Program and Course Structure

School of Architecture and Planning
Bachelor of Architecture
SAP0102
Batch 2020-25

1.1 Vision, Mission and Core Values of the University

Vision of the University

To serve the society by being a global University of higher learning in pursuit of academic excellence, innovation and nurturing entrepreneurship.

Mission of the University

1. **Transformative educational experience**
2. **Enrichment by educational initiatives that encourage global outlook**
3. **Develop research, support disruptive innovations and accelerate entrepreneurship**
4. **Seeking beyond boundaries**

Core Values

- **Integrity**
- **Leadership**
- **Diversity**
- **Community**

1.2 Vision and Mission of the School of Architecture and Planning

Vision of the School

To be amongst the top institutes in India imparting quality education and professional skills to the students to emerge as architects of global caliber and thus the society in large.

Mission of the School

1. **To create and sustain a stimulating and responsive academic inclusive environment.**
2. **To regularly enhance the teaching contents & techniques in keeping with current and future trends.**
3. **To provide a competitive and career oriented programme.**
4. **To encourage students to be socially responsive and responsible architects.**

Core Values

- **Critical Thinking and Observation**
- **Analytical Skills**
- **Creativity**
- **Integrity to uphold authentic building traditions and architecture principles**

1.3 Programme Educational Objectives (PEO)

PEO1 : To equip the students with the basic knowledge about the evolution of architecture as a distinct body of knowledge.

PEO2 : To sensitize the students about the specialized components within the field of architecture that are required to be integrated for a successful professional practice.

PEO3 : To familiarize the students with various levels of complexities of architectural design .

PEO4 : To ensure awareness amongst the students regarding architectural design as a functions of natural & cultural context.

PEO5 : To ensure familiarity amongst students about the current techniques and their validity related to good architecture.

PEO6 : To strengthen entrepreneurial and innovation culture among students.

1.3.3 Program Outcomes (PO's)

PO1: Architectural Knowledge

PO2: Critical thinking and Analysis

PO3: Problem solving and Design Development Skills

PO4: Communication and Display

PO5: Environment and sustainability

PO6:Professional Ethics

First Year:

PROFESSIONAL CORE COURSES (PC)

- History, Theory & Criticism
- Basics of Design
- Architectural Visual Representation and Design

BUILDING SCIENCES AND APPLIED ENGINEERING

- Construction Material & Methods
- Architectural Structures

PROFESSIONAL ELECTIVE (PE) NIL

PROFESSIONAL ABILITY ENHANCEMENT COURSES NIL

SKILL ENHANCEMENT COURSES

- Communicative English
- Fine Arts
- Digital Design Fabrication
- Value Added Course

Second Year :

PROFESSIONAL CORE COURSES (PC)

- History, Theory & Criticism
- Architectural Design

BUILDING SCIENCES AND APPLIED ENGINEERING

- Construction Material & Methods
- Architectural Structures

PROFESSIONAL ELECTIVE (PE)

- Trends In Architecture
- Textile Crafts, Art & Design

PROFESSIONAL ABILITY ENHANCEMENT COURSES NIL

SKILL ENHANCEMENT COURSES

- Digital Design Fabrication-I
- Community Connect
- Value Added Course

Third Year

PROFESSIONAL CORE COURSES (PC)

- History, Theory & Criticism
- Architectural Design

BUILDING SCIENCES AND APPLIED ENGINEERING

- Construction Material & Methods
- Architectural Structures

PROFESSIONAL ELECTIVE (PE)

- UI, UX and Design Thinking
- Trends In Planning & GIS

PROFESSIONAL ABILITY ENHANCEMENT COURSES NIL

SKILL ENHANCEMENT COURSES

- Digital Design Fabrication-I
- Community Connect
- Value added Course

Fourth Year

PROFESSIONAL CORE COURSES (PC)

- Architectural Design
- Urbanism
- Landscape
- Architectural Design and Parametric Design-VII

BUILDING SCIENCES AND APPLIED ENGINEERING

- Construction Material & Methods
- Architectural Structures
- Working Drawing

PROFESSIONAL ELECTIVE (PE)

- Specialisation Elective- Sustainability
- Specialisation Elective- Digital Design Fabrication

PROFESSIONAL ABILITY ENHANCEMENT COURSES

SKILL ENHANCEMENT COURSES

- Digital Design Fabrication-I
- Community Connect
- Value added Course

Fifth Year

PROFESSIONAL CORE COURSES (PC)

- Urban Design
- Thesis

BUILDING SCIENCES AND APPLIED ENGINEERING

PROFESSIONAL ELECTIVE (PE)

- Specialisation Elective- Sustainability
- Specialisation Elective- Digital Design Fabrication

PROFESSIONAL ABILITY ENHANCEMENT COURSES

Professional Practice

SKILL ENHANCEMENT COURSES

Critical Study of Art

School of Architecture and Planning/SAP

Batch : 2020-25

Program: BACHELOR OF ARCHITECTURE

Semester/Term.: 1

S. No.	Subject Code	Subjects	Teaching Load			Credits	Remarks (if any)
			L	P	S		
THEORY SUBJECTS							
1.	ART107	History, Theory & Criticism-I	2	0	0	2	OLD
2.	ARP 101	Communicative English-1	1	2	0	2	OLD
JURY SUBJECTS							
4.	ARJ 109	Basics of Design-I	0	3	7	12	NEW
5.	ARJ 110	Construction Material & Methods-I	0	5	1	4	NEW
6.	ARJ 121	Architectural Visual Representation and Design- I	0	3	3	6	NEW
7.	AFA102	Fine Arts	0	5	1	4	NEW
PRACTICALS SUBJECTS							
8.	SAP VAC 001	VAC-I (Orientation workshop)	-	-	-	2/ Non GPA creditS	NEW
		TOTAL CREDITS				**30**	

School of Architecture and Planning/SAP

Batch : 2020-25

Program: BACHELOR OF ARCHITECTURE

Semester/Term.: 2

S. No.	Subject Code	Subjects	Teaching Load			Credits	Remarks (if any)
			L	P	S		
THEORY SUBJECTS							
1.	ART 118	History, Theory & Criticism-II	2	0	0	2	OLD
2.	ARP102	Communicative English-2	1	2	0	2	OLD
JURY SUBJECTS							
4.	ARJ 119	Architectural Design-II	0	3	7	12	NEW
5.	ARJ 130	Construction Material & Methods-II	0	5	1	4	NEW
6.	ARJ 131	Architectural Visual Representation and Design-II	0	5	1	4	NEW
7.	ARJ 132	Digital Design Fabrication Script-I	0	1	1	2	NEW
8.	AFA 111	Fine Arts-II	0	2	2	4	OLD
PRACTICALS SUBJECTS							
9.	SAP VAC 002	VAC-II	-	-	-	2/ Non GPA creditS	NEW
					TOTAL	**30**	

School of Architecture and Planning/SAP

Batch : 2020-25

Program: BACHELOR OF ARCHITECTURE

Semester/Term.: 3

S. No.	Subject Code	Subjects	Teaching Load			Credits	Remarks
			L	P	S		
THEORY SUBJECTS							
1.	ART 209	Environment, Sustainability & Services-I	2	0	0	2	OLD
2.	ART 208	History, Theory & Criticism –III	2	0	0	2	OLD
3.	ART 206	Architectural Structures-I	2	0	0	2	OLD
JURY SUBJECTS							
4.	ARJ 205	Architectural Design-III	0	3	7	12	NEW
5.	ARJ 206	Construction Material & Methods-III	0	6	2	6	NEW
6.	ARJ 203	Digital Design Fabrication-I	0	2	2	4	OLD
PRACTICALS SUBJECTS							
7.	CCU 303	Community Connect	0	4	0	2	NEW
8	RSP 001	Related Study Program-I	-	-	-	4/ Non GPA creditS	NEW
9	SAP VAC 003	VAC-III	-	-	-	2/ Non GPA creditS	NEW
		TOTAL CREDITS				30	

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Batch : 2020-25

Program: BACHELOR OF ARCHITECTURE

Semester/Term.: 4

S. No.	Subject Code	Subjects	Teaching Load			Credits	Remarks
			L	P	S		
THEORY SUBJECTS							
1.	ART 219	Environment, Sustainability & Services-II	2	0	0	2	OLD
2.	ART 218	History, Theory & Criticism –IV	2	0	0	2	OLD
3.	ART 216	Architectural Structures-II	2	0	0	2	OLD
JURY SUBJECTS							
4.	ARJ 215	Architectural Design-IV	0	3	7	12	NEW
5.	ARJ 216	Construction Material & Methods-IV	0	6	2	6	NEW
6.	ARJ 213	Digital Design Fabrication-II	0	2	2	4	OLD
PRACTICALS SUBJECTS							
7	AEJ 220	Trends In Architecture	0	3	0	2	NEW
8	AEJ 221	Textile Crafts, Art & Design					NEW
9	AEJ 222	Art & Design					NEW
10	AEJ 223	Product-Furniture Design					NEW
11	AEJ 224	Ergonomics					NEW
12	SAP VAC 004	VAC-IV	-	-	-	2/ Non GPA credits	NEW
					TOTAL CREDITS	30	

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Program: BACHELOR OF ARCHITECTURE

Semester/Term.: 5

S. No.	Subject Code	Subjects	Teaching Load			Credits	Remarks (if any)
			L	P	S		
THEORY SUBJECTS							
1.	ART 304	History, Theory & Criticism –V	2	0	0	2	OLD
2.	ART 305	Environment, Sustainability & Services-III	2	0	0	2	OLD
3.	ART 306	Architectural Structures-III	2	0	0	2	OLD
JURY SUBJECTS							
4.	ARJ 301	Architectural Design-V	2	2	6	12	OLD
5.	ARJ 302	Construction Material & Methods-V	2	2	2	6	OLD
6.	ARJ 303	Digital Design Fabrication-III	0	2	2	4	OLD
PRACTICALS ELECTIVE SUBJECTS							
7.	AEJ 307	High Rise Building	2	0	0	2	OLD
8.	AEJ 308	Product Design Primer					OLD
9.	AEJ 309	Parametric and Biomimicry					
10.	CCU301	Community Connect	0	4	0	2	OLD
		TOTAL				**30**	

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Program: BACHELOR OF ARCHITECTURE
Semester/Term.: 6

S. No.	Subject Code	Subjects	Teaching Load			Credits	Remarks
			L	P	S		
THEORY SUBJECTS							
1.	ART315	Environment, Sustainability & Services-IV	2	0	0	2	OLD
2.	ART 314	History, Theory & Criticism –VI	2	0	0	2	OLD
3.	ART 316	Building, Estimation & Costing	2	0	0	2	OLD
JURY SUBJECTS							
4.	ARJ 311	Architectural Design-VI	2	2	6	12	OLD
5.	ARJ 312	Construction Material & Methods-VI	2	2	2	6	OLD
6.	ARJ 313	Digital Design Fabrication-IV	0	2	2	4	OLD
ELECTIVE SUBJECTS							
7.	AEJ 317	UI, UX and Design Thinking	2	0	0	2	OLD
8.	AEJ 319	Robotics					
9.	AEJ 320	Trends in Planning & GIS					
		TOTAL				**30**	

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Program: BACHELOR OF ARCHITECTURE

Semester/Term.: 7

S. No.	Subject Code	Subjects	Teaching Load			Credits	Remarks (if any)
			L	P	S		
THEORY SUBJECTS							
1.	ART 403	Urbanism	2	0	0	2	OLD
2.	ART 404	Landscape	2	0	0	2	OLD
3.	ART 405	Professional Practice	2	0	0	2	OLD
JURY SUBJECTS							
4.	ARJ 401	Architectural Design and Parametric Design-VII	2	2	6	12	OLD
5.	ARJ 402	Working Drawing-VII	2	2	6	12	OLD
		TOTAL				**30**	

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Semester/Term.: 8

S. No.	*Subject Code	Subjects	Teaching Load			Credits	Remarks
			L	T	P		
PRACTICALS							
1.	ARJ 411	Practical Training/ Internship	-	-	-	22	NEW
					TOTAL	**22**	

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Semester/Term.: 9

S. No.	Subject Code	Subjects	Teaching Load			Credits	Remarks (if any)
			L	P	S		
THEORY SUBJECTS							
1.	ARJ 503	Specialisation Elective-1	6	0	0	6	NEW
2.	ARJ 504	Specialisation Elective-2					
3.	ART 505	Critical Study of Art	2	0	0	2	NEW
JURY SUBJECTS							
4.	ARJ 501	Architectural Design-VIII	2	2	8	15	NEW
5.	ARJ 502	Dissertation	1	0	4	7	NEW
TOTAL CREDITS						**30**	

Students may specialize in Sustainability/Digital Design Fabrication

* the subject codes are subject to change as per to the approval by COE

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Program: BACHELOR OF ARCHITECTURE

Semester/Term.: 10

S. No.	Subject Code	Subjects	Teaching Load			Credits	Remarks (if any)
			L	P	S		
THEORY SUBJECTS							
1.	ART 512	Specialisation Elective-1	6	0	0	6	NEW
2.	ART 513	Specialisation Elective-2					
JURY SUBJECTS							
3.	ARJ 511	Thesis	2	0	12	20	NEW
TOTAL CREDITS						**26**	

SEMESTER 1

ART 108 -History, Theory & Criticism -1

School: SUSAP		**Batch : 2020-2025**
Program: B.Arch		**Current Academic Year: 2020-21**
Branch:		**Semester: 1**
1	**Course Code**	**ART 108**
2	**Course Title**	**History, Theory & Criticism -1**
3	**Credits**	**2**
4	**Contact Hours (L-P-S)**	**2-0-0**
	Course Status	**Compulsory**
5	**Course Objective**	1. To make students critically analyze, evaluate and make informed judgment on a wide range of architectural problems and situations 1st to 5th Century AD 2. To comprehend key architectural works, cultural movements and ideas, their theoretical and cultural context and relevance to design 3. To help students communicate complex design ideas through verbal, visual and written means
6	**Course Outcomes**	CO1: Undertake research into architectural history. CO2: Engage in critical and analytical thinking with enhanced skills about architectural practices. CO3: Present verbal and visual arguments clearly and concisely on architectural styles
7	**Course Description**	This course examines the History of architecture from the early civilizations through the 6th century offering an introduction to the design fundamentals and analysis. It treats buildings and environments, including cities, in the context of the cultural and civilizational history.
8	**Outline syllabus**	

	Unit 1	**Indus Valley civilization & The Aryan civilization**
	A	Introduction to Indus Valley and Aryan civilizations, their social systems and cultures
	B	City of Harappa, Mohanjodaro and Lothal, layout of domestic units & public facilities, building materials and construction technologies used.
	C	The Vedic civilization; Layouts of Aryan Village, type of dwellings and building materials.
	Unit 2	**Ancient River Valley Civilizations: Mesopotamia**
	A	Introduction to Mesopotamian civilizations, their social systems and cultures
	B	Ziggurats and their development – White Temple, Ziggurat of Ur, Urnammu and Khorsabad
	C	Generic Temple Layout - Temple Oval and Khafaje o Palace Complex/Citadel of Khorsabad, Nebuchadnezzar's Babylon, Persepolis
	Unit 3	**Ancient River Valley Civilizations: Egypt**
	A	Introduction to Egyptian civilization, their social systems and cultures
	B	Monumentality tomb architecture: evolution of the pyramid from the mastaba – Great Pyramid of Cheops, Gizeh etc.
	C	Temple architecture: mortuary temples and cult temples - Temple of Ammon Ra, Karnak, Khons - Temple of Abu Simbel (Rock Cut) etc.
	Unit 4	**Ancient Civilizations: Aegean & Classical Period: Greece**
	A	Introduction to Greek civilization, their social systems and cultures
	B	Classical Order – Doric, Ionic, Corinthian. Temple types on basis of column layout – case example of Acropolis, Athens
	C	Public Buildings and Square – Agora, Stoa, Prytaneum, Bouleuterion, Tholos, Gymnasium, Theatre

	Unit 5	**Classical Period: Rome**		
	A	Introduction to Roman civilization, their social systems and cultures		
	B	Contribution in new materials and new construction/structural systems, eg, Pozzolana, Cementae, Stone Blocks, Stone Masonry, Arch, Vault, Dome Orders in architecture: Tuscan and Composite techniques of construction.		
	C	Forum Romanum and other Imperial forums, Pantheon, Public buildings: Colloseum, Circus Maximus, Thermae of Caraculla.		
	Mode of examination	**Theory**		
	Weightage Distribution	**CA**	**MTE**	**ETE**
		30%	**20%**	**50%**
	Text book/s*	A Global History of Architecture-Francis D K Ching A History of Architecture - Sir Banister Fletcher The Great ages of world Architecture – G K Hiraskar Fundamentals on Town Planning - G K Hiraskar Ancient Indian Architecture – Sanjeev Maheshwari & Rajeev Garg Indian Architecture – Percy Brown		
	Other References	https://www.youtube.com/watch?v=fU_xbzQvJW8&feature=emb_logo https://www.youtube.com/watch?v=g4jiaIqXhVI&feature=emb_logo https://www.youtube.com/watch?time_continue=74&v=oRL2XRQ1Z7E&feature=emb_logo		

Schools: SAP		**Batch :** 2020-25
		Current Academic Year: 2020-21
		Semester: 1st (One)
1	Course Code	**ARP101**
2	Course Title	Communicative English-1
3	Credits	2
4	Contact Hours (L-T-P)	1-2-0
5	Course Objective	To minimize the linguistic barriers that emerge in varied socio-linguistic environments through the use of English. Help students to understand different accents and standardise their existing English. Guide the students to hone the basic communication skills - listening, speaking, reading and writing while also uplifting their perception of themselves, giving them self-confidence and building positive attitude.
6	Course Outcomes	CO1 Learn to use correct sentence structure and punctuation as well as different parts of speech. CO2 Learning new words its application and usage in different contexts helpful in building meaning conversations and written drafts. CO3 Develop over all comprehension ability, interpret it and describe it in writing. Very useful in real life situations and scenarios. CO4 A recognition of one's self and abilities through language learning and personality development training leading up to greater employability chances. CO5 Learn to express oneself through writing while also developing positive perception of self. CO6 To be able to speak confidently in English. CO7 To empower them to capitalise on strengths, overcome weaknesses, exploit opportunities, and counter threats. CO8 To ingrain the spirit of Positive attitude in students through a full length feature film followed by a

		storyboarding activity CO9 Create a Self Brand, identity and self esteem through various interesting and engaging classroom activity. CO10 Exposing students to simulataions and situations wherein students learn to describe people and situations and handle such situations effectively and with ease. CO11 Teaching students how to engage in meaningful dialogues and active conversational abilities to navigate through challenging situations in life and make effective conversations CO12 Learn how to transform adverse beginnings into positive endings – through writing activities like story completion.
7	Course Description	The course is designed to equip students, who are at a very basic level of language comprehension, to communicate and work with ease in varied workplace environment. The course begins with basic grammar structure and pronunciation patterns, leading up to apprehension of oneself through written and verbal expression as a first step towards greater employability.
8	Outline syllabus – ARP 201	
	Unit A	**Sentence Structure**
	Topic 1	Subject Verb Agreement
	Topic 2	Parts of speech
	Topic 3	Writing well-formed sentences
	Unit B	**Vocabulary Building & Punctuation**
	Topic 1	Homonyms/ homophones, Synonyms/Antonyms
	Topic 2	Punctuation/ Spellings (Prefixes-suffixes/Unjumbled Words)
	Topic 3	Conjunctions/Compound Sentences
	Unit C	**Writing Skills**
	Topic 1	Picture Description – Student Group Activity
	Topic 2	Positive Thinking - Dead Poets Society-Full-length feature film - Paragraph Writing inculcating the positive attitude of a learner through the movie | SWOT Analysis – Know yourself

	Topic 3	Story Completion Exercise –Building positive attitude - The Man from Earth (Watching a Full length Feature Film)
	Unit D	**Speaking Skill**
	Topic 1	Self-introduction/Greeting/Meeting people – Self branding
	Topic 2	Describing people and situations - To Sir With Love (Watching a Full length Feature Film)
	Topic 3	Dialogues/conversations (Situation based Role Plays)
9	Evaluations	*Class Assignments/Free Speech Exercises / JAM Group Presentations/Problem Solving Scenarios/GD/Simulations (60% CA and 40% ETE*
10	Texts & References | Library Links	• Blum, M. Rosen. *How to Build Better Vocabulary*. London: Bloomsbury Publication • Comfort, Jeremy(et.al). *Speaking Effectively*. Cambridge University Press

Observations:

1. A Single Consolidated Syllabus has now replaced the Previous Functional English Beginners -1 and Functional English Intermediate -1
2. 2 Credits previously allocated to FEN 01 the Lab Sessions have been dissolved
3. The Pearson Voice Labs have been completely eliminated

ARJ 105 - BASICS OF DESIGN- 1

School: SUSAP		**Batch : 2020-25**
Program: B.Arch		**Current Academic Year: 2020-21**
Branch:		**Semester: 1**
1	Course Code	ARJ 105
2	Course Title	BOD 1 (Basics of Design 1)
3	Credits	12
4	Contact Hours (L-P-S)	0-3-7
	Course Status	Compulsory
5	Course Objective	• To understand the basic principles of composition • To enable students to formally apply and visualize various methods of form generation • To enable students to understand concepts of colour and texture.
6	Course Outcomes	CO1: Students will be equipped to various methods of form making, model making skills CO2: Students will be exposed to concepts of composition and basic principles of design. CO3: Students will be enabled to understand and apply principles of colour and texture CO4: The students will be able to understand relation of space and human.
7	Course Description	The studio is designed to familiarize students with visual grammar, elements of design and methods of visual composition with various mediums and color in 2D & 3D.
8	Outline syllabus	
	Unit 1	**2D & 3D COMPOSITION**
		a. Visual elements- point, line, plane and volume. b. Understanding Positive and negatives, solids and voids c. Principles of Proportion, Scale and balance, rhythm, contrast, harmony, symmetry, focus, order and chaos
	Unit 2	**CONSTRUCTION/ADDITION/ SUBTRACTION**
		Model based additives exercise using: a. Planes b. Solids c. Manipulating planes and solids

