4	Moment of inertia of composite areas –Numerical exercise	3
MODULE V [7 hours]		
5.1	Concept of truss – Applications – properties– Different configurations	2
5.2	Conditions for a stable, determinate truss – Examples Assumptions in the analysis of truss – Different methods of truss analysis	2
5.3	Analysis of cantilever and simply supported trusses – Graphical method and Method of joints	3



23ABC107	MATHEMATICS FOR ARCHITECTURAL APPLICATIONS	L	T	P	S	C	Year of Introduction 2023
		2	1	0	2	3	

Preamble:

The course enables the students to understand basic concepts of Linear Algebra, probability distributions and statistical methods. Mathematics and its application are required as a fundamental basis for equipping Architecture students with analytical, logical and practical skills needed to excel in design. Data and mathematical analysis work as essential tools to make the right decision in many practical situations.

Prerequisite: Basics of probability and matrices.

Course Outcomes: After the completion of the course the student will be able to

- CO 1** Use the Gauss elimination method to solve given systems of linear equations. [Apply level]
- CO 2** Apply concepts of measures of central tendency, dispersion to analyze data. [Apply level]
- CO 3** Apply the concepts of correlation coefficient, regression lines, and method of least squares in analyzing relationships between variables. [Apply level]
- CO 4** Use the concept, properties and important models of random variables to analyze suitable random phenomena. [Apply level]
- CO 5** Apply important statistical tests of hypothesis to perform statistical inferences concerning characteristics of a population based on attributes of samples drawn from the population. [Apply level]

CO - PO MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO 1	✓	✓										✓
CO 2	✓	✓										✓
CO 3	✓	✓										✓
CO 4	✓	✓										✓
CO 5	✓	✓										✓

Assessment Pattern

Bloom's Category	Continuous Assessment Tools			End Semester Examination
	Test1	Test 2	Other tools	
Remember	✓	✓	✓	✓
Understand	✓	✓	✓	✓
Apply	✓	✓	✓	✓
Analyse			✓	
Evaluate			✓	
Create			✓	

Mark Distribution of CIA					
Course Structure [L-T-P-J]	Attendance	Theory [L- T]			Total Marks
		Assignment	Test-1	Test-2	
	4	12	12	12	40
Total Mark distribution					
Total Marks	CIA (Marks)	ESE (Marks)		ESE Duration	
100	40	60		3 hours	
End Semester Examination [ESE]: Pattern					
PATTERN	PART A	PART B		ESE Marks	
PATTERN 1	10 Questions, each question carries 2 marks Marks: (2x10 =20 marks)	2 questions will be given from each module, out of which 1 question should be answered. Each question can have a maximum of 2 sub divisions. Each question carries 8 marks. Marks: (5x8 = 40 marks) Time: 3 hours		60	
	Total Marks: 20	Total Marks: [5x 8 = 40 marks]			
SYLLABUS					
MODULE I : Linear Algebra					
(Text1: Sections 7.3,7.4,7.5) Systems of linear equations, Solution by Gauss elimination, row echelon form and rank of a matrix, fundamental theorem for linear systems (homogeneous and non-homogeneous, without proof)					
MODULE II : Statistics					
(Text 2: Sections 25.5, 25.6, 25.7, 25.8, 25.10, 25.11) Measures of central tendency-Mean-median-mode, Measures of Dispersion-Mean deviation-standard deviation-variance. Definition of skewness and kurtosis.					
MODULE III : Statistics					
Text 2: Sections 25.13, 25.14, 24.4,24.5) Correlation coefficient – Regression Lines-Method of least squares-Fitting of straight line and parabola.					
MODULE IV : Probability distributions					

(Text2: Sections 26.7, 26.8, 26.9, 26.10, 26.14, 26.15, 26.16)

Probability distributions: Random variable-probability density function-probability distribution function-properties, Expectation of a random variable- Mean and variance. Probability distributions: Binomial-Poisson-Normal (without proof of mean and variance)

MODULE V : Testing of hypothesis**(Text2:Sections27.1-27.6,27.9-27.15)**

Sampling distribution- Standard error- Testing a hypothesis- Type I and Type II errors- Level of significance. Large sample tests: Test of significance for a single mean- Test of significance for difference of means. Small sample tests: Student's t- distribution-Test of significance of a sample mean- Test of significance of difference between sample means.

Text books

- 1 Erwin Kreyszig, Advanced Engineering Mathematics, 10th Edition, John Wiley & Sons, 2016.
- 2 B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 44th Edition, 2017.

Reference books

1. Richard A Johnson, Probability and Statistics for Engineers (Miller and Freunds)-Prentice Hall of India ,8th Edition.
2. SC Gupta and VK Kapoor, Fundamentals of Mathematical Statistics, SC hand Publications.
3. Prof. Gilbert Strang, Linear Algebra [MITOPENCOURSEWARE]
<https://ocw.mit.edu/courses/18-06-linear-algebra-spring-2010/> (Relevant sections)
4. Prof. Somesh Kumar, Probability and Statistics [NPTEL]
<https://nptel.ac.in/courses/111105041> (Relevant sections)

COURSE CONTENTS AND LECTURE SCHEDULE

No.		No. of Hours [36 hours]
MODULE 1 [7 hours]		
1.1	Systems of linear equations	1
1.2	Solution by Gauss elimination	1
1.3	Solution by Gauss elimination(continued)	1
1.4	row echelon form	1
1.5	rank of a matrix	1
1.6	Fundamental theorem for linear systems (homogeneous and non-homogeneous, without proof)	1

1.7	Fundamental theorem for linear systems(continued)	1
MODULE II [6 hours]		
2.1	Measures of central tendency-Mean	1
2.2	Median	1
2.3	Mode	1
2.4	Measures of Dispersion-Mean deviation	1
2.5	Standard deviation-variance	1
2.6	Definition of skewness and kurtosis.	1
MODULE III [6 hours]		
3.1	Correlation coefficient	1
3.2	Correlation coefficient(continued)	1
3.3	Regression lines	1
3.4	Regression lines(continued)	1
3.5	Method of least squares-Fitting of straight line and parabola.	1
3.6	Fitting of a parabola.	1
MODULE IV [8 hours]		
4.1	Random variable-probability density function	1
4.2	Probability distribution function- properties	1
4.3	Expectation of a random variable-Mean and variance.	1
4.4	Mean and variance(continued)	1
4.5	Binomial	1
4.6	Poisson distributions	1
4.7	Normal distribution	1
4.8	Normal distribution(continued)	1
MODULE V [9 hours]		
5.1	Sampling distribution- Standard error	1
5.2	Testing a hypothesis- Type I and Type II errors- Level of significance	1
5.3	Testing a hypothesis(continued)	1
5.4	Large sample tests: Test of significance for a single mean-	1
5.5	Test of significance for a single mean(continued)	1
5.6	Test of significance for difference of means	1
5.7	Small sample tests: Student's t- distribution-Test of significance of a sample mean	1

5.8	Test of significance of a sample mean(continued)	1
5.9	Test of significance of difference between sample means.	1

CO Assessment Questions

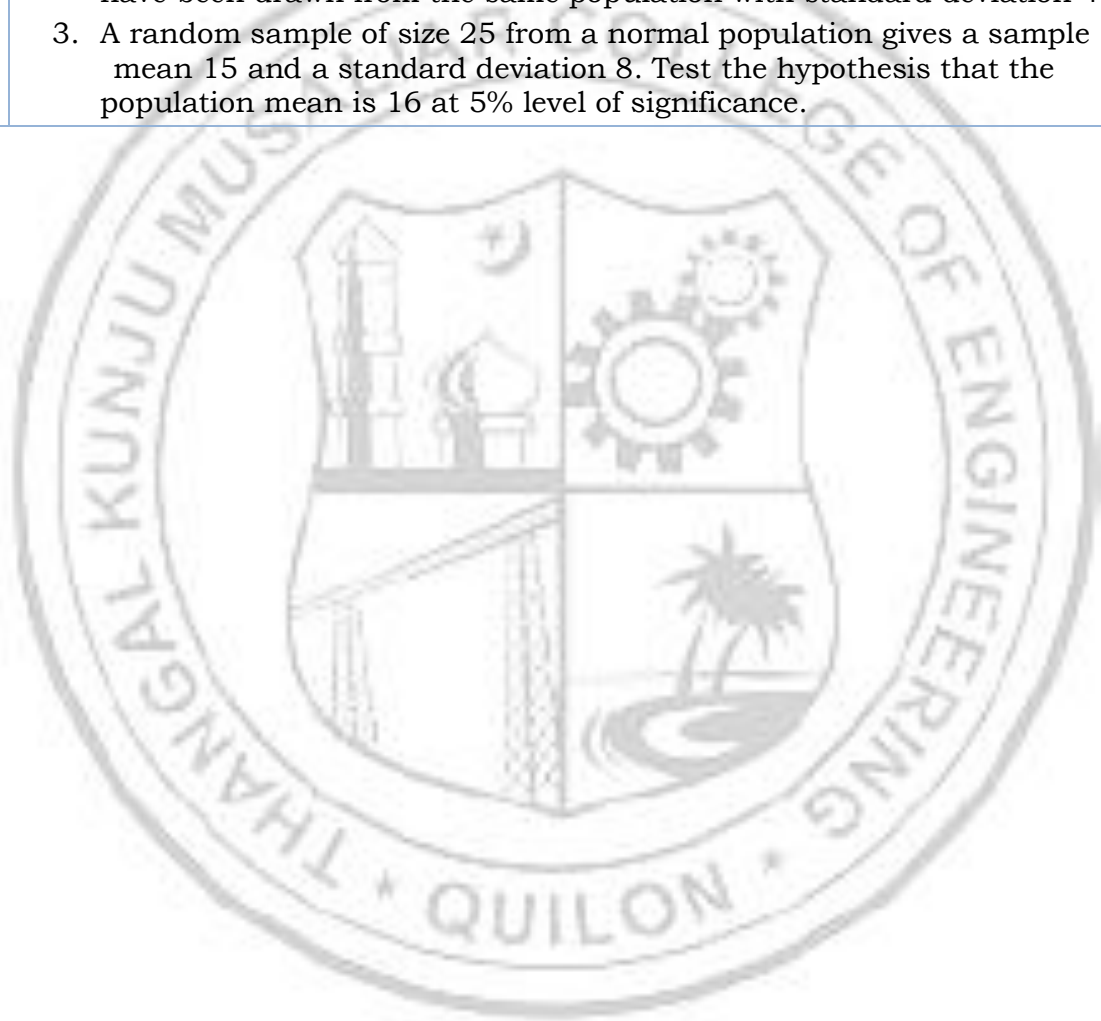
1	<p>1. Find the rank of the matrix $\begin{bmatrix} 3 & 0 & 2 & 2 \\ -6 & 42 & 24 & 54 \\ -21 & 21 & 0 & -15 \end{bmatrix}$</p> <p>2. Solve the following system of equations by Gauss elimination method: $2x+2y+4z=18$, $x+3y+2z=13$, $3x+y+3z=14$.</p> <p>3. For what values of λ and μ the given system of equations $x+y+z=1$, $x+2y+3z=10$, $x+2y+\lambda z=\mu$ has (i) No solution (ii) unique solution (iii) infinite number of solutions.</p>
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2	<p>1. The mean of 200 items was 50. Later on, it was discovered that two items were misread as 92 and 8 instead of 192 and 88. Find out the correct mean.</p> <p>2. Find the mode of the following data.</p> <table border="1"> <tr> <td>Marks</td> <td>1-5</td> <td>6-10</td> <td>11-15</td> <td>16-20</td> <td>21-25</td> <td>26-30</td> <td>31-35</td> <td>36-40</td> <td>41-45</td> </tr> <tr> <td>No. of candidates</td> <td>7</td> <td>10</td> <td>16</td> <td>32</td> <td>24</td> <td>18</td> <td>10</td> <td>5</td> <td>1</td> </tr> </table> <p>3. Find the mean deviation from the median of the following frequency distribution.</p> <table border="1"> <tr> <td>Marks</td> <td>0-10</td> <td>10-20</td> <td>20-30</td> <td>30-40</td> <td>40-50</td> </tr> <tr> <td>No. of students</td> <td>5</td> <td>8</td> <td>15</td> <td>16</td> <td>6</td> </tr> </table>	Marks	1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	No. of candidates	7	10	16	32	24	18	10	5	1	Marks	0-10	10-20	20-30	30-40	40-50	No. of students	5	8	15	16	6
Marks	1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45																								
No. of candidates	7	10	16	32	24	18	10	5	1																								
Marks	0-10	10-20	20-30	30-40	40-50																												
No. of students	5	8	15	16	6																												

