Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

DIT UNIVERSITY
Dehradun

Detailed Course Structure
of

B.Arch

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28
Credit and Course Requirement of the Program

S.N.			
1	**General Requirement**	**Credit(Min.)**	**Courses(Min.)**
	Professional Ability Enhancement	30	3
	Skill Enhancement	15	4
	Open Elective	12-15	4-5
2	**Discipline Requirement**		
	Professional Core	137	23
	Building Science & Applied Engineering	54	17
	Professional Elective	26	8-9
3	**Total**	**274(Min)**	**59(Min)**

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28
List of Courses Bucket-wise

Professional Core (PC)							
S. No.	**Course Code**	**Course Name**	**L**	**T**	**P**	**S**	**Course Credits**
1	ARN101	Architectural Design-I	0	0	0	8	8
2	ARN104	Architectural Graphics Skills-I	2	0	0	2	4
3	ARN105	History of Architecture-I	2	0	0	0	2
4	ARN106	Basic Design & Visual Art	0	0	0	3	3
5	ARN108	Architectural Design-II	0	0	0	8	8
6	ARN112	Architectural Graphics Skills-II	2	0	0	2	4
7	ARN113	History of Architecture-II	2	0	0	0	2
8	ARN201	Architectural Design-III	0	0	0	9	9
9	ARN205	History of Architecture-III	2	0	0	0	2
10	ARN207	Architectural Design-IV	0	0	0	9	9
11	ARN212	Contemporary Architecture	2	0	0	0	2
12	ARN213	Building Bye Laws & Code of Practice	2	0	0	0	2
13	ARN214	Net Zero and Resilient Building Design	2	0	0	0	2
14	ARN301	Architectural Design-V	0	0	0	12	12
15	ARN305	Landscape Design	0	0	2	2	4
16	ARN306	Architectural Design-VI	0	0	0	12	12
17	ARN309	Specification and Estimation	3	0	0	0	3
18	ARN311	Town Planning	2	0	0	0	2
19	ARN313	Principles and Practices of Sustainable Building Design	1	0	2	0	3
20	ARN401	Architectural Design-VII	0	0	0	12	12
21	ARN404	Theory of Urban Design	2	0	0	0	2
22	ARN406	Architectural Design-VIII	0	0	0	12	12
23	ARN502	Architectural Thesis	-	-	-	-	18

Building Science and Applied Engineering (BSAE)							
S.No.	**Course Code**	**Course Name**	**L**	**T**	**P**	**S**	**Course Credits**
1	ARN102	Building Construction & Materials-I	0	0	2	2	4
2	ARN103	Structural Design & Systems-I	2	0	0	0	2
3	ARN109	Building Construction & Materials-II	0	0	2	2	4
4	ARN111	Structural Design & Systems-II	2	0	0	0	2
5	ARN114	Surveying & Levelling	0	0	2	0	2
6	ARN202	Building Construction & Materials-III	0	0	2	2	4
7	ARN203	Structural Design & Systems-III	2	0	0	0	2
8	ARN206	Climatology	1	0	2	0	3
9	ARN208	Building Construction & Materials-IV	0	0	3	2	5
10	ARN209	Structural Design & Systems-IV	2	0	0	0	2

11	ARN302	Building Construction & Materials-V	0	0	4	1	5
12	ARN303	Structural Design & Systems-V	2	0	0	0	2
13	ARN304	Building Services-I(WS)	2	0	0	0	2
14	ARN307	Building Construction & Materials-VI	0	0	4	1	5
15	ARN308	Structural Design & Systems-VI	2	0	0	0	2
16	ARN312	Building Services-II(EMS)	2	0	0	0	2
17	ARN402	Building Construction & Materials-VII	0	0	3	3	6

Professional Ability Enhancement Course (PAEC)							
S. No.	**Course Code**	**Course Name**	**L**	**T**	**P**	**S**	**Course Credits**
1	ARN408	Professional Practice	2	0	0	0	2
2	ARN413	Dissertation	0	0	0	2	2
3	ARN501	Practical Training	-	-	-	-	26

Skill Enhancement Course (SEC)							
S. No.	**Course Code**	**Course Name**	**L**	**T**	**P**	**S**	**Course Credits**
1	ARN107	Computer Application-I	0	0	3	0	3
2	ARN115	Computer Application-II	0	0	3	0	3
3	ARN245	Technical Training 1	0	0	4	0	2
4	ARN405	Working Drawing	0	0	0	7	7

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

Professional Elective (PE)							
S. No.	**Course Code**	**Course Name**	**L**	**T**	**P**	**S**	**Course Credits**
1	ARN141	Theory of Design	0	0	0	3	3
2	ARN142	Interior Design	0	0	0	3	3
3	ARN241	Furniture Design	0	0	0	3	3
4	ARN242	Architectural Photography	0	0	0	3	3
5	ARN243	Traffic Awareness	0	0	0	3	3
6	ARN244	Architectural Documentation	0	0	0	3	3
7	ARN341	Architectural Journalism	0	0	0	3	3
8	ARN342	Barrier Free Built Environment	0	0	0	3	3
9	ARN343	Hill Architecture	0	0	0	3	3
10	ARN344	Earthquake Resistant Architecture	0	0	0	3	3
11	ARN441	Mega Structures	0	0	0	3	3
12	ARN442	City Planning Concepts	0	0	0	3	3
13	ARN443	Architectural Acoustics	0	0	0	3	3
14	ARN444	Construction & Resource Management	0	0	0	3	3
15	ARN445	Building Economics	0	0	0	3	3
16	ARN446	Contemporary Technology in Architecture	0	0	0	3	3
17	ARN447	Sustainable Cities & Communities	0	0	0	3	3
18	ARN448	Visual Communication	0	0	0	3	3
19	ARN449	Adaptive Reuse of Built Form	0	0	0	3	3
20	ARN541	Building Information Modelling	0	0	4	0	4
21	ARN542	Advanced Building Performance Assessment Methods	0	0	4	0	4
22	ARN543	Architectural Conservation Studio	0	0	4	0	4
23	ARN544	Vernacular Architecture Case Studies	0	0	4	0	4

Open Elective (OE)						
S. No.	**Course Code**	**Course Name**	**L**	**T**	**P**	**Course Credits**
1.	MEN449	Total Quality Management	3	0	0	3
2.	MEN450	Renewable Energy Sources	3	0	0	3
3.	CEN382	Properties of Materials	3	0	0	3
4.	CEN378	Disaster Preparedness, Planning & Management	3	0	0	3
5.	CEN366	Environmental Management & Sustainability	3	0	0	3
6.	CEN361	Fundamentals of GIS	3	0	0	3

7.	CEN359	Environmental Risk Assessment and Disaster Management	3	0	0	3
8.	CEN362	Green Buildings and Energy Conservation	3	0	0	3
9.	CEN363	Air and Water Pollution	3	0	0	3
10.	CEN351	Remote Sensing, Photogrammetry and Image Processing	3	0	0	3
11.	CEN365	Impact Assessment and Life Cycle Assessment	3	0	0	3
12.	MEN446	Product Design and Development	3	0	0	3
13.	MEN483	Entrepreneurship & Start-ups*	0	0	4	2

Abbreviations:

1	L	Lecture
2	T	Tutorial
3	P	Practical
4	S	Studio

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28
Detailed Syllabus

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN101
3.	**Course Title**	Architectural Design-I
4.	**Credits (L:T:P:S:C)**	0:0:0:8:8
5.	**Contact Hours (L:T:P:S)**	0:0:0:8
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Professional Core

8. Course Summary

The course provides knowledge about design principles and their application, process of design and measurement of human activities.

9. Course Objective

- The course should enable the student to comprehend design principles, methods, visual judgment and the creative process. Studio focuses on the development of fundamental skills: manual (making), visual (seeing) and intellectual (abstracting)
- Get acquainted with workshop tools and incorporate their use in the creative process.

10. Course Outcomes

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

- Will be able to make composition using Design Principles and elements.
- Have a comprehensive knowledge about the sketching and the usage of colour media.
- Able to communicate observation & memory through free hand drawing.
- Will be able to design the spaces as per anthropometrics studies.

11. Curriculum Content

UNIT 1: Introduction to Architecture & Design Principles (32 Studios)

- Introduction to architecture. Scope and types of services rendered by an Architect.
- Introduction to Primary Elements and Basic Design Principles.
- Component of design-Geometrical forms, Transformations, collisions, Articulation.
- Application of elements of design to achieve design principles and in Creative work.

UNIT 2: Application of Design Principles (32 Studios)

- Difference & relation between form & Space
- Proportion & Scale- Visual Scale & Human Scale
- Approach to Design as a continuous process through Aesthetics, function, psychological impact (on space & design) and Technology (construction)
- Basic components of a building and their Functions.
- Openings, Enclosures & Quality of Space, Organization of Form & Space
- Types of Organization of forms with emphasis on spatial relationship,
- Form of circulation space, path space relationship.

UNIT 3: Basic Human Activities (16 Studios)

- Study of basic human Needs, Various requirements, standard measurements of Human activities and allocation of Spaces.

- Students are expected to do any small exercise as a group work.

UNIT 4: Approach and Process of Design (32 Studios)

- Principles of Design with reference to function, various activities and related spaces.
- Case Study & analysis of single units like living spaces, sleeping and cooking spaces etc.
- Art, Architecture & Architectural Design, Preliminary geometric interpretation from nature & surroundings

UNIT 5: Architectural Research-I (16 Lectures)

Introduction. Meaning of research. Significance and importance of research. Basic definitions & terminologies.

Text book [TB]:

1. Francis D.K.Ching , Architecture, Form, Space and Order, 4th edition, 2015.
2. Dennis J Hall, Architectural Graphic Standards 12th edition, 2016

Reference books [RB]:

1. E. & O.E., Planning – the Architect's handbook, 5th edition, 2015.
2. Joseph D. Chiara, Time Saver standards for building types, 4th edition, 2017.
3. Ernst Neufert, Neufert Architect's data, 5th edition, 2019.

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN102
3.	**Course Title**	Building Construction & Materials - I
4.	**Credits (L:T:P:S:C)**	0:0:2:2:4
5.	**Contact Hours (L:T:P:S)**	0:0:2:2
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Building Science & Applied Engineering

8. Course Summary

The course provides knowledge about building materials, bonds and building components.

9. Course Objective

- To make the pupil aware of the history related to construction and construction materials.
- The pupil will be taught the history and evolution of construction methods and construction materials related to bricks and brick bonds.

10. Course Outcomes

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

- Analysis of the evolution of construction methods and construction materials related to bricks and brick bonds.
- Related to types of buildings that will initiate the pupil's thought process to think in the direction of classifying typologies and structures of any particular building visually.
- Understand the basic building elements, their function and behaviour under various conditions with specific reference to “Load Bearing Construction”.

11. Curriculum Content

UNIT 1: Materials Past and Present (16 Studios)

- Building material and construction method.
- Types of mortars and their classifications based on different components involved in them.
- Types of mortar joints and their advantages and disadvantages.
- Construction materials:
  1. Blocking material.
  2. Binding material.
  3. Layering material.

UNIT 2: Materials (8 Studios)

- Classification, availability, characteristics and uses of materials discussed in unit - I
- For example- Cement, fine aggregates, coarse aggregates, mortars, concrete, plastering etc

UNIT 3: “Masonry and Arches in Bricks and Stone” (28 Studios)

- Brick Bonds
- Types of brick bonds: English bond, Flemish bond, Header bond, Stretcher bond in different thickness of brick walls.
- Stone masonry -Rubble work: Random Rubble, built-to-course and coursed masonry, miscellaneous, Classification, characteristics and properties of stones, quarrying of stone, artificial stone

UNIT 4: Vertical Section & Types of Buildings (12 Studios)

- Vertical section of building explaining all the building terminologies with standard dimensions specification and details.
- Basic difference between a framed structure and a load bearing structure. Their advantages and disadvantages.

Text book [TB]:

1. Francis D.K.Ching , Building Construction Illustrated, 6th edition, 2020.

Reference books [RB]:

1. E. & O.E., Planning – the Architect's handbook, 5th edition, 2015.
2. Joseph D. Chiara, Time Saver standards for building types, 4th edition, 2017.
3. Ernst Neufert, Neufert Architect's data, 5th edition, 2019.

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN103
3.	**Course Title**	Structural Design & System-I
4.	**Credits (L:T:P:S:C)**	2:0:0:0:2
5.	**Contact Hours (L:T:P:S)**	2:0:0:0
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Building Science & Applied Engineering

8. Course Summary

The course provides knowledge about structural system and properties of materials.

9. Course Objective:

To help students develop an analytical and logical sequence in thinking about structural aspect of building along with the types of building structures and basics of structural components.

10. Course Outcomes

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

- Understand the advantages & limitations of various building structural systems.
- Understand the behaviour of structural materials under loading conditions.
- Understand the various loading conditions for buildings

11. Curriculum Content

UNIT 1: Types of Structures (4 Lectures)

Classification based on - loading system, Materials, Technique/ Technology.

UNIT 2: Properties & Behavior of Structural Materials (12 Lectures)

Concept of homogenous & heterogeneous materials in response of direct & bending force.

UNIT 3: Simple Stresses & Strain (10 Lectures)

Introduction, types, elasticity, elastic theorem, limit, hook's law, modulus of elasticity, poison's ratio, linear strain, shear stress.

UNIT 4: Concept of Load (6 Lectures)

Introduction, static load, dynamic load or impact load, fluctuating load, stresses created by these loads.

Text book [TB]:

1. Egor P. Popov, Introduction to the Mechanics of Solids, 1968

2. S. Ramamrutham and R. Narayanan R., Strength of Materials, 20th edition, 2020

Reference books [RB]:

1. Timoshenko& Gere J.M., Mechanics of Materials, 2nd edition, 2004
2. R.S. Khurmi & N. Khurmi, A Textbook of Engineering Mechanics, 22nd edition,2018

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN104
3.	**Course Title**	Architectural Graphics Skill – I
4.	**Credits (L:T:P:S:C)**	2:0:0:2:4
5.	**Contact Hours (L:T:P:S)**	2:0:0:2
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Professional Core

8. Course Summary

The course provides knowledge about drawing skills and orthographic projections.

9. Course Objective

- Students will learn how to make architectural drawings manually draw using traditional and current tools and techniques.
- They will understand the relationship between plan, elevation and sectional drawings of objects and simple architectural composition.

10. Course Outcomes

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

- Have a comprehensive knowledge about the sketching and the usage of colour media.
- Handle the instruments T square, set square manually to draw plan, elevation and section of an object.
- Understand the relationship between elevation, plan and section of the objects
- Will be able to draw to a suitable scale

11. Curriculum Content

UNIT 1: Drawing Tools and Accessories (4 Studios)

- Introduction to the subject and drawing equipment. Setting of drawing equipment such as drawing board set-squares, Tee-square, French curve, stencils, different types of pencils and pens and their uses.

UNIT 2: Lettering & Scale (20 Studios)

- Free hand and Architectural lettering, size and notation of drawing
- Types and uses of scales, Scales used by an architect, reducing and enlarging scales
- Measured drawing of small objects, such as building elements, pieces of furniture and small built forms.

UNIT 3: Basic Technical Drawing (8 Studios)

- Types of line, Drafting and quality of lines with pencil and ink pen
- Symbolic representation of building elements and material, other features as per I.S.I and standard practice.
- Division of lines and angles.
- Drawing polygons, Inscribing and circumscribing circles in polygons. Internal & External tangents, Metric Drawing.

UNIT 4: Orthographic Projections (32 Studios)

- Definition, Planes of Projections.
- Projection of regular rectilinear and circular solids (prisms, pyramids, cones, cylinders, spheres etc.) in different positions,

- Surface Development of solids, interpenetration of solids.

Text book [TB]:

1. C. Leslie Martin, Architectural Graphics, 2nd edition, 1970
2. Francis D.K Ching, Architectural Graphics, 7th edition, 2023
3. N.D. Bhatt, Engineering Drawing, 53rd edition, 2014
4. Robert W. Gill, Manual of Rendering With Pen and Ink, 1990

Reference books [RB]:

1. A.J. Metric Handbook, editors, Jan Bilwa and Leslie Fair weather
2. Charles G. et al, Architectural Graphic standards 6th edition, 1970
3. H. Schaarwachter, Perspective for the Architect, 1976
4. Webster Wells, Plane and Solid Geometry, 2022

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN105
3.	**Course Title**	History Of Architecture– I
4.	**Credits (L:T:P:S:C)**	2:0:0:0:2
5.	**Contact Hours (L:T:P:S)**	2:0:0:0
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Professional Core

8. Course Summary

The course provides knowledge about history of civilization and built environment.

9. Course Objective

This course aims to introduce the strong relation of Culture, Society and Architectural Design over time. The course shall enable the student to understand the manner in which buildings may be "read" relative to a specific culture. The student shall also decipher that Architectural design is a process in which the needs of society are erected in a built form which subsequently defines the goals of the society itself.