	Unit 3	**COLOUR**		
		Design Exercise to expose studio to: a. Colour Theory and colour in the context of design b. Colour interaction and colour contrast c. Visual weight of colour and texture		
	Unit 4	**FORM FINDING**		
		a. Formal application of methods learnt through the preparatory exercises. b. Exploration of firm materials in developing forms c. Exploration of soft materials in developing forms		
	Unit 5	**DESIGN DEVELOPMENT & MODEL MAKING**		
		a. Converting the orthographic projections into Three Dimensional Visualizations – LCJ models b. Plans, Elevations c. Compiling the entire portfolio		
	Mode of examination	Jury		
	Weightage Distribution	CA	MTE	ETE
		50%	0%	50%
	Text book/s*	**Suggested Books/Readings:** 1. Gill, R. W. (2011). Rendering with pen and ink. London: Thames and Hudson. 2. Ching, F. D. (2014). Architecture Form, Space, and Order. John Wiley & Sons. 3. Unwin, S. (2008). Analysing architecture. London: Routledge. 4. Unwin, S. (2012). Exercises in architecture: Learning to think as an architect. Abingdon, Oxon: Routledge.		
	Other References			

ARJ 107 - Construction Material & Methods-I

School: SUSAP		**Batch : 2020-25**
Program: B.Arch		**Current Academic Year: 2020-21**
Branch:		**Semester: 1**
1	Course Code	ARJ 107
2	Course Title	CMM-I (Construction Material & Methods-I)
3	Credits	4
4	Contact Hours (L-T-S)	0-5-1
	Course Status	Compulsory
5	Course Objective	1. To develop understanding about construction principles. 2. To familiarize students with building elements 3. To make familiar with basic building materials such as mud, bamboo, stone and bricks and the various construction techniques wherein these materials are used. 4. To understand different types of brick& stone masonries and their applications along with mud & bamboo construction.
6	Course Outcomes	CO1: To be able to describe the functions and characteristics of common building systems and assemblies CO2: To define basic building elements CO3: To be aware of the properties and applications of various basic materials such as mud, bamboo, stone and bricks CO4: To select and design suitable type of masonry works in building application.
7	Course Description	The entire course of Construction Methods and materials that is taught in the first 6 semesters is a logically laid out curriculum which aims at one aspect of the construction in each semester. The course in First Semester aims at introducing to the students the primary building materials and their properties and applications in building construction. The students are taught the basics of construction through lectures and hands-on exercises. Further the course elaborates on mud , stone and bricks as the basic building materials.
8	Outline syllabus	
	Unit 1	**Brick and its properties**
	A	Brick terminology, types of brick and its manufacturing process, Properties of brick and its uses.
	B	General idea of load transmission in load bearing & frame structures, their advantages, disadvantages and suitability.
	C	Elements of building Terminology, Nomenclature of various parts of building from foundation to roof. Section through building.
	Unit 2	**Brick & Brick masonry**
	A	Brick bonds- English bond and Flemish (single and double) bond in

		brick for upto two brick thick wall. Special Brick Bonds – Rat Trap, silver lock, English cross, Dutch, garden wall bond, Offset functions and quoins: right angled and angular quoins.		
	B	Laying of brick bonds/ junctions on sites L Junction, T junction, Cross junction, Oblique junction		
	C	Design and construction of brick jallis		
	Unit 3	**Stone masonry**		
	A	Dressing, laying in Stone Masonry- Random Rubble, Coursed Rubble, Ashlars		
	B	Bonding in Stone Masonry- Random Rubble, Coursed Rubble, Ashlar, Composite Stones		
	C	Joints of stone masonry		
	Unit 4	**Mud & Bamboo construction**		
	A	Mud Architecture- Construction details & Techniques		
	B	Bamboo Architecture- Construction details & Techniques		
	C	Properties, Advantages & Disadvantages of Mud & Bamboo		
	Unit 5	**Clay products, Stones & Cement**		
	A	Clay products: Classification of bricks, Fire Brick, Fly Ash Bricks, Tiles, Terra-cotta, Earthenware, Porcelain, Stoneware.		
	B	Stones: Uses of Stones, Qualities of Good Building Stones, Dressing, Common Building Stones of India, Artificial Stone		
	C	Cement: Properties, Different Types and Uses in Building construction		
	Mode of examination	Theory/Jury		
	Weightage Distribution	CA	MTE	ETE
		50%	0%	50%
	Text book/s*			
	Other Reference			

ARJ 106-Architectural, Visual Representation And Design -1

School: SUSAP		**Batch : 2020-2025**
Program: B.Arch		**Current Academic Year: 2020-21**
Branch:		**Semester: 1**
1	Course Code	ARJ 106
2	Course Title	Architectural, Visual Representation and Design -1
3	Credits	12
4	Contact Hours (L-P-S)	0-3-7
	Course Status	Compulsory
5	Course Objective	• Development of Soft and Hard Skills for the representation and visualization of design. • Sensitizing and catalyzing the student's imagination and subjective expression in the use of form and image.
6	Course Outcomes	CO1: The students will be able to describe various terminologies of architectural drawing and techniques. CO2: The students will be able to illustrate various Soft and Hard Skills for the representation and visualization of design and architecture. CO3: The students will be able to read and reproduce orthographic drawings CO4: The students will be able to describe various terminologies of architectural drawing and techniques.
7	Course Description	The process of design requires varied techniques of visualization and representation to aid design development. These may be in two or three dimensions using physical media with hand sketching, mechanical drawing and making models or virtual representation using computer software and audio visual media. In architectural practice the precise and communicative representations of designed objects follows certain conventions of representation and also employ graphic techniques to express "soft" aspects of design. This aspect is addressed under the title Architectural Drawing. The course overlaps with the Design Studio course and may be seen as a complementary and symbiotic set of exercises for development of skills.
8	Outline syllabus	
	Unit 1	FUNDAMENTALS OF ARCHITECTURAL DRAWING
		1a. Architectural Lettering 1b. Architectural scales and dimensioning 1c. Architectural representation of materials and architectural

		elements through architectural graphic symbols		
	Unit 2	ORTHOGRAPHIC PROJECTIONS		
		2a. Principles and projection methods of orthographic projection 2b. Development of surfaces 2c. section of solids		
	Unit 3	INTRODUCTION TO ARCHITECTURAL DRAWINGS		
		3a. Plans, elevations, sections 3b. Measure Drawing 3c. Scaling and compositions of sheets		
	Unit 4	ISOMETRIC AND AXONOMETRIC VIEWS		
		4a. Solids 4b. Compositions 4c. Buildings		
	Unit 5	RENDERING AND VISUALISATION		
		5a. Converting the orthographic projections into Three Dimensional Visualizations. 5b. Basic Architectural Rendering of orthographic projections drawings to develop understanding of materials, proportions and scale. 5c. Compiling the entire portfolio		
	Mode of examination	Jury/Practical/Viva		
	Weightage Distribution	CA	MTE	ETE
		50%	0%	50%
	Text book/s*	-		
	Other References	Suggested Books/Readings: 1. Gill, R. W. (2011). *Rendering with pen and ink*. London: Thames and Hudson 2. Ching, F. D. (n.d.). *Architectural Graphics Ed. 6*. John Wiley & Sons. 3. Bhatt, N.D. and Panchal, V.M. (1996). *Engineering Drawing – Plane and Solid Geometry*. Charotar Publishing House.		

AFA 101 –Fine Arts -I

School : SAP		**Batch : 2020-25**
Program: B. Arch		**Current Academic Year: 2020-2021**
Branch: Architecture		**Semester: 1**
1	Course Code	**AFA 101**
2	Course Title	**Fine Arts - I**
3	Credits	**4**
4	Contact Hours (L-T-P)	**0-5-1**
	Course Type	Compulsory
5	Course Objective	1. The programme focuses on inculcating the significance of developing hand and mind coordination. 2. It concentrates on exploring different forms by examining objects. 3. Making the students recognize the difference between spaces by practicing works in both indoor and outdoor areas. 4. Promoting the significance of regular sketching and its impact on the overall composition and creative skills. 5. Examining various sketching techniques such as rendering, line drawing, shading etc. . 6. Recognizing the significance of line and demonstrating its nuances.
6	Course Outcomes	**CO 1:-**The students will explore different forms. **CO2:-** The students shall be able to visualize objects in both 2 and 3 dimensions and replicate them in a composition. **CO3:-** The students will be able to imagine and duplicate presented objects using different techniques. **CO 4:-**The students will be able to understand how different forms reach structural unity by adhering to the nuances of proportion and scale. .
7	Course Description	The course introduces students with the foundation skill which enables them in developing coordination between the visualized and created. It aims at inculcating the significance of continuous practice of manual skills in order to develop their creative skills. Further it focuses on acquiring new techniques in order to enhance a visual vocabulary.
8	Outline syllabus	
	Unit 1	**Introduction**
		1A:- Lines 1B:- Forms 1C:- Space
	Unit 2	**Shapes**
		2A:-. Abstract shapes

		2B:- Two dimensional shapes rectangle, square, triangle 2C:- Three dimensional shapes cones, cylinder, cubes, cuboid		
	Unit 3	**Object study**		
		3A:- Single object study 3 B:- Multiple object study by taking things from of a single group eg: only three dimensional shapes like cubes, cones etc 3C:- Multiple object study by taking things from different groups eg: drapery, fruits and cones etc		
	Unit 4	**Exploration of forms**		
		4A :- Regular forms 4B :- Abstract forms 4C :- Definitive forms		
	Unit 5	**Sketching techniques**		
		5C :- Shading 5A :- Rendering 5B :- Hatching		
	Mode of examination	**Jury**		
	Weightage Distribution	**CA**	**MTE**	**ETE**
		50%	**0%**	**50%**
	Text book/s*			
	Other References			

SEMESTER 2

ART 118 -History, Theory & Criticism -2

School: SUSAP		**Batch : 2020-25**
Program: B.Arch		**Current Academic Year: 2020-21**
Branch:		**Semester: 2**
1	**Course Code**	**ART 118**
2	**Course Title**	**History, Theory & Criticism -2**
3	**Credits**	**2**
4	**Contact Hours (L-P-S)**	**2-0-0**
	Course Status	**Compulsory**
5	**Course Objective**	To understand the historical development through different era's and region. To understand the political economy of the period To understand Cultural and Social significance of the period To identify and study the salient features of the architectural styles during the era
6	**Course Outcomes**	CO1: Identify main characteristics of architecture, recognizing Influences and major concepts-identify buildings, ideas, and architects that portray the Architecture. CO2: Interpret & discuss the socio-cultural context of the particular era within which these theoretical approaches to design have developed. CO3: Compare & critique the various approaches to design in relation to their historical context. CO4: major concepts-identify buildings, ideas, and architects that portray the Architecture.

7	**Course Description**	This Course deals specifically with the socio-political, historical and cultural dimensions of Architectural history in various regions. Through this module students develop a deeper understanding of the architectural styles during the period and famous examples of the same.
8	**Outline syllabus**	
	Unit 1	**Buddhist and Jain Architecture**
	A	Evolution of Jain & Buddhist Architecture; Development by Ashoka, Hinayan & Mahayan styles of Buddhist architecture
	B	Architectural features of Stupas, Monolithic Pillars, Rock cut architecture (Chaityas & Viharas), Monestries, Rock edicts.
	C	Jain viharas, Temples of Rajasthan, Gujarat, Central India.
	Unit 2	**Early Christian Architecture**
	A	Introduction to society and culture of 400 -1150 AD in Europe
	B	Development of Early Christian Church from Roman Basilica
	C	Study of different basilica churches in Italy - St. Peter's Basilica.
	Unit 3	**Byzantine Architecture**
	A	Contribution of Byzantine architecture in the development of structural system – dome construction over square plan,
	B	Adoption of Greek cross in church layout • Use of mosaic and mural in interior
	C	Salient buildings – Santa Sophia, Istanbul; St. Mark's Cathedral, Venice
	Unit 4	**Romanesque Architecture**
	A	Massiveness and verticality of medieval churches. Combination of the five towered structures and longitudinal basilica.

	B	Gradual integration of tower from early to later examples. Integration of centralized and longitudinal plans		
	C	Articulation of external wall like arcaded interiors resulting in dematerialization of exterior. Study of important cathedrals and churches from Italy and France		
	Unit 5	**Gothic Architecture**		
	A	Introduction to society and culture of 1150 – 1350 AD in Europe		
	B	Development of Gothic church and its new elements: Pointed Arch window, Different arch types – lancet, equilateral, depressed, Trefoil arch , Cluster column and intersecting vault roof , Clerestory window and triforium, Flying buttress , Glazed window, stone and metal trellis, flamboyant window, rose window , Entrance of church		
	C	Salient buildings: Cathedrals of St. Dennis, Cathedrals of Chartres, Cathedrals of Notre Dame (Paris), Cathedrals of Reims		
	Mode of examination	**Theory**		
	Weightage Distribution	**CA**	**MTE**	**ETE**
		30%	**20%**	**50%**
	Text book/s*	A Global History of Architecture-Francis D K Ching A History of Architecture - Sir Banister Fletcher The Great ages of world Architecture – G K Hiraskar Fundamentals on Town Planning - G K Hiraskar Ancient Indian Architecture – Sanjeev Maheshwari & Rajeev Garg Indian Architecture – Percy Brown History of Indian Architecture – Sharmin Khan History of Architecture – K Changeria		
	Other References	https://www.youtube.com/watch?v=oUssv4vEU4w https://www.youtube.com/watch?v=p1J9lU5xJI8 https://www.youtube.com/watch?v=l-NBNUoT1Uw https://www.youtube.com/watch?v=dHO0IIYw6Oc https://www.youtube.com/watch?v=rSiD5Jinpuw https://www.youtube.com/watch?v=uYhOaQhV6QE		

ARP102- Communicative English -2

Schools: SAP		**Batch :** 2020-25
		Current Academic Year: 2020-21
		Semester: 2nd (Second)
1	Course Code	**ARP102**
2	Course Title	Communicative English -2
3	Credits	2
4	Contact Hours (L-T-P)	2-0-0
5	Course Objective	To Develop LSRW skills through audio-visual language acquirement, creative writing, advanced speech et al and MTI Reduction with the aid of certain tools like texts, movies, long and short essays.
6	Course Outcomes	**CO1** Move from primary self-assessment to larger goal and vision statement realisation with the help of feature length films as enablers and multimedia as language facilitators. **CO2** To develop a positive attitude through written expression of positive thought process and outlook with the help of writing activities like story completion et al. **CO3** Learn advanced writing skills in English like full length essays et al. **CO4** Master the science of speech and correct pronunciation through the accent-neutralisation program followed by reading sessions applying the lessons learnt.
7	Course Description	The course takes the learnings from the previous semester to an advanced level of language learning and self-comprehension through the introduction of audio-visual aids as language enablers. It also leads learners to an advanced level of writing, reading, listening and speaking abilities, while also reducing the usage of L1 to minimal in order to increase the employability chances.
8	Outline syllabus – ARP 202	
	Unit A	**Acquiring Vision, Goals and Strategies through Audio-visual Language Texts**
	Topic 1	Pursuit of Happiness / Goal Setting & Value Proposition in life
	Topic 2	12 Angry Men / Ethics & Principles
	Topic 3	The King's Speech / Mission statement in life | strategies & Action Plans in Life

	Unit B	**Creative Writing**
	Topic 1	Story Reconstruction - Positive Thinking
	Topic 2	Theme based Story Writing - Positive attitude
	Topic 3	Learning Diary Learning Log – Self-introspection
	Unit C	**Writing Skills 1**
	Topic 1	Precis
	Topic 2	Paraphrasing
	Topic 3	Essays (Simple essays)
	Unit D	**MTI Reduction/Neutral Accent through Classroom Sessions & Practice**
	Topic 1	Vowel, Consonant, sound correction, speech sounds, Monothongs, Dipthongs and Tripthongs
	Topic 2	Vowel Sound drills , Consonant Sound drills, Affricates and Fricative Sounds
	Topic 3	Speech Sounds | Speech Music| Tone | Volume| Diction |Syntax |Intonation | Syllable Stress |
	Unit E	**Gauging MTI Reduction Effectiveness through Free Speech**
	Topic 1	Jam sessions
	Topic 2	Extempore
	Topic 3	Situation-based Role Play
9	Evaluations	*Class Assignments/Free Speech Exercises / JAM Group Presentations/Problem Solving Scenarios/GD/Simulations (60% CA and 40% ETE*
10	Texts & References | Library Links	• Wren, P.C.&Martin H. *High English Grammar and Composition*, S.Chand& Company Ltd, New Delhi. • Blum, M. Rosen. *How to Build Better Vocabulary*. London: Bloomsbury Publication • Comfort, Jeremy(et.al). *Speaking Effectively*. Cambridge University Press. The Luncheon by W.Somerset Maugham - http://mistera.co.nf/files/sm_luncheon.pdf

Observations:

1. A Single Consolidated Syllabus has now replaced the Previous Functional English Beginners -2 and Functional English Intermediate -2

2. 2 Credits previously allocated to FEN 02 Lab Sessions have been dissolved

3. The Pearson Voice Labs have been completely eliminated

School: SUSAP		**Batch : 2020-25**
Program: B.Arch		**Current Academic Year: 2020-21**
Branch:		**Semester: 2**
1	Course Code	ARJ 115
2	Course Title	AD2 (Architectural Design 2)
3	Credits	12
4	Contact Hours (L-P-S)	0-7-3
	Course Status	Compulsory
5	Course Objective	• To be able to understand variaous design process • To expose students to different works of renowned architects. • To enable students to formally apply methods of design, spatial analysis and form generation to a small scale project with constraints of site and context.
6	Course Outcomes	CO1: Students will be equipped to methods of model making, drawings and design presentations. CO2: Students will be exposed to the works of renowned architects and identify various design processes, methods and means deployed to achieve spatial organization. CO3: Students will be enabled to apply spatial configuration to a small scale project. CO4: To enable students to formally apply methods of design, spatial analysis and form generation to a small scale project with constraints of site and context
7	Course Description	The studio is designed to expose students to different works of renowned cononical architects and introduce them to methods of case studies. The studio would guide students to formally understand and arrive at a design solution to a given problem through architectural methods of model making, drawings and design presentations.
8	Outline syllabus	
	Unit 1	**FORM INTERPRETATION**
		d. Model (Preferably projectt from previous semester) based exercises to understand space transformation and anthropometry e. visual composition and spacial relations f. Understanding architectural elements and final visualization in terms of model.
	Unit 2	**REVERSE ENGINEER A PROJECT**

		d. Study of renowned architect's buildings though open models e. Drawings & Documents 2a. Context manipulation.		
	Unit 3	**DOCUMENTATION**		
		a. Interpretation of design methods and concept. b. Interchanging between 2D and 3D representation to understand form generation and scale 3a. Reverse design analysis and criticism		
	Unit 4	**ANALYSIS**		
		Design Exercise to expose studio to: d. Design process e. circulation f. space relation		
	Unit 5	**DESIGN RESEPONSE**		
		d. Formal application of methods learnt through the preparatory exercises. e. Design exercise of residential dwelling of with site constraints, client and context. f. Arriving at design solutions through physical models, drawings and supportive documents		
	Mode of examination	Jury		
	Weightage Distribution	CA	MTE	ETE
		50%	0%	50%
	Text book/s*	Conditional Design- An introduction to Elemental Architecture Operative Design- A catalogue of spatial Verbs, Di Mari Yoo Case Study Houses, Elizabeth A.T.Smith 101 Things I learned in architecture school, Mathew Fredrick. Shadow Makers, Stephen Kite.		
	Other References			

ARJ 117- Construction Material & Methods-II

School: SUSAP		**Batch:2020-25**
Program: B.Arch		**Current Academic Year: 2020-21**
Branch:		**Semester: 2**
1	Course Code	ARJ 117
2	Course Title	CMM-II (Construction Material & Methods-II)
3	Credits	4
4	Contact Hours (L-P-S)	0-5-1
	Course Status	Compulsory
5	Course Objective	1. To develop an understanding about basic materials and applying principles of timber. 2. To acquaint the students with wood & commercial timber. 3. To familiarize the students with traditional & conventional use of timber in building construction. 4. To familiarize the students with various components and their construction details in timber.
6	Course Outcomes	CO1: To be able to describe the load bearing systems principles in timber construction. CO2: To explain various construction details of substructure and superstructure in timber construction. CO3: To select and design suitable type of construction in traditional or conventional timber application. CO4: To be able to detail out various construction details in timber.
7	Course Description	The part 2 of 6 of Construction methods and materials deals with construction details of Load bearing and Timber Framed Structures. The students are taught the construction basics of using these materials, the differing structural characteristics and the varying ways they are employed in the making of buildings.
8	Outline syllabus	
	Unit 1	**Arches in brick and stone**
	A	Elementary principles of Arch construction.
	B	Definition of various technical terms, and Components of arch, Types of Arch – Flat, Segmental, Semi-circular etc.
	C	Exposure to site and practising in construction yard by making examples of Arches and brick masonry.
	Unit 2	**Commercial timber and its properties**
	A	Timber used as a building material, advantages and disadvantage of Timber, Manufacturing process of timber & composite timber.
	B	Use of timber as a structural member, Types of Timber joinery detail, Classification, Characteristics, Defects, Preservation.
	C	Exposure to site and practising different types of timber joinery in wood workshop.
	Unit 3	**Timber doors/window**