3	<p>1. In a partially destroyed laboratory record of an analysis of a correlation data, the following results only are legible: Variance of $x=9$, Regression equations: $8x-10y+66=0$, $40x-18y=214$. What are (i) the mean values of x and y. (ii) the coefficient of correlation between x and y.</p> <p>2. Obtain the equations of the lines of regression from the following data:</p> <table border="1"> <tr> <td>X</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> </tr> <tr> <td>Y</td> <td>9</td> <td>8</td> <td>10</td> <td>12</td> <td>11</td> <td>13</td> <td>14</td> </tr> </table> <p>3. Fit a straight line to the following data.</p> <table border="1"> <tr> <td>X</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> <tr> <td>Y</td> <td>14</td> <td>27</td> <td>40</td> <td>55</td> <td>68</td> </tr> </table>	X	1	2	3	4	5	6	7	Y	9	8	10	12	11	13	14	X	1	2	3	4	5	Y	14	27	40	55	68
X	1	2	3	4	5	6	7																						
Y	9	8	10	12	11	13	14																						
X	1	2	3	4	5																								
Y	14	27	40	55	68																								

4	<p>1. Suppose that X has Poisson distribution. If $P(X=2) = 2/3$, $P(X=1)$, find $P(X=0)$ and $P(X=3)$.</p> <p>2. In a test of 2000 electric bulbs, it was found that the life of a particular make was normally distributed with an average life of 2040 hours and a standard deviation of 60 hours. Find the number of bulbs likely to</p>
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	burn (i) more than 2150 hours (ii) less than 1950 hours.						
	3. A discrete random variable X has the following probability function						
x	1	2	3	4	5	6	7
F(x)	k	2k	2k	3k	K2	2k2	7k2+k
	i Find k						
	ii Evaluate $P(X < 3)$, $P(X \geq 6)$						
5	<p>1. A normal population has mean 6.8 and standard deviation of 1.5. A sample mean of 400 members gave a mean of 6.75. Is the difference significant?</p> <p>2. In a random sample of size 500, the mean is found to be 20. In another independent sample of size 400, the mean is 1.5. Could the samples have been drawn from the same population with standard deviation 4.</p> <p>3. A random sample of size 25 from a normal population gives a sample mean 15 and a standard deviation 8. Test the hypothesis that the population mean is 16 at 5% level of significance.</p>						



23ARK108	COMMUNICATION SKILLS AND TECHNIQUES FOR ARCHITECTURE	L	T	P	S	C	Year of Introduction 2023
		1	0	1	2	2	

Preamble:

- To develop the communication skills of students by helping them in the areas of English Language-Listening, Speaking, Reading and Writing.
- Help them to become confident speakers of English while dealing with their clients, suppliers, business partners and colleagues.
- Help to cultivate their analytical skills in writing especially writing resumes, letters, emails, proposals and reports.

Prerequisite: NIL

Course Outcomes: After the completion of the course the student will be able to

CO1 Understand new vocabulary and language skills in communication

CO2 Identify the listening patterns and apply listening techniques

CO3 Analyze and interpret reading skills

CO4 Develop writing skills

CO5 Develop speaking skills

CO - PO MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	✓									✓		✓
CO2	✓									✓		✓
CO3		✓			✓					✓		✓
CO4		✓	✓		✓					✓		✓
CO5	✓		✓		✓					✓		✓

Assessment Pattern

Bloom's Category	Continuous Assessment Tools		Final test/ Viva (25)
	Presentation	Other tools for assessment	
Remember	✓	✓	✓
Understand	✓	✓	✓
Apply	✓	✓	✓
Analyze	✓	✓	✓
Evaluate		✓	
Create		✓	

Mark Distribution of CIA					
Course Structure [L-T-P]	Attendance	Theory [L- P]			Total Marks
		Presentation/ demonstration	Marks for report	Final test/ Viva	
	10	40	25	25	100
Total Mark distribution					
Total Marks	CIA (Marks)	ESE (Marks)	ESE Duration		
100	100	-	-		
SYLLABUS					
MODULE I : Types of communication					
Types of communication - objectives, verbal and non-verbal communication-effective communication and communication breakdown-significance of technical communication-technical vocabulary, vocabulary used in formal letters/e-mails/reports etc. Reduction of speech sounds in natural speech-Phonetics, intonation in natural speech, Basic Grammar. Technology based communications- Effective email messages, Using software – Modern day research, and search, plagiarism piracy, patent.					
MODULE II : Active and Passive listening					
Active and Passive listening – listening for general content and listening for specific information-listening to technical talks, TED talks, news bulletins and interviews on TV channels.					
MODULE III : Reading comprehension					
Reading comprehension – reading styles and critical analysis, reading shorter and technical articles from journals, newspapers etc. related to architecture Skimming, scanning, intensive and extensive reading, Close reading, Comprehension - Note taking, Note making - interpretation- critical reading and analysis- speed reading Approaches to efficient reading. Tips for effective reading, Benefits of Effective reading.					
MODULE IV : Technical writing, Differences between technical and literary style					
Technical writing, Differences between technical and literary style - Letter writing formal and informal, Email writing job applications- Minute preparation, CV preparation-difference between BIO-DATA, CV and RESUME - Writing reports and Resumes- structure of a report, types of reports, references and bibliography Creative writing exercises.					
MODULE V : Participating in group discussions, debates-Oral Presentations					

Participating in group discussions, debates-Oral Presentations - expression for starting a presentation, tips to improve slide presentations introducing a topic - visual presentation tools- listing supporting ideas- body language and audience analysis. Voice modulation-high pitch and low pitch public Differences between GD and debate-GD strategies activities to improve GD skills. interview etiquette, dress code, body language-online (Skype) interviews, FAQs related to job interviews, soft skills and its relevance-Time management, Psychometrics and stress Management- manners and etiquette.

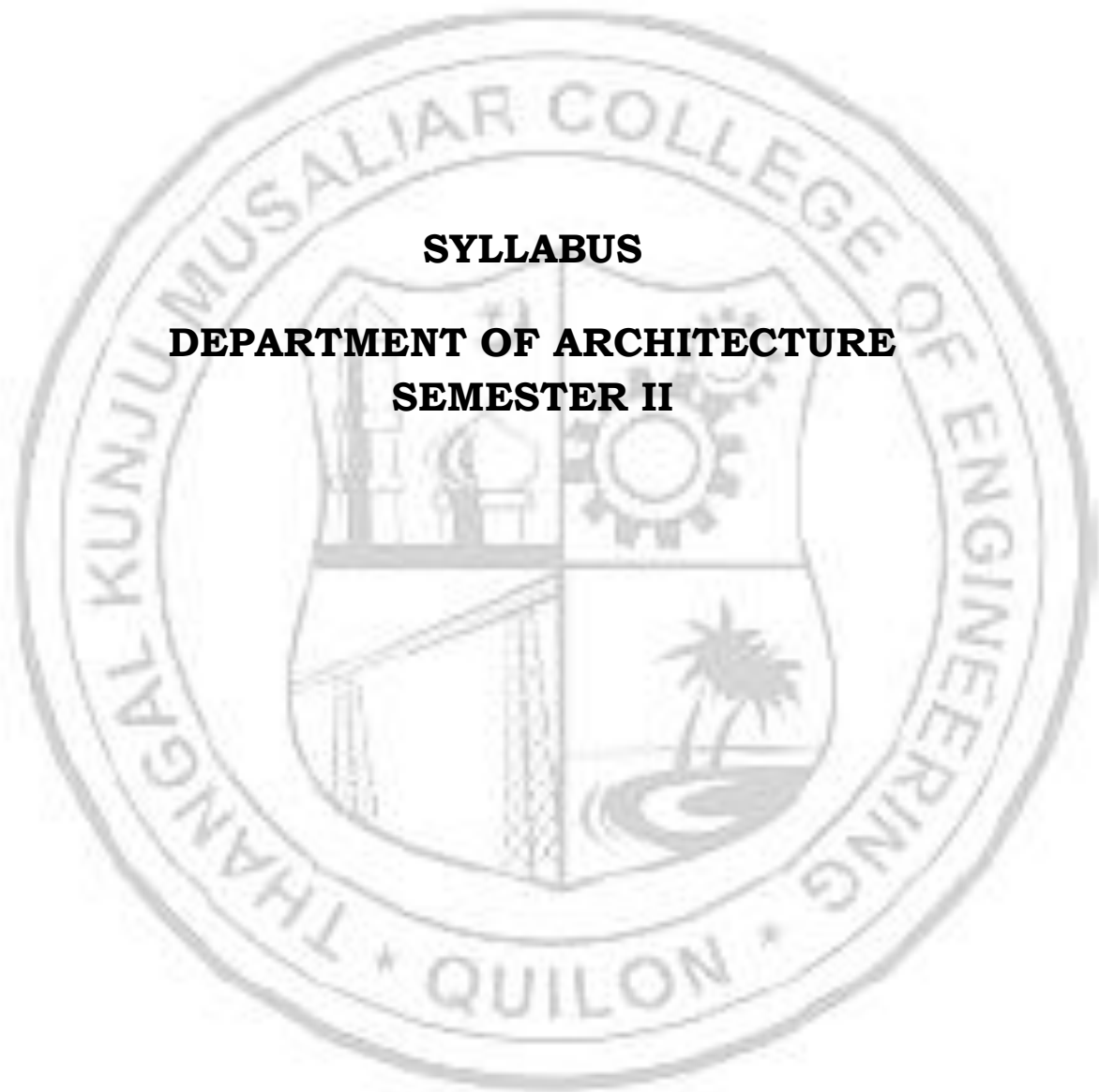
Reference books

1. Anderson, P.V, Technical Communication, Thomson Wadsworth, Sixth Edition, New Delhi, 2007.
2. Evans, D, Decision maker, Cambridge University Press, 1997.
3. John Seely, The Oxford Guide to Writing and Speaking, Oxford University Press, New Delhi, 2004.
4. Prakash, P, Verbal and Non-Verbal Reasoning, Macmillan India Ltd., Second Edition, New Delhi, 2004.
5. Thorpe, E, and Thorpe ,S, Objective English, Pearson Education, Second Edition, NewDelhi,2007.
6. Turton, N. Dand Heaton ,J .B, Dictionary of Common Errors, Addison Wesley LongmanLtd.Indianreprint1998.
7. English for Engineers and Technologists (Combined edition, Vol. 1 and 2), Orient Blackswan 2010.
8. Meenakshi Ramanand Sangeetha Sharma, Technical Communication: Principles and Practice”, 2nd Edition, Oxford University Press, 2011

COURSE CONTENTS AND LECTURE SCHEDULE

No.		No. of Hours [26 hours]
MODULE 1 [5 hours]		
1.1	Types of communication - objectives, verbal and non-verbal communication-effective communication	1
1.2	Communication breakdown-significance of technical communication-technical vocabulary, vocabulary used in formal letters/e-mails/reports etc.	1
1.3	Reduction of speech sounds in natural speech-Phonetics, intonation in natural speech, Basic Grammar.	1
1.4	Technology based communications- Effective email messages, using software	1
1.5	Modern day research, and search, plagiarism piracy, patent.	1
MODULE II [5 hours]		
2.1	Active and Passive listening	1
2.2	Listening for general content	1
2.3	Listening for specific information	1

2.4	Listening to technical talks	1
2.5	TED talks, news bulletins and interviews on TV channels.	1
MODULE III[5 hours]		
3.1	Reading styles and critical analysis, reading shorter and technical articles from journals, newspapers etc. related to architecture Skimming, scanning, intensive and extensive reading.	1
3.2	Close reading, Comprehension - Note taking, Note making	1
3.3	Interpretation- critical reading and analysis-	1
3.4	Speed reading Approaches to efficient reading.	1
3.5	Tips for effective reading, Benefits of Effective reading.	1
MODULE IV[5 hours]		
4.1	Technical writing, Differences between technical and literary style -	1
4.2	Letter writing formal and informal, Email writing job applications- Minute preparation	1
4.3	CV preparation-difference between BIO-DATA, CV and RESUME ,Writing reports and Resumes	1
4.4	Structure of a report, types of reports, references and bibliography	1
4.5	Creative writing exercises.	1
MODULE V [6 hours]		
5.1	Participating in group discussions, debates-Oral Presentations - expression for starting a presentation, tips to improve slide presentations introducing a topic	1
5.2	Visual presentation tools- listing supporting ideas- body language and audience analysis.	1
5.3	Voice modulation-high pitch and low pitch public	1
5.4	Differences between GD and debate-GD strategies activities to improve GD skills.	1
5.5	Interview etiquette, dress code, body language-online (Skype) interviews, FAQs related to job interviews, soft skills and its relevance-Time management,	1
5.6	Psychometrics and stress Management- manners and etiquette.	1



SYLLABUS
DEPARTMENT OF ARCHITECTURE
SEMESTER II

23ARD201	ARCHITECTURAL DESIGN -I	L	T	P	S	C	Year of Introduction
		0	0	8	8	8	2023

Preamble:

To enable the students to develop a basic understanding of space, form, structure, and the built environment, to enable the conceptualization of form, space and structure through creative thinking and to initiate architectural design process deriving from first principles. To involve students in a design project(s) that will include simple space planning and the understanding of the functional aspects of a good design.