10. Course Outcomes

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

- Have a comprehensive knowledge about the design of our environment, with the exception of some current trends, which has largely been essential in defining our culture and sub-cultures, while providing a long-term replication of cultural ideas in built form.
- Apply the technique to observe social structure and behaviour within their own environment.
- Will be able to discuss the differences between their own and other cultural sub-sects of the world.

11. Curriculum Content

UNIT 1: Introduction to Sociology & Its Effect on Architecture (6 Lectures)

- Definition, scope and use of sociology.
- Importance of the subject for Architects and Town Planners
- Man, his Social and Physical environment, Social groups & social structure, utility and relation with Architecture.
- Sociological studies of communities with their habits and built environment

UNIT 2: Pre – History & Built Spaces (8 Lectures)

Paleolithic Age, Mesolithic Age, Neolithic Age

UNIT 3: Early Civilizations & Architecture – Parallel India and the World (8 Lectures)

Indus Valley Civilization, Egyptian Civilization, Mesopotamian Civilization, The Aryans in India

UNIT 4: Buddhist and Jain Architecture (10 Lectures)

Asoka, and the beginnings of Buddhist School; Rock-cut architecture; Viharas or Monasteries; South India; Buildings in Brick; Lats, eddicts, stupas, viharas and chaityas (synopsizing the Stone Age to Neolithic settlements, world civilizations, and the Aryan civilization). Jain Architecture with specific reference to the temple cities of Palitana and Cemar

Text book [TB]:

1. G.K. Hiraskar, The Great Ages of World Architecture, 2015

2. Satish Grover, Buddhist and Hindu Architecture in India, 2nd edition, 2018.
3. Percy Brown, Indian Architecture (Buddhist and Hindu Period), 2010

Reference books [RB]:

1. Spiro Kostof, A History of Architecture: Setting and Rituals, 1995.
2. Gosta, E. Sandstrom, Man the Builder, 1975

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN106
3.	**Course Title**	Basic Design and Visual Art
4.	**Credits (L:T:P:S:C)**	0:0:0:3:3
5.	**Contact Hours (L:T:P:S)**	0:0:0:3
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Professional Core

8. Course Summary

The course provides knowledge of art and graphics.

9. Course Objective

The course should enable the student to appreciation the art and its philosophies. They will be familiarized with principles and theories of arts and architectural composition and development of art and graphic skills.

10. Course Outcomes

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

- Will be able to make composition using Design Principles and elements.
- Have a comprehensive knowledge about the sketching and the usage of color media.
- Able to communicate observation & memory through free hand drawing.
- Will be able to make the collages, Murals and Sculptures.

11. Curriculum Content

UNIT 1: Introduction to Theory of Architecture & Art & its Philosophy (12 Studios)

- Introduction to Graphic Composition, Principles of design, Elements of Design, Introduction to Architectural Composition, Application of elements and Principles of Design through 2-D and 3-D compositions, Unity, Elements of Unity, Texture, Color, Tone Direction Proportion, Form and shape, solids and voids
- Colour theory
- Relevance of art in life, Appreciation of art: Painting, Sculpture and Architecture

UNIT 2: Art and Graphics Skills (16 Studios)

- Free hand sketching and drawing, Drawing curves and other shapes, Comprehension of scale, still life drawing- from observation &memory, Nature.
- Free hand sketching – Drawing People, Furniture and various rendering skills and techniques like textures, materials, finishes using various equipment like transfer, airbrush and architectural drafting.

UNIT 3: Collage, Mural, Sculptures (3D) (8 Studios)

Collage with paper and various waste materials with theme and presentation, Mural with different materials on live scale, Sculpture with different materials like P.O.P, Clay etc., Photography & Small movie making.

UNIT 4: Model Making & Carpentry Workshop (12 Studios)

- Understanding the qualities of different materials, Different types of joints on model making
- Use of different types of materials – paper, thermacol, clay, wood, P.O.P. etc, with different combinations, Use of Colors in model making

UNIT 5: Arts and Graphics Skills-II **(16 Studios)**

- Free hand drawing –drawing people, furniture, fabric and transport from imitation, observation and recapitulation.
- Rendering techniques –for textures of materials and finishes; using equipment's like transfers, airbrush, rendering architectural drawings. Drawing from nature-shrubs, trees, grass, plats, flowers, rocks, water.
- Still life drawing from observation

Text book [TB]:

1. Francis D.K Ching, Architectural Graphics, 7th edition, 2023
2. N.D. Bhatt, Engineering Drawing, 53rd edition, 2014
3. Francis D.K.Ching , Architecture, Form, Space and Order, 4th edition, 2015.
4. Robert W. Gill, Manual of Rendering With Pen and Ink, 1990.

Reference books [RB]:

1. Keith E. Hedges, Architectural Graphic Standards, 12th edition, 2017
2. E. & O.E., Planning – the Architect's handbook, 5th edition, 2015.

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN107
3.	**Course Title**	Computer Application-I
4.	**Credits (L:T:P:S:C)**	0:0:3:0:3
5.	**Contact Hours (L:T:P:S)**	0:0:3:0
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Skill Enhancement

8. Course Summary

The course provides training on MS Office and Photo editing software.

9. Course Objective

This course aims to introduce various software to the students helping them in compilation of then text reports etc, further, to enable them to understand the role of various data storing devices such as scanners Digitizers etc. and their applications.

10. Course Outcomes

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

- Have a comprehensive knowledge about the basic software.
- Will be able to make the presentation, graphs, charts etc.
- Will be able to edit the drawings and data using software like Photoshop, Photo editor etc.
- Know how to scan and take prints using printers, plotters etc

11. Curriculum Content

UNIT 1: Learning M.S.Office-I (6 Labs)

- Basic command to operate the component say M.S. Office such as M. S. Word, Knowledge about D.T.P Techniques in M.S. Word, Use of various Command to make charts, graphs, tables, to help students compile their reports in M.S. Word, exporting & importing such work done is other software and using of clip Art and making elementary shapes in M.S. Word.

UNIT 2: Learning M.S.Office-II (6 Labs)

- Learning the other components of M.S. office like M.S. Excel, M.S. Power Points, etc, Making work sheets in M.S. Excel.

UNIT 3: Use of Photo editing Softwares (16 Labs)

Learning photo-editing software such as Adobe, Photoshop, Photo editor, Page Maker etc.

UNIT 4: Introduction to Use of Printing Equipment and Hardware (4 Labs)

Familiarizing the use of scanners, printers, plotters their hardware and other related systems

Text book [TB]:

1. Imran Mehmood, A Comprehensive Book to Learn Microsoft Office
2. WebTech Solution, Mastering Photoshop, 2015

Reference books [RB]:

1. Andrew Faulkner & Conrad Chavez, Adobe Photoshop CC Classroom in a Book.
2. Marc Campbell, PageMaker 7.0 from A to Z, 2012

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN108
3.	**Course Title**	Architectural Design-II
4.	**Credits (L:T:P:S:C)**	0:0:0:8:8
5.	**Contact Hours (L:T:P:S)**	0:0:0:8
6.	**Prerequisites (if any)**	ARN101
7.	**Course Basket**	Professional Core

8. Course Summary

The course provides knowledge about anthropometric studies, site attributes and circulation related to site.

9. Course Objective

To make the students aware about how materials, processes of construction, and the structure are integral to design. The students will also understand the importance of site orientation, attribute and inter-relationship of activities, circulation and the way buildings respond to it.

10. Course Outcomes

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

- Design based on the typology of load the structure is distributing.
- Design based on the interdependence of form, function and structure in the process of Architectural Design.
- Understand the context for design: site attributes and surroundings

11. Curriculum Content

UNIT 1: Introduction to Different aspects of Simple Structures (16 Studios)

Primary knowledge of Load bearing and frame structures required for design process.

UNIT 2: Anthropometrics Studies, and Measure Drawings (48 Studios)

- Study of basic human Needs, Various requirements, standard measurements of Human activities and allocation of Spaces.
- Students are expected to do any small exercise as a group work.
- Measured drawing of building unit or units representing the structural & spatial components. Ex. Small room, stair case, canopy, courtyard, fountain etc.
- Students are expected to do any small exercise as a group work.

UNIT 3: Site Attributes and Response to Climate (16 Studios)

Site Orientation Response of site to the physical feature (natural in & man made).

UNIT 4: Circulation (24 Studios)

Inter-relation with the activities and circulation in context to site surrounding and inside the site.

UNIT 5: Architectural Research-II (24 Studios)

Research in architecture. Research problems in architecture. Study of articles and write-ups of eminent people of the profession

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

Text book [TB]:

1. Francis D.K.Ching , Architecture, Form, Space and Order, 4th edition, 2015.
2. Dennis J Hall, Architectural Graphic Standards 12th edition, 2016

Reference books [RB]:

1. E. & O.E., Planning – the Architect's handbook, 5th edition, 2015.
2. Joseph D. Chiara, Time Saver standards for building types, 4th edition, 2017.
3. Ernst Neufert, Neufert Architect's data, 5th edition, 2019.
4. Mario G Salvadori et al., Structure in Architecture, 2017

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN109
3.	**Course Title**	Building Construction & Materials - II
4.	**Credits (L:T:P:S:C)**	0:0:2:2:4
5.	**Contact Hours (L:T:P:S)**	0:0:2:2
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Building Science & Applied Engineering

8. Course Summary

The course provides knowledge about building materials, bonds and building components

9. Course Objective

To acquaint the students with the principles, properties & behaviour of structural components of framed structure.

10. Course Outcomes

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

- Each student shall be able to apply timber and timber products strategically & in a proper manner, judiciously in different elements of building.
- Understand the nature and properties of timber.
- Understand various joints in timber and apply

11. Curriculum Content

UNIT 1: Timber (8 Studios)

Softwood and Hardwood - Secondary Timber - Physical properties and their uses/ applications in buildings (framing, shutters, Panelling, flooring, roof finishing and furniture) - Defects, Conversion, Seasoning, Decay and preservation of timber - Fire retardant treatment, anti-termite treatment.

UNIT 2: Industrial Timber (4 Studios)

Plywood, block board, particle board, fiber boards. MDF boards, veneers, laminates etc, and other current products/development.

UNIT 3: Tools and Techniques (8 Studios)

Elementary carpentry, Tools, Common joints

UNIT 4: Doors and Windows (24 Studios)

- Types of Doors-Ledged, Braced Batten Door, Panelled, Flush, Sliding doors, Sliding and folding doors, Mosquito Proof Shutters, Rotating Door, etc.
- Types of windows, ventilators and their details

UNIT 5: Partitions & Panelling (20 Studios)

Wooden Partitions and panelling.

Text book [TB]:

1. Francis D.K.Ching , Building Construction Illustrated, 6th edition, 2020.

Reference books [RB]:

1. W. B Mckay, Building Construction, 5th edition, 2013
2. Edward Allen & Joseph Lano , Fundamentals of Building Construction: Materials and Methods, 2019

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN111
3.	**Course Title**	Structural Design & System-II
4.	**Credits (L:T:P:S:C)**	2:0:0:0:2
5.	**Contact Hours (L:T:P:S)**	2:0:0:0
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Building Science & Applied Engineering

8. Course Summary

The course provides knowledge about structural system and properties of materials.

9. Course Objective

To acquaint the students with the principles, properties & behaviour of structural components of framed structure.

10. Course Outcomes

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

- Understand the basic theory of shear force and bending moments in structural members- horizontal and vertical.
- Understand the various aspects of vertical structural member.
- Understand the stress distribution in horizontal structural members.

11. Curriculum Content

UNIT 1: Properties of Sections **(6 Lectures)**

C.G., M.I., section modulas, radius of gyration, theorem of perpendicular & parallel axis, M.I. for composite sections

UNIT 2: Shear Force & B.M. **(10 Lectures)**

Introduction to different beams (cantilever, simple supported, fixed, continuous) concept, of shear force & bending moment, sagging & hogging moments, B.M. & shear force diagrams for determinate beams under simple loads, moment of resistance, point of contra flexure, interrelation between B.M. & S.F. diagram.

UNIT 3: Theory of Columns **(8 Lectures)**

Introduction, Euler's load, derivation of Euler's formulae, buckling, short & long columns, slenderness ratio, Rankin's formulae, effects of eccentric loading.

UNIT 4: Stresses in Beams **(8 Lectures)**

Introduction to beam, theory of simple bending, neutral axis, bending & shear stress in symmetrical sections, bending & shear stress distribution & its diagram.

Text book [TB]:

1. Francis D. K. Ching, Building Structures Illustrated, 2nd edition, 2014
2. S. Ramamrutham and R. Narayanan R., Strength of Materials, 20th edition, 2020

3. Louis L. Bucciarell, Engineering Mechanics for Structures, 2009

Reference books [RB]:

1. Timoshenko& Gere J.M., Mechanics of Materials, 2nd edition, 2004
2. R.S. Khurmi & N. Khurmi, A Textbook of Engineering Mechanics, 22nd edition,2018

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN112
3.	**Course Title**	Architectural Graphics Skill – I
4.	**Credits (L:T:P:S:C)**	2:0:0:2:4
5.	**Contact Hours (L:T:P:S)**	2:0:0:2
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Professional Core

8. Course Summary

The course provides knowledge about drawing skills and orthographic projections

9. Course Objective

Make the student conversant with architectural drafting & train to draw the metric drawing. Will also enable student to understand the theory of perspective to draw an object / simple along with the developing and rendering the foreground and background of the perspective view in different medium.

10. Course Outcomes

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

- Identify and understand the concept of drafting different types of perspective views.
- Draft and show the Sciography in their presentation drawings.
- Render the fore-ground and back ground of the perspective

11. Curriculum Content

UNIT 1: Section of Solid **(12 Studios)**

Sections of regular rectilinear and circular solids (prisms, pyramids, cones, cylinders, spheres etc.): conditions of sectional plane and true shape of sections.

UNIT 2: Views **(12 Studios)**

- Isometric, axonometric and pictorial view

UNIT 3: Perspective Drawing **(12 Studios)**

- Purpose and use. Differences with metric projections.
- One point, two point, three point perspectives. Drafting of simplex or complex building.
- Introduction to shortcut methods in perspective drawing. Free hand perspective.

UNIT 4: Shades, Shadows and Rendering **(16 Studios)**

- Values in shades and shadows,
- Constructing plan shadows (point, line and plane),
- Constructing shadows in elevations (Point, line and Plane).
- Short- cut methods for constructing shadows Presentation techniques in different types of rendering techniques and materials.

UNIT 5: Rendering **(12 Studios)**

- Rendering in different media.
- Rendering of students own works (design project) interior and exterior perspectives.
- Enlargement and Rendering in Ink

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

Text book [TB]:

1. Perspective for the Architect, Themes and Hudson
2. Milind Mulik , Perspective, 2006
3. C. Leslie Martin, Architectural Graphics, 2nd edition, 1970
4. Francis D.K Ching, Architectural Graphics, 7th edition, 2023
5. N.D. Bhatt, Engineering Drawing, 53rd edition, 2014
6. Robert W. Gill, Manual of Rendering With Pen and Ink, 1990

Reference books [RB]:

1. A.J. Metric Handbook, editors, Jan Bilwa and Leslie Fair weather
2. Charles G. et al, Architectural Graphic standards 6th edition, 1970
3. H. Schaarwachter, Perspective for the Architect, 1976
4. Webster Wells, Plane and Solid Geometry, 2022

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN113
3.	**Course Title**	History Of Architecture– II
4.	**Credits (L:T:P:S:C)**	2:0:0:0:2
5.	**Contact Hours (L:T:P:S)**	2:0:0:0
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Professional Core

8. Course Summary

The course provides knowledge about the evolution of various architecture style in India.

9. Course Objective

The course should enable the students to gain awareness about the society and world around them. This awareness will in turn, make them appreciate the various elements of culture and society that have an effect on the architecture of a place, in terms of motive and style.

10. Course Outcomes

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

- Apply the tools and techniques to observe societal elements, architectural designs, social structures and behaviours within their own environment.
- Discuss the differences between theirs and other cultural sub-sects of the world.
- Understand the evolution of new architectural forms in India after invasion from outside world.

11. Curriculum Content

UNIT 1: Hindu Architecture-Indo Aryan (6 Lectures)

- Evolution of the temple form in north India; the schools of Architecture: Rajputana, Gujarat, Khajuraho, Deccan and Orrisa styles

UNIT 2: Hindu Architecture-Dravidian (6 Lectures)

- Genesis under the Pallavas; Pandyas, Vijayanagar Dynasty and Madura; Later Chalukyan,or Hoysala Style; evolution of the vimana and the contributions of the Nayaks to the temple cities

UNIT 3: Introduction and understanding of Islam's philosophy and its interpretation in building type (8 Lectures)

- Sultanate Style- The Arabs, Afghans, Slave Dynasty, Khaljis, Tughlaqs, Lodhis and Sher Shah regimes and their architecture
- Provincial Style- Development of colloquial styles in various provinces of India like Punjab, Jaunpur, Gujarat, Bengal, Bijapur, Bihar and Deccan.

