Programme Structure, Syllabi, Outline of Tests, and Course of Reading **under the Faculty of Architecture, Town, and Country Planning**

Model Framework for for B.Arch (5 year Degree Program)

Model Framework (MFW) for B.Arch 2023-2028 Batch, ASAP, AMITY University Punjab

Sem.	SUBJECTS								
	DTDD	TS	SD	TS	SD	KS	KS	SD	KS
CRs	8	4	3	3	3	2	1	1	1
I	PC1	CC1	PC2	AC1	PC3	AECC1	SEC-CS	SEC-CC	VAC
	Arch. Design - I	Bdg Constn & Mat-I	Architectural Graphics-I	Structures in Arch. - I	Arch. Drawing-I	Bldg. Scs I-EVS	Architectural Communications	Computer Applications - I, MS Office	Foreign Business Language
	8	4	3	3	3	2	1	1	1
II	PC4	CC2	PC5	AC2	PC6	AECC2	SEC2	SEC3	VAC
	Arch. Design - II	BCM - II	Architectural Graphics-II	Structures in Arch. - II	Arch. Drawing-II	Bldg. Scs II-EVS	Architectural Model Making Workshop-I	Parametric Architecture-I (Internet, AI & sketching Applications)	Foreign Business Language
	8	4	3	3	3	2	1	1	1
III	PC7	CC3	SEC4	AC3	PC9	AC4	SEC5	SEC6	SEC7
	Arch. Design - III	BCM - III	Comp. Graphic Skills-I (Autocad Basics+Sketch Up)	Structures in Arch. - III	History of Arch. - I	Surveying & Levelling	Architectural Model Making Workshop-II	Parametric Architecture-II (Programming with 'C')	Photography Skills
	8	4	3	3	3	2	2	1	26
IV	PC10	CC4	SEC8	AC5	PC12	AC6	AC7	SEC9	
	Arch. Design - IV	BCM - IV	Comp. Graphic Skills-II (Autocad 2D+3D)	Structures in Arch. - IV	History of Arch. - II	Bldg. Climatology	Bldg Tech. I- Public Health	Parametric Architecture-III (Unreal Engine- 1)	
	8	4	3	3	3	2	2	1	26
V	PC13	CC5	SEC10	AC8	PC14	AC9	AC10	SEC11	
	Arch. Design - V	BCM - V	Comp. Graphic Skills-III (3ds Max I+ corel Draw)	Structures in Arch. - V	History of Arch. - III	Measured & Working Drawing	Bldg Tech.II- Lighting, Illumination /Electrical	Parametric Architecture-IV (Unreal Engine-2)	
	8	4	3	3	3	2	2	1	26
VI	PC15	CC6	SEC12	AC11	PC16	AC12	AC13	SEC13	
	Arch. Design - VI	BCM - VI	Comp. Graphic Skills-IV (3ds Max II+Photoshop)	Structures in Arch. - VI	History of Arch. - IV	Building Byelaws	Bldg Tech.III- Acoustics/Fire Fighting	Parametric Architecture-V (Digital Media Creation)	
	8	4	3	3	3	2	2	1	26
VII	PC17	CC7	SEC14	AC14	PC18	CC8	AC15		
	Arch. Design - VII	BCM - VII	Comp. Graphic Skills-V (Autodesk Revit)	Estimating, Costing & Specifications	History of Arch. - V	Landscape Architecture	Bldg. Tech.IV- HVAC	Basic Accounting & Marketing Skills	
	18						6	2	26
VIII	NTCC-PAECC1						NTCC-PAECC2	NTCC-PAECC3	
	PROFESSIONAL TRAINING						Project Report	Architectural Documentaion & Curation	
	10	4	3	2	2	2	2	1	26
IX	PC19	CC9	SEC15	CC9	PE1(SP. E. C.)	PE2(SP. E. C.)	PE3(SP. E. C.)	OE1	
	Arch. Design - VIII	BCM - VIII	Comp. Graphic Skills-VI (Lumion)	Housing	Urban Design/Urban & Reg. Plg	Contemporary Arch./Arch. Conservation	Constn. Mgmt./Architectural Journalism	Open Elective Green Buildings	
	2	2	2	20					26
X	PAECC4	PAECC5	PAECC6	NTCC-PAECC7					
	Arch. Research Methods	Professional Practice	Road Safety and Civic Sense	Architectural Thesis					260

PE1(SP. E. C.)		PE2(SP. E. C.)	
Urban Design/ Urban & Reg. Plg		Contemporary Arch./ Arch. Conservation	
			CREDITS for UG Degree=260

Program structure for B. Arch [Scheme 2023-28]

Semester-Wise Program structure (2023-28) for B.ARCH										
Sr. No.	**Year 1**		**Year 2**		**Year 3**		**Year 4**		**Year 5**	
	Semester 1	**Semester 2**	**Semester 3**	**Semester 4**	**Semester 5**	**Semester 6**	**Semester 7**	**Semester 8**	**Semester 9**	**Semester 10**
1	**Architectural Design- I [CU :8** , PS-2, AR/Des Studio - 6] {PCC}	**Architectural Design-II [CU:8** ,PS-2 , AR/Des Studio - 6] {PCC}	**Architectural Design - III [CU:8**, PS-2, AR/Des Studio - 6] {PCC}	**Architectural Design - IV [CU:8**,PS-2 , AR/Des Studio - 6] {PCC}	**Architectural Design - V [CU:8**,PS-2,AR/Des Studio -6] {PCC}	**Architectural Design - VI [CU:8**,PS-2,AR/Des Studio -6] {PCC}	**Architectural Design - VII [CU:8**,PS-2 , AR/Des Studio -6] {PCC}	**Professional Training* [CU:18** ,SW-18] {NTPAECC}	**Architectural Design - VIII [CU:10,**PS-2,AR/Des Studio-8] {PCC}	**Architectural Research Methods [CU:2**, L-2] {PCC}
2	**Building Construction & Materials-I [CU :4**,PS-1, AR/Des Studio -3] {CC}	**Building Construction & Materials-II [CU:4**, PS-1 ,AR/Des Studio -3] {CC}	**Building Construction & Materials - III [CU:4** , PS-1, AR/Des Studio - 3] {CC}	**Building Construction & Materials - IV [CU;4,** PS-1, AR/Des Studio -3] {CC}	**Building Construction & Materials - V [CU:4,**PS-1,AR/Des Studio - 3] {CC}	**Building Construction & Materials- VI [CU:4,** PS-1,AR/Des Studio-3] {CC}	**Building Construction & Materials- VII [CU:4**, PS-1 ,AR/Des Studio-3] {CC}	**Project Report [CU:6 ,**SW-6] {NTPAECC}	**Building Construction & Materials - VIII [CU:4**,PS-1, AR/Des Studio-3] {CC}	**Professional Practice [CU:2**, L-2] {CC}

3	**Architectural Graphics-I [CU: 3**,AR/Des Studio -3] {PCC}	**Architectural Graphics-II [CU:3** , AR/Des Studio - 3] {PCC}	**Computer Graphic Skills-I** [**CU:3**, AR/Des Studio-3] {SEC}	**Computer Graphic Skills-II [CU:3,** PS-4, SW-2] {SEC}	**Computer Graphic Skills-III** [**CU:3,**PS-4,SW-2] {SEC}	**Computer Graphic Skills-IV** [**CU:3**,PS-4,SW-2] {SEC}	**ComputerGraphic Skills-V [CU:3**,PS-4 ,SW-2] {SEC}	**Architectural Documentation & Curation [CU:2,** SW-2] {NTPAECC}	**Computer Graphic Skills-VI [CU:3** , PS-4, SW-2] {SEC}	**Road Safety and Civic Sense [CU:2,** L-2] {SEC}
4	**Structures in Architecture - I [CU:3**, L-3 , PS- 0] {AC}	**Structures in Architecture -II [CU:3** , L-3 , PS-0] {AC}	**Structures in Architecture -III [CU:3** ,L-3] {AC}	**Structures in Architecture -IV** [**CU:3**,L-3] {AC}	**Structures in Architecture - V [CU:3,**L-3] {AC}	**Structures in Architecture -VI [CU:3**,L-3] {AC}	**Estimating, Costing & Specifications [CU:3**,L-3] {AC}		**Housing [CU:2**, L-2] {CC}	**Architectural Thesis [CU:20**, PSJ-4, SW-16] {NTPAECC}
5	**Architectural Drawing - I [CU:3,** AR/Des Studio - 3] {PCC}	**Architectural Drawing - II [CU:3** , AR/Des Studio -3] {PCC}	**History of Architecture - I [CU:3** , L-3] {PCC}	**History of Architecture - II [CU:3**,L-3] {PCC}	**History of Architecture -III [CU:3**,L-3] {PCC}	**History of Architecture -IV [CU:3** , L-3] {PCC}	**History of Architecture - V [CU:3**,L-3] {PCC}		**Urban Design/Urban & Regional Planning [CU:2**, L-2] {SEC}	
6	**Environmental Studies -I [CU:2,** L-2] {AEC}	**Architectural Model Making Workshop-I [CU:1** , PS-2] {SC}	**Surveying & Levelling [CU:2** ,T-1, PS-2] {AC}	**Building Climatology [CU:2,** L-2] {AC}	**Measured & Working Drawing [CU:2,**PS-1,AR/Des Studio-1] {AC}	**Building Byelaws [CU:2**,L-2] {AC}	**Landscape Architecture [CU:2,**L-2] {CC}		**Contemporary Architecture / Architectural Conservation [CU:2** ,L-2] {SEC}	

7	**Computer Applications [CU:1**, PS-2] {SEC}	**Parametric Architecture-I [CU:1** ,PS-2] {SEC}	**Architectural Model Making Workshop -II [CU:1,**PS-2] {SC}	**Building Technology - I [CU:2,** L-2] {AC}	**Building Technology - II [CU;2** ,L-2] {AC}	**Building Technology - III [CU:2**,L-2] {AC}	**Building Technology - IV [CU:2**,L-2] {AC}		**Construction Management/ Architectural Journalism [CU:2,** L-2] {SEC}	
8	**Architecural Communications [CU:1** , L-1] {AEC}	**Environmental Studies - II [CU:2**, L-2] {AEC}	**Parametric Architecture-II** [**CU:1**, PS-2] {SEC}	**Parametric Architecture-III [CU:1**,PS-2] {SEC}	**Parametric Architecture-IV** [**CU:1**, PS-2] {SEC}	**Parametric Architecture-V** [**CU:1**, PS-2] {SEC}	**Basic Accounting & Marketing Skills [CU:1**,L-1] {SEC}		**Open Elective I Green Buildings [CU:1**,L-1] {OE}	
9	**Foreign Business Language -I [CU:1**, L- 1] {VAC}	**Foreign Business Language - II [CU:1,** L-1] {VAC}	**Photography Skills [CU:1,** PS-2] {SEC}							
Credits	**26**	**26**	**26**	**26**	**26**	**26**	**26**	**26**	**26**	**26**
Total Program Credits										**260**

Program structure for B.Arch [5 year] **(Ist Semester)**

Courses shown in blue colour below are the courses offered by School of Architecture & Planning and the syllabi of the same were proposed in the meeting.

Sr. No	Course Code	Course Title	Course Type			Credit				Credit Units
				L	T	PS	FW	SW	AR/Des Studio	
1		Architectural Design-I	Professional Core Courses	0	0	2	0	0	6	8
2		Building Construction & Materials-I	Core Courses	0	0	1	0	0	3	4
3		Architectural Graphics-I	Professional Core Courses	0	0	0	0	0	3	3
4		Structures in Arch. -I	Allied Courses	3	0	1	0	0	0	3
5		Arch. Drawing - I	Professional Core Courses	0	0	0	0	0	3	3
6		Environmental Studies-I	Ability Enhancement courses	2	0	0	0	0	0	2
7		Computer Applications	Skill Enhancement Courses	0	0	2	0	0	0	1
8		Architectural Communications	Professional Core Courses	1	0	0	0	0	0	1
9		Foreign Business Language	Value Added Courses	1	0	0	0	0	0	1

		Total Credits					**Min Required: 26** **Semester Credits: 26**

B. ARCH Course Design

SEM I

Annexure **'CD-01'**

L/DS	T	P/S/J	SW/FW	Total Credit Units
6	0	2	0	8

Course Title: ARCHITECTURE DESIGN- I
Course Code:
Credit Units:8
Course Level: UG
Course Objectives: To make the students familiar with the Mental and Visual 3D perception.
The students will develop skills to identify and utilize simple geometric shapes for various 2D and 3D compositions

Prerequisites: Basic knowledge of Drawing

Course Contents/syllabus:

Unit I: Introduction to Elements of Design and Visual Grammar	**27 Hours**
Understanding the role of the following basic elements like Point, Lines, Planes, Patterns, Shapes, Forms, Spaces, Color, Texture. • Exercises in Point, line and shapes to achieve focus in design using different textural elements; Development of geometric pattern by division, subtraction, and addition, and expressing them with the use of colors;	

• Two-dimensional & Three-dimensional Design exercises involving real and imaginary objects, drawing compositions and models, to form an appropriate base for subsequent Architectural design and theory. • Exploring color schemes and their application in a visual composition. • Study models in different materials viz. paper, clay, soap, wires etc. made by themselves.	
Unit II: Principles of Design- Application of Visual Grammar and Gestalt Principles	**27 Hours**
Understanding and using basic principles like Repetition, Rhythm, Symmetry, Unity, Harmony, Balance Contrast etc. • Learning the Principles of Design with their application in a visual composition and in architectural forms and spaces; • To acquire interest in design using different 3D elements; • Development of geometric pattern by multiplication, repetition and deletion; • Multi- dimensional Design Exercises involving solids and volumes, Study models of different materials viz. Colored papers, threads, match Sticks etc.	
Unit III: Anthropometrics	**27 Hours**
Role of human dimensions in design including provisions for the physically challenged. Idea of human scale and proportion. • Anthropometrics: human body as a basis of measurement. • Relating space and self. Human scale. • Basic ergonomics; measurement and perception of movement, single activity/ function spaces. • Human body derived measurement systems to understand scale and proportion of spatial layouts. • The relation of human body with furniture design -like height of seat and knee height etc. • Exercises to experiment basic proportions, body relations and spatial concepts.	
Unit IV: Application of Anthropometrics	**27 Hours**
Study of human dimensions and proportions as applied to designing spaces with furniture layout. • Exercises on anthropometric studies for postures and single/multiple person activities, design of furniture items like chairs, tables for self/specific person. Design spatial layout for single/multi activity like hostel room, exhibition stall, drinking water fountain, information kiosk, food stall etc. (Layout of furniture based on anthropometrics). • Anthropometrics for physically challenged persons. Exercises in order to experiment basic proportions, body relations and spatial concepts.	

• Students will learn skills in problem solving, visualization, oral, and graphic communication. • Field trips to relevant architectural sites.	

Site Visits/ Case Studies: 36 sessions

- Design problems will be introduced on the basis of live case studies and site visits as mandatory component of design studio to impart experiential learning.
- Field visits to enrich students' knowledge of context development for anthropometrics, scale and proportion.

Course Learning Outcomes:

CLO1	Introduce elementary Design (all forms of Art) and delineate Architecture as the origin of all Art forms.
CLO2	Outline Design Principles and its application in Architecture.
CLO3	Harness multi-dimensional volumes through modeling spaces.
CLO4	Evaluate the aptitude of creative imagination under a set of constraints.

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Donald Watson, Michael Crosbie, John Cllender	Time Saver Standard for Architectural Design Data	McGraw-Hill Education	1997	0070685061	1024
Francis D.K.Ching	Architecture Form, Space and Order	John Wiley & Sons,	2014	9781118745083	464
V.S.Pramar	Design Fundamentals in Architecture	Somaiya Publications Pvt.Ltd., New Delhi	1997.	8170391709	270

Ernst Neufert	Neuferts Architects Data	John Wiley & Sons	2000	9788126517619	636
Broadbent, G.	Design in Architecture - Architecture and Human Science	John Wiley and Sons. New York	1973	978-471105831	600
Roger, K. L.	Architect? A Candid Guide to the Profession	Cambridge: The MIT Press	1998	0262621215	304

Annexure **'CD-01'**

L/DS*	T	P/S/J	SW/FW	Total Credit Units
3	0	1	0	4

Course Title: BUILDING CONSTRUCTION & MATERIALS -I
Course Code:
Credit Units: 4
Course Level: UG
Course Objectives: To familiarize the properties of brick and stones as building materials
Prerequisites: Basic knowledge of drawing.

Course Contents/syllabus:

Unit I: Mud	**15 Hours**

Stabilization and use for walling and terracing. Types of Mud Bricks. To understand mud as a building material in the context of various construction methods. Focus on mud as a building material would be emphasized based on the performing standards and codes, wherein application of mud material would be discussed in detail, both in the context of historical and contemporary methodology. With time, the topic can also focus on latest trends in practice and usage of new technology with this material.	
Unit II: Introduction to Brick	**15 Hours**
Composition and properties of brick, manufacturing of various types of bricks. Brick Bonds – English Flemish (Single and Double) Rat Trap To learn and understand various types of bricks as a building material in the context to the construction methods of walls. Focus on brick as a building material would be emphasized based on the practical methods, wherein application of brick as a material would be discussed in detail, in the context of contemporary methodology & practices. With time, the topic can also focus on latest trends in practice and usage of new technology with this material. Types of brick bond and their application and properties shall be discussed in detail. **Sets of drawings:** types of bricks, header and stretcher, English, Flemish bonds, types of material indications, t- junctions and cross-junctions.	
Unit III: Wall Junctions (English & Flemish Bonds)	**15 Hours**
L , Tee, & Cross Junctions; Construction of brick jallis To understand various types of junctions in bricks in the context to the construction methods of walls. Focus on brick junctions construction method would be emphasized based on the practical codes. Application of brick as a jali would be discussed in detail, in the context of contemporary methodology & practices. With time, the topic can also focus on latest trends in practice and usage of new technology with this material. Types of brick junctions & jalis with their applications and properties shall be discussed in detail. **Sets of drawings:** T- junctions, cross-junctions and layout of Brick jalis	

Unit IV: Stones	15 Hours
Building stones, types, properties of good stone, natural bed, Dressing, Laying and Bonding in Stone Masonry Geological Classification of rocks – stones (granite, laterite, quartzite, marble, slates), uses of stone, deterioration & preservation of stone, availability, properties, and application of stones for construction in India. Stone for finishing, cutting & polishing. Granite & Marble. Types of stone masonry.	

Site Visits/ Case Studies:12 sessions

- To introduce the students to primary building materials and their applications in building construction.
- To cultivate personal observation and self-learning in the students, site visits should be conducted so as to cover the given syllabus.
- Students will observe measure, sketch and annotate what they see at site and submit a site visit report to the teachers concerned for evaluation. This award shall form part and parcel of the sessional work for internal assessment.

Course Learning Outcomes:

CLO1	Identify types of bricks and stones
CLO2	Draw the wall joints in different bonding styles
CLO3	Compare the structure of various types of masonry
CLO4	Evaluate the structure made out of brick and stone masonry.

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
R Barry	Building Construction	Wiley-Blackwell	1999	9780632052615	288

Sushil kumar	Building Construction	Standard Publishers Distributors	2006	8186308024, 9788186308028	796
Don A. Watson	Construction Materials and Processes,	McGraw Hill Co	1972	978-0070684768	512
W.B.Mckay,	'Building Construction', Vol.1, 2, 3, Longmans, U.K. 1981.	Longman	1970	812500940X, 9788125009405	480
R.Chudley	The Construction of Building (Vol 1)	Longman Scientific & Technical.	1999	9780582413955	192
S.K. Duggal	Building Materials	New Age International Publishers	2021	978-9387788398	600
B.C. Punmia, Ashok K. Jain, Arun K. Jain	Building Construction	Laxmi Publications (P) LTD	2017	978-8131804285	668

Annexure **'CD-01'**

L/DS*	T	P/S	SW/FW	Total Credit Units
3	0	0	0	3

Course Title: ARCHITECTURAL GRAPHICS-I

Course Code:
Credit Units: 3
Course Level: UG
Course Objectives: To familiarize with principles and theories in graphics and architectural composition.vis, the development of art **in Pencil.**

Prerequisites: Basic knowledge of drawing

Course Contents/syllabus:

Unit I: Pencil as an effective presentation tool.	**12 Hours**
• Free hand line work- free hand drawing appropriate to visual & architectural representation, sketching, drawing from observation, terminology & abbreviations used in visual representation • compositions patterns with different strokes/grades in pencil- line & shape, tone & texture, figure & ground, Color & value,	
Unit II: Calligraphy	**14 Hours**
• Lettering, writing styles, developing Architectural hand • Exercises in graffiti/ posters/ murals etc. • Composing Logo Cover page designing for various printed materials	
Unit III: Architectural Connotations	**14 Hours**
• Understanding Architectural Connotations in freehand sketching • Representing 2-D drawings of simple landscape features in pencil. Vis- crowns of trees, shapes of trees, textures of grass, rocks, tiles, cladding materials. • Depicting scale with the use of human figures in the sketches	
Unit IV: simple geometrical Volumes	**14 Hours**
• Effect of light and shade & textures on solids- shapes and forms; human figures, trees and vehicles • Outdoor sketching of simple building forms. • Sketches of scenes and activities from memory involving public spaces like markets, festivals, recreational spaces	

Course Learning Outcomes:

CLO1	Explain and illustrate usage of pencil as a tool in Architecture profession.
CLO2	Develop architectural hand using calligraphy
CLO3	Identify and develop understanding of interrelationship between 2D and 3D form of simple object, with the help of sketching
CLO4	Depiction of 3D scenes engaging scale and proportion to determine anthropometric representations.

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Pratap Mulick	Sketching	Jyotsna Prakashan	2006	9788179251041	
Gill Robert W	Rendering with pen & ink	Thames & Hudson	1984	9780500680261	400
Francis D.K. Ching	Architectural Graphics	CBS Publishers and Distributers Pvt. Ltd.	6ED	9781119035664	272

Annexure **'CD-01'**

L	T	P/S	SW/FW	Total Credit Units
3	0	0	0	3

Course Title: Structures in Architecture – I
Course Code:
Credit Units: 3
Course Level: UG
Course Objectives: To develop basic understanding of archi-structures
Prerequisites: Basic knowledge of geometry.

Course Contents/syllabus:

Unit I: Cellular System	**12 Hours**
Introduction to structural systems and structural design. Structural geometry in nature and in architecture **Introduction to structural engineering basic concepts. Role of structural engineering. The Various types of structural systems.** The arrangement of structural components for load transfer. Different geometrical shapes in nature and architecture. Symmetrical and unsymmetrical structural systems. Understanding natural structures and compare with manmade structures.	
Unit II: **Force Mechanism**	**14 Hours**
Recapitulation of Newton's Laws of Motion. Force and Moment of a Force. Laws of resolution of forces: Parallelogram and Polygon of forces. Concept of direct Force Mechanism in structures, tension & compression. Equilibrium of force and resolution of force. Study of Moments, Moments of forces, Moments of couples. Understanding the Newton's law of forces. Real life problems related to Newton's Law of motion. Concept of Parallelogram and Polygon Law of forces. Different types of forces and concept of stress and strain. Resolution of forces and related numerical problems. Study the concept of force, Moment and moment of forces in structural members.	
Unit III: Loads & Supports	**14 Hours**

Introduction to type of Loads & Supports (roller, hinge and fixed) and reactions thereof. Moment of a force, a Couple and their physical interpretations. Determination of centre of gravity, Moment of Inertia of square ,Rectangle & I shaped cross-section, Methods of finding out CG for a regularly shaped body or a system of bodies and MI from first principle Understanding of forces along equilibrium of concurrent forces. Definition of centre of gravity, centroid, moment of inertia. Computing center of gravity of regular and complex shapes such as steel sections like C, T, L I and compound sections. Definition of parallel axis and perpendicular axis theorem, radius of gyration.	
Unit IV: Bulk Active Structure Systems	**14 Hours**
Trabeated and Arcuated Structures. The simplest structural system (slab, beam and column) and introduction to simply supported and cantilevered beams. Concept of Trabeated and Arcuated Structures. Different structural components used in structures. The role of each structural components in load transfer mechanism. Different types of slabs, beams and columns. Role of simply supported and cantilever beams and load transfer mechanism in these beams.	

Course Learning Outcomes:

CL01	Recapitulate the principles and laws of geometry in nature. And understand Translational and Rotational Equilibrium of Rigid bodies.
CL02	Apply the said laws for simple analytical problem solving
CL03	Comprehend fundamental principles of structural behavior in withstanding gravity and various ways of mitigation of gravitational force.

CL04	Evaluate the transition from physics of rigid bodies to real structural components and apply the concepts in design.

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Salvadori, **Oakley,** and Heller	Structure in Architecture- The building of Buildings	Pearson; 4th edition	2016	978-0132803205	240
Surjeet Kumar	Theory of Structures	Vayu	2014	978-9380097879	234
Angus J. Macdonald	Structure and Architecture	Routledge	2018	978-1138629226	360
Daniel Schodek Martin Bechthold	Structures	Pearson; 7th edition	2013	978-0132559133	576
S. S. Bhavikatti	Strength of Materials	Vikas Publishing House	2013	978-9325971578	512

Annexure **'CD-01'**

L/DS*	T	P/S	SW/FW	Total Credit Units
3	0	0	0	3

Course Title: ARCHITECTURAL DRAWING-I
Course Code:

Credit Units: 3
Course Level: UG

Course Objectives: To enable the students draw 3D drawings manually and develop the understanding of perspective drawings.
Prerequisites: Basic knowledge of drawing

Course Contents/syllabus:

Unit I: Drawing tools and Accessories	**12 Hours**
• Introduction to the subject and drawing equipment. Setting of drawing equipment. • Basic technical drawing: Concept and types of lines. Dimensioning and types of Lines. • Scales & its Use in the Architectural Drawing. • Drawing polygons. Inscribing and circumscribing circles in polygons.	
Unit II: Orthographic Projections	**14 Hours**
• Projection of points lines and planes. • Projection of regular rectilinear and circular solids (prisms, pyramids. cones, cylinders, spheres etc.) in Ist Quarter.	
Unit III: Orthographic Projections	**14 Hours**
• Sections of regular rectilinear and circular solids (prisms, pyramids, cones, cylinders, spheres etc.)	
Unit IV: Development of Surfaces	**14 Hours**
• Simple Geometrical Solids e.g. Cube, Cuboids, Cone, Cylinder, Pyramid, Prism etc. • Interpenetration of Solids.	

Course Learning Outcomes:

CL01	Explain and illustrate usage of various manual drafting tools and techniques, used in Architecture profession.
CL02	Identify and develop understanding of interrelationship between 2D and 3D form of simple object, with the help of orthographic Projections
CL03	Analyse the sectional modeling of 3D solids through drawings
CL04	Build and Create, 3D paper models, of simple built form, using surface development technique

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Bhatt, N. D.	Engineering Drawing ; Plane and Solid Geometry.	Charotar Publishing House Pvt. Limited.	2010	978-9380358178	720
Dhawan R K	Fundamentals of Engineering Drawing	S Chand	2014	978-121939263	456

ANNEXURE **'CD-01'**

COURSE TITLE: ENVIRONMENTAL STUDIES -I
Course Code:
Credit Units: 2
Course Level: B. Sc.

Course Objectives: To develop basic understanding of the environment and role of humans in shaping it.
Prerequisites: Basic knowledge of environment around us.

Course Contents/syllabus:

	Total Hours
Unit-1- Environmental Pollution	**9 Hours**
Environmental Pollution: types, Cause, effects and controls –Air, water, soil, chemical and noise pollution. Nuclear hazard and human health risk Solid waste Management-control measures of urban and industrial waste. Pollution case studies.	
Unit-2- Environmental Policies and practices	**9 Hours**
Environmental Policies and practices: Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture. Environment laws: Environment Protection Act; Air (Prevention and Control of Pollution) Act; Water (Prevention and Control of Pollution) Act; Wildlife Protection Act; Forest Conservation Act, international agreements: Montreal and Kyoto protocols and convention on biological diversity(CBD), The Chemical Weapons Convention (CWC). Natural reserves, tribal population and rights and Human-wildlife conflict in Indian context.	
Unit-3- Human communities and the Environment	**9 Hours**
Impacts on environment, human health and welfare. Carbon foot-print. Resettlements and rehabilitation of project affected persons, case studies. Disaster management: floods, earthquake, cyclone and landslides. Environmental movements: Chipko, Silent valley, Bishnois of Rajasthan. Environmantal ethics: Role of Indian and other religions and cultures in environmental conservation. Environmental communication and public awareness, case studies (e.g., CNG vehicles in Delhi).	
Unit-4- Field work	**9 Hours**
• Visit to an area to document environmental assets: river/forest/flora/fauna, etc. • Visit to local polluted Site-Urban/Rural/Industrial/Agricultural • Study of common plants, insects, birds and basic principles of identification. • Study of simple ecosystems-pond, river, Delhi Ridge, etc.	

Course Learning Outcomes: At the end of this course, the students will be able to develop:

CL01	Understanding the types of pollution and their impact on environment and human health. Understand the environmental concerns and their impact on humans and agriculture.
CL02	Able to analyse the impacts of natural and manmade disaster on human population and settlements.
CL03	Sensitization about the environmental issues and concerns leading to proactive actions to improve the environmental conditions in our daily life.
CL04	Able to imbibe practical approach and solution to solve environmental concerns

Text / Reference Books:

AUTHOR	TITLE	Publisher	Year of publication	ISBN	Pages
William P. Cunningham, Mary Ann Cunningham	Principles of Environmental Science	McGraw-Hill	2019	9781260219715	--
William P. Cunningham, Mary Ann Cunningham, Barbara Woodworth Saigo	Environmental Science: A global concern,	McGraw-Hill	2021	9781260363821	--

Gurjar B. R., Molina L.T., Ojha C.S.P. (Eds.)	Air Pollution: Health and Environmental Impacts	CRC	2010	9781439809624	--
Elaine M.A. and Bugyi G.(Eds.)	Impact of Water Pollution on Human Health and Environmental Sustainability (Practice, Progress, and Proficiency in Sustainability)	Idea Group, U.S	2016	978-1466695597	--
Bryant E.	Natural Hazards, 5th Edition	Cambridge University Press	2004	978-0521537438	--
Keith Smith	Environmental Hazards Assessing Risk and Reducing Disaster	Oxford University Press	2013	978-0415681063	--

Annexure **'CD-01'**

L	T	P/S	SW/FW	Total Credit Units

1	0	0	0	1

Course Title: ARCHITECTURAL COMMUNICATIONS
Course Code:
Credit Units:1
Course Level: UG
Course Objectives: To introduce the students to the architectural vocabulary in a graded manner.
Prerequisites: Basic knowledge of English.