Prerequisite: Nil

Course Outcomes After the completion of the course the student will be able:

CO 1	To get a basic understanding of space, form, structure, and the built environment, to enable the conceptualization of form, space and structure through creative thinking. (Understanding)
CO 2	To initiate architectural design process deriving from first principles, building case study by choosing appropriate examples and space standards to enable them to formulate and concretize their concepts and architectural program. (Applying)
CO 3	To acquire skills of drawing and representation, built environment and its components, construction technology and structures to apply to architectural design. (Analyzing and evaluating)
CO 4	To involve students in a design project(s) that will involve simple space planning, understanding the functional aspects of good design, small scale building project(s) which will sensitize them to intelligent planning responsive to the environmental context. (Creating)

CO - PO MAPPING

CO	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CO 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CO 3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CO 4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Assessment Pattern

Bloom's Category	Continuous Assessment Tools			End Semester Examination
	Review 1	Review 2	Other tools	
Remember				
Understand	✓	✓	✓	✓
Apply	✓	✓	✓	✓
Analyze	✓	✓	✓	✓
Evaluate	✓	✓	✓	✓
Create	✓	✓	✓	✓

Other Assessment tools: Site study, analysis, sketching, video, presentation

Mark Distribution of CIA					
Course Structure [L-T-P]	Attendance	Studio [P]			Total Marks
		Assignment	Review-1	Review-2	
	10		90		100
Total Mark distribution					
Total Marks	CIA (Marks)	ESE (Marks)		ESE Duration	
200	100	100		Jury	
End Semester Examination [ESE]: ESE will be the portfolio evaluation by a panel of jury.					
SYLLABUS					
MODULE I : Study of simple structural systems and behavior under load:					
Working model of structures (Like post and lintel, cantilever, trusses, arches, space frame, suspension etc.), Development of basic skill in design expression through visual analysis of structural forms, sculptural and spatial qualities of the structural system, three dimensional projects related to structural systems developed through models and sketches.					
MODULE II : Integration of form and function in the Architectural design:					
Design of a basic shelter: an architectural form with a specific function, stressing on concept generation and development of rich design process. Representation of ideas through sketches, diagrams, and architectural drawings with application of line quality, thickness and intensity as appropriate to the intent, isometric, axonometric, and oblique views, one and multi-point perspectives, sectional perspectives, light, shade, shadows and sciography. <i>Scale/ Complexity:</i> Small scale simple function private/public buildings predominantly single floor. <i>Typology/Project:</i> Shop, flower kiosk, Bake house, petrol bunk, fire station, weekend cottage etc.					
Reference books					
<ol style="list-style-type: none"> 1. Arthur L. Guptill and Susan E. Meyer, 'Rendering in Pen and Ink', Watson-Guptill, 1997 2. Francis D. K. Ching, 'Architectural Graphics', Wiley, 2009. 3. Francis D. K. Ching, 'Architecture: Form, Space and Order', John Wiley & Sons, 2007. 4. Geoffrey Broadbent 'Design in Architecture' John Wiley and Sons, 1973. 5. Neuferts' Architect's Data 6. Simon Unwin, 'Analysing Architecture', Routledge, 2003. 7. Simon Unwin, 'An Architecture Notebook Wall' Routledge, 2000. 8. Simon Unwin, 'Doorway', Routledge, 2007. 					

COURSE CONTENTS AND LECTURE SCHEDULE		
No.		No. of Hours [112 hours]
MODULE 1[40hours]		
	Study of simple structural systems and behavior under load:	
1.1	Working model of structures -Like post and lintel, cantilever, trusses, arches, spaceframe, suspension etc.)	6
1.2	Working model of structures- cantilever, trusses, arches.	6
1.3	Working model of structures-spaceframe, suspension etc.	6
1.4	Development of basic skill in design expression through visual analysis of structural forms.	6
1.5	Development of basic skill in design expression through visual analysis of sculptural and spatial qualities of the structural system.	6
1.6	Three dimensional models of projects related to structural systems	6
1.7	Three dimensional models of projects related to structural systems developed through sketches.	4
MODULE II [72 hours]		
	Integration of form and function in the Architectural design:	
2.1	Design of a basic shelter: an architectural form with a specific function.	6
2.2	Design of a basic shelter: an architectural form with stressing on concept generation and development of rich design process.	6
2.3	Representation of ideas through sketches, diagrams.	6
2.4	Architectural drawings with application of line quality.	6
2.5	Representation of ideas through sketches, diagrams, and architectural drawings with intensity as appropriate to the intent, isometric, axonometric, and oblique views	6
2.6	Representation of ideas through sketches, diagrams, and architectural drawings with intensity as appropriate to the intent, one and multi-point perspectives, sectional perspectives, light, shade, shadows and sciography.	6
2.7	<i>Scale/ Complexity:</i> Small scale simple function private/public buildings predominantly single floor.	6
2.8	<i>Typology/Project:</i> Shop, flower kiosk, Bake house, petrol bunk, fire station, weekend cottage etc.	6

23ARS202	HISTORY OF ARCHITECTURE AND CULTURE - I	L	T	P	S	C	Year of Introduction
		3	0	0	3	3	2023

Preamble:

To enable the students to:

1. Identify and appreciate Architecture as an outcome of social and cultural processes of a geographical locality.
2. Improve visual literacy level and appreciate the aesthetic components of art and architecture.
3. Analyze architectural grammar, styles and practices in various cultural settings

Prerequisite: Nil

Course Outcomes: After the completion of the course the student will be able to

- Build up the concepts of culture and civilization and identify impact on architectural products.
- Instill visual and formal analysis of architecture in the minds of students to enhance the sketching, written and communication skills of students.

CO 1	To understand the beginnings of architecture, how prehistoric shelters and settings for rituals evolved around the world in different cultures
CO 2	To develop an understanding of the physical experience of buildings in order to appreciate the complexity of the physical and metaphysical influences bearing on architecture.
CO 3	To develop an understanding of architecture as an outcome of various social, political and economic, cultural and climate conditions.
CO 4	To understand the influence of culture and religion in forming architectural styles in India.
CO 5	To understand the progress of Architecture into a noble process with a governing theory and aesthetics, prominent architectural styles, religious and secular architecture, materials, construction technology, and theory of architecture during the First Millennium.

CO - PO MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO 1	✓		✓									✓
CO 2	✓					✓						✓
CO 3	✓		✓				✓					✓
CO 4	✓					✓						✓
CO 5	✓			✓								✓

Assessment Pattern

Bloom's Category	Continuous Assessment Tools			End Semester Examination
	Test 1	Test 2	Other tools	
Remember	✓	✓	✓	✓
Understand	✓	✓	✓	✓
Apply			✓	
Analyse	✓	✓	✓	✓
Evaluate			✓	
Create				

Other Assessment tools: Site study, analysis, sketching, video, presentation

Mark Distribution of CIA					
Course Structure [L-T-P]	Attendance	Theory [L]			Total Marks
		Assignment	Test-1	Test-2	
	4	12	12	12	40
Total Mark distribution					
Total Marks	CIA (Marks)	ESE (Marks)		ESE Duration	
100	40	60		3 hours	
End Semester Examination [ESE]: Pattern					
PATTERN	PART A	PART B		ESE Marks	
PATTERN 1	5 questions with one question from each module, with 4 marks for each question. Answer all questions in Part A Marks: (5x4=20 marks)	10 questions with 2 questions from each module, of which the student should answer any one from each module. Each question carries 8 marks Each question carries 8 marks. Marks: (5x8 = 40 marks) Time: 3 hours		60	
	Total Marks: 20	Total Marks: [5x8 = 40 marks]			
SYLLABUS					
MODULE I :					
<p>A brief overview of Paleolithic and Neolithic Culture – art forms and evolution of shelter – megaliths – agricultural revolution and its impact on culture and civilization. Pre-Historic Civilization: Primitive man - shelters, settlements, religious and burial systems E.g.: Oval hut, Nice, Dolmen tomb, gallery grave, passage grave, Gobekli Tepe Temple, Catal Huyuk, Jericho, Jomon culture Stone Henge.</p>					
MODULE II :					
<p>Introduction to River valley cultures: generic forces shaping settlements and habitats: River valley culture: Indus Valley Civilization: Forces shaping settlements and habitats: Layout and Built forms of Mehrgarh, Early & Late Harappan & Mohenjodaro.</p>					
MODULE III :					
<p>River valley cultures: Mesopotamian civilization - Ziggurats at Warka, Ur and Chogha Zanbil, Palace of Sargon. Nile Valley Civilization (Egyptian): Old kingdom, middle kingdom - Mastaba Tombs, Pyramid of Cheops, Temple of Khons, Karnak, Temple at Abu Simbel.</p>					

MODULE IV :

Greece - Pre-Classical Civilization Greek Language of Architecture – Palaces & Temples and their essential features. Geometry and Greek Architecture, Greek Capitals and Orders, Parthenon

Rome –Important Roman Cities, Typical Roman house, Form Development of Roman vocabulary of Architecture, Structural and Engineering Feats Typology of buildings - Colosseum, Forums, Palaces Pantheon, Basilica. A Comparative study of Greek & Roman Culture & Architecture.

MODULE V :

Pre-classical Aryan & Mauryan: Vedic and Epic Age Salient features Vedic Village, Mauryan Empire – Architectural remains from Pataliputra, Asokan pillar at Vaishal, Lomas Rishi Cave
Buddhism – Religion influencing Architecture – Buddhist Chaityas, Viharas, Stupa at Sanchi, Rock cut caves at Junnar, Chaitya hall at Bhajja.