UNIT 4: Mughal Architecture (6 Lectures)

- The architecture of the Timurids in India- Babur, Hamayun, Akbar, Jahangir and Shahjahan
- Later Mughal- the Oudh architecture in Lucknow and its surroundings briefly outlining the Lucknow city

UNIT 5: Colonial (6 Lectures)

- The British architecture of the colonial days in Indian capital of Delhi and the residency at Lucknow, emphasizing on their planning criteria and architectural features; Gothic revival architecture of Bombay and classical architecture of Calcutta

Text book [TB]:

1. G.K. Hiraskar, The Great Ages of World Architecture, 2015
2. Satish Grover, Buddhist and Hindu Architecture in India, 2nd edition, 2018.
3. Percy Brown, Indian Architecture (Buddhist and Hindu Period), 2010

Reference books [RB]:

1. Spiro Kostof, A History of Architecture: Setting and Rituals, 1995.
2. Gosta, E. Sandstrom, Man the Builder, 1975

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN114
3.	**Course Title**	Surveying and Levelling
4.	**Credits (L:T:P:S:C)**	0:0:2:0:2
5.	**Contact Hours (L:T:P:S)**	0:0:2:0
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Professional Core

8. Course Summary

The course provides knowledge about surveying and levelling.

9. Course Objective

The course should enable the student to understand the topographical factors and other physical constraints present in the site. The students deal with the real engineering problems in surveying and mapping operations.

10. Course Outcomes

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

- Handle the different tools and equipment used in surveying
- Understand the survey plans
- Apply the survey techniques to prepare contour maps

11. Curriculum Content

UNIT 1: Surveying **(24 Labs)**

- Role of surveying in Architecture, Types of survey.
- Introduction to various techniques – Chain and Plain Table Survey, Travers Survey.
- Contouring – Contour Maps, characteristics, use and interpretation.

UNIT 2: Leveling **(4 Labs)**

General principles and application of Levelling in Surveying.

UNIT 3: Drone Analysis **(4 Labs)**

Introduction to drone analysis. Its importance in today's world.

S.No.	List of Experiments
1	Measurement of distance and locating various objects by chain surveying
2	Determination of elevation of various points with dumpy level by collimation plane method and rise and fall method
3	Two point and three point problem using plane table surveying
4	Measurement of horizonatal angles by method of repetition and vertical angles with theodolites
5	Determination of elevation of point by trigonometric levelling

Text book [TB]:

1. C. Venkatramaiah, Textbook of Surveying, Universities Press Ltd, 1996
2. S.K. Duggal, Surveying Volume 1, Tata McGraw Hill Publishing, 2006

Reference books [RB]:

1. N.N. Basak, Surveying & Levelling, McGraw Hill Education Pvt. Ltd.
2. B.C. Punamia, Surveying, 16th Edition, Laxmi Publications, 2005

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN115
3.	**Course Title**	Computer Application-II
4.	**Credits (L:T:P:S:C)**	0:0:3:0:3
5.	**Contact Hours (L:T:P:S)**	0:0:3:0
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Skill Enhancement

8. Course Summary

The course provides training on AutoCAD.

9. Course Objective

This course aims to enable the students to visualize and graphically reproduce simple and complex layouts to succeed in subsequent drafting and design courses.

10. Course Outcomes

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

- Create, annotate, edit and plot drawings using basic AutoCAD commands and features.
- Apply basic AutoCAD skills to intermediate AutoCAD course and other design and drafting courses.
- Apply the tool to prepare a building plan

11. Curriculum Content

UNIT 1: Introduction to AutoCAD, Basic Drawing Tools and Drawing Precision (9 Labs)

Interface, Navigating a Drawing, Lines, Circles, Rectangles, Polar Tracking, Erasing Objects, Creating a Simple Drawing, Object Snaps, Polar Tracking Options, Object Snap Tracking, Snap and Grid Settings etc

UNIT 2: Drawing Organization, making changes, Getting Information and object types (12 Labs)

Templates, Units, Layers, Controlling Layer States Move and Copy, Rotate and Scale, Mirror, Grip Editing, Arcs, Poly lines, Polygons, Ellipses, Object Properties, Measuring Objects

UNIT 3: Advance Editing, Blocks, Setting up Layout (12 Labs)

Trim and Extend, Stretching Objects, Fillets and Chamfers, Offset and Array, Using Blocks, Defining a Block, Reusing Blocks, Printing Concepts, Working in Layouts, Copying Layouts, Creating Viewports.

UNIT 4: Adding Text, Hatching, Dimensioning and Printing (9 Labs)

Modifying Text, Adding Leaders, Creating Tables, Creating Hatches, - Modifying Hatches, Linear Dimensions, Radial and Angular Dimensions, Editing Dimensions, Printing Layouts, Printing from Model Space.

UNIT 5: Introduction to AutoCAD 3D- creating, editing and printing (6 Labs)

Introduction and practice sessions on 3D commands.

Text book [TB]:

1. V. Sharma, Fundamentals of CAD/CAM/CIM, 2012

2. Linkan Sagar, Autocad 2022 Training Guide, 2022

Reference books [RB]:

1. John Willis, Autocad 2024, 2023
2. Krygiel, Eddy, Autodesk Official Training Guide,

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN141
3.	**Course Title**	Theory of Design
4.	**Credits (L:T:P:S:C)**	0:0:0:3:3
5.	**Contact Hours (L:T:P:S)**	0:0:0:3
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Professional Elective

8. Course Summary:

This course provides knowledge about principles and elements of design as they evolved through time, globally.

9. Course Objective:

Understanding the architectural development in different periods over centuries in history along with the understanding the Need, demand and supply in different periods by various great designers.

10. Course Outcomes:

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

- Understand the evolution and development process from past to present of different trend and ideology in terms of technology, form design, planning etc.
- Understand about development and style of Post-independence Architecture.
- Understand the concept of modern buildings designed by master architects.

11. Curriculum Content

UNIT 1: Theory (9 Lectures)

Discuss the evolution and development in design process from past to present. Discuss the principles and Elements of design followed in buildings in past and how the trend changed over the period as per demand. Compare the buildings of past with the present and study the technological, form, shape, design, planning and construction material etc. from earlier days to present day.

UNIT 2: Historical Study (9 Lectures)

Purity of form with structural honesty obtained in different periods – Roman, Romanesque, Baroque etc. leading to modern Architecture. Study of important palaces and public buildings in Britain and France.

UNIT 3: Modern Architecture (10 Lectures)

- Belief in creation of “new” and “ideal” world through the fundamentals of true and original. Origin of geometry, nature, simplicity, abstraction, non-objective, construction and technology available in those times. Equating technology and progress with present functionalism and appropriateness.
- Works of great masters – Frank Lloyd Wright, Le-Corbusier, Alvar Alto, Mies Vender, Louis Kahn, Louis Sullivan, Edwin Lutyens etc.

UNIT 4: Post Independence and Contemporary Architecture (1950 onwards) (10 Lectures)

Introduction to post independence development in India, Introduction to contemporary development in India and other parts of world, various architectural theories, thinking, building materials and construction technology adopted in high rise structures, architectural styles and urbanism.

UNIT 5: Great Masters of the Period (10 Lectures)

Works of the great masters of the period in India i.e.- Charles Chorrea, B.V. Doshi, Raj Rewal, Achyut Kanvinde, Hafeez Contractor etc.

Textbook [TB]:

1. Nehru, Jawaharlal. Glimpses of World History. India, Penguin Random House India Private Limited, 2004.
2. Eisner, Simon, et al. The Urban Pattern. United Kingdom, Wiley, 1993.
3. Fletcher, Bannister and Cruickshank, Dan. A History of Architecture. 1996.
4. Grover, Satish. Buddhist and Hindu Architecture in India. India, CBS Publishers & Distributors, 2003.

Reference books [RB]:

1. Swain, James Edgar. A History of World Civilization. India, Eurasia Publishing House (PVT), 1994.
2. Crouch, Dora P.. History of Architecture, Stonehenge to Skyscapers. United States, McGraw-Hill Book Company, 1985.
3. Toynbee, Arnold, and Somervell, David Churchill. A Study of History. United Kingdom, Oxford University Press, 1987.
4. Crouch, Dora P., et al. Traditions in Architecture: Africa, America, Asia, and Oceania. United Kingdom, Oxford University, 2001.

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARF242
3.	**Course Title**	Interior Design
4.	**Credits (L:T:P:S:C)**	0:0:0:3:3
5.	**Contact Hours (L:T:P:S)**	0:0:0:3
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Discipline Elective

8. Course Summary:

This course specifically provides insight into interior design for the students of architecture.

9. Course Objective:

Interior design, being one of the important/essential area of Architectural practice, the subject deals in detail with various aspects of space interiors. Students will get an opportunity to understand the qualities of spaces and develop their skills in designing functional and meaningful space interiors.

10. Course Outcomes:

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

- To design the Space organization and alteration of interior space.
- Apply the parameters related to qualitative aspects of space.
- Understanding of various materials used in Interiors (from traditional to latest) along with its technology of application and specification.
- To know different surface treatments in interiors, e.g. on walls, floors, ceilings etc.

11. Curriculum Content

UNIT 1: Introduction and Basic Principles of Design (12 Lectures)

Elements and principles of design in context of interior design- Space, Light, Color, Texture, Form, Shape, Size, Volume, Plane, Balance, Symmetry, Rhythm, Proportion, Scale, Emphasis etc.

UNIT 2: Interior Lighting (12 Lectures)

Direct and indirect lighting, location and light grid systems, luminaire types, quality of lighting. Ambient, task and accent lighting.

UNIT 3: Understanding Furniture Work (12 Studios)

Understanding furniture layout, furniture design with the construction technique, types of furniture and their usage, construction materials and fabrics used in furniture designing, cost estimation, understanding works of great masters.

UNIT 4: Modern trends in Interior Design (12 Studios)

Understanding and designing modern interiors using modern materials and techniques. Modular Concept. Interior Design of any one of the building types of approximate area of 500 sq m with estimation.

Textbooks [TB]:

1. Martin, C. Leslie. Architectural Graphics. Norway, Macmillan, 1970.
2. Schaarwächter, Georg. Perspective for the Architect. Netherlands, Thames & Hudson, 1967.

3. Mulik, Shankar, “A Text Book of perspective &Sciography”, Allied Publishers Ltd. Mumbai,1994.
4. Kasu, Ahmed Abdullah. Interior Design: An Introduction to Art, Craft, Technique Science and Profession of Interior Design. India, Iquara Publications, 2005.

Reference books [RB]:

1. Tate, Allen, and Smith, C. Ray. Interior Design in the 20th Century. United Kingdom, Harper & Row, 1986.
2. Reznikoff, S. C.. Interior Graphic and Design Standards. United States, Whitney Library of Design, 1986.
3. Allen, Phyllis Sloan, and Stimpson, Miriam F.. Beginnings of Interior Environment. United States, Macmillan, 1990.
4. Pile, John F.. Interior Design. United Kingdom, Harry N. Abrams, 2003.
Gilliatt, Mary. Mary Gilliatt's Interior Design Course. United Kingdom, Conran Octopus, 2005

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN201
3.	**Course Title**	Architectural Design-III
4.	**Credits (L:T:P:S:C)**	0:0:0:9:9
5.	**Contact Hours (L:T:P:S)**	0:0:0:9
6.	**Prerequisites (if any)**	ARN109
7.	**Course Basket**	Professional Core

8. Course Summary

The course provides knowledge about vernacular Architecture, Site analysis, and site planning

9. Course Objective

Learning from vernacular wisdom and precedents. The course would focus on the core philosophy to harmonise the building form and fabric with the site and climate thereby reducing ecological impacts and achieving energy efficiency.

10. Course Outcomes

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

- At the end of the sequence each student will have created all the pieces they need for the design of a small single-zone building, usually some type of residential project.
- The form of the building will have evolved week by week from the issues covered in each module.
- At the end of the sequence each student will have developed their own set of design criteria against which their final building design can be evaluated.
- Students shall be able to work in any climate, in context of local topography.

11. Curriculum Content

UNIT 1: Group work -Vernacular Study (32 Studios)

- Case study of typical small scale settlement in town or village, for understanding evolution of
- Design, use of material (Maximum one week), local climate, topography life style, culture, occupation, economy etc.
- Study of accepted worldwide themes- primitive, pre- industrial, modern and new vernacular

UNIT 2: Site Study and Analysis & Site Planning (32 Studios)

- Site and surroundings survey- location, local climatic conditions, topography, existing landscape, socio-cultural impact on design. Study of locally available material, technology and resources. Use surveying for site analysis. Introduction to site planning.

UNIT 3: Built form and Building design development (32 Studios)

- Concept development, detailed study of functions, circulation and connectivity with overall planning. Study of relationship of built and open spaces, interlinking of various activities, volumetric analysis, Façade treatment- Interior and exterior. Overall design development till last stage.

UNIT 4: Presentation (32 Studios)

- Enhancement of presentation skills using multiple media. Creation of 3-D models based on the design.

UNIT 5: Architectural Research-III (16 Lectures)

Research problems in architecture. Problem identification, Case Studies

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

Text book [TB]:

1. Jan Sliwa and Leslie Fairweather, A.J. Metric Handbook, 3rd Edition,1977.
2. Great Britain: Department of the Environment, Residential roads and footpath, 2nd Edition, 1992.

Reference books [RB]:

1. American Institute Of Architects Ramsey, Charles G.; Sleeper, Harold R.; Boaz, Joseph N., Architectural Graphic Standards, 6th Edition, 1970
2. Joseph De Chiara, Tata McGraw Hills, Time Saver standards for building types, 4th Edition, 2001.

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN202
3.	**Course Title**	Building Construction & Materials - III
4.	**Credits (L:T:P:S:C)**	0:0:2:2:4
5.	**Contact Hours (L:T:P:S)**	0:0:2:2
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Building Science & Applied Engineering

8. Course Summary

The course provides knowledge about Roofing systems and coverings, surface finishing, types of glasses and uses, Vertical Transportation and types of staircases.

9. Course Objective

- The course should enable the student to comprehend design principles, methods, visual judgment and the creative process. Studio focuses on the development of fundamental skills: manual (making), visual (seeing) and intellectual (abstracting)
- Get acquainted with workshop tools and incorporate their use in the creative process.

10. Course Outcomes

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

- Understand the advantages and limitation of different surface material, glass etc available in market.
- Able to design the roofing system and staircases.
- Apply the usage of vertical mode of transportation (mechanical) like lift, escalators etc in their design

11. Curriculum Content

UNIT 1: Surface Finishing (10 Lectures)

- Surface Finishing: Types of plastering, types of jointing and pointing. Cladding with natural and artificial stones, their composition, sizes, colours, properties, defects and their fixing details
- PAINTS: characteristic of an ideal paint, types of paints, defects in painting, painting on different surfaces.
- Varnishing: characteristics of an ideal, varnish types of varnishes, process of varnishing.
- Distemper: properties of distempers, process of distempers. Wall finishes: wall paper, whitewashing and color washing for walls.

UNIT 2: Glass and Fiber Glass (10 Lectures)

- Classification of glass, types of glass, physical properties and uses of glass, special varieties of glass and Architectural glass.

UNIT 3: Roof Coverings (10 Lectures)

- Concrete Tiles, Asbestos Cement sheets (Plain & Corrugated),
- Aluminium Sheets (Plain & Corrugated).
- Galvanized Iron Sheets (Plain & Corrugated). Stone, Slating, Shingles, Thatch. Any contemporary roofing material.

UNIT 4: Roofing Systems in Timber_ (12 Studios)

- Brief introduction to different roofing systems and typologies like sloping roof, domes, galvanized iron sheet sloping roof, curved vault.

UNIT 5: Vertical transportation (10 Studios)

- Brief introduction to stairs, lifts, escalators & conveyor belts. Type of escalators and a sheet describing their typologies.

UNIT 6: Types of staircases (12 Studios)

- Straight stairs, L-Shaped Stairs, Dog-Legged Stairs, Winder Stairs, Spiral Stairs, Curved Stairs, Ladders. Their uses, advantages, disadvantages, and limitations. Sheets related to an example of each staircase type with measure drawings and details of joineries.

Text book [TB]:

1. N.V. Naik , Building Construction – Materials
2. MACKAY, Building Construction, Vol. 1-4, 5th Edition,2013
3. R BARRY , Construction Technology, , Vol 1-5. 4th Edition, 2010.

Reference books [RB]:

1. F.D.K. Ching , Building Construction Illustrated, 6th Edition,2020.
2. R.Chudley, Construction Technology, 4th Edition, 2005.
3. P.C. Verghese, Building Construction, 2nd Edition, 2016.

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN203
3.	**Course Title**	Structural Design & Systems-III
4.	**Credits (L:T:P:S:C)**	2:0:0:0:2
5.	**Contact Hours (L:T:P:S)**	2:0:0:0
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Building Science & Applied Engineering

8. Course Summary

The course provides knowledge about Plain and Reinforced cement concrete, Design method and design of beam and slab.

9. Course Objective

To understand the principle of reinforced concrete elements and to design the structure using limit state analysis.