Course Contents/syllabus:

Unit I: Grammar	**03 Hours**
• **Agreement of verb and subject, articles, prepositions, punctuation, change of voice, narration, common errors in English-**Introduction to communication, language, speaking skills and writing skills. Exercises related to building vocabulary, building sentences, pronunciation drills, conversational skills, language, the writing process, writing with a thesis, writing topic sentences, writing a paragraph • **Vocabulary of Architecture -**Introduction to building construction components to learn vocabulary of architecture, understanding relation between architectural designs, building components (Foundation, plinth, wall, sill, lintel, roof, doors, windows, ventilators, staircases, sunshades etc.) along with the building materials.	
Unit II: Writing for Events	**04 Hours**
• **Writing pertaining to events/activities. Paper presentation-** Writing and selecting a theme for an event. Preparing and delivering simple and interactive presentations on a selected theme using computer software. Public speaking for above types of presentations.	
Unit III: Technical composition	**04 Hours**
• **Technical composition (e.g., reports, papers essays) writing. Writing reports on Design projects/complexes** • **Presenting architectural concepts and proposals with the help of text, images, slides, video, photographs, models etc-**Preparing and delivering simple and interactive presentations on a selected theme using computer software. Public speaking for above types of presentations.	

Unit IV: Review Writing	**04 Hours**
• **Article reviews, Presentations and Seminars to be done in individual and group work on selected themes-** Understanding sequences and framework for presentation, importance of posture, gesture, pronunciation, tone etc. on presentation quality. Decision regarding selection of appropriate media such as text, photographs, videos, etc. for effective communication.	

Course Learning Outcomes:

CL01	Acquire fluency in spoken and written English
CL02	Able to communicate and understand with clarity, precision and confidence in the Architectural workplace.
CL03	Apply understanding of cultural, historical, and current perspectives on the manmade and natural environment
CL04	Ability to present an idea / theme / concept / notion effectively and confidently

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Francis D.K. Ching	A Visual Dictionary of Architecture Paperback – Illustrated	Wiley	1995	978-470648858	320
Das	An Introduction to Professional English and Soft Skills	Cambridge University Press	2009	978-8175966727	272
Kul Bhushan Kumar and R.S. Salaria	Effective Communication Skills	Khanna Publishing	2018	9789382609940	404
S. Freeman	Written Communication in English	Orient BlackSwan	1977	8125004262	224

Annexure **'CD-01'**

L	T	P/S	SW/FW	Total Credit Units
0	0	2	0	1

Course Title: COMPUTER APPLICATIONS
Course Code:
Credit Units:1
Course Level: UG
Course Objectives: To Introduce students to MS Office tools- M S Word, MS Excel and MS Power-point.
Prerequisites: Basic knowledge of English.

Course Contents/syllabus:

Unit I:	**09 Hours**
• **Understanding the basic commands & Formulae of MS Office Tools like 'MS Word' & 'MS Excel'.** • **Application of Standard, Formatting Tool Bars & Status Bar** • **Saving and Publishing documents/spreadsheets** To learn the Use of different software for word processing with emphasis on report writing. Application of data processing software for performing calculations and analyzing data. Use of spreadsheet for various mathematical calculations. Preparations of templates for regular repetitive functions.	

Unit II:	09 Hours
• **Presenting concepts and proposals with the help of Text, Images & Drawing Tool Bars.** • **Inserting tables, Pie charts & drawings and animating them.** • **Creating Macros & Hyperlinks.** To understand the Use of different presentation software for word processing with emphasis on presentation	
Unit III:	**09 Hours**
• **Understanding the basic commands of 'MS Power-point'.** • **Importing spreadsheets or documents with other extension types** Application of data processing software for linking pages and analyzing data. Use of different software for making presentations / slide shows. To present data and information by using text, images, diagrams with animations, transitional effects and audio movie input, etc. .Application of data processing software for linking pages and analyzing data. Understanding bit-map images and vector graphics, image size and resolution. Basic tools for editing and creating graphics. Photo editing. **Learning the commands of 'MS Access' to apply interactive database management tools to presentations Preparing simple and interactive slide shows and presentations to present papers/ Seminars** • **Page Setup & Print Command.** • To learn the overall finalization and formatting of presentation for final presentation. Learning the Commands related to the finalization shall be discussed in this.	
Unit IV:	**09 Hours**
.**Introduction to Drawing Tools and creating 2D & 3D models in 'Paint 3D' App by Microsoft** Use of different layer styles, non-destructive filters, curves and levels, blending modes, etc. to enhance image.	

Course Learning Outcomes:

CLO1	Understanding the office tools and the basic functioning
CLO2	Applying formatting to documents and designing their layouts

CLO3	Analyzing the presentation tools and their utility
CLO4	Evaluating the printability of the documents and spreadsheets

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Michael Price	Office 2013 in Easy Steps	McGraw Hill Education	2017	978-9351344773	240

Annexure **'CD-01'**

L	T	P/S	SW/FW	Total Credit Units
1	0	0	0	1

Course Title: FBL-I, FRENCH GRAMMAR
Course Code:
Credit Units: 1
Course Level: UG/PG

Course Objectives: This course enables the students to read, comprehend, and analyze a wide range of texts such as small paragraphs and comprehensions in French. Upon completion, students should be able to comprehend and respond with grammatical accuracy to spoken and written French as well as demonstrate cultural awareness.

Course Contents/syllabus:

	Teaching Hours
Unit-I : My family and my house	**4**
Descriptors/Topics • Talk about your family members	

• Usage of possessive adjectives • Describe your house/apartment • Prepositions of location • Negation	
Unit-II- Lifestyle	**3**
Descriptors/Topics • Talk about your hobbies and pastimes • Usage of appropriate articles : definite and contracted • Talk about your daily routine • Usage of pronominal verbs	
Unit-III- In the city	**3**
Descriptors/Topics • Filling up a simple form • Ask for personal information • Usage of interrogative adjectives • Give directions about a place • Ordinal numbers • Usage of demonstrative adjectives	
Unit-IV- Week-end	**3**
Descriptors/Topics • Talk about your week-end plans • Usage of disjunctive pronouns • Usage of Near Future tense • Talk about weather • Write a simple post card	

Course Learning Outcomes: At the end of this course, the students will be able to interact in a simple way on everyday topics. This course content focuses on the speech of the students in a lucid and a concurrent manner using appropriate vocabulary and pronunciation techniques. Extra stress will be given on their understanding of grammatical structures and the foreign accent of the language. At the end of the course, the student shall be able to:

CLO1	Understand information; Express in his own words; Paraphrase; Interpret and translate
CLO2	Apply information in a new way in a practical context

CLO3	Analyze and break-down information to create new ideas
CLO4	Evaluate and express opinion in a given context

Text / Reference Books:

Author	Title	Publisher	Year of Publication	ISBN No
Christine Andant, Catherine Metton, Annabelle Nachon, Fabienne Nugue,	A Propos - A1, Livre de l'élève et Cahier d'exercices.	Langers International Pvt. Ltd.	2010	978-9380809069
Collins Dictionaries	Easy Learning French Complete Grammar, Verbs and Vocabulary	Collins	2016	978-0008141721
Nikita Desai, Samapita Dey Sarkar	Apprenons La Grammaire Ensemble - French	Langers International Pvt. Ltd.	2017	978-8193002681

Annexure **'CD-01'**

Course Title: FBL-I, German Grammar
Course Code:
Credit Units: 1
Course Level: UG/PG

L	T	P/S	SW/FW	Total Credit Units
1	0	0	0	1

Course Objectives: To help students learn:

- how to tell time.
- to write simple sentences and conversations using irregular verbs.
- to frame sentences with one subject and direct objects also revising the Nominative case done in the previous semester.

Course Contents/syllabus:

	Teaching Hours
Module I: Time (Uhrzeit); People and the World: Land, Nationalität und Sprache	**4**
• Introduction of time • Read text related to time and teach the students the time expressions • Exercises related to Time • Adverbs of time and time related prepositions • Vocabulary: Countries, Nationalities, and their languages • Negation: “nicht/ kein” • Ja/Nein Fragen. • All the colors and color related vocabulary, adjectives, and opposites • Exercises and comprehension for the same.	
Module II: Irregular verbs (unregelmässige Verben)	**3**
• Introduction to irregular verbs and their conjugation e.g. fahren, essen, lesen etc • Read a text related to the eating habits of Germans • Vocabulary: Obst, Gemüse, Kleiderstück with usage of irregular verbs • Free time and hobbies • Food and drinks	
Module III: Accusative case: articles and pronouns (Akkusativ Kasus: Artikel und Pronomen)	**3**
• Introduction to the concept of object (Akkusativ) • Formation of sentences along with the translation and difference between nominative and accusative articles • Usage of accusative Definite articles • Usage of accusative Indefinite articles	
Module IV: Accusative case: possessive pronouns (Akkusativ Kasus: Possessivpronomen) Family and Relationship	**3**
• Accusative Personal Pronouns: - Revision of the nominative personal pronouns and introduction of accusative. Applicability of pronouns for both persons and things. • Usage of accusative Personal Pronouns • Introduction of accusative possessive pronouns • Difference between nominative and accusative possessive pronouns	

• usage of accusative possessive pronouns	

Course Learning Outcomes: After completing these modules, the students will be capable of constructing sentences with possessive and demonstrative adjectives in German. In addition, they will be proficient in formulating meaningful sentences as they will be capable of applying their knowledge of all the irregular verbs they have learnt during the session. They will also have an idea of German culture by studying about various German festivals.

At the end of the course, the student shall be able to:

CLO1	Understand information; Express in his own words; Paraphrase; Interpret and translate
CLO2	Apply information in a new way in a practical context
CLO3	Analyze and break-down information to create new ideas
CLO4	Evaluate and express opinion in a given context

Author	**Title**	**Publisher**	**Year**	**ISBN No**	**Pages**
Dora Schulz, Heinz Griesbach	Deutsche Sprachlehre Fur Auslander	Max Hueber Verlag	1984	978-3190010066	-
Hartmut Aufderstrasse, Jutta Muller, Helmut Muller	Themen Aktuell: Glossar Deutsch	Max Hueber Verlag	2003	978-3190816903	-
Giorgio Motta	Wir Plus Grundkurs Deutsch fur Junge Lerner Book German Guide	Goyal Publishers	2011	9788183072120	248

Program Structure- 2nd Sem

Courses shown in blue colour below are the courses offered by School of Architecture & Planning and the syllabi of the same were proposed in the meeting.

Sr. No	Course Code	Course Title	Course Type			Credit				Credit Units
				L	T	PS	FW	SW	AR/Des Studio	
1		Architectural Design-II	Professional Core Courses	0	0	2	0	0	6	8
2		Building Construction & Materials-II	Core Courses	0	0	1	0	0	3	4
3		Architectural Graphics-II	Professional Core Courses	0	0	0	0	0	3	3
4		Structures in Arch. -II	Allied Courses	3	0	1	0	0	0	3

5		Arch. Drawing - II	Professional Core Courses	0	0	0	0	0	3	3
6		Architectural Model Making Workshop-I	Skill Component Core Courses	0	0	1	1	0	0	1
7		Parametric Architecture-I (Internet, AI & sketching Applications)	Skill component -Core Courses	0	0	2	0	0	0	1
8		Environmental Studies - II	Ability Enhancement courses	2	0	0	0	0	0	2
9		Foreign Business Language	Value Added Courses	1	0	0	0	0	0	1
		Total Credits						**Min Required: 26 Semester Credits: 26**		

Course Design Contents -SEM II onwards

Annexure **'CD-01'**

L/DS	T	P/S/J	SW/FW	Total Credit Units
6	0	2	0	8

Course Title: ARCHITECTURE DESIGN- II
Course Code:
Credit Units:8
Course Level: UG

Course Objectives: To develop the design of single storeyed structure laying the emphasis on form, function and structure systems. The design presentation will be focussed on space Analysis with sectional details. The students should be sensitized to design for physically challenged also.

Prerequisites: Basic understanding of scale and drafting sketches.

Course Contents/syllabus:

	Weightage	**Teaching Hours**
Unit I: Introduction to Scale		
• Introduction of scale in Spatial Layout; • Application of Anthropometry and work triangle in residential Kitchen. • Application of human scale in Toilet design.	25%	28 Hours
SITE VISITS: • Site visit to Chandigarh Houses, Govt. Houses – Different Prototypes and Independent Marla Houses. • Taking Measurements and Sketching to understand the application of human scale and anthropometry in Toilet & Kitchen design. Work triangle to be highlighted in Kitchen design. Understanding types and shapes of Toilets, Toilet Seats, etc.		8 Hours
Unit II: Design of Single-cell Units		
• Study and differentiate human needs, wants and desire • Study of cases for different user's requirements • Transform the behavioral requirements into space form • Study of relationship among spaces with proximity chart e.g. 1Bed Room Residence	25%	28 Hours

SITE VISITS: • Site Visit to 1BHK Residence (EWS residence in Bapu Dham Colony, Studio Apartment) along with services and parking to understand Interrelationship of spaces & Space Adjacency Matrix.		8 Hours
Unit III: Barrier Free Spaces		
• Distribution of the human activity spaces considering the physical barriers as challenge. • Analyze the relationship among the spaces e.g; Designing a cottage/farmhouse for an elderly couple/ a bachelor while keeping in view the provisions for physically challenged person	25%	28 Hours
SITE VISITS: • Visit to Old Age Home (Senior Citizen Home, Sec-43/ Sri Satya Sai Old Age Home, Sec-30/ Akal Old Age Home, Mullanpur) to take Measurements and Sketch and understand the special requirements of elderly and differently abled.		8 Hours
Unit IV: Public Service Zones		
• Composition of spaces with geometric or non-geometric forms Visualization of Architectural composition from different positions on context • Colour composition of exterior and interior spaces • Application of building materials according to colour composition and texture • Verbal presentation with technical drawings of built form. Example - Design of Milk Booth/ Snack Bar/ Security check Post as a time problem.	25%	28 Hours

SITE VISITS: • Visit to Milk Booth in Leisure Valley/ Rock Garden/ Govt. Arts Museum and College to understand composition of spaces with geometric or non-geometric forms & application of colours, textures and different building materials. Documentation of site(s) visited with photographs, sketches and critical analysis.		8 Hours

Course Learning Outcomes:

CLO1	To understand the application of the architectural design process for small scale projects of human habitat
CLO2	To transform the human behavioural needs into architectural program requirements
CLO3	To analyze the information on context and the human-space relationship
CLO4	To compose the architectural spaces in a design project

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Donald Watson, Michael Crosbie, John Cllender	Time Saver Standard for Architectural Design Data	McGraw-Hill Education	1997	0070685061	1024
Francis D.K.Ching	Architecture Form, Space and Order	John Wiley & Sons,	2014	9781118745083	464
V.S.Pramar	Design Fundamentals in Architecture	Somaiya Publications Pvt.Ltd., New Delhi	1997.	8170391709	270
Ernst Neufert	Neuferts Architects Data	John Wiley & Sons	2000	9788126517619	636

Broadbent, G.	Design in Architecture - Architecture and Human Science	John Wiley and Sons. New York	1973	978-471105831	600
Roger, K. L.	Architect? A Candid Guide to the Profession	Cambridge: The MIT Press	1998	0262621215	304

Annexure **'CD-01'**

L/DS*	T	P/S/J	SW/FW	Total Credit Units
3	0	1	0	4

Course Title: BUILDING CONSTRUCTION & MATERIALS -II
Course Code:
Credit Units: 4
Course Level: UG
Course Objectives: To familiarize the students with detail of various components.
To introduce the building materials, their properties and application in construction

Prerequisites: Basic knowledge of drawing.

Course Contents/syllabus:

	Weightage (%)	Teaching Hours
Unit I: Cementitious Materials		
Lime, Cement & Aggregate- sources, classification, properties and method of manufacturing, mixing and uses, applications & functions of Good Mortars/ Concrete Damp-proofing.- methods of Horizontal and Vertical DPC	**25%**	**14 Hours**
Site Visits: Visit to nearby construction site and material testing lab to see different materials like lime, cement, aggregate. Audio-video documentation of the process of laying DPC / plastering. Visit to Ambuja Knowledge Centre Sec-5, Panchkula		**4 Hours**
Unit II: Introduction to Shallow Foundations		
Types, and Design of Shallow Foundations- spread footings, Mat Foundations, Raft Footings	**25%**	**14 Hours**
Site Visits: Visit to nearby construction site to observe process of casting shallow / deep foundations. Documentation of site(s) visited with photographs and sketches. Visit to Aerocity projects/ JLPL/ HLP Galleria on Zirakpur-Patiala highway.		**4 Hours**
Unit III: Introduction to Deep Foundations		
Pile Foundations, Grillage Foundations, Caisson Foundations & their materials.	**25%**	**14 Hours**
Site Visits: Visit to nearby construction site to observe process of excavation and construction of foundations Documentation of site(s) visited with photographs and sketches.		**4 Hours**

Unit IV: Sectional Details of a Building		
Cutting a section through the wall- single storey building showing various components of building including kitchen, toilet and stairs	**25%**	**14 Hours**
Site Visits: Visit to nearby construction site to observe and document process of construction of stairs – laying of landing beam & slab, waist slab, treads & risers, finishing, balustrade & railing, etc. Drawing sectional details of a building.		**4 Hours**

Course Learning Outcomes:

CLO1	To develop understanding about cementitious materials and complex foundations and the constructions techniques involved.
CLO2	To comprehend the constructions techniques involved in foundations and damp proofing
CLO3	To analyse the properties of various construction materials used for mortars and damp-proofing
CLO4	To evaluate the best suitable materials and techniques for erection of single storey building

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
R Barry	Building Construction	Wiley-Blackwell	1999	9780632052615	288
Sushil kumar	Building Construction	Standard Publishers Distributors	2006	8186308024, 9788186308028	796

Don A. Watson	Construction Materials and Processes,	McGraw Hill Co	1972	978-0070684768	512
W.B.Mckay,	'Building Construction', Vol.1, 2, 3, Longmans, U.K. 1981.	Longman	1970	812500940X, 9788125009405	480
R.Chudley	The Construction of Building (Vol 1)	Longman Scientific & Technical.	1999	9780582413955	192
S.K. Duggal	Building Materials	New Age International Publishers	2021	9789387788398	600
Dr. B.C. Punmia, Er. Ashok K. Jain, Dr. Arun K. Jain	Building Construction	Laxmi Publications (P) LTD	2017	9788131804285	668

Annexure **'CD-01'**

L/DS*	T	P/S	SW/FW	Total Credit Units
3	0	0	0	3

Course Title: ARCHITECTURAL GRAPHICS-II
Course Code:
Credit Units: 3

Course Level: UG

Course Objectives: To enable the students in developing appropriate manual skills for visualization and representation of built forms in different types of drawings..
To familiarize the students with the development of art in Colour as a medium**.**

Prerequisites: Basic knowledge of sketching styles appropriate to proportional development of figures.

Course Contents/syllabus:

	weightage	HOURS
Unit I: Color Wheel and Color Schemes		
• Design of compositions in color wheel with primary/ secondary/tertiary schemes. Rendering schematic layouts with Pencil colors/water colors/ poster colors	**22%**	**09 Hours**
• SITE VISIT: To Sector 17 Mural and /or Government model high schools or fine arts college sector 10.		**03 Hours**
Unit II: Pencil Crayons and Oil Pastels as presentation medium		
• Rendering of various surfaces such as brick, stone, grass, timber etc. • Trees, Human figures, Automobiles, Lamp Posts, Street furniture in Plan, Elevation and Perspective in Crayons and Oil Pastels	**26%**	**11 Hours**
• SITE VISIT: Outdoor sketching and rendering of various surfaces like brick, stone, timber, grass, glass, etc.		**03 Hours**
Unit III: Water Color Rendering		
• Outdoor free hand sketching and Color rendering of Trees, Shrubs, Vegetation, buildings, Vehicles etc.	**26%**	**11 Hours**
• SITE VISIT: Outdoor sketching (plan, elevation, perspective) and rendering of buildings, trees, humans, automobiles, etc. using pencil / water colours.		**03 Hours**
Unit IV: Poster Color Rendering		
• Color Rendering of various scenes such as Garden scene, Street Scene, Lake scene, Village scene, etc..	**26%**	**11 Hours**

• SITE VISIT: Visit to Leisure Valley / Sukhna Lake / Rock Garden for Colour Rendering of various scenes such as Garden Scene, Street Scene, Lake scene, Village scene, etc.		**03 Hours**

Course Learning Outcomes:

CLO1	Explain and illustrate usage of pencil as a tool in Architecture profession.
CLO2	Develop architectural hand using calligraphy
CLO3	Identify and develop understanding of interrelationship between 2D and 3D form of simple object, with the help of sketching
CLO4	Depiction of 3D scenes engaging scale and proportion to determine anthropometric representations.

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Pratap Mulick	Sketching	Jyotsna Prakashan	2006	9788179251041	136
Gill Robert W	Rendering with pen & ink	Thames & Hudson	1984	9780500680261	400
Francis D.K. Ching	Architectural Graphics	CBS Publishers and Distributers PVT. LTD	6ED	978-1119035664	272

Annexure **'CD-01'**

L	T	P/S	SW/FW	Total Credit Units
3	0	0	0	3

Course Title: STRUCTURES IN ARCHITECTURE –II
Course Code:
Credit Units: 3

Course Level: UG

Course Objectives: To create awareness of concepts of Static Analysis, Strength of materials, their behavior & Structural analysis leading to application based learning as required for Architectural Design.

Prerequisites: Basic knowledge of geometry.

Course Contents/syllabus:

Unit I: Design for 4S	**12 Hours**
Synergy, Strength, stiffness & Stability. Stress & Strain - Stress, strain, Hooke's law, Stress strain Curve, stresses in simple & composite section. Modulus of elasticity (Young's Modulus). Constitutive relationship between stress and strain • Analysis of bars of varying sections • Analysis of uniformly tapering circular rod • Analysis of uniformly tapering rectangular bar. • Analysis of bars of composite sections • Thermal Stresses • Thermal stresses in composite bars • Elongation of bar due to its own weight • Analysis bar of uniform strength	
Unit II: **Temporary Stresses**	**14 Hours**
Longitudinal strain • Lateral Strain • Poisson's Ratio • Volumetric Strain • Volumetric strain of cylindrical rod • Bulk modulus • Principle of complementary shear stresses	
Unit III: Bending Moment & Shear Force	**14 Hours**
Basic concepts, B.M. & S.F. Centroid or centre of gravity of simple plane figures. Parallelogram Law of Forces • Resolution of forces- Triangular Law of forces, Polygon Forces.	

Diagram for simple beam & frames for various type of Loading & support condition Bending stress in beams- Theory of simple bending, section Modulus. Relationship between load, shear force and bending moment diagrams	
Unit IV: Strength of Sections	**14 Hours**
Bending stresses in symmetrical & asymmetrical section,. Shear stress in beams in symmetrical structure. Fixed & continuous Beams Working out structure systems for Layout of a small building	

Course Learning Outcomes:

CLO1	Study of stresses and strains and their effect in various elements.
CLO2	Analytical method for determining stresses and strains in the oblique section.
CLO3	Apply the knowledge of resolution of forces and theorems related with equilibrium
CLO4	Evaluate the method to draw and make shear force and bending moment diagrams.

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Salvadori, **Oakley,** and Heller	Structure in Architecture- The building of Buildings	Pearson; 4th edition	2016	978-0132803205	240
Surjeet Kumar	Theory of Structures	Vayu	2014	978-9380097879	234
Angus J. Macdonald	Structure and Architecture	Routledge	2018	978-1138629226	360

Daniel Schodek , Martin Bechthold	Structures	Pearson; 7th edition	2013	978-0132559133	576
R.K. Bansal	Strength of Materials	Laxmi Publications	2011	978-8131808146	
Sadhu Singh	Strength of Materials	Khanna Publications	1978	978-8174090485	1250

Annexure **'CD-01'**

L/DS*	T	P/S	SW/FW	Total Credit Units
3	0	0	0	3

Course Title: ARCHITECTURAL DRAWING-II
Course Code:
Credit Units: 3
Course Level: UG

Course Objectives: To enable the students draw 3D drawings manually and develop the understanding of perspective drawings.
Prerequisites: Basic knowledge of drawing

Course Contents/syllabus:

Unit I: Isometric projections	**12 Hours**
Metric drawings, projections and their dimensions. Types used & advantage • Isometric, Axonometric & Oblique view • Metric drawings, projections and their dimensions • Difference between perspective and metric projections Isometric of simple forms.	
Unit II: Axonometric projections	**14 Hours**
Axonometric of simple architectural forms and of simple household furniture items Developing Axonometric views at 45 degrees inclination for table, chairs, stools, exterior views of single storeyed structures in different shapes.	
Unit III: Perspective Drawing (One Point perspective)	**14 Hours**
Anatomy of perspective: Station point, Eye level, Cone of vision, Picture plane, Horizon line, Ground line, Vanishing points • Types of perspectives : One point, Two point, Three point Parallel Perspective- One point and two points perspectives of interiors • Perspective of different Solids and Building elements	
Unit IV: Perspective Drawing (Two Point perspective)	**14 Hours**
Introduction to theory of Geometrical Perspective Drawing. Angular (Two Point Perspective)of building exterior and simple architectural forms	

Course Learning Outcomes:

CL01	Explain and illustrate usage of various manual drafting tools and techniques, used in Architecture profession.
CL02	Identify and develop understanding of interrelationship between 2D and 3D form of simple object, with the help of orthographic Projections
CL03	Analyse the sectional modeling of 3D solids through drawings
CL04	Build and Create, 3D paper models, of simple built form, using surface development technique

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Bhatt, N. D.	Engineering Drawing ; Plane and Solid Geometry.	Charotar Publishing House Pvt. Limited.	2010	978-9380358178	720
Dhawan R K	Fundamentals of Engineering Drawing	S Chand	2014	978-121939263	456

Annexure **'CD-01'**

Course Title: ENVIRONMENTAL STUDIES-II
Credit Units: 2
Course Level: B. Sc.

Course Objectives: To develop basic understanding of the environment and role of humans in shaping it.
Prerequisites: Basic knowledge of environment around us.

Course Contents/syllabus:

	Total Hours
Unit-1- Environmental Pollution	**9 Hours**
Environmental Pollution: types, Cause, effects and controls –Air, water, soil, chemical and noise pollution. Nuclear hazard and human health risk Solid waste Management-control measures of urban and industrial waste. Pollution case studies.	
Unit-2- Environmental Policies and practices	**9 Hours**
Environmental Policies and practices: Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture. Environment laws: Environment Protection Act; Air (Prevention and Control of Pollution) Act; Water (Prevention and Control of Pollution) Act; Wildlife Protection Act; Forest Conservation Act, international agreements: Montreal and Kyoto protocols and convention on biological diversity(CBD), The Chemical Weapons Convention (CWC). Natural reserves, tribal population and rights and Human-wildlife conflict in Indian context.	
Unit-3- Human communities and the Environment	**9 Hours**
Impacts on environment, human health and welfare. Carbon foot-print. Resettlements and rehabilitation of project affected persons, case studies. Disaster management: floods, earthquake, cyclone and landslides. Environmental movements: Chipko, Silent valley, Bishnois of Rajasthan. Environmantal ethics: Role of Indian and other religions and cultures in environmental conservation. Environmental communication and public awareness, case studies (e.g., CNG vehicles in Delhi).	
Unit-4- Field work	**9 Hours**
• Visit to an area to document environmental assets: river/forest/flora/fauna, etc. • Visit to local polluted Site-Urban/Rural/Industrial/Agricultural • Study of common plants, insects, birds and basic principles of identification. • Study of simple ecosystems-pond, river, Delhi Ridge, etc.	

Course Learning Outcomes: At the end of this course, the students will be able to develop:

- Understanding the types of pollution and their impact on environment and human health.

- Understand the environmental concerns and their impact on humans and agriculture.
- Able to analyse the impacts of natural and manmade disaster on human population and settlements.
- Sensitization about the environmental issues and concerns leading to proactive actions to improve the environmental conditions in our daily life.
- Able to imbibe practical approach and solution to solve environmental concerns.