	A	Design considerations, Location of doors, Panelled, partly panelled and partly glazed shutters, flush shutters, and ledged, braced, battened and framed shutters. Joinery details of timber frame, styles, rails, panels etc., Fixtures and fastenings.		
	B	Design considerations, Location of windows, fully glazed window, louvered, centrally pivoted, top hung windows, side hung, partly glazed, Joinery details of timber frame, style, rails, panels, fixing of glass, double glazing etc. Fixtures and fastenings		
	C	Market Survey of industrial timber products- Veneer, Plywood , Sunmica, Laminates, Block board, particle board, fibre board etc. Timber & Hardware- Hinges, Handles, Knobs, Bolts, L-drops, Locks, Stoppers, Stays, Silencers, Chain guards, Closers, Catchers, Knockers etc. in various materials.		
	Unit 4	**Timber roof / staircase**		
	A	Classification of roof, various forms of roofs for different spans- collar beam roof, pitched roof, single roof, double roof, trussed roof etc.		
	B	Introduction to Timber Portal Frames, Timber trusses and joinery details of tie beam, principal rafter, common rafter etc., Fixing of roof tiles.		
	C	Principles & components of staircase, Requirement of good staircase, Classification of staircase based on geometry and materials like timber, brick, stone, RCC etc. Joinery details of timber tread riser, baluster, handrail, newel post etc.		
	Unit 5	**Timber wall, floor**		
	A	Functional requirements of floor in design and construction, Classification of floor - ground and upper floor. Introduction to timber floors in relation to spans, load transmission. Joinery details of bridging joist, binder, and girder etc., Types of strutting.		
	B	Construction detail of timber wall, dhazi wall /kathkuni wall		
	C	Column and joinery details of timber structures.		
	Mode of examination	Theory/Jury/		
	Weightage Distribution	CA	MTE	ETE
		50%	0%	50%
	Text book/s*			
	Other References			

Program: B.Arch		Current Academic Year: 2020-21
Branch:		**Semester: 2**
1	Course Code	ARJ 116
2	Course Title	Architectural, Visual Representation and Design-II
3	Credits	4
4	Contact Hours (L-P-S)	0-5-1
	Course Status	Compulsory
5	Course Objective	• Development of Soft and Hard Skills fort the representation and visualization of design. • Develop in depth understanding of various architectural drawing and rendering techniques.
6	Course Outcomes	CO1: The students will be able to describe various skills of of representation in advanced media of rendering. CO2: The students will be able to develop in depth understanding of hand skills and architectural drawing. CO3: the students will be able to interpret two dimensional and three dimensional drawings CO4: the students will be able to design and compose architectural drawings rendered in suitable media
7	Course Description	This course introduces advanced techniques for architectural drawing such as perspective projection, sciography mix-media renderings etc. The course intends to develop essential manual skills such as proficiency in drawing, largely used as primary mode of communication of ideas in architectural design.
8	Outline syllabus	
	Unit 1	**Three dimensional Visualizations: Isometrics and Axonometric**
		1a. Isometric views 1b. oblique three dimensional views 1c. Visualizing Architectural drawings into view
	Unit 2	**Three dimensional Visualizations : Perspectives**
		2a. Free hand Perspective Drawings 2b. Two point and one point pespectives for simple forms and complex. 2c. Visualizing Architectural drawings into perspective view
	Unit 3	**Sciography**
		3a. Sciography in architecture. Rendering for sciography, tones,texture, colors, and light. 3b. Sciography in two dimentional surfaces 3c. Sciography of simple and complex forms
	Unit 4	**Architectural Rendering**

		4a. Introduction to various techniques of rendering 4b. Architectural Entourages (Trees, people, cars, materials) 4c. Application of skills on architectural drawings		
	Unit 5	**Visualisation and form development**		
		5a. Converting the orthograhc projections/ architectural drawings into Three Dimensional Visualizations like Sectional models, views 5b. Rendering (applying sciography and architectural renders) of orthographic projections drawings to develop deep understanding of proportions and scale. 5c. compiling the entire portfolio		
	Mode of examination	Jury/Practical/Viva		
	Weightage Distribution	CA	MTE	ETE
		50%	0%	50%
	Text book/s*	-		
	Other References	**Suggested Books/Readings:** 1. Gill, R. W. (2011). *Rendering with pen and ink*. London: Thames and Hudson. 2. Ching, F. D. (n.d.). *Architectural Graphics Ed. 6*. John Wiley & Sons. 3. Bhatt, N.D. and Panchal, V.M. (1996). *Engineering Drawing – Plane and Solid Geometry*. Charotar Publishing House.		

ARJ116 -Architectural, Visual Representation and Design -2

ARJ 114-Digital Design Fabrication – I

School: SUSAP		**Batch : 2020-25**
Program: B.Arch		**Current Academic Year: 2020-21**
Branch:		**Semester: 2**
1	**Course Code**	ARJ 114
2	**Course Title**	Digital Design Fabrication Script – I
3	**Credits**	2
4	**Contact Hours (L-P-S)**	0-1-1
	Course Status	Compulsory
5	**Course Objective**	• Knowledge and understanding of Computer Graphics tools. • Practical skills in the computer graphic software for architectural presentation • Skills in experimentation, critical analysis and the discriminatory selection of computer software for specific end uses. • Awareness of architectural drafting with a focus on industry standards. • Ability to assemble drawings in industry-standard plan form and produce plotted hard copies ready for distribution
6	**Course Outcomes**	CO1: Demonstrate and present work using Computer Graphic tools. CO2: Use of software tools to construct accurate 2D geometry as well as complex 3D shapes and surface objects; CO3: Create 2D representations of 3D objects as plan view, elevations and sections;
7	**Course Description**	Students will use the Adobe Creative Suite for this course. Students will learn to use the basic tools of Photoshop, Illustrator, and InDesign. Upon completion of the course students will be able to understand the difference between a pixel-based and vector-based graphic and import and export graphics in multiple formats. Topics will include creating text and gradients, drawing and composing an illustration, transforming and distorting objects, incorporating color techniques, placing type in

		an image, how to work with layers and printing preparation will also be covered. This course also covers the study of Computer Aided Drafting (CAD) with regard to Architecture. Students learn the commands to draft necessary drawings using the latest version of AutoCAD Software.
8	**Outline syllabus**	
	Unit 1	Introduction to Vector Based tools using Adobe Illustrator
		Unit-a: Introduction to Vector and Raster Graphics Unit b: Working with Vector Graphics Unit c: Drawing using Vector Graphics
	Unit 2	Introduction to Raster Based tools using Adobe Photoshop
		Unit-a: Composition using Vector Graphics Unit b: Working with Raster Graphics Unit c: Composition using Raster tools
	Unit 3	Introduction to CAD using AutoCAD (Interface/Tools/Working)
		Unit-a: Introduction to AutoCAD Unit b: Working with Drafting tools Unit c: AutoCAD Drafting
	Unit 4	Drafting Drawings using AutoCAD
		Unit-a: Working with Layers and Hatching
	Unit 5	Advanced plotting (Layouts, Viewports), Office Standards
		Unit a: Plan, Elevation and Sections Unit b: 3D Build tools AutoCAD Unit c: Layouts and Plotting
	Mode of examination	Jury/Practical/Viva
	Weightage Distribution	**CA** / **MTE** / **ETE**
		50% / **0%** / **50%**

	Text book/s*	• Adobe Photoshop Classroom in a Book (2020 release) • Render Floor Plans with Photoshop by Robert H Frank • Fundamental AutoCAD 2020
	Other References	

AFA 111 –Fine Arts -II

School : SAP		**Batch : 2020-25**
Program: B. Arch		**Current Academic Year: 2020-21**
Branch: Architecture		**Semester: 2**
1	Course Code	AFA111
2	Course Title	**Fine Arts - II**
3	Credits	4
4	**Contact Hours** (L-P-S)	0-2-2
	Course Status	Compulsory
5	Course Objective	1. The course aims at interpreting the significance of a composition which includes an in depth study of its elements and principles. 2. Describe the components of a composition and varying degree of their impact on a layout. 3. Provide an in-depth study of color theory using both demonstration as well as lecture methods. 4. Classify and manoeuvre natural and geometric shapes. 5. Describe the significance of pattern, rhythm, and movement in space and reproduce composition layouts keeping the latter in mind.
6	Course Outcomes	**CO 1:-**The students will learn about the elements of a composition which includes color, line, shape, texture. **CO2:-** The students shall be able to visualize and reproduce the spaces on the basis of the principles of a composition which includes rhythm, movement, harmony, pattern etc. **CO3:-** The students shall acquire the skill to understand significance of a well-developed composition by carefully analysing the ones around them and by studying other artist projects. **CO 4:-** The students will be having an overall theoretical as well practical understanding of managing a visual space.
7	Course Description	The course aids in visualizing and practicing different forms of developing a composition. It enables students in developing an understanding of creating a space in a balanced and harmonious way.
8	Outline syllabus	
	Unit 1	**Introduction Elements of a composition**
		1A:- Color, line 1B:- Point, space 1C:- Form, Unity and Texture

	Unit 2	**Introduction to Principle of a composition**		
		2A:- Balance and Alignment , Emphasis 2B:- Contrast and Proportion 2C:- Movement and White Space		
	Unit 3	**Introduction to shapes and space**		
		3A:- Geometric shape 3 B:- Organic Shape 3C:- Negative and Positive Space		
	Unit 4	**Dimensional Study**		
		4A :- Two dimensional Compositions 4B :- Three dimensional compositions 4C :- Spatial explorations		
	Unit 5	**Study of Artistic Projects in different disciplines**		
		5A :- Painting 5B :- Printmaking and Graphic design 5C :- Three- Dimensional compositions (Sculptures and Installation)		
	Mode of examination	**Jury**		
	Weightage Distribution	**CA**	**MTE**	**ETE**
		50%	**0%**	**50%**
	Text book/s*			
	Other References			

SEMESTER 3

ART 209 - Environment Sustainability and Services I

School: SUSAP		**Batch : 2020-2025**
Program: B.Arch		**Current Academic Year: 2020-21**
Branch:		**Semester: 3**
1	Course Code	ART 209
2	Course Title	Environment Sustainability and Services I
3	Credits	2
4	Contact Hours (L-P-S)	2-0-0
	Course Status	Compulsory
5	Course Objective	1. to introduce the various parameters to describe the climate of a place 2. to explain the climate characteristics globally both at macro and micro level 3. to discuss heat gain in buildings and to introduce concept of thermal comfort 4. to outline the principles of building design, landscape and environment with their implications on thermal comfort, day-lighting and ventilation 5. to enumerate various intervention strategies to modify building microclimate of the various zones 6. to encourage development of creative ideas for climate responsive building design
6	Course Outcomes	CO1: describe the climate of a place appropriate for architectural intervention CO2: demonstrate an understanding of the concept of thermal comfort in buildings CO3: assess level of heat gain in buildings CO4 : understand material properties w.r.t. climate CO5: understand ways to modify heat gain, day-light and ventilation in buildings CO6: develop strategies for modifying/controlling building microclimate in the different climatic zones CO7: adopt design features for enhancing climate responsiveness of buildings
7	Course Description	This course aims to introduce study of climate in built environment from architectural point of view and establishes the link between the climate of a place, thermal comfort and the building design. It also prepares students to design climate responsive buildings.
8	Outline syllabus	
	Unit 1	**Climate in Architecture**
	A	Relevance of Climatology to Architecture

	B	Understanding factors affecting the macro climate of a place and microclimate of site. Measurements.		
	C	Climatic measurements		
	Unit 2	**Thermal comfort, design and materials**		
	A	Thermal Comfort factors and indices		
	B	Principles of Thermal Design and Heat exchange in buildings		
	C	Thermal Properties of Materials		
	Unit 3	**Structural Control**		
	A	Solar Geometry		
	B	Ventilation and Air Movement		
	C	Daylighting		
	Unit 4	**Climate responsive Design Characteristics in different climatic zones**		
	A	Hot Dry Zone		
	B	Warm Humid and Composite Zone		
	C	Cold Zone		
	Unit 5	**Climate responsive Design Applications in different climatic zones**		
	A	Hot Dry Zone		
	B	Warm Humid and Composite Zone		
	C	Cold Zone		
	Mode of examination	Theory		
	Weightage Distribution	CA	MTE	ETE
		30% (1 test +2 Quizzes)	20%	50%
	Text book/s*	Mayhew, A., Szokolay, S.V., Ingersoll, T.G., Koenigsberger O.H., (2011) Manual of Tropical Housing and Building, Edition 1, Universities Press		
	Other References	1. Givoni, B. (1969)Man, Climate and Architecture, Elsevier 2. Olgyay, V., (1969)Design with Climate, Priceton Univesity Press 3. Krishan, A., Baker, N., Yannas, S., Szokolay, S.V., (2001) Climate Responsive Architecture: A Design Handbook for Energy Efficient Buildings, McGraw Hill Publication 4. Szokolay S.V., (2008) Introduction to Architectural Science: The Basis of Sustainable Design, Elsevier Press 5. Nayak, J.K., Prajapati, J.A., Handbook on Energy Conscious Design		

ART 208 -History, Theory & Criticism – 3

School: SUSAP		**Batch : 2020-2025**
Program: B.Arch		**Current Academic Year: 2019-20**
Branch:		**Semester: 3**
1	**Course Code**	**ART 208**
2	**Course Title**	**(HTC-3) History, Theory & Criticism - 3**
3	**Credits**	**2**
4	**Contact Hours (L-P-S)**	**2-0-0**
	Course Status	**Compulsory**
5	**Course Objective**	1. To understand the historical development through the 16th to the 19th century 2. To understand the political economy of the period 3. To understand Cultural and Social significance of the period 4. To identify and study the salient features of the architectural styles during the 16th to the 19th century
	Course Outcomes	CO1: Identify main characteristics of modern architecture, recognizing Influences and major concepts - identify buildings, ideas, and architects that portray Modern and Contemporary Architecture. CO2: Interpret & discuss the socio-cultural context of the 16th- 19th century within which these theoretical approaches to design have developed. CO3: Compare & critique the various approaches to design in relation to their historical context.

7	**Course Description**	This Course deals specifically with the socio-political, historical and cultural dimensions of Architectural history from the 16th century to the 19th century. Through this module students develop a deeper understanding of the architectural styles during the period and famous examples of the same.
8	**Outline syllabus**	
	Unit 1	**Renaissance**
	A	Break with medieval churches for sources from Roman antiquity. Spatial centralization through simple addition of independent spatial elements
	B	Use of elementary geometrical forms unified through symmetry and simple mathematical ratios. Reintroduction of anthropomorphic Classical Orders.
	C	Study of palazzos and development of centralized church form through specific examples from Italy.
	Unit 2	**Mannerism**
	A	Conflict and tension in Mannerism in place of harmony and order of Renaissance. Dynamic interplay of contrasting elements as against static addition of independent units of Renaissance church.
	B	Interplay between manmade and nature in villas. Dynamism of urban spaces.
	C	Centralized longitudinal and the elongated central church plans. Study of important villas, churches and urban spaces in Italy.
	Unit 3	**Baroque & Rococo**
	A	Dynamism and systemization of Baroque architecture. Vitality and spatial richness with underlying systematic organization.
	B	Space as constituent element of architecture, as a complex totality and indivisible figure, comprising of interacting spatial elements based on inner and outer forces.
	C	Sensitivity to effects of texture, color, light and water. Study of important urban spaces and churches in Italy and Germany.

	Unit 4	**Hindu Architecture – Nagara & Vesara Style**		
	A	The evolution of the temple form, evolution of the shikhara in north India.		
	B	The three schools of architecture - the Gujarat (Sun Temple, Modhera), the Khajuraho (Kandariya Mahadeva Temple), and the Orissa styles (Lingaraj and Konark Temple).		
	C	Comparison in spatial attributes scale and detail.		
	Unit 5	**Hindu Architecture - Dravidian Style**		
	A	The evolution of the vimana and the contributions of the Chalukyas (Badami, Aihole & Pattadakal), the Pallavas (Shore Temple, Mahabalipuram), the Pandyas and the Cholas (brihadeshwara temple thanjavur)		
	B	The contributions of the Nayaks to the temple cities (Meenakshi Amman Temple).		
	C	The city morphology, spatial diversity and planning criteria.		
	Mode of examination	**Theory**		
	Weightage Distribution	**CA**	**MTE**	**ETE**
		30%	**20%**	**50%**
	Text book/s*			
	Other References			

ART 206 – ARCHITECTURAL STRUCTURES-1

School: SUSAP		**Batch : 2020-2025**
Program: B.ARCH		**Current Academic Year: 2020-21**
Branch:		**Semester:3**
1	Course Code	ART 206
2	Course Title	Architectural **Structures-1**
3	Credits	2
4	Contact Hours (L-P-S)	2-0-0
	Course Status	Compulsory
5	Course Objective	1. Understand how various materials function when loaded 2. To understand how different materials interact with each other 3. To introduce the concept of behaviour of structural components and simple analytical techniques 4. To understand how different materials interact with each other
6	Course Outcomes	CO1: Demonstrate systematic knowledge of developing architectural forms based on structural systems CO2: Understand the interdependence of architectural form and structural system of a structure CO3: Identify basic structural systems CO4: Demonstrate the current knowledge and the latest trends in structural systems of contemporary architecture.
7	Course Description	The course is an understanding of the basic principles of structural mechanics so that it forms the basis for study of structure systems. Through a series of practical exercise participants will be familiarized with how structural systems and materials interact with each other. The objective here is to develop amongst students an appreciation of the various nuances involved in the both manmade and natural structures.
8	Outline syllabus	
	Unit 1	
	A	Concept of direct force mechanism in structure, tension and compression.
	B	Concept of loads as forces, response as deformations.
	C	Simple stresses and Strains
	Unit 2	
	A	Centre of Gravity
	B	Moment of Inertia
	C	Concept of equilibrium of forces
	Unit 3	
	A	Elements of Static
	B	Shear force & Bending Moment

	C	Forces in Trusses		
	Unit 4			
	A	Beams and Loads		
	B	Bending Stresses and Shear Stress		
	C	Deflection of Beams		
	Unit 5			
	A	Column and Struts		
	B	Properties of Concrete		
	C	Properties of Steel		
	Mode of examination	Theory		
	Weightage Distribution	CA	MTE	ETE
		30%	20%	50%
	Text book/s*			
	Other References			

ARJ 201- Architectural Design -III

School: SUSAP		**Batch : 2020-2025**
Program: B.Arch		**Current Academic Year: 2020-21**
Branch:		**Semester: 3**
1	Course Code	ARJ 201
2	Course Title	ARCHITECTURAL DESIGN III
3	Credits	12
4	Contact Hours (L-P-S)	0-3-7
	Course Status	Compulsory
5	Course Objective	• Understanding the norms & systems of building in a settlement. • To develop intuitive mode of investigation for design. • To study the built environment and to develop a basic understanding of space and form. • To explore the inter-relationship between human behaviour and space in a built environment, including, volume of space, shape, form, function, climate and materials.
6	Course Outcomes	CO1: Demonstrate basic skills of drawings and representation, also assimilate learning of construction, structures and computers to apply to basic design. CO2: Develop out of the box creative skills for design of small projects. CO3: Explore creative processes and idea generation and demonstrate critical evaluation of these processes in their design project.
7	Course Description	The main objective of this subject is to make the students familiar with design & the architectural design process. The students will be Understanding the norms & systems of building in a settlement and designing an 'Urban Insert' accordingly. Sensitizing students to be more observant to their surroundings and promoting it as a basic creative instinct in the students.
8	Outline syllabus	
	Unit 1	Minor Project
		Introduction to Minor project Form and material based investigation Understanding spatial aspects based on activity, space, form and human scale.
	Unit 2	Minor Project- finalization
		Documentation. Analysis. Identification of requirements Final design presentation
	Unit 3	Major Project- Conceptual

		Introduction to Major project (INSERT FOR THE SETTLEMENT IN QUESTION, such as Pre primary/ nursery school, Art gallery and Pavilion etc. Site- 1500 sqm (appx) Scale : 1:50/ 1:100 Understanding/Insight/Perception – Generating the insight for Context, Purpose, Motivation, End User etc Action Research -Literature Study, Site Analysis, Case Study.		
	Unit 4	Concept Development		
		Concept- Understanding and generating the idea, its expression in different methods using manual, digital media etc Schematic Design development- single line representations of drawings in architectural formats for the developed concept, which includes : Site –its understanding of terrain, movement patterns, flora and fauna, climate etc Blocking/ Massing of built forms- generating an understanding of built forms in relation to the site, their orientations, interrelation amongst all the built forms etc. Facade/ Aesthetics- understanding whether form follows function or vice versa. Expression of the idea through 3d Model development.		
	Unit 5	Finalization		
		Design development (on appropriate scale)- double line representations of drawings in architectural formats for the developed schematic design, which includes : Site Plan, floor plans, sections, elevations, etc Expression of the design through 3d Model development on appropriate scale and materials Final portfolio submission (manual or digital output)		
	Mode of examination	Jury		
	Weightage Distribution	CA	MTE	ETE
		50%	0%	50%
	Text book/s*	-		
	Other References			