10. Course Outcomes

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

- Understand the principle of RC Structure
- Understand the design of structure with limit state analysis.
- Identify different elements of a R.C.C structure as per IS code provisions

11. Curriculum Content

UNIT 1: Plain Cement Concrete (6 Lectures)

Introduction to cement, types of cement, aggregates, ingredients of plain cement concrete, grades of concrete, water cement ratio, properties of P.C.C, concrete mix

UNIT 2: Reinforced Cement Concrete (6 Lectures)

Introduction & properties of concrete and test, reinforcing steels. Requirements of governing & detailing, IS code 456-2000.

UNIT 3: Design Method (6 Lectures)

Working and Limit State Design of reinforced concrete sections for bending and shear; Bond strength and development length; Serviceability; Limit states of deflection and cracking

UNIT 4: Design of Beam (6 Lectures)

Theory & Design Of Single & Doubly Reinforced Beams, L& T Beams (Simple Supported, cantilever & Continuous), Concept Of Over Reinforced & Under Reinforced Sections and balance section

UNIT 5: Design of Slab (8 Lectures)

Classification, Load Estimation, Design of One Way slab, Two Way slab

Text book [TB]:

1. McCormac, Jack C., Design of Reinforced Concrete, 9th Edition,2014.
2. George F. Limbrunner and Abi O. Aghayere, Reinforced Concrete Design, 7th Edition, 2009
3. Nilson, Arthur H., Design of Concrete Structures, 14th Edition, 2009

Reference books [RB]:

1. Timoshenko,S.P..and D.H. Young, Elements of Strength of Materials, 5th Edition,2003.

2. A.R.Jain and B.K.Jain, Theory and Analysis of Structures, Vol.I, 3rd Edition,2012.
3. B.C.Punmia,'Strength of Materials and Theory of Structures, 10th and 13th Edition ,2010 and 2017.

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN205
3.	**Course Title**	History Of Architecture-III
4.	**Credits (L:T:P:S:C)**	2:0:0:0:2
5.	**Contact Hours (L:T:P:S)**	2:0:0:0
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Professional Core

8. Course Summary

The course provides knowledge about history of architecture during classical periods, Medieval, Early modern and Modern history.

9. Course Objective

The course should enable the students to critically understand architecture in context of geographical, geological, local, climatic, socio-cultural, political and religious influences. It should lay emphasis on influential architectural styles in terms of spaces, form, material and structure etc. and expose students to landmark buildings of different architectural styles flourishing in Europe

10. Course Outcomes

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

- History and context of the important buildings that shaped our culture
- History of technological advances that impact the development of architecture.
- Impacts of certain cultural and religious traditions on architecture
- History of climate and geographical changes that shaped human civilization and its architecture

11. Curriculum Content

UNIT 1: Intro to Euro-Centric Civilizations (Classical Periods) (6 Lectures)

- Greek Architecture: Aegean, Helladic, Hellenic/Classical and Hellenistic Periods
- Roman Architecture: Etruscan and Roman Civilization
- (Constantly correlating the stated topics with World and Indian history throughout the syllabus)

UNIT 2: Advent of Christianity and splitting of Rome into two Empires: Western and Eastern (6 Lectures)

- Early Christian Architecture: Flourishing of Early Christian style of Architecture to Collapse of Western Rome into Dark Ages
- Byzantine Architecture: Flourishing and sustenance of Eastern Empire

UNIT 3: Medieval History (Middle and Dark Ages) (6 Lectures)

- Early Medieval and Romanesque Architecture
- Gothic Architecture: Extensive Architecture of Gothic period culminating into Black Death

UNIT 4: Early Modern History (6 Lectures)

- Renaissance Architecture: Early, High and High Mannerism Renaissance
- Baroque and Rococo Architecture

UNIT 5: Modern History (8 Lectures)

- French Revolution and its influence of Architecture: Link with Rococo and Neo-Classical styles
- Neo Classical Architecture: Industrial Revolution, Revival Styles, Architecture till late 19th century

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

Text book [TB]:

1. Sir Banister Fletcher, History of Architecture, 20th Edition,1999.
2. S. Lloyd & H.W. Muller, History of World Architecture, New Edition, 1986.

Reference books [RB]:

1. Francis D. K. Ching, M. Jarzombek, V. Prakash , A Global History of Architecture, 3rd Edition,2017.
2. Leland M Roth, Amanda C. Roth Clark, Understanding Architecture, 3rd Edition, 2013.

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN206
3.	**Course Title**	Climatology
4.	**Credits (L:T:P:S:C)**	1:0:2:0:3
5.	**Contact Hours (L:T:P)**	1:0:2
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Building Science & Applied Engineering

8. Course Summary

The course provides knowledge about Climate and thermal comfort, daylight and Design Application for different climatic conditions.

9. Course Objective

The course should enable the student in understanding the architecture design of climate adapted buildings as a meaningful process based on the understanding of the Climate as a source for making architecture.

10. Course Outcomes

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

- Will be able to make composition using Design Principles and elements.
- Have a comprehensive knowledge about the sketching and the usage of colour media.
- Able to communicate observation & memory through free hand drawing.
- Will be able to design the spaces as per anthropometrics studies.

11. Curriculum Content

UNIT 1: Introduction to Climate (4 Lectures)

Importance of climate in architecture, factors affecting climate, elements of climate- Solar radiation, temperature, wind, humidity and precipitation and their measurement.

UNIT 2: Tropical Climate (4 Lectures)

Climatic zones, Characteristics of tropical climate, macroclimate and microclimate.

UNIT 3: Human thermal comfort (4 Lectures)

Study of body's heat production and heat loss, comfort zone, bio-climatic chart and effective temperature, Isopleths.

UNIT 4: Means of Thermal Control (6 Lectures)

- Shading devices - Method of recording the position of sun in relation to earth, solar chart, shadow angle protractor and its application in design of shading devices.
- Ventilation and air movement - Requirement, size and position of openings, air flow pattern inside and outside buildings.

UNIT 5: Day Light (6 Lectures)

Natural light, glare, day light factor and day lighting in tropics.

UNIT 6: Design Application (8 Lectures)

Shelter for Composite Climates, Shelter for Warm Humid Climates, Shelter for Hot Dry Climates, Shelter for Tropical Upland Climates.

Text book [TB]:

1. Koenisberger , Manual of Tropical Housing and Building, 1975
2. Stephan Behling, Solar power: the Evolution of Sustainable Architecture,2000

Reference books [RB]:

1. Arvind Krishan, Climate Responsive Architecture, 2017
2. Nora Richter Greer, Architecture as response, 1998.

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN245
3.	**Course Title**	Technical Training 1
4.	**Credits (L:T:P:S:C)**	0:0:4:0:2
5.	**Contact Hours (L:T:P:S)**	0:0:4:0
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Skill Enhancement

8. Course Summary

The course provides training on latest software related to the field of architecture.

9. Course Objective

The course should enable the student in applying the software to prepare architectural and presentation drawings.

10. Course Outcomes

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

- Understand the various commands for preparation of architectural and presentation drawings.
- Develop the skill to prepare 2D drawings and 3D views of the building projects.
- Able to communicate observation & memory through free hand drawing.
- Will be able to design the spaces as per anthropometrics studies.

11. Curriculum Content

UNIT:

The technical training 1 will cover the training on latest software related to the field of architecture and the content of the course will be provided at the time of offering the course as the software may be different depending on the industry requirements.

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	Civil
2.	**Course Code**	CEN382
3.	**Course Title**	Properties of Materials
4.	**Credits (L:T:P:S:C)**	3:0:0:0:3
5.	**Contact Hours (L:T:P:S)**	3:0:0:0
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Open Elective

8. Course Summary

The course provides knowledge about properties of materials.

9. Course Objective

The objectives of this course are to learn the design concrete mixes for various mix proportions using different types of blending materials such as silica fume, fly ash and blast furnace slag.

10. Course Outcomes

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

- Study the microstructure of basic constituents of concrete.
- Study the behavior of fresh concrete and hardened concrete.
- Design different types of concrete mixes.
- Design different types of special concretes.

11. Curriculum Content

Unit- 1: Lime, Mortar and Stones (5 Lectures)

Lime: Classification and its application; Stone: Types of building stone, uses, deterioration and preservation, dressing stones and tests; Mortar: Importance, types and its ingredients.

Unit 2: Concrete Ingredients and Microstructure (9 Lectures)

Cement – Chemical composition, hydration of cement, types of cement, manufacture of OPC with flow charts. Tests on cement – field testing, fineness, normal consistency, setting time, soundness, and compressive strength (detailed procedures covered in laboratory). Quality of mixing water. Structure of aggregate phase, structure of hydrated cement paste, structure - property relationship in hydrated cement paste, transition zone in concrete, influence of transition zone on properties of concrete.

Unit 3: Fresh Concrete (7 Lectures)

Workability – definition, factors affecting workability, measurement of workability by slump, compaction factor, Vee-Bee, flow tests. Segregation and bleeding, process of manufacture of concrete – batching. Mixing, transporting, placing, compaction, curing of concrete. Chemical admixtures – plasticizers, accelerator, retarders and air entraining agents. Mineral admixtures – fly ash, blast furnace slag, meta kaolin, Silica fume, rice husk ash.

Unit 4: Hardened Concrete (10 Lectures)

Factors affecting strength, w/c ratio, gel/space ratio, maturity concept, effect of aggregate properties, compressive strength, tensile strength, bond strength, modulus of rupture, modulus of

elasticity, Poisson's ratio, relationship between these parameters. Accelerated curing, aggregate- cement bond strength. Shrinkage – plastic shrinkage and drying shrinkage, factors affecting shrinkage. Creep – measurement of creep, factors affecting creep, effect of creep. Durability – definition, significance,

permeability, sulphate attack, chloride attack, carbonation, freezing and thawing. Factors contributing to cracks in concrete – plastic shrinkage, settlement cracks, construction joints. Thermal expansion, transition zone, structural design deficiencies. Tests on hardened concrete – compressive strength, split tensile strength, flexural strength, non-destructive testing of concrete.

Unit- 5: Special Concretes **(8 Lectures)**

Constituents, Properties and applications of lightweight concrete, high performance concrete (HSC, SCC), high density concrete, fibre reinforced concrete, Ferro-cement.

Text book [TB]:

1. Shetty, M. S., "Conerete Technology", S. Chand & Co. Ltd, New Delhi, 6th Edition, 2005.
2. Mehta, P. K, Monteiro, P. J. M., "Concrete: Microstructure, Properties, and Materials", McGraw Hill Professional, 2013.
3. Gambhir, M. L., "Concrete Technology", Tata McGraw Hill, New Delhi, 5th Edition, 2013.
4. Neville, A. M., Brooks, J. J., "Concrete Technology", Prentice Hall, 2nd Edition, 2010

Reference books [RB]:

1. Neville, A. M., "Properties of concrete", ELBS Publications, London.
2. IS: 10262: "Recommended Guidelines for Concretes Mix design", BIS Publication

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN241
3.	**Course Title**	Furniture Design
4.	**Credits (L:T:P:S:C)**	0:0:0:3:3
5.	**Contact Hours (L:T:P:S)**	0:0:0:3
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Professional Elective

8. Course Summary:

This course provides students with the knowledge and skills necessary to design furniture.

9. Course Objective:

To provide knowledge on History of Furniture Design and various aspects involved in the design of furniture for various spaces.

10. Course Outcomes:

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

- Understand the various anthropometric aspects, human factors & other design criteria involved in the design of furniture.
- Understand the various materials & technology involved in the making of furniture.
- Prepare a scale model of any furniture

11. Curriculum Content

UNIT 1: History of Furniture Design (12 Studios)

- Furniture designs during Egyptian, Greek, Roman, Romanesque, Gothic, Renaissance, Industrial Revolution – Contributions in the beginning of the 20th century by the four pioneer architects in furniture design – Bauhaus, De Stijl& other modern furniture designs.

UNIT 2: Human Factors (12 Studios)

- Study of Anthropometry & Design criteria involved in the design of
- Sofa, settee, couch, etc.
- Cot, bedside lockers, wardrobes
- Cupboards, shelves
- Bunk beds, study table
- Display furniture
- Furniture for the physically challenged

UNIT 3: Principles of Design & Detailing (12 Studios)

- Form – Color - Symbols
- Materials & finishes – Wood, Glass, Metal, Plastics and Upholstery - include various finishes.
- Fabrication Techniques involved
- Multiple Utility Oriented Approaches to Furniture Design.

UNIT 4: Room Plans and Furniture Arrangement (12 Studios)

- Types of furniture – Built in furniture – Movable furniture – Systems furniture – Specially Designed furniture – Readymade furniture – Modular, Knockdown & Economy Furniture. Traffic pattern and furniture layout for residence, commercial and office areas

Textbooks [TB]:

1. Pile, John F.. Interior Design. United Kingdom, Harry N. Abrams, 2003.
2. Gilliatt, Mary. Mary Gilliatt's Interior Design Course. United Kingdom, Conran Octopus, 2005.

Reference books [RB]:

1. Aronson, Joseph. The Encyclopedia of Furniture. United Kingdom, Batsford, 1977.
2. Whiton, Sherrill. Elements of Interior Decoration (Classic Reprint). United States, Fb&c Limited, 2018.

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN242
3.	**Course Title**	Architectural Photography
4.	**Credits (L:T:P:S:C)**	0:0:0:3:3
5.	**Contact Hours (L:T:P:S)**	0:0:0:3
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Professional Elective

8. Course Summary:

This course introduces professional photography to students of architecture which will aid them to represent, and document works of architecture.

9. Course Objective: To provide the students' knowledge on different aspects of Professional photography and its application in architecture.

10. Course Outcomes:

At the end of the course, the student can:

- Understand the basics of photography.
- Understand the importance and relevance of photography in the architecture field.
- Implement the techniques of photography in a small exercise.

11. Curriculum Content

UNIT 1: INTRODUCTION TO PHOTOGRAPHY (12 Studios)

General introduction to the art of photography; concept of color; concepts of lighting, distance, visual angle, frames; media

UNIT 2: PHOTOGRAPHIC TECHNIQUES (12 Studios)

Types of cameras, properties and priorities; Exposure, Aperture, Speed; Photographic films, Film processing color, black and white, printing techniques, developing.

UNIT 3: ANALYSIS OF WORKS (12 Studios)

Works of Indian and international photographers will be presented and discussed. Seminars on Indian architectural photography

UNIT 4: FIELD PROGRAM (12 Studios)

Exercise on integrating photography in architectural journalism.

Textbook [TB]:

1. Saunders, Dave. Professional Advertising Photography. United Kingdom, McGraw-Hill/ Contemporary, 1990.
2. Hicks, Roger W.. Practical Glamour Photography. United Kingdom, New Burlington Books, 1984.

Reference books [RB]:

1. Calder, Julian, and Garrett, John, The New 35mm Photographer's Handbook: Everything You Need to Get the Most Out of Your Camera, 1999.

2. King, Julie Adair, Digital Photography For Dummies, 2012.

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN207
3.	**Course Title**	Architectural Design-IV
4.	**Credits (L:T:P:S:C)**	0:0:0:9:9
5.	**Contact Hours (L:T:P:S)**	0:0:0:9
6.	**Prerequisites (if any)**	ARN201
7.	**Course Basket**	Professional Core

8. Course Summary

The course provides knowledge about development of building form and site planning with respect to contextual climatic conditions and light quality.

9. Course Objective

- Understanding the theoretical and practical aspects of building design as per the specified scale and complexity with a three-dimensional form development
- To work on context-based design problems also considering cost effective building technology and earthquake resistant structure.

10. Course Outcomes

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

- Understand the bio climatic design approach.
- Understand the impact of openings in a living space.
- Apply the inferences derived from various case studies to the assigned studio project.

11. Curriculum Content

UNIT 1: Bioclimatic Design Approach (32 Studios)

Introduction to bioclimatic design approach, having an agglomeration of simple spaces with particular emphasis on the design of the building envelope.

UNIT 2: Exploration of Light Quality in Spaces (32 Studios)

Study of the intensity & quality of natural light under various circumstances and its transformation in interiors due to location, size, and material of glazed openings – Use of high openings, clear-storeys, dormer windows, light wells, courtyards, and other contraptions to bring light into the interior of buildings –To analyze how space such as corridors, lobbies, courtyards etc. can be designed to foster interaction.

UNIT 3: Presentation (16 Studios)

Enhancement of presentation skills using multiple media. Creation of 3-D models based on the design. Surveying to be used for the site analysis of project site.

UNIT 4: Architectural Research-IV (32 Studios)

Types of research. Literature review. Study and present the literature review related to the studio project.

UNIT 5: Site Planning (32 Studios)

Textbook [TB]:

1. Jan Bilwa and Leslie Fair weather, A.J. Metric Handbook

Reference books [RB]:

1. The American Institute of Architects, Architectural Graphic standards, Wiley Publications, 12th Edition
2. Joseph D.C. and Michael J. Crosbie, Time Saver standards for Building Types, Tata McGraw Hills, 4th Edition

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN208
3.	**Course Title**	Building Construction & Materials- IV
4.	**Credits (L:T:P:S:C)**	0:0:3:2:5
5.	**Contact Hours (L:T:P:S)**	0:0:3:2
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Building Science & Applied Engineering

8. Course Summary:

This course provides knowledge about concrete and R.C.C. as building materials and associated construction details of joints, staircases, and foundations.