Text / Reference Books:

AUTHOR	TITLE	Publisher	Year of publication	ISBN	Pages
William P. Cunningham, Mary Ann Cunningham	Principles of Environmental Science	McGraw-Hill	2019	9781260219715	--
William P. Cunningham, Mary Ann Cunningham, Barbara Woodworth Saigo	Environmental Science: A global concern,	McGraw-Hill	2021	9781260363821	--
Gurjar B. R., Molina L.T., Ojha C.S.P. (Eds.)	Air Pollution: Health and Environmental Impacts	CRC	2010	9781439809624	--
Elaine M.A. and Bugyi G.(Eds.)	Impact of Water Pollution on Human Health and Environmental Sustainability	Idea Group, U.S	2016	978-1466695597	--

	(Practice, Progress, and Proficiency in Sustainability)				
Bryant E.	Natural Hazards, 5th Edition	Cambridge University Press	2004	978-0521537438	--
Keith Smith	Environmental Hazards Assessing Risk and Reducing Disaster	Oxford University Press	2013	978-0415681063	--

Annexure **'CD-01'**

L/DS*	T	P/S	SW/FW	Total Credit Units
0	0	1	1	1

Course Title: ARCHITECTURAL MODEL MAKING WORKSHOP-I
Course Code: ACH112
Credit Units: 3
Course Level: UG

Course Objectives: To familiarise students with different types of materials and manufacturing techniques for creating art forms/ models.
Prerequisites: Basic knowledge of drawing

Course Contents/syllabus:

Unit I: Identifying tools and materials for craft work	9Hours
• Introduction to the use of different types of tools used in carpentry/ model making with variety of materials like paper, thermocol, clay, ceramic, plastic sheet, sheet metal, wood etc. • Rules, safely and precautions • Learning the usage of various materials in 2D and 3D art work • Create an art work with the above materials by hand	
Unit II: Wooden Joints	**9 Hours**
• Different types of joints, joinery details (which are commonly used in timber construction and interiors). • Learning to handle machine tools • Application of machine tools for art work	
Unit III: Soap carving	**9 Hours**
• Study of application of art work in design field • Creation of art work for design presentation • Soap carving to create sculptural forms	
Unit IV: Brick and Stone Masonry	**9 Hours**
• Scaled live examples in construction courtyard- brick and stone masonry	

Course Learning Outcomes:

CL01	To sensitize the usage of various materials for production of art work
CL02	To apply different mediums and machine tools for production various types of art work
CL03	To analyze different mediums for create art forms
CL04	Build and Create, 3D models, of simple built forms, using hand tools and crafting technique

Text / Reference Books:

workshop	Title	Publisher	Ed/year	ISBN No	Pages
Eugene Felder & Emmett Elvin	The complete book of drawing techniques.	Charotar Publishing House Pvt. Limited.	2010	978-9380358178	720

Catherine Norman, Ryland Peters & Small	Paper Scissor Glue	S Chand	2014	978-121939263	456
Tim Mc Creight & Nicole Bsulla	Color on Metal	GUILD Pub	2001		126

Annexure **'CD-01'**

L	T	P/S	SW/FW	Total Credit Units
0	0	2	0	1

Course Title: PARAMETRIC ARCHITECTURE-I
Course Code: ACH113
Credit Units:1
Course Level: UG
Course Objectives: Familiarizing the use of multimedia, AI and web applications
Prerequisites: Basic knowledge of English.

Course Contents/syllabus:

Unit I: Introduction to World Wide Web	**09 Hours**
Use of Internet, various search engines, Applications and plug-ins for Architectural Research	
Unit II: Open-Source Programming Tools	**09 Hours**
• Introduction to computation, parametric modeling, algorithms, scripting, coding and open-source Modeling languages viz. 'Processing' Sketching apps: free hand strokes with stylus	

Unit III: Importing and Rastering Images	09 Hours
• Exercises to understand scale in digital media • Rastering Images • Introduction to tablets: Bamboo- slate/ ipad sketch etc. Developing views and vistas for architectural design	
Unit IV: Introduction to Artifical Intelligence (AI)	**09 Hours**
• The concept of Artifical Intelligence (AI), • Role of AI and its applications in Architectural industry • Robotics and 3D printing	

Course Learning Outcomes:

CLO1	Understand the role of multi-media in Architecture
CLO2	Acquire knowledge of scripting in software tools
CLO3	Apply computing skills to import images for design development
CLO4	Assess the application of AI to the professional practice

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Michael Price	Office 2013 in Easy Steps	McGraw Hill Education	2017	978-9351344773	240
Curtis Hillman	Flash Web Design, The Art of Motion Graph	New Riders Publishing, Indianapolis, IN. U.S.A	2000	9780735708969	240

Casey Reas	Processing- A Programming Handbook for Visual Designers and Artists	MIT Press	2007	978-0262182621	768

Annexure **'CD-01'**

L	T	P/S	SW/FW	Total Credit Units
1	0	0	0	1

Course Title: FRENCH GRAMMAR
Credit Units: 1
Course Level: UG/PG

Course Objectives: This course enables the students to read, comprehend, and analyze a wide range of texts such as small paragraphs and comprehensions in French. Upon completion, students should be able to comprehend and respond with grammatical accuracy to spoken and written French as well as demonstrate cultural awareness.

Course Contents/syllabus:

	Teaching Hours
Unit-I : My family and my house	**4**
Descriptors/Topics • Talk about your family members • Usage of possessive adjectives • Describe your house/apartment • Prepositions of location • Negation	

Unit-II- Lifestyle	**3**
Descriptors/Topics • Talk about your hobbies and pastimes • Usage of appropriate articles : definite and contracted • Talk about your daily routine • Usage of pronominal verbs	
Unit-III- In the city	**3**
Descriptors/Topics • Filling up a simple form • Ask for personal information • Usage of interrogative adjectives • Give directions about a place • Ordinal numbers • Usage of demonstrative adjectives	
Unit-IV- Week-end	**3**
Descriptors/Topics • Talk about your week-end plans • Usage of disjunctive pronouns • Usage of Near Future tense • Talk about weather • Write a simple post card	

Course Learning Outcomes: At the end of this course, the students will be able to interact in a simple way on everyday topics. This course content focuses on the speech of the students in a lucid and a concurrent manner using appropriate vocabulary and pronunciation techniques. Extra stress will be given on their understanding of grammatical structures and the foreign accent of the language. At the end of the course, the student shall be able to:

- Understand information; Express in his own words; Paraphrase; Interpret and translate.
- Apply information in a new way in a practical context
- Analyze and break-down information to create new ideas
- Evaluate and express opinion in a given context

Text / Reference Books:

Author	Title	Publisher	Year of Publication	ISBN No
Christine Andant, Catherine Metton, Annabelle Nachon, Fabienne Nugue,	A Propos - A1, Livre de l'élève et Cahier d'exercices.	Langers International Pvt. Ltd.	2010	978-9380809069
Collins Dictionaries	Easy Learning French Complete Grammar, Verbs and Vocabulary	Collins	2016	978-0008141721
Nikita Desai, Samapita Dey Sarkar	Apprenons La Grammaire Ensemble - French	Langers International Pvt. Ltd.	2017	978-8193002681

Annexure **'CD-01'**

L	T	P/S	SW/FW	Total Credit Units
1	0	0	0	1

Course Title: GERMAN GRAMMAR
Credit Units: 1
Course Level: UG/PG
Course Objectives: To help students learn:

- how to tell time.

- to write simple sentences and conversations using irregular verbs.
- to frame sentences with one subject and direct objects also revising the Nominative case done in the previous semester.

Course Contents/syllabus:

	Teaching Hours
Module I: Time (Uhrzeit); People and the World: Land, Nationalität und Sprache	**4**
• Introduction of time • Read text related to time and teach the students the time expressions • Exercises related to Time • Adverbs of time and time related prepositions • Vocabulary: Countries, Nationalities, and their languages • Negation: “nicht/ kein” • Ja/Nein Fragen. • All the colors and color related vocabulary, adjectives, and opposites • Exercises and comprehension for the same.	
Module II: Irregular verbs (unregelmässige Verben)	**3**
• Introduction to irregular verbs and their conjugation e.g. fahren, essen, lesen etc • Read a text related to the eating habits of Germans • Vocabulary: Obst, Gemüse, Kleiderstück with usage of irregular verbs • Free time and hobbies • Food and drinks	
Module III: Accusative case: articles and pronouns (Akkusativ Kasus: Artikel und Pronomen)	**3**
• Introduction to the concept of object (Akkusativ) • Formation of sentences along with the translation and difference between nominative and accusative articles • Usage of accusative Definite articles • Usage of accusative Indefinite articles	
Module IV: Accusative case: possessive pronouns (Akkusativ Kasus: Possessivpronomen) Family and Relationship	**3**
• Accusative Personal Pronouns: - Revision of the nominative personal pronouns and introduction of accusative. Applicability of pronouns for both persons and things. • Usage of accusative Personal Pronouns	

• Introduction of accusative possessive pronouns • Difference between nominative and accusative possessive pronouns • usage of accusative possessive pronouns	

Course Learning Outcomes: After completing these modules, the students will be capable of constructing sentences with possessive and demonstrative adjectives in German. In addition, they will be proficient in formulating meaningful sentences as they will be capable of applying their knowledge of all the irregular verbs they have learnt during the session. They will also have an idea of German culture by studying about various German festivals.

At the end of the course, the student shall be able to:

- Understand information; Express in his own words; Paraphrase; Interpret and translate.
- Apply information in a new way in a practical context
- Analyse and break-down information to create new ideas
- Evaluate and express opinion in a given context

Text / Reference Books:

Author	Title	Publisher	Year	ISBN No	Pages
Dora Schulz, Heinz Griesbach	Deutsche Sprachlehre Fur Auslander	Max Hueber Verlag	1984	978-3190010066	-
Hartmut Aufderstrasse, Jutta Muller, Helmut Muller	Themen Aktuell: Glossar Deutsch	Max Hueber Verlag	2003	978-3190816903	-
Giorgio Motta	Wir Plus Grundkurs Deutsch fur Junge Lerner Book German Guide	Goyal Publishers	2011	9788183072120	248

Program Structure- 3rd sem

Courses shown in blue colour below are the courses offered by School of Architecture & Planning and the syllabi of the same were proposed in the meeting.

Sr. No	Course Code	Course Title	Course Type			Credit				Credit Units
				L	T	PS	FW	SW	AR/Des Studio	
1		Arch. Design - III	Professional Core Courses	0	0	2	0	0	6	8
2		BCM - III	Core Courses	0	0	1	0	0	3	4
3		Comp. Graphic Skills-I (Autocad Basics+Sketch Up)	Skill Enhancement Courses	0	0	0	0	0	3	3
4		Structures in Arch. - III	Allied Courses	3	0	0	0	0	0	3
5		History of Arch. - I	Professional Core Courses	3	0	0	0	0	0	3
6		Surveying & Levelling	Allied Courses	0	1	2	0	0	0	2
7		Architectural Model Making Workshop-II	Skill Component Core Courses	0	0	1	1	0	0	1
8		Parametric Architecture-II (Programming with 'C')	Skill Enhancement Courses	0	0	2	0	0	0	1

9		Photography Skills	Skill Enhancement Courses	0	0	2	0	0	0	1
		Total Credits						**Min Required: 26 Semester Credits: 26**		

Annexure **'CD-01'**

L/DS	T	P/S/J	SW/FW	Total Credit Units
6	0	2	0	8

Course Title: ARCHITECTURE DESIGN-III
Credit Units:8
Course Level: UG

Course Objectives: To develop the design of small buildings with respect to site, landscape, climate and Socio-economic conditions in urban context & the application of anthropometrics

Prerequisites: Basic understanding of scale and drafting sketches.

Course Contents/syllabus:

Unit I: Understanding of Socio-Cultural Attributes of the Physical Environment	**28 Hours**

Context and elements of built and un- built spaces in an observable setting to develop the understanding of socio-cultural attributes of the physical environment, methods of construction emerging out of the way of life of the people in a given place including topographical and climatic survey. Major Design Problem -Developing design of a residence (up to 2-storeys) considering site orientation, prevailing wind direction and the use of local building materials	
Unit II: Climatic Considerations in spatial Layout	**28 Hours**
Integrating attributes in terms of facility development, plan form, volume, orientation, climatic considerations and space organization Major Design Problem (contd) -Developing design of a residence (up to 2-storeys) considering site orientation, prevailing wind direction and the use of local building materials	
Unit III: Integrating Structural Concepts	**28 Hours**
Identifying the spatial requirements emerging out of activities aesthetic appeal, functional quality and elementary structural concepts required to evolve the specific form Minor Design Problem- Evolving design of public place like Exhibition Kiosk cum Artisan Haat /Post Office Extension Counter in a suburban setting.	
Unit IV: Integration of Form & Function	**28 Hours**
Climatic consideration for the design, orientation of building on site their application in elevations as functional/aesthetic solutions will also be a part of the design exercise Minor Design Problem(contd)- Evolving design of public place like Exhibition Kiosk cum Artisan Haat /Post Office Extension Counter in a suburban setting. Time-problem- Design of Creche {pre-School Activity spaces}.	

Site Visits/ Case Studies:32 sessions

- Design problems will be introduced on the basis of live case studies and site visits as mandatory component of design studio to impart experiential learning.
- Field visits to enrich students' knowledge of context development for well-designed residences and public spaces

Course Learning Outcomes:

CLO1	To develop sensitivity towards existing informal settings and elements of built space.
CLO2	To map gathered information of visited physical setting
CLO3	To critique the materials, construction techniques and structural systems used in the elements of built forms
CLO4	To evaluate climate responsive techniques applicable to simple structures

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Donald Watson, Michael rosbie, John Cllender	Time Saver Standard for Architectural Design Data	McGraw-Hill Education	1997	0070685061	1024
Francis D.K.Ching	Architecture Form, Space and Order	John Wiley & Sons,	2014	9781118745083	464
V.S.Pramar	Design Fundamentals in Architecture	Somaiya Publications Pvt.Ltd., New Delhi	1997.	8170391709	270
Ernst Neufert	Neuferts Architects Data	John Wiley & Sons	2000	9788126517619	636
Broadbent, G.	Design in Architecture - Architecture and Human Science	John Wiley and Sons. New York	1973	978-471105831	600

Roger, K. L.	Architect? A Candid Guide to the Profession	Cambridge: The MIT Press	1998	0262621215	304
Michael Malone	The Architect's Guide to Residential Design	McGraw-Hill Education	2010	978-0884154303	272
Donald B. Corner (Author), Jan C. Fillinger (Author), Alison G. Kwok	Passive House Details: Solutions for High-Performance Design	Routledge	2017	978-1138958265	332

Annexure **'CD-01'**

L/DS*	T	P/S/J	SW/FW	Total Credit Units
3	0	1	0	4

Course Title: BUILDING CONSTRUCTION & MATERIALS-III
Credit Units: 4
Course Level: UG
Course Objectives: To introduce and familiarize the students with constituents, manufacturing process/ availability/ properties/characteristics/defects/ classifications and usage of traditional building materials and their use in simple building work.
To make students understand and appreciate the various methods of building construction in coordination with the building materials and science related to them

Prerequisites: Basic knowledge of drawing.

Course Contents/syllabus:

Unit I: Timber and Glass as Building Materials	**12 Hours**
Timber: Manufacturing process and qualities of Decorative & commercial Plywood including Ply-Board, Block Boards, Particle Boards, Wood Wool, Cement Board, Gypsum Board, Fiber Board Compressed Straw Board, Veneers, Laminates, Cement Fiber Board. Glass as a building material. Classification, Composition, Properties and Use of Glass.Character and uses of various types of Glass - Plate Glass, Wired Glass, Foam Glass, Laminated Glass, Tinted Glass, Glass Wool, Glass Block, Fiber Glass, Crinkle Glass, Toughened Glass, Obscured Glass	
Unit II: Construction Details in Timber	**14 Hours**
Joinery details in wood – Doors and windows Detailing of log huts	
Unit III: Wooden Staircase Design Details	**14 Hours**
Types, Designs and working details of wooden stairs	
Unit IV: Timber Floors	**14 Hours**
Timber floors: construction techniques, types of timber floors: single, double and triple joist timber floors, • Furnishing of floors with different floor finishes like cement, coloured cement, mosaic, terrazzo, tiles etc. special consideration for rubber and PVC flooring, methods of laying.	

Site Visits/ Case Studies:18 sessions

- To introduce the students to primary building materials and their applications in building construction.
- To cultivate personal observation and self learning in the students, site visits should be conducted so as to cover the given syllabus.
- Students will observe measure, sketch and annotate what they see at site and submit a site visit report to the teachers concerned for evaluation. This award shall form part and parcel of the sessional work for internal assessment.

Course Learning Outcomes:

CLO1	To recognize the various types of wooden structures used in different locations in the building industry
CLO2	To understand timber joinery, stairs and timber floors.
CLO3	To be updated with the properties and applications of various special materials made out of timber and glass.
CLO4	To create drawings and designs based on the acquired knowledge base.

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
R Barry	Building Construction	Wiley-Blackwell	1999	9780632052615	288
Sushil kumar	Building Construction	Standard Publishers Distributors	2006	8186308024, 9788186308028	796
Don A. Watson	Construction Materials and Processes,	McGraw Hill Co	1972	978-0070684768	512
W.B.Mckay,	'Building Construction', Vol.1, 2, 3, Longmans, U.K. 1981.	Longman	1970	812500940X, 9788125009405	480
R.Chudley	The Construction of Building (Vol 1)	Longman Scientific & Technical.	1999	9780582413955	192

Annexure **'CD-01'**

L/DS*	T	P/S	SW/FW	Total Credit Units
0	0	4	2	3

Course Title: COMPUTER GRAPHIC SKILLS-I
Credit Units: 3
Course Level: UG
Course Objectives: To enable the students learn the use of software tools available for architectural applications**.**
Prerequisites: Basic knowledge of computing tools.

Course Contents/syllabus:

Unit I:	**12 Hours**
To comprehend tools and systems for 2d drafting • Basic commands like copy, paste, stretch, offset, move fillet, extend, trim and other useful 2D commands. Basic Text annotating and dimensioning of the Plans	
Unit II:	**14 Hours**
2D drafting in Auto Cad. Develop and draw various architectural plans, elevations and sections through 2D CAD Drawing the basic Plans.	
Unit III:	**14 Hours**
Drawing the basic Elevations and Sections Hatching and filling of the Walls in the Plans, Elevations and Sections. Basic rendering in the Auto Cad and in other Software in 2D. Manipulate and alter through various tools and techniques existing architectural drawings in 2D CAD	
Unit IV	**14 Hours**
Google Sketch –Up - Sketching in different modes like, natural, sepia, monochrome, etc.	

Course Learning Outcomes:

CL01	Develop the understanding of computer aided drafting

CL02	Comprehending computer aided drafting and its parameters as tools and its application in architecture
CL03	Demonstrate the concepts of CAD drafting methods and techniques in 2D and 3D through various architectural projects of progressive complexity
CL04	Evaluates CAD techniques for quicker methods and presentation skills

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Cadfolks	AutoCAD 2020 For Beginners	Kishore	2007	978-8193724149	344
Elise, Moss	Autodesk AutoCAD Architecture 2020 Fundamentals	Autodesk	2019	978-1630572648	350
Linkan Sagar/ Nisha Gupta	Autocad 2019 Training Guide	BPB; First, 2019 edition	2019	978-9388511254	192

Annexure **'CD-01'**

L	T	P/S	SW/FW	Total Credit Units
3	0	0	0	3

Course Title: STRUCTURES IN ARCHITECTURE –III
Credit Units: 3

Course Level: UG

Course Objectives: To learn the fundamental aspects of indeterminancy with the help of thumb rules as applicable to simple Design problems.
To understand the structural behavior of various structural elements.
To understand the analysis and design of R.C.C. structures and their use in building industry by LIMIT STATE METHOD

Prerequisites: Basic knowledge of geometry.

Course Contents/syllabus:

Unit I: Determinacy and Indeterminacy	**14 Hours**
Introduction to the theory related with determinate and indeterminate structures and also to know that which structure is determinate or indeterminate Concept of structural indeterminacy & its application in structural system development. Concepts of Soil Mechanics, soil bearing capacity. Types of foundations (shallow and deep). Design of shallow foundations	
Unit II: **Design of Compression Members**	**14 Hours**
Introduction to Columns as compression members, basic principles of buckling, Euler formula, slenderness ratio Short and Long Columns, IS-Code Provisions, Design of Short Columns under Axial compression, Design of long Columns, use of interaction diagram for design. Lateral ties. Reinforcement Detailing, Numerical Problems	
Unit III: Arches & Frames	**14 Hours**
Arches-: Type & behavior of arches with history. Introduction to 3 hinged arches Frames-: In determinacy of frames will different-end conditions	
Unit IV: Form active Structure systems	**12 Hours**
Types of Form Active Structure Systems- Cable structures, Pneumatic Structures, Bending Structures like Arches Tents, Cables and Pneumatic vis-à-vis materials and plan shape/s It should be noted that emphasis would be on the design parameters and graphical presentation of systems rather than their structural analysis.	

Course Learning Outcomes:

CL01	Understand the Distinction between determinate and indeterminate structures
CL02	Understand and analyse Moment distribution method. Describe simple frames and sway frames.
CL03	Analyze the structural geometry based on strength and stability criteria.
CL04	Evaluate the use of different structural systems in building industry.

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Salvadori, **Oakley,** and Heller	Structure in Architecture- The building of Buildings	Pearson; 4th edition	2016	978-0132803205	240
Surjeet Kumar	Theory of Structures	Vayu	2014	978-9380097879	234
Angus J. Macdonald	Structure and Architecture	Routledge	2018	978-1138629226	360
Daniel Schodek Martin Bechthold	Structures	Pearson; 7th edition	2013	978-0132559133	576

Annexure **'CD-01'**

L/DS*	T	P/S	SW/FW	Total Credit Units

3	0	0	0	3

Course Title: HISTORY OF ARCHITECTURE-I
Credit Units: 3
Course Level: UG
Course Objectives: Understanding the early cultures in the periods from 3500BCE to 400BCE in context of location, climate as well as the socio-economic, historical, and cultural influences of the time

Prerequisites: Basic knowledge of History.

Course Contents/syllabus:

Unit I: 3500-2500 BCE	**12 Hours**
• Beginning of Chinese Civilization • Early Mesopotamian & Indus settlements • Pre-dynastic Egypt & European developments.	
Unit II: 2500-1500 BCE	**14 Hours**
• Harrapa & Mohenjodaro in Indus Valley • Mesopotamian Ziggurat at Ur • Egyptian pyramids at Giza • Stonehenge at England	
Unit III: 1500-0800 BCE	**14 Hours**
• Egyptian temple Architecture at Karnak • The Greek city of Mycenae • Missisipi cultures at Mexico	
Unit IV: 0800-0400 BCE	**14 Hours**
• Ritual complex of Chinese Zhou dynasty	

• The rise of Varanasi • Iron Age & Etruscan's Arch • The Summer palace & Hanging Gardens of Babylon	

Course Learning Outcomes:

CL01	Understanding the development of early civilizations.
CL02	Understanding the social infrastructure work in relation to climate, culture, religion and socio-economic circumstances and selection of materials and style
CL03	Application of the influences of trade in early periods of civilization
CL04	Analyzing the growth of civilizations on timeline basis

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Dr. Meenakshi Dubey	Indian Rock Art - Prehistoric Paintings of the Pachmarhi Hills.	Bradshaw Foundation	1999	8176710059	180
Kanti Chandra Pandey	Comparative aesthetics. Vol. I. Indian aesthetics. Second edition.	Cambridge University Press	2009	8170804450	1368
David G. Saile	Architecture in Cultural Change: Essays in Built Form and Culture Research	School of Architecture and Urban Design, University of Kansas,	1986	--	175

G.K. Hiraskar	The Great Ages Of World Architecture	Dhanpat Rai Publications	2018	8189928880	406

Annexure **'CD-01'**

L/DS*	T	P/S	SW/FW	Total Credit Units
1	0	2	0	2

Course Title: SURVEYING & LEVELLING
Credit Units: 2
Course Level: UG

Course Objectives: To provide the knowledge of the basics of surveying and leveling and its applications in the field of building construction.

Prerequisites: Basic knowledge of drawing

Course Contents/syllabus:

Unit I:	**09 Hours**
• Introduction :- Different types of surveys. • Chain Surveying :-Principal of chain surveying description of different equipments, Methods of chaining and booking, selection of base line and stations, obstacles in chaining. Location of inaccessible points by chain, Ranging rods	
Unit II:	**09 Hours**
• Prismatic Compass survey: -Description of Prismatic & surveyors compass methods of traversing, local attractions and its elimination, adjustment of closing error by graphical method.	

• Plane Table survey: - Description of different equipment, different methods of plane tabling, Strength of Fix, Two point and three point problems and their solutions	
Unit III:	**09 Hours**
• Leveling: -Description of dumpy and tilting levels & leveling staves, methods of leveling, Sensitivity of bubble tube, setting out grade lines, permanent adjustment of leveling instruments. • Contouring: -Setting out contour gradient, different method of contouring. Simple earthwork calculations of areas and volumes	
Unit IV:	**09 Hours**
• Minor Instruments: - Box sextant, Hand level, Abney level, Plane meter, Ghat tracer etc. • Total Station - Introduction, Various components, Operation, Advantages/ Disadvantages	

Site Visits/ Practical Studies: 18 sessions

- Types of Surveys, Leveling & Contouring will be introduced on the basis of site visits as mandatory component of the subject to impart experiential learning.
- Field visits to enrich students' knowledge of context development for topography, scale, and proportions.

Course Learning Outcomes:

CL01	Understand land topography and its connection with surveying & leveling exercises.
CL02	Familiarize with the primary basic surveying techniques adopted in past years
CL03	Analyze the methods of leveling with various instruments and the concept of contouring
CL04	Apply the concept of Total Station Survey and its multi-functioning in surveying

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
R. Subramanian	Surveying and Levelling (Oxford Higher Education)	Oxford University Press	2012	978-0198085423	1008

M.S Roy	Quantity Surveying and Contract & Tenders	Vayu Education Of India	NA	978-9385077203	-
S.S. Bhavikatti	Surveying and Levelling, Vol I	Dreamtech Press	2019	978-9389307429	402
N N Basak	Surveying and Levelling | 2nd Edition	McGraw Hill Education	2017	978-9332901537	-

Annexure **'CD-01'**

L/DS*	T	P/S	SW/FW	Total Credit Units
0	0	1	1	1

Course Title: ARCHITECTURAL MODEL MAKING WORKSHOP-II
Credit Units: 1
Course Level: UG

Course Contents/syllabus:

	Weightage (%)	Teaching Hours
Unit I: Masonry construction		

• Design & Model Making of Furniture and other Interior & Exterior Elements. Modeling with Paper Mache. – Erecting garden walls, partition walls and cavity walls in construction yard • Modelling arches and vaults- semicircular arch, corbelled arch, barrel vaults.	25%	9 Hours
Unit II: Sculpture Making		
Making three dimensional sculptures involving the basic platonic solids and abstract sculptures using various techniques/ materials such as POP, wire/ matchstick, soap, clay etc., involving the principles of art • Working with Pop/soft clay and Introduction to molds – waste mold, press mold etc. Hollow casting – a vase	25%	9 Hours
Unit III: Engraving, Carving, Polishing and Painting		
Activity with application of metals in built form – horizontal, vertical and inclined surfaces – elements in architectural environment - products and furniture forms- doors, windows, jalies, railing, stair etc. Metals and other materials – form and joinery		9 Hours
Unit IV: Model Making		
Preparation of wooden base for model making. Models of a small multi- cellular unit. • Making a study model of a Design Project done during the Semester or of a Small Building. Creating the Basic Model, Adding Doors and Windows, Floors and Floor Openings, Roof and Ceiling and Staircases	25%	9 Hours

Course Learning Outcomes:

CL01	Gain hands-on experience on various aspects of model making
CL02	Apply different methods and tools for producing various types of models.
CL03	Analyze different techniques for creating scale models.
CL04	Develop 3D models of simple design projects using hand crafting techniques.

Annexure **'CD-01'**

L	T	P/S	SW/FW	Total Credit Units
0	0	2	0	1

Course Title: PARAMETRIC ARCHITECTURE-II
Credit Units:1
Course Level: UG
Course Objectives: To introduce the students with Programing Languages
To enable the students in understanding the function and user interface of a program.

Prerequisites: Basic knowledge of Computers

Course Contents/syllabus:

Unit I:	**06 Hours**
Introduction to programming languages, Basic structure of a C program; preliminary concept about header files, Constants, Variables and Keywords, Programming Instructions, Compilation and Execution.	

Unit II:	**08 Hours**
Concept of basic functions like main() and input-output functions; data types of variables with a particular emphasis on integer, floating point and character type variables.	
Unit III:	**08 Hours**
Statements and expressions; control and loop; how to write functions; concept and use of pointers; arrays; graphics Decision, Loop and Case Control Structures	
Unit IV:	**08 Hours**
Structures and Classes, Input and Output functions. Writing small programs for architectural uses.	

Course Learning Outcomes:

CL01	Understanding the basics of procedural programming languages like 'C'
CL02	Gain knowledge of system programming language to write an operating system
CL03	Familiarising with C language for developing an operating system or compiler development.
CL04	Evaluating the codes procedures and the concepts of structured programming using C language

Text / Reference Books:

Author	**Title**	**Publisher**	**Ed/year**	**ISBN No**	**Pages**
Trivedi, Bhushan	Programming in ANSI C++"	Oxford University Press India.	2012	9780198083962	644

Annexure **'CD-01'**

L/DS*	T	P/S	SW/FW	Total Credit Units
0	0	1	1	1

Course Title: PHOTOGRAPHY SKILLS
Credit Units: 1
Course Level: UG

Course Objectives: To familiarise students with different types of materials and manufacturing techniques for creating art forms/ models.
Prerequisites: Basic knowledge of drawing

Course Contents/syllabus:

Unit I: Compact & SLR Camera & accessories.	**6 Hours**
Components & working of Compact & SLR Camera, Peripheral equipment like cables, lights, flashguns, lenses, filters, tripods etc. Assignments oriented towards using camera, Indoor & outdoor photography	
Unit II: Basics of using camera & Techniques.	**6 Hours**
Techniques of using camera, basics in optics, light, exposure, focus, depth of field, aperture. Dark room techniques, digital printing. Assignments oriented towards using camera, Indoor & outdoor photography.	
Unit III: Reading a photograph, Understanding subject in a for various types of applications.	**6 Hours**
Reading a photograph, Understanding subject in a photograph, composition basics, light, exposure to various types of photography like nature, portraits, wildlife, sports, documentation, journalism etc. Assignments oriented towards using photography for presentation	
Unit IV: Photographic investigation of a location and situation	**6 Hours**
Photographic investigation of a location and situation. Assignments culminating into a small presentation investigating a case. Understanding Architectural Photography.	