Text books

1. A Global History of Architecture/ Francis. D. K. Ching, Mark Jarzombek, Vikramaditya Prakash. Published by John Wiley and sons, Third edition 2017
2. A History of Architecture: Settings and Rituals/ Spiro Kostoff. Revisions by Greg Castilo. Published by Oxford University Press, 1985, 1995
3. Sir Banister Fletcher, “A History of Architecture”, CBS Publications (Indian Edition), 1999.
4. Percy Brown, „Indian Architecture: Buddhist and Hindu Periods“, D. B. Taraporevala, 1965
5. Satish Grover, „The Architecture of India: Buddhist and Hindu“, Vikas, 1980

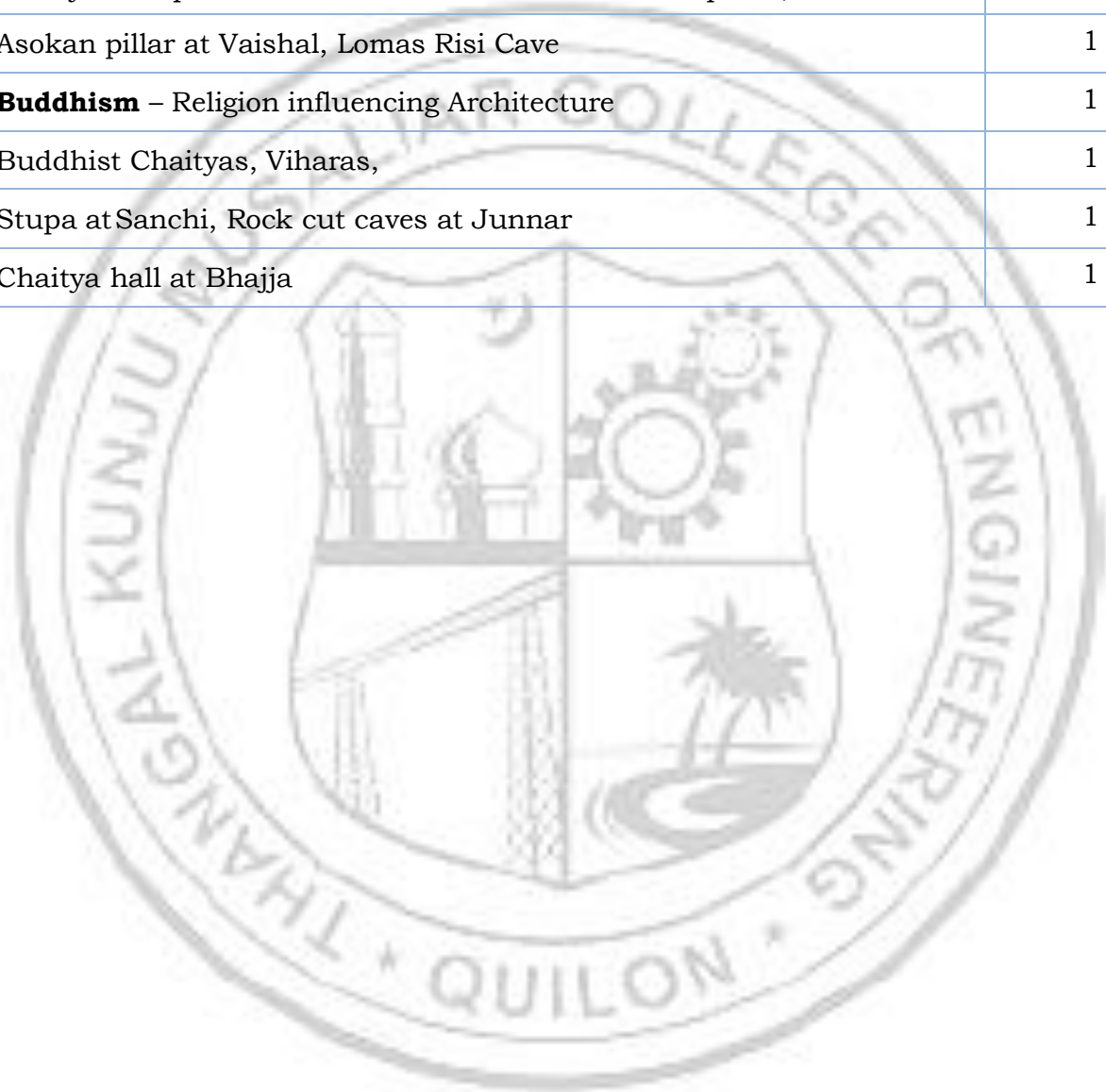
Reference books

- Leland M Roth; “Understanding Architecture: Its Elements, History and Meaning”; Craftsman House; 1994
- Lloyd S. and Muller H.W., “History of World Architecture – Series”, Faber and Faber
- Patrick Nuttgens, “The Story of Architecture FROM ANTIQUITY TO THE PRESENT”, H.F. Ullmann Pub: 1983
- Pier Luigi Nervi, General Editor, “History of World Architecture – Series”, Harry N. Abrams, Inc. Pub., New York, 1972.
- Sir Banister Fletcher, “A History of Architecture”, CBS Publications (Indian Edition), 1999.
- Spiro Kostof, “A History of Architecture: Setting and Rituals, Oxford University Press, London, 1985.
- Vincent Scully, “Architecture – The Natural and the Manmade”, Harper Collins Pub: 1991.

COURSE CONTENTS AND LECTURE SCHEDULE

No.		No. of Hours [39 hours]
MODULE 1 [6 hours]		
1.1	A brief overview of Paleolithic and Neolithic Culture- Art forms and evolution of shelter – megaliths	2
1.2	Agricultural revolution and its impact on culture and civilization.	2
1.3	Pre-Historic Civilization: Primitive man - shelters, settlements, religious and burial systems.	1
1.4	E.g.: Oval hut, Nice, Dolmen tomb, gallery grave, passage grave, Gobekli Tepe Temple, Catal Huyuk, Jericho, Jomon culture Stone Henge.	1
MODULE II [6 hours]		
2.1	Introduction to River valley cultures: generic forces shaping settlements and habitats.	2
2.2	Indus Valley Civilization: Forces shaping settlements and habitats	2
2.3	Layout and Built forms of Mehrgarh, Early & Late Harappan & Mohenjodaro	2
MODULE III [9 hours]		
3.1	River valley cultures: Mesopotamian civilization	2
3.2	Ziggurats at Warka, Palace of Sargon.	1
3.3	Ur and Chogha Zanbil	1
3.4	Palace of Sargon.	1
3.5	Nile Valley Civilization (Egyptian): Old kingdom, middle	1
3.6	Mastaba Tombs, Pyramid of Cheops	1
3.7	Temple of Khons, Karnak	1
3.8	Temple at Abu Simbel	1
MODULE IV [9 hours]		
4.1	Greece - Pre-Classical Civilization Greek Language of Architecture	1
4.2	Palaces & Temples and their essential features	1
4.3	Geometry and Greek Architecture	1
4.4	Greek Capitals and Orders	1
4.5	Parthenon	1
4.6	Rome –Important Roman Cities Typical Roman house.	1
4.7	Form Development of Roman vocabulary of Architecture.	1

4.8	Structural and Engineering Feats Typology of buildings-- Colosseum, Forums, Palaces Pantheon, Basilica.	1
4.9	A Comparative study of Greek & Roman Culture & Architecture	1
MODULE V [9 hours]		
5.1	Pre-classical Aryan & Mauryan: Vedic and Epic Age	2
5.2	Salient features of Vedic Village	1
5.3	Mauryan Empire – Architectural remains from Pataliputra,	1
5.3	Asokan pillar at Vaishal, Lomas Risi Cave	1
5.4	Buddhism – Religion influencing Architecture	1
5.5	Buddhist Chaityas, Viharas,	1
5.6	Stupa at Sanchi, Rock cut caves at Junnar	1
5.7	Chaitya hall at Bhajja	1



23ARS203	THEORY OF ARCHITECTURE - II	L	T	P	S	C	Year of Introduction 2023
		3	0	0	3	3	

Preamble:

To enable the students to:

1. Identify and appreciate Architecture as an outcome of social and cultural processes of a geographical locality.
2. Improve visual literacy level and appreciate the aesthetic components of art and architecture.
3. Analyze architectural grammar, styles and practices in various cultural settings.

Prerequisite: To define architecture from various perspectives

Course Outcomes After the completion of the course the student will be able:

- CO 1** To appreciate and evaluate architecture or built form with an understanding of the significance of different contexts in architecture
- CO 2** To critically approach a given architectural work with respect to the user behavior and design influences from allied fields
- CO 3** To appreciate the relevance of creativity and user behavior in architectural design
- CO 4** To analyze the various stages of the design process and their significance in architecture and explore the representation of ideas in visual language
- CO 5** To evaluate the development of architectural theories and philosophies from built examples

CO - PO MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO 1	✓	✓				✓				✓		✓
CO 2	✓	✓				✓				✓		✓
CO 3	✓	✓				✓				✓		✓
CO 4	✓	✓				✓				✓		✓
CO 5	✓	✓				✓				✓		✓

Assessment Pattern

Bloom's Category	Continuous Assessment Tools			End Semester Examination
	Test1	Test 2	Other tools	
Remember	✓	✓	✓	✓
Understand	✓	✓	✓	✓
Apply			✓	
Analyse	✓	✓	✓	✓
Evaluate			✓	
Create				

Other Assessment tools: Site study, analysis, sketching, video, presentation

Mark Distribution of CIA					
Course Structure [L-T-P]	Attendance	Theory [L]			Total Marks
		Assignment	Test-1	Test-2	
	4	12	12	12	40
Total Mark distribution					
Total Marks	CIA (Marks)	ESE (Marks)		ESE Duration	
100	40	60		3 hours	
End Semester Examination [ESE]: Pattern					
PATTERN	PART A	PART B			ESE Marks
PATTERN 1	5 questions with one question from each module, with 4 marks for each question. Answer all questions in Part A Marks: (5x4=20 marks)	10 questions with 2 questions from each module, of which the student should answer any one from each module. Each question carries 8 marks. Each question carries 8 marks. Marks: (5x8 = 40 marks) Time: 3 hours			60
	Total Marks: 20	Total Marks: [5x8 = 40 marks]			
SYLLABUS					
MODULE I :					
<p>Architecture, Society, and Culture- The impact of society and culture in built form Importance of Context - Climate as determinant, Structure and Building materials as determinants. Socio-cultural determinants – Culture, temporal and regional influences as a determinant in architecture –Beliefs, Aspiration, values of the user <i>Case studies of buildings in a local context- Kerala vernacular houses, Wattle, and daub construction of Assam, Toda huts, Yurt tents, etc.</i></p>					
MODULE II :					
<p>Architecture and Human Behavior- Need for studying the influence of architecture and human behavior- Appreciation of architecture from the user's perspective. Using the elements of architecture and principles of design to induce behavior and emotion. <i>Areas of application: Designing for social interaction, safety, privacy, etc. - Designing for children – school, home, and play. - Designing for persons with physical challenges – visual, orthopaedic, etc.</i></p>					

MODULE III :**Creativity and Meaning in Design**

Creativity in design – Function and Expression, Role of causes in the process of design, Understanding the concept of creativity, Theories on thinking- left / right brain, convergent and divergent thinking, lateral and vertical thinking, various techniques to generate creativity

MODULE IV :**Design Process**

Need for integration of aesthetics and function in design, Formative Ideas, Concepts related to spatial organization and characteristics, and Importance of Massing in built form.