9. Course Objective:

To help students understand the properties and behavior of concrete as a building material. Students will also acquire knowledge about the different types of foundations and where they are used.

10. Course Outcomes:

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

- Understand the advantages and limitations of Concrete as building material used at different places.
- To be updated with special types of concrete available in the market.
- To understand the concept of foundation and draw the constructional details of various types of foundation.

11. Curriculum Content

UNIT 1: Concrete & Concreting (16 Studios)

- Concrete: Ingredients - suitability requirements for aggregates, grading of aggregates - role of water in concrete -reinforcement - admixtures - properties of concrete. Manufacture of concrete and concreting - mix proportioning - batching, mixing, transporting, placing, compaction, curing formwork - quality control.
- Outline of tests for concrete
- Concreting: effect of form work in terms of finishing of concreting, mixing, transporting, and placing, consolidating and curing of concrete. Various types of cement concrete. Properties and uses.

UNIT 2: Special Concrete & Concreting Methods (16 Studios)

Lightweight, high-density, fiber reinforced, polymer concrete - outline of manufacture, properties and uses of the above - ready mixed concrete - guniting - cold weather and underwater concreting – current developments in concrete products and methods of concreting.

UNIT 3: Foundation (22 Studios)

Introduction to RCC framed structures. Use of concrete in foundations.

- FOOTING FOUNDATIONS – types and construction details.
- SHALLOW FOUNDATIONS: All types and details with special reference to Rafts – situations where adopted, raft with basement, water proofing of basements below ground water table.
- DEEP FOUNDATIONS: Pile foundations – situations where adopted, types of piles, methods of construction, pile capacity from pile loading tests, under reamed piles.
- CONCRETE SLABS: one-way two way continuous & cantilever.

- CONCRETE BEAMS: singly reinforced, doubly reinforced, cantilever & continuous beams. Concrete columns, floors, walls, partitions, lintels, arches, sunshades.

UNIT 4: R.C.C. Joints (10 Studios)

Introduction to different types of RCC joints

UNIT 5: R.C.C Staircase (16 Studios)

Types according to profile – straight flight, doglegged, quarter turn half turn, bifurcated and Spiral. Structural system for the above types sloped slab, cranked slab, cantilevered slab, continuous slab& folded plate, foundation for RCC stair case.

Textbook [TB]:

1. Khurmi R.S., Khurmi N, A textbook of Strength of Materials, 2019
2. Khurmi R. S., Applied Mechanics and Strength of Materials, 2006
3. P.N. Khanna, Indian Practical Civil Engineers' Handbook, 1999

Reference books [RB]:

1. Francis D. K. Ching, Building Construction Illustrated, 2020
2. Edward Allen, Joseph Iano, Exercises in Building Construction, 2019
3. Muni Budhu, Soil Mechanics & Foundations, 3rd Edition
4. Cheng Liu & Jack Evett, Soils and Foundations, 2014

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN209
3.	**Course Title**	Structural Design & Systems - IV
4.	**Credits (L:T:P:S:C)**	2:0:0:0:2
5.	**Contact Hours (L:T:P:S)**	2:0:0:0
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Building Science & Applied Engineering

8. Course Summary:

This course imparts knowledge of designing structural elements like R.C.C. Columns, Stairs, Flat Slab and Foundations.

9. Course Objective:

To understand the principle of reinforced concrete elements and designing of structure using limit state analysis. Students will also know about various elements of a reinforced concrete structure

10. Course Outcomes:
At the end of the course, the student will be able to:

- Understand the principle of R.C.C Structure
- Understand the design of R.C.C structural members and stairs.
- Understand design of R.C.C foundation

11. Curriculum Content

UNIT 1: Design of R.C.C. Column (6 Lectures)
- Design of rectangular column
- Design of circular column
- Design of square column

UNIT 2: Design of Stairs (5 Lectures)
Effective Span, Load Distribution on Stairs, Design (Simple Problems) of dog legged, tread-riser, type stair.

UNIT 3: Pre-stressed Concrete (5 Lectures)
Introduction, different method of pre-stressed concrete, losses of pre-stressed concrete, advantages and disadvantages, Analysis of pre-stressed concrete members.

UNIT 4: Design of Flat Slab (8 Lectures)
Introduction, advantages and disadvantages of flat slab, analysis and design of flat slab.

UNIT 5: Foundation (8 Lectures)
Introduction to foundation, Purpose of foundation, Types of foundation, Safe bearing capacity, RCC Foundation Design

Textbook [TB]:

1. N. Subramanian, Design of Reinforced Concrete Structures, Oxford University Press, 2013
2. Darwin, David, et al. Design of Concrete Structures. United Kingdom, McGraw-Hill Education, 2020.

Reference book [RB]:

1. McCormac, Jack C., and Brown, Russell H. Design of Reinforced Concrete. United Kingdom, Wiley, 2015.
2. Aghayere, Abi O., and Limbrunner, George F. Reinforced Concrete Design. United Kingdom, Pearson, 2014.
3. Darwin, David, et al. Design of Concrete Structures. United Kingdom, McGraw-Hill Education, 2020.

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN212
3.	**Course Title**	Contemporary Architecture
4.	**Credits (L:T:P:S:C)**	2:0:0:0:2
5.	**Contact Hours (L:T:P:S)**	2:0:0:0
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Professional Core

8. Course Summary:

This course introduces contemporary architectural materials and design principles by referring to the architecture of the 20th and 21st century.

9. Course Objective:

The course will enable the students to critically understand the theory of Modern and Contemporary Architecture in the 20th and 21st Century. To study the development in material, structure, social and economic changes as well as Architectural Theory.

10. Course Outcomes:

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

- History and context of the important buildings that shaped our culture and built environment.
- History of technological advances that impacted the development of architecture.
- Visually recognised Architectural Illustrations and identify main characteristics of Modern Architecture.
- Describe, using format and technical vocabulary, the defining characteristic of Modern and contemporary buildings.

11. Curriculum Content

UNIT 1: Introduction, Advent of Steel, Glass and Ferro-Concrete (6 Lectures)

Late Renaissance and development of open spaces, Advent of Steel and Henry Labrouste, Great Exhibitions of 1851 and 1889 and their contributions, Gustave Eiffel, Development of Ferro concrete: Auguste Perret etc.

UNIT 2: Development of New Art & Architecture- Reaction against and for Industrial Revolution (5 Lectures)

Art & Craft, Art Nouveau movement and Victor Horta, Werkbund, Bauhaus, Chicago School, Organic Architecture, H.P. Berlage, H. H. Richardson and 'True Construction', Balloon Frame Structure and Plane Surfaces in America, Works of Le Corbusier, Philip Johnson, Mies Vander Rohe, Peter Behrens etc

UNIT 3: Development of International Style & Ism in Architecture (5 Lectures)

Functionalism, Brutalism, Cubism, Fauvism, Expressionism, Structuralism etc.

UNIT 4: 20th Century World Architecture (5 Lectures)

Works of master architects like Alvar Alto, Frank O Gehry, Richard Roger, M. Pei, Oscar Niemeyer, Norman Foster, Michael Graves, Zaha Hadid etc.

UNIT 5: Indian Architecture Since Independence (5 Lectures)

Transformation of Indian architecture during colonial period – influences and effect

Works of some master architects from the post-independence period, like B.V Doshi, Charles Correa, Raj Rewal, A.P. Kanvinde, Laurie Baker etc.

UNIT 6: Works of Architects in Last 10 years (6 Lectures)

Review through case the award-winning works of national and international architects in last 10 years under various categories.

Textbook [TB]:

1. Lloyd, Seton, and Müller, Hans Wolfgang. Ancient Architecture. Italy, Electa Architecture, 2004.
2. Corbusier, Le. Towards a New Architecture. United Kingdom, Architectural, 2011.

Reference books [RB]:

1. Curtis, William J.R.. Modern architecture since 1900. Germany, Phaidon Press, 1996.
2. Ching, Francis D. K., et al. A Global History of Architecture. Germany, Wiley, 2010.

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN213
3.	**Course Title**	Building Bye Laws & Code of Practice
4.	**Credits (L:T:P:S:C)**	2:0:0:0:2
5.	**Contact Hours (L:T:P:S)**	2:0:0:0
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Professional Core

8. Course Summary:

This course provides knowledge on local building bye laws and national building code, their need and application.

9. Course Objective:

- To study the development controls as applicable to building design.
- To acquaint the students to compulsory building bye-laws and permits.

10. Course Outcomes:

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

- Building Bye laws and other building regulations required for the approval of plans from local authority.
- Will be able to apply the codes related to health, safety, and welfare in the development of Architectural Design
- Will be able to prepare submission drawing as per the bye laws of the Local Authority.

11. Curriculum Content

UNIT 1: Introduction to Building Bye Laws (8 Lectures)

Introduction to Building Bye Laws and regulation, their need and relevance, general definitions such as building height, building line, FAR, Ground Coverage, set back line etc. Role of various statutory bodies governing building works like development authorities, municipal corporations etc. Introduction to Master Plan and understanding various land uses like institutional, residential etc. and related terminology.

UNIT 2: Application of Building Bye Laws (6 Lectures)

Interpretation of information given in bye laws including ongoing changes as shown in various annexure and appendices. Application of Bye Laws like structural safety, fire safety, earthquake safety, basement, electricity, water, and communication lines in various building types.

UNIT 3: Introduction to Codes of Practice (6 Lectures)

Introduction to various building codes in professional practice emphasizing the importance of codes and regulations to protect public health, safety and welfare and to ensure compliance with the local authority.

UNIT 4: Application of Codes of Practice and Building Bye Laws (6 Lectures)

Understanding the applications of various codes as per various building types. Conducting a comprehensive code search process and representing the above analysis by preparing detailed code data sheets as applicable in the domain which has been chosen for the research.

UNIT 5: Application of Building Bye Laws (6 Lectures)

Preparation of complete Local Development Authority drawing for a small two storied building that may have been designed in any of the previous semester.

Reference books [RB]:

1. Nabhi Publications- Delhi Building Bye-Laws
2. D.D.A. – Delhi Master Plan
3. MDDA - Building bye Laws
4. Model Building Bye Laws
5. IS Codes
6. National Building Code (NBC)

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN243
3.	**Course Title**	Traffic Awareness
4.	**Credits (L:T:P:S:C)**	0:0:0:3:3
5.	**Contact Hours (L:T:P:S)**	0:0:0:3
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Professional Elective

8. Course Summary:

This is a COA recommended course which imparts knowledge on traffic circulation patterns and civic sense to ensure road safety.

9. Course Objective:

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

10. Course Outcomes:

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

- Understand road as an active space with potential for hazards and accidents.
- Understand typologies of vehicles, typologies of roads and typologies of intersections.
- Design a street section which allows for inclusive movement i.e. designed for pedestrian movement and barrier free circulation for differently abled users in addition to vehicular movement.
- Understand, recognize, and implement traffic signages in their designs.
- Understand the laws, legislations and regulations related to traffic control and road safety.
- Assume personal and ethical responsibility for civic sense both as a road user and as a site designer.

11. Curriculum Content

UNIT 1: Introduction to Road Safety (4 Lectures)

- Road as an active space, Types of Users, User Behavior, Sensory Factors like Vision, and Hearing in User Behavior.
- Types of Vehicles: Heavy Vehicles, Light Motor Vehicle, Two Wheelers, Auto-Rickshaw, Bicycles and Cycle Rickshaw, Non-Motorized Vehicles.
- Vehicle Characteristics: Dimensions, Weight, Turning Radii, Braking Distance, Lighting System, Tyres, etc.
- Type of Hazards: Conflicts and Accidents.

UNIT 2: Typology of Roads: Components and Design (6 Lectures)

- Road Classification: National Highways, State Highways, District Roads (MDR and ODR), Village Roads
- Urban Road Classification: Expressways, Arterial, Sub-Arterial, Collector, Local, Service Roads, One-Way, Two-Way etc. Mountainous Roads. Speed Limits of the Road types.
- Design of Roads: Cross-Sectional Elements- Right of Way, Carriageway, Median, Shoulders, Sidewalk, Lanes, Cycling Track, Green Strip, Curbs, Camber, etc. Spatial Standards for the Cross-Section Design.
- Relationship between Road Design and Road Safety.

UNIT 3: Intersections (6 Lectures)

- Types of Road Intersections: Basic Forms of at-grade Junctions (T, Y, Staggered, Skewed, Cross, Scissors, Rotary, etc. Grade Separated Junctions (with or without interchange): Three-Leg, Four-Leg, Multi-Leg, etc.
- Design of Intersections: Design and Spatial Standards for Traffic Islands, Turns, Turning Radii, Directional Lanes, Pedestrian Crossings, Median Openings, Traffic Calming Components like Speed Breakers and Table-Top Crossings etc.
- Design Considerations for Diverging, Merging, and Weaving Traffic.
- Location and Design for Traffic Signals.

UNIT 4: Pedestrian Circulation and Barrier Free Design (6 Lectures)

- Requirement of Pedestrian Infrastructure: Sidewalks and Footpaths, Recommended Sidewalk Widths, Pedestrian Crossings, Pedestrian Bridges, Subways, Cycle Tracks, etc.
- Barrier Free Design: Location and Design Standards for Ramps for Wheelchair Access, Other Provisions like Tactile for Visually Challenged etc.
- Safety Provisions: Pedestrian Railings, Anti-skid Flooring, Pedestrian Signal, Walk Button, etc.

UNIT 5: Traffic Signs and Road Markings (6 Lectures)

- Type for Traffic Signs: Principles and Types of Traffic Signs (Danger Signs, Prohibitory Signs, Mandatory Signs, Informatory Signs, Indication Signs, Direction Signs, Place Identification Signs, Route Marker Signs, etc. Reflective Signs, LED Signs, Static and Dynamic Signs.
- Standards for Traffic Signs: Location, Height, and Maintenance of Traffic Signs
- Types of Road Markings: Centre Lines, Traffic Lane Lines, Pavement Edge Lines, No Overtaking Zone Markings, Speed Markings, Hazard Markings, Stop Lines, Pedestrian Crossings, Cyclist Crossings, Route Direction Arrows, Word Messages, Marking at Intersections, etc.
- Material, Colour and Typography of the Markings.

UNIT 6: Traffic Signals, Traffic Control Aids, Street Lighting (6 Lectures)

- Traffic Signals: Introduction, Advantages, and Disadvantages
- Signal Indications: Vehicular, Pedestrian and Location of the Signals.
- Signal Face, Illustration of the Signals. Red, Amber, Green Signals and its significance, Flashing Signals, Warrant of signals, Co-ordinated control of signals.
- Traffic Control Aids: Roadway Delineators (Curved and Straight Sections), Hazard Markers, Object Markers, Speed Breakers, Tabletop Crossings, Rumble Strips, Guard Rails, Crash Barriers etc.
- Street Lighting: Need for Street Lighting, Type of Lighting, Illumination Standard, Location and Intermediate Distance.

UNIT 7: Road Accidents (4 Lectures)

- Nature and Types of Road Accidents (Grievously Injured, Slightly Injured, Minor Injury, Non-Injury, etc.)

- The situation of Road Accidents in India (Yearly), Fatality Rates, etc.
- Factors (and Violations) that cause accidents, Prevention and First Aid to Victims
- Collision Diagrams and Condition Diagrams exercises.
- Traffic Management Measures and their influence in Accident Prevention.

UNIT 8: Road Safety and Civic Sense (4 Lectures)

- Need for Road Safety, Category of Road Users and Road Safety Suggestions.
- Precautions for Driving in Difficult Conditions (Night, Rain, Fog, Skidding Conditions, Non-Functional Traffic Lights, etc.)
- Types of Breakdowns and Mechanical Failures. Accident Sign (Warning Light, Warning Triangle, etc.)
- Introduction to Concept of Civic Sense and its relationship to Road Safety: Importance of Civic Sense, Road Etiquettes and Road User Behavior, Rules of Road, Right of the Way. Providing Assistance to Accident Victim. Sensitization against Road Rage.

UNIT 9: Traffic Regulations, Laws & Legislations (6 Lectures)

- Indian Motor Vehicles Act (Chapter VIII: Control of Traffic to be discussed in detail)
- Regulations Concerning Traffic: Cycles, Motorcycles and Scooters, Rules for Pedestrian Traffic, Keep to the Left Rule, Overtaking Rules, Turning Rules, Priority Rules, Hand Signals, etc.
- Speed and Hazard Management. Penal Provisions.
- National Road Safety Policy, Central Motor Vehicle Rules, State Motor Vehicle Rules
- Introduction to Good Practices.