Site Visits/ Practical Studies: 12 sessions

- Cameras, accessories, and photography techniques will be introduced on the basis of live case studies and site visits as mandatory component of photography skills to impart experiential learning.

- Field visits to enrich students' knowledge of context development for techniques, compositions, anthropometrics, scale, and proportions.

Course Learning Outcomes:

CL01	Understanding the use of Photography as a means of communication and Documentation
CL02	Treating camera as a tool to demonstrate concepts and ideas, document situations, & objects in general
CL03	Familiarising with camera, film, digital technology & techniques and applying aesthetics of photography
CL04	Evaluating the aesthetics of photography, Composition and light

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
John Child	Studio Photography: Essential Skills	Routledge	2008/Third Edition	9780240520964	720
Mark Galer	Introduction to Photography: A Visual Guide to the Essential Skills of Photography and Lightroom	Routledge	2015	1138854514	174
Mark Galer	Digital Photography: Essential Skills	Focal Press	2008	0240521129	246
David Taylor	The Advanced Photography Guide: The Ultimate Step-by-Step Manual for Getting the Most from Your Digital Camera	DK	2018	978-0241301920	192
George Haines	Learn Photography: An All-Colour Guide Packed with Information for the Beginner	Hamlyn young books	1991	978-1850516378	144

Program Structure- 4th sem

Courses shown in blue colour below are the courses offered by School of Architecture & Planning and the syllabi of the same were proposed in the meeting.

Sr. No	Course Code	Course Title	Course Type			Credit				Credit Units
				L	T	PS	FW	SW	AR/Des Studio	
1		Arch. Design - IV	Professional Core Courses	0	0	2	0	0	6	8
2		BCM - IV	Core Courses	0	0	1	0	0	3	4
3		Comp. Graphic Skills-II (Autocad 2D+3D)	Skill Enhancement Courses	0	0	4	0	2	0	3
4		Structures in Arch. - IV	Allied Courses	3	0	0	0	0	0	3
5		History of Arch. - II	Professional Core Courses	3	0	0	0	0	0	3

6		Bldg. Climatology	Allied Courses	2	0	0	0	0	0	2
7		Bldg Tech. I- Public Health	Allied Courses	2	0	0	0	0	0	2
8		Parametric Architecture-III (Unreal Engine-I)	Skill Enhancement Courses	0	0	2	0	0	0	1
		Total Credits						**Min Required: 26 Semester Credits: 26**		

Annexure **'CD-01'**

L/DS	T	P/S/J	SW/FW	Total Credit Units
6	0	2	0	8

Course Title: ARCHITECTURE DESIGN- IV
Credit Units:8
Course Level: UG

Course Objectives: To develop the design of buildings with respect to site, landscape, climate and socio-economic conditions in rural context & the application of indigenous technology w.r.t. Vernacular Architecture.

Prerequisites: Basic understanding of scale and drafting techniques.
Course Contents/syllabus:

Unit I: Study and Design of Vernacular Architecture	**28 Hours**
• Developing the over-all village layout identifying the position of key facilities as required in a rural setup- Documentation of historical- socio- cultural information, • 2. Use of locally available materials leading to construction techniques in elements of built forms and in response to the climate of the region. • 3. Structural System in the built forms • 4. Identification of possible design intervention in the region/ settlement.	

Unit II: Design of Public Place	**28 Hours**
• Design of a country-side House/ Farmhouse considering the site orientation, prevailing wind direction and the use of local building materials. - Justification of the Design Intervention • Conceptual Design • Design development/ Form Development • 4. Presentation/ Crits	
Unit III: Design of Office Building in Rural Setup	**28 Hours**
• Design of Community Centre/ Multi-purpose Sampark Centre/ Gram Panchayat/ Tehsil Sub Division- Justification of the Design Intervention • Conceptual Design • Design development/ Form Development • 4. Presentation/ Crits • Final developed to- scale drawings- site plan, plans, elevations, sections, elevations 2. Facilitation to the floor plan for justification of provided spatial proposals 3. Detailed Site Plan with built and un-built spaces and landscaping features 4. Development of views and construction details 5. Model of the proposed design	
Unit IV: Design of Village Level Medical Facility	**28 Hours**
• Design of Anganwadi/ Dispensary/ Veterinary Hospital- Final developed to- scale drawings- site plan, plans, elevations, sections, elevations 2. Facilitation to the floor plan for justification of provided spatial proposals 3. Detailed Site Plan with built and un-built spaces and landscaping features 4. Development of views and construction details 5. Model of the proposed desig • Final developed to- scale drawings- site plan, plans, elevations, sections, elevations 2. Facilitation to the floor plan for justification of provided spatial proposals 3. Detailed Site Plan with built and un-built spaces and landscaping features 4. Development of views and construction details 5. Model of the proposed design	

Site Visits/ Case Studies: 32 sessions

- Design problems will be introduced on the basis of live case studies and site visits as mandatory component of design studio to impart experiential learning.
- Field visits to enrich students' knowledge of context development for well-designed residences and public spaces.

Course Learning Outcomes:

CLO1	To understand the application of the architectural design process for rural/ vernacular projects

CLO2	To transform the human behavioral needs into architectural program requirements
CLO3	To analyses the information on context and the human-space relationship
CLO4	To create appropriate design solutions for the vernacular design project

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Bureau of Indian Standards (BIS)	Recommendations for Buildings and Facilities for the Physically Handicapped	New Delhi: Bureau of Indian Standards	1987	-	-
Bureau of Indian Standards (BIS)	The National Building Code of India, SP: 7.	New Delhi: Bureau of Indian Standards	2016	978-8170610991	2246
Laurie Baker	A Manual of Cost Cuts for Strong Acceptable Housing	COSTFORD (Centre of Science and Technology for Rural Development	2014	-	150
Laurie Baker	Rural Community Buildings	COSTFORD (Centre of Science and Technology for Rural Development	2014	-	52
Donald Watson, Michael Crosbie, John Cllender	Time Saver Standard for Architectural Design Data	McGraw-Hill Education	1997	0070685061	1024
Francis D.K.Ching	Architecture Form, Space and Order	John Wiley & Sons,	2014	9781118745083	464

V.S.Pramar	Design Fundamentals in Architecture	Somaiya Publications Pvt.Ltd., New Delhi	1997	8170391709	270
Ernst Neufert	Neuferts Architects Data	John Wiley & Sons	2000	9788126517619	636

Annexure **'CD-01'**

L/DS*	T	P/S/J	SW/FW	Total Credit Units
3	0	1	0	4

Course Title: BUILDING CONSTRUCTION & MATERIALS -IV
Credit Units: 4
Course Level: UG
Course Objectives:

- To introduce and familiarize the students with constituents, manufacturing process/ availability/ properties/ characteristics/ defects/ classifications and usage of traditional building materials and their use in simple building work
- To make students understand and appreciate the various methods of building construction in coordination with the building materials and science related to them

Prerequisites: Basic knowledge of construction drawing.
Course Contents/syllabus:

Unit I: Building Materials	**12 Hours**

• Adhesives as Building Material- Natural Adhesives – Animal, Casein, Bituminous. Thermoplastic Adhesives – Polyvinyl Acetate. Thermosetting Adhesives & Plastics - Urea Formaldehyde, Phenol Formaldehyde, Melamine Formaldehyde, Resorcinol Formaldehyde, Epoxide Resins. Rubber Adhesive. • Waterproofing Compounds- Waterproofing details in different levels: details in simple foundations, walls, roofs, sills, lintels and roofs in RCC, RB and steel, damp proof details of plinth, sill, lintel, and roof level. • Water proofing materials and systems for basement	
Unit II: Structures in Brickwork – Part 1	**14 Hours**
• Fireplace- detailing of smoke ventilation shaft for fireplace designs • Arches- Classification of Arches on the basis of geometrical shape, materials, construction techniques, viz. flat, segmental, semicircular, Tudor, circular, elliptical, semi-elliptical, venetian, florentine arches, etc. Illustration of terminology for arches, construction detailing and methods of centering • Cavity Walls- Construction of cavity wall with different thermal and acoustical insulative system	
Unit III: Structures in Brickwork – Part 2	**14 Hours**
• Lintels and Jambs- design and details of spanning the openings in masonry • Partitions in Masonry- types and construction methods of non load bearing walls as space dividers	
Unit IV: Traditional/ Vernacular Construction Techniques	**14 Hours**
• Dhajji Wall Construction- pahadi style of stone masonry with wooden planks	

Site Visits/ Case Studies: 18 sessions

- To introduce the students to primary building materials and their applications in building construction.
- To cultivate personal observation and self-learning in the students, site visits should be conducted so as to cover the given syllabus.
- Students will observe measure, sketch and annotate what they see at site and submit a site visit report to the teachers concerned for evaluation. This award shall form part and parcel of the sessional work for internal assessment.

Course Learning Outcomes:

CLO1	Acquire knowledge of resins and binders for adhesives used in manufacturing composite materials like plyboard, paints etc.
CLO2	Understand the concept of Thermal comfort and construction detail of Cavity Wall, Study of openings with respect to lintels, jambs, Arches and vernacular construction methods
CLO3	Analyse the detailing of partitions in building interiors with non- load bearing masonry
CLO4	Create appropriate solutions using vernacular construction methods

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Don A. Watson	Construction Materials and Processes	McGraw Hill Co	1972	978-0070684768	512
R Barry	Building Construction	Wiley-Blackwell	1999	9780632052615	288
R. Chudley	The Construction of Building (Vol 1)	Longman Scientific & Technical.	1999	978-0582413955	192
S.P. Bindra & S.P. Arora	The Textbook of Building Construction	Dhanpat Rai & Co.	2010	978-8189928803	-
Sushil Kumar	Building Construction	Standard Publishers Distributors	2006	8186308024, 9788186308028	796
W.B. Mckay,	'Building Construction', Vol.1, 2, 3, Longmans, U.K. 1981.	Longman	1970	812500940X, 9788125009405	480

Annexure **'CD-01'**

L	T	P/S	SW/FW	Total Credit Units
0	0	4	2	3

Course Title: COMP. GRAPHIC SKILLS-II (AutoCAD 2D+3D)
Credit Units: 2
Course Level: UG
Course Objectives:

- Introduction and the use of AutoCAD software available for architectural applications.

Prerequisites: Basic usage of IT infrastructure.

Course Contents/syllabus:

Unit I: Introduction to AutoCAD	**12 Hours**
Advanced 2D drafting using AutoCAD - To apply more complex tools and methods to edit drawings in 2D Cad • Demonstrate presentation drawings in 2D CAD •	
Unit II: **Basic Tools and Interface of AutoCAD**	**14 Hours**
Draw and create a complete set of architectural drawings for a dwelling unit in 2DCAD Use of layers and blocks exercise on simple working drawings Basics of 2D Drafting	

Unit III: Basics of 3D Interaction in AutoCAD	14 Hours
Introduction to 3d commands. To comprehend tools and systems for 3d modelling in CAD • Develops and draws various architectural volumes, forms and surfaces through 2 d Cad • Convert and draw 2 d architectural drawings to 3d form Simple exercises on 3D commands	
Unit IV: Advanced 3D Tools in AutoCAD	**14 Hours**
To apply more complex tools and methods to edit drawings in 3D Cad • Demonstrate presentation drawings , material application and lighting in 3D Cad • Draw and create a complete set of architectural drawings for a dwelling unit in 3 D Cad 3D Modeling of project	

Course Learning Outcomes:

CLO1	Understanding techniques of design visualization and communication using AutoCAD
CLO2	Basic application of AutoCAD as an effective architectural tool.
CLO3	Comprehend computer aided drafting and its parameter as tools and its application in architecture
CLO4	Demonstrate the concepts of CAD drafting methods and techniques in 2D and 3D through various architectural projects of progressive complexity

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
James A. Leach, Shawna Lockhart	AutoCAD 2022 Instructor	SDC Publications	2021	978-1630574208	1300

Sandeep Dogra	AutoCAD 2022 for Architectural Design: A Power Guide for Beginners and Intermediate Users	CADArtifex	2021	978-8195345250	482
Dean Muccio	AutoCAD 2020 for the Interior Designer	SDC Publications	2021	978-1630574284	426
Munir Hamad	AutoCAD 2022 3D Modeling	Mercury Learning & Information	2021	978-1683927273	400

Annexure **'CD-01'**

L	T	P/S	SW/FW	Total Credit Units
3	0	0	0	3

Course Title: STRUCTURES IN ARCHITECTURE –IV
Credit Units: 3
Course Level: UG
Course Objectives: To teach the fundamental aspects of Limit state method with help of thumb rules as applicable to simple Design problems.

Course Contents/syllabus:

Unit I: Introduction to RCC	**14 Hours**

Introduction- Materials, basic properties of concrete & steel, reinforcement, Standard loading, and characteristic strength, permissible stresses in concrete & steel as per Indian standard. Design philosophies- working Method, ultimate load method, Limit state method	
Unit II: **Limit State Design Method**	**14 Hours**
Limit state Design Method- Safety & Serviceability requirements of Limit states, Characteristic material strength, load & Safety factors Design of Beams: Singly, doubly reinforced beam for flexure, Shear and Bond. Design of steel beams Design of RCC one-way slab & two-way slab. Use of IS codes to solve numericals.	
Unit III: Compression Members	**14 Hours**
Design of Compression member: Design of short & slender columns	
Unit IV: Strength of Sections	**12 Hours**
Vector Active Structure Systems -Truss Systems, working out structure systems for Layout of a small building Working out structure systems for Layout of a small building	

Course Learning Outcomes:

CLO1	Understanding the performance and design of RCC
CLO2	Apply the design of RCC components using limit state design method
CLO3	Design process involved for compression members in RCC
CLO4	Evaluate the performance of vector active structure systems in comparison to conventional structure systems

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Salvadori, Oakley, and Heller	Structure in Architecture- The building of Buildings	Pearson; 4th edition	2016	978-0132803205	240
Surjeet Kumar	Theory of Structures	Vayu	2014	978-9380097879	234
Angus J. Macdonald	Structure and Architecture	Routledge	2018	978-1138629226	360
Daniel Schodek , Martin Bechthold	Structures	Pearson; 7th edition	2013	978-0132559133	576
Dr. R.K. Bansal	A Textbook of Strength of Materials	Laxmi Publications	2018	978-8131808146	1160
R.S. Khurmi	Textbook of Strength of Materials	S Chand Publishers	2015	978-9385401954	752
IS Code for Reinforced Concrete Design	IS 456:2000 SP-16 SP-34	Bureau of Indian Standards	2000 1980 1987	-	114

Annexure **'CD-01'**

L/DS*	T	P/S	SW/FW	Total Credit Units
2	1	0	0	3

Course Title: HISTORY OF ARCHITECTURE-II
Credit Units: 3
Course Level: UG
Course Objectives: To understand the early cultures in the periods from 0400BCE to 0600CE in context of location, climate as well as the socio-economic, historical and cultural influences of the time.

Course Contents/syllabus:

Unit I: 0400-0000 CE	**12 Hours**
• Persepolis - Capital city of Persian Empire • Development of Greek Architecture - Doric order, Temenos at Delphi, Ionic Order & The Parthenon • Hellenistic Developments: Ptolemis • Mauryan Kings & Rise of Buddhism in Pataliputra	
Unit II: 0000-0200 CE	**14 Hours**
• Founding of Rome; Pompeii colonies • Mausoleum of Augustus • Vitruvius & Corinthian Order; The Colosseum • Mahayana Buddhism & Sanchi Stupa at India • Qin & Han dynasty; The Great wall of China	
Unit III: 0200-0400 CE	**14 Hours**

• Rise of theaters; The Pantheon & Roman Baths of Caracalla • Chaitya Hall at Karli • Han dynasty's Mingtang – Biyong ritual complex in China • Mayan Civilization: The City of Teotihuacan	
Unit IV: 0400-0600 CE	**14 Hours**
• Zoroastrian Fire temples • Gupta Period in India: Ajanta Caves & Chaitya Halls • Hindu renaissance: Temple 17 at Sanchi • Emergence of Christianity; St. Peter's Rome & Rise of Baptisteries • Zapotechs of Mexico: Plaza of Monte Alban	

Course Learning Outcomes:

CLO1	Understanding the evolution of historical styles and techniques in different parts of the world
CLO2	Expressing the architectural features of the buildings with the help of simple sketches
CLO3	Analyzing elements and principles of architecture employed in the early cultures
CLO4	Evaluating impact of climate, geographical features, available resources, culture, socio-political, economic and religious beliefs on the evolution and development of the built environment

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages

Kanti Chandra Pandey	Comparative aesthetics. Vol. I. Indian aesthetics. Second edition.	Cambridge University Press	2009	8170804450	1368
David G. Saile	Architecture in Cultural Change: Essays in Built Form and Culture Research	School of Architecture and Urban Design, University of Kansas,	1986	--	175
G.K. Hiraskar	The Great Ages of World Architecture	Dhanpat Rai Publications	2018	8189928880	406
Francis D. K. Ching , Mark M. Jarzombek , Vikramaditya Prakash	A Global History of Architecture, 3rd Edition	Wiley	2017	978-1118981337	864
Percy Brown	Indian Architecture (Buddhist and Hindu Periods)	Read Books	2010	978-1446510216	438
Percy Brown	Indian Architecture (The Islamic Period)	CBS Publishers & Distributors Pvt. Ltd.	2005	9788123924564	372
Banister Fletcher	History of Architecture	CBS Publishers & Distributors Pvt. Ltd.	1999	978-8123906416	1794
Satish Grover	Buddhist and Hindu Architecture in India	CBS Publishers & Distributors Pvt. Ltd.	2017	978-8123909738	237
Merklinger, Elisabeth S.	Sultanate Architecture of Pre-Mughal India	Munshiram Manoharlal Publishers	2005	978-8121510882	174

Annexure **'CD-01'**

L/DS*	T	P/S	SW/FW	Total Credit Units
2	0	0	0	2

Course Title: BUILDING CLIMATOLOGY
Credit Units: 2
Course Level: UG
Course Objectives: To familiarize the students with the design of ambient spaces and their surroundings; the factors affecting the design and the use of optimum devices for creating comfort.

Prerequisites: Knowledge of Basics of Climate
Course Contents/syllabus:

Unit I: Introduction to Climatology	**09 Hours**
• Introduction to climatology, role of climate with respect to shelter, importance of studying Building Climatology. • Movement of earth around the sun, change of seasons, distribution of global pressure belts and global wind movements, global climatic zones. • Definition of weather, climate, elements of climate, interrelationship of climatic elements and psychometric chart.	
Unit II: Principles of Thermal Design	**09 Hours**
• Study of indigenous shelters in response to the climatic zones in India • Definition and explanation of thermal comfort, relationship of climatic elements with thermal comfort, thermal stress index, bio climatic chart, effective temperature and corrected effective temperature histogram • Heat exchange between building and environment (qualitative aspect only), thermal properties of materials, thermal properties of building elements, solar gain factor, solar temperature • Use of C. Mahony's tables	
Unit III: Solar Charts and their Uses	**09 Hours**

• Solar chart and its importance, understanding the movement of sun across the sky, importance of understanding the optimum orientation and building form in different climatic zones, concept of shading devices • Sun path diagram • Calculation for the design of horizontal and vertical shading devices	
Unit IV: Means of Thermal Control – Ventilation and Orientation	**09 Hours**
• Air movement inside buildings, Microclimate • Guidelines for designing well ventilated buildings • Optimum Orientation of Building — Importance, Form and Placement of Building	

Course Learning Outcomes:

CLO1	Understand significance of climate on architecture at global, regional and local level
CLO2	Design built forms based on human thermal comfort, day lighting & ventilation
CLO3	Analyze different active, passive and hybrid systems used in all climatic zones
CLO4	Relate relationship between climatic components and architectural design

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Arvind Krishan; Nick Baker; Simos Yannas & S V Szokolay	Climate responsive architecture: A design handbook for energy efficient buildings	Tata McGraw-Hill Pub. Co	First, 2017	978-0074632185	409
Otto H. Koenigsberger	Manual of tropical housing and building	Longman	First, 1975	978-0582445451	320

Richard Hyde	Climate Responsive Design: A Study of Buildings in Moderate and Hot Humid Climates	Taylor & Francis	First, 2000	978-0419209706	256
The Energy and Resources Institute (TERI)	Griha Introduction to National Rating system	India: TERI Press	2013	-	-

Annexure **'CD-01'**

L	T	P/S	SW/FW	Total Credit Units
2	0	0	0	2

Course Title: BLDG. TECH. SERV. I - PUBLIC HEALTH
Credit Units: 2
Course Level: UG
Course Objectives: To acquaint the students with the principles used in all basic building services with regards to Water Supply, Sanitation and Storm Water drainage

Prerequisites: Basic understanding of water cycle.

Course Contents/syllabus:

Unit I: Water Supply	**9 Hours**

Sources of water, Water treatment techniques, Requirements of water supply to different types of buildings, modes and methods of conveyance of water, fixtures and appurtenances, distribution of water, methods of distribution, different distribution systems and their principles of layout.	
Unit II: **Municipal Water Supply System**	**9 Hours**
Municipal water distribution systems, underground and overhead water tanks. Brief description of rainwater harvesting and water table recharging techniques	
Unit III: Sanitation and Drainage	**9 Hours**
• General principles of drainage. • Refuse, different form of refuse: garbage/solid waste, sullage, toilet waste • Storm water collection and disposal systems. • Drainage layout for building premises, kitchen, utility and toilet layouts, fixtures and fitting • W.C. flushing valves, flushing tanks, Wash basins, bathing accessories. • Types of traps: floor traps. GT. Manholes, grease chambers, curb and gutter inlets, inspection chambers, intercepting traps. • Ventilation of drains and sewers, principles of design of sewer lines, longitudinal sections of drains.	
Unit IV: Municipal Waste Discharge System & Storm Water Management	**9 Hours**
• Drainage in non-municipal areas, soak wells, septic tanks. • Rain water drainage pipes, spouts, sizing of rain water pipes, storm water drainage system. • Sustainable techniques in storm water disposal planning: at the project level, at the city level. • Eco friendly Sewage treatment techniques: biogas plants, sewage treatment methods • Specialized water supply and drainage requirements: • Swimming pools, basement level supply and disposal, terrace gardens supply and drainage etc.	

Course Learning Outcomes:

CLO1	Understand the basics of water supply and disposal systems in built environment
CLO2	Design of water supply, waste disposal and rain water harvesting system in multi-storey buildings

CLO3	Analysis of water conservancy methods to ensure use and recharge of potable water to ensure sustainable development
CLO4	Evaluation of various water use and disposal systems to define their application as per building typology

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Birdie, J. S. & Birdie, G. S	Water Supply and Sanitary Engineering	Dhanpat Rai Publishing Company (p) Ltd	2010	978-8187433798	984
Fred Hall, Roger Greeno	Building Services Handbook	Routledge	2015	978-1138805637	768
Bureau of Indian Standards	The National Building Code	BIS Publications	2020	978-8170610991	2246
Gurcharan Singh	Water Supply and Sanitary Engineering	Standard Publishers & Distributors	2020	978-8180140297	968

Annexure **'CD-01'**

L	T	P/S	SW/FW	Total Credit Units
0	0	2	0	1

Course Title: PARAMETRIC ARCHITECTURE -III (Unreal Engine)

Credit Units:1
Course Level: UG
Course Objectives: Creating animated renders with Open-source freeware like ‘Unreal Engine.
Prerequisites: Basic knowledge of Computers.

Course Contents/syllabus:

Introduction to Unreal Game Engine	**9 Hours**
• IDE Basics • Visualization Concepts • Sprites • C# Language Concepts • Creating Scripts • C# Coding Fundamentals • Game Loops and Functions	
Object-Oriented Concepts	**9 Hours**
• Simple Movement and Input • 2D Physics Concepts • Primitive Data and Math • Organizing Game Objects • Object-Oriented Concepts	
Animation	**9 Hours**
• Managing Game Objects • Exceptions and Debugging • Loops and Arrays • Game Design Strategies • Animation • Sound Effects	

Scenography	9 Hours
• Advanced Game Physics • Multiple Scenes • Artificial Intelligence • User Interfaces • Game Art	

Course Learning Outcomes:

CLO1	Understanding Open-source freeware interface
CLO2	Creating objects with the aid of Boolean Operators
CLO3	Applying Environmental background to Scenes
CLO4	Analyzing scenes to create animated Audio-visual tracks

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Sargey Rose	Unreal Engine 5 for Beginners:	Packt Publishing Limited, India	2023	978-1800568082	440
Henk Venter, Wilhelm Ogterop	Unreal Engine 5 Character Creation, Animation, and Cinematics	Packt Publishing Limited, India	2022	978-1801812443	608

Program Structure- 5th sem

Courses shown in blue colour below are the courses offered by School of Architecture & Planning and the syllabi of the same were proposed in the meeting.

Sr. No	Course Code	Course Title	Course Type			Credit				Credit Units
				L	T	PS	FW	SW	AR/Des Studio	
1		Arch. Design - V	Professional Core Courses	0	0	2	0	0	6	8
2		BCM - V	Core Courses	0	0	1	0	0	3	4
3		Comp. Graphic Skills-III (3ds Max I+ corel Draw)	Skill Enhancement Courses	0	0	4	0	2	0	3

4		Structures in Arch. - V	Allied Courses	3	0	0	0	0	0	3
5		History of Arch. -III	Professional Core Courses	3	0	0	0	0	0	3
6		Measured & Working Drawing	Allied Courses	0	0	0	1	0	1	2
7		Bldg Tech.II-Lighting, Illumination /Electrical	Allied Courses	2	0	0	0	0	0	2
8		Parametric Architecture-IV (Unreal Engine-II)	Skill Enhancement Courses	0	0	2	0	0	0	1
		Total Credits						**Min Required: 26** **Semester Credits: 26**		

Annexure **‘CD-01’**

L/DS	T	P/S/J	SW/FW	Total Credit Units
6	0	2	0	8

Course Title: ARCHITECTURE DESIGN- V
Credit Units: 8
Course Level: UG
Course Objectives: Application of Design theory and principles and Design of Low rise / medium rise /high rise buildings with complex issues to be tackled covering functional relationship, climatic condition, social aspects along with structural considerations and building services Application and use of relevant building bye-laws and provisions of National Building Code

Prerequisites: Basic understanding of scale and drafting sketches.

Course Contents/syllabus:

Unit I: Study of Club House/Auditorium/Theater or Assembling spaces	**28 Hours**
• Library Study showing the anthropometrics, Layouts of various spaces • Case examples/Prototypes of the Projects • Green Building/Energy Efficiency & Barrier Free design features in the building • Study of design/Layouts of Club House/Auditorium/Theater or Assembling spaces	
Unit II: Design of Club House/Auditorium/Theater or Assembling spaces	**28 Hours**
• Study and differentiate requirements of the project. • Concept, zoning, and evolution of the design. • Design development stages of the project • Pre-liminary design stages of the project • Final Design of the Project with Physical Model	
Unit III: Study of an Institutional Building like High School/Public Library or Youth Hostel	**28 Hours**

• Library Study showing the anthropometrics, Layouts of various spaces • Case examples/Prototypes of the Projects • Green Building/Energy Efficiency & Barrier Free design features in the building • Study of design/Layouts of Club House/Auditorium/Theater or Assembling spaces	
Unit IV: Design of an Institutional Building like High School/Public Library or Youth Hostel	**28 Hours**
• Study and differentiate requirements of the project. • Concept, zoning, and evolution of the design. • Design development stages of the project • Pre-liminary design stages of the project • Final Design of the Project with Physical Model	

Site Visits/ Case Studies: 32 sessions

- Design problems will be introduced on the basis of live case studies and site visits as mandatory component of design studio to impart experiential learning.
- Field visits to enrich students' knowledge of context development for well-designed Club House/Auditorium/Theater or Assembling spaces and High School/Public Library or Youth Hostel

Course Learning Outcomes:

CLO1	Value various advanced structural systems and latest building materials.
CLO2	Enquire new technology, structural system and materials
CLO3	Formulate methods developed to meet various requirements through drawings or models
CLO4	Evaluate new techniques and systems at building level in their design.

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Donald Watson, Michael Crosbie, John Cllender	Time Saver Standard for Architectural Design Data	McGraw-Hill Education	1997	0070685061	1024

Francis D.K.Ching	Architecture Form, Space and Order	John Wiley & Sons,	2014	9781118745083	464
V.S.Pramar	Design Fundamentals in Architecture	Somaiya Publications Pvt.Ltd., New Delhi	1997.	8170391709	270
Ernst Neufert	Neuferts Architects Data	John Wiley & Sons	2000	9788126517619	636
Broadbent, G.	Design in Architecture - Architecture and Human Science	John Wiley and Sons. New York	1973	978-471105831	600
Roger, K. L.	Architect? A Candid Guide to the Profession	Cambridge: The MIT Press	1998	0262621215	304
Noory Yeganeh Saba	Developments in Auditorium Design in last fifty years 1960-2009	LAP Lambert Academic Publishing	1997	9783844333251, 3844333258	140
Josep Maria Minguet (Editor), Santi Trivino (Editor)	Bars & Clubs (Architecture & Design)	Instituto Monsa de Ediciones; Bilingual, Illustrated edition	2012	978-8415223580	240
Dudek	Architecture of Schools: The New Learning Environments	Routledge; First edition	2017	978-1138049543	
Sibylle Kramer	Building to Educate: School Architecture & Design	Braun	2018	978-3037682388	200
J. Paul Guyer	An Introduction to Golf Clubhouse Design	Createspace Independent Pub	2016	978-1533510242	72
Alistair Black	Libraries of Light: British public library design in the long 1960s	Routledge; 1st edition	2016	978-1472472946	242

R. Thomas Hille	The New Public Library: Design Innovation for the Twenty-First Century	Routledge; 1st edition	2018	978-1138326736	456
Binita Parajuli	The Public Library Design	LAP Lambert Academic Publishing	2012	978-3659220517	152
Bronislaw J. Sammler (Author), Don Harvey (Author)	Technical Design Solutions for Theatre: The Technical Brief Collection Volume 2: 002 (Technical Brief Collection S)	Routledge; 1st edition	2002	978-0240804927	294
Bronislaw J. Sammler, Don Harvey	Technical Design Solutions for Theatre: The Technical Brief Collection: 001	Routledge; 1st edition	2002	978-0240804903	284
John Orrell	The Human Stage: English Theatre Design, 1567–1640	Cambridge University Press; 1st edition	2009	978-0521109451	316
Chuck Gloman , Rob Napoli	Scenic Design and Lighting Techniques: A Basic Guide for Theatre	Routledge; 1st edition	2016	978-1138142022	414

Annexure **‘CD-01’**

L/DS*	T	P/S/J	SW/FW	Total Credit Units
3	0	1	0	4

Course Title: BUILDING CONSTRUCTION & MATERIALS -V
Credit Units: 4
Course Level: UG
Course Objectives:

- To introduce and familiarize the students with constituents, manufacturing process/ availability/ properties/characteristics/defects/ classifications and usage of traditional building materials and their use in simple building work.
- To make students understand and appreciate the various methods of building construction in coordination with the building materials and science related to them

Prerequisites: Basic knowledge of drawing.