ARJ 207- Construction Material & Methods-III

School: SUSAP		**Batch : 2020-2025**
Program: B.Arch		**Current Academic Year:2020-21**
Branch:		**Semester:3**
1	Course Code	ARJ 207
2	Course Title	(CMM-III) Construction Material & Methods-III
3	Credits	6
4	Contact Hours (L-P-S)	0-6-2
	Course Status	Compulsory
5	Course Objective	To inform students about the wall opening components of a building and their construction details. The students are briefed about the different types of steel door windows in different building types. To introduce them to the conventional and vertical transport system in a building To cultivate personal observation, self learning in students and better understanding of details, site visits are conducted so as to cover the given syllabus.
6	Course Outcomes	CO1: The students will be able to explain the details of wall opening components in a structure. CO2: The students shall know about the metal in construction. CO3: The students will be able to detail about the mechanism of vertical transportation and their construction details. CO4: They will be able to illustrate the construction details of the working of these elements.
7	Course Description	This Construction Studio is designed to introduce the students to the components of a building. The course discuss about the timber and steel door window details, their types and joinery. The students are introduced to the different members and modes of vertical transportation. The students get the basic understanding of the content through workshops, studio work and site exposure.
8	**Outline syllabus**	
	Unit 1	**Metals (Ferrous) &**
	A	Ferrous-Iron (Pig, Cast & Wrought), Variety of Mild Steel sections – Sheets (plain & corrugated), Flats, Bars (round & square), Angles (Equal and Unequal), R.S. Sections (I beams, Channels, Tees).
	B	Hollow Tubular sections available for application in building industry. Hot rolled Sections and Cold rolled Sections, Stainless steel and Alloys, types of Steel connections- Riveted connections, Bolted connections and welding processes.
	C	Forms of Steel for Industrial Construction- Classification, Availability, Characteristics and uses of forms of Steel, First to Fourth generation

		Steel Roofing Products.		
	Unit 2	**Steel Doors & Windows**		
	A	Types of Steel Doors (Centre Hung Shutter, Fixed Glass pane, Horizontal Glazing Bar, Side Hung Shutter and Top Hung Shutter) Mild Steel Land Z section Door, Pressed Steel doors, Mild Steel Sliding Door, Fly Proof Screen Door.		
	B	Types of Steel Ventilators and Windows (Pressed Steel, Z Metal Section Shutter)		
	C	Rolling Shutter & Collapsible Shutter, Methods of their Operation.		
	Unit 3	**Aluminium and UPVC Door, Window and Partitions**		
	A	Types of Aluminium Doors (Hinged, Pivot, Sliding, Sliding Folding) and windows (Casement windows, Steel Windows, Fixed and Sliding Windows)		
	B	Types of UPVC Doors(Bi Fold, Casement, French and Sliding Doors) and windows (Casement, Top Hung, French, Sliding, Fixed and Tilt & Turn Window)		
	C	Partition details in Aluminium and UPVC.		
	Unit 4	**Steel Floors, Floor finishes and Staircase**		
	A	Introduction to Mezzanine floor Construction, Components of Structural Steel Mezzanine Floors, Detailing of Structural Steel Works- Beam to Column joint, Beam to Beam Joint, Column Splice, Column Base, Roof Truss to Column Joint.		
	B	Types of Mezzanine floor (Industrial Mezzanine Floors, Warehouse Mezzanine Floor, Office Space Mezzanine floor, Retail Mezzanine floor) Types of Mezzanine Floor decking System (checker plate, Open Grid Steel, Steel Grating, Steel and Timber Floor Decking)		
	C	Steel staircase and its elements, Types of Steel Staircase- Straight Flight, Winder, Quarter landing, Half Landing, Curved and Spiral Staircase.		
	Unit 5	**Steel truss**		
	A	Types of Steel Trusses-King Post Truss, Queen Post Truss, Howe Truss, Pratt Truss, Fin Truss, North Light Truss, Quadrangular Truss, north light Truss,Tubular Steel Truss.		
	B	Portal Frame and Lattice Girder Roofs		
	C	Fixing details of various roof coverings, Ridge, Laps& Purlin Connections,Valleys, gutters, etc		
	Mode of examination	Jury /Theory		
	Weightage Distribution	CA	MTE	ETE
		50%	0%	50%
	Text book/s*			
	Other References			

ARJ 203 - DIGITAL DESIGN FABRICATION – 1 (DDF-1)

School: SAP		**Batch : 2020-2025**
Program: B. ARCH		**Current Academic Year:** 2020-21
Branch: ARCH		**Semester: 3**
1	Course Code	ARJ 203
2	Course Title	Digital Design Fabrication – 1 (DDF-1)
3	Credits	4
4	Contact Hours (L-T-P)	0-2-2
	Course Status	Compulsory
5	Course Objective	• Knowledge and understanding of 3D Modelling, texturing and basic rendering • Practical skills in the computer application software for architectural practice • Knowledge and Understanding of functional and aesthetic requirements of architecture and the application of those in virtual environments. • Skills in experimentation, critical analysis and the discriminatory selection of computer software for specific end uses. • Quality of the work produced; with the balance of the student's artistic expression & sensitivity as well as technical understanding, with integration of techniques and subject.
6	Course Outcomes	CO1. Students can able to demonstrate and present their work using Digital 3D tools. CO2. Students can able to realistically reconstruct a still life object or image in 3D Model. CO3. Students can able to demonstrate 3D Visualisation and Animation.
7	Course Description	In this module the students will learn to visualize and use 3D software to create digital 3D models. This course is designed for students to learn both practical and theoretical knowledge in constructing and managing 3-dimensional modeling and texturing. It is a highly interdisciplinary and complex subject of artistic expression and technological understanding.
8	Outline syllabus	
	Unit 1	**Introduction to 3D Modelling (Interface/Tools/Working)**
		Sub unit - a, b and c detailed in Instructional Plan
	Unit 2	**Working with conceptual 3D Model with texture**
		Sub unit - a, b and c detailed in Instructional Plan
	Unit 3	**Lightning and basic rendering**

		Sub unit - a, b and c detailed in Instructional Plan		
	Unit 4	**Render output in Still Image**		
		Sub unit - a, b and c detailed in Instructional Plan		
	Unit 5	**Render output in Animation**		
		Sub unit - a, b and c detailed in Instructional Plan		
	Mode of examination	Jury/Practical/Viva		
	Weightage Distribution	CA	MTE	ETE
		60%	0%	40%
	Text book/s*	• Autodesk 3ds Max 2020 Essentials • Inside Rhinoceros 6 • Lumion 3D Cookbook - Brightman Designs		
	Other References			

CCU 301– COMMUNITY CONNECT

School: SAP		**Batch : 2020-2025**
Program: B.Arch , M.Arch		**Current Academic Year: 2020-21**
Branch:Architecture		**Semester : B.Arch (V & VI) , M.Arch (I)**
1	Course Code	CCU 301
2	Course Title	Community Connect
3	Credits	2
4	Contact Hours (L-P-S)	0-4-0
	Course Status	Compulsory
5	Course Objective	1. The objective of assigning the project related to community work is to expose our students to different social and infrastructural issues faced by the people in different sections of society in rural areas. 2. This type of project work will help the students to develop better understanding of problems of people living in a less privileged position in the society, may be socially, medically, economically, in the built fabric or otherwise. 3. This type of live project work will help our students to connect their class-room learning with practical issues/problems in the rural setup.
6	Course Outcomes	CO1: The community connect project will enable our students to acquire knowledge and skills which will help them understand, project and perceive rural setup. CO 2 : These types of activities will give practical exposure to our students to understand different current issues, analyse them from a rural perspective & suggest solutions for the same. CO 3 : Students will learn to do research.
7	Course Description	The course shall enable the students to be able to connect with the community and provide them with architectural solutions for the social issues that they face in their day to day life. Major sub themes for research are - a. Impact of government projects in community b. Social issues through surveys c. Environment issues through primary and secondary surveys d. Economic issues, through census and primary surveys. e. Technology-adaption f. Infrastructure Issues.
8	Outline syllabus	
	Unit 1	**Introduction to the Research problem**
	A	a) Statement of the problem.

	B	b) Purpose of the study		
	C	c) Significance of the study.		
	Unit 2	**Literature/ On site review**		
	A	a) Identify and group together common areas.		
	B	b) Compare, contrast and evaluate issues.		
	C	c) Demonstrate why the topic and research is relevant to your field of study.		
	Unit 3	**Methodology**		
	A	a) Sample		
	B	b) Data collection		
	C	c) Data analysis		
	Unit 4	**Implications and Limitations of study**		
	A	a) Identifying the limitations and how important each limitation is.		
	B	b) Explaining the nature of limitations.		
	C	c) Suggesting how such limitation could be overcome		
	Unit 5	**Implications and Recommendations**		
	A	a) Specific measures or directions that can be taken		
	B	b) Critical suggestion regarding the best course of action in a certain situation		
	C	c) *Guide to resolve issues and result in a beneficial outcome*		
	Mode of examination	Jury		
	Weightage Distribution	CA	MTE	ETE
		-	-	100 %
	Text book/s*			
	Other References			

SEMESTER 4

ART 219 – Environment Sustainability and Services II

School: SUSAP		**Batch : 2020-2025**
Program: B.Arch		**Current Academic Year: 2020-21**
Branch:		**Semester: 4**
1	Course Code	ART- 219
2	Course Title	Environment Sustainability and Services II
3	Credits	2
4	Contact Hours (L-P-S)	2-0-0
	Course Status	Compulsory
5	Course Objective	1. To describe the water supply and distribution requirements in buildings 2. To explain the terminology, principle of sanitation, drainage layouts, fixtures 3. To describe the electrical system, distribution, installation and material. 4. To sketch the schematic layout of simple water, sanitation and electrical services for domestic and public buildings. 5. To discuss various systems of environmental control and management.
6	Course Outcomes	CO1: Knowledge and comprehension of water supply and distribution system in buildings CO2: Knowledge and comprehension of sanitation system, its various components, their working, and types CO3: Knowledge and comprehension of electrical services and application to make informed choice of appropriate wiring system in buildings and incorporate necessary design features CO4: Application in electrical, plumbing and sanitary services of buildings CO5: Knowledge and awareness of various concepts of environment control and management strategies
7	Course Description	This course aims to familiarize the students with building services like water supply, sanitation and electrical services that are necessary in a multi-storeyed, large-scale building. It also introduces the concept of sustainable environment control and management.
8	Outline syllabus	
	Unit 1	**Water Supply**
	A	Distribution of water in an area, Overhead tank, Underground tanks, Pipe appurtenances
	B	Requirements of water distribution system in low rise and high rise buildings. Water fixtures, water meter and storage tanks

	C	Hot and cold water supply system, Pipe - types, size, Jointing and fittings.		
	Unit 2	**Sanitation**		
	A	Principles of sanitation, Collection and conveyance of waste matter from buildings, Sanitation systems in buildings, Sanitary fittings, traps & types, manholes, intercepting and inspection chambers.		
	B	Drainage systems :Types of drainage systems, Dry and wet carriage systems, Sizes of drain pipes and material of pipes, Gradients used in laying drains and sewers etc		
	C	Sewage treatment system- septic tank and soak pits, Roof and surface water drainage. Rain water storage and harvesting principles and methods.		
	Unit 3	**Electrical**		
	A	Electrical Introduction – Terminology and Distribution of electricity in a building		
	B	Electrical Circuits, Fuse, MCB, etc., Types of switches, sockets etc Design consideration for electrical installation		
	C	Wires and types and specifications, Systems of wiring – Basic considerations. Various types of internal wiring systems e.g. cleat, casing and capping, batten and conduit (surface & concealed).		
	Unit 4	**Services Drawing**		
	A	The plumbing and sanitary drawings for individual spaces e.g. kitchen, toilet, wash area, utility etc. and building		
	B	Plumbing and drainage layout drawing for a building.		
	C	Electrical layout drawing of a building		
	Unit 5	**Environmental control & management**		
	A	Storm water and Waste water management		
	B	Sewage disposal system and effluent management		
	C	Solid waste management		
	Mode of examination	Theory		
	Weightage Distribution	CA	MTE	ETE
		30%	20%	50%
	Text Book/s	Rangwala, P.B. (2019). *Water supply and Sanitary Engineering including Environmental Engineering*. Anand, India: Charotar Publishing House Pvt. Ltd.		
	Other References	1. Hall, F., & Greeno, R. (2013). *Building Services Handbook: Incorporating current building and water regulations.* Oxon, Ox: Routledge. 2. Orbart, A., & Parlour, R. P. (2016) *Building Services engineering for architects and building design professionals*. Integral Publication. 3. National Building Code of India 2005 Bureau of Indian Standards, New Delhi, 2005 4. https://www.designingbuildings.co.uk/wiki/building-services 5. https://www.coursera.org/learn/global-environment-management		

ART 218 – History, Theory & Criticism -4

School: SUSAP		**Batch : 2020-2025**
Program: B.Arch		**Current Academic Year: 2020-21**
Branch:		**Semester: 4**
1	**Course Code**	**ART 218**
2	**Course Title**	**History, Theory & Criticism -4**
3	**Credits**	**2**
4	**Contact Hours (L-P-S)**	**2-0-0**
	Course Status	**Compulsory**
5	**Course Objective**	1. To make students critically analyze, evaluate and make informed judgment on a wide range of architectural problems and situations 10th to 16th Century AD 2. To comprehend key architectural works, cultural movements and ideas, their theoretical and cultural context and relevance to design 3. To illustrate the differences in architectural styles of Hindu, Colonial and Mughal eras and make the students compare the religious and cultural context with respect to the socio-economic variations of those times.
6	**Course Outcomes**	CO1: Undertake research into architectural history. CO2: Engage in critical and analytical thinking and identify cultural impacts on architectural styles from ancient to modern times CO3: To distinguish the various styles of architecture found in India and develop appreciation for the same. CO4: To apply the needs of a city and its people sensitively in their design.
7	**Course Description**	This course examines the History of Architecture from the 10th century through the 16th century offering an overall understanding of religious and cultural context to architectural styles evolved. It introduces the impact of socio-economics on the building typology.

8	**Outline syllabus**	
	Unit 1	Neo Classical Architecture
	A	Origins of Neoclassical Style, Constribution of Andrea Palladio
	B	Colonal and Federal Style, Contribution of Giovanni Battista
	C	Greek Revivial, Beaux Arts.
	Unit 2	Early Islamic architecture
	A	Birth of Islam; Early Islamic architecture- beginnings in Arabia, Arab houses, prophets mosque , Dome of the Rock, Islamic architecture under Ummayads in Syria, Damascus, Spain, Toledo;
	B	Islamic architecture under Abbasids in North Africa –Dar alSalam, Samarra; under Tulunids at Egypt; Under Nasrids at Granada; Qayrawan; Under Aglabids- Tunisia; Under Fatimids-;
	C	Mosques of Iran and Central Asia, Afghanistan; under the Samanid, Uzbekistan, Iran; Mosques and Tombs.
	Unit 3	Indo-Islamic Architecture - the Sultanate Style
	A	Introduction and understanding of 'Islam's' philosophy and its consequent rituals and their interpretation in building types.
	B	The architecture of early Islamic dynasties that ruled from Delhi like the Slave, Khalji, Tughlaq, Sayyid, Lodhis and Shershah Suri regimes.
	C	Comparison in spatial attributes scale and detail.
	Unit 4	Mughal Architecture
	A	Evolution of Mughal Architecture from the Sultane style of Architecture fro Babur to Shahjahan.
	B	Architectural Features - Geometry in Architecture.
	C	Analysis of Architecture of Qutub Complex, Taj Mahal, Fatehpur Sikri, Tomb of Itmad-Ud-Daulah and similar spaces and interpretation in comparative context.
	Unit 5	Colonial Architecture and Late Mughal Architecture

	A	British Architecture – Private Bungalows and Government Buildings.		
	B	French, Dutch and Portuguese forms of architecture. Comparison with British Architecture.		
	C	Late Mughal Architecture: Comparison with Early Mughal Architecture, Impact of Socio-economic conditions in architectural context.		
	Mode of examination	Theory		
	Weightage Distribution	CA	MTE	ETE
		30%	20%	50%
	Text book/s*			

ART 216 – Architectural Structures-II

School: SUSAP		**Batch : 2020-25**
Program: B.ARCH		**Current Academic Year: 2020-21**
Branch:		**Semester:4**
1	Course Code	ART 216
2	Course Title	Architectural Structures-II
3	Credits	2
4	Contact Hours (L-T-P)	2-0-0
	Course Status	Compulsory
5	Course Objective	1. To understand the analysis of indeterminate structures and their use. 2. To understand how different materials interact with each other 3. To introduce the concept of behaviour of structural components under deflection.
6	Course Outcomes	CO1: Demonstrate systematic knowledge of developing architectural forms based on structural systems CO2: Understand the interdependence of architectural form and structural system of a structure CO3: Identify basic structural systems CO4: Demonstrate the current knowledge and the latest trends in structural systems of contemporary architecture.
7	Course Description	The course is an understanding of the basic principles of structural mechanics so that it forms the basis for study of structure systems. Through a series of practical exercise participants will be familiarized with how structural systems and materials interact with each other. The objective here is to develop amongst students an appreciation of the various nuances involved in the both manmade and natural structures.
8	Outline syllabus	
	Unit 1	
	A	Determinacy and Indeterminacy : Determinate and Indeterminate structures .
	B	Energy Principles Introduction: Virtual work, Betti's and Maxwell, laws of reciprocal deflection. Application of Virtual work. Castigliano's theorems.
	C	Introduction, forms of Elastic Strain Energy
	Unit 2	
	A	Slope Deflection method .
	B	Analysis of fixed and continuous beams,

	C	yielding of supports.		
	Unit 3			
	A	Analysis and design of sections		
	B	Singly and doubly reinforced sections		
	C	Introduction and use of design aids (IS 456:2007)		
	Unit 4			
	A	Strength and Serviceability requirements .		
	B	Design methods		
	C	Working stress ,ultimate strength and limit state		
	Unit 5			
	A	Introduction to One-Way slab. Two way slab.		
	B	Detailing of Reinforcement		
	C	Introduction. Shear stress, Diagonal tension. shear reinforcement , Development 1ength, Anchorage Bond, Flexural bond.		
	Mode of examination	Theory		
	Weightage Distribution	CA	MTE	ETE
		30%	20%	50%

ARJ 211 - Architectural Design- IV

School: SUSAP		**Batch : 2020-2025**
Program: B.Arch		**Current Academic Year: 2020-21**
Branch:		**Semester: 4**
1	Course Code	ARJ 211
2	Course Title	ARCHITECTURAL DESIGN IV
3	Credits	12
4	Contact Hours (L-P-S)	0-3-7
	Course Status	Compulsory
5	Course Objective	• The aim of the studio is to introduce students to design of repetitive units/ Modular focusing on horizontal spatial planning with focus on interrelationship between spaces and their respective hierarchy. • To sensitise them to observing their environment and incorporating the learning's into their design. • The objective is to focus on design evolution with respect to passive design strategies and site context.
6	Course Outcomes	CO1: students should develop skills of drawing and representation CO2: to assimilate learning of graphics, construction, structures and computers to apply to basic design. CO3: Explore creative processes and idea generation and demonstrate critical evaluation of these processes in their projects. CO4: Appraise how design can impact, interact with, and improve environments. CO5: Understand spaces with three-dimensional visualization through the use of block models and appropriate softwares.
7	Course Description	Looking at the immediate built environment and understanding its fundamental components and their impact on the surroundings. The studio deals with the study of built form and its relationship to the site, surroundings and climatic setting. Design proposals to address sensitivity to climatic and physical settings. The design problem would induce students to experiment with built and open spaces. Exercises relating personal experiences to behavioral needs and translating them into documented information that can be used as a basis for design. Introduction to other role players in the Architectural process viz; the client and the user.
8	Outline syllabus	
	Unit 1	Minor Project

		a. Introduction to Minor project b. Form and material based investigation c. Understanding spatial aspects based on activity, space, form and human scale.		
	Unit 2	Minor Project- finalization		
		a. Pre design study-Case study and functional standards b. Concept formulation and idea investigation c. Final design presentation		
	Unit 3	Major Project- Conceptual		
		a. Introduction to Major project b. Preparation of design requirements, area requirements based on standards and their interrelation and circulation patterns. Site- 4000 sqm (appx) Scale : 1:100 , 1:200		
	Unit 4	Concept Development		
		a. Concept Formulation, Bubble Diagram and activity zoning. b. Design development- site development c. Design development- floor Plans		
	Unit 5	Finalisation		
		a. Design development- sections and elevations b. Model making on appropriate scale c. Final portfolio submission		
	Mode of examination	Jury		
	Weightage Distribution	CA	**CO1,CO3**	ETE
		50%		50%
	Text book/s*	-		
	Other References			