Textbook [TB]:

1. Kumar, R. Srinivasa. Introduction to Traffic Engineering. India, Universities Press, 2018.
2. Kadiyali, Dr. L.R.. Traffic Engineering and Transport Planning. India, Khanna Publishers, 1999.
3. Ministry of Road Transport and Highways, Government of India, Book on Road Safety Signage and Signs

Reference books [RB]:

1. Neufert, Ernst. Architects' Data. United Kingdom, Wiley, 2023.
2. Time-Saver Standards for Urban Design. United Kingdom, McGraw-Hill Education, 2003.
3. Publications by Indian Road Congress.
4. MORT&H Pocketbook for Highway Engineers, 2019 (Third Revision)
5. Publications by UTTIPEC namely, Street Design Guidelines, UTTIPEC Guideline for Road Markings, UTTIPEC Guideline and Specification for Crash Barriers, Pedestrian Railing and dividers, UTTIPEC Standard Typical Crossing Design

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN244
3.	**Course Title**	Architectural Documentation
4.	**Credits (L:T:P:S:C)**	0:0:0:3:3
5.	**Contact Hours (L:T:P:S)**	0:0:0:3
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Professional Elective

8. Course Summary:

The course will provide the knowledge of documenting a building.

9. Course Objective: The course will enable the students to understand the character of a settlement, street, building, spaces and materials through a process of documentation.

10. Course Outcomes: At the end of the course, the student can:

- Understand the purpose and importance of documentation in architecture.
- Understand the complete process of documentation
- Understand and apply the technique of documentation

11. Curriculum

UNIT 1: Introduction (6 Lectures)

Need for documentation, purpose, tools for documentation in architecture

UNIT 2: Project Selection (6 Lectures)

Heritage Documentation, Monograph of an architect, Contemporary project.

UNIT 3: Research (6 Lectures)

Historical research related to styles & contemporary works, influence of culture & technology, context, its role.

UNIT 4: Geodetic Survey (12 Lectures)

Topographic maps, road maps, site maps etc., Architectural survey, survey methodology, physical measure drawings, photographic survey, digital architectural photogrammetry (2D-3D digital drawings) etc.

UNIT 5: Presentation (18 Lectures)

Document of a small architectural example or a part of the structure, where the content will cover various issues mentioned above.

Text book [TB]:

1. The little book of documentation by Anita Cheria-Edwin
2. Building the architecture documentation by Safari books online

Reference book [RB]:

1. Simon Unwin, Analysing Architecture, 1997

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN301
3.	**Course Title**	Architectural Design-V
4.	**Credits (L:T:P:S:C)**	0:0:0:12:12
5.	**Contact Hours (L:T:P:S)**	0:0:0:12
6.	**Prerequisites (if any)**	ARN207
7.	**Course Basket**	Professional Core

8. Course Summary:

The course aims to equip students with basics of structural knowledge involved in architecture design with the introduction of various modern structural systems.

9. Course Objective:

- The course should enable the student to comprehend with different types of structural system in design.
- Develop skill for making models of various structural forms with appropriate and innovative materials.

10. Course Outcome:

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

- Will be able to make a balance between design and structure.
- Have a comprehensive knowledge about the basics of different types of structure.
- Understand the concept through on scale model of important historical buildings incorporating one of the structural forms. e.g. Trabeated-: Parthenon, Arcuated-: Santa Sophia, Parthenon, Vector Active-: Pompidou Center, Form Active-: Sydney Opera House, Tensile-: any of the famous bridges or stadiums.

11. Curriculum Content:

UNIT 1: Trabeated **(24 Studios)**

- Brick and stone, columns and beams.

UNIT 2: Arcuted **(24 Studios)**

- Corbelled, Radiating Arch, Vault and Dome, Squinch and Pendentives.

UNIT 3: Vector Structure **(24 Studios)**

- Trusses and space frames, slabs, one way and two way, coffers.

UNIT 4: Form Structure **(24 Studios)**

- Folded slabs, shells, Hyperbola-paraboloid.

UNIT 4: Tensile Structure **(24 Studios)**

- Tents, Cables, and Pneumatic vis-à-vis materials and plan shapes.

UNIT 5: Architectural Research-V **(12 Lectures)**

Data collection methods- case study, interviews. Application of methods for the studio project

UNIT 6: Site planning **(12 Studios)**

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

Text book [TB]:

1. Francis D.K. Ching, Architecture Form, Space and Order, 2015
2. Francis D.K. Ching, Building Construction Illustrated, 2020

Reference books [RB]:

1. Bousmaha Baiche & Nicholas Walliman, Newfert Architect's Data
2. DeChiara & Callender, Time Saver Standards for Building Type
3. Thomas Herzog, Pneumatic structures : A Handbook of Inflatable Architecture, 1976
4. Frei Otto , Tensile Structures (v. 1 & 2) by
5. Allen, Edward and Zalewski, Waclaw , Form and Forces: Designing Efficient, Expressive Structures, 2009

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN302
3.	**Course Title**	Building. Construction & Materials-V
4.	**Credits (L:T:P:S:C)**	0:0:4:1:5
5.	**Contact Hours (L:T:P:S)**	0:0:1:4
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Building Science & Applied Engineering

8. Course Summary:

The course imparts technical knowledge related with particularly steel with its practical implementation in modern architectural buildings.

9. Course Objective:

To inculcate awareness of the constructional aspects of structural steel and its application in various building components of an industrial building.

10. Course Outcomes:

Each student shall be able to apply steel & aluminum products strategically & in a proper manner, judiciously in different elements of building. Understand the nature and properties of ferrous & non Ferrous metals and their applicability in Building Construction.

11. Curriculum Content:

UNIT 1: Ferrous Metals
Brief study on manufacture, properties and uses of cast iron, wrought iron, pig iron and steel. Market forms of steel - structural steel, stainless steel, steel alloys - properties and uses - current developments.

UNIT 2: Aluminum & Aluminum Alloys (13 Studios)

- Aluminium and Aluminium Alloys - brief study on manufacture, properties and uses - Aluminium products -extrusions, foils, castings, sheets, etc.-tin and lead, properties and uses - current developments.
- Use of nonferrous metals e.g. copper & copper based alloys (brass & bronze), tin, cadmium, chromium, zinc, lead, nickel etc. in architectural construction
- Aluminum roofing, Aluminum doors - open able, sliding, pivoted, Aluminum windows - open able, sliding, fixed, pivoted, Aluminum ventilators - top hung, bottom hung, pivoted, louvered, fixed

UNIT 3: Gypsum Products (13 Studios)

- Introduction – Gypsum Board, Suspended Ceiling (Boards & Tiles), Gypsum Plaster, Mineral fibre tiles, Components and Accessories, Jointing and Finishing

UNIT 4: Steel Trusses Frames, Gates And Steel Components (13 Studios)

- Structural Steel Sections - types of connections in steel - steel in foundations, columns and beams – and different structural members.
- Steel trusses – saw tooth roof truss with north light glazing, simple trusses in steel
- Space frames:- single, double & triple layered tubular space, frames with globe connections,
- Gates: collapsible gate, entrance gate.
- Steel components: Steel doors, (hinged, sliding), steel windows (casement window & sliding window), Steel stairs (dog legged, spiral stair) steel hand rails and balustrade grill designs for windows
- Virendeel Girder

UNIT 5: Partitions & Paneling **(13 Studios)**

- Pressed steel door frames.
- Metal stud Partitions, single layer and double layer.
- Mezannine Floors
- Different types of Structural and curtain walling along with its fitting and fixtures.

UNIT 6: Cladding & False Ceiling **(15 Studios)**

- Metal false ceiling... Different types of ceiling options available in Market.
- Use of steel as external cladding material.
- Use of Aluminium and other non-ferrous metals in cladding, panelling, and in kitchen fittings.

Text book [TB]:

1. Francis D. K. Ching, Building Construction Illustrated, 2020
2. Edward Allen, Exercises in Building Construction, 2019

Reference books [RB]:

1. United States Gypsum Company , Gypsum Construction Handbook with Product and Construction Standards, 2014

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN303
3.	**Course Title**	Structural Design & Systems-V
4.	**Credits (L:T:P:S:C)**	2:0:0:0:2
5.	**Contact Hours (L:T:P:S)**	2:0:0:0
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Building Science & Applied Engineering

8. Course Summary:

The course exhibits practical knowledge with structural theory and its application through rigorous mathematical calculations involved in design of a structure.

9. Course Objective:

To understand the concept of innovative structural forms and its application in architectural design studio.

10. Course Outcome:

At the end of the course, the student can:

- Identify the concept of various structural elements and system
- Understand the structural geometry based on strength and stability criteria.
- Apply the concept of structural forms in architectural design studio

11. Curriculum Content:

UNIT 1: Classification of Structures **(6 Lectures)**

- Vector Active
- Force Active
- Surface Active

UNIT 2: Arches, Shells & Domes **(6 Lectures)**

- Arches, Shells, Vaults & Domes: concept, classification and application.

UNIT 3: plate structures **(6 Lectures)**

- Introduction, classification and application
- Folded Plates: concept & application
- Flat Slab and Coffered Slab

UNIT 4: Tensile Structures **(6 Lectures)**

Concept, formation, classification and application.

UNIT 5: Pneumatic & Kinetic Structures **(8 Lectures)**

Concept, classification and application

Text book [TB]:

1. Francis D.K. Ching , Building Structures Illustrated, 2015
2. Frei Otto, Tensile Structures: Vol-II, Pneumatic Structures, Cable Structures

Reference book [RB]:

1. Daniel Schodek & Martin Bechthold, Structures, 2013
2. Daneil Schodek , Structure in Sculpture, 1993

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN304
3.	**Course Title**	Building Services-I (WS)
4.	**Credits (L:T:P:S:C)**	2:0:0:0:2
5.	**Contact Hours (L:T:P:S)**	2:0:0:0
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Building Science & Applied Engineering

8. Course Summary:

The Course provides theoretical and practical knowledge about water and plumbing systems employed in a building structure.

9. Course Objective:

To understand the various types of water supply and plumbing systems.

10. Course Outcome:

At the end of the course, the student can:

- Understand the water supply systems in buildings.
- Understand the active and passive components of plumbing.
- Design plumbing system for residential building.

11. Curriculum Content:

UNIT 1: Water Supply & Water Management (12 Lectures)

- Comprehensive understanding of water
- Sources of water supply, quality of water, impurities, requirement of water supply to different types of buildings
- Hot and cold water supply system in low and high rise buildings
- Pipes and their sizes
- Jointing and fittings

UNIT 2: Plumbing System and Plumbing Bye Laws (10 Lectures)

- Sanitary system for individual and group of buildings
- Indian standards and bye laws, Shells.

UNIT 3: Sanitation (12 Lectures)

- Purpose and principle of sanitation, Collection and conveyance of waste water
- Quantity and quality of refuse

- Sanitary appliances, traps and its varieties, pipes and joints
- Rain water storage and water harvesting principles.

Text book [TB]:

1. S.C. Rangwala, Water Supply & Sanitary Engineering, 2016
2. Norbert M. Lechner Plumbing, Electricity, Acoustics, 2011

Reference book [RB]:

1. Murray P. Horwood , The Sanitation of Water Supplies, 1932
2. Larry W. Mays, Water Distribution System Handbook, 1999

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN 305
3.	**Course Title**	Landscape Design
4.	**Credits (L:T:P:S:C)**	0:0:2:2:4
5.	**Contact Hours (L:T:P)**	0:0:0:4
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Professional Core

8. Course Summary:

The Course introduces basics of landscape design with the various processes in conjunction with architecture.

9. Course Objective:

To introduce the elements of landscape design and its relevance in architecture.

10. Course Outcome:

At the end of the course, the student can:

- To introduce the students to the discipline of Landscape architecture & its relevance to Architecture.
- To classify historical gardens and identify their characteristics.
- Identify the elements of landscape design
- To develop the skill of integrated design of open and built spaces.
- To design, develop and prepare landscape plan.

11. Curriculum Content:

UNIT 1: Introduction (12 Lectures)

- Introduction to Landscape Architecture- its meaning, experience of a landscape.
- History of landscape architecture, evolution of garden design- Italian, French, Mughal, Persian, Japanese, Chinese and English.

UNIT 2: Principles and Theories (13 Lectures)

- Landscape Perceptions- The biophilia hypothesis, Prospect-refuge theory, Information processing theory and Landscape preferences.

UNIT 3: Elements of Landscape Design (13 Lectures)

- Natural elements- Landforms- soil dynamics, rock, water, vegetation. Plant types, their characteristics, structure and colour.
- Man-made elements- Hardscape, Softscape, garden furniture, lighting fixtures, signage and sign boards, paving materials.

UNIT 4: Site Analysis & Planning (13 Studios)

- Site study and analysis of all natural and man-made factors of site like site-topography and slope, soil, hydrology and drainage, vegetation, climate and visual analysis.
- Principles of site planning, integrating the building and open space.

UNIT 5: Disciplines of Landscape **(13 Studios)**

- Urban landscape, Heritage Landscape

Studio component of the semester may be integrated with Architectural Design of the current semester.

Text book [TB]:

1. Kevin Lynch, Site Planning, 1984
2. J. Appleton, The Experience of Landscape, 1996

Reference book [RB]:

1. Ian Mcharg , Design With Nature, 1995
2. John Simonds, Landscape Architecture: A Manual of Land Planning & Design, 1995

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN341
3.	**Course Title**	Architectural Journalism
4.	**Credits (L:T:P:S:C)**	0:0:0:3:3
5.	**Contact Hours (L:T:P:S)**	0:0:0:3
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Professional Elective

9. Course Summary

The course introduces the journalism in architecture field.

9. Course Objective: To provide the students' knowledge on different aspects of Professional communication skills and develop Investigative skills regarding Architectural Design and become a good Architectural Critique.

10. Course Outcomes: At the end of the course, the student can:

- Write and speak effectively and use representational media appropriate for both within the profession and with the general public.
- Gather, assess, record, and comparatively evaluate relevant information and performance in order to support conclusions related to a specific project or assignment.
- Develop understanding of the parallel and divergent histories of architecture and the cultural norms of a variety of indigenous, vernacular, local, and regional settings in terms of their political, economic, social, ecological, and technological factors.

11. Curriculum

UNIT 1: Journalism in General

Basic understanding of the subject and related theories

UNIT 2: Theories of Journalism, Techniques and Processes.

Analysis of recent historical and contemporary examples of written and journalistic criticism of architecture, including selected writings by Indian and overseas critics; discursive techniques, analysis of major critical themes, thematic categories in architectural writing over the past three centuries.

UNIT 3: Contemporary Architectural Reportage

Works of Indian and international writers and critics will be presented and discussed. Seminars on Indian architectural writers, journalists and critics, Develop Academic Honesty in Architectural reportage.

UNIT 4: Digital and Print Journalism. In Architecture

- Use of Digital Still and Video Photography in Architecture
- Expose students to various types of storytelling styles in Architecture, trends in digital reporting, and hands-on learning.

Text book [TB]:

1. Pappal Suneja, Exploration of Architectural Journalism in India, 2019

Reference books [RB]:

1. Bender Thomas , Architecture and the Journalism of Ideas, 2024
2. Mohammad Al Asad and Majd Musa, Architectural Criticism and Journalism : Global Perspectives, 2007

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN342
3.	**Course Title**	Barrier Free Built Environment
4.	**Credits (L:T:P:S:C)**	0:0:0:3:3
5.	**Contact Hours (L:T:P:S)**	0:0:0:3
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Professional Elective

8. Course Summary:

The course provides knowledge about basics of design concepts that enable people with disabilities to move about safety and freely and to use the facilities within the built environment.

9. Course Objective:

The course will provide knowledge about concept of accessibility and universal design with focus on implications of ability and different ability on usage of built environment.

10. Course Outcome:

- The student will be able to understand the basic concepts of accessibility and universal design.
- The students will be able distinguish between concepts of accessibility and universal design
- The students will be able to apply the knowledge in building design, landscape architecture and interior design.

11. Curriculum Content:

Unit 1: Basic Concepts (8 Lectures)

Understanding of human ability relevant to design problems in home, workplace, infrastructure etc.

Unit 2: Concept of Accessibility and Universal Design (10 Lectures)

Evolution and limitations of accessible design and difference between accessible and universal design.

Unit 3: Accessibility Standards (10 Lectures)

Theory of disability, devices and controls, defining design requirements, classification of buildings and access provisions. Design elements within the buildings. Site planning, parking, approach to plinth level, corridors, entrances, exits, windows ramps, stairways, lifts, toilets, signage, floor finishes. Design elements outside buildings

Unit 4: International Theory of Universal Design (10 Lectures)

Principles of universal design that enable usability and inclusion across the spectrum of age, size, gender, ability and conditions and contextual derivation of universal design principles in India

Unit 5: Accessibility Consideration in Building Typology (10 Lectures)

Provisions in various buildings- residences, restaurants, auditorium, parks railway stations etc. Case studies

Text Books:

1. Universal Design by Goldsmith

Reference Books:

1. Centre for Universal Design, North Carolina State University, Mullick A, Ostroff
2. Universal Design Handbook, Preiser, Wolfgang

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN343
3.	**Course Title**	Hill Architecture
4.	**Credits (L:T:P:S:C)**	0:0:0:3:3
5.	**Contact Hours (L:T:P:S)**	0:0:0:3
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Professional Elective

8. Course Summary:

The Course focuses on architectural settlements particularly in hilly areas highlighting region specific architecture.