Course Contents/syllabus:

Unit I: Ferrous and Non-ferrous metals	**12 Hours**
Definitions of Ferrous and Non-ferrous metals, Properties of Ferrous and Non-Ferrous Metals with the differences, applications & Uses. The importance in these metals in the Building Construction • Ferrous metals Iron: Various types of iron, properties of various types of iron, iron products and their uses in construction. • Non-Ferrous metals Aluminum: Different types of section and uses in construction Copper, Zinc, Brass, Tin, Lead etc. Properties uses, treatment.	
Unit II: Plastics as Building Material	**14 Hours**
Plastics as Building Material -Thermoplastics and thermosetting plastics –properties and architectural uses of plastics – structural plastics –Reinforced plastics and Decorative laminates-plastic coatings, Adhesives, and sealants – Modifiers and Plasticizers, Use of nanomaterials	
Unit III: Paneling & Partitions	**14 Hours**
• Paneling & Partitions in Timber and Aluminium sections	

• Glass Block Partitions • Fabrications of plastics (PVC and UPVC). Primary plastic building products for walls, roof and partitions	
Unit IV: Escalators, Ramps and Elevators	**14 Hours**
• Use and Importance of Escalators, ramps, and Elevators, • Ramps and Elevators- Locations, safety and installation, Construction Details of Ramps and Elevators, • Details of Escalators- Locations, safety and installation, Construction Details	

Site Visits/ Case Studies:18 sessions

- To introduce the students to the assigned building materials and their applications in building construction.
- To cultivate personal observation and self-learning in the students, site visits should be conducted so as to cover the given syllabus.
- Students will observe measure, sketch and annotate what they see at site and submit a site visit report to the teachers concerned for evaluation. This award shall form part and parcel of the sessional work for internal assessment.

Course Learning Outcomes:

CLO1	Understand the application of Ferrous and Non-Ferrous metals in building construction industry.
CLO2	Acquaint with the application of Plastics as Building Material.
CLO3	Detail out the sections and joints in the execution of Paneling & Partitions at site
CLO4	Assess the installation and application Escalators, Ramps and Elevators.

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Don A. Watson	Construction Materials and Processes	McGraw Hill Co	1972	978-0070684768	512

R Barry	Building Construction	Wiley-Blackwell	1999	9780632052615	288
R. Chudley	The Construction of Building (Vol 1)	Longman Scientific & Technical.	1999	978-0582413955	192
S.P. Bindra & S.P. Arora	The Textbook of Building Construction	Dhanpat Rai & Co.	2010	978-8189928803	-
Sushil Kumar	Building Construction	Standard Publishers Distributors	2006	8186308024, 9788186308028	796
W.B. Mckay,	'Building Construction', Vol.1, 2, 3, Longmans, U.K. 1981.	Longman	1970	812500940X, 9788125009405	480
Thomas, Marvin	Architectural Working Drawings: A Professional Technique	McGraw-Hill Inc.,US	1978	978-0070642409	192
Osamu (Art) A Wakita, Nagy R. Bakhoum, Richard M. Linde	The Professional Practice of Architectural Working Drawings, 5th Edition	Wiley	2017	978-1-118-88052-4	688

Annexure **'CD-01'**

L/DS*	T	P/S	SW/FW	Total Credit Units
0	0	4	2	3

Course Title: COMPUTER GRAPHIC SKILLS-III (3ds Max I + Corel Draw)
Credit Units: 3
Course Level: UG
Course Objectives: Introduction and the use of Google Sketch, Auto-cad, 3 DS Max software for architectural applications. as a tool for comprehensive modeling, animation, simulation, and rendering solution for 3D animations, architectural visualization, and images.

Prerequisites: Basic knowledge of different Software applications and requirements of Software in the Industry.

Course Contents/syllabus:

Unit I: Corel Draw	**12 Hours**
• Introduction to Corel Draw: Tool Palettes, functions, Rendering, layering • Importing images from other software and editing images with Tool Palettes	
Unit II: 3 DS Max Software-Part-I	**14 Hours**
• Introduction to 3DS Max. • Furniture modeling using software 3Ds max- Tool Palettes, functions, modelling	
Unit III: 3 DS Max Software-Part-II	**14 Hours**
• Exterior and Interior modeling using software 3Ds max	
Unit IV: Material, Light application	**14 Hours**
• Material attachment, Light focusing, • Different views, Short Animations/Walkthroughs • Rendering with Background and Foreground.	

Course Learning Outcomes:

CLO1	To understand the illustration and editing of images as a presentation tool in Architecture profession.
CLO2	Develop architectural presentation and 3-dimensional sense.
CLO3	Develop understanding of interrelationship between 2D and 3D form of simple objects, with the help of software.
CLO4	Create futuristic and enhance sensitive designs.

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Thomas Mooney	3ds Max Speed Modeling for 3D Artists	Packt Publishing Limited	2012	184969236X	422

Linkan Sagar/ Nisha Gupta	3D Max 2019 Training Guide	BPB;	2019	9388511158	102
DT Editorial Services	CorelDRAW2018 in Simple Steps	Dreamtech Press	2018	9388425251	284
Pratap Mulick	Sketching	Jyotsna Prakashan	2006	9788179251041	
Gill Robert W	Rendering with pen & ink	Thames & Hudson	1984	9780500680261	400
Jeffrey M. Harper	Mastering Autodesk 3ds Max 2013	Wiley	2013	978-8126541102	1008

Annexure **'CD-01'**

L	T	P/S	SW/FW	Total Credit Units
3	0	0	0	3

Course Title: STRUCTURES IN ARCHITECTURE –V
Credit Units: 3
Course Level: UG

Course Objectives: To teach the basics of Seismic Design, Steel Design & Composite Structure Systems

Prerequisites: Basic knowledge of Structural Design.

Course Contents/syllabus:

Unit I: Design of steel beams	**14 Hours**
Supported, unsupported Beams – Design of laterally unsupported rolled section Beams- Purlin in Roof Trusses-Design of Channel and I section Purlins.	
Unit II: **Trusses**	**14 Hours**
Trusses- Definition of truss, Perfect truss, Imperfect truss, Type of trusses & suitability, analysis of simple stress by Analytical method	
Unit III: Designs of connection in steel structure	**14 Hours**
Designs of connection in steel structure: Bolted & welded Connection, assumptions, different type of joints, design of Various types of welded connections subjected to direct loads & moments. Diagram for simple beam & frames for various type of Loading & support condition Bending stress in beams- Theory of simple bending, section Modulus. Relationship between load, shear force and bending moment diagrams	
Unit IV: Surface Active Structures	**12 Hours**
Surface Active Structures-Plate, Folded & Shell structures. Working out structure systems for Layout of a small building	

Course Learning Outcomes:

CLO1	Study of stresses and strains and their effect in various elements.
CLO2	Analytical method for determining stresses and strains in the oblique section.
CLO3	Apply the knowledge of resolution of forces and theorems related with equilibrium
CLO4	Evaluate the method to draw and make shear force and bending moment diagrams.

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Salvadori, Oakley, and Heller	Structure in Architecture- The building of Buildings	Pearson; 4th edition	2016	978-0132803205	240
Surjeet Kumar	Theory of Structures	Vayu	2014	978-9380097879	234
Angus J. Macdonald	Structure and Architecture	Routledge	2018	978-1138629226	360
Daniel Schodek , Martin Bechthold	Structures	Pearson; 7th edition	2013	978-0132559133	576
Dr. R.K. Bansal	A Textbook of Strength of Materials	Laxmi Publications	2018	978-8131808146	1160
R.S. Khurmi	Textbook of Strength of Materials	S Chand Publishers	2015	978-9385401954	752
IS Code for Reinforced Concrete Design	IS 456:2000 SP-16 SP-34	Bureau of Indian Standards	2000 1980 1987	-	114

Annexure **'CD-01'**

L/DS*	T	P/S	SW/FW	Total Credit Units
3	0	0	0	3

Course Title: HISTORY OF ARCHITECTURE-III
Credit Units: 3
Course Level: UG

Course Objectives: To provide the knowledge of the evolution of different architectural styles through study of Multi-Religious, politically influenced & Provincial World Architecture.

Prerequisites: Basic knowledge of History.

Course Contents/syllabus:

Unit I: 0600-0800 CE	**12 Hours**
• Rise of Islam in Arabia; Dome of Rock, Jerusalem & Great mosque of Samarra,iraq. • Pallavas & Chalukyas in India-Kailasnath Temple, Ellora; Mahavihara at Nalanda • Glimpses of Europe in 800 CE:Palatine Chapel • Mayan cities, Gulf of Mexico	
Unit II: 0800-1000 CE	**14 Hours**
• Rise of Rajputs: Sun Temple at Modhera, Kandariya Mahadev Temple, and Orissan temples- Lingaraja Temple, Rajarani Temple & Jain temples at Mount Abu • Pure Land Budhism in Japan: Phoenix Hall at Byodo-in • Germany: a new seed of power in Europe;St Michael in Hildesheim; Pisa Cathedral,ItalyEstablishment of Bangkok by King Rama & Golden Stupa at Wat Pra Kaew	
Unit III: 1000-1200 CE	**14 Hours**
• Seljuks' Madrasas in Turkey & Iwans in Iran, qubba in Morocco • Chola Dynasty's Vrah Vishnulok, Angkor Wat at Cambodia • Pagoda of Pagan, Burma • Seven capitals of Delhi:Alai Darwaza, Tomb of Ghiyasuddin Tughlaq Sun Temple at Konarak, Orissa	
Unit IV: 1200-1400 CE	**14 Hours**
• Churches of High Middle ages in Europe: Notre Dame of Reims, France • Ming Dynasty's The Forbidden City,China	

• Timurid Dome of Bibi Khanum Friday mosque at Samarkand, Uzbekistan & at Gulbarga,India	

Course Learning Outcomes:

CLO1	Comprehend the development of Eras of Architecture in different countries.
CLO2	Learn about the architecture in relation to climate, culture, religion and socio-economic circumstances, materials and styles in relation to Architectural Design.
CLO3	Interpret the evolution of mass development due to Industrial Revolution.
CLO4	Identify the architectural development of various continents & sub-continents.

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Francis D. K. Ching , Mark M. Jarzombek , Vikramaditya Prakash	A Global History of Architecture	Wiley	3rd Edition	1118981332	864
Fletcher, Banister Sir,	History of Architecture	CBS	2009	8170804450	1794
David G. Saile	Architecture in Cultural Change: Essays in Built Form and Culture Research	School of Architecture and Urban Design, University of Kansas,	1999	8123906412	175
G.K. Hiraskar	The Great Ages Of World Architecture	Dhanpat Rai Publications	2018	8189928880	406

Annexure **'CD-01'**

L/DS*	T	P/S	SW/FW	Total Credit Units
1	0	1	1	2

Course Title: MEASURED & WORKING DRAWING
Credit Units: 2
Course Level: UG

Course Objectives: Architectural Detailing and Execution Drawings. With details of Joinery, Electrical & Plumbing.Preparation of complete Local Development Authority drawing for a small two storied building

Prerequisites: Basic knowledge of drawing

Course Contents/syllabus:

Unit I: Drawing Floor plans & Elevations	**06 Hours**
• All Floor plans of a simple building (Ground, First & Terrace) • Elevations of a building- Front, Rear and Side	
Unit II: Drawing Section and Electrical Services	**08 Hours**
• Sections of a simple building- X-Axis, Y-Axis • Electrical, Lighting Details duly marked in one floor of design drawings (Electrical layout duly marked in one floor of the design drawings) with the Legends	
Unit III: Drawing Joinery Details	**08 Hours**
• Joinery of Door, Windows & Cupboards Details duly marked in one floor of design drawings, with the Legends	

Unit IV: Drawing Plumbing Services	08 Hours
• Plumbing Details duly marked in one floor of design drawings, with the Legends	

Site Visits/ Case Studies:06 sessions

- To cultivate personal observation and self-learning in the students, site visits should be conducted to cover the given syllabus.
- Students will observe measure, sketch, and annotate what they see at site and submit a site visit report to the teachers concerned for evaluation. This award shall form part and parcel of the sessional work for internal assessment.

Course Learning Outcomes:

CL01	Understand the working and construction methods in detail.
CL02	Learn various architectural and construction components.
CL03	Analyze the drawing details for executing the work of construction.
CL04	Present detailing of design and construction by understanding the function of services and spaces.

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Brand: Taylor & Francis Ltd	Working Drawings Handbook	Routledge	2012	0750663723	300
Bhatt, N. D.	Engineering Drawing ; Plane and Solid Geometry.	Charotar Publishing House Pvt. Limited.	2010	978-9380358178	720

Dhawan R K	Fundamentals of Engineering Drawing	S Chand	2014	978-121939263	456
Thomas, Marvin	Architectural Working Drawings: A Professional Technique	McGraw-Hill Inc.,US	1978	978-0070642409	192
Osamu (Art) A Wakita, Nagy R. Bakhoum, Richard M. Linde	The Professional Practice of Architectural Working Drawings, 5th Edition	Wiley	2017	978-1-118-88052-4	688

Annexure **'CD-01'**

L/DS*	T	P/S	SW/FW	Total Credit Units
2	0	0	0	2

Course Title: BUILDING TECHNOLOGY- II (Lighting, Illumination /Electrical)
Credit Units: 2
Course Level: UG
Course Objectives: Introduction to elementary building services of electricity. To make students understand the basics of Lighting & Illumination/Electrical.

Prerequisites: Basic knowledge of use of Electrical & Lighting in a building.

Course Contents/syllabus:

Unit I: ELECTRICAL SERVICES (Part-I)	**9 Hours**

Introduction to electrical energy, basic definitions, and related theorems to understand distribution of electrical energy. Assessment of electricity requirements in buildings, study of fittings and accessories used in electrical system, Load Calculation.	
Unit II: ELECTRICAL SERVICES (Part-II)	**9 Hours**
Systematic diagrams for electricity distribution, different types of wiring, Various circuit diagrams for bedroom lighting, staircase lighting, Lightning Protection, Substation etc	
Unit III: ILLUMINATION (Part-I)	**9 Hours**
Introduction to illumination Illumination Schemes- Types and their design considerations - Residential, commercial, industry and street lighting, Lux requirement for different spaces, Methods for Lux Calculation.	
Unit IV: ILLUMINATION (Part-II)	**9 Hours**
Artificial lighting – Direct and Indirect methods of lighting Types of Luminaries for interior and exterior lighting.	

Course Learning Outcomes

CL01	Gain knowledge of lighting systems and the schematic layout of electrical and lighting connections
CL02	Apply the principles and installations of general and specialized services in the interiors.
CL03	Analyse the significance of design and functioning of electrical and lighting systems as essential components in Interior Design
CL04	Design the layout, functioning and application of lighting fixtures.

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages

V.K. Jain	Handbook of Designing and Installation of Services in Building Complex	Khanna Publisher, New Delhi,	1998	8174092455	932
BARRY R	Building Services	John Wiley and Sons Ltd	1998	0246112638	136
N N Basak	Environmental Engineering	McGraw Hill Education	2017	0070494630	312
J.B Gupta	Electrical Installation, Estimating	S.K Kataria& Sons, New Delhi	2002	8188458996	200

Annexure **'CD-01'**

L	T	P/S	SW/FW	Total Credit Units
0	0	2	0	1

Course Title: PARAMETRIC ARCHITECTURE -IV (Unreal Engine-II)
Credit Units:1
Course Level: UG
Course Objectives: To enable students to create animated walkthroughs using video-game production software like "Unreal Engine 5".
Prerequisites: Basic knowledge of Computers.

Course Contents/syllabus:

Unit I: Interface Tools in Unreal Engine	**06 Hours**
• Open, Saving and Appending Files, Importing Objects (from other file formats) • Working with Viewports (windows)	

Unit II: Scenes and Sets in in Unreal Engine	**08 Hours**
• Working with Basic Meshes • Editing/Joining/Separating Meshes, Boolean Operations	
Unit III: Animating Cameras and Objects in Unreal Engine	**08 Hours**
• Liquid and droplet effects using Meta Shapes • Setting Up the Physics Engine and Using Voxels • Using the Timeline and Animation Editor • Creating Motion Paths and Camera Trackers	
Unit IV: Lighting and Rendering in Unreal Engine	**08 Hours**
• Materials, Textures and Unity of Design • Lighting Design and Light settings • Environmental Lighting and Mood Lighting • Aliasing, Tessellation and Render Settings	

Course Learning Outcomes:

CLO1	Understanding the Interface Tools in Unreal Engine
CLO2	Creating Scenes and Sets in in Unreal Engine
CLO3	Applying movement to Cameras and Objects in Unreal Engine
CLO4	Analyze Lighting and Rendering in Unreal Engine

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Sargey Rose	Unreal Engine 5 for Beginners:	Packt Publishing Limited, India	2023	978-1800568082	440
Henk Venter, Wilhelm Ogterop	Unreal Engine 5 Character Creation, Animation, and Cinematics	Packt Publishing Limited, India	2022	978-1801812443	608

Program Structure- 6th sem

Courses shown in blue colour below are the courses offered by School of Architecture & Planning and the syllabi of the same were proposed in the meeting.

Sr. No	Course Code	Course Title	Course Type			Credit				Credit Units
				L	T	PS	FW	SW	AR/Des Studio	
1		Arch. Design - VI	Professional Core Courses		0	2	0	0	6	8
2		BCM - VI	Core Courses	0	0	1	0	0	3	4
3		Comp. Graphic Skills-IV (3DS Max II+Photoshop)	Skill Enhancement Courses	0	0	4	0	2	0	3
4		Structures in Arch. - VI	Allied Courses	3	0	0	0	0	0	3
5		History of Arch. -IV	Professional Core Courses	3	0	0	0	0	0	3
6		Building Byelaws	Allied Courses	2	0	0	0	0	0	2
7		Bldg Tech.III- Acoustics/Fire Fighting	Allied Courses	2	0	0	0	0	0	2
8										
		Parametric Architecture-V (Digital Media Creation)	Skill Enhancement Courses	0	0	2	0	0	0	1

		Total Credits					**Min Required: 26** **Semester Credits: 26**

Annexure **'CD-01'**

L/DS	T	P/S/J	SW/FW	Total Credit Units
6	0	2	0	8

Course Title: ARCHITECTURE DESIGN- VI
Credit Units:8
Course Level: UG
Course Objectives: Course aims at teaching the design of buildings for passive recreation and large span buildings for public uses.

Prerequisites: Basic understanding of scale, drafting, and sketches.

Course Contents/syllabus:

Unit I: Study of a multi-storied building like office building, shopping mall.	**28 Hours**

The focus would be on understanding how to design for an urban setting.Library Study showing the anthropometrics, Layouts of various spaces. Case examples/Prototypes of the Project.s Green Building/Energy Efficiency & Barrier Free design features in the building Study of design/Layouts of office buildings and commercial centres	
Unit II: Design of a multi-storied building like office building, shopping mall.	**28 Hours**
Study and differentiate requirements of the project. Concept, zoning, and evolution of the design. Design development stages of the project. Pre-liminary design stages of the project. Final Design of the Project with Physical Model	
Unit III: Study of Infotainment center / hotel	**28 Hours**
The focus would be on understanding how to design for an urban setting. Library Study showing the anthropometrics, Layouts of various spaces. Case examples/Prototypes of the Project.s Green Building/Energy Efficiency & Barrier Free design features in the building Study of design/Layouts of multi-functional, service (advanced services) oriented building and mixed use occupancy buildings	
Unit IV: Design of Infotainment center / hotel	**28 Hours**
Study and differentiate requirements of the project. Concept, zoning, and evolution of the design. Design development stages of the project. Pre-liminary design stages of the project. Final Design of the Project with Physical Model	

Site Visits/ Case Studies:32 sessions

- Design problems will be introduced on the basis of live case studies and site visits as mandatory component of design studio to impart experiential learning.
- Field visits to enrich students' knowledge of context development for a multi-storied building like office building, shopping mall and study of Infotainment center / hotel

Course Learning Outcomes:

CLO1	Demonstrate architectural and structural vocabulary through verbal and written communication
CLO2	Develop sensitivity towards building bye-laws
CLO3	Apply services learnt in previous semester to design project at building and site level
CLO4	Forms correlation between design and other subjects studied in previous semesters and till present

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Donald Watson, Michael Crosbie, John Cllender	Time Saver Standard for Architectural Design Data	McGraw-Hill Education	1997	0070685061	1024
Francis D.K.Ching	Architecture Form, Space and Order	John Wiley & Sons,	2014	9781118745083	464
V.S.Pramar	Design Fundamentals in Architecture	Somaiya Publications Pvt.Ltd., New Delhi	1997.	8170391709	270
Ernst Neufert	Neuferts Architects Data	John Wiley & Sons	2000	9788126517619	636
Broadbent, G.	Design in Architecture - Architecture and Human Science	John Wiley and Sons. New York	1973	978-471105831	600
Roger, K. L.	Architect? A Candid Guide to the Profession	Cambridge: The MIT Press	1998	0262621215	304
Syed Jibran Hashmi, Horst Kreimes, Stellios Plainiotis	Dynamic Energy Simulation Of Shopping Mall: A Detail Analyses of Energy Modelling and Design Comparisons On Shopping Mall	LAP LAMBERT Academic Publishing	2016	978-3330027343	92

David Smiley	Sprawl and Public Spaces: Redressing the Mall: NEA Design Series - (Nea Series on Design)	Princeton Architectural Press; 1st edition	2002	978-1568983769	112
Marriott Field	City Architecture Or Designs For Dwelling Houses, Stores, Hotels, Etc.: In Twenty Plates, With Descriptions, And An Essay On The Principles Of Design (1853)	Kessinger Publishing Co	2009	978-1104015909	120
Manfred Ronstedt, Tobias Frey	Hotel Buildings: Construction and Design Manual	DOM Publishers	2014	978-3869223315	304
Azur Corporation (Contributor)	American Hotel Interior (World Premier Hotel Design)	Azur Corporation; Edition (31 May 2007)	2007	978-4309800059	192
Foreign Office	Remarks on a National Style [of Architecture] in Reference to the Proposed Foreign Office	Nabu Press	2012	978-1275996779	46
Ivana Tatic	Office Building Designed on Principles of Bioclimatic Architecture	LAP LAMBERT Academic Publishing	2017	978-3330067639	72
Drew Plunkett, Olga Reid	Detail in Contemporary Hotel Design (Detailing for Interior Design)	Laurence King Publishing; Illustrated edition	2013	978-1780672854	192

Annexure **‘CD-01’**

L/DS*	T	P/S/J	SW/FW	Total Credit Units
3	0	1	0	4

Course Title: BUILDING CONSTRUCTION & MATERIALS -VI
Credit Units: 4
Course Level: UG
Course Objectives:

- To introduce and familiarize the students with constituents, manufacturing process/ availability/ properties/characteristics/defects/ classifications and usage of traditional building materials and their use in simple building work.
- To make students understand and appreciate the various methods of building construction in coordination with the building materials and science related to them.

Prerequisites: Basic knowledge of drawing.

Course Contents/syllabus:

Unit I: Study of Gypsum & Paints as Building Materials	**12 Hours**
• Study of Gypsum & Paints as Building Materials, their application in building industry, - Gypsum Board, Suspended Ceiling (Board & Tiles), Gypsum Plaster, Components and Accessories. Jointing and Finishing. Construction details of Suspended Ceilings with Gypboard • Types of Paints, Physical and chemical Properties. Preparation of variety of surfaces, Application of various coats. Finishes – Lime / Colour wash, Dry distemper, Oil bound distemper, Cement paints, Acrylic emulsions, Synthetic enamels, Wall textures etc. Polishes and Varnishes	
Unit II: Floors – Decked Floors	**14 Hours**
• Floors – Decked Floors: Steel Floors and their fabrications, • Various components of steel and the structure, composite steel decking/flooring, services in the flooring/decking.	
Unit III: Detailing of the Composite Roofs, water proofing in a structure.	**14 Hours**
Construction of steel structures (Factory shed/ large span) Steel columns, portal frames, etc. • • Roofs- Roofs and Trusses: Steel Trusses: North light truss, tubular monitor roof truss. Types & Uses. • Detail of terracing for Flat roofs: for Masonry structures	

• Water proofing and Rainwater disposal, Rainwater Harvesting for Flat roofs and Steel roofs.	
Unit IV: Expansion Joints	**14 Hours**
• Expansion Joints: Uses, applications, norms, and requirements	

Site Visits/ Case Studies:18 sessions

- To introduce the students to the assigned building materials and their applications in building construction.
- To cultivate personal observation and self-learning in the students, site visits should be conducted so as to cover the given syllabus.
- Students will observe measure, sketch and annotate what they see at site and submit a site visit report to the teachers concerned for evaluation. This award shall form part and parcel of the sessional work for internal assessment.

Course Learning Outcomes:

CLO1	Learn the usage of various finishes and gypsum board partitions and false ceilings in construction works
CLO2	Apply the updated applications of special floors for Computer server rooms and other insulated areas
CLO3	Familiarise with Steel roofing techniques for varying spans
CLO4	Create drawings and designs based on the acquired knowledge base

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Don A. Watson	Construction Materials and Processes	McGraw Hill Co	1972	978-0070684768	512
R Barry	Building Construction	Wiley-Blackwell	1999	9780632052615	288

R. Chudley	The Construction of Building (Vol 1)	Longman Scientific & Technical.	1999	978-0582413955	192
S.P. Bindra & S.P. Arora	The Textbook of Building Construction	Dhanpat Rai & Co.	2010	978-8189928803	-
Sushil Kumar	Building Construction	Standard Publishers Distributors	2006	8186308024, 9788186308028	796
W.B. Mckay,	'Building Construction', Vol.1, 2, 3,4,5..	Longman Longmans, U.K	1981.	812500940X, 9788125009405	480
Thomas, Marvin	Architectural Working Drawings: A Professional Technique	McGraw-Hill Inc.,US	1978	978-0070642409	192
Osamu (Art) A Wakita, Nagy R. Bakhoum, Richard M. Linde	The Professional Practice of Architectural Working Drawings, 5th Edition	Wiley	2017	978-1-118-88052-4	688

Annexure **'CD-01'**

L/DS*	T	P/S	SW/FW	Total Credit Units
0	0	4	2	3

Course Title: COMP. GRAPHIC SKILLS-IV (3ds Max II + Photoshop)
Credit Units: 3
Course Level: UG

Course Objectives: Introduction and the use of 3 DS Max software for architectural applications. as a tool for comprehensive

modeling, animation, simulation, and rendering solution for 3D animations, architectural visualization, and images

Prerequisites: Basic knowledge of sketching styles appropriate to proportional development of figures.

Course Contents/syllabus:

Unit I: Rendering Techniques in 3DS Max	**12 Hours**
Materials, Massing techniques in the software, Mapping, and scaling of materials, study of lighting and shadows	
Unit II: Creating Walk-Throughs /Animating the views in 3Ds Max	**14 Hours**
Small and medium length Animation and walk-throughs, Positioning of cameras and creation of images	
Unit III: Introduction to Adobe Photo-Shop	**14 Hours**
Overall introduction to the interface, tool palettes, layers and addition of colors, masking etc.	
Unit IV: Importing Images & Editing in Photo-Shop	**14 Hours**
Detailing of Tool Palettes and layers of images. Importing Images & Editing in PhotoShop Rendering and presentation	

Course Learning Outcomes:

CLO1	understand the illustration and editing of images as a presentation tool in Architecture profession
CLO2	Develop architectural presentation and 3-dimensional sense.
CLO3	Develop understanding of interrelationship between 2D and 3D form of simple objects, with the help of software.
CLO4	Create futuristic and enhance sensitive designs.

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Thomas Mooney	3ds Max Speed Modeling for 3D Artists	Packt Publishing Limited	2012	184969236X	422

Linkan Sagar/ Nisha Gupta	3D Max 2019 Training Guide	BPB;	2019	9388511158	102
DT Editorial Services	CorelDRAW2018 in Simple Steps	Dreamtech Press	2018	9388425251	284
Pratap Mulick	Sketching	Jyotsna Prakashan	2006	9788179251041	
Gill Robert W	Rendering with pen & ink	Thames & Hudson	1984	9780500680261	400
Scott Onstott	Enhancing Architectural Drawings and Models with Photoshop	Sybex; Pap/Dvdr edition	2010	978-0470916568	360
Horst Sondermann	Photoshop® in Architectural Graphics	Springer; 2009th edition	2009	978-3211715918	328

Annexure **'CD-01'**

L	T	P/S	SW/FW	Total Credit Units
3	0	0	0	3

Course Title: STRUCTURES IN ARCHITECTURE - VI
Credit Units:3
Course Level: UG

Course Objectives: To teach the basics of Seismic Design, Steel Design & Composite Structure Systems

Prerequisites: Basic knowledge of Structural Design.