Application of design process through case studies

MODULE V :**Architectural inspirations, philosophies, and theories of architects**

Aalvar Aalto, Charles Correa, Eero Saarinen, F L Wright, Geoffery Bawa, Laurie Baker, Le Corbusier, Louis Sullivan, Mies Van de Rohe, Walter Gropius

Text books

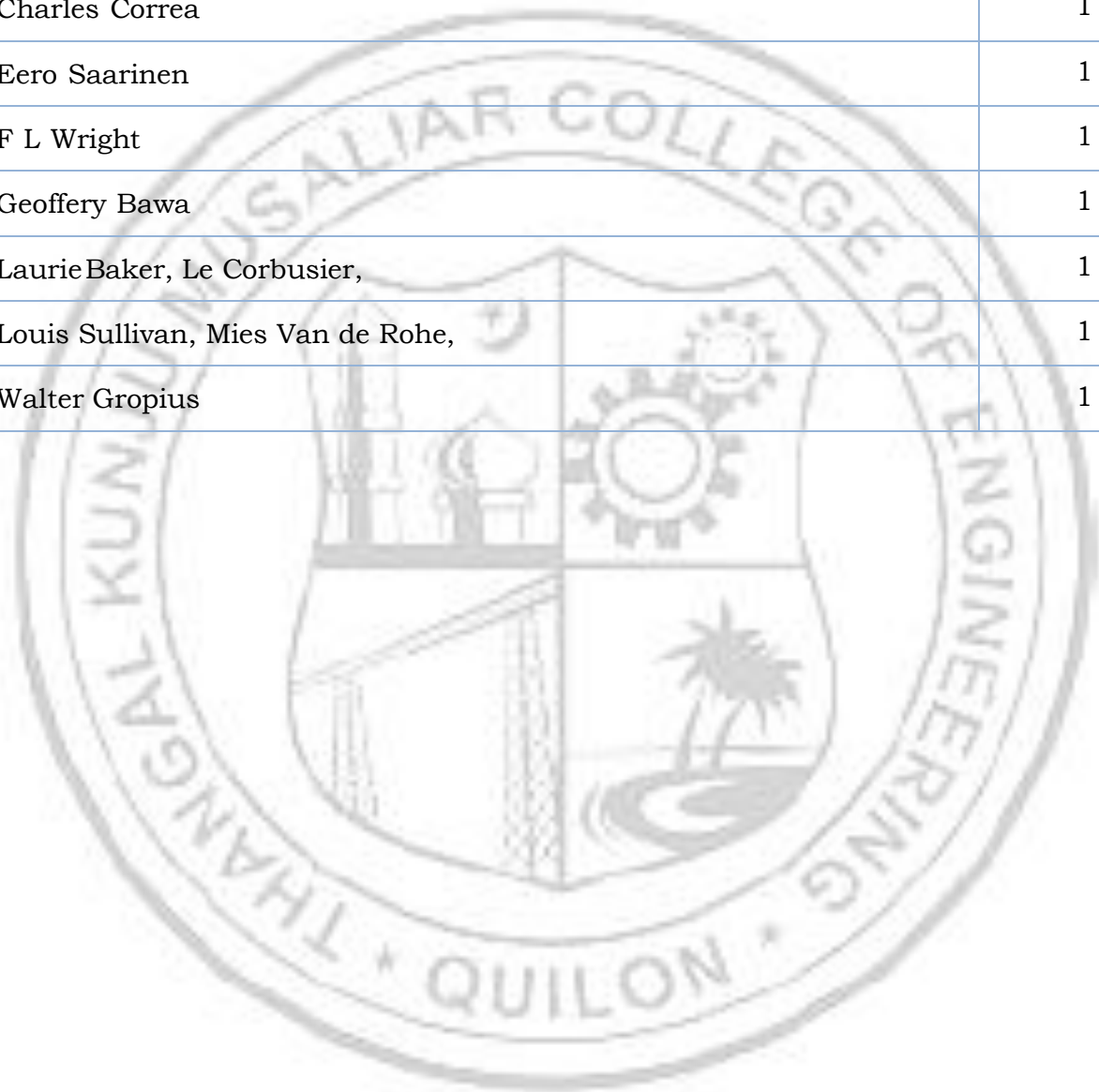
1. Amos Rapaport , House form and culture
2. Don Norman, The Design of Everyday Things
3. Emily Cole, 'The Grammar of Architecture', Metro Books, New York,2002
4. Francis D.K. Ching, A Visual Dictionary of Architecture
5. John Berger, Ways of Seeing
6. Juhani Pallasmaa, The Eyes of the Skin: Architecture and the Senses, John Wiley & Sons, 2012
7. James C. Snyder, Introduction to Architecture, McGraw-Hill, 1979
8. Stephen Grabow, Kent Spreckelmeyer, The Architecture of Use: Aesthetics and Function in Architectural Design, Routledge, 2014
9. William Lidwell, Kritina Holden and Jill Butle, Universal Principles of Design
10. Robert Gilliam Scott, 'Design Fundamentals', McGraw-Hill Inc.,US,

Reference books

- Carmen Kagal, VISTARA, 'The Architecture of India',1986
- Gabriele Leuthauser , 'Architecture in the 20th Century', Taschen GmbH, 2005
- Gautum Bhatia, 'Laurie Baker', Penguin India,2000
- Geoffery Broadbent, 'Design in Architecture', Wiley-Blackwell, 1973
- Garry Stevens, 'Reasoning Architect: Mathematics and Science in Design', McGrawHill Education,1990
- Patrick Nuttgens, 'The Story of Architecture', Phaidon Press Limited,1983
- Helen Marie Evans and Carla David Dunneshil, "An invitation to design", Macmillan Publishing Co. Inc., New York, 1982.
- V S Parmar , Social history of Indian architecture

COURSE CONTENTS AND LECTURE SCHEDULE		
No.		No. ofHours [39 hours]
MODULE 1 [10hours]		
1.1	Importance of context, climate, materials, society and culture in built form	2
1.2	Socio- cultural determinants and examples	1
1.3	Climate, structure and building material as determinant	2
1.4	Examples Kerala vernacular architecture, Wattle and daub construction of Assam,	2
1.5	Wattle and daub construction of Assam	2
1.6	Toda houses, Yurt houses	1
MODULE II [7 hours]		
2.1	Architecture and Human Behavior.	2
2.2	Need for studying influence of architecture and human behavior.	2
2.3	Design to induce behavior and emotion.	1
2.4	Areas of application: Designing for social interaction, safety, privacy.	1
2.5	Designing for children – school, home, and play and Designing for persons with physical challenges – visual, orthopedic, etc.	1
MODULE III [6 hours]		
3.1	Creativity in design- Function and expression, its role in the process of design, and habitats.	1
3.2	Understanding the concept of creativity.	1
3.3	Theories on thinking of left and right brain, thinking	1
3.4	convergent and divergent thinking, lateral and vertical thinking,	1
3.5	Techniques to generate creativity	2
MODULE IV [6 hours]		
4.1	Design process- need for integration of aesthetics and function in design, formative ideas	1
4.2	Formative ideas	1
4.3	Concepts related to spatial organization and characteristics	1
4.4	The importance of massing in built form	1
4.5	Application of design process through case studies	2

MODULE V [10 hours]		
5.1	Architectural inspirations	1
5.2	Architectural philosophies	1
5.3	Theories of architects	1
5.3	Alvar Aalto	1
5.4	Charles Correa	1
5.5	Eero Saarinen	1
5.6	F L Wright	1
5.7	Geoffery Bawa	1
5.8	Laurie Baker, Le Corbusier,	1
5.9	Louis Sullivan, Mies Van de Rohe,	1
5.10	Walter Gropius	1



23ARS204	ARCHITECTURAL GRAPHICS AND VISUAL ARTS II	L	T	P	S	C	Year of Introduction 2023
		1	0	3	4	4	

Preamble:

To equip students with the necessary skills required to prepare different types technical drawings to represent buildings

Prerequisite: Nil

Course Outcomes: After the completion of the course the student will be able to

CO 1	Prepare technical drawings using pen and ink
CO 2	Draw pictorial projections of simple solids
CO 3	Prepare Architectural drawings of small buildings
CO 4	Prepare Rendered Presentation drawings
CO 1	Prepare technical drawings using pen and ink

CO - PO MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO 1	✓											
CO 2	✓											
CO 3	✓	✓	✓						✓			
CO 4	✓		✓									

Assessment Pattern

Bloom's Category	Continuous Assessment Tests			End Semester Exam (50 Marks)
	Test1 (7.5 Marks)	Test 2 (7.5 Marks)	Other tools	
Remember	✓	✓	✓	✓
Understand	✓	✓	✓	✓
Apply	✓	✓	✓	✓
Analyse				
Evaluate				
Create				

Other Assessment tools: Site study, analysis, sketching, video, presentation

Mark Distribution of CIA

Course Structure [L-T-P]	Attendance	Theory and Drawing [L- P]			Total Marks
		Assignment	Test-1	Test-2 (Portfolio and Viva)	
	5	30	7.5	7.5	50
Total Mark distribution					
Total Marks	CIA (Marks)	ESE (Marks)		ESE Duration	
100	50	50		3 hours	

End Semester Examination [ESE]: Pattern

PATTERN	PART A	ESE Marks
PATTERN 1	<p>One question, to evaluate the drawing skill and various presentation techniques acquired by the student during the semester. The drawing shall include, plan / elevation / sections/ views / sectional views etc. Depending upon the size of the drawing.</p> <p>All modules will be included as sub divisions in the question description.</p> <p>Marks: (50marks)</p>	50
Total Marks: 50		
SYLLABUS		
MODULE I		
<p>Drafting with pen and ink: Introduction to drafting with pen and ink. Drawing plan, sections, elevations of small buildings and building components. Preparing site layouts</p> <p>Drawings:</p> <ol style="list-style-type: none"> 1. Plans for small buildings. 2. Technical drawings of building components 3. Typical sections of residential buildings. 4. Elevations of small buildings 5. Site layouts of small buildings 		
MODULE II		
<p>Axonometric Projection: Types of axonometric projections. Isometric projection of small buildings and structures.</p> <p>Perspective projection: One-point, two-point and three-point perspectives Projection of one-point and two-point perspectives (vanishingpoint method)</p> <p>Application of Sciography in pictorial views: Drawing shadows on isometric and perspective views</p> <p>Drawings:</p> <ol style="list-style-type: none"> 1. Isometric projection of small buildings. 2. One-point and two-point perspectives of small buildings. 		
MODULE III		
<p>Measured drawing: Measured drawing of a small building. Preparation of plans, elevations, sections and three-dimensional views, Interior perspectives & sectional perspectives</p>		

Drawings:		
1. Plans, elevations and sections of the building		
2. Isometric views of the building		
MODULE IV :		
Rendering Techniques:		
Rendering of Architectural presentation drawings using different mediums (pen, graphite pencil, watercolor etc.)		
Drawings:		
1. Render - Perspective views of the building		
2. Render - Interior perspectives of the building.		
Text books		
1. Ching, Francis D. K., Architectural Graphics, Hoboken, New Jersey: John Wiley & Sons, 2015		
2. Ching, Francis D. K., Design Drawing, Hoboken, New Jersey: John Wiley & Sons, 2010		
3. Norling. Earnest R., Perspective Made Easy, New York: Dover Publications, Inc., 1999		
4. Guptill, Arthur L., Rendering in Pen and Ink: The Classic Book on Pen and Ink Techniques for Artists, Illustrators, Architects, and Designers. United States, Clarkson Potter/Ten Speed, 2014.		
Reference books		
<ul style="list-style-type: none"> • Lohan, Frank., Pen & Ink Techniques, the University of Michigan, Contemporary Books, 1978 • Alexander, Christopher. A Pattern Language: Towns, Buildings, Construction. United States, Oxford University Press, 2018. 		
COURSE CONTENTS AND LECTURE SCHEDULE		
No.		No. of Hours [52 hours]
MODULE 1 [12 hours]		
1.1	Drafting with pen and ink: Introduction to drafting with pen and ink.	3
1.2	Sciography: Projection of shadows on plans and elevations of simple solids.	3
1.3	Drawings: 1. Simple drawings with technical pen on gateway sheets.	3
1.4	2. Projection of shadows on plans and elevations of solids prisms, pyramids, cylinder and cone.	3
MODULE II [14 hours]		
2.1	Axonometric Projection: Types of axonometric projections Isometric projection of solids.	2
2.2	Perspective projection: One-point, two-point and three-point perspectives Projection of one-point and two-point perspectives (vanishing point method)	3
2.3	Application of Sciography in pictorial views: Drawing shadows on isometric and perspective views	3
2.4	Drawings:	3

	1. Isometric projection of solids (prisms, pyramids, cylinder, cone and sphere) -projection of shadows	
2.5	2. One-point and two-point perspectives of solids (prisms, pyramids, cylinder, cone and sphere) - projection of shadows	3
MODULE III [14 hours]		
3.1	Measured drawing: Measured drawing of a small building. Preparation of plans.	3
3.2	Elevations, sections and three-dimensional views.	3
3.3	Interior perspectives & sectional perspectives.	3
3.4	Drawings: Plans, elevations and sections of the building.	3
3.5	Isometric views of the building	2
MODULE IV [12 hours]		
4.1	Rendering Techniques: Rendering of Architectural presentation drawings using different mediums (pen, graphite pencil, watercolor etc.)	3
4.2	Drawings: 1. Render - Perspective views of the building	3
4.3	2. Render - Interior perspectives of the building	3

23ARB205	BUILDING MATERIALS AND CONSTRUCTION TECHNIQUES II	L	T	P	S	C	Year of Introduction
		1	0	2	3	3	2023

Preamble:

The goal of this course is to expose the students to elementary building materials and their applications. It aims to familiarize students to contemporary as well as vernacular and traditional building materials. After this course, the students will be able to recognize materials in the market and use them in their design processes.