9. Course Objective:

To impart a comprehensive knowledge of architecture suited for hilly regions and to develop an understanding of historical and environmental responsiveness for building up on the hills.

10. Course outcomes:

After successful completion of this course, students will be able to:

1. Understand challenges in the development of hilly areas.
2. Work out pathways, roads and zoning for a campus on the hilly terrain and prepare architectural drawings.
3. Design while considering associated environmental and ecological impact of such development.

11. Curriculum Content:

Unit-1 **(12 Studios)**

- Study of historical perspective of hill architecture and its unique attributes and concerns, constraints of climate, topography and availability of materials.
- Study of unique built form, topographical, ecological and hydrological features of hilly regions with suitable examples. Design factors such as access, circulation, gradients, slope analysis, grading and interpolation of contours.

Unit-2 **(12 Studios)**

Study of major hill settlements in various regions of the world with focus on settlements in Himalayan region of India. Understand traditional hill architecture of India, medieval European settlements and other places.

Unit-3 **(12 Studios)**

Case study of vernacular hill architecture of Himachal Pradesh like building types, techniques and materials. Study of structural aspects, environmental and ecological aspects of modern buildings and necessary safeguards at hills.

Unit-4 **(12 Studios)**

Typical construction techniques and details for roads, drainage and retaining walls in hilly region.

References Books:

1. Lakshman Thakur, The Architecture Heritage of Himachal Pradesh, 1996
2. Sinha and Chacko , Hill Cities of Eastern Himalayas, 1993
3. Ronald M. Bernier, Himalayan Architecture, 1997

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN344
3.	**Course Title**	Earthquake Resistant Architecture
4.	**Credits (L:T:P:S:C)**	0:0:0:3:3
5.	**Contact Hours (L:T:P:S)**	0:0:0:3
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Professional Elective

8. Course Summary

The course will provide the knowledge of earthquake resistant buildings.

9. Course Objective:

Students would be able to understand the formation and causes of earthquakes and factors to be considered in the design of buildings and services to resist earthquakes.

10. Course Outcomes

The students should be able to:

- Understand the fundamentals of earthquake and basic terminology related to earthquake resistant design concepts.
- Develop a familiarity with design codes and building configuration.
- Understand the various types of construction details to be adopted in a seismic prone area.
- Apply the knowledge gained in the architectural design assignment

11. Curriculum

Unit 1: Fundamentals of earthquake (12 Studios)

- Earth structure, seismic waves, plate tectonic theories, origin of continents, seismic zones in India.
- Predictability, intensity and measurement of earthquake.
- Basic terms like faultline, focus, epicentre, focal depth etc.

Unit 2 : Site planning, performance of ground and buildings (12 Studios)

- Historical experience, site selection and development.
- Affects of earthquake on ground, soil rupture, liquefaction, landslides.
- Behaviour of various types of building structures, equipments, lifelines, collapse patterns.
- Behaviour of non structural elements like services, fixtures in earthquake prone zones.

Unit 3 : Seismic design codes and building configuration (12 Studios)

- Seismic design code provisions- Introduction to Indian codes.
- Building configuration – scale of building, size, horizontal and vertical plane, building proportions, symmetry of building- tortion, irregularities in buildings like shortened floor heights and short columns etc.

Unit 4 : Various types of construction details used in urban planning and design (12 Studios)

- Seismic design and detailing of non-engineered construction- masonry structures, wood structures, earthen (mud) structures.
- Seismic design and detailing of RCC and steel structures.
- Design of non-structural elements – Architectural elements, water supply, drainage, electrical and mechanical components.
- Vulnerability of existing buildings, planning of facilities, fires after earthquake, socio-economic impact after earthquakes.

Text Books:

1. National information centre for earthquake engineering , Guidelines for earthquake resistant non engineered construction, 2006.
2. C.V.R Murthy Andrew Charlson, Earthquake Design Concepts, 2006.
3. P. Agarwal, Earthquake Resistant Design, 2006.

Reference Books:

1. Ian Davis, Safe shelter within unsafe cities: Disaster vulnerability and rapid urbanization, 1987.
2. Socio-economic development record – Vol.12, No.1, 2005.
3. Mary c. Camrio, Lugia Binda, 'Learning from practice-A review of Architectural Design and construction experience after recent earthquakes' – Joint USA-Italy Workshop, October 18-23, 1992.

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN 306
3.	**Course Title**	Architectural Design-VI
4.	**Credits (L:T:P:S:C)**	0:0:0:12:12
5.	**Contact Hours (L:T:P:S)**	0:0:0:12
6.	**Prerequisites (if any)**	ARN301
7.	**Course Basket**	Professional Core

8. Course Summary

This course equips students with various processes n designing different types of housing projects.

9. Course Objective

To make the students aware about how materials, processes of construction, and the structure are integral to design in rural areas.

10. Course Outcome

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

- Will be able to Design based on the socio-economic survey.
- Understand the context for design: site attributes and surroundings in the design and linked it with the planning.

11. Curriculum Content

UNIT 1: Theory of Housing **(24 Lectures)**
Shelter as a basic requirement, determinants of housing form, Census of India definitions, Introduction to policies, housing need, demand and supply, dilapidation, structural conditions, materials of constructions, housing age, occupancy rate, crowding, housing shortage, income and affordability, poverty and slums, houseless population. Various housing typologies viz. traditional houses, plotted development, group housing, multi-storied housing, villas, chawls, etc., slums and squatters, night shelters, public health issues related to housing, various theories of housing, concept of green housing, green rating of housing projects

UNIT 2: Housing Project **(96 Studio)**
The various types of housing projects in a typical urban scenario can be taken with suitable design parameters that get established after conducting a rigorous study. Analysis of existing design trends & user preferences need to be ascertained. Awareness about special building byelaws applicable for Group housing schemes is essential. In addition to design issues such as security, accessibility, identity, social interaction, comfort, economy etc that would be investigated, the application of Fractals in design can also be explored. Ex. Housing for the poor / Slum dwellers, Multi-storeyed apartments for Govt. / corporate employees, Multi-storeyed condominiums for the rich etc.

UNIT 3: Architectural Research-VI **(36 Studio)**
Other data collection methods to be applied for studio project.

UNIT 4: Site planning **(36 Studio)**

Text book [TB]:

1. F.D.K. Ching, A Visual Dictionary of Architecture, 2011

2. Levitt, David, The Housing Design Handbook: A Guide to Good Practice, 2018

Reference books [RB]:

1. Norberg-Schulz, C., Principles of Modern Architecture, 2000
2. NING YU LUO ZHONG ZHAO ZHANG HUI FANG , New Rural Housing Design Theory,
3. Bernard Leupen and Harald Mooij , Housing Design: A Manual

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN307
3.	**Course Title**	Building Construction & Materials-VI
4.	**Credits (L:T:P:S:C)**	0:0:4:1:5
5.	**Contact Hours (L:T:P:S)**	0:0:4:1
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Building Science & Applied Engineering

8. Course Summary:

This course provides practical knowledge about structural systems incorporated in high rise structures and its implementation in practice.

9. Course Objective:

To help students understand the use of various forms plastics as a construction material. To understand the structural systems in high rise construction.

10. Course Outcome:

At the end of the course, the student can:

- Each student shall be able to apply ceramics, and forms of Plastics strategically & in a proper manner, judiciously in different elements of building.
- Understand the construction techniques and structural systems in high rise construction.
- Understand the damp proofing and water proofing process and details

11. Curriculum Content:

UNIT 1: Floor Finishing (13 Studio)

Brick flooring, Cement Concrete, Different types of Stones (natural and artificial) used in floor finishing, Terrazzo, Ceramic & Vitrified Tiles, Wooden (natural and artificial). Rubber, cork.

UNIT 2: Thermoplastics and Thermosetting Plastics (13 Studio)

Properties and architectural uses of plastics – structural plastics –Reinforced plastics and Decorative laminates-plastic coatings, Adhesives and sealants – Modifiers and Plasticizers
Ex: Thermoplastics – Polythene, Polyvinyl chloride, polyvinyl acetate, Poly-propylene, Polymethyl metha Crylate, Polystyrene, Acrylo-nitrile butadiene styrene, Nylon, Polycarbonate.Thermosetting Plastics-Polyesters resin, Polyurethane, Synthetic resin, Rubber.

UNIT 3: Adhesives and Sealants (13 Studio)

- Introduction, Natural Adhesives – Animal, Cassin,
- Bituminous, Thermoplastic Adhesives – Polyvinyl Acetate,
- Modifiers and Plasticizers. sealants used for aluminium work, epoxy etc.

UNIT 4: Ceramics, Pvc And Upvc (13 Studio)

Terracotta, Faience, Fireclay, Stoneware, Earthen ware, Vitreous China, Porcelain. Jointing and Finishing.

Primary plastic building products for walls, roof and partitions. Secondary building products for rooms, windows, roof lights, domes, gutters and handrails etc.

UNIT 5: Special Structures (13 Studio)

- Definition –single, double and multilayered grids- two way and three way space grids connectors, Grid domes-various forms-Geodesic domes.
- Shell, Folded Plates and Tensile Structures – Shell types, Classification as per BIS- Relative merits and applicability, Folded plates- types-comparison with shell- applicability, suspended cable structures- types of cable network systems- shapes of cable suspended systems, examples of tensile membrane structures- types of pneumatic structures.
- Various systems of construction of high-rise buildings in RCC and steel.

UNIT 6: Damp Proofing and Water Proofing (15 Practical/ Studio)

- Damp proofing: Hot applied and cold applied – Emulsified asphalt, Bentonite clay. Butyl rubber, silicones Vinyl's, Epoxy resins and metallic water proofing materials, their properties and uses.
- Water proofing: water proofing membranes such as rag, asbestos, glass felt, rplastic and synthetic rubber- vinyl, butyl rubber, polyvinyl chloride – prefabricated membranes sheet lead, asphalt their properties and uses.
- Application: application of the above in basement floor, swimming pool, and terraces

Text book [TB]:

1. Goyal, M.M., "Handbook of Building Construction"

Reference books [RB]:

1. Deplazes, A. (Editor), "Constructing Architecture: Materials, Processes, Structures: A Handbook", Birkhäuser
2. F.D.K. Ching, "Building Construction Illustrated", 2015

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN308
3.	**Course Title**	Structural Design & Systems-VI
4.	**Credits (L:T:P:S:C)**	2:0:0:0:2
5.	**Contact Hours (L:T:P:S)**	0:0:0:2
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Building Science & Applied Engineering

8. Course Summary:
This course enables students to design steel components mathematically for architectural structures.

9. Course Objective:
To enable the students to design steel structures and basic components.

10. Course Outcome:
At the end of the course, the student can:

- Understand types of steel sections, concept of load distribution in steel structures.
- Design of steel connections- rivets, bolts, pins.
- Design of welded connections**.**

11. Curriculum Content:

UNIT 1: Introduction **(8 Lectures)**

- Steel as structural member
- Advantages & disadvantages of steel

Rolled steel sections.

UNIT 2: Steel Connections- I **(8 Lectures)**

Rivets, bolts, pins: introduction, types of joints, methods.

UNIT 3: Welded Connections **(8 Lectures)**

- Introduction, types, symbols
- Design of different types of welded connections

UNIT 4: Members Subjected To Axial Compression **(8 Lectures)**

Steel struts, columns and built up sections.

Text book [TB]:

1. B.C. Punamia, Design of Steel Structure Vol I& II, 2015
2. S.K. Duggal, Design of Steel Structures, 2917

Reference book [RB]:

1. P.C. Varghese, Design of Steel Structures, 2008
2. Charles G Salmon & John E Johnson, Steel Structure: Design & Behaviour, 2008

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN309
3.	**Course Title**	Specification & Estimation
4.	**Credits (L:T:P:S:C)**	3:0:0:0:3
5.	**Contact Hours (L:T:P:S)**	0:0:3:0
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Professional Core

8. Course Summary:

This course provides students various aspects of estimation, bill of quantities and specification writing.

9. Course Objective:

To introduce the techniques of preparing estimates and writing the specifications.

10. Course Outcome:

At the end of the course, the student can:

- Understand the various processes of estimation.
- Execute the appropriate methods for preparing estimates.
- Write the specification.
- Understand the rate analysis.

11. Curriculum Content:

UNIT 1: Specification (12 Lecture)

- Definition, Importance and scope of the subject. Correct form of writing specifications, avoiding ambiguity and conflicting statements. Form and sequence of clauses, study and uses of standard specification viz; drafted by C.P.W.D. etc.
- Writing detailed specifications for various building constructions works e.g. earthwork for foundations, concreting the trenches for foundations, superstructure in cement mortar, R.B. work, plastering and painting, lime punning, flooring, whitewashing, distempering and painting. Snowcem wash, stone masonry, mud phuska, terracing and others.

UNIT 2: Estimation (12 Lecture)

- Estimates-types of estimates-approximate and detailed methods of estimating – plinth area method, carpet/ floor area method cubic content method, approximate quantity method and number system, detail estimates procedure of estimating, taking out quantities schedule of rates.
- Exercise in estimating (with different methods) of small buildings, estimating exercises for interior schemes, plumbing work and electrical installations etc.

UNIT 3: Rate Analysis (24 Lecture)

- Principles of analysis of rates, rates of labour and materials, exercises in rate analysis of different building works, e.g. earthwork for foundations, flooring, timber work etc.
- Introduction to P.W.D. accounts procedure, measurement book, daily labour, muster roll, stores, stock, and issue of material from stock, indent form, imprest account, cash book, mode of payment.

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

Text book [TB]:

1. B.N. Dutta, Estimating and Costing in Civil Engineering, 2021
2. S.C. Rangwala, Estimating, Costing & Valuation, 2017

Reference book [RB]:

1. Rodney D. Stewart, Cost Estimating, 1982
2. M Chakraborti , Estimating, Costing, Specification & Valuation, 2006

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN311
3.	**Course Title**	Town Planning
4.	**Credits (L:T:P:S:C)**	2:0:0:0:2
5.	**Contact Hours (L:T:P:S)**	2:0:0:0
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Professional Core

8. Course Summary

The course imparts students with theoretical knowledge and various aspects of town planning.

9. Course Objective

The intention is to make students aware of the problems of cities and how to address the various issues. The course focus is on the physical and spatial aspects of planning of cities. How have these been affected because of out-population, housing shortage, infrastructure and related problem.

10. Course Outcome

At the end of the course, the student can:

- Identify the elements of planning concepts.
- Identify various infrastructure of town and cities.
- To understand the present growth trends and future needs.

11. Curriculum Content:

UNIT 1: Introduction (6 Lecture)

Definitions of **town planning**, levels of planning and steps for preparation of a town plan, survey techniques in planning, concepts, functions, components and preparation of a development plan. Planning concepts related to garden city, geddesian triad, neighbourhood planning, radburn layout, satellite towns and ribbon development.

UNIT 2: Ancient Planning Systems (6 Lecture)

Indus valley civilization - Mohenjodaro, Harappa, Extracts from Chanakya's Arthasastra, Manasara's Vastushastra, planning thought behind Fatehpur Sikhri, Shahjahanabad, Jaipur and Delhi

UNIT 3: Town Planning Terminology (6 Lecture)

Town planning surveys, Preparation of MASTER PLAN for old and new towns.

UNIT 4: THE PLANNING PROCESS (6 Lecture)

Land use, Concept of F.A.R. and Density, Zoning and Subdivision Regulations, Master Plan

UNIT 5: TRANSPORT PLANNING (6 Lecture)

Traffic and urban environment. Traffic design Elements. Traffic control devices, road intersections.

UNIT 6: DEVELOPMENT LAWS (2 Lecture)

Need of urban development laws, study of evolution of urban development laws in India, development authority, land acquisition act, land acquisition process, land ceiling act etc.

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

Text book [TB]:

1. John Ratcliffe, An Introduction to Town and Country Planning, 1992
2. Modak & Ambedkar, Town and Country Planning & Housing, 1971

Reference book [RB]:

1. Arthur B. Gallion and Simon Eisner, The Urban Pattern – City planning and Design, 2005
2. Rame Gowda, Urban and Regional planning, 1972

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN312
3.	**Course Title**	Building Services-II (EMS)
4.	**Credits (L:T:P:S:C)**	2:0:0:0:2
5.	**Contact Hours (L:T:P)**	2:0:0:0
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Building Science & Applied Engineering

8. Course Summary:

This Course provides detailed knowledge about electrical, HAVC systems and fire safety involved in building structural system.

9. Course Objective:

To understand various systems of services in built environment.

10. Course Outcome:

At the end of the course, the student can:

- Understand electrical systems at building level.
- Understand illumination systems involved at domestic level.
- Understand HVAC system and vertical transportation system for buildings.