Course Contents/syllabus:

Unit I: Earthquake-resistant Structural Design	**14 Hours**
Introduction of earthquake resistant structure, Basic elements of Earthquakes Resistant Design Structural modelling, seismic method of analysis – seismic design methods – code based methods. Response control concepts, seismic education and retrofitting seismic test methods.	
Unit II: **Tension & Force Design**	**14 Hours**
Lateral Force Design & diagonal tension. Design of RC structure per latest IS: 1893 by Equivalent static lateral load method. Design of Diagonal Strap Bracing Lateral Force Resisting Systems for the 2006 IBC	
Unit III: Pre-stressed Concrete Structures	**14 Hours**
Introduction to Pre-stressed concrete structures. Difference in Pre and Post tensioning systems, Advantages (History: Structures those have been designed economically), Basic design concept of Pre-stressed concrete beam, Analysis of pre stress and bending stress, Resultant Stress, Thrust Line, Concept of Load balancing, Various losses of stresses, Stresses behavior at anchorage zone Simple Numerical Problems.	
Unit IV: Composite Structural Systems	**12 Hours**
Composite Structural Systems: Composite sections (made of more than one material) Working out structure systems for Layout of a small building	

Course Learning Outcomes:

CLO1	Understand the load resistant parameters in structures

CLO2	Acquaint with brace design and diagonal strap
CLO3	Comprehend the concept of prestressed concrete structures
CLO4	Develop Composite structure system for a small building

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Salvadori, Oakley, and Heller	Structure in Architecture- The building of Buildings	Pearson; 4th edition	2016	978-0132803205	240
Surjeet Kumar	Theory of Structures	Vayu	2014	978-9380097879	234
Angus J. Macdonald	Structure and Architecture	Routledge	2018	978-1138629226	360
Daniel Schodek Martin Bechthold	Structures	Pearson; 7th edition	2013	978-0132559133	576
Dr. R.K. Bansal	A Textbook of Strength of Materials	Laxmi Publications	2018	978-8131808146	1160
R.S. Khurmi	Textbook of Strength of Materials	S Chand Publishers	2015	978-9385401954	752
IS Code for Reinforced Concrete Design	IS 456:2000 SP-16 SP-34	Bureau of Indian Standards	2000 1980 1987	-	114 252 289

L/DS*	T	P/S	SW/FW	Total Credit Units
3	0	0	0	3

Course Title: HISTORY OF ARCHITECTURE-IV
Credit Units: 3
Course Level: UG

Course Objectives: To provide the knowledge of the evolution of different architectural styles through study of Modernism & Provincial World Architecture.

Prerequisites: Basic knowledge of History.

Course Contents/syllabus:

Unit I: 1400-1500 CE	**12 Hours**
• Islamic Architecture in Deccan Plateau: jama masjid at Gulbargha • Muhammad Shah's Tomb in Bengal • Rajput forts: Chittor Fort • Mamluks in Egypt: Tomb of sultan Qaitbay, • Tughlaqs' Jami Masjid at Ahmedabad	
Unit II: 1500-1600 CE	**14 Hours**
• Rise of Italian Renaissance; San Lorenzo, Florence • Developments in Vatican City • Church of St Andrea at Mantua,& St Peter's Basilica • St. Peter's plans by Michelangelo & Bramante • Developments in America- Mexico : Temple Mayor Rise, Peru: Urban Developments	
Unit III: 1600-1650 CE	**14 Hours**
• Rise of Mughals in India: Fatehpur Sikri, Humayun's Tomb, Taj Mahal at Agra • Vijay Nagar Kingdom; Gol Gumbaz, Bijapur	

• Tea Houses in Japan: Katsura Imperial Villa • Ming Dynasty, China: Potala Palace • Churches at Kremlin	
Unit IV: 1650-1700 CE	**14 Hours**
• Italian High Renaissance: Villa Rotonda, Villa Trissino by Ar. Andrea Palladio • Bernini's layout for St. Peter's Square • Russian The Baroque Era- St Paul's Cathedral, St. Petersburg, Russia	

Course Learning Outcomes:

CLO1	Understanding the evolution of Architectural styles in pre-renaissance era
CLO2	Identify the development of Renaissance and mannerism
CLO3	Comprehend the dynasties in Eastern parts of the world and their influences on Architecture
CLO4	Acquaint with the architectural development of Baroque era

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Francis D. K. Ching , Mark M. Jarzombek , Vikramaditya Prakash	A Global History of Architecture	Wiley	3rd Edition	1118981332	864
Fletcher, Banister Sir,	History of Architecture	CBS	2009	8170804450	1794

David G. Saile	Architecture in Cultural Change: Essays in Built Form and Culture Research	School of Architecture and Urban Design, University of Kansas,	1999	8123906412	175
G.K. Hiraskar	The Great Ages Of World Architecture	Dhanpat Rai Publications	2018	8189928880	406

Annexure **'CD-01'**

L/DS*	T	P/S	SW/FW	Total Credit Units
2	0	0	0	2

Course Title: BUILDING BYELAWS
Credit Units: 2
Course Level: UG
Course Objectives:

- Architectural practice and building regulations.
- Familiarizing with Building Bye-laws through Local Developments Authority Guidelines, applicable to Residential and Non Residential building

Prerequisites: Basic knowledge of Building National codes.

Course Contents/syllabus:

Unit I: Basics of Building bylaws	**9 Hours**

Building bylaws: jurisdiction and applicability of the building bye-laws terminology, ground coverage, FSI calculations, building height regulations, building use regulation	
Unit II: National Building Code and Municipal Plans	**9 Hours**
Submission plan, methods of municipal approval, NBC, fire prevention and safety measures, other regulatory aspects such as master plan and zonal plan, NBC, special requirements for occupancy/ land development and other	
Unit III: Advanced Building Codes & Provision of Services	**9 Hours**
Codal provisions with respect to Land-use classifications and use permitted Means of Access, Community open spaces and amenities, Requirement of Plots. Code of conduct for specially able & various services like water supply & sanitation, electrical, mechanical etc	
Unit IV: Development Code pertaining to residential and non-residential premises	**9 Hours**
Control for Building /Buildings within Use Premises, Development Norms and Standards for Hill Towns, general building requirements NOC, Occupation certificate, Building's services approvals and completion certificate procedure. Codal provisions with respect to Classification of Buildings, Open spaces within a plot, Off-street parking spaces, Requirement of parts or buildings.	

CLO1	Understand the development rules and laws stipulated by NBC.
CLO2	Identify the codal provisions as per NBC.
CLO3	Analyze the role of service and codes in design
CLO4	Acquaint with the general building requirements as per local byelaws

Text / Reference Books:

Author	Title	Publisher	Ed/Year	ISBN No	Pages
Nabhi's (Author), Nabhi's Board Of Editors	New Unified Building Bye-Laws For Delhi,2016	Nabhi Publication	2019	8172749597	290
V.K. Puri	Compendium Of Haryana Building Bye-Laws &Amp;	Jba Publishers, Karol Bagh	2014	9380082991	--

	Urban Development Regulations				
Satpal Puliani	Karnataka Municipal Corporations Model Building Bye-Laws,2017	Karnataka Law Journal Publication	2018	B07k5bd66t	254

Annexure **'CD-01'**

L/DS*	T	P/S	SW/FW	Total Credit Units
2	0	0	0	2

Course Title: BLDG TECH. III- ACOUSTICS/FIRE FIGHTING
Credit Units: 2
Course Level: UG

Course Objectives: To acquaint the students with the basic principles used in all basic building services with regards to electrical and mechanical services in buildings.

Prerequisites: Basic knowledge of building design.

Course Contents/syllabus:

Unit I: Basics of Acoustical Service	**9 Hours**
• Acoustical concepts- wave theory, sound power, sound intensity, decibels, sound power level, sound intensity level, sound pressure level, frequency bands concept of reflection, absorption, transmission. • Absorption coefficient, NRC, sound absorbing materials, -fibrous, membrane, resonators, perforated facing, application techniques. • Noise control by absorption, sound transmission, transmission loss, composite barriers, noise reduction between rooms, light construction.	

Unit II: Advanced Acoustical Service and Design	9 Hours
• Reverberation time (RT), calculation of RT, sample problems, RT and noise criteria for spaces for speech and music. • Acoustical design of enclosed spaces for speech and music, reflection analysis reflection/diffusion, echoes, flutter echo, foci. • Acoustical design consideration in interior design and sound amplification system.	
Unit III: Fire Services & Systems-I	**9 Hours**
• Triangle of fire, Materials to be used in construction, Staircases, Fire escape distances for different buildings, Fire spread in Buildings, Fire doors, Basements, Lifts, Electrical Sub-station, AHU Shut off, NBC Rules for fire. • Fire safety standards and requirements for various types of Buildings.	
Unit IV: Fire Services & Systems-II & Security	**9 Hours**
• Fire alarm system and components, Hydrant System and Components, Pump house and location. • Wet riser system, Down comer system and Sprinkler Systems for fire Fighting services. • Security System, Access Control System, Intruder detection and CCTV systems.	

CLO1	Understand the importance of Acoustics in Design.
CLO2	Identify the value and methods of of Firefighting systems in a building
CLO3	Analyze the installation, application and functioning of Acoustic in Design
CLO4	Acquaint with the installation, application and functioning of Fire-fighting & Security systems in Design.

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
M.A. Siraskar	Acoustics in Building Design	Sangam Books Ltd	1979	0861250028	102
B Gréhant (Author)	Acoustics in Buildings	Thomas Telford Ltd	1996	0727725114	305

Raf Orlowski (Author)	Acoustics in Architectural Design	The Crowood Press Ltd	2021	1785008781	160
B.M.SeN	Fire Fighting Vol-1	Techno World	2021	B08N12HN32	175
IPS N. C. Asthana	Fire Fighting	Aavishkar Publishers, Distributors	2015	9788179104910	216

Annexure **'CD-01'**

L	T	P/S	SW/FW	Total Credit Units
0	0	2	0	1

Course Title: PARAMETRIC ARCHITECTURE-V
Credit Units:1
Course Level: UG
Course Objectives: To develop an understanding of the opportunities and techniques for creating digital media products and solutions.
Prerequisites: Basic knowledge of Computers

Course Contents/syllabus:

Unit I: Digital Media Fundamentals	**9 Hours**

Digital Media Terminologies- digital Art, Audio, Animation Digital Art- computer generated graphics, digital paintings, hybrid, digitized artwork, 2D versus 3D art; Digital Audio- digital music, ringtones, sound effects. Animation- stop motion animation, motion graphics, animated logo design, animated advertisements, animatics / pre-visualization, storyboarding, 3D product design, modeling, character design;	
Unit II: Types of Digital Media Businesses	**9 Hours**
Advertising Agencies, Media Houses, Publishing Houses, Studios, Website Development Firms etc. The Open Movement Philosophy- Open Source versus Public Domain. Creating online spaces (for example, wiki, blog, social networking tools).	
Unit III: Digital Media Ecosystem	**9 Hours**
Globalization; rate of technological advancement. (b) Work models – telecommuting, virtual work Idea generation (brainstorming; free writing; word association, mind-mapping).	
Unit IV: Creative Solution Design	**9 Hours**
Creative solutions to the problems through the use of new hardware and software inventions Factors affecting creation of digital media content – rule of thirds, lighting, composition, psychology of colours Color Theories, Harmony Rules, Tints, Shades, Gradients, Colour Mixing, New Colour Creation. Rules of composition, rule of thirds or the golden section/rectangle. Composition, perspective, angles, lighting, repetition, proximity, white space, balance, and contrast.	

Course Learning Outcomes:

CLO1	Develop an understanding of the digital communication- the trends and development in digital media
CLO2	Identify digital media tools and types of digital media businesses
CLO3	Apply the process of concept formulation to the development of digital media content
CLO4	Identify different ways of implementing the creative process and evaluate the utility of different digital media tools

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Carlo Aiello	Parametric Design for Architecture	Laurence King Publishing	2013	1780673140	208
Vassilis Kourkoutas	Parametric Form Finding in Contemporary Architecture	LAP Lambert Academic Publishing	2012	365912527X	92
Yue-Ling, Wong	Digital Media Primer	United Kingdom: Pearson Education	2008.	0134054288	528
Savage, T. M. and Vogel, K. E	Introduction to Digital Media	Ontario: Jones and Bartlett Publishers,	2009	144968839X	336

Program Structure- 7th sem

Courses shown in blue colour below are the courses offered by School of Architecture & Planning and the syllabi of the same were proposed in the meeting.

Sr. No	Course Code	Course Title	Course Type			Credit				Credit Units
				L	T	PS	FW	SW	AR/Des Studio	
1		Arch. Design - VII	Professional Core Courses	0	0	2	0	0	6	8
2		BCM - VII	Core Courses	0	0	1	0	0	3	4
3		Comp. Graphic Skills-V (Autodesk Revit)	Skill Enhancement Courses	0	0	4	0	2	0	3
4		Estimating, Costing & Specifications	Allied Courses	3	0	0	0	0	0	3
5		History of Arch. - V	Professional Core Courses	3	0	0	0	0	0	3
6		Landscape Architecture	Core Courses	2	0	0	0	0	0	2
7		Bldg. Tech.IV- HVAC	Allied Courses	2	0	0	0	0	0	2

8		Basic Accounting & Marketing Skills	Skill Enhancement Courses	1	0	0	0	0	0	1
		Total Credits						**Min Required: 26 Semester Credits: 26**		

Annexure **'CD-01'**

L/DS	T	P/S/J	SW/FW	Total Credit Units
6	0	0	2	8

Course Title: ARCHITECTURE DESIGN- VII
Credit Units:8
Course Level: UG

Course Objectives: To familiarize the students with long span mid-rise structures and multi-functional building projects with emphasis on building services and systems, architectural controls and building byelaws.

Prerequisites: Techniques of Energy Efficient Design, Knowledge of Water and Waste Recycling Technologies, Awareness about LEED Rating and best practices

Course Contents/syllabus:

Unit I: Large Span Structures- P.S. Stage	**36 Hours**

Exhibition Pavilions/ Industrial Buildings/ Multiplex/ Banquets– P.S. Stage starting with Literature review (Group or Individual), Students may visit site for collecting context specific data for getting better understanding of real- life project details. The collected data may be analysed and presented for evaluation. Ideation- Readings/ short movies/ Discussion on designers' philosophies could be initiated for idea generation. • Further approaches for design iterations may involve more common techniques like • Flow diagram to explore relation of various spaces, bubble diagram for locating various zones on site, try and re-create for analysing spaces in all dimensions through Block Models and single line graphics and study models for choosing the right option	
Unit II: Large Span Structures - Final Stage	**36 Hours**
• Exhibition Pavilions/ Industrial Buildings/ Multiplex/ Banquets – Final Stage with Models • Design Development- Apply services learnt in previous semester to design project at building and site level. • Build with precision block models, study models, site models. • The final design proposal is prepared after conducting various informal and formal reviews at individual and at group level. The drawings and detail physical model explaining the approach and consideration of urban setting to achieve the requirements with various other restrictions may be the submited. • Formative assessment in the studio could be done through individual critique, group discussion formal and informal feedback etc. • Summative assessment of the studio work could be achieved through Panel discussion, presentation, peer review, public review , Criteria based evaluation etc.	
Unit III: Multi-functional Mid-rise Buildings- P.S. Stage	**36 Hours**
Housing (Site Area – 1hectare approx..), Institutional Campus, etc.- P.S. Stage starting with Literature review (Group or Individual), Students may visit site for collecting context specific data for getting better understanding of real- life project details. The collected data may be analysed and presented for evaluation. • Ideation- Readings/ short movies/ Discussion on designers' philosophies could be initiated for idea generation. • Further approaches for design iterations may involve more common techniques like • Flow diagram to explore relation of various spaces, bubble diagram for locating various zones on site, try and re-create for analysing spaces in all dimensions through Block Models and single line graphics and study models for choosing the right option	
Unit III: Multi-functional Mid-rise Buildings - Final Stage	**36 Hours**
• Housing continued-Site Planning of Institutional Campus with Vehicular and Pedestrian networks, Parking, Landscaping, Electrical Substation, Fire Tank, etc. • Design Development- Apply services learnt in previous semester to design project at building and site level. • Build with precision block models, study models, site models.	

• The final design proposal is prepared after conducting various informal and formal reviews at individual and at group level. The drawings and detail physical model explaining the approach and consideration of urban setting to achieve the requirements with various other restrictions may be the submited. • Formative assessment in the studio could be done through individual critique, group discussion formal and informal feedback etc. • Summative assessment of the studio work could be achieved through Panel discussion, presentation, peer review, public review , Criteria based evaluation etc.	

Site Visits/ Case Studies: 36 sessions

- Design problems will be introduced on the basis of live case studies and site visits as mandatory component of design studio to impart experiential learning.
- Field visits to enrich students' knowledge of context development for well-designed residences and public spaces

Course Learning Outcomes:

CLO1	Understand the architectural design process for Large Span and Multi-functional Projects
CLO2	Transform the human behavioural needs into architectural program requirements
CLO3	Analyse the information on context and the human-space relationship
CLO4	Create appropriate design solutions for the design project

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Donald Watson, Michael Crosbie, John Cllender	Time Saver Standard for Architectural Design Data	McGraw-Hill Education	1997	0070685061	1024
Francis D.K.Ching	Architecture Form, Space and Order	John Wiley & Sons,	2014	9781118745083	464
V.S.Pramar	Design Fundamentals in Architecture	Somaiya Publications Pvt.Ltd., New Delhi	1997.	8170391709	270

Ernst Neufert	Neuferts Architects Data	John Wiley & Sons	2000	9788126517619	636
Broadbent, G.	Design in Architecture - Architecture and Human Science	John Wiley and Sons. New York	1973	978-471105831	600
Roger, K. L.	Architect? A Candid Guide to the Profession	Cambridge: The MIT Press	1998	0262621215	304

Annexure **'CD-01'**

L/DS*	T	P/S/J	SW/FW	Total Credit Units
3	0	1	0	4

Course Title: BUILDING CONSTRUCTION & MATERIALS -VII
Credit Units: 4
Course Level: UG
Course Objectives:

- To enable the student to study various constructional details in metals i.e., steel & aluminium in coordination with study of materials & science related to them
- To enable the student to know about latest techniques like prefabrication, pre-stressing, etc. used in the construction industry

Prerequisites: Knowledge of basic construction methods, elements and drawing.

Course Contents/syllabus:

Unit I: Building Materials – Stainless Steel and Aluminium	**12 Hours**
The study about application of stainless steel and aluminium in interiors and exteriors. Introduction to a wide range of modern building construction systems incorporating the use of metals like steel, aluminum and composite materials. Steel Structures: Study of steel structures, construction, joining, welding riveting etc. Hot rolled sections, cold forming of sheets into sections. • Materials of Suspended Ceilings: Study variety of false ceiling types and materials available in the market. • Modern Factory Shed Construction: Study of modern building construction materials. • Study of various patent materials of construction available under different trade names with their specifications, properties and uses like Vineertex, Marblex, Fixopan, Anchor Boards, Novapan, composite aluminium bond, etc.	
Unit II: Steel, Aluminium and UPVC in Buildings	**14 Hours**
Doors and windows in: Rolled steel sections, Pressed steel frames, Aluminium extrusions and their uses, Sliding, folding and pivoted doors in UPVC	
Unit III: Prefab Construction, Pre-stressing and Post-stressing	**14 Hours**
Prefabricated construction of building components. • Precast, pre stressed • Pre Tensioning and Post Tensioning of concrete members. • Advantages of Pre-stressing over RCC. Modular Coordination and Prefabrication in buildings – objectives and basic principles Application of pre-stressing and post-tensioning in structures (special reference to high-rise buildings)	
Unit IV: Commercial Kitchen	**14 Hours**
Dry & Wet Areas in kitchen – Study of work triangle, Design for a commercial kitchen with primary focus on construction details of building components, services and Working Drawings	

Site Visits/ Case Studies:18 sessions

- To introduce the students to primary building materials and their applications in building construction.
- To cultivate personal observation and self-learning in the students, site visits should be conducted so as to cover the given syllabus.
- Students will observe measure, sketch and annotate what they see at site and submit a site visit report to the teachers concerned for evaluation. This award shall form part and parcel of the sessional work for internal assessment.

Course Learning Outcomes:

CLO1	Know about various modern materials/ Patented material used for joinery, false ceiling and roofing
CLO2	Comprehend the details/ arrangements of combinations for various uses.
CLO3	Analyze the concept and utility of Pre-fabrication of Building Components
CLO4	Evaluate the design for kitchens for commercial use

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Don A. Watson	Construction Materials and Processes	McGraw Hill Co	1972	978-0070684768	512
R Barry	Building Construction	Wiley-Blackwell	1999	9780632052615	288
R. Chudley	The Construction of Building (Vol 1)	Longman Scientific & Technical.	1999	978-0582413955	192
S.P. Bindra & S.P. Arora	The Textbook of Building Construction	Dhanpat Rai & Co.	2010	978-8189928803	-
Sushil Kumar	Building Construction	Standard Publishers Distributors	2006	8186308024, 9788186308028	796
W.B. Mckay,	'Building Construction', Vol.1, 2, 3,4,5..	Longman Longmans, U.K	1981.	812500940X, 9788125009405	480

L	T	P/S	SW/FW	Total Credit Units
0	0	4	2	3

Course Title: COMP. GRAPHIC SKILLS-V (REVIT)
Credit Units: 3
Course Level: UG
Course Objectives: Introduction and the use of Autodesk Revit Architecture as a tool for building design, simulation and drafting.

Prerequisites: Basic usage of AutoCAD and IT infrastructure.

Course Contents/syllabus:

Unit I: Introduction to Revit	**27 Hours**
Building Information Modeling- Revit Interface. Working with a Project, Navigation between Views, Basic Drawing and Editing General Drawing Tools, Editing Revit Elements and basic Modifying Tools, Setting up Levels and Grids Creating Levels, Importing CAD files, Creating Structural Grids and adding Columns Drawing and Modifying Walls, Creating Exterior Shell and adding Interior Walls	
Unit II: **Design Families in Revit**	**27 Hours**
Loading Families-Creating and adding Doors and Windows, Creating Additional Part Sizes, Creating Curtain Walls Adding Curtain Grids, Working with Curtain Wall Panels, Adding Mullions, Creating Views, Duplicating Views Adding Callout Views, Creating Elevations, Creating Sections, Creating Floors, Shaft Openings, Sloped Floors	
Unit III: Creating and Editing Design Components	**27Hours**
Adding Components, Reflected Ceiling Plans, Creating Ceilings, Soffits, Adding Ceiling Fixtures, Roofs, Creating Roofs, Roofs by Footprint, Reference Planes and Work Planes, Roofs by Extrusion Vertical Circulation- Adding Stairs, Creating Ramps, Working with Railings	
Unit IV: Detailing and Exporting	**27 Hours**

Construction Documentation, Setting up Sheets, Placing and Modifying Views, Printing Sheets, Annotation, Working with Dimensions, Working with Text, Adding Detail Lines and Symbols Tags and Schedules, Adding Tags, Rooms and Room Tags, Working with Schedules, Creating Legends, Detailing in Revit, Setting up Detail Views, Creating and Annotating Details, Keynoting and Keynote Legends, Patterning	

Course Learning Outcomes:

CLO1	Understand the role of BIM in construction documentation and execution
CLO2	Learn and apply Revit as an effective architectural tool
CLO3	Analyse of building design between simulated models and actual construction using Revit
CLO4	Evaluate the results to ensure best possible solution and promote sustainable development

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Robert Yori, Marcus Kim, Lance Kirby	Mastering Autodesk Revit 2020	Sybex	2020	978-1119570127	1104
Elise Moss	Autodesk Revit 2020 Architecture Basics	SDC Publications	2019	978-1630572631	650
Daniel John Stine	Design Integration Using Autodesk Revit 2020	SDC Publications	2019	978-1630572501	898
Gaurav Verma, Matt Weber	Autodesk Revit 2020 Black Book	CADCAMCAE Works	2019	978-1988722603	375

Annexure **'CD-01'**

L	T	P/S	SW/FW	Total Credit Units
3	0	0	0	3

Course Title: ESTIMATING AND COSTING & SPECIFICATIONS
Credit Units: 3
Course Level: UG
Course Objectives:

- To inculcate awareness, regarding factors affecting cost of building
- To familiarize the student with commonly used method of preparing estimate of architectural projects
- To enable the student to have idea regarding the quality and quantity of materials, quantity and classes of skilled and unskilled labours required for the project

Prerequisites: Basic knowledge of mathematics

Course Contents/syllabus:

Unit I: Introduction to Estimation	**9 Hours**

• Introduction and types of estimate. • Introduction to methods of estimate • Preparing estimates of quantity of material for various items of work e.g. earthwork, brickwork, flooring roofing etc. • Units of measurement and payment	
Unit II: Costing and Rates	**9 Hours**
• Analysis of rates of material and labour required for various items of work. • RCC estimation and costing. • Construction case study/practical exercise in preparing a detailed estimate of one storied building with respect to quantities of material and labour required as well as analysis of rates of material and labour	
Unit III: Building Economics	**9 Hours**
• Basic principal of economics as applied to the building and factors affecting cost of building	
Unit IV: Valuation	**9 Hours**
• Fundamentals of valuation and methods of valuation (theoretical introduction)	

Course Learning Outcomes:

CLO1	Understand the calculation methods for working out Bill of Quantities.
CLO2	Apply Rates as per prevailing standards to prepare draft estimates
CLO3	Analyze the estimates to cut costs and plan for construction schedules
CLO4	Develop Valuation of projects for loans and advances

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages

D D Kohli, R C Kohli	A Textbook of Estimating and Costing	S Chand Publishing	2013	978-8121903325	504
BN Dutta	Estimating and Costing in Civil Engineering (Theory and Practice)	CBS Publishers & Distributors Private Limited	2020	978-8174767707	904
Simran Bir Singh, Amit Kumar	Building Estimation Notes: A Complete Practical Handbook for Civil Engineers	Red Bricks Academy of Civil Engineering	2020	-	254
Holm Leonard, E. Schaufelberger John, Griffin Dennis, Cole Thomas	Construction Cost Estimating: Process and Practices	Pearson Education	2017	978-9332552623	388

Annexure **'CD-01'**

L/DS*	T	P/S	SW/FW	Total Credit Units
3	0	0	0	3

Course Title: HISTORY OF ARCHITECTURE-V
Credit Units: 3
Course Level: UG

Course Objectives:

- To provide the knowledge of the evolution of different architectural styles through study of Multi-Religious & Provincial World Architecture
- Understanding the early cultures in the periods from 1700 CE to 1925CE around the globe in context of location, climate as well as socio-economic, historical and cultural influences of the time

Prerequisites: Basic knowledge of History

Course Contents/syllabus:

Unit I: 1700-1800 CE	**12 Hours**
• The Baroque Era- St Paul's Cathedral, St. Petersburg, Russia • Neo-Palladianism: Stowe gardens, England • Durbar square, Nepal • Rise of Jaipur • Spread of Colonialism: The nayaks of Madurai - Meenakshi Temple	
Unit II: 1800-1850 CE	**14 Hours**
• Neo-Classicism, Romanticism & Picturesque Architectural Styles in Europe: Salt Works of Chaux, Ledoux & Durand • Putuo Zongcheng at Chengde, China • US Capital, Washington • Golden temple, Amritsar • Glimpses of Colonial Calcutta • Establishment of Bangkok by King Rama & Golden Stupa at Wat Pra Kaew	
Unit III: 1850-1900 CE	**14 Hours**

• Neo-Gothicism in England: Parliament House • Transition from Victorian Era to Beaux Arts through the Industrial Revolution: London Law courts, Crystal Palace & Supreme Court, Rome • Glass House at Werkbund Exhibition, Germany • Art Nouveau - Ar. Victor Horta: Maison Tassel • City Beautiful Movement in US • Garden City Movement: Ebenezer Howard's concept	
Unit IV: 1900-1925 CE	**14 Hours**
• Erich Mendelson's Expressionism at Einstein Tower, Germany • Lutyen's Delhi & Baker's Parliament House • Russian Constructivism: Rusakov Factory Club • Bauhaus School by Walter Gropius • Villa Savoye by Corbusier	

Course Learning Outcomes:

CLO1	Understand the transition of architecture and revival of the arts through Renaissance
CLO2	Familiarise with the role of movements in the evolution of architecture and its transition towards the modern style
CLO3	Analyse the work done by the Masters and their contribution in developing various styles of Architecture
CLO4	Evaluate the role of Garden City Movement in the modern-day context for more sustainable architecture and urban development

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages

Francis D. K. Ching , Mark M. Jarzombek , Vikramaditya Prakash	A Global History of Architecture	Wiley	3rd Edition	1118981332	864
Fletcher, Banister Sir,	History of Architecture	CBS	2009	8170804450	1794
David G. Saile	Architecture in Cultural Change: Essays in Built Form and Culture Research	School of Architecture and Urban Design, University of Kansas,	1999	8123906412	175
G.K. Hiraskar	The Great Ages Of World Architecture	Dhanpat Rai Publications	2018	8189928880	406

Annexure **'CD-01'**

L/DS*	T	P/S	SW/FW	Total Credit Units
2	0	0	0	2

Course Title: LANDSCAPE ARCHITECTURE
Credit Units: 2
Course Level: UG
Course Objectives:

- To familiarize students with the various elements of landscape architecture and the principle of landscape design and conservation
- To develop and strengthen the competence in dealing with the analytical, artistic and technical aspects of designing open spaces at different scales

Prerequisites: Basic understanding of ecology, natural principles and variety of plant species.