ARJ 217 - Construction Material & Methods-IV

School: SUSAP		**Batch : 2020-2025**
Program: B.Arch		**Current Academic Year: 2020-21**
Branch:		**Semester: 4**
1	Course Code	ARJ 217
2	Course Title	CMM- IV (Construction Material & Methods-IV)
3	Credits	6
4	Contact Hours (L-P-S)	0-6-2
	Course Status	Compulsory
5	Course Objective	1. To provide complete knowledge on Concrete, a building material vastly used, it's composition, applications and different grades used in the construction industry. 2. To make students study the RCC details of multi-storeyed building, from foundation in RCC to roofing, substructure preparation and over-head structures. 3.To introduce them to conventional slab systems ,form based systems and retaining walls. 4.To familiarize students about the conventional and new formwork systems, scaffolds, temporary supports, underpinning and waterproofing. 5. To cultivate personal observation and self learning in students,site visits are conducted so as to cover the given syllabus. 6. To help students observe measure, sketch and annotate what they see at site and submit a site visit report to the teachers concerned for evaluation. This shall form part and parcel of the sessional work for internal assessment.
6	Course Outcomes	CO1:Present the RCC construction systems and comprehend the details in sheet form and report work. CO2:Illustrate the construction details of RCC building from foundation to slabs and roofing. CO3:Apply all related details concerned with the material in the components studied.
7	Course Description	This Construction Studio is designed to study the load bearing structures, understanding of building components and their construction processes. The students are introduced to timber as a building material, the construction practices and joinery. The course aims at providing understanding of timber components through

		workshops, studio work and site exposure.
8	Outline syllabus	
	Unit 1	**Introduction to Foundation & Reinforced Brick Work**
	A	Definitions, Purpose of foundation, types of foundation, selection criteria for foundation based on soil conditions, physical properties.
	B	Reinforced Brick Work, Types, Mixing, Curing, Water Cement Ratio, Qualities and Workability.
	C	Construction Equipment- Electric hand Tools, Earth Moving & Excavation and Transportation.
	Unit 2	**Foundation**
	A	Load bearing Foundation (brick and stone)
	B	Types of Foundation- Spread/ Isolated foundation (Spread, Combined , Grillage & Raft) Pier Foundation & Caisson Foundation)
	C	Pile Foundation & types of Pile Foundation (Timber, Concrete, and Composite & Steel Piles), 2 Pile, 3 Pile & 4 Pile Foundation.
	Unit 3	**RCC Building Component detailed study**
	A	Columns, Lintel, Projections and Beam, Understanding of Steel Reinforcement types (Laying, Bending & Binding)
	B	Slabs- Simply Supported, Continuous and Cantilevered, Understanding of Steel Reinforcement types (Laying, Bending & Binding)
	C	RCC Staircase (Waist & Folded Slab) and its details.
	Unit 4	**Water Proofing, Damp Proofing, Structure Joints and Fire Protection**
	A	Causes and defects of dampness, methods adopted for waterproofing (Basement, Toilet, Kitchen & Terrace) and damp proofing at different levels of a building, admixtures and different materials (rigid, flexible) used in the process.
	B	Types of Joints- Expansion Joint, Isolation Joint, Contraction Joint, Sliding Joint and construction Joint)
	C	Fire Resistance- Wall & Masonry Construction, Framed & Composite Walls, Timber & Concrete Floors, RCC Columns and Beams, Steel Columns and Beams, Hollow Protection to Steel Columns and Beams.
	Unit 5	**Deep Excavation, Scaffolding & Formwork, Shoring, and Underpinning**
	A	Setting out of Site, Excavations method, precautions to be taken in deep excavation, de-watering and Timbering (Hard Soil, Firm Soil, loose wet Soils and Loose Dry Soil), Timbering of Shallow Trenches
	B	Scaffolding & Types of Scaffolding (Brick- Layer's, Mason's, Steel or Tubular Needle and Wooden Scaffold), Shoring & Types of Shoring (Raking, Flying & Dead Shores), Underpinning.
	C	Formwork (Plywood and Steel Formwork), Formwork for Square column, Round Column, Beam, Slab And RCC Staircase, Construction and Removal of Formwork.
	Mode of	

	examination			
	Weightage Distribution	CA	MTE	ETE
		30%	20%	50%
	Text book/s*			

ARJ 213 – DIGITAL DESIGN FABRICATION – 2 (DDF-2)

School: SAP		**Batch : 2020-2025**
Program: B. ARCH		**Current Academic Year: 2020-21**
Branch: ARCH		**Semester: 4**
1	Course Code	ARJ: 213
2	Course Title	**DIGITAL DESIGN FABRICATION – 2 (DDF-2)**
3	Credits	4
4	Contact Hours (L-T-P)	0-2-2
	Course Status	Compulsory
5	Course Objective	• Understanding of Advance 3D Modelling using Autodesk 3Ds Max. • Knowledge of options to work collaboratively on Virtual 3D Design. • Knowledge and Understanding of functional and aesthetic requirements of architecture and the application of those in virtual environments. • Knowledge of advanced 3D Renders using V-Ray rendering. • Learning of VR tools
6	Course Outcomes	• Students will learn how to model complex objects and environments • They will learn how to setup simple dynamic structures in digital 3d space • They learn new modes of digital presentation like VR • They develop more efficient modes of production which facilitate group projects, i.e. organization • Students can able to produce real 3D Models using VRAY render
7	Course Description	This course will be devoted to Advance digital modelling, Advance rendering using V-RAY render & image processing, this class will present advanced concepts and methodologies of digital based design for use in all phases of the design process. An emphasis will be placed on bringing the analog and digital realms closer together through concept, process + presentation; thus positioning the computer and digital media more intuitively in the students practice of architecture. As a result the students should become more adept at clearly articulated presentation of concept and form and understand principles behind new processes of fabrication, documentation and architectural experimentation made possible by the computer.
8	Outline syllabus	
	Unit 1	**Advance 3D Modelling**
		Sub unit - a, b and c detailed in Instructional Plan
	Unit 2	NURBS fundamentals: Creating + Editing Splines for surface creation,

		Surfaces, Splines from surfaces		
		Sub unit - a, b and c detailed in Instructional Plan		
	Unit 3	**Advance Rendering using VRAY**		
		Sub unit - a, b and c detailed in Instructional Plan		
	Unit 4	**Advance Renders as Image, Animation & VR**		
		Sub unit - a, b and c detailed in Instructional Plan		
	Unit 5	**Final Project**		
		Sub unit - a, b and c detailed in Instructional Plan		
	Mode of examination	Jury/Practical/Viva		
	Weightage Distribution	CA	**CO1,CO3**	ETE
		50%		50%
	Text book/s*	Architectural Rendering with 3ds Max and V-Ray: Photorealistic Visualization. 3D Photorealistic Rendering: Interiors & Exteriors with V-Ray and 3ds Max: 1 The VR Book: Human-Centered Design for Virtual Reality		
	Other References			

SEMESTER 5

AEJ 309–TRENDS IN ARCHITECTURE

School: SAP		**Batch : 2020-2025**
Program: B.Arch		**Current Academic Year: 2020-21**
Branch:		**Semester:5**
1	**Course Code**	**AEJ 309**
2	**Course Title**	**ELECTIVE-TRENDS IN ARCHITECTURE**
3	**Credits**	**2**
4	**Contact Hours (L-P-S)**	**0-3-0**
	Course Status	
5	**Course Objective**	To compare the trends in architecture within various time frames. To understand and expose students to the works of renowned architecture and the trends evolved by them. To analyse the case studies with respect to defined parameters.
6	**Course Outcomes**	CO1: Students will be able to compare the trends evolved in architecture since 19th century till date. CO2: Students will be equipped with the knowledge of various architects and their works. CO3: Students will be able to analyze the work done by architects globally and evaluate the trends evolved by their

		works. CO4: Students will be equipped with the knowledge of various architects and their works.
7	**Course Description**	The studio is designed to introduce the students to the main trends in architecture from the nineteenth century till date and the activities of important architects under this time frame.
8	**Outline syllabus**	
	Unit 1	**Trends in architecture- 19th century**
		Emanuel Rocco, Sullivan and Alder, Felix Duban Case examples- Galleria Umberto, Auditorium Building Chicago, School of Beaux Arts Analysis of case examples
	Unit 2	**Trends in architecture- First Half of 20th century/ Pre war**
		Walter Gropius, Pierre Chareu, Otto Wagner, Antoni Gaudi Case examples- Bauhaus, Maison De Verre, casa Mila Analysis of case examples
	Unit 3	**Trends in architecture -Industrial Revolution**
		Le Corbusier, Jean Pourve, Frank Lloyd Wright, Alvaro Alto, Godin Case examples- The Cloister, Johnson Wax Administrative Building, Le Familistere Analysis of case examples
	Unit 4	**Trends in architecture -Later half of 20th Century/ Post war**

		Frank O'Gehry, Jean Nouvel, Renzo Piano, Peter Zumthor, Charles Garnier, Case examples- Guggenheim Museum, Nemausus, Pompidou Center, The Opera Garnier Analysis of case examples		
	Unit 5	**Trends in architecture -21st Century**		
		Tokyo Ito, ZahaHadid Case examples- The Sendai Media Center, Heydar AliyevCenter Analysis of case examples		
	Mode of examination	**Jury**		
	Weightage Distribution	**CA**	**CO1,CO3**	**ETE**
		50%		**50%**
	Text book/s*	1. Troman, R. (ed.), "History of Architecture, From Classic to Contemporary", Parragon.2009 2. Gossel, P. (2005) Architecture in the 20th century, Vol-1 & Vol 2, Taschen 3. The Phaidon Atlas of Contemporary Architecture, Phaidon Press, 2004 4. Vidiella, A.S. (2008) The sourcebook of Contemporary Architecture, Harper Collins		
	Other References			

Students will be equipped with the knowledge of various architects and their works.

ARJ 301- Architectural Design –III

School: SUSAP		**Batch : 2020-25**
Program: B.ARCH		**Current Academic Year:** 2020-21
Branch: -		**Semester:** 5
1	Course Code	ARJ 301
2	Course Title	Architectural Design-V
3	Credits	12
4	Contact Hours (L-T-P)	2-2-6
	Course Status	Compulsory
5	Course Objective	• The aim of the studio is to introduce students to design of repetitive units focusing on horizontal spatial planning with focus on interrelationship between spaces and their respective hierarchy. • To sensitise them to observing their environment and incorporating the learning's into their design. • The objective is to focus on design evolution with respect to passive design strategies and site context.
6	Course Outcomes	CO1: students should develop skills of drawing and representation CO2: to assimilate learning of graphics, construction, structures and computers to apply to basic design. CO3: Explore creative processes and idea generation and demonstrate critical evaluation of these processes in their projects. CO4: Appraise how design can impact, interact with, and improve environments. CO5: Understand spaces with three-dimensional visualization through the use of block models and appropriate softwares.
7	Course Description	Looking at the immediate built environment and understanding its fundamental components and their impact on the surroundings. The studio deals with the study of built form and its relationship to the site, surroundings and climatic setting. Design proposals to address sensitivity to climatic and physical settings. The design problem would induce students to experiment with built and open spaces. Exercises relating personal experiences to behavioral needs and translating them into documented information that can be used as a basis for design. Introduction to other role players in the Architectural process viz; the client and the user.
8	Outline syllabus	
	Unit 1	**Minor Project**
		a. Introduction to Minor project b. Form and material based investigation c. Understanding spatial aspects based on activity, space,

		form and human scale.		
	Unit 2	**Minor Project- finalization**		
		a. Pre design study-Case study and functional standards b. Concept formulation and idea investigation c. Final design presentation		
	Unit 3	**Major Project- Conceptual**		
		a. Introduction to Major project b. Preparation of design requirements, area requirements based on standards and their interrelation and circulation patterns. c. Pre design study -Literature Study, Site Analysis, Case Study.		
	Unit 4	**Concept Development**		
		a. Concept Formulation, Bubble Diagram and activity zoning. b. Design development- site development c. Design development- floor Plans		
	Unit 5	**Finalisation**		
		a. Design development- sections and elevations b. Model making on appropriate scale c. Final portfolio submission		
	Mode of examination	Jury		
	Weightage Distribution	CA	**CO1,CO3**	ETE
		50%		50%
	Text book/s*	-		
	Other References			

ARJ 302 – Construction Material & Methods-IV

School: SAP		**Batch : 2017-22**
Program: B. Arch		**Current Academic Year:** 2019-20
Branch:		**Semester: 5**
1	Course Code	ARJ 302
2	Course Title	Construction Material & Methods-V (CMM-V)
3	Credits	6
4	Contact Hours (L-T-P)	2-2-2
	Course Status	Compulsory
5	Course Objective	1.To generate a basic understanding of the prefab construction 2.To familiarize the students with the constructional details of Prefab construction including open prefab systems, large panel prefab system, joints, precasting methods, on-site and off-site prefabrication, components. 3.To help them understand the methods of pre-stressing and post-tensioning of concrete, their application in large space structures today. 4.To familiarize the students with the components of Steel structures, their application, joinery, construction details of multi-storeyed steel structures, forms and materials for speedy construction from foundation to roofing, from walls to slabs, from structure to facade. 5.Study of Trusses- Wooden & Steel, their types, construction details and coverings. 6.To cultivate personal observation and self learning in the students, site visits should be conducted so as to cover the given syllabus. 7.To help students observe measure, sketch and annotate what they see at site and submit a site visit report to the teachers concerned for evaluation. This shall form part and parcel of the sessional work for internal assessment.
6	Course Outcomes	CO1: Explain the basic construction of steel, wooden and prefab structures. CO2: Illustrate the applications of prefab construction, steel construction, it's components and details from foundation to roofing. CO3:Apply all related details concerned with the material in the components studied.
7	Course Description	This Construction Studio is designed to study the Precast and Modular construction practices involving open prefab system, large panel prefab system. The students are introduced to pre-stressing and post-stressing of concrete, their characteristics and applications. The students are taught the construction basics of steel and wooden

		structures, their differing characteristics and the varying ways employed in the making of muti-storeyed buildings.		
8	Outline syllabus			
	Unit 1	**Precast and Modular Construction Practices**		
	A	Materials and Building components in small prefab construction		
	B	Prefabrication Material and Systems – open prefab system, large panel prefab system, joints, precasting methods, materials, on-site and off-site prefabrication, components, etc		
	C	Assembly of components, tolerances, modules, reference system, grids, positioning of functional elements – slabs, walls, staircases; Standardization in buildings' design and their components.		
	Unit 2	**Precast and Modular Construction Practices –Pre stressing & Post tensioning**		
	A	Pre-stressed Concrete Introduction, methods of pre-stressing and their application to large space structures		
	B	Pre-stressed Concrete-Materials for pre-stressing Classification, Availability, Characteristics and Uses		
	C	Post-tensioned Concrete, their applications & characteristics		
	Unit 3	**Steel structures**		
	A	Metal as building material, application, advantages, disadvantages, characteristics etc.		
	B	Elements and Components of Steel and Wooden structures -Beams ,Columns etc.		
	C	Joinery of Steel and Wooden structures		
	Unit 4	**Steel structures**		
	A	Foundation, Floors, Slabs, mezzanine floors		
	B	Portal frames, Space frames, their assembly & construction		
	C	Multi storied steel structure / Speed floors - Forms & materials for speedy construction, and the construction methods		
	Unit 5	**Trusses- Wooden & Steel**		
	A	Types of inclined roofs, Lean-to roofs, King Post and Queen Post trusses.		
	B	Roof coverings using AC/CGI sheets, Gutters, Ridge and Valley detail		
	C	Site exposure		
	Mode of examination	Jury		
	Weightage Distribution	CA	MTE	ETE
		50%	-	50%
	Text book/s*			

ARJ 303 – Digital Design Fabrication – III (DDF-III)

School: SAP		**Batch : 2020-25**
Program: B. ARCH		**Current Academic Year:** 2020-21
Branch: ARCH		**Semester: 5**
1	Course Code	ARJ 303
2	Course Title	Digital Design Fabrication – III (DDF-III)
3	Credits	4
4	Contact Hours (L-T-P)	0-2-2
	Course Status	Compulsory
5	Course Objective	• Understanding of Autodesk Revit as an example of parametric BIM building modelling software. • Knowledge of options to work collaboratively on Virtual Design and Construction (VDC) projects. • Knowledge and Understanding of functional and aesthetic requirements of architecture and the application of those in virtual environments. • Knowledge of advanced CAD/BIM principles: Interoperability, software extensions, scripting/automation, texturing/rendering, workflow methods and others.
6	Course Outcomes	CO1. Ability to create a parametric building information model ("BIM" = a 3d object-oriented model of a building where each component has "intelligent" behaviours and embedded data) and extract data. This approach facilitates the creation of construction documents (plans, elevations etc.), material takeoffs and building schedules as well as performance (e.g. building energy) analysis. CO2. Ability to use CAD/BIM-based tools to solve technical issues (fabrication, energy efficiency, lighting, structural etc.) during the planning process.
7	Course Description	In this module the students will learn Centered on problem-based tasks, topics such as 3-dimensional modeling, design for fabrication, parametric building design, building information modeling (BIM), material takeoff, energy-efficient planning and model analysis, rendering and presentation, and others will be explored.
8	Outline syllabus	
	Unit 1	**Introduction to BIM and BIM tools**
		Sub unit - a, b and c detailed in Instructional Plan
	Unit 2	**Design development process in BIM & Tools of parametric design**
		Sub unit - a, b and c detailed in Instructional Plan
	Unit 3	**Building modelling using BIM tools**
		Sub unit - a, b and c detailed in Instructional Plan

	Unit 4	**Scheduling and detailing with Advance BIM implementation**		
		Sub unit - a, b and c detailed in Instructional Plan		
	Unit 5	**Output Renders**		
		Sub unit - a, b and c detailed in Instructional Plan		
	Mode of examination	Jury/Practical/Viva		
	Weightage Distribution	CA	**CO1,CO3**	ETE
		50%		50%
	Text book/s*	Autodesk 3ds Max 2018 Essentials, Inside Rhinoceros 6, Lumion 3D Cookbook - Brightman Designs		
	Other References			

ART 304 -History, Theory & Criticism -5

School: SAP		**Batch : 2020-25**
Program: B.Arch		**Current Academic Year:** 2020-21
Branch:		**Semester: V**
1	Course Code	ART 304
2	Course Title	History, Theory & Criticism –V (HTC-V)
3	Credits	2
4	Contact Hours (L-T-P)	2-0-0
	Course Status	Compulsory
5	Course Objective	1. To understand the historical development through the 20th to the 21st century 2. To understand the political economy of the period 3. To understand Cultural and Social significance of the period 4. To identify and study the salient features of the architectural styles during the 20th to the 21st century.
6	Course Outcomes	CO1. Identify main characteristics of modern architecture, recognizing Influences and major concepts - identify buildings, ideas, and architects that portray Modern and Contemporary Architecture. CO2. Interpret & discuss the socio-cultural context of the 20th and 21st centuries within which these theoretical approaches to design have developed. CO3. Compare & critique the various approaches to design in relation to their historical context. CO4. Comprehend key architectural works, cultural movements and ideas, their theoretical and cultural context and relevance to design
7	Course Description	The History, Theory and Criticism (HTC) program deals specifically with the socio-political, historical and cultural dimensions of Architectural history from 1750 AD to 1950 AD. Through this module students develop a deeper understanding of the architectural styles during the period and famous examples of the same.
8	Outline syllabus	
	Unit 1	**Indian Architecture**
	A	Indo-Saracenic style
	B	Modern Architecture in India
	C	Philosophies, theories of indo Saracenic style architect
	Unit 2	**Early modern architecture**
	A	Art Deco
	B	Bauhaus
	C	The International style
	Unit 3	**Contemporary Architecture**
	A	Emergence of the Modern Movement in 20th C.
	B	Avant-garde: Futurism, Constructivism, De Stijl, Expressionism etc.

	C	Urban visions: The Birth of the skyscraper, Mega structures.		
	Unit 4	**Works and Philosophies**		
	A	Le Corbusier and the Esprit Nouveau		
	B	Le Corbusier's Chandigarh		
	C	Alvar Aalto and the Nordic tradition		
	Unit 5	**Architects of modernist movement**		
	A	Mies van der Rohe		
	B	Frank Lloyd Wright		
	C	Frank Gehry		
	Mode of examination	Theory		
	Weightage Distribution	CA	MTE	ETE
		30%	20%	50%
	Text book/s*	1. European Architecture 1750-1890 by Barry Bergdoll 2. Modern Architecture by Alan Colquhoun 3. Space, Time and Architecture — Sigfried Giedion 4. Theory and Design in the First Machine Age | The MIT Press by Reyner Banham		
	Other References			

ART 305 – Environment Sustainability and Services III

School: SAP		**Batch : 2020-25**
Program: B.Arch		**Current Academic Year:** 2020-21
Branch: Architecture		**Semester:5**
1	Course Code	ART 305
2	Course Title	Environment Sustainability and Services-III (ESS-III)
3	Credits	2
4	Contact Hours (L-T-P)	2-0-0
	Course Status	Compulsory
5	Course Objective	• to explain the importance of good lighting, types, distribution of lamps, lighting effect • to introduce concepts of heating, ventilation and air conditioning as a building service and the functioning of varied types of systems, advantages • to initiate air-conditioned building design including ducting and distribution • to explain the functioning of lifts, types, sizes, standards • to inculcate efficient energy design of buildings and the relevant norms and standards
6	Course Outcomes	CO1: Knowledge of the functions of artificial lighting, types, effects, design CO2: Familiarity with air conditioning system, various components, function, working, types of cooling and heating CO3: Make informed choice of appropriate air conditioning system in buildings and incorporate necessary design features CO4: Knowledge on various types of lifts, elevators, escalators, working, components, sizes, standards CO5: Familiarity with Concepts of Energy efficient building practices, relevant code and compliance strategies
7	Course Description	This course aims to familiarize the students with advanced building services like Heating, Ventilation, Air-conditioning, 9HVAC) Lifts and Artificial Lighting that are necessary in a multi-storeyed, conditioned large-scale building. It also introduces the concept of energy-efficient building design and the relevant codes and standards.
8	Outline syllabus	
	Unit 1	**Artificial Lighting**
	A	Illumination and Glare
	B	Choice of luminaries
	C	Architectural lighting and special effects

	Unit 2	**Air conditioning**		
	A	Principles of Air conditioning, Humidification & Dehumidification, Refrigeration cycle and air cycle, applications of refrigeration, Cooling Load		
	B	Methods of cooling: evaporative cooling, AC, Systems of Air conditioning: Unitary air conditioning systems and central air conditioning , Packaged etc		
	C	Methods of heating		
	Unit 3	**Air distribution system**		
	A	Description of plants and duct layout, various terminologies associated		
	B	Air distribution system-fans, filters, ductwork, outlets, dampers		
	C	Drawing an HVAC layout of a room showing Air distribution system		
	Unit 4	**Lifts, Conveyers and Escalators**		
	A	Types, control, arrangements and operation		
	B	Design standards from building codes.		
	C	Details of systems and equipments		
	Unit 5	**Energy Efficient Building Design**		
	A	ECBC Code and ISO 50001		
	B	Compliance Requirements and Demonstration		
	C	Energy Audits		
	Mode of examination	Theory		
	Weightage Distribution	CA	MTE	ETE
		30% (1 test +2 Quizzes)	20%	50%
	Text book/s*	Hall, F., Greeno, R., (2013) Building Services Handbook, 7th ed. Routledge Publication, New York		
	Other References	1. Severns, W.H., Fellows, (1958) J.R., Air-conditioning and Refrigeration, John Wiley & Sons Inc 2. A.F.C. Sherrat. (1980) Air Conditioning and Energy Conservation CIDC Architectural Press 3. Mujamdar, M.,(2002) Energy-efficient buildings in India, TERI & Ministry of Non-Conventional Energy Sources, New Delhi 4. National Building Code – 2005, Bureau of Indian Standards, New Delhi		