Prerequisite: Skill & Knowledge of manual drafting.

Course Outcomes After the completion of the course the student will be able:

CO 1	Describe qualitative aspects of various building materials including timber, bamboo & concrete.
CO 2	Explain various building materials including wood, bamboo and concrete their application for various construction needs.
CO 3	Identify various building materials and appropriately use them in the workshop and construction yard and understand their behavior.
CO 4	Justify the use of various building materials in the design processes appropriately

CO - PO MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO 1	✓	✓										
CO 2	✓	✓			✓							
CO 3	✓	✓			✓				✓	✓		
CO 4	✓	✓			✓		✓					✓

Assessment Pattern

Bloom's Category	Continuous Assessment Tools			End Semester Examination
	Test1	Test 2	Other tools	
Remember	✓	✓	✓	✓
Understand	✓	✓	✓	✓
Apply	✓	✓	✓	✓
Analyze				
Evaluate				
Create				

Other Assessment tools: Site study, analysis, sketching, video, presentation

Mark Distribution of CIA					
Course Structure [L-T-P]	Attendance	Theory [L-P]			Total Marks
		Assignment	Test-1	Test-2 (Portfolio and Viva)	
	5	30	7.5	7.5	50

Total Mark distribution			
Total Marks	CIA (Marks)	ESE (Marks)	ESE Duration
100	50	50	3 hours

End Semester Examination [ESE]: Pattern

PATTERN	PART A	PART B	PART C	ESE Marks
PATTERN 1	Will contain 6 questions with at least one question from each module, having 2.5 marks for each question. Answer all questions in Part A Marks: (6x2.5=15marks)	Contain 4 questions, with 2 questions from each theory-based module, of which the student should answer any one from each module. Each question carries 7.5 marks. Marks: (7.5x2 = 15 marks)	2 drawing questions (may have sub questions), from the two drawing-based modules, of which the student should answer any one. Marks: (20x1 = 20 marks)	50
	Total Marks: 15	Total Marks: [7.5 x 2 = 15 marks]	Total Marks: 20	

SYLLABUS

MODULE I

Timber and Working with Timber

Timber: Classification, use of timber in construction, properties of timber-specification. Types of timber and its suitability for construction.

Seasoning of timber: need for seasoning and various methods of seasoning. Defects in timber - various types and its causes

Modern and traditional methods of treating timber. Treatment of samples of wood in construction yards, analysis and documentation of the same.

Documentation and presentation of wood samples of various species as part of the portfolio.

Working with Timber: Introduction to carpentry-General principles, Various steps involved-required sizes of members. Study of wood joints and its details in doors, windows etc.

Drawings: Wooden joinery for joining vertical, horizontal and inclined members- sketches.

Construction of wood joints in carpentry workshop, discussion on the same with analysis and

properties of joints. Site Visit Toda huts, Yurt tents, etc.

MODULE II

Bamboo as a building material

Types, properties, application. Comparison of bamboo with wood. Strength and workability as criteria Various stepsinvolved in working with bamboo, required sizes of members. Methods of joining bamboo for various applications.

Drawings- Joining details of bamboo for various Applications, Construction of bamboo joints in construction yardand documenting and presentation in portfolio.

Site Visit

MODULE III

Concrete

Introduction to concrete as a building material, relevant IS codes Concrete: Ingredients of plain cement concrete- grades, properties- applications and uses. Reinforced cement concrete, water-cement ratio, workability, curing Various types of concrete in construction such as Light weight concrete, Rapid setting concrete etc. *Safe onsite experience - concrete - listing out observations, Documentation and presentation through seminar.*

Site Visit

MODULE IV

Steel

Steel-physical properties- uses.

Types of steel employed in building construction- properties- uses. Hot rolled steel & cold rolled steel.

Structural steel- Bi steel- Stainless steel- Coated steel- Properties & Use.

Steel as reinforcement in RCC work: Types of reinforcement for concrete – standard forms - cutting, bending and placing of reinforcement.

Site visits to study the aspects of steel reinforcement.

Text books

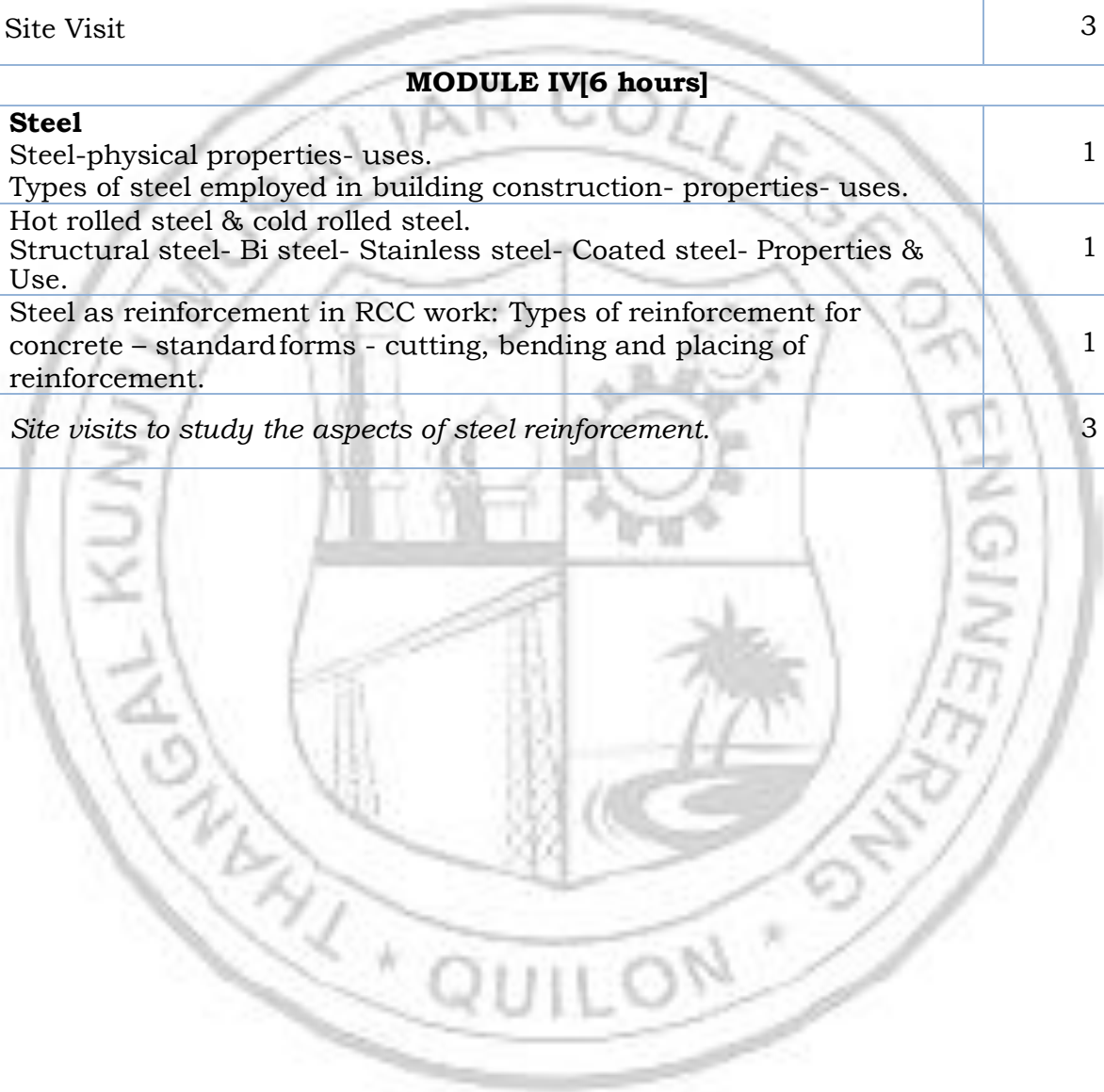
- Arthur Lyons, 'Materials for Architects and Builders', Elsevier Butterworth- Heinemann, 2004.
- P.C. Varghese, 'Building Materials', Prentice hall of India Pvt Ltd, New Delhi,2005
- Harry Parker, 'Materials and Methods of Architectural Construction', John Wiley & Sons Canada, 1958.
- H Leslie Simmons, 'Construction – Principles, Material & Methods', 7th edition, John Wiley & Sons Inc., New York, 2001.
- P C Varghese, 'Building Materials', Prentice Hall of India Pvt. Ltd, New Delhi, 2010.
- Rosen Harold J, Construction materials for Architecture, Krieger PubCo,1992
- Doran, David; Cather, Bob; Doran, D. K; Cather, R - Construction materials reference book, Routledge,2013

Reference books

- Relevant BIS codes.
- Traditional architectural Forms of Malabar Coast, Ashalatha Thampuran.

COURSE CONTENTS AND LECTURE SCHEDULE		
No.		No. of Hours [39 hours]
MODULE 1[9hours]		
1.1	Timber and Working with Timber Timber: Classification, use of timber in construction. Properties of timber-specification. Types of timber and its suitability for construction	1
1.2	Seasoning of timber: need for seasoning and various methods of seasoning. Defects in timber - various types and its causes	1
1.3	Modern and traditional methods of treating timber. Treatment of samples of wood in construction yards, analysis and documentation of the same	1
1.4	Documentation and presentation of wood samples of various species as part of the portfolio.	1
1.5	Working with Timber: Introduction to carpentry-General principles	1
1.6	Various steps involved-required sizes of members	1
1.7	Study of wood joints and its details in doors, windows etc.	1
1.8	Drawings: Wooden joinery for joining vertical, horizontal and inclined members- sketches.	1
1.9	Construction of wood joints in carpentry workshop, discussion on the same with analysis and properties of joints. <i>Site Visit.</i>	1
MODULE II[12 hours]		
2.1	Bamboo as a building material Types, properties, application.	1
2.2	Comparison of bamboo with wood	1
2.3	Strength and workability as criteria Various steps involved in working with bamboo , required sizes of members.	1
2.4	Methods of joining bamboo for various applications.	1
2.5	Drawings- Joining details of bamboo for various Applications	3
2.6	Construction of bamboo joints in construction yard and documenting and presentation in portfolio.	3
2.7	Site Visit	2
MODULE III[12 hours]		
3.1	Concrete Introduction to concrete as a building material, relevant IS codes	1

3.2	Concrete: Ingredients of plain cement concrete :grades, properties- applications and uses	1
3.3	Reinforced cement concrete, water- cement ratio, workability, curing Various types of concrete in construction such as Light weight concrete, Rapid setting concrete etc.	1
3.4	Safe on site experience - concrete	3
3.5	listing out observations, Documentation and presentation through seminar.	3
3.6	Site Visit	3
MODULE IV[6 hours]		
4.1	Steel Steel-physical properties- uses. Types of steel employed in building construction- properties- uses.	1
4.2	Hot rolled steel & cold rolled steel. Structural steel- Bi steel- Stainless steel- Coated steel- Properties & Use.	1
4.3	Steel as reinforcement in RCC work: Types of reinforcement for concrete – standard forms - cutting, bending and placing of reinforcement.	1
4.4	<i>Site visits to study the aspects of steel reinforcement.</i>	3



23ARC206	THEORY OF STRUCTURES II					L	T	P	S	C	Year of Introduction	
						2	1	0	2	3	2023	
Course Objectives												
<ul style="list-style-type: none"> To develop an overall understanding and interest in structural system To calculate the sectional properties (section modulus and radius of gyration) for various sections by working out problems. 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. To study the internal stresses (bending and shear stresses) in beams and strength of sections. 												
Prerequisite: Nil												
Course Outcomes: After the completion of the course the student will be able to												
CO 1	Recall the fundamental terms and theorems associated with mechanics of linear elastic deformable bodies											
CO 2	Explain the behaviour and response of various structural elements under various loading conditions.											
CO 3	Calculate internal stresses/ strains, stress resultant in structural elements subjected to axial/ transverse loads and bending/twisting moments and present the results graphically											
CO 4	Calculate safe load carrying capacity of beams and columns											
CO - PO MAPPING												
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO 1	✓	✓										
CO 2	✓	✓										
CO 3	✓	✓										
CO 4	✓	✓										
Assessment Pattern												
Bloom's Category	Continuous Assessment Tools			End Semester Examination								
	Test1	Test 2	Other tools									
Remember												
Understand		✓										✓
Apply		✓			✓							✓
Analyse												
Evaluate												
Create												