Course Contents/syllabus:

Unit I: Introduction to Landscape Architecture	**9 Hours**
Definition of Landscape – meaning and importance, types of garden, garden components, garden design – formal and informal, principles of landscape gardening. Types of natural elements – stones, rocks, pebbles, plants and vegetation. Elements of landscape-hard & soft. Evolution of Garden Design w.r.t. regional environment & existing examples around the globe	
Unit II: **Plant Species and their Selection**	**9 Hours**
Spatial development in Landscape Design. Classification of plants, indoor plants and their functions, layout & components, Floriculture – commercial, ornamental, Selection of plants & pest control Physical requirements of plants – light, temperature, water, planting medium, soil separator, weight of plants, acclimatization & maintenance Techniques to meet physical requirements of plants. Plant materials -classification, characteristics, use and application in landscape design; their role as shading devices. Influence of climate & selection of color	
Unit III: Elements of Landscape Design	**9 Hours**
Various landscaping elements – water bodies - pools, fountains, artifacts, paving & lighting. Roof and deck landscape, Protection of the integrity of the roof and structure, provisions for drainage, light weight planting medium, irrigation, selection of materials, water proofing, provision for utilities and maintenance. Bonsai – meaning, plants suitable for bonsai culture, techniques and styles. Artificial indoor plants and their caring techniques. Landforms:- Site Planning for neighborhood parks, children's play area and Campus development. Pavements and furniture. Water: waterfalls/streams/pools & ponds. Light & sound effects	
Unit IV: Landscaping in Urban Context	**9 Hours**
Urban open spaces and principles of urban landscape. Street landscaping. Landscape design for waterfront areas and functional areas in urban centers. Green roofs and walls. Landscape design parameters for various types of built forms – indoor and outdoor linkage to spaces. Landscaping of courtyards- residential and commercial forms. Courtyard design, room design with indoor landscape elements, terrace garden	

Course Learning Outcomes:

CL01	Understanding the significance in linking the built environment with the unbuilt/ natural context
CL02	Integration of landscape as part in urban context to ensure sustainable development
CL03	Decision in choice of elements as part of the Landscape Design process
CL04	Evaluating the environmental values of green spaces at the micro and macro scale

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Grant W. Reid	From Concept to Form in Landscape Design	Wiley	2007	978-0470112311	256
Charles Harris, Nicholas Dines	Time-saver Standards for Landscape Architecture	McGraw-Hill Education	2017	978-1259004100	1200
William R. Nelson	Planting Design: A Manual of Theory And Practice	Stipes Pub Llc	2004	978-1588743589	315
C. Tandy	Handbook of Urban Landscape	Architectural Press	2002	978-0851396903	275
Bimal Das Chowdhury, T.K Bose, S.P Sharma	Tropical Garden Plants in Colour	Horticultural & Allied Publishers	1991	978-8190017114	779

Annexure **'CD-01'**

L	T	P/S	SW/FW	Total Credit Units
2	0	0	0	2

Course Title: BUILDING TECHNOLOGY – V (HVAC)
Credit Units: 2
Course Level: UG
Course Objectives:

- To acquaint the students with the basic principles of HVAC and its variants.
- To detail out the process of design, installation and maintenance of HVAC systems in buildings.

Prerequisites: Basic knowledge of physics.

Course Contents/syllabus:

Unit I: Introduction to HVAC	**9 Hours**
• Fundamental principles of Heating Ventilation And Air-conditioning • IAQ, comfort conditions, gas laws	
Unit II: Refrigeration cycle	**9 Hours**
• Refrigeration cycle • A/C equipment • Components of AC – compressor, heat exchangers, condenser and evaporators	
Unit III: Types of Air Conditioning Systems	**9 Hours**
• Types of Air-conditioning: single zone, multi zone, window air conditioners, split air conditioners, ductable air conditioners, package system and central air conditioning	

Unit IV: HVAC Layout	9 Hours
• All air systems and chilled water systems. • A/C plant room, AHU's Building ducting, diffusers and grills, FC units.	

Course Learning Outcomes:

CL01	Understanding the thermodynamic principles behind heating and cooling.
CL02	Application of heating and cooling principles in changing indoor air quality and temperature.
CL03	Analysis of different types of HVAC systems.
CL04	Evaluating the local conditions to choose between standalone and centralized systems.

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Marko Pinterić	Building Physics: From physical principles to international standards	Springer	2021	978-3030673710	286
Carl-Eric Hagentoft	Introduction to Building Physics	Professional Pub Service	2001	978-9144018966	444
R.S. Khurmi	Textbook Of Refrigeration And Air-Conditioning	S Chand	2019	978-8121927819	720
W. Larsen Angel	HVAC Design Sourcebook	McGraw-Hill Education	2011	978-0071753036	400

C P Arora	Refrigeration and Air Conditioning	McGraw-Hill Education	2021	978-9390385843	968

Annexure **'CD-01'**

L	T	P/S	SW/FW	Total Credit Units
1	0	0	0	1

Course Title: BASIC ACCOUNTING & MARKETING SKILLS
Credit Units: 1
Course Level: UG
Course Objectives: An overview of marketing, distribution and promotion of building materials and equipment's in the construction industry as a backdrop to consultancy services. The intention is to acquaint the students with the skills required to market the profession and themselves professionally within the ethical codes of conduct.

Prerequisites: Basic knowledge of Marketing and Accounts.

Course Contents/syllabus:

Unit I: Introduction to Accounting	**03 Hours**
Introduction to Accounting Utility of accounting, Types of accounting, Financial accounting ,Management accounting, Cost accounting, Distinction between financial and management accounting Architect's office practice, filling, recording, accounting and partnership. Basic Account Keeping and preparation of Balance Shee	

Unit II: **Basics of Marketing**	**05 Hours**
Introduction to marketing, Significance of marketing as a business function, Marketing concepts, sales vs marketing Matrices for promotion Consumer behavior, Customer Relationship Management Concept and importance of market segmentation targeting and positioning w.r.t. Project management Importance and factors affecting price	
Unit III: Sales Management	**05 Hours**
Sales management w.r.t. professional service providers like Architects and Interior Designers – nature scope and importance Importance of Office set up.'SPIN' model	
Unit IV: Marketing Communication	**05 Hours**
Marketing communication – advertising – merits and demerits, direct marketing, publicity, sales promotion, face to face selling. Introduction and importance of integrated marketing communication. Emerging trends in marketing communication. Innovation in marketing communication.	

Course Learning Outcomes:

CLO1	Gain the Basic understanding of Accounts in relevance to Architecture.
CLO2	Understand the importance of Marketing in practice of Architecture.
CLO3	Apply the knowledge of Accounts, Sales and marketing.
CLO4	Interpret the skills and enhance the operations of the profession.

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
J.R. Monga (Author), Raj Bahadur	Basics of Accounting	Scholar Tech Press	2019	9387273458	100
J.R. Monga (Author), Raj Bahadur	Basic Financial Accounting	Scholar Tech Press	2021	B09M8MLC6H	882

Les Giblin	Core Selling Skills: Because Selling Is All About People	Embassy Books	2015	9383359048	96
Philip Kotler	Marketing Management | marketing cases in the Indian context	Pearson Education	2017	9339222725	899

Program Structure- 8th sem

Courses shown in blue colour below are the courses offered by School of Architecture & Planning and the syllabi of the same were proposed in the meeting.

Sr. No	Course Code	Course Title	Course Type		Credit					Non Teaching Credit Units
				L	T	PS	FW	SW	AR/Des Studio	
1		Professional Training*	Non Teaching - Professional Ability	0	0	0	0	18	0	18

			Enhancement Courses							
2		Project Report**	Non Teaching - Professional Ability Enhancement Courses	0	0	0	0	6	0	6
3		Architectural Documentaion & Curation	Non Teaching - Professional Ability Enhancement Courses Courses	0	0	0	0	2	0	2
		Total Credits						**Min Required: 26 Semester Credits: 26**		

Annexure **'CD-01'**

L/DS	T	P/S/J	SW/FW	Non Teaching Credit Units
0	0	0	18	18

Course Title: PROFESSIONAL TRAINING
Credit Units:18
Course Level: UG
Course Objectives: **T**he purpose of this study is to expose the students to practical field of design and construction to understand the

application of academic knowledge acquired in the college.

Prerequisites: Basic knowledge of Professional Skills

Work Profile
The architect may expose the trainee to difference aspects of professional practice. viz; o Preparation of Sketch designs, presentation drawings etc; Municipal drawings according to the byelaws; Workings drawings and details; Estimates, bill of quantities & specifications. o Discussions with: Clients andvarious Consultants; Inspection and management of site o Preparation of Models, perspectives and photographs o Preparation of Reports, progress charts
Portfolio
After completion of 18 weeks of practical training, the trainee is required to submit a Project report containing o Office profile o Listing of current project being undertaken o Project wise details of work undertaken by student o Trainee's own assessment and experience about office, working, projects etc All projects listed in the report should compulsorily correspond with the list of projects mentioned in the monthly log. Copies of drawing shall be attached as annex to support the content of the report. The drawing prints shall be obtained with the permission of the office and stamped/sealed by the 'Supervisor'/Head of the firm/office.

CoA guidelines:

GUIDELINES FOR CONDUCT OF

PRACTICAL TRAINING AND ARCHITECTURAL DESIGN THESIS

1. **PRACTICAL TRAINING –(1)** Practical Training shall be undergone during 8th/ 9thsemester of the Architecture Degree course for a period of six months or one semester in the office of an architect or an organization operating in an allied field of practice or research, duly approved by the institution, under mentorship of an architect having experience of at least 5 years.

   (2) The practical training shall be supervised and evaluated through periodic assessment by the mentoring architect and end semester examination (viva voice) as part of curricular studies.

   (3) Training in Foreign Country shall be done under the Registered Architect of that Country and to be approved and monitored by the Head of the University or Institution.

Course Learning Outcomes:

CLO1	Understand and apply the professional aspects of an architecture office/company and the multiple issues in conception, preparation and execution of project on a site.
CLO2	Develop skills that helps to adapt to fit special requirements.
CLO3	Take initiative in making the best use of the opportunities which he gets during training period and prepare himself/herself for profession.
CLO4	Be well versed with the realm of architectural discipline ranging from generation of idea, preparation of drawings to the final execution of design on site

Text / Reference Books: Training Manual

Annexure **'CD-01'**

L	T	P/S	SW/FW	NTC units
0	0	0	6	6

Course Title: PROJECT REPORT

Credit Units: 6
Course Level: UG
Course Objectives: The purpose of this study is to enable the students to gain the kind and range of practical experience which will prepare them for their likely responsibilities, immediately after qualifying B. Arch. Course

Prerequisites: Basic knowledge of Professional Skills & Software for report making.

Critical Appraisal of a building of national/International importance -1
Present a report choosing any building that has been designed/ executed by the company/ firm, she / he is working for internship. This can be done through secondary research/data collection. The report should contain: • Explanation/ Justification for the choice of the project. • Fact file of the project- discussion on location, client profile, context (physical, cultural) and legal bindings. • Remarkable features that make the building / complex noteworthy. • Trainee's own assessment and experience about the same. • References used in preparation of the appraisal
Critical Appraisal of a building of national/International importance-2
Present a report choosing any building that is present in the city/ town where she / he is working for internship. This needs to be done with primary study and user experience study The report should contain: • Explanation/ Justification for the choice of the project/ built structure • Fact file of the project- discussion on location, client profile, context (physical, cultural) and legal bindings. • Remarkable features that make the building / complex noteworthy/ award winning/ popular. • User experience and the design comparison. • Trainee's own assessment and experience about the same. • References used in preparation of the appraisal

Course Learning Outcomes:

CLO1	Be aware of or sensitive to the existence of certain ideas, material, or phenomena and design trends
CLO2	Document data in the shape of pictures, Working Drawings, and detailed drawings
CLO3	formulate and theorize the principles into practice of data collection and interpretation

CLO4	Be able to review the construction techniques and present the appraisal of the selected projects

Text / Reference Books: Training Manual

Annexure **'CD-01'**

L/DS	T	P/S/J	SW/FW	Non Teaching Credit Units
0	0	0	2	2

Course Title: ARCHITECTURAL DOCUMENTAION & CURATION
Course Code:
Credit Units: 02
Course Level: UG
Course Objectives: Create an Opportunity for the students to bring in the best of Design and professional skills learnt during the internship.
Explore the undervalued areas and experiment with creative skill sets.
Learn the art of exhibiting and curating their own Design works.
Build a Design exhibition as a communication bridge to create awareness among the different stakeholders.

Prerequisites: Basic knowledge of Professional Training.

Architectural Documentation
Documenting an urban/suburban/rural area and exhibiting the potential of that area through cultural significance and place making; o Collecting data in the form of sketches/ survey plans/rastering images/ vectorizing drawings of selected areas

○ Recording observations as reports / review papers/ proceedings of academic events like seminars etc/ vlogs/ blogs and discussion notes ○ Preparation of presentation drawings/ slides/ views/ walk-throughs/models/ photographs etc.
Curating the Exhibition
After completion of 18 weeks of practical training, the trainee is required to curate the exhibition of the efforts proposed or implemented for preservation and restoration with focus on conservation of localized styles, material segregation for beautification, artwork and activity generation

EXPECTED OUTCOME:

CLO1	To bring professional confidence through their thought out and creative Internship works.
CLO2	To display skills in addressing masses and showcase their expression of design.
CLO3	To apply creativity to enhance qualitative environment and liveability in any given setting
CLO4	To evaluate the experiences and peer group learning in diversified sectors

Program Structure- 9th sem

Courses shown in blue colour below are the courses offered by School of Architecture & Planning and the syllabi of the same were proposed in the meeting.

Sr. No	Course Code	Course Title	Course Type			Credit				Credit Units
				L	T	PS	FW	SW	AR/Des Studio	
1		Arch. Design - VIII	Professional Core Courses	0	0	2	0	0	8	10
2		BCM - VIII	Core Courses	0	0	1	0	0	3	4
3		Comp. Graphic Skills-VI (Lumion)	Skill Enhancement Courses	0	0	4	0	2	0	3
4		Housing	Core Courses	2	0	0	0	0	0	2
5		Urban Design/Urban & Regional Planning	Specialization Elective Courses	2	0	0	0	0	0	2
6		Contemporary Arch./Arch. Conservation	Specialization Elective Courses	2	0	0	0	0	0	2
7		Construction Management./Architectural Journalism	Specialization Elective Courses	2	0	0	0	0	0	2

8		Open Elective I Green Buildings	Open Elective Courses	1	0	0	0	0	0	1
		Total Credits						**Min Required: 26 Semester Credits: 26**		

Annexure **'CD-01'**

L/DS	T	P/S/J	SW/FW	Total Credit Units
8	0	2	0	10

Course Title: ARCHITECTURE DESIGN- VIII
Credit Units:12
Course Level: UG

Course Objectives: To understand the principles and approach of designing buildings / complexes / public spaces in the context of urban design, environmental components, and urban services. To Understand the preparation and background research of Architectural Thesis.

Prerequisites: Basic knowledge of urban design in the making of quality-built environment. And the basic knowledge of Architectural research.

Course Contents/syllabus:

Unit I: Multifunctional building at urban or metropolitan scale - Pre-liminary submissions- concept and design development	**36 Hours**

• Design problems at urban or metropolitan scales with emphasis on site planning, landscape, structure, building services, HVAC systems, architectural detailing including the national acts and codes . • Design Problems dealing with Airport/ Hospital/ Stadium Or, Development / redevelopment of markets, plazas, city square and public areas, building(s) in historic context with Conducting case studies & library study & Pre-liminary submissions- concept and design development • Methods of space programming, analysis, evaluation of design criteria and fundamentals of composite site planning. Introduction to building services, utilities and building automation and facility planning. Exposure to techniques of post occupancy evaluation and measurement of users' satisfaction. The design problem should deal with complex circulation patterns, services and layouts. Emphasis on design of circulation pattern, application of cost effective techniques, innovative structural systems, building materials and system and application of urban design elements in campus design	
Unit II: Multifunctional building at urban or metropolitan scale - Final Stage with Models	**36 Hours**
Field study tour to construction sites or similar projects. Group work or teamwork, as in the case of complex urban projects, should be experimented. Guest lectures by practicing architects to help students ideate solutions with emphasis on the building bye-laws , cost effectiveness and innovative structural considerations. Final Stage with Models - Presentation Drawings and Models	
Unit III: Architectural Pre-Thesis: Project Proposal	**36 Hours**
• Introductory Lecture Discussing course objectives, outcomes, schedule content. • Discussion on Suggested Problem Areas, Idea of Proposed Projects, Criteria for Choosing A Topic or Problem, Project Report Writing. • Thesis Topic Formats for suggested/chosen topics, Various Stages of Work • The project can be oriented in either of the three types: Designing a live project/ Researching to develop design concepts in futuristic trends/ Studying theories of design to propose innovative solutions to prevailing design challenges	
Unit IV: Architectural Pre-Synopsis	**36 Hours**
• Each student shall submit three proposals for the project (such as urban monuments/ organic architecture/transport planning/redevelopment Towers/ cultural centre, educational campus, religious complex, industrial centre, recreational complex, civic centre, television studio, cinema studio, aquarium, zoological park, airport terminal, hotel or hospitals etc.) that he or she wants to undertake, in the order of preference. • Each of the project should have the following information presented in from of typed/neatly hand written on A-4 size paper Title of project; Authority proposing the project, with address; .Site, area, location; Brief about the project	

giving broad requirements, Need for the Project, Objectives of the project, the validity of the project, scope of the chosen project, Design Methodology, proposed Case studies, Site Analysis and Design Requirements.	

Site Visits/ Case Studies:36 sessions

- Design problems will be introduced on the basis of live case studies and site visits as mandatory component of design studio to impart experiential learning.
- Field visits to enrich students' knowledge of contextual development for well-designed urban level projects.

Course Learning Outcomes:

CLO1	Understand the architectural design process for Large Scale Projects
CLO2	Develop understanding of designing a multifunctional building on an intermediate scale, with emphasis on the building bye-laws , cost effectiveness and innovative structural considerations
CLO3	Understand the context of thesis study
CLO4	Select and substantiate the title of thesis project proposal with valid data

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Bureau of Indian Standards (BIS)	Recommendations for Buildings and Facilities for the Physically Handicapped	New Delhi: Bureau of Indian Standards	1987	-	-
Bureau of Indian Standards (BIS)	The National Building Code of India, SP: 7.	New Delhi: Bureau of Indian Standards	2016	978-8170610991	2246

Charles Correa	Housing and Urbanization: Building Solutions for People and Cities	Thames & Hudson	2000	978-0500282106	144
Chris Wilkinson	Supersheds: The Architecture of Long-Span, Large-Volume Buildings	Butterworth-Heinemann	2014	978-1483112640	128
Donald Watson, Michael Crosbie, John Cllender	Time Saver Standard for Architectural Design Data	McGraw-Hill Education	1997	0070685061	1024
Donald Watson	Time-Saver Standards for Urban Design	McGraw Hill Education	2017	978-1259002908	896
Ernst Neufert	Neuferts Architects Data	John Wiley & Sons	2000	978-8126517619	636
Francis D.K.Ching	Architecture Form, Space and Order	John Wiley & Sons,	2014	978-1118745083	464
John Ormsbee Simonds	Landscape Architecture: A Manual of Site Planning and Design	Mcgraw-Hill	Second, 1983	978-0070574489	384
Mitchell Thomashow & Anthony Cortese	The Nine Elements of a Sustainable Campus	The MIT Press	2016	978-0262529006	248
Peter Pearce	Structure in Nature is a Strategy for Design	The MIT Press	1980	978-0262660457	264

William Lidwell, Kritina Holden & Jill Butler	Universal Principles of Design	Rockport Publishers	2010	978-15925358 73	272

Annexure **'CD-01'**

L/DS*	T	P/S/J	SW/FW	Total Credit Units
3	0	1	0	4

Course Title: BUILDING CONSTRUCTION & MATERIALS -VII
Credit Units: 4
Course Level: UG
Course Objectives:

- To introduce and familiarize the students with constituents/ manufacturing/availability/ properties/characteristics/defects/ classifications and usage of advanced building materials.
- To familiarise them with various construction and transportation equipments methods
- To make students understand and appreciate the modern methods of building construction and their applicability.

Prerequisites: Knowledge of basic construction methods, elements and drawing.

Course Contents/syllabus:

Unit I: Miscellaneous Building Materials	**12 Hours**
Translucent concrete, glass reinforced concrete, bendable concrete, foam concrete, cellular concrete,Ready Mix Concrete, Concrete Admixtures, Defects and repairs in concrete Bamboo, introduction to rebar, torque steel etc.	
Unit II: Long Span Structures	**14 Hours**
Introduction to Long Span Structures. Structural Systems for Long Span: their application in buildings and associated issues. Pre and post Tensioning. Segmental Construction. Composite Construction. Pre-engineered Construction. Space steel frame, hinged portal truss, air truss, other large span steel structures.	
Unit III: Modular Coordination	**14 Hours**
Advantages of planning and designing with dimensional coordination; assembly of components; planning and design modules. standardization in building design and their components	
Unit IV: High Rise Buildings	**14 Hours**
Introduction. Evolution of High Rise Buildings. Structural Systems and their integration with architectural designs. Service Installations in High-rise buildings. Construction related issues.	

Site Visits/ Case Studies:18 sessions

- To introduce the students to advance building materials and modern techniques and their applications in building construction.
- To cultivate personal observation and self-learning in the students, site visits should be conducted so as to cover the given syllabus.
- Students will observe measure, sketch and annotate what they see at site and submit a site visit report to the teachers concerned for evaluation. This award shall form part and parcel of the sessional work for internal assessment.

Course Learning Outcomes:

CLO1	Know about the current trends in concrete technology
CLO2	Comprehend the types of structural systems available for the construction of large span structures & high-rise buildings and their integration with architectural designs
CLO3	Summarize the application of modularization and mass production in construction industry

CLO4	Evaluate the specific requirements / implications on design & construction process associated with each of these technologies

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Don A. Watson	Construction Materials and Processes	McGraw Hill Co	1972	978-0070684768	512
Mark Lawson	Design in Modular Construction	CRC Press	2014	978-0367865351	280
Mehmet Halis Gunel	Tall Buildings Structural Systems and Aerodynamic Form	Routledge	2014	ASIN: B00LC9DDMK	214
R Barry	Building Construction	Wiley-Blackwell	1999	9780632052615	288
R. Chudley	The Construction of Building (Vol 1)	Longman Scientific & Technical.	1999	978-0582413955	192
Ryan E. Smith	Prefab Architecture: A guide to Modular design and construction	Wiley	2011	978-0470275610	384
S.P. Bindra & S.P. Arora	The Textbook of Building Construction	Dhanpat Rai & Co.	2010	978-8189928803	-

Terri Meyer Boake	Diagrid Structures	Birkhauser	2014	978-3038215646	185
Ulrich Knaack	Prefabricated Systems: Principles of Construction	Birkhauser	2012	978-3764387471	133

Annexure **'CD-01'**

L/DS*	T	P/S	SW/FW	Total Credit Units
0	0	4	2	3

Course Title: COMPUTER GRAPHIC SKILLS-VI
Credit Units: 3
Course Level: UG

Course Objectives: To enable the students learn the ideas of Lumion and the tools to generate expert visualizations.
To familiarize the students with the development of art in Color as a medium**.**

Prerequisites: Basic knowledge of sketching styles appropriate to proportional development of figures.

Course Contents/syllabus:

Unit I: Introduction of Lumion	**27 Hours**
Starting a project – Project Setup, Screen Layout Controlling the Camera Modeling Environment and Modifying Terrain Adding a Water Plane and/or Ocean	
Unit II: Importing – Updating Models with Geometry	**27 Hours**

Placing Content from the Library Using Layers Assigning and Modifying Materials Saving Material Sets Advanced Materials (Glass, Waterfalls, Self Illuminated, Glows) Environment Settings	
Unit III: Cloud Setting	**27 Hours**
Setting Sun Direction and Height Cloud Setting Adding / Modifying Light Fixture Creating Rendering Images	
Unit IV: Creating Animations	**27 Hours**
Animating Objects Camera Presets Working with Filters Adding Special Effects to Individual clips Using Theater Mode Export and Rendering Options Rendering the final output as a movi	

Course Learning Outcomes:

CLO1	Explain and illustrate usage of Lumion to generate amazing top-notch videos swiftly
CLO2	Append 3D visualization to SketchUp and Revit projects using Lumion
CLO3	Identify and develop understanding of begining Lumion projects, append cameras and environment, direct decorations
CLO4	Evaluate tools to how to build landscapes, and generate animations

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Circo Cardoso	Getting Started with Lumion 3D	Ingram Short Title	2013	978-1849699495	134
Circo Cardoso	Lumion 3D Cookbook	Packt Publishing Limited	2014	978-1783550937	258
Circo Cardoso	Mastering Lumion 3D	Ingram short title	2014	978-1783552034	286

Annexure **'CD-01'**

L/DS*	T	P/S	SW/FW	Total Credit Units
2	0	0	0	2

Course Title: HOUSING
Credit Units: 2
Course Level: UG
Course Objectives: To understand the fundaments of Housing Policy and Design

Prerequisites: Basic design skills along with drafting, presentation skills and understanding of building codes

Course Contents/syllabus:

Unit I: Basics of Housing Design	**9 Hours**
Definition, terminologies and importance. • Ecological and environmental aspects of human habitat. • Concept of Neighbourhood and community. • Hierarchy of human needs and Housing typologies Urbanization and housing statistics • Factors of housing demand and supply • Housing delivery mechanism Type of dwelling structures- detached/semidetached houses; Flats and multistoried classification according to the type of access-corridor, gallery, direct.Combination of different access types.	
Unit II: Housing policies and programmes	**9 Hours**
Housing and its relationship with neighbourhood and city plan • Zoning regulation, its impact on quality of life of neighbourhood • Density; definitions, types of density, factors, FAR, FSI, etc. • Development norms and standards for services, amenities and facilities • Sub- division techniques	
Unit III: Factors and principles of site planning	**9 Hours**

Housing Design and site planning. Analysis for physical, climatic, legal, financial, socio-cultural aspects • Principles of Neighbourhood design • Housing case studies (Successful real estate projects) • Design of Neighbourhood (concept and calculations) Selection of site for the housing.Considerations of physical characteristics of site and its location factors;Community and neighborhood factors	
Unit IV: Housing on Contours	**9 Hours**
Importance of orientation and topography in housing design. Topography: problem inherent in steeply sloping site economic and aesthetic implication of the building along and against the contours, silhouette problems on a sloping site	

Course Learning Outcomes:

CLO1	Identify the basic elements of housing, neighbourhood, community, slums and real estate market.
CLO2	Gain knowledge of inter-relationships between hierarchy of human needs and housing typologies
CLO3	Apply zoning regulations and sub-division techniques and computation for density, FAR, built-up area, MOS, as per development norms.
CLO4	Critically appraise of existing housing scheme in terms of quality of life through case study

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
A.K. Jain	Housing for All	Khanna Publishing House	2019	978-9386173560	320
Ministry of Housing & Urban Alleviation	National Housing and Habitat Policy 2007	Government of India	2007	-	42

Nico Larco, Kristin Kelsey, Amanda Stocker West	Site Design for Multifamily Housing: Creating Livable, Connected Neighborhoods	Island Press	2014	978-1610915472	168
David Levitt, Jo McCafferty	The Housing Design Handbook: A Guide to Good Practice	Routledge	2018	978-1138568952	354
Sandra Hofmeister	Affordable Housing: Cost-efficient Models for the Future	Edition Detail	2018	978-3955534486	192
David J. Erickson	The Housing Policy Revolution: Networks and Neighborhoods	Urban Institute Press,U.S.	2009	978-0877667605	264
Avi Friedman	Multifamily Housing: Creating a Community	Images Publishing Group Pty Ltd	2017	978-1864706697	240

Annexure **'CD-01'**

L/DS*	T	P/S	SW/FW	Total Credit Units
2	0	0	0	2

Course Title: URBAN DESIGN
Credit Units: 2

Course Level: UG

Course Objectives: To help students formulate an understanding of the urban forms and spaces. The contemporary needs of the society and the role of spaces will be dealt along with the need for design control.

Prerequisites:

Course Contents/syllabus:

Unit I: Introduction	**9 Hours**
• Emergence of urban design as a discipline • Introduction, Role, Scope and Importance of Urban Design • Distinction between Urban Design, Architecture and Town Planning • Concepts of urban design • Elements of Urban Design- Pattern, Grains, Texture, Density etc., their role and importance • Urban design parameters- space and place, morphology, urban form and structure.	
Unit II: **Basic Principles and Techniques in Urban Design**	**9 Hours**
• Determinants of Urban Form – Landform, Climate, Symbolism, Activity Pattern, Socio-cultural Factors etc. and their role and importance. • Imageability - Elements and their role and importance including Paths, Nodes, Landmarks, Edges, Districts etc. • Urban scale, Mass and Space	
Unit III: Studies of Urban Spaces and Cities	**9 Hours**
• To introduce the components of a city and their interdependent roles in the urban fabric • Expressive quality of built forms, spaces in public domain like street, square, precinct, piazza, mall etc. • Urban Design study of selected Capital Cities - Chandigarh and Delhi	
Unit IV: Development Controls, Policies and Framework	**9 Hours**
• Development Controls - Role and Importance in Urban Design. • Introduction to Legal and Institutional framework for Urban Design including Delhi Urban Art Commission - Objectives, Constitution, Role, Importance, Impact etc.	