ART 306 – Architectural Structures-3

School: SUSAP		**Batch : 2017-22**
Program: B.ARCH		**Current Academic Year:** 2019-20
Branch:		**Semester:5**
1	Course Code	ART 306
2	Course Title	Architectural Structures-III
3	Credits	2
4	Contact Hours (L-T-P)	2-0-0
	Course Status	Compulsory
5	Course Objective	1. To understand the design elements of Reinforced Cement Concrete 2. To understand the design elements of Steel structures along with Soil mechanics and foundation engineering.
6	Course Outcomes	CO1: Demonstrate systematic knowledge of developing architectural forms based on structural systems CO2: Understand the interdependence of architectural form and structural system of a structure CO3: Identify basic structural systems CO4: Demonstrate the current knowledge and the latest trends in structural systems of contemporary architecture.
7	Course Description	The course is an understanding of the basic principles of structural mechanics so that it forms the basis for study of structure systems. The students are exposed to a wide variety of examples that teach them to appreciate structural systems in steel structures. Through a series of practical exercise participants will be familiarized with how structural steel interacts with each other. To impart knowledge about the necessity and techniques of prefabricated building components.
8	Outline syllabus	
	Unit 1	
	A	Steel - Mechanical properties of steel, Structural steel products and advantage of steel as structural materials, Basis of structural design(Codes and Specifications, Design philosophies)
	B	Introduction to Steel members - Introduction to steel structural components. Beam, Column Compression members, Basic Column Bases and foundation.Tension members.
	C	Design of connections - Design of Riveted connections, Design of Bolted connections, Design of Welded connections
	Unit 2	
	A	Steel trusses for large span- Introduction to trusses. Types of Trusses. Standard Trusses SP38

	B	Composite construction & Prefabrication - Introduction to Girders Space , Pre-engineered buildings/Prefabricated buildings. Modular concepts		
	C	Design of Column - Detail of axially loaded short and long columns. Detail of eccentrically loaded short and long columns .Design for direct and uni-axial bending, use of design aids.		
	Unit 3			
	A	Soil mechanics - Soil mechanics (characteristics, bearing capacity, lateral pressure due to soil and underground water, soil investigation report and safe bearing capacity of soil).		
	B	Foundation - Introduction of different types of foundation w.r.t. SBC		
	C	Retaining Walls		
	Unit 4			
	A	Foundation Design - Design of simple R.C.C. isolated footing, introduction to framed structure. Behaviour of structure under wind load and seismic load.		
	B	Types of joints - Construction joints & Expansion joints in R.C.C. framed building.		
	C	Water proofing systems - Various types of water proofing systems		
	Unit 5			
	A	Flat slab, Coffered slab, Shells & Folded Plates		
	B	Pre stressed beams		
	C	Pre stressed slabs		
	Mode of examination	Theory		
	Weightage Distribution	CA	MTE	ETE
		30%	20%	50%
	Text book/s*			

AEJ-307- High Rise Building

School: SAP		**Batch : 2020-25**
Program: B. Arch		**Current Academic Year: 2020-21**
Branch:		**Semester: 5**
1	Course Code	AEJ 307
2	Course Title	High Rise Buildings
3	Credits	2
4	Contact Hours (L-T-P)	2-0-0
	Course Status	Elective
5	Course Objective	1. to introduce the various parameters to describe the High rise building 2. to explain the characteristics globally both at urban and metropolis level 3. to discuss services in buildings and to introduce concept of efficiency. 4. to outline the principles of High rise building design, and environment with their implications on comfort, functional elements 5. to enumerate various intervention strategies to modify building and their social and sustainable impact. 6. to encourage development of creative ideas for futuristic building design
6	Course Outcomes	CO1: Describe high rise construction and its architectural intervention CO2: Demonstrate an understanding of the concept of high-rise in cities. CO3: Discover level of special services require in buildings, its various structure techniques CO4 Understanding of material properties w.r.t. climate and sustainability. CO5: Campare ways to modify heat gain, day-light and ventilation in buildings CO6: Develope design features for enhancing futuristic approaches, vertical cities in design
7	Course Description	This course aims to introduce study of high rise building design its need and implication on built environment from architectural point of view and establishes the link between the climate of a place, environment and social issues. It also prepares students to design and think futuristic building design
8	Outline syllabus	
	Unit 1	**High Rise Building**
	A	Introduction to the basic terms high rise building, design considerations
	B	Introduction to characteristics of high rise building, Understanding various terminologies
	C	Methods of estimating different components of a building, Reasons for

		high rise development		
	Unit 2	**Structure of High Rise Building**		
	A	Evoluation of structural system		
	B	Design , consideration and elements in Tubular system		
	C	Design , consideration and elements in Steel structure and Braced frame system		
	Unit 3	**Future development**		
	A	High rise building ,Present and Future		
	B	Vertical cities - the new form of high-rise construction evolution		
	C	High rise building case studies		
	Unit 4	**Environmental Impact**		
	A	Aspect and significance of high rise building in urban area		
	B	Social Sustainability of High-rise Buildings		
	C	On the Psychological Impacts of High rise Living - Building the Skyline		
	Unit 5	**High Rise building Services**		
	A	Design of lifts and elevators in high rise buildings, byelaws, fire escape		
	B	Design ,components and features of H.V.A.C, Plumbing and sanitation services in high rise building		
	C	Design ,components and features of electrical services in high rise building		
	Mode of examination	Theory/Jury		
	Weightage Distribution	CA	MTE	ETE
		30%	20%	50%
	Text book/s*			
	Other References			

CCU 302 – Community Connect

School: SAP		**Batch : 2020-25**
Program: B.Arch		**Current Academic Year: 2020-21**
Branch:Architecture		**B.Arch (V & VI) , M.Arch (I)**
1	Course Code	CCU 302
2	Course Title	Community Connect
3	Credits	2
4	Contact Hours (L-T-P)	0-0-4
	Course Status	Compulsory
5	Course Objective	1. The objective of assigning the project related to community work is to expose our students to different social and infrastructural issues faced by the people in different sections of society in rural areas. 2. This type of project work will help the students to develop better understanding of problems of people living in a less privileged position in the society, may be socially, medically, economically, in the built fabric or otherwise. 3. This type of live project work will help our students to connect their class-room learning with practical issues/problems in the rural setup.
6	Course Outcomes	CO1: The community connect project will enable our students to acquire knowledge and skills which will help them understand, project and perceive rural setup. CO 2 : These types of activities will give practical exposure to our students to understand different current issues, analyse them from a rural perspective & suggest solutions for the same. CO 3 : Students will learn to do research.
7	Course Description	The course shall enable the students to be able to connect with the community and provide them with architectural solutions for the social issues that they face in their day to day life. Major sub themes for research are - g. Impact of government projects in community h. Social issues through surveys i. Environment issues through primary and secondary surveys j. Economic issues, through census and primary surveys. k. Technology-adaption l. Infrastructure Issues.
8	Outline syllabus	
	Unit 1	**Introduction to the Research problem**
	A	d) Statement of the problem.
	B	e) Purpose of the study
	C	f) Significance of the study.
	Unit 2	**Literature/ On site review**
	A	d) Identify and group together common areas.

	B	e) Compare, contrast and evaluate issues.		
	C	f) Demonstrate why the topic and research is relevant to your field of study.		
	Unit 3	**Methodology**		
	A	d) Sample		
	B	e) Data collection		
	C	f) Data analysis		
	Unit 4	**Implications and Limitations of study**		
	A	d) Identifying the limitations and how important each limitation is.		
	B	e) Explaining the nature of limitations.		
	C	f) Suggesting how such limitation could be overcome		
	Unit 5	**Implications and Recommendations**		
	A	d) Specific measures or directions that can be taken		
	B	e) Critical suggestion regarding the best course of action in a certain situation		
	C	f) *Guide to resolve issues and result in a beneficial outcome*		
	Mode of examination	Jury		
	Weightage Distribution	CA	MTE	ETE
		-	-	100 %
	Text book/s*			
	Other References			

SEMESTER 6

ARJ 311- Architectural Design Studio-IV

School: SUSAP		**Batch : 2020-25**
Program: B.ARCH		**Current Academic Year:** 2020-21
Branch:		**Semester:** 6
1	Course Code	ARJ 311
2	Course Title	Architectural Design-VI
3	Credits	12
4	Contact Hours (L-T-P)	2-2-6
	Course Status	Compulsory
5	Course Objective	• The aim of the studio is to develop sensitivity to building by laws and to understand varied structural building systems. • To Explore and design systems involving complex services for different requirements • To develop sensitivity to building for large crowds • To sensitise them to observing their environment and incorporating the learning's into their design.
6	Course Outcomes	CO1: students should develop skills of drawing and representation CO2: to assimilate learning of graphics, construction, structures and computers to apply to basic design. CO3: Explore creative processes and idea generation and demonstrate critical evaluation of these processes in their projects. CO4: Appraise how design can impact, interact with, and improve environments.
7	Course Description	The studio deals with the study the study of complex projects with intricate building services like- Hospital/ Hotel/Convention Centre/Group Housing Design etc and Integration of Design ideas with structural feasibility The design problem would induce students to sensitivity towards horizontal as well as vertical circulation requirements in a multi-storeyed building. Exercises relating personal experiences to behavioural needs and translating them into documented information that can be used as a basis for design. Introduction to other role players in the Architectural process viz; the client and the user.
8	Outline syllabus	
	Unit 1	**Minor Project**

		a. Introduction to Minor project b. Form and material based investigation c. Understanding spatial aspects based on activity, space, form and human scale.		
	Unit 2	**Minor Project- finalization**		
		a. Pre design study-Case study and functional standards b. Concept formulation and idea investigation c. Final design presentation		
	Unit 3	**Major Project- Conceptual**		
		a. Introduction to Major project b. Preparation of design requirements, area requirements based on standards and their interrelation and circulation patterns. c. Pre design study -Literature Study, Site Analysis, Case Study.		
	Unit 4	**Concept Development**		
		a. Concept Formulation, Bubble Diagram and activity zoning. b. Design development- site development c. Design development- floor Plans, circulation, services and landscape		
	Unit 5	**Finalization**		
		a. Design development- sections and elevations b. Model making on appropriate scale with understanding of structural systems c. Final portfolio submission		
	Mode of examination	Jury		
	Weightage Distribution	CA	**CO1,CO3**	ETE
		50%		50%
	Text book/s*	-		
	Other References	As per studio programme		

ARJ 312 – Construction Material & Methods-VI

School: SAP		**Batch : 2020-25**
Program: B. Arch		**Current Academic Year: 2020-21**
Branch:		**Semester: 6**
1	Course Code	ARJ 312
2	Course Title	Construction Material & Methods-VI (CMM-VI)
3	Credits	6
4	Contact Hours (L-T-P)	2-2-2
	Course Status	Compulsory
5	Course Objective	1.To make students understand the curtain walling and structural glazing systems used in facade. 2.To familiarize the students with different conventional wall and floor finishes. The students are introduced to Gypsum, it's various components and jointing details. 3.To help them understand the methods of wet and dry cladding in different material. 4.To introduce students with different types of false ceilings, gypsum false ceilings, it's construction details and incorporation of services. 5.The students are taught about the internal partition details,kitchen and toilet details and construction details of furniture. 6.To cultivate personal observation and self learning in the students, site visits should be conducted so as to cover the given syllabus. 7.To help students observe measure, sketch and annotate what they see at site and submit a site visit report to the teachers concerned for evaluation. This shall form part and parcel of the sessional work for internal assessment.
6	Course Outcomes	CO1:Understand and comprehend the facade systems including cladding materials and glazing systems. CO2: Illustrate the construction of interior finishes, flooring, wall and false ceiling,interior partitioning and furniture details. CO3: Apply all related details concerned with the material in the components studied. CO4: Understand spaces with three-dimensional visualization through the use of block models and appropriate software.
7	Course Description	This Construction Studio is designed to study the Internal floor and wall finishes of wet and dry cladding systems. The students are introduced to the use of gypsum as a product used in false ceilings and internal partitions apart from other conventional materials. The students are taught the curtain walling systems and structural

		glazings, characteristics of glass as a building material. The students will also study the constructional details of furniture and new composite materials. The students are encouraged to conduct a market research of new materials in design and construction.		
8	Outline syllabus			
	Unit 1	**Curtain walling/ structural glazing**		
	A	Curtain walling- Conventional Stick System, Semi unitized system, Unitized system, etc		
	B	Structural glazing both on walls and roofs/ Site Exposure		
	C	Introduction- Glass as a building material, types & its applications, factors defining performance & selection of Glass		
	Unit 2	**Wall and Floor Finishes**		
	A	Floor & Floor Finishes Brick, Cement Concrete, Stone, Terrazzo, Chequered Tile, Ceramic Tile, Vitrified Tiles, Wooden.		
	B	Wall finishes- Gypsum Plaster, Components and Accessories, Jointing and Finishing. Paints and Plaster		
	C	Materials and Details of Cladding -wet and dry in different materials, market research		
	Unit 3	**False Ceilings and Furniture details**		
	A	Introduction to different types of False ceilings and their materials.		
	B	Gypsum Products Introduction - Gypsum Board, Suspended Ceiling (Board & Tiles). Construction details of different false ceilings		
	C	Construction details of furnitures		
	Unit 4	**Internal Partitions**		
	A	Construction details of Metal Partition		
	B	Construction details of Wooden Partition		
	C	Construction details of Glass Partition		
	Unit 5	**Application of materials and techniques in specific areas -Detailed drawings**		
	A	Kitchen details etc		
	B	Toilet details etc		
	C	Market research of new materials		
	Mode of examination	Theory/Jury/		
	Weightage Distribution	CA	MTE	ETE
		50%	0%	50%
	Text book/s*			
	Other References			

ARJ 313 – Digital Design Fabrication-V

School: SAP		**Batch : 2020-25**
Program: B. ARCH		**Current Academic Year: 2020-21**
Branch: ARCH		**Semester: 6**
1	Course Code	ARJ: 313
2	Course Title	Digital Design Fabrication – V (DDF-V)
3	Credits	4
4	Contact Hours (L-T-P)	0-2-2
	Course Status	Compulsory
5	Course Objective	In this course, key phenomena and concepts in the field of digital fabrication are introduced and analyzed. The course deals with digital fabrication based on three overlapping perspectives: technology, crafts, and theory. The technological perspective highlights the technologies, concepts and processes that enable digital fabrication (including additive and subtractive manufacturing, CAD/CAM). The craft perspective puts emphasis on the various craftmanship abilities that are expressed in digital fabrication practices in seeking to transform an idea into a tangible prototype. The theory-focused perspective implies an appreciative feature of the course in which digital fabrication is discussed in terms of what changes digital fabrication can entail for organizations.
6	Course Outcomes	1. Explain what characterizes central technologies in digital fabricatio 2. Explain theories that are relevant to how digital fabrication involves changes for organizations and organizing. Regarding proficiency and aptitude, the student is, after the course, expected to be able to: 3. Independently translate an idea into a tangible prototype using techniques and methods in digital fabrication. 4. From given circumstances, in groups, carry out design work that is materialized through prototypes based on digital fabrication. Regarding evaluative capacity and approach, the student is, after the course, expected to be able to: 5. Assess what type or combinations of types of digital fabrication technologies that are appropriate for the task at hand. 6. Critically review and assess the introduction and shift to digital fabrication in manufacturing organizations. 7. Analyze organizational implications of digital fabrication.
7	Course Description	This course is a hands-on exploration and apprenticeship in the art and process of digital fabrication. The course will assist students in nurturing the ability to efficiently translate ideas and concepts into

		digitally produced physical objects. Students will be given the opportunity to develop the skills necessary to maintain, calibrate and troubleshoot equipment in a fabrication lab as well as learn what it takes to keep a lab in operation. The future is present in the now. It is a magical time that we must take advantage of.		
8	Outline syllabus			
	Unit 1	**Introduction to Advance 3D Modelling**		
		Sub unit - a, b and c detailed in Instructional Plan		
	Unit 2	**Design development process**		
		Sub unit - a, b and c detailed in Instructional Plan		
	Unit 3	**Understanding of Farication materials**		
		Sub unit - a, b and c detailed in Instructional Plan		
	Unit 4	**Using technology for Digital Design Fabrication in the form of Prototype**		
		Sub unit - a, b and c detailed in Instructional Plan		
	Unit 5	**Output Project**		
		Sub unit - a, b and c detailed in Instructional Plan		
	Mode of examination	Jury/Practical/Viva		
	Weightage Distribution	CA	**CO1,CO3**	ETE
		50%		50%
	Text book/s*	Anderson Chris Makers : the new industrial revolution		
	Other References			

ART 314 -History, Theory & Criticism -VI

School: SUSAP		**Batch : 2020-25**
Program: B.ARCH		**Current Academic Year: 2020-21**
Branch:		**Semester:6**
1	Course Code	ART 314
2	Course Title	History, Theory & Criticism - VI
3	Credits	2
4	Contact Hours (L-T-P)	2-0-0
	Course Status	Compulsory
5	Course Objective	1. To understand the historical development through the 20th to the 21st century 2. To understand the political economy of the period 3. To understand Cultural and Social significance of the period 4. To identify and study the salient features of the architectural styles during the 20th to the 21stcentury.
6	Course Outcomes	CO1: Identify main characteristics of modern architecture, recognizing Influences and major concepts - identify buildings, ideas, and architects that portray Modern and Contemporary Architecture. CO2: Interpret & discuss the socio-cultural context of the 20th and 21st centuries within which these theoretical approaches to design have developed. CO3: Compare & critique the various approaches to design in relation to their historical context. CO4: Critique the architectural style in the historical context.
7	Course Description	This module deals specifically with the socio-political, historical and cultural dimensions of Architectural history from the 20th century to the 21st century. Through this module students develop a deeper understanding of the architectural styles during the period and famous examples of the same.
8	Outline syllabus	
	Unit 1	**Post Modern Architecture**
	A	Historical background
	B	Architecture
	C	Materials and Technology
	Unit 2	**Critical Regionalism**
	A	Historical background
	B	Architecture
	C	Materials and Technology

	Unit 3	**Late Modernism**		
	A	Historical background		
	B	Social beliefs and Architecture		
	C	Materials and Technology		
	Unit 4	**Deconstructivism**		
	A	Historical background		
	B	Social beliefs and Architecture		
	C	Materials and Technology		
	Unit 5	**Comparison and Critique**		
	A	Comparison - Styles of Architecture 20th – 21st Century		
	B	Critque - Styles of Architecture 20th – 21st Century		
	C	Term Paper		
	Mode of examination	Theory		
	Weightage Distribution	CA	MTE	ETE
		30%	20%	50%
	Text book/s*			
	Other References			

ART 315 – Environment Sustainability and Service-IV

School: SAP		**Batch : 2020-25**
Program:B.Arch		**Current Academic Year: 2020-21**
Branch:Architecture		**Semester:6**
1	Course Code	ART 315
2	Course Title	Environment Sustainability and Service-IV
3	Credits	2
4	Contact Hours (L-T-P)	2-0-0
	Course Status	Compulsory
5	Course Objective	1.To explain the water supply and distribution, requirement of in buildings 2.To explain the principal and requirement of sanitation, Fixtures and terms involved 3.To understand the electrical system , distribution, installation and material. 4.To explain the schematic layout of simple water, sanitation and electrical for domestic and public buildings. 5. To introduce system of environment control and management
6	Course Outcomes	CO1: Knowledge of the functions of water supply distribution and management CO2: Familiarity with sanitation system its various components, their working, and types CO3: Make informed choice of appropriate wire selection in buildings and incorporate necessary design features CO4: Knowledge on various types of electrical, plumbing and sanitary services, working, components, sizes, standards CO5: Familiarity with Concepts of environment control and management strategies
7	Course Description	This course aims to familiarize the students with advanced building services like Fire Fighting, Acoustics, and Building Smart Technologies that are necessary in a multistoried, large-scale building. It also introduces the concept of energy-efficient building design and the relevant codes and standards.
8	Outline syllabus	
	Unit 1	**Fire Fighting**
	A	Causes & spread of fire, Fire fighting in multi-storey building, Combustibility of materials and safety norms, Fire resistant materials
	B	Fire detection and fire fighting equipments, Fire norms as per NBC
	C	Design of fire escapes layout, Fire detection and suppression system

		for buildings		
	Unit 2	**Acoustics & Measurement of Sound.**		
	A	Need of this special services, Cycles/sec, Decibels (dB), Effects & behaviour of sound		
	B	Inter space noise , Science of sound, Control and acoustical solutions (ABC)		
	C	Reverberation, Sound waves, Squeeze, Flanking, calculation, Reverberation time		
	Unit 3	**Sound transmission**		
	A	Class (STC) , Ceiling Attenuation, Class (CAC) ,Transmission Loss (TC), Impact Isolation Class (IIC)		
	B	Noise Reduction, Co- efficient etc.		
	C	Case study of Auditorium		
	Unit 4	**Building Smart Technologies**		
	A	Various Technologies such as Wind turbine technology, its concept, characteristics , standards , application and cost analysis Nanotechnology, its worldwide scenario, application and scope in future		
	B	Sensor technology in a building includes its installation, various types and standards		
	C	Building Integrated Photovoltaic Technology (BIPV). The Module shall culminate by analyzing the design and application of the various technologies studied in Intelligent Buildings		
	Unit 5	**Façade technology**		
	A	Double skin facade		
	B	Energy generating facades		
	C	Zero Energy Buildings		
	Mode of examination	Theory		
	Weightage Distribution	CA	MTE	ETE
		30%	20%	50%