Mark Distribution of CIA					
Course Structure [L-T-P]	Attendance	Theory [L- T]			Total Marks
		Assignment	Test-1	Test-2	
	4	12	12	12	40
Total Mark distribution					
Total Marks	CIA (Marks)	ESE (Marks)		ESE Duration	
100	40	60		3 hours	
End Semester Examination [ESE]: Pattern					
PATTERN	PART A		PART B		ESE Marks
PATTERN 1	Part A contains 5 questions with one question from each module, with 4 marks for each question. Answer all questions in Part A. Marks:(5x4=20marks)		Part B contains 10 questions with 2 questions from each module, of which the student should answer any one from each module. Each question carries 8 marks. One or two questions can have subdivisions Marks: (5x8 = 40 marks) Time: 3 hours		60
	Total Marks: 20		Total Marks: 40 marks		
SYLLABUS					
MODULE I : Review of statics and Concept of deformable					
Strength, Stiffness, Stability- Bending and Buckling Concept of stress, Types of stresses. Concept of strain, Types of strains. Stress – Strain relation - Hooke’s law Young’s Modulus of Elasticity, Shear Modulus, Bulk Modulus, Relation between elastic constants (Derivation not required) - Numerical exercise Stress-strain (-) diagram of mild steel – Proportionality limit, Yield point, Ultimate stress, True and Engineering Stress strain curve, Idealized Stress strain curves. Factor of safety, working stress - Numerical exercise Axially loaded bars with uniform cross section– Calculation of stress, strain and deformation – Numerical exercise Deformation of axially loaded bars with varying axial loads - Numerical exercises - Analysis of axially loaded composite bars (with maximum two materials)					
MODULE II : Beams					
Different types. - Types of loading on beams. Concept of bending moment and shear force. Practical examples Shear Force and Bending Moment diagrams. Practical significance - Numerical example Cantilever beams with point loads, UDL and moment - Numerical exercises Simply supported beams with point loads, UDL and moments –Numerical exercises Simply supported overhanging beams (one side and both sides) with point load, UDL and moment – Numerical exercises					

MODULE III : Theory of simple bending

Assumptions and Limitations Variation of bending stress across the cross section - Maximum bending stress, section modulus, moment of resistance - Practical significance III Section modulus calculation of different cross sections (solid rectangle, hollow rectangle, solid circle, hollow circle, I section) - Numerical exercise CO -2 CO -3. Bending stresses in symmetrical and composite beams - Numerical exercise Calculation of allowable loads in beams based on bending stress criteria. - Proportioning of beam sections to carry given load without exceeding the allowable bending stress - Numerical exercises

MODULE IV : Shear stress in beams

Shear stress in beams (Derivation of equation not required) Variation of shear stress across various cross sections - rectangular, circular and triangular sections (Derivation required) Calculation of shear stress in symmetric cross sections - Numerical exercise Calculation of allowable loads in beams- based shear stress criteria - Numerical exercises

MODULE V : Concept of torsion

Torsion equation (Derivation not required), Assumptions, Torsional stresses in circular sections, Polar moment of inertia, Polar modulus - Practical significance Torsion of solid and hollow circular shafts, Variation of stress across the cross section - Numerical exercise Power transmitted by circular shafts and hollow circular shafts. - Proportioning the shafts to transmit a given power based on shear stress and angle of twist considerations Numerical exercise Definitions of Columns and Struts - Long, Medium, and Short columns - Effective Length - Slenderness Ratio Critical load - Safe load - Different end conditions - Euler's formula for critical load for columns with different end conditions (derivations not required)- Assumptions and its limitations Effective length of columns with different end conditions - Numerical exercise Determination of the strength of columns - Proportioning of column sections - Numerical exercises

Text books

- 1 Gere and Timoshenko, Mechanics of Materials, CBS- Distributors and Publishers
- 2 Stephen Timoshenko, Strength of Materials, Part 1
- 3 Elementary Theory and Problems, CBS· Publishers and Distributors
- 4 Stephen Timoshenko, Strength of Materials, Part 2
- 5 Advanced Theory and Problems, CBS· Publishers and Distributors

Reference books

1. Henry J., Covan, Architectural structures: An introduction to structural mechanics, Pitman· Publishing Philip Garrison, Basic structures for engineers and architects, Wiley - Blackwell· publishers
2. Francis D. K. Ching, Barry S. Onouye, Douglas Zuberbuhler, Building structures· illustrated, Wiley publishers
3. R.K Bansal., Strength of Materials, Lakshmi Publications PvtLtd·
4. Benjamin J., Engineering Mechanics, Pentex Book Publishers and·Distributors
5. S. Ramamrutham., Strength of Materials, Dhanpat Rai Publishing· Company Pvt
6. Junarkar S. B. and Shah S. J., Mechanics of Structures (Vol. I), 30/e, Charotar Publishing· House Pvt. Ltd., New Delhi, 2012
7. Punmia B. C., A. K. Jain and A. K. Jain, Strength of Materials· & Theory of Structures (Vol.I), Laxmi Publications, New Delhi, 2013.
8. Vaidyanathan R. and P.Perumal, Structural Analysis (Vol.I), Laxmi·Publications,2004 A.P.Dongre , Structural Engineering for Architecture, Scitech Publications Ltd·

COURSE CONTENTS AND LECTURE SCHEDULE		
No.		No. of Hours [36 hours]
MODULE 1 [8 hours]		
1.1	Review of statics	1
1.2	Concept of deformable bodies – Strength, Stiffness, Stability- Bending and Buckling	1
1.3	Concept of stress, Types of stresses. Concept of strain , Types of strains. Stress –Strain relation - Hooke’s law	1
1.4	Young’s Modulus of Elasticity, Shear Modulus, Bulk Modulus, Relation between elastic constants (Derivation not required) - Numerical exercise	1
1.5	Stress-strain (-) diagram of mild steel – Proportionality limit, Yield point, Ultimate stress, True and Engineering Stress strain curve, Idealized Stress strain curves. Factor of safety, Working stress - Numerical exercise	1
1.6	Axially loaded bars with uniform cross section– Calculation of stress, strain and deformation – Numerical exercise	1
1.7	Deformation of axially loaded bars with varying axial loads - Numerical exercise	1
1.8	Analysis of axially loaded composite bars (with maximum two materials) - Numerical exercises	1
MODULE II [8 hours]		
2.1	Beams – Different types. - Types of loading on beams.	1
2.2	Concept of bending moment and shear force. Practical examples	1
2.3	Shear Force and Bending Moment diagrams.	1
2.4	Practical significance - Numerical examples Cantilever beams with point loads, UDL and moment - Numerical exercises Simply supported beams with point loads, UDL and moments – Numerical exercises Simply supported overhanging beams (one side and both sides) with point load, UDL and moment – Numerical exercises	5
MODULE III [7 hours]		
3.1	Theory of simple bending – Assumptions and Limitations	1
3.2	Variation of bending stress across the cross section - Maximum bending stress, section modulus, moment of resistance - Practical significance	1
3.3	Section modulus calculation of different cross sections (solid rectangle, hollow rectangle, solid circle, hollow circle, I section) - Numerical exercise	1
3.4	Bending stresses in symmetrical and composite beams – Numerical exercise	2
3.5	Calculation of allowable loads in beams based on bending stress criteria. - Proportioning of beam sections to carry given load without exceeding the allowable bending stress - Numerical exercises	2

MODULE IV [6 hours]		
4.1	Shear stress in beams (Derivation of equation not required)	1
4.2	Variation of shear stress across various cross sections – rectangular, circular and triangular sections (Derivation required)	1
4.3	Calculation of shear stress in symmetric cross sections - Numerical exercise	2
4.4	Calculation of allowable loads in beams- based shear stress criteria – Numerical exercises	2
MODULE V [7 hours]		
5.1	Concept of torsion - Torsion equation (Derivation not required), Assumptions, Torsional stresses in circular sections, Polar moment of inertia, Polar modulus - Practical significance	1
5.2	Torsion of solid and hollow circular shafts, Variation of stress across the cross section - Numerical exercise	1
5.3	Power transmitted by circular shafts and hollow circular shafts. - Proportioning the shafts to transmit a given power based on shear stress and angle of twist considerations Numerical exercise	1
5.4	Definitions of Columns and Struts – Long, Medium, and Short columns – Effective Length – Slenderness Ratio	1
5.5	Critical load – Safe load — Different end conditions — Euler’s formula for critical load for columns with different end conditions (derivations not required)— Assumptions and its limitations	1
5.6	Effective length of columns with different end conditions - Numerical exercise	1
5.7	Determination of the strength of columns – Proportioning of column sections - Numerical exercise	1

23ARK207	COMPUTER STUDIO AND DIGITAL ART	L	T	P	S	C	Year of Introduction 2023
		0	0	2	2	2	

Preamble:

To enable the students to prepare documents, images, and drawings for presentation during various stages of design development.

Prerequisite: Nil

Course Outcomes After the completion of the course the student will be able:

- CO 1** Create, edit, and print word documents, and slide presentations.
- CO 2** Create, Edit, and print images and photos
- CO 3** Create edit and print 2D CAD drawings
- CO 4** Create, and Edit 3D drawings in Sketch up
- CO 1** Create, edit, and print word documents, and slide presentations.

CO - PO MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO 1	✓				✓			✓		✓		
CO 2	✓				✓			✓		✓		
CO 3	✓				✓			✓		✓		
CO 4	✓				✓			✓		✓		
CO 1	✓				✓			✓		✓		

Assessment Pattern

Bloom's Category	Continuous Assessment Tools			End Semester Examination
	Test 1	Test 2	Other tools	
Remember	✓	✓	✓	✓
Understand	✓	✓	✓	✓
Apply	✓	✓	✓	✓
Analyze				
Evaluate				
Create				

Mark Distribution of CIA

Course Structure [L-T-P]	Attendance	Practical [P]			Total Marks
		Presentation/ Demonstration	Report / Record	Viva	
	10	40	25	25	100

Total Mark distribution

Total Marks	CIA (Marks)	ESE (Marks)	ESE Duration
100	100	-	-

SYLLABUS

MODULE I

Word processing: Creation, Editing and Formatting of MS Word documents. Text Style, Review, Reference Citation, Bibliography and Table of contents in MS Word.

PowerPoint: Slide design, layout, Smart art graphics, Insertion of drawings, audio/video clips, charts, transitions, animations, slide show, record the presentation, export slides as high-resolution images.

Exercise 1: Present Basic Design- I Assignment sheet in POWERPOINT and submit colour printout.

MODULE II

Image processing: basic image sourcing, editing and insertion for desktop publishing in Adobe Photoshop or similar software. Rendering of architectural drawings using photoshop, GIMP, Adobe Illustrator, or mobile applications.

Exercise 2: Present Basic Design-I Assignment in Photoshop/Gimp and submit colour printout.

MODULE III

Fundamentals of **CAD** software. Settings - Units, Scale, Limits, Commands, Toolbars, Line Type, Line Weight, Colours and Layers. Grid and Snap settings. Simple exercises in 2D CAD software (AutoCAD) specifically for proficiency of, drawing/editing objects.

Exercise 3: Present BMCT -I Assignment in CAD

MODULE IV

CAD - Blocks, Text, Dimension. Use of templates, Viewport, Layout settings and Printing.

Exercise 4: Submit black and white printout of BMCT -I Assignment with formatting, labels, and dimensions.

MODULE V

Sketch up – 2D and 3D.