Course Learning Outcomes:

CLO1	Explain the scope and nature of urban design as a discipline
CLO2	Develop effective design ideas based on the principles of urban design
CLO3	Analyze the link between architectural designs, planning and urban design at all scales
CLO4	Evaluate urban issues and situations involving public realm

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Alexander Christopher	A New Theory of Urban Design	Oxford University Press	1987	978-0195037531	272
Arthur B. Gallion & Simon Eisner	Urban Pattern: City Planning and Design	London: Van Nostrand Reinhold	1986	978-0442227319	-
Cliff Moughtin	Urban Design: Street and Square	Routledge	2003	978-0750657174	314
Gordon Cullen	The Concise Townscape	London: Architectural Press	1961	978-0750620185	200
Kevin Lynch	The Image of the City	The MIT Press	1964	978-0262620017	202
P.D. Spreiregen	Urban Design: The Architecture of Towns and Cities	McGraw Hill	1965	-	-
Raymond J. Curran	Architecture and the Urban Experience	Van Nostrand Reinhold Co.	1983	978-0442212087	221
Rob Krier	Urban Space	Academy Editions London	1979	978-0856705764	175

Annexure **'CD-01'**

L/DS*	T	P/S	SW/FW	Total Credit Units
2	0	0	0	2

Course Title: URBAN & REGIONAL PLANNING
Credit Units: 2
Course Level: UG
Course Objectives: To acquaint the students with Regional settings and Land Preservation.

- To enable the students in understanding of integrated planning.
- To understand region development issues and specific solutions

Prerequisites: Awareness of terms defining local and regional zoning

Course Contents/syllabus:

Unit I: Introduction	**9 Hours**
Regional planning and Land Preservation; functional diagram of Regional Planning Methodology, Understanding of schedule and questionnaire. Surveys to understand topology of Region. Planning process, components and techniques- survey techniques and data collection methods • Concept of master plan, its elements, preparation and implementation • Perspective plans, structure plans, advocacy plans, zonal plans • Participatory and inclusive planning	
Unit II: Evolution of Planning concepts	**9 Hours**

Urban redevelopment; City beautiful movement, Garden cities, Radburn city and neighbourhood concept • Theories related to growth and decay of settlements- Luis Mumford, Geddesian triad, Ekistics. • Utopian Planning theories-Linear city- Tony Garnier, Soriya Y Mata. Planning concepts by Le Corbusier and FLW	
Unit III: Democratic framework	**9 Hours**
Smart Development: Principles of intelligent urbanism, Land Economy, Innovative economic and industrial Development, Resist development in flood plains. Five Year plans and their impacts, Existing and innovative practices; Planning for tourism	
Unit IV: Integrated planning practices	**9 Hours**
Efficient use of land use activities, Designate Transportation Corridors, Zoning laws and policies for sustainable growth of region. UDPFRI Guidelines, MoUD laws, Zoning and developmental control	

Course Learning Outcomes:

CLO1	Identify the elements of a settlement
CLO2	Distinguish between different settlements, concepts of planning and techniques of survey
CLO3	Recognize planning issues at national context in terms of magnitude of problems, outcomes of initiatives and related factors
CLO4	Re-create thematic settlement patterns/ origin and growth patterns of city & Develop local area plans

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
A.Bandyopadhyay	Text Book of Town Planning	Kolkata: Books and Allied (P) Ltd.	2001	978-8187134657	360

A.K.Jain	Town Planning – Principles, Process and Practice	Khanna Publishing	-	978-9386173409	-
Avi Friedman	Fundamentals of Sustainable Urban Renewal in Small and Mid-Sized Towns	Springer	1st ed. 2018	978-3319744636	291
C.L.Doxiadis	Ekistics: An Introduction to the Science of Human Settlements	Hutchinson, London	1968	978-0080212432	527
G.K.Hiraskar	Fundamentals of Town Planning.	New Delhi: Dhanpat Rai and Co.	2018	978-8189928896	147
Ministry of Urban Development	Urban Development Plans Formulation & Implementation Guidelines	Government of India, New Delhi	2014	978-0750657174	314

Annexure **'CD-01'**

L/DS*	T	P/S	SW/FW	Total Credit Units
2	0	0	0	2

Course Title: Program Elective – II (CONTEMPORARY ARCHITECTURE)
Credit Units: 2
Course Level: UG
Course Objectives: To develop an understanding of Era of Modernism and Contemporary Architecture.

Prerequisites: Basic knowledge of History of Architecture.

Course Contents/syllabus:

Unit I: 1925-1950 CE	**9 Hours**
• Rise of Modernism • Mies Van Der Rohe's Barcelona Pavilion & Farnsworth House • Buckminster Fuller: Geodesic Dome & 4D Dymaxion House • Corbusier's Palace of Soviets • Organic Architecture by F L wright Robie House, Taliesin East • Emergence of tall buildings:Raymond Hood's Rockfeller Centre, New York	
Unit II: 1950-1975 CE	**9 Hours**
• Cities of Chandigarh & Capitol complex, Bhuvneshwar & Gandhinagar. • National Congress, Brasilia • Guggenheim Museum, Manhattan • Louis kahn's Parliament of Bangladesh • Sydney Opera House by John Utzon	
Unit III: 1975-2000 CE	**9 Hours**

• Ahmedabad after Corbusier: CEPT, Gandhi Ashram & Sangath • Kenzo Tange's Mastrplan for city of Abuja, Nigeria • Post Modernism: pompidou Centre, France • Phillipjohnson's AT & T building, New York • I M Pei's Pyramide Du Louvre, Paris	
Unit IV: 2000-till date	**9 Hours**
• Globalisation • Rise of Shanghai • San Tiago calatrava's Milwaukee Art museum, Wisconsin • Dubai Skyline • Concept of smart Cities: Barcelona	

Course Learning Outcomes:

CLO1	Understanding the essence of Modernism in Architectural.
CLO2	Integration of past and the present architecture.
CLO3	To learn the Current trends in contemporary architecture.
CLO4	To analyze the changes happening due to technology and styles in architecture.

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Frampton, K	Modern Architecture-A Critical History	Thames and Hudson	2020	0500204446	736
Gossel, P. and Leuthauser, G	Architecture in the 20th Century	Taschen GmbH	Vol1 2005	3822841269	608

Gossel, P. and Leuthauser, G	Architecture in the 20th Century	Taschen GmbH	Vol2 2020	3836570904	600
Troman, R.	History of Architecture, From Classic to Contemporary	Parragon Inc	2010	1445408503	336
Joan Ockman	Architecture Culture: 1943-1968 (Readers in 20th Century Thought S.)	Rizzoli	1993	0847815226	464

Annexure **'CD-01'**

L/DS*	T	P/S	SW/FW	Total Credit Units
2	0	0	0	2

Course Title: Program Elective–II (ARCHITECTURAL CONSERVATION)
Credit Units: 2
Course Level: UG
Course Objectives:

- To make students understand the role and importance of heritage/architecture conservation.
- To develop understanding about the importance of historical and heritage buildings

Prerequisites: Basic knowledge about history of architecture.

Course Contents/syllabus:

Unit I: Introduction to Architectural Conservation	**9 Hours**
• Definitions of conservation, preservation, restoration, reconstruction and adaptation. • Objectives. Principles and concepts of conservation and its application • Role of architect in conservation program. • Identification and study of problems, issues involved and solutions available in promoting conservation, preservation and management of heritage/architecture conservation	
Unit II: Degrees of Intervention in Historic Buildings and Monuments	**9 Hours**
Prevention of deterioration • Preservation of the existing state • Consolidation of the fabric • Restoration • Rehabilitation • Reproduction • Reconstruction	
Unit III: Decay and Remedies	**9 Hours**
Introduction to Decay in Cultural property, Materials and Structural failures • Internal and External environment of historic buildings • Climatic causes of decay • Botanical, biological and microbiological causes of decay • Insects and other pests as causes of decay • Man-made causes of decay	
Unit IV: Regional Conservation Policy Framework	**9 Hours**
• Study of existing policy framework available at national/state level for heritage/architecture conservation. • Case studies of heritage/architecture conservation with specific reference to the state of Punjab. • Designing in Historic Context-Concepts of :-Imitation,Inspiration,Innovation,Influence,Evolution,New Design	

Course Learning Outcomes:

CLO1	Understand the philosophy and science of architectural conservation

CLO2	Learn the appropriate methodologies and tools for recording, documentation and inventorying of heritage structures,
CLO3	Critically evaluate and make assessment of heritage components
CLO4	Demonstrate respect for built and cultural heritage and design in a heritage contex

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
D. Dayalan	Conservation and Management of Cultural Heritage	Aryan Books International	2019	978-8173056369	230
Aylin Orbasli	Architectural Conservation: Principles and Practice	Wiley-Blackwell	2007	978-0632040254	240
Jukka Jokilehto	A History of Architectural Conservation	Routledge	2017	978-1138639997	494
Peter Bille Larsen, William Logan	World Heritage and Sustainable Development: New Directions in World Heritage Management	Routledge	2018	978-1138091405	310
Patrick Ngulube	Handbook of Research on Heritage Management and Preservation	IGI Global	2018	978-1522531371	400
Jigna Desai	Equity in Heritage Conservation: The Case of Ahmedabad, India	Routledge	2020	978-0367663018	212

Norman Weiss, Kyle Normandin, Deborah Slaton	Cleaning Techniques in Conservation Practice: A Special Issue of the Journal of Architectural Conservation	Routledge	2005	978-1873394748	154

Annexure **'CD-01'**

L/DS*	T	P/S	SW/FW	Total Credit Units
2	0	0	0	2

Course Title: Program Elective III (CONSTRUCTION MANAGEMENT)
Credit Units: 2
Course Level: UG
Course Objectives: To make student understand and appreciate the role and importance of management in building construction

Prerequisites: Planning and Mathematics.

Course Contents/syllabus:

Unit I: Introduction to Construction Management	**9 Hours**

• Aim, Objectives and functions of construction management. • Role of Architect and Construction/Project manager in Construction Management. • Resources of construction industry. • Construction stages of project.	
Unit II: **CPM and PERT**	**9 Hours**
• Differences between PERT and CPM, Basic concepts, Procedure to draw a network, Time estimates, Time analysis of networks. • Events slacks and activity floats, critical path, Crashing project completion time, Time scale networks, Probability of completion of a project, Resource allocation.	
Unit III: Contracts and Corresponding Acts	**9 Hours**
• Award of contract, terminology • The Indian Contract Act, 1963 • The Arbitration and Conciliation Act, 1996 • Service Tax Act, 2004.	
Unit IV: Site Work	**9 Hours**
• Issue of Work Order, Commencement of Work, Discharge of Obligation by Owner and Contractor, Site Organisation, Supervision of Works, Duties of Architect or Engineer Supervising the Work, What a Field Architect/Site Engineer Should Remember, • Site Meetings, Essential Site Records, Mode of Measurements, Scrutiny of Bills, Breach of Contract, Final Completion of Work, Common Causes of Accidents, Safety Management, Cost Effectiveness and Control can be achieved in the Following Stages.	

Course Learning Outcomes:

CLO1	Understand the need for management in architectural projects
CLO2	Comprehend methods to ntegrate various resources, manpower, finances to ensure timely completion of project

CLO3	Familiarize with types of contracts and Acts as per Indian legislation
CLO4	Be able to monitor construction schedule and evaluate the performance of collaborating teams to deliver results

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Paul Netscher	Construction Management: From Project Concept to Completion	Panet Publications	2014	978-1975934347	372
Krishan Kumar Chitkara	Construction Project Management	McGraw-Hill	2019	978-9353166274	768
Kumar Neeraj Jha	Construction Project management, Theory & Practice	Pearson Education India	2015	978-9332542013	904
Krishnamurthy	Construction and Project Management	CBS Publishers and Distributors	2018	978-9386217790	314
B.C. Punmia	Project Planning and Control with PERT and CPM	Laxmi Publications Private Limited	2016	978-8131806982	260

Annexure **'CD-01'**

L/DS*	T	P/S	SW/FW	Total Credit Units
2	0	0	0	2

Course Title: Program Elective –III (ARCHITECTURAL JOURNALISM)
Credit Units: 2
Course Level: UG
Course Objectives: To develop techniques of observing, recording, reporting and analyzing architecture for the purpose of publication.

Prerequisites: Reading, writing and analytical skills.

Course Contents/syllabus:

Unit I: Introduction to Architectural Journalism	**9 Hours**
• Architectural journalism, Role of media in profession of Architecture. • Journalism & its types. • News, Values, Responsibility of Reporter.	
Unit II: **Writing and Documentation Skills**	**9 Hours**
• Analyzing data to find out trends and new angles • Presenting data for media audience. • Understanding the Audience, gathering Intelligence through Research • Principles of writing: Authorial Voice and Structure of material. • Preparing press note, Photo-series & Skills of Photojournalism, writing captions.	

Unit III: Preparing Story Board and Layouts	9 Hours
• Computer assisted reporting: Use of search engines and web (twitter etc.) • Blog writing & managing a blog. • Techniques of writing features, News, Articles, Profiles of personalities Interviews, Advertisements. • Editorials: Structure of Editorials, Editorial Board • Writing letter to editor, Columns Middles & Editorial cartoons.	
Unit IV: Reporting and Ethics	**9 Hours**
• Reviewing Art & Architecture Festivals, Reporting Live Events, Seminars, Conferences, Disasters, Cases & Judgments. • Reporting on innovations by industry • Ethics of Reporting.	

Site Visits/ Case Studies:6 sessions

- Site visits to impart experiential learning and be able to observe, interact and collect information for writing/ reporting purposes.
- Field visits to enrich students' knowledge of contextual development of well-designed architectural/ design projects and events.

Course Learning Outcomes:

CLO1	Understand the essence of Architectural Journalism
CLO2	Acquaint with the processes to Integrate, observations, interactions and data into presentable format
CLO3	Be able to develop unbiased approach and to negate out fiction from fact and being neutral while reporting
CLO4	Evaluate the scenario and reactions while reviewing or reporting live events

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Mohammad Al-Asad, Majd Musa	Architectural Criticism & Journalism	Umberto Allemandi & Co	2007	978-8842214809	208
Pappal Suneja	Exploration of Architectural Journalism in India	Copal Publishing	2019	978-1072583271	180
Pappal Suneja	Myriad Disciplines of Architectural Writing	White Falcon Publishing	2019	978-9388459587	186
Pappal Suneja	Literature Study & Technical Writing in Architecture	Lambert Academic Publishing	2018	978-3330007109	144
Robin Wilson	Image, Text, Architecture: The Utopics of the Architectural Media	Routledge	2016	978-1138573260	251

Annexure **'CD-01'**

L/DS*	T	P/S	SW/FW	Total Credit Units

1	0	0	0	1

Course Title: Open Elective – I (GREEN BUILDINGS)
Credit Units: 1
Course Level: UG
Course Objectives: To introduce students to various aspects of energy efficiency in building design

Prerequisites: Basic design skills along with drafting and presentation skills, knowledge of design principles

Course Contents/syllabus:

Unit I: Introduction to Green Building Design	**3 Hours**
Introduction to energy conscious architecture; Definitions related to energy and comfort in the context of Architectural design; typical features of green buildings, benefits of green buildings towards sustainable development. Energy conservation in buildings, Design solutions and use of passive design tools	
Unit II: Principles of Energy Conservation	**5 Hours**
Basic concepts, parameters and principles of energy conservation; patterns and efficiency of energy use in architecture; technologies, methods of energy conservation. Methods to reduce operational energy: Energy efficient building envelopes, efficient lighting technologies, energy efficient appliances for heating and air-conditioning systems in buildings, zero ozone depleting potential (ODP) materials, wind and solar energy harvesting, energy metering and monitoring, concept of net zero buildings.Applicability of energy conservation to 5 elements of nature	
Unit III: Rating systems	**5 Hours**
Introduction of green Rating systems - LEED, GRIHA, ECBC 2007. Need and use of green rating systems. ECBC Code Provisions - Openable Window-to-Floor Area Ratio (WFR_{op}), Visible Light Transmittance (VLT), Thermal Transmittance of Roof (U_{roof}), Residential envelope transmittance value (RETV), Thermal transmittance of building envelope (except roof) for cold climate ($U_{envelope,cold}$). Overview of the criteria as per these rating systems. Application procedures for project rating and LEED certified qualification.	
Unit IV: Indoor Environmental Quality	**5 Hours**
Indoor Environmental Quality for Occupant Comfort and Wellbeing: Daylighting, air ventilation,	

exhaust systems, low VOC paints, materials & adhesives, building acoustics.	

Course Learning Outcomes:

CLO1	Understand the significance of green design practices for buildings
CLO2	Apply sustainable design processes and materials from conception to finalization of design
CLO3	Identify Rating mechanism for minimizing carbon footprint
CLO4	Evaluate the environmental impact of materials and their ratings on building lifecycle.

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Linda Reeder	Guide to Green Building Rating Systems: Understanding LEED	Green Globes	2010	9780470401941	222
Jerry Yudelson,	The Green Building Revolution	Island Press	2007	9781597261784	272
Krishan A.	Climate Responsive Architecture	McGraw Hill Education	2017	978-0074632185	4089
.K. Nayak & J.A. Prajapati	Handbook of Energy Conscious Buildings	Indian Institute of Technology, Bombay and Solar Energy Centre, Ministry of Non-conventional Energy Sources, Government of India.	2016	-	80

Mili Majumdar	Energy Efficient Buildings in India	TERI-The **Energy** and Resources Institute,	2009	978-8185419824	250

Program Structure- 10th sem

Courses shown in blue colour below are the courses offered by School of Architecture & Planning and the syllabi of the same were proposed in the meeting.

Sr. No	Course Code	Course Title	Course Type		Credit					Credit Units
				L	T	PSJ	FW	SW	AR/Des Studio	
1		Arch. Research Methods	Professional Core Courses	2	0	0	0	0	0	2
2		Professional Practice	Core Courses	2	0	0	0	0	0	2

3		Road Safety and Civic Sense	Skill Enhancement Courses	2	0	0	0	0	0	2
4		Architectural Thesis	Allied Courses	0	0	4	0	16	0	20
		Total Credits						**Min Required: 26 Semester Credits: 26**		

Annexure **'CD-01'**

L/DS*	T	P/S	SW/FW	Total Credit Units
2	0	0	0	2

Course Title: ARCH. RESEARCH METHODS
Credit Units: 2
Course Level: UG
Course Objectives: To enable the student to analyze and evaluate architectural projects etc. and also understand architectural research with special emphasis on India.

Prerequisites: Basic knowledge of Architectural Research & Writing.

Course Contents/syllabus:

Unit I: Architectural Research	**9 Hours**
An introduction to Architectural Research in general and in profession, its purpose and scope. Architectural research in India from earliest time to the present era. Research methods, evaluation of results and its application. Defining the Research question, identifying the research methodology.	
Unit II: Review Writing	**9 Hours**
Building literature review, Cross-disciplinary review, Fieldwork, Interviews, Documenting data, Writing it up, Design Research. Research Design, Techniques of preparing a project report and review writing, their application to architectural publications.	
Unit III: Formal and Functional Analysis	**9 Hours**
Architectural History, Experience of space, Drawing, diagrams and Maps, formal analysis Structural analysis, How to sessions on peer reviewing and editing, Submission of final proposals. Ethical issues related to publishing, Plagiarism Importance of Referencing, Different styles of referencing.	
Unit IV: Architectural Evaluation	**9 Hours**
An introduction to architectural evaluation in general and definition, purpose, scope and its applications to Architecture, fine arts literature etc Value of appraisal / evaluation reports and reviews in the field of architecture fine-arts, literature, their scope, and merits. Techniques of analysis and evaluation employed in buildings, projects competitions etc. methods of appraisal / evaluation of building complexes and exhibitions	

Course Learning Outcomes:

CLO1	Understand the Introduction to research process and research methodology
CLO2	Apply the techniques to present reports on architectural data/documents/events.
CLO3	Analyse methods to review current projects in the profession and prevent cases of plagiarism
CLO4	Evaluate tools to research on performance of built and unbuilt Architectural projects.

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Groat L.	Architectural Research Methods	Wiley India Exclusive(Others)	2018	8126571942	200
Elzbieta Danuta Niezabitowska	Research Methods and Techniques in Architecture	Wiley India Exclusive(Others	2018	9781138055988	350
by Sanoff, H.	Methods of Architectural Programming	Dowden Hutchinson and Ross Publishing Inc. Vol.29, Community Development Series	2018	9780367023669	198
Ajla Akšamija	Research Methods for the Architectural Profession	Routledge	2021	0367433966	214

Annexure **'CD-01'**

L/DS*	T	P/S	SW/FW	Total Credit Units
2	0	0	0	2

Course Title: PROFESSIONAL PRACTICE
Credit Units: 2
Course Level: UG
Course Objectives: The program provides a tremendous opportunity for students to understand and familiar with different aspects of Architectural Practice and Professional Responsibilities.

Prerequisites: Basic knowledge of Professional regulations.

Course Contents/syllabus:

Unit I: Architectural Acts and Regulations	**9 Hours**
• **Architects –** Role, Functions, Social Obligations, Profession Activities, Responsibilities etc. • **Indian Architects Act 1972 –** Scope, Objective, Role & Importance in managing the profession and professionals. • **Council of Architecture –** Constitution, Role and Function, Registration of Architects etc. • **Indian Institute of Architects –** History, Objectives, Role and Function in promoting Architectural profession and education.	
Unit II: Architectural Codes and Profession	**9 Hours**
• **Architectural Practice –** Type of Practices, Setting office, Office Organization, Management, Income Tax, Service Tax etc. • **Architectural Competition –** Importance, Type, Procedure, Guidelines framed by Council of Architectural to conduct competition, including Role of Board of Assessors, Professional Adviser and Technical Advisers. • **Code of Professional conduct** • Conditions Governing the **Appointment of Architects**, Scale of Professional charges, Execution of work and payment of fee.	

Unit III: Architectural Duties, Contract & Tenders	9 Hours
• Duties, Responsibilities and Liabilities of **Client, Architect, Contractor,** and their mutual relationship. • **Tenders-** Type, Process, Scrutiny and Selection of Contractor, Pre-Qualification and Registration of Contractor. • Concept of **Contract.**	
Unit IV: Copy right, Arbitration & Valuation	**9 Hours**
• **Copy Right Act** as Applicable to Architectural work. • **Complaints –** Procedure for lodging complaints, and their Resolution based on Indian Architects Act 1972 • **Valuation -** Purpose, Objective, Types and Method of valuation. • Arbitration and Reconciliation Act.	

Course Learning Outcomes:

CLO1	Understand the Architectural Codes & Regulation to Practice.
CLO2	Learn the practices types, competition processes, appointment of Architects.
CLO3	Apply the knowledge to frame tender documents and contracts between participating agencies like architects, contractors, clients etc.
CLO4	Evaluate the methods of Copyrights, arbitration, and valuation in building projects.

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
M Chakraborti	Estimating, Costing, Specification & Valuation In Civil Engineering	Chakraborti	2006	818530436X	856

Dr Roshan H Namavati	Professional Practice: With Elements of Estimating, Valuation, Contract and Arbitration	Lakhani Book Depot	2016	9385492667	545
Philip King	Professional Practice Management	Law Book Co of Australasia	1995	0455213364	300
Hedley Smyth	Managing the Professional Practice: In the Built Environment	Blackwell Publishing Ltd	2011	9781405199759	200

Annexure **'CD-01'**

L/DS*	T	P/S	SW/FW	Total Credit Units
2	0	0	0	2

Course Title: ROAD SAFETY AND CIVIC SENSE
Credit Units : 2
Course Level: UG
Course Objectives: The program provides an exposure to learn road safety and civic sense.

Prerequisites: Basic knowledge of Professional regulations.

Course Contents/syllabus:

Unit I: Introduction to Road Safety	**09 Hours**

Introduction to Road Safety Engineering: Road safety scenario, Road safety issues, Characteristics of road crashes, Factors contributing to road crashes; Crash data collection, standards and design of databases.	
Unit II: Geospatial procedures	**09 Hours**
Mapping, prioritization and allocation: Geospatial procedures and blackspots/hotspots/clusters identification, Performance metrics, Ranking. Problem solving session with examples on geocoding, crash concentration maps, computation of performance measures and ranking	
Unit III: Crash Investigation and analysis	**09 Hours**
Human/vehicular factors relating to crashes, Steps of crash investigation, Diagnosing the crash problem, Solutions/crash costs/economic appraisal. Before-after Evaluations - Treatment and control site selection, Observational field studies, Stateof-the-art method	
Unit IV: Developing Civic Sense	**09 Hours**
Identifying the Roles of Government and Public Sector, community, media, education sector and health professionals; checks and measures adopted to instill civic sense in the masses	

Course Learning Outcomes:

CLO1	Identify factors contributing to road crashes.
CLO2	Assert the procedure for evaluation of planned/existing roadway facilities
CLO3	Develop mechanism to train the theoretical and practical concepts o road safety to the masses
CLO4	Prioritize manage and derive preventive countermeasures and before-after evaluation

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
R Srinivasa Kumar	Introduction to Traffic Engineering	The Orient Blackswan	2018	9386235471	832
Dr. L.R. Kadiyali	Traffic Engineering and Transport Planning	Khanna Publishers	1999	817409220X	860
Government of India	Road Safety Signage and Signs	Ministry of Road Transport & Highways	2009	-	-
MORT&H	MORT&H Pocketbook for highway engineers	Mort&H	2019, 3rd	-	-

Annexure **'CD-01'**

L/DS*	T	P/S/J	SW/FW	Non Teaching Credit Units
0	0	4	16	20

Course Title: ARCHITECTURAL THESIS
Credit Units: 20
Course Level: UG
Course Objectives:

- To prepare student to independently handle and present all aspects of an architectural design, from its evolution to final solution in totality. To prepare a detailed design & research report.
- To demonstrate the students' capability of synthesizing architecture, engineering systems, social sciences and humanities through a capstone project which showcases creative and critical thinking abilities and skills developed through the course.

Prerequisites: Basic knowledge of Architectural Research & Report writing.

Course Contents/syllabus:

A. The thesis project will comprise of the following:

- An illustrated report, which will include the validity and scope of the chosen project, methodology, prototype studies, site analysis, client's and architect's brief, delineation of programme and design criteria.
- A fully worked-out design proposal including consideration of site planning structures, services, and any other aspects/specific to the project.

B. Stages of Work:

Unit I: Synopsis
The intent of the thesis project as well as the criteria for selection of the project will be introduced to the students. Students will submit brief write- up on a project of not more than 6 pages (size A3), i.e "Statement of Purpose".
Unit II: Report
• A report on Program Formulation comprising all analytical aspects of the project including the synopsis, library study, site analysis, minimum 3 prototype studies /internet Studies & their inferences, comparison and analysis, methodology and framing the requirements The stage includes design discussions with the experts
Unit III: Preliminary Submission
• Design Concept, Design development Stages mentioning zoning, areas with model, Pre-Liminary design stage discussions. • The stage includes design discussions with the experts. • EVOLUTION OF DESIGN: Hybrid Mode of Presentation (Hand Drafted+ AutoCAD Printouts), Illustrating structural Grid, Site Analysis Concept, Conceptual 3D views and Thermocol Model. • Scale : SITE (1:200), PLANS (1:50/ 1:100), for projects upto 5 Acres of plot Area. SITE (1:500), PLANS (1:100),for projects more than 5 Acres of plot Area.
Unit IV: Final Submission & Model

• Final Submission, design improvements, Detailing of Architectural Design with forms & model. A final compiled Stage report with final design viva-voce. Including final presentation and final model with 3D- views • Plot size for drawings: preferably A1. • Scale : SITE (1:200), PLANS (1:50/ 1:100), for projects upto 5 Acres of plot Area. SITE (1:500), PLANS (1:100),for projects more than 5 Acres of plot Area.	**All 4**

stages are on the pattern of continuous evaluation by the external jury.

NOTE: • Students will submit two copies of the final report (original and one photocopy) on a standard format prescribed in the thesis programme issued every year by the Thesis Coordinator.
• The report must also included A-4/A-3 size copies of all final drawings and at least two photographs of the final model.
• Submission will be made one week before the date of examination.
• All buildings should have accessibility to the physically challenged persons.

Teaching and Evaluation System:

• The thesis studio will be conducted under the overall coordination of the Thesis Coordinator. In addition, two members of the Visiting Faculty would also be associated throughout the duration of the studio. Each student will be assigned a Thesis Guide (from amongst the faculty) who will supervise the progress of the student's work on a regular basis.
• Approval of the thesis project/topic will be done by the Thesis Coordinator and the concerned Thesis Guide.

CoA guidelines:

2. ARCHITECTURAL DESIGN THESIS – (1) The Architectural Design Thesis shall be prepared under the guidance of a core Faculty member.

(2) The University or Institution shall conduct the internal evaluation at stages for the Architectural Design Thesis with the guide as a co-assessor.

(3) A jury comprising of an internal and external examiner and the guide shall conduct the final examination (Viva-voice) of the Architectural Design Thesis. External Examiners shall have minimum 10 years' experience.

Course Learning Outcomes:

CLO1	Understand the independence of handling a Live project while dealing with different issues pertaining to site selection.
CLO2	Define the scope of the thesis project and prepare designing brief.
CLO3	Analysethe design methodology required in project selection.
CLO4	Exhibit knowledge and understanding of planning, designing, construction, structure, Services etc.

Text / Reference Books:

Author	Title	Publisher	Ed/year	ISBN No	Pages
Architect Professor Indranil Sen	11 Steps to Architectural Thesis	Notion Press	1st Edition 2018	978-1684661657	160
Donald Watson, Michael Crosbie, John Cllender	Time Saver Standard for Architectural Design Data	McGraw-Hill Education	1997	978-0070685061	1024
Francis D.K.Ching	Architecture Form, Space and Order	John Wiley & Sons,	2014	978-1118745083	464
V.S.Pramar	Design Fundamentals in Architecture	Somaiya Publications Pvt.Ltd., New Delhi	1997.	978-8170391709	270
Ernst Neufert	Neuferts Architects Data	John Wiley & Sons	2000	978-8126517619	636
Broadbent, G.	Design in Architecture -	John Wiley and Sons. New York	1973	978-471105831	600

	Architecture and Human Science				
Roger, K. L.	Architect? A Candid Guide to the Profession	Cambridge: The MIT Press	1998	978-0262621215	304