ART 316 - Building, Estimation & Costing

School: SAP		**Batch : 2020-25**
Program: B. Arch		**Current Academic Year: 2020-21**
Branch:		**Semester: 6**
1	Course Code	ART 316
2	Course Title	Building, Estimation & Costing
3	Credits	2
4	Contact Hours (L-T-P)	2-0-0
	Course Status	Compulsory
5	Course Objective	1. To know the various types of estimates and the techniques for preparing them 2. To know the importance and uses of specifications and how to write them 3. To know how to calculate the rates for a unit of work to be executed 4. To know the process of valuation of properties and how to prepare a valuation report
6	Course Outcomes	CO1: To knows and Recall the process of Construction stage wise and the type of Construction and materials used. CO2: To be able to Comprehend and understand the various processes of Estimating, Valuation, and tendering CO3: Execute and Implement the appropriate methods for preparing the estimates and valuation reports CO4: Demonstrate the acquired knowledge to complete a building Estimate/ Valuation report. CO5: Compares, evaluates, interprets the building typologies for preparing an estimate or doing the valuation , Justify with the help of documents and analysis
7	Course Description	This module introduces students to the methods of estimation and costing. Students are also familiarized with the specifications in a building project. The module also strives to inculcate awareness regarding the factors affecting the cost of buildings. Further it also deals with introducing to the students the methods of rate analysis for buildings components. Students would also familiarize with the valuation of building projects.
8	Outline syllabus	
	Unit 1	**Classification of Areas & Types of Estimates**
	A	Introduction to the basic terms used in Estimation , Important considerations while preparing an Estimate
	B	Introduction to various types of Estimates , Understanding various terminologies of estimates
	C	Methods of estimating different components of a building
	Unit 2	**Methods of building estimates**

	A	Preparation of Bill of Quantities (BOQ		
	B	Introduction of Centreline method & individual wall method of building estimate		
	C	Methods for preparation of Preliminary estimate		
	Unit 3	**Specifications**		
	A	Introduction to Specifications , Important considerations while Writing the Specifications		
	B	Specifications as per CPWD, PWD etc., and how to read them		
	C	Writing Specifications for Building work Writing Specifications for Interior finishing and FurnishingWorks		
	Unit 4	**Analysis of Rates**		
	A	Introduction to Schedule of Rates , Importance of Rate Analysis, Considerations done while doing the Rate Analysis		
	B	Calculations for basic building materials like RCC, Brick work		
	C	Calculating the various quantities of materials required per unit		
	Unit 5	**Valuation of Properties**		
	A	Introduction to the concepts of Valuation , Various considerations taken while doing valuation		
	B	Process of Valuation		
	C	Preparing valuation report		
	Mode of examination	Theory		
	Weightage Distribution	CA	MTE	ETE
		30%	20%	50%
	Text book/s*			
	Other References			

AEJ 320 - Trends In Planning And GIS

School: SUSAP		**Batch : 2020-25**
Program: B.ARCH		**Current Academic Year: 2020-21**
Branch: -		**Semester:6**
1	**Course Code**	AEJ 320
2	**Course Title**	Trends In Planning And GIS
3	**Credits**	2
4	**Contact Hours (L-T-P)**	2-0-0
	Course Status	Elective
5	**Course Objective**	The proposed course provides basic understanding about GIS Technology.
6	**Course Outcomes**	CO1: Identify GIS and its components CO2 : Illustrate the types of data used in a GIS software CO3 : Analyze techniques used in GIS such as spatial interpolation, map projection etc. CO4 : Compose the GIS analysis sheets
7	**Course Description**	This course is designed to help the students understand the basics of GIS and be able to analyse the different components of the software. Presently, GIS is being used extensively in various domains including in civil engineering, water resources, earth sciences, transportation engineering, navigation etc. Google Earth and Google Map are very popular custom designed user friendly GIS products which are widely used for various purposes including in navigation etc. As students of Architecture applications of GIS can be used to develop the understanding of its application in an urban context , which shall enable them to develop their critical evaluation skills for integration of built environment in an existing fabric of a city.
8	**Outline syllabus**	
	Unit 1	**What is Geographic Information Systems ?**
		1. Different components of GIS 2. Different types of vector data , Raster data models and their types **3.** TIN data model

	Unit 2	**Advantages and disadvantages associated with vector , raster and TIN**		
		1. Raster data compression techniques 2. Different raster data file formats **3.** TIN and vector data advantages over raster data		
	Unit 3	**Database systems**		
		1. Introduction to Data systems and their types 2. Spatial database systems and their types **3.** Non-spatial data (attributes) and their type		
	Unit 4	**Pre-processing of spatial datasets**		
		1. Different map projections 2. Spatial interpolation techniques **3.** Different types of resolutions & Digital Elevation Model (DEM)		
	Unit 5	**Quality assessment of freely available DEMS**		
		1. GIS analysis-1 2. GIS analysis-2 and applications **3.** Errors in GIS & Key elements of maps		
	Mode of examination	**Jury**		
	Weightage Distribution	**CA**	**MTE**	**ETE**
		50%	**0%**	**50%**
	Text Books	Fundamentals of GIS by Micheal Demers Concepts and Techniques of Geographic Information System by Lo and Yeung.		
	Other References	www.GISdevelopment.net		

SEMESTER 7

ARJ 401- Architectural Design –VII

School: SUSAP		**Batch : 2020-25**
Program: B.ARCH		**Current Academic Year: 2020-21**
Branch: Architecture		**Semester: 7**
1	Course Code	ARJ 401
2	Course Title	Architectural Design-VI
3	Credits	12
4	Contact Hours (L-T-P)	2-2-6
	Course Status	Compulsory
5	Course Objective	• The aim of the studio is to introduce students to High Density Development, Preferably High Density Housing • Exploring and designing systems involving complex services for different requirements • To develop sensitivity to building for large crowds To develop sensitivity to building by laws.
6	Course Outcomes	CO1: students should develop skills of drawing and representation CO2: to assimilate learning of graphics, construction, structures and computers to apply to basic design. CO3: Explore creative processes and idea generation and demonstrate critical evaluation of these processes in their projects. CO4: Appraise how design can impact, interact with, and improve environments. CO5: Understand spaces with three-dimensional visualization through the use of block models and appropriate softwares.
7	Course Description	Looking at the immediate built environment and understanding its fundamental components and their impact on the surroundings. The studio deals with the study of built form and its relationship to the site, surroundings and climatic setting. Design proposals to address sensitivity to people, climatic and physical settings. The design problem would induce students to experiment with built and open spaces.
8	Outline syllabus	
	Unit 1	Minor Project
		1a. Introduction to Minor project 1b. Form and material based investigation 1c. Understanding spatial aspects based on activity, space, form

		and human scale.		
	Unit 2	Minor Project- finalization		
		2a. Pre design study-Case study and functional standards 2b. Concept formulation and idea investigation 2c. Final design presentation		
	Unit 3	Major Project- Conceptual		
		3a. Introduction to Major project 3b. Preparation of design requirements, area requirements based on standards and their interrelation and circulation patterns. 3c. Pre design study -Literature Study, Site Analysis, Case Study. Project : 250- 600 Dwelling Unit		
	Unit 4	Concept Development		
		4a. Concept Formulation, Bubble Diagram and activity zoning. 4b. Design development- site development 4c. Design development- floor Plans		
	Unit 5	Finalisation		
		5a) Design development- sections and elevations 5b) Model making on appropriate scale 5c) Final portfolio submission		
	Mode of examination	Jury		
	Weightage Distribution	CA	**CO1,CO3**	ETE
		50%		50%
	Text book/s*	-		
	Other References			

ARJ 402 - Working Drawing -VII

School: SAP		**Batch : 2010-25**
Program: B. Arch		**Current Academic Year: 2019-2020**
Branch: Architecture		**Semester: 7**
1	Course Code	ARJ 402
2	Course Title	Architectural Working Drawing Studio-VII
3	Credits	12
4	Contact Hours (L-P-S)	2-2-6
	Course Status	Compulsory
5	Course Objective	1. To familiarize the students to the local building by laws. 2. To familiarize the students to the methods and components of submission /permit drawings based on the local by-laws. 3. To familiarize the students to the language of representation of working drawings and the methodology of preparing drawings. 4. To prepare a basic set of working drawings including site plan , landscape plan, floor plans, elevators, sections, detailed drawings of building compounds (kitchen, toilet, stairs, etc) and construction details as required (doors, windows, electrical, plumbing etc) 5. Preparation of schedule of finishes, doors, windows, drainage systems, etc.
6	Course Outcomes	CO1: To recognise the need and relevance of building by law and to apply them in the building design. CO2: To understand the methodology of presentation and representation in working drawings. CO3: To prepare detailed dimensioned working drawings of the building. CO4: To compare the various alternatives of available materials/ methods of construction details and incorporate the various services and apply them in the design. CO5: To produce a comprehensive and well designed and detailed-out set of working drawings good for execution of the building project.
7	Course Description	The module introduces the students to the local by-laws, their needs and interpretation and application in design including making a submission/ permit drawings. The students are taught how to generate a well detailed-out set of working drawings of the building project including site plan, floor plans, elevations, sections, details of building components (toilets, stairs, kitchen etc) and all other possible details. The working drawings set should be in such details that it is good for an error free execution of the project.
8	Outline syllabus	

	Unit 1	**Introduction to bylaws and working drawings**		
	A	Introduction to local building bylaws, there need relevance interpretations and application in the design.		
	B	Preparation of submission/ permit drawings as per the local by-laws.		
	C	Introduction to working drawings there methodology of dimensioning and how to prepare of comprehensive working drawings.		
	Unit 2	**Floor plans, Setting out plans / Centre lines plans**		
	A	Setting out plans, centre lines plans.		
	B	Site plan and landscapes plan (including details)		
	C	Floor plans		
	Unit 3	**Elevations and Sections**		
	A	Elevations		
	B	Sections		
	C	Skin/ Facade sections and details.		
	Unit 4	**Building components**		
	A	Kitchen details (plan, wall elevations, sections and details)		
	B	Toilet details (plan, wall elevations, sections and details)		
	C	Stairs details (plan, sections and details)		
	Unit 5	**Services and Miscellaneous details**		
	A	Electrical layouts (Architectural)		
	B	Plumbing layouts (Architectural) including water supply, sanitation, Architecture and fire (if required)).		
	C	Other Services (if required) and details of miscellaneous components (eg. Grills/Gates, Compound walls, Planters etc.		
	Mode of examination	Internal and External Jury		
	Weightage Distribution	CA	MTE	ETE
		50%	-	50%
	Text book/s*			
	Other References			

ART 403 - Urbanism

School: SUSAP		**Batch : 2020-25**
Program: B.Arch		**Current Academic Year: 2020-21**
Branch:		**Semester: 7**
1	Course Code	ART 403
2	Course Title	Urbanism
3	Credits	2
4	Contact Hours (L-T-P)	2-0-0
	Course Status	Compulsory
5	Course Objective	• To understand the basic elements, principles and techniques of urban design. • To understand the broader aspects and issues that bear upon the conception and built environment and public spaces at urban level. • To familiarize students with socio-economic issues and historical aspects of cities.
6	Course Outcomes	CO1: Define urban morphology and its component elements through the evolution of the city with an emphasis on the emergence and creation of archetypal urban space. CO2: Describe the characteristics of the typology of urban space based on a familiarity with historic examples CO3: Analyze existing urban conditions and urban issues, and study the transformation of cities and their morphology. CO4: the city with an emphasis on the emergence and creation of archetypal urban space.
7	Course Description	Urbanism introduces the study of urban character—built form, social realm, and natural systems—through a historical overview that contextualizes contemporary issues related to urban form and development. Students will be introduced to the theories, language, and vocabulary of urbanism through readings, web-based lectures, directed observation, and critical thought.
8	Outline syllabus	
	Unit 1	**Introduction**
	A	Introduction to Urban Design. Brief discussion on History, Need, objective and scope of Urban Design.
	B	Introduction to the various determinants of Urban Form with relevant examples urban Form, Configuration and Character.
	C	Introduction to the various determinants of Urban Form with relevant examples Activity pattern, socio-cultural factors, materials and texture etc.
	Unit 2	**Urban Design Principles and Theories**

	A	Brief discussion on Public Realm, Urban Connections, concepts of urban Design, Urban Scale, Mass, Space, Neighborhood concept, community space and hierarchy of urban spaces within the city.		
	B	Sustainable development, Urban Morphology and Façade Controls, Place Making, Place Branding, Place Promotion, Streetscape and Urban Infrastructure.		
	C	Kevin Lynch's Principles and case presentation. Elements of townscape- Gordon Cullen and case presentation.		
	Unit 3	**Urban Renewal and Conservation**		
	A	Introduction to the Urban Renewal. Discussion on Urban renewal schemes in Indian context.		
	B	Discussion on the role of urban conservation need and scope of urban conservation in Indian context. Relevance of urban conservation in historic areas in terms of present context.		
	C	Introduction to the Built Heritage and its importance. Issues related with physical deterioration of built heritage and its preservation.		
	Unit 4	**The Morphology of the Cities**		
	A	The Origins of Cities		
	B	Greek City States		
	C	Rome and Empire		
	Unit 5	**Transformations of the 19th Century and the modern movement**		
	A	The Industrial City		
	B	Garden and Park		
	C	The Modern Movement		
	Mode of examination	Theory		
	Weightage Distribution	CA	MTE	ETE
		30%	20%	50%
	Text book/s*			
	Other References			

ART 404– Landscape

School: SUSAP		**Batch : 2020-25**
Program: B.Arch		**Current Academic Year: 2020-21**
Branch:		**Semester: 7**
1	**Course Code**	ART 404
2	**Course Title**	Landscape Architecture
3	**Credits**	2
4	**Contact Hours (L-T-P)**	2-0-0
	Course Status	Compulsory
5	**Course Objective**	• Describe role and scope of landscape architecture. • Differentiate between garden styles in landscape architecture and its evolution through history. • Demonstrate the methods of representations in landscape architecture designs • Prepare landscape and site planning drawings
6	**Course Outcomes**	CO1: Identify the relationship of landscape architecture with nature. CO2: Distinguish between the different garden styles and its evolution through time. CO3: Analyze and evaluate landscape drawings to make site plan exercises. CO4: Prepare landscape design drawings using appropriate representational graphics.
7	**Course Description**	This course is designed to develop an understanding about landscape architecture and its relationship with nature. The course looks into various garden styles. The idea of site planning and landscape design is introduced in theory and drawings to develop a personal graphic presentation style.
8	**Outline syllabus**	

	Unit 1	INTRODUCTION
		a. Role and scope of landscape architecture. b. Elements of Landscape - Natural elements c. Elements of Landscape - Design elements
	Unit 2	HISTORY
		a. Evolution of Landscape Architecture: Historic times to present day b. Hindu Garden styles and philosophy c. Mughal Garden styles and philosophy
	Unit 3	GRAPHICAL REPRESENTATION
		a. Principles of Landscape Design - Illustration with suitable examples. b. Graphics Techniques for making landscape drawings – representation of landscape architecture. c. Conventional symbols in landscape presentations.
	Unit 4	DRAWINGS
		a. Understanding site planning principles b. Understanding the process of conceptual design, design development and construction documentation c. Preparation of schematic design set.
	Unit 5	PLANT SELECTION
		a. Understanding and identification of species. b. Selection criteria of plants on the basis of visual, functional, micro climate and ecological aspects. c. Planting Design with Classification of plants.
	Mode of examination	**Jury**

	Weightage Distribution	**CA**	**CO1,CO3**	**ETE**
		30%		**50%**
	Text book/s*	- Design With Nature - Ian L. McHarg - Landscape Architectural Graphic Standards - Leonard J. Hopper - The Planting Design Handbook- by Nick Robinson - Landscape Graphics - Grant Reid - Trees of Delhi - Pradip Krishen		
	Other References			

ART 405- Professional Practice

School: SUSAP		**Batch : 2020-25**
Program:B.Arch		**Current Academic Year: 2020-21**
Branch:		**Semester: 7**
1	**Course Code**	ART 405
2	**Course Title**	Professional Practice
3	**Credits**	2
4	**Contact Hours (L-T-P)**	2-0-0
	Course Status	Compulsory
5	**Course Objective**	Introduce aspects of professional conduct, duties and responsibilities and legal rights and procedures of the architectural profession
6	**Course Outcomes**	CO1: Identify the importance of Architecture as a profession. CO2:Illustrate the role of architecture as a professional body and in education CO3 :Explain the various laws related to Architecture profession CO4 :Summarize the various procedures involved in architecture professional practices. CO5 : Hypothesize the inter-relationships of different within the Architecture profession.
7	**Course Description**	The idea behind this module is to understand the basic principles Town planning. The students would be exposed to the various kinds of surveys involved in planning and relevance of the same. To understand though case studies the techniques used in planning.
8	**Outline syllabus**	
	Unit 1	**Architectural Profession Today**
		1. Registration under Architect Act 1972. 2. Main provision of Architects Act, AICTE Act, Architects role in society and careers in Architectural Profession, 3. Scale of professional fees, mode of payment, professional conduct and ethics.

	Unit 2	**Indian Institute of Architects**		
		1. Its role as a professional body for promotion and regulation of the Architectural profession and assisting its members 2. Role in architecture education in India 3. ARCASIA (Architects Regional Congress of Asia), Commonwealth Architects Association, UIA (Union International des Architects)		
	Unit 3	**Law related to the profession**		
		1. Introduction to the Acts such as Contracts and Arbitration. **2.** Environmental, Consumer Protection and Negotiable Instrument act. **3.** Easement, Partnership, Income Tax, Service Tax, Professional Tax.		
	Unit 4	**Procedures involved in architectural profession**		
		1. Tenders and Contracts 2. Valuation & Arbitration 3. Local body approvals		
	Unit 5	**Introduction to agencies related to Architectural profession**		
		1. Role of Architect with client 2. Role of Architect with Contractor and Project management services. 3. Role of Architect with local authorities		
	Mode of examination	Based on Internal and External Exams		
	Weightage Distribution	**CA**		**ETE**
		30%		**50%**

ARJ 411: INTERNSHIP (Credits 22)

B. Arch – TERM VIII

Course Outline:
The internship is a term - long work-experience programme conducted after the Nineth Term of the course. Students are attached to different architectural and built-environment practices to gain real-world experience and exposure to what kind of work goes into the practice of architecture.

Learning Objectives:

- Understand of the demands of a workplace
- Be familiar with the variety in architectural practice
- Compare the experiences of academic studios with the actual practice of architecture
- Acquaint the students with different kinds of practices

Learning Strategy: Architectural practice based learning.
Contact Period: No Contact Periods
Form of Evaluation: Report submission
Method of Evaluation: Evaluation by Internal and External Expert(s)
A student will be required to submit a performance report from the Architect under whom training was completed as well as a detailed report on the work carried out by him/her during the training.
A student will be required to study one building in detail and submit the report.
The Internal assessment marks for the practical training will be awarded to each student by the Faculty Members on the basis of; the performance report from the Architect under whom the training was carried out and the report of works rendered by the student during the training.

The external Jury will award the marks for the practical training on the basis of Viva-voce examination of the student on the work rendered by the student during training.

The external Jury will award the marks for the practical training on the basis of Viva-voce examination of the student on the work rendered by the student during training.