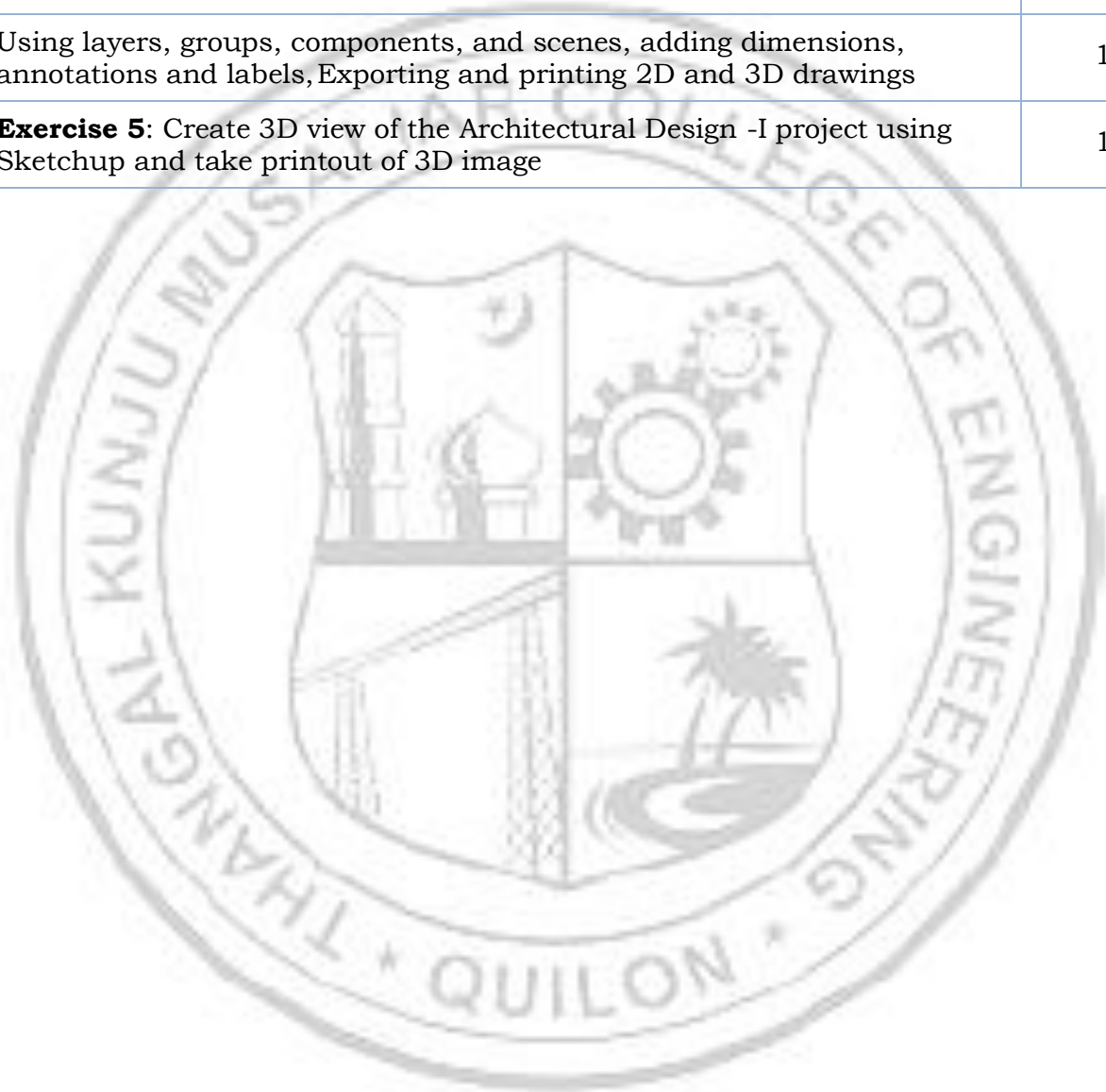
Exercise 5: Create 3D view of the Architectural Design -I project using Sketch up and submit printout of 3D image

Reference Books

- Foulkes, L. (2020). Learn Microsoft Office 2019: A Comprehensive Guide to Getting Started with Word, PowerPoint, Excel, Access, and Outlook. Packet Publishing Ltd.
- Evening, M. (2009). Adobe Photoshop CS4 for Photographers: Learn Photoshop the Martin Evening Way!. CRC Press.
- Jain, S., & Geetha, M. (2018). Corel Draw training guide. BPB Publications.
- Lecarme, O., & Delvare, K. (2013). The book of GIMP: A complete guide to nearly everything. No Starch Press.
- Omura, G., & Benton, B. C. (2013). Mastering AutoCAD 2014 and AutoCAD LT 2014: Autodesk Official Press. John Wiley & Sons.
- Schreyer, A. C. (2012). Architectural Design with Sketch Up: Component-based Modeling, Plugins, Rendering, and Scripting. John Wiley & Sons.

COURSE CONTENTS AND LECTURE SCHEDULE		
No.		No. of Hours [26 hours]
MODULE 1 [4hours]		
1.1	Word processing: Creation, Editing and Formatting of MS Word documents.	1
1.2	Text Style, Review, Reference Citation, Bibliography and Table of contents in MS Word.	1
1.4	PowerPoint: Slide design, layout, Smart art graphics, Insertion of drawings, audio/video clips, charts, transitions, animations, slide show, record the presentation, export slides as high- resolution images.	1
1.5	Exercise 1: Present Basic Design- I Assignment sheet in POWERPOINT and submit colour printout.	1
MODULE II [5 hours]		
2.1	Image processing: basic image sourcing, editing and insertion for desktop publishing in AdobePhotoshop or similar software.	2
2.2	Rendering of architectural drawings using photoshop, GIMP, Adobe Illustrator, or mobileapplications.	2
2.3	Exercise 2: Present Basic Design-I Assignment in Photoshop/Gimp and submit colour printout	1
MODULE III [6 hours]		
3.1	Fundamentals of Computer Aided Design (CAD) software. Settings - Units, Scale, Limits, Line Type, Line Weight, Colours and Layers.	2
3.2	Grid and Snap settings.	1
3.3	Simple exercises of 2D drafting in CAD software (AutoCAD) - drawing/editing objects.	2
3.4	Exercise 3: Present BMCT -I Assignment in CAD	1
MODULE IV [6 hours]		
4.1	2D drafting in CAD – Creation and editing of Blocks, Adding, and editing of Text and Dimension	2
4.2	Use of templates, Viewports, Layout settings and Printing.	2

4.3	Exercise 4: Submit black and white printout of BMCT -I Assignment with formatting labels, and dimensions.	2
MODULE V [5 hours]		
5.1	Introduction to Sketch up interface and tools, Drawing and modifying 2D shapes and objects, applying materials, colors, textures, and styles,	2
5.2	Creating, and editing 3D models from 2D drawings.	1
5.3	Using layers, groups, components, and scenes, adding dimensions, annotations and labels, Exporting and printing 2D and 3D drawings	1
5.3	Exercise 5: Create 3D view of the Architectural Design -I project using Sketchup and take printout of 3D image	1



23ARS208	CARPENTRY AND MODELMAKING WORKSHOP	L	T	P	S	C	Year of Introduction
		0	0	2	2	2	2023

Preamble:

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

Prerequisite: Nil

Course Outcomes: After the completion of the course the student will be able to Understand and use different materials, tools, and machinery for making models. Ability to make true scale models of architectural designs, manually and mechanically and familiarity with carpentry, joinery, smithy and molding with different materials and techniques

CO 1	Students will be able to understand the importance of Model making and different types of material, tools and Techniques in model making.
CO 2	Students will be able to create geometric and free form models which convey innovative thoughts.
CO 3	Students will be able to understand the workshop practice and explore modern manufacturing methods
CO 4	Students will be able to demonstrate different wooden joineries and its applications.
CO 5	Students will be able to relate to scaled models to know the geometry of simple and complex built forms.

CO - PO MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO 1	✓				✓							✓
CO 2	✓											✓
CO 3	✓									✓		✓
CO 4	✓		✓							✓		✓
CO 5	✓				✓							✓

Assessment Pattern

Bloom's Category	Continuous Assessment Tools			End Semester Examination
	Test1	Test 2	Other tools	
Remember			✓	✓
Understand	✓	✓	✓	✓
Apply	✓	✓	✓	✓
Analyse	✓	✓	✓	✓
Evaluate			✓	✓
Create	✓	✓	✓	✓

Mark Distribution of CIA					
Course Structure [L-T-P]	Attendance	Practical [P]			Total Marks
		Presentation	Report / Record	Viva	
	10	40	25	25	100
Total Mark distribution					
Total Marks	CIA (Marks)	ESE (Marks)		ESE Duration	
100	100	----		----	
SYLLABUS					
MODULE I : Introduction to Model Making					
Introduction to various materials for model making like paper, thermocol, clay, ceramic, plastic sheet, sheet metal, wood etc. Selection of material for model making. Introduction to various tools for model making Application of tools, suitability, and safety precautions.					
MODULE II : Geometric and Free form					
Exercises related to Geometric and free form using various materials such as paper, thermocol, clay, plastic sheet, sheet metal, wood etc.					
MODULE III : Workshop					
General: Introduction to workshop practice, Safety precautions, Shop, floor ethics, Basic First Aid knowledge. Study of mechanical tools, components, and their applications: Tools, screw drivers, spanners, Allen keys, cutting pliers ate and accessories (b) bearings, Seals, O-rings, circlips, keys etc.					
Demonstration on welding practice, Smithy and Sheet metal.					
Introduction to Modern manufacturing methods: Power tools, CNC machine tools, 3D printing, Glass cutting.					
MODULE IV : Carpentry					
Understanding of carpentry tools Minimum any Two model- 1. T-Lap joint 2. Cross lap joint 3. Dovetail joint 4. Mortise joints					
MODULE V : Architectural models for study and presentation					
Models should preferably be coordinated with other subjects like Design/Building technology/Theory of Structure/ History of Architecture etc.					
Text books					
<ol style="list-style-type: none"> 1. Model Building for Architects and Engineers by John Taylor. 2. Architectural Models by Rolf Janke. 3. Color on Metal by Tim Mc Creight & Nicole Bsullak . 4. The complete book of drawing techniques, by Eugene Felder & Emmett Elvin. 5. Architectural Model making by Nick Dunn. 6. Paper Scissor Glue by Catherine Norman, Ryland Peters & Small 					
Reference books					
<ol style="list-style-type: none"> 1. An Architectural model by Will Strange. 					

2. Folding Techniques for Designers: From Sheet to Form by Paul Jackson.
Construction and Design Manual: Architectural Models by Pyo Mi Young

COURSE CONTENTS AND LECTURE SCHEDULE

No.		No. of Hours [26 hours]
MODULE 1 [2 hours]		
1.1	Introduction to Model Making: Introduction to various materials for model making like paper, thermocol, clay, plastic sheet, sheet metal, wood etc. Selection of material for model making. Introduction to various tools for model making Application of tools, suitability, and safety precautions.	2
MODULE II [6 hours]		
2.1	Geometric form: Exercises related to Geometric form using various materials such as paper, thermocol, clay, plastic sheet, sheet metal, wood etc.	3
2.2	Free form: Exercises related to Free form using various materials such as paper, thermocol, clay, plastic sheet, sheet metal, wood etc.	3
MODULE III [6 hours]		
3.1	General: Introduction to workshop practice, Safety precautions, Shop, floor ethics, Basic First Aid knowledge.	2
3.2	Study of mechanical tools, components and their applications: Tools, screw drivers, spanners, Allen keys, cutting pliers etc and accessories (b) bearings, Seals, O-rings, circlips, keys etc.	2
3.3	Demonstration on welding practice, Smithy and Sheet metal.	1
3.4	Introduction to Modern manufacturing methods: Power tools, CNC machine tools, 3D printing, Glass cutting.	1
MODULE IV [6 hours]		
4.1	Carpentry: Understanding of carpentry tools and joinery T-Lap joint	2
4.2	Cross lap joint, Dovetail joint	2
4.3	Mortise joints.	2
MODULE V [6 hours]		
5.1	Architectural models for study and presentation: Models coordinated with other subjects like Design/Building technology/Theory of Structure/ History of Architecture	3
5.2	Model making	3