Distribution of Grades/Marks
Practical Training / Internship: Evaluation by Office:11 Credits- Internal assessment & Jury
Report by student:5 credits- Submission of training drawing and report.
Viva Voice- 5 credits- External Jury

SEMESTER 9

ARJ 501- Architectural Design-VIII

School: SUSAP		**Batch : 2020-25**
Program: B.Arch		**Current Academic Year: 2020-21**
Branch:		**Semester: 9**
1	Course Code	ARJ 501
2	Course Title	Architectural Design-VIII
3	Credits	12
4	Contact Hours (L-P-S)	2-2-6
	Course Status	Compulsory
5	Course Objective	• Exploring and designing for city level • Understanding the language of city spaces, plazas, etc in architectural design • Learn about the different elements of urban design
6	Course Outcomes	CO1: students should develop skills of drawing and representation CO2: to assimilate learning of graphics, construction, structures and computers to apply to basic design. CO3: Explore creative processes and idea generation and demonstrate critical evaluation of these processes in their projects. CO4: Appraise how design can impact, interact with, and improve environments. CO5: Understand spaces with three-dimensional visualization through the use of block models and appropriate softwares.
7	Course Description	The studio deals with the city level urban design/development to enable the students to relate to city level design. It deals with designing and developing for an urban space and interrelation and scales. It is focused around assessing city level issues, creation of public spaces, identifying movement patterns, etc. Problem 1: Minor Design projects related to revitalisation/reuse of old structure Problem 2: Major • The design problem of Urban design scale is to be introduced, example; Redesigning of existing Urban area by studying and identifying the problems associated with it. • The project would be a medium sized urban design intervention. • The design solution would address issues like demography, market value, land use patterns etc. Other design issues are the detailing of open and built areas after studying human and

<table>
<tr><td></td><td></td><td colspan="3">vehicular traffic movement patterns.
• The project should be substantiated by detailed site surveys and reading about urban design principles. Study models must accompany every stage.</td></tr>
<tr><td>8</td><td colspan="4">Outline syllabus</td></tr>
<tr><td rowspan="2"></td><td>Unit 1</td><td colspan="3">Design Problem</td></tr>
<tr><td></td><td colspan="3">a. Introduction to Project
b. Form and material based investigation
c. Understanding spatial aspects based on activity, space, form and human scale.</td></tr>
<tr><td rowspan="2"></td><td>Unit 2</td><td colspan="3">Literature & Case Study</td></tr>
<tr><td></td><td colspan="3">a. Pre design study-Case study
b. Pre design study -Literature Study, Site Analysis.
c. Functional standards.</td></tr>
<tr><td rowspan="2"></td><td>Unit 3</td><td colspan="3">Concept Development</td></tr>
<tr><td></td><td colspan="3">a. Concept formulation and idea investigation
b. Preparation of design requirements, area requirements based on standards and their interrelation and circulation patterns.
c. Concept Formulation, Bubble Diagram and activity zoning.</td></tr>
<tr><td rowspan="2"></td><td>Unit 4</td><td colspan="3">Design Development</td></tr>
<tr><td></td><td colspan="3">a. Design development- site development
b. Design development- floor Plans
c. Design development- sections and elevations</td></tr>
<tr><td rowspan="2"></td><td>Unit 5</td><td colspan="3">Design Presentation</td></tr>
<tr><td></td><td colspan="3">a. Design sheets presentation.
b. Model making on appropriate scale
c. Final portfolio submission</td></tr>
<tr><td></td><td>Mode of examination</td><td colspan="3">Jury</td></tr>
<tr><td rowspan="2"></td><td rowspan="2">Weightage Distribution</td><td>CA</td><td>CO1,CO3</td><td>ETE</td></tr>
<tr><td>50%</td><td></td><td>50%</td></tr>
<tr><td></td><td>Text book/s*</td><td colspan="3">-</td></tr>
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ARJ 502 – DISSERTATION

School: SUSAP		**Batch : 2020-2025**
Program:B.ARCH		**Current Academic Year:** 2019-20
Branch:		**Semester:9**
1	Course Code	ARJ 502
2	Course Title	Dissertation
3	Credits	7
4	Contact Hours (L-T-P)	1-0-4
	Course Status	Compulsory
5	Course Objective	1. To facilitate Independent study and 2. To initiate systematic documentation 3. To prepare the students for thesis
6	Course Outcomes	CO1: Define and Recognise the importance of planning and preparation of data required to undertake a research project. CO2 : Develop a thorough understanding of the chosen subject area. Identify the critical data and material required to carry out the project. CO3 : Demonstrate the ability to collate and critically assess/interpret data. To be performed either individually or as a teamwork. CO4 : Develop an ability to effectively examine and communicate knowledge in a scientific manner. CO5 : Formulate the study and the inputs based on research findings. CO6 : Compare the findings, assess the research as per the comments and discussions and finally submitting a complete research report/design.
7	Course Description	The idea behind this module is to enable the student to research and document on any topic of their choice relevant to the built environment. The students have the choice of the topic. This would prepare them to undertake their thesis work.
8	Outline syllabus	
	Unit 1	**Introduction to Dissertation**
	A	a) Statement of the problem.
	B	b) Purpose of the study
	C	c) Significance of the study.

	Unit 2	**Literature Review**		
	A	**a)** Identify and group together common areas.		
	B	**b)** Compare, contrast and evaluate issues.		
	C	**c)** Demonstrate why the topic and research is relevant to your field of study.		
	Unit 3	**Methodology**		
	A	**a)** Sample		
	B	**b)** Data collection		
	C	c) Data analysis		
	Unit 4	**Implications and Limitations of study**		
	A	**a)** Identifying the limitations and how important each limitation is.		
	B	**b)** Explaining the nature of limitations.		
	C	**c)** Suggesting how such limitation could be overcome		
	Unit 5	**Implications and Recommendations**		
	A	a) Specific measures or directions that can be taken		
	B	*b)* Critical suggestion regarding the best course of action in a certain situation		
	C	**c)** *Guide to resolve issues and result in a beneficial outcome*		
	Mode of examination	Jury		
	Weightage Distribution	CA	MTE	ETE
		50%	-	50%
	Text book/s*			
	Other References			

ART 503 – Energy Management (Specialisation Elective-1)

School: SUSAP		**Batch : 2020-25**
Program: B.Arch		**Current Academic Year: 2020-21**
Branch:		**Semester: 9**
1	**Course Code**	**ART**
2	**Course Title**	**ENERGY MANAGEMENT**
3	**Credits**	**3**
4	**Contact Hours (L-P-S)**	**3-0-0**
	Course Status	**Specialization Elective**
5	**Course Objective**	The program offers a comprehensive learning and problem-solving foru for those who want a broader understanding of the latest Energy Management techniques and strategies
6	**Course Outcomes**	CO1: To apply the knowledge of the subject to calculate the efficiency of various thermal utilities. CO2: To design suitable energy monitoring system to analyze and optimize the energy consumption in an organization. CO3: To improve the thermal efficiency by designing suitable systems for heat recovery and co-generation. CO4: To guide the employees of the organization about the need and the methods of energy conservation.
7	**Course Description**	This course is primarily concerned with energy management in buildings and Code compliance, and standards followed in National and International context. It will expose students to the processes and considerations involved in undertaking an energy management and analysis of buildings. Finally, methods of assessing energy performance will be covered. Understanding and application of the standards and rating schemes may also be explored.
8	**Outline syllabus**	
	Unit 1	**Energy Efficiency and Management fundamentals**

		a) Energy Management and Energy efficiency, definition, need, importance, relevance to the construction industry etc. b) Energy and Resources, escalating energy & energy consumption issues, carbon emissions and their impact etc. c) Fundamentals of Building Energy Management systems and Intelligent buildings
	Unit 2	**Energy Management best practices**
		a) Components of Energy Management practices b) Energy benchmarking, Energy cost control, Peak demand reduction, Energy Purchase agreements etc. **c)** Case Study analysis of best energy management practices in construction industry.
	Unit 3	**Energy Codes , Standards / Protocols**
		a) Introduction to the Energy Management policies, such as ISO 50001, ASHRAE 90.1, ISHRAE etc. used in National and International contexts. b) Case study analysis for Codes and Standards followed/ best applied National / International projects. c) Live project assessment / fact sheet development , Initiating an Energy Management Program
	Unit 4	**Energy Management Program**
		a) Introduction to building energy management/ energy efficiency software such as Energy Star / Energy Plus/ EQuest /other relevant software for real time metering , energy simulation, lighting , ventilation , building envelope , thermal assessment (heat loss, heat gain), building occupancy load calculation, material analysis, HVAC, degree days calculation etc. b) Creating an Energy Action Planning ledger c) Walk through assessment of a live project (existing/ proposed)
	Unit 5	**Energy Management Program Review – Live Project**

		a) Determining efficiency targets of the live project taken up in previous unit. b) Assessing Energy performance of a building c) Energy risk analysis, energy saving opportunities, future passive strategies possibilities for energy efficient design of a building.		
	Mode of examination	**Jury**		
	Weightage Distribution	**CA**	**CO1 ,CO 3**	**ETE**
		50%		**50%**
	Text/Reference Books	1. Levermore Geoff, "Building Energy Management Systems", E&FN Spon, London, 2000. 2. Moss J. Keith, "Energy Management and Operating Costs in Buildings", E & FN Spon, London, 1996. 3. Douglas , Harris : A Guide to Energy Management in Buildings 4. Frank Kreith, D. Yogi Goswami :Energy Management and Conservation Handbook		
	Other References	1. ISO standards 2. ASHRAE 90.1 3. ISHRAE 4. NBC 5. ECBC 6. BEE 7. Sustainable Development Goals of UN		

ART 504 - FABRICATION SCRIPTING (Specialisation Elective-2)

School: SUSAP		**Batch : 2020-25**
Program: B.Arch		**Current Academic Year: 2020-21**
Branch:		**Semester: 9**
1	**Course Code**	**ART-504**
2	**Course Title**	**Fabrication Scripting**
3	**Credits**	**3**
4	**Contact Hours (L-P-S)**	**3-0-0**
	Course Status	**Specialisation Elective**
5	**Course Objective**	The course is an in-depth exploration of the world of digital fabrication and parametric architecture. Students learn the software skills and scripting to create projects by utilizing the Digital Fabrication Lab's advanced facilities (including laser cutting, 3D printing)
6	**Course Outcomes**	**CO1:** Become adept at developing concepts that move from software to physical manifestations of form. **CO2:** Develop a hands-on understanding of the multiple functions and processes of a fabrication lab. **CO3:** Learn to measure, print and cut with precision as well as produce error free objects. **CO4:** Apply research and methodologies from other content areas to the making of design works.
7	**Course Description**	Digital fabrication will be considered in the context of an evolving discussion of the possibilities and limitations of the digitally mediated object, rapid prototyping in contemporary architecture practice.
8	**Outline syllabus**	
	Unit 1	

		a) Learn to use software skills in regard to parametric form study. **b)** Become skillful at developing concepts for design. **c)** Understand conversion of design ideation from software to physical manifestations of form.
	Unit 2	
		a) Develop working processes that involve automated production techniques. **b)** Integrate technical knowledge with artistic vision. **c)** Apply research and methodologies from other content areas.
	Unit 3	
		a) Introduction to the technical processes and requisite software. **b)** Preliminary experiments in laser cutting, 3D modeling, 3D scanning, and 3D printing from digital files. **c)** Brief outline to requisite software: Rhino-Grasshopper.
	Unit 4	
		a) Tutorials to understand Rhino. **b)** Tutorials to understand Grasshopper **c)** Integration of scripting language between Rhino – Grasshopper.
	Unit 5	
		a) Develop techniques to visualize concepts and communicate them to others. b) Formulate a design project and digitise. c) Translate 3D models into requisite physical manifestations.
	Mode of examination	**Jury**

	Weightage Distribution	**CA**	**CO1,CO3**	**ETE**
		50 %		**50%**
	Text book/s*			
	Other References			

ART 505 - Critical Studies of Art

School : SCADMS		**Batch : 2020-25**
Program: B.Arch		**Current Academic Year: 2020-21**
Branch: 4th Year		**Semester: 9**
1	Course Code	**ART-505**
2	Course Title	**Critical Studies of Art**
3	Credits	2
4	Contact Hours (L-T-P)	2-0-0
	Course Status	Compulsory
5	Course Objective	1. The programme is intended to comprehend various visual art practices sculpture, painting and performance art. 2. It focuses on comprehending various forms, techniques and materials that have been experimented and explored in order to comprehend expanse of practices. 3. To understand the growth of visual art and the ideologies behind art works. 4. To aid in developing an ability to read and analyse different art works. .
6	Course Outcomes	**CO 1:-**The students will be able to understand the basic principles, materials and techniques used in developing an artwork. **CO2:-** The students shall be able analyse and read art works and differentiate between various art practices. **CO3:-** The students will be able to acess and articulate their comprehension of various works of art. **CO 4:-** They will be able to critically think about visual forms and by exploring various ideologies and their relationship with visual art.
7	Course Description	The course enables in developing critical thinking and articulation skills. Knowledge of various forms, styles and techiniques of visual art widens the students pleathora of comprehending images in the contemporary times by providing them with tools to comprehend artworks. It aids in traversing through the different notions of art by exploring ideologies associated with works of arts.

8	Outline syllabus	
	Unit 1	**Introduction**
		• 1A:- Principles and Elements of Art • 1B:- Material, medium and Techniques • 1C:- "Ways of Seeing"
	Unit 2	**Study 1: Art in the West : 1990 – 1950**
		• 2A:- Guernica (Picasso) , Women with the Hat (Henry Mattise), Les Demoiselles d'Avignon (Picasso), Water Lilies (Claude Monet), Starry Nights (Vincent Van Gogh), • 2B:- Number 5, (Jackson Pollack), Broadway Boogie Woogie (Piet Mondrian), Spanish Dancer (Joan Miró), Bride's Toilet (Amrita Shergill) • 2C:- Persistence of Memory (Salvador Dali), The Two Fridas (Frida Kahlo), Nude Descending a Staircase (Marcel Duchamp),
	Unit 3	**Study 2: Art In the West : 1950 Onwards**
		• 3A:- The Treachery of Images (René Magritte), Barnett Newman (Onement 1), No. 3/No. 13 Magenta, Black, Green on Orange (Mark Rohtko), The Thinker (Auguste Rodin), Fountain (Marcel Duchamp) • 3B:- Kazimir MalevichSuprematism (Kazimir Malevich) , Unique Forms of Continuity (Umberto Boccioni), The Prophet and Masks (Emil Nolde), • 3C:- Bird in Space (Constantin Brancusi), Reclining Figures (Henry Moore), The Walking Man I (Alberto Giacometti), Tod und Feuer (Death and Fire, Paul klee), Impact of Bauhaus.
	Unit 4	**Performance and Asian Art**
		• 4A:- Bharat Mata (Abanindranath Tagore), Santal Family (Ramkinkar Baij), Jatayu Vadham (Raja Ravi Varma), Santal Boy with Drum (Jamini Roy), Contact of a Prince (F.N. Souza), Bride's Toilet (Amrita Shergill), Mother Teresa (M.F. Hussain) • 4B:- Japnese Art, Chinese Art, Impact of Buddhist Art, Combodian Art • 4C:- I Like America and America Likes Me (Joseph Beuys), Cut Piece (Yoko Ono), Rhythm 0 (Marina Abramovic), Yard (Allan Kaprow), Open Score

		(Robert Rauschenberg)		
	Unit 5	**Contemporary Art**		
		• 5A:- Conceptual Art Practices • 5B:- Introduction to CuratorialStudies • 5C:- Projects		
	Mode of examination	**Theory**		
	Weightage Distribution	**CA**	**MTE**	**ETE**
		30%	**20%**	**50%**
	Text book/s*	**- Laurie Adams - A History of Western Art**-*McGraw-Hill Humanities_Social Sciences_Languages (2011)* - ***Adrian George*** *(2015) - The Curators Handbook* - ***RoseLee Goldberg*** **-** *Performance Art: from Futurism to the Present* - ***Aisan Art :*** *Dorinda Neave, Lara C.W. Blanchard and Marika Sardar* - - **History of Fine Arts in India and the West:** *Edith Tomory* - **A Student's Handbook of Indian Aesthetics** : *Neerja A. Gupta* *- Thomas Godfrey and Tony Godfrey:* ***Conceptual Art Book***		
	Other References	- **Fred S. Kleiner - Gardner's Art Through the Ages_** *A Concise History of Western Art-Cengage Learning (2013)*		

SEMESTER 10

ARJ 511 – Architectural Design Thesis

School: SUSAP		**Batch : 2020-25**
Program: B.Arch		**Current Academic Year: 2020-21**
Branch:		**Semester:10**
1	Course Code	**ARJ 511**
2	Course Title	Architectural Design Thesis
3	Credits	20
4	Contact Hours (L-T-P)	2-0-12
	Course Status	Compulsory
5	Course Objective	• Identify a contextually challenging architectural design problem. • Evolve strategy to evolve a good solution. • Evolve present and defend the proposed design
6	Course Outcomes	CO1: Identify a socio economic environmental context in need of a good architectural design for a key project. CO2 : Construct a database design brief noted in the context and knowledge base. CO3 : Analyse and prioritize the process to arrive at design solution. CO4 : Develop and present the proposed design.
7	Course Description	The B. Arch program culminates in a thesis project. Under the guidance of a thesis Mentor. Students are required formulate a cohesive thesis argument and project using supportive research and case studies and should demonstrate his ability and skills to do a critical enquiry through design. The nature of the work must be an original research or design project that involves additional learning of a substantive nature. The final proposal to be presented in appropriately rendered drawings, modules, 3D views and Report. The work must be documented with a written thesis completed to Institute specifications within the final term of the senior year.
8	Outline syllabus	
	Unit 1	**Identification of the project , preparation of Synopsis**
		d) Introduction/Background
		e) Aims & Objective, Rationale of the topic
		f) Site Identification and justification
	Unit 2	**Literature Study , Case study**
		a) Identify and group together common areas.
		b) Compare, contrast and evaluate issues.
		c) Demonstrate why the topic and research is relevant to

		your field of study.		
	Unit 3	**Program formulation**		
		a) Detailed Design Program		
		b) Design Criteria / Approach specific to the topic chosen		
		c) Conceptual Design		
	Unit 4	**Design interventions**		
		a) Preliminary Design Drawings		
		b) Service Drawings		
		c) Landscape / Site Details		
	Unit 5	**Design Proposal and Report**		
		a) Detailed design proposal		
		b) Supporting literature study		
		c) All Drawings & Report		
	Mode of examination	Jury		
	Weightage Distribution	CA	MTE	ETE
		50%	0%	50%
	Text book/s*			
	Other References			

ART 512 – ENERGY SYSTEMS AND MEASURES OF ENERGY EFFICIENCY
(Specialisation Elective-1)

School: SUSAP		**Batch : 2020-25**
Program: B.Arch		**Current Academic Year: 2020-21**
Branch:		**Semester: 10**
1	**Course Code**	**ART 512**
2	**Course Title**	**ENERGY SYSTEMS AND MEASURES OF ENERGY EFFICIENCY**
3	**Credits**	**3**
4	**Contact Hours (L-P-S)**	**3-0-0**
	Course Status	**Specialization Elective**
5	**Course Objective**	Objective of this course is to have an in-depth understanding of energy systems, their fundamentals and energy efficiency measures considered in a building project.
6	**Course Outcomes**	CO1: To understand the different Renewable Energy Technologies CO2 : To analyze the building energy systems through different case studies CO3: To identify the measures of Energy efficiency via calculative analysis. CO4: To calculate cost and payback analysis for energy efficient solutions and energy systems via software on a live project
7	**Course Description**	Renewable energy sources such as wind, hydro, solar and biomass are gaining an increasingly important role in assisting in environmental protection and improving the security of energy supply. It is equally significant in architectural design where buildings commenced about 50% of all energy usage in the most countries. This course aims at introducing the students to various forms of renewable energy sources and appropriate technologies for harnessing them for our benefit. In the other glance, the course provides the student with knowledge about passive systems in buildings such as wind chatters, double/triple glazing windows, thermal mass and so on.

3	**Outline syllabus**	
	Unit 1	**Energy Generation and Sustainability**
		a) Renewable Energy Technologies; review of energy sources, energy storage and conversion with emphasis on batteries and fuel cells, hydrogen as energy carrier b) Next Generation Smart Grid systems; challenges faced during the paradigm change; concepts such as SYNDEM/ VSM , etc. c) Sustainable Energy that relate to energy generation, transmission, distribution and delivery as well as theories , technologies, design, policies and integration of sustainable energy.
	Unit 2	**Energy Systems**
		a) Study of building energy systems – Passive and Active energy systems via Case Study (International &/or National), as per typology of the building such as residential, commercial, institutional, etc. b) Inference and analysis of case studies c) Proposal for energy systems, assessing energy performance in a Live Project.
	Unit 3	**Measure of Energy efficiency**
		a) Identifying the measures of Energy efficiency via calculative analysis on a related software for the Live Project. b) Environment/ Carbon Footprint analysis/ Energy Use Intensity analysis. c) Life Cycle Analysis of Live Project; for specified material/space/area/whole building etc.
	Unit 4	**Implementation and Operation – Live Project**
		a) Analysis of implementation of Energy Management system, and Energy systems. b) Maintenance strategy and control; transitioning from reactive to proactive maintenance, establishing minimum standard for inspection etc. c) Performing a operation and management system via open source software for Computerised Maintenance Management System (CMMS) etc. in relation to IGBC/ISHRAE/ASHRAE etc.
	Unit 5	**Checking and Management review – Live Project**

		a) Calculate Cost and Payback Analysis for Energy Efficient solutions and Energy Systems via software. b) Identifying and analysis of the savings of each measure taken up for efficient design proposal. c) Documenting all energy calculations data from Energy Management, Materials and Energy Balance, Energy systems and measures of Energy efficiency for Presentation / Jury.		
	Mode of examination	**Jury**		
	Weightage Distribution	**CA**	**CO1,CO3**	**ETE**
		50%		**50%**
	Text Books			
	Other References			

ART 514 – Fabrication Scripting

1	**Course Code**	**ARJ 514**
2	**Course Title**	**Fabrication Scripting**
3	**Credits**	**6**
4	**Contact Hours (L-P-S)**	**6-0-0**
	Course Status	**Specialisation Elective**
5	**Course Objective**	The course is an in-depth exploration of the world of digital fabrication and parametric architecture. Students learn the software skills and scripting to create projects by utilizing the Digital Fabrication Lab's advanced facilities (including laser cutting, 3D printing)
6	**Course Outcomes**	**CO1:** Become adept at developing concepts that move from software to physical manifestations of form. **CO2:** Develop a hands-on understanding of the multiple functions and processes of a fabrication lab. **CO3:** Learn to measure, print and cut with precision as well as produce error free objects. **CO4:** Apply research and methodologies from other content areas to the making of design works.
7	**Course Description**	Digital fabrication will be considered in the context of an evolving discussion of the possibilities and limitations of the digitally mediated object, rapid prototyping in contemporary architecture practice.
8	**Outline syllabus**	
	Unit 1	
		a) Theory of generative Design b) Wallacie c) Wallacie plugin

	Unit 2			
		d) Introduction to urban context **e)** Introduce wallacie and biomorpher on the parallel design studio for urban design **f)** Massing and road networks analysis		
	Unit 3			
		g) Mixed use planning analysis **h)** Area analysis (Documentation on indesign) **i)** Incorporating the principles of wallacie on the urban design studio		
	Unit 4			
		j) Rectifying the area **k)** Massing and road networks analysis **l)** Mixed use planning analysis Area analysis		
	Unit 5			
		m) Wind Analysis (CFD) (Documentation on indesign) **n)** Documentation and booklet generation **o)** Presentation and jury		
	Mode of examination	**Jury**		
	Weightage Distribution	**CA**		**ETE**
		50 %		**50%**
	Text book/s*			
	Other References			