11. Curriculum Content:

UNIT 1: ELECTRICAL SERVICES (6 Lecture)

- Basic principles, electricity demand calculations
- Distribution networks at site level and building level
- Electrical wiring – main and distribution boards
- Types of conductors, wiring system and conduits
- Earthing for safety and its types

  Fixing of electrical fixtures and switches

UNIT 2: ILLUMINATION (6 Lecture)

- Visual tasks, synthesis of light
- Additive and subtractive synthesis of colour- Luminous Flux, Candela, Solid Angle, Utilization factor, Deprecation Factor,
- Classification of lighting- Artificial light sources, spectral energy distribution, luminous efficiency, colour temperature, colour rendering index

UNIT 3: HEATING VENTILATION AND AIR CONDITIONING (6 Lecture)

Basic principles, terminologies, psychometric chart and comfort zone

- Refrigerant cycle
- Evaporative cooling system

- Types of air conditioning systems and selection criteria for these systems

UNIT 4: VERTICAL TRANSPORTATION SYSTEM (6 Lecture)

- Lifts- types, working of lifts with details of lift sections, carrying capacity, rated load, rated speed, RTT, installation requirement, grouping of lifts and design standards for lift lobby
- Escalators- introduction and working of escalators.

UNIT 5: FIRE SAFETY IN BUILDINGS (8 Lecture)

Fire, causes of fire in buildings, firefighting, protection & fire resistance, equipment and methods of firefighting, fire safety codes, fire regulations, egress route, fire detection and suppression equipment and systems.

Text book [TB]:

1. Mark Karlen et al, Lighting Design Basics, 2017
2. D.P Kothari & I.J Nagrath, Basic electrical engineering, 2019
3. John Mathew, Introduction To The Design And Analysis Of Building Electrical System, 1993

Reference book [RB]:

1. NBC, Handbook for Building Engineers in Metric systems
2. Fred Hall & Roger Greeno, Building Services Handbook, 2013
3. Evans Douglas , The Elevator Family, 2001

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN 313
3.	**Course Title**	Principles & Practices of Sustainable Building Design
4.	**Credits (L:T:P:S:C)**	1:0:2:0:3
5.	**Contact Hours (L:T:P:S)**	1:0:2:0
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Professional Core

8. Course Summary

This course provides knowledge about various concepts, theories and implementation in building design.

9. Course Objective

To introduce the Theories and Concepts of sustainable buildings.

10. Course Outcome

At the end of the course, the student can:

- Understand the Concept of sustainability and its application in built environment
- Understand the relationship between solar heat gain and built form
- Understand the various passive cooling techniques used in built environment
- Understand the concept of intelligent building

11. Curriculum Content:

Unit 1: Introduction (6 Lectures)

Definition & concept of sustainability, need of sustainable buildings, Features of sustainable buildings.

Unit 2: SOLAR ENERGY & BUILDING (6 Lectures/ Practical)

Solar geometry and built form – Various techniques of shading to reduce heat gain in tropical climate – Various methods of Maximising exposure to solar radiation in cold & temperature climate. Heating & cooling loads – Energy estimates - Energy conservation – Efficient day lighting – Solar Water heating system**.** Exercises on heating and cooling load calculations in buildings

Unit 3: PASSIVE COOLING CONCEPTS (6 Lectures/ Practical)

General principles – Evaporative cooling, Nocturnal radiation cooling, Passive Dessicant cooling, induced ventilation, earth sheltering, Berming, Wind Towers, earth – Air tunnels, Curved Roofs & Air Vents, Insulation, Vary Thermal wall etc.Case studies on buildings designed with passive cooling techniques.

Unit 4: OVERALL DESIGN CONCEPT (8 Lecture/ Practical)

Land form & orientation – Vegetation & Pattern – Water Bodies – Open Space & Built form - Plan form &Elements – Roof form – Fenestration pattern & Configuration – Building envelope & finishes

Unit 5: INTELLIGENT BUILDING **(6 Lecture/ Practical)**

Definition & Concept Of Intelligent Building

Services in Intelligent buildings- lighting, hvac, plumbing, security, access control, CCTV & alarm systems, audio- visual & entertainment system etc.

TEXT BOOKS [TB]:

1. Mili Majunder, Energy Efficient Buildimgs in India
2. J.K Nayak & Others , Energy Systems Energy Group

REFERENCE BOOKS [RB]:

1. George Basid et al, Energy Performance of Buildings
2. PARR, New Direction in Sustainable Design
3. Charles J, Sustainable Construction: Green Building Design and Delivery

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN401
3.	**Course Title**	Architectural Design-VII
4.	**Credits (L:T:P:S:C)**	0:0:0:12:12
5.	**Contact Hours (L:T:P:S)**	0:0:0:12
6.	**Prerequisites (if any)**	ARN306
7.	**Course Basket**	Professional Core

8. Course Summary

The course provides knowledge about design principles and their application, process of design and measurement of human activities.

9. Course Objective

Learning from modern technology and modes of construction and design. The course would focus on the core philosophy to harmonise the office/commercial building form and fabric with the site and climate thereby reducing ecological impacts and achieving energy efficiency.

10. Course Outcomes

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

- Create all the pieces they need for the design of an office/commercial building.
- Evolve the form of the building week by week from the issues covered.
- Develop their own set of design criteria against which their final building design can be evaluated.
- Work in any climate, in context of local topography.

11. Curriculum Content

UNIT 1: Office Buildings (60 Studios)

Office spaces require special care in design & detailing. Students get exposed to the various services, structural systems and vertical access systems such as elevators, escalators etc of multi-storeyed buildings. Knowledge about various types of cores, fire-fighting systems and special building rules applicable to multi-storeyed buildings are implied. Scholars will be required to do the Interior design scheme in detail. Ex. Multi-storeyed office buildings that do not exceed G+6 floors.

UNIT 2: Commercial Buildings (60 Studios)

Acoustical study should also be there with reference to different buildings- multiplexes, auditorium, conference room etc. The teacher will introduce acoustical terminology, concepts and defects as well as the latest acoustical materials available.

UNIT 3: Architectural Research-VII (42 Studios)

Apply the understanding of research in studio project for literature review and data collection.

UNIT 4: Site Planning (30 Studios)

Text book [TB]:

1. Francis D.K.Ching , Architecture, Form, Space and Order, 4th edition, 2015.
2. Dennis J Hall, Architectural Graphic Standards 12th edition, 2016

Reference books [RB]:

1. E. & O.E., Planning – the Architect's Handbook, 5th edition, 2015.
2. Joseph D. Chiara, Time Saver standards for building types, 4th edition, 2017.
3. Ernst Neufert, Neufert Architect's data, 5th edition, 2019.

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN402
3.	**Course Title**	Building Construction & Materials-VII
4.	**Credits (L:T:P:S:C)**	0:0:3:3:6
5.	**Contact Hours (L:T:P:S)**	0:0:3:3
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Building Science & Applied Engineering

8. Course Summary

The course will help to learn the new materials, techniques, and contemporary construction of different building structures.

9. Course Objective

- To develop the understanding of non-conventional energies and the various technologies involved.
- To appreciate different techniques used to construct building elements.
- To display the sensitivity to different non-conventional energy resources, materials and construction techniques.

10. Course Outcomes

The students will be able to

- Understand the application of non-conventional materials in architecture field
- Understand the application of appropriate materials in wall construction
- Understand the non-conventional energy sources and techniques
- Apply the non-conventional materials and techniques in their design projects

11. Curriculum Content

Unit 1: Introduction to Non-Conventional Materials and Technologies in the Architectural Field (8 Studios)

- Renewable Energy Resources: Solar Energy, Biomass Energy, Hydro Power Energy, Wind Energy, Tidal Energy, Bio Fuel
- Appropriate technology and rural development: with respect to government policies and initiatives

Unit 2: Appropriate Walling Materials and Technologies (12 Studios)

- Types of non-conventional walling techniques: mud walls: adobe, wattle and daub, rammed earth, cob walls, compressed earth blocks, etc.
- Sun dried bricks, stabilized soil blocks, hollow concrete blocks, etc.
- Ferro-cement and similar materials
- Use of precast aesthetical materials: Bricks jaalis, cement jaalis, mouldings etc.

Unit 3: Appropriate Roofing Materials and Technologies (12 Studios)

- Alternative non-conventional materials and techniques used for roofing: Bamboo roofing, Composite material, Mangalore tiles, etc
- Types of other Roofs: Jack arch roof, Thatch roofing, Filler slab roofing with various filler material, Clay/micro-concrete tiled roofing, etc.

Unit 4: Use of Bio- Mass as a Non-Conventional Source of Energy Leading to Various Non- Conventional Techniques (8 Studios)

Various uses of biomass and techniques involved in the same.

Unit 5: Use of Bamboo as a Renewable Building Material (12 Studios)

- Importance and Potential of Bamboo
- Uses of bamboo as a building material including the techniques involved.

Unit 6: Region Specific Non–Conventional Techniques (12 Studios)

- Non - Conventional techniques in general but conventional for a specific region developed in response to the locally available materials and construction techniques in response to the climate of a region in an urban or rural set up may be taken for study.
- Students can integrate the same exercise to various allied subjects like climate responsive architecture, BMC, Building Services, etc. Students may also study works of other architects.

Text book [TB]:

1. J. Sengupta, “Cost Effective Building Materials from Industrial and Agricultural Wastes”, Proceedings of Winter School on Alternative Building Materials, Vidisha, India, 2005.
2. F.D.K., Building Construction Illustrated, Wiley, 6th Edition, 2019.

Reference books [RB]:

1. Brenda and Robert Vale-Thames and Hudsson, Green Architecture: Design for a sustainable future by, 1996.
2. Steven Harris and Deborah Berke; Architecture of the Everyday; Princeton Architectural Press; 1997.

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN404
3.	**Course Title**	Theory of Urban Design
4.	**Credits (L:T:P:S:C)**	2:0:0:0:2
5.	**Contact Hours (L:T:P:S)**	2:0:0:0
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Professional Core

8. Course Summary

The course is helpful for the students to understand the human behavior, and importance of urban concepts in the practical world.

Course Objective

To introduce the Theories and Concepts of Urban Design

9. Course Outcomes

At the end of the course, the student can:

- Understand the History and Concept of Urban Design
- Understanding of Urban Design in International and Indian Context
- Developing the knowledge of Urban Design Principles and mapping of Urban spaces

10. Curriculum Content

Unit 1: Introduction **(6 Hours)**

- Introduction to Urban Design
- Importance, Elements and the Dimensions of Urban Design

Unit 2: The Morphology **(8 Hours)**

- Key Concepts – Land use, Building Structures, Plot Pattern, The Street Pattern
- The Public Space Network
- Buildings In Space and Buildings Defining Space
- Traditional Urban Space
- Urban block Patterns and Road Networks

Unit 3: Understanding and Perceiving Spaces **(6 Hours)**

- Human sensory perception of environment
- Meaning and symbolism in urban form
- Sense of Place and personalization
- CASE STUDIES AND LITERATURE STUDIES to understand: Place Identity, Key Attributes of Successful places

Unit 4: The Social, Visual and Functional Dimension **(12 Hours)**

- Relationship between people (Society) and (Urban) space

- Neighbourhood Unit- Size, Boundaries, Social relevance and Meaning, Social mixed and Balanced Communities
- Patterns and Aesthetic Order
- Streets and Squares
- Townscape and Urban Architecture
- Hard and soft Landscaping
- Street Furniture
- Public Private Interface – Comfort, Relaxation, Passive & Active Engagement, Discovery
- Social use of Space
- Movement
- Privacy- Visual and Oral
- Land use, Density and Urban Form
- Environmental Design- Microclimate, Wind shading, Designing for Sun and Shade, Natural Lighting, Parking, Servicing, and Infrastructure
- Growth of Car free Streets and Squares

Text book [TB]:

1. K. Lynch, Good city form. Boston : MIT Press. 1st Edition, 1984.
2. K. Lynch, Image of the City, MIT Press, Cambridge, Mass, 1980.
3. M. Carmona et al., Public Places Urban Spaces. Oxford: Architectural Press. 2nd Edition, 2010.

Reference books [RB]:

1. Whyte, W. H., The social life of small urban spaces. Washington D.C: Conservation Foundation. 8th Edition, 2021.
2. Broadbent G., Emerging concepts in Urban Space Design, Von Nastrand Reinhol, New York, 1st Edition, 1995.
3. Watson, D., Plattus, A. and Shibley, R., Time-Saver standards for urban design. New York: McGraw Hill. 1st Edition, 2003.

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN441
3.	**Course Title**	Mega Structures
4.	**Credits (L:T:P:S:C)**	0:0:0:3:3
5.	**Contact Hours (L:T:P:S)**	0:0:0:3
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Professional Elective

8. Course Summary

The course provides knowledge about large scale projects in detail such as bridges, stadium, high rise buildings, and various other mega structures.

9. Course Objective

Detailed and comprehensive study of any type of mega structure; the structure, systems, services, traffic transportation, parking, erecting and commissioning of components.

10. Course Outcomes

The students should be able to:

- To design the Space organization and alterations of bridges and stadiums
- Apply the parameters related to qualitative aspects of space.
- Understanding of various aspects involved in designing modular megastructure along with its technology of application and specification.
- To know different megastructure projects around the world, e.g. Asia, America, Europe etc.

11. Curriculum Content

UNIT 1: Bridges and Stadiums (12 Hours)

Detailed and comprehensive study of the structure, system, services, traffic transportation, parking, erecting and commissioning of components of stadiums and bridges. Understand the role of architects in design of bridges.

UNIT 2: High Rise Buildings (12 Hours)

Detailed and comprehensive study of the structure, system, services, traffic transportation, parking, erecting and commissioning of components of high rise buildings.

Unit 3: Modular Megastructure (12 Hours)

Understanding the concepts and designing of modular in megastructure design.
Use of modular concepts by architects in high rise structures.

Unit 4: Mega Structures in different parts of the world (12 Hours)

Understanding and detailed analysis of contemporary mega structures in different parts of the world (Asia, America, Europe)

Reference books [RB]:

1. Ian Abley, Manmade Modular Mega structure, 2006.
2. Daab, Stadium Design (Design Books), 2005.
3. Charles S. Whitney, Bridges of the World: Their Design and Construction, 2003.

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN442
3.	**Course Title**	City Planning Concepts
4.	**Credits (L:T:P:S:C)**	0:0:0:3:3
5.	**Contact Hours (L:T:P)**	0:0:0:03
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Professional Elective

8. Course Summary

The course helps to learn and understand the different concepts and theories related to urban and regional planning.

9. Course Objective

The course is intended to introduce the concept of city planning.

10. Course Outcomes

- The student will be able to understand the historical overview of city planning.
- The students will be able to understand the various theories of city planning.
- The students will be able to recognize the contribution of Renowned Planners

11. Curriculum Content

UNIT 1: Introduction (12 Hours)

City planning concepts. History of planned cities and their planning pattern.

UNIT 2: Planning Theories (12 Hours)

Concentric zone theory, sector theory, multiple nuclei theory. Garden City Concept, Green Belt Concept, City as an organism, Global City Concept, Inclusive City, City of the future and future of city

UNIT 3: Sustainable Development of Cities & Communities (12 Hours)

Sustainable site selection and development. Sustainable building materials and technologies. Low impact construction. Bio Mimicry. Dimensions of sustainable cities and sustainable community

UNIT 4: Case Study (12 Hours)

Case studies of planned cities to recognize the contribution of Patric Geddes, Lewis Mumford, C.A. Doxiadis, Clarence Stein, Peter Hall etc.

Text book [TB]:

1. Gallion, A., and Eisner, S., The Urban Pattern, 6th Edition, 1983.
2. Le Corbusier, The City of Tomorrow, Courier Corporation, 2000.

Reference books [RB]:

1. Ebenezer Howard, Garden Cities of Tomorrow, 1965.

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN444
3.	**Course Title**	Construction & Resource Management
4.	**Credits (L:T:P:S:C)**	0:0:0:3:3
5.	**Contact Hours (L:T:P:S)**	0:0:0:03
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Professional Elective

8. Course Summary

The course provides the in-depth knowledge of construction management and resource management during the time of execution of design.

9. Course Objective

The course is intended to introduce the understanding of construction management as well as resource management

10. Course Outcomes

- The student will be able to understand the requirement and objective of construction management tools.
- The students will be able to understand various management techniques for construction projects
- The students will be able to understand the components of resource management

11. Curriculum Content

UNIT 1: Introduction (12 Hours)

Need for construction management, its aims and objectives and available management tools. Role of architect in construction management

UNIT 2: Tools & Techniques (12 Hours)

Management techniques and tools for one off projects. Management techniques and tools for repetitive projects. Site clearance, safety precaution, noise and pollution control

UNIT 3: Resource Management-I (12 Hours)

Challenges of managing people in construction; organization and management theory; HRM theory; strategic HRM approaches;

UNIT 4: Resource Management-II (12 Hours)

Operational HRM approaches; employee relations; employee empowerment; diversity and work/life balance; employee welfare; strategic human resource development; employment legislation

Text book [TB]:

1. Gehlot, P.S., Construction Planning and Management, 2007.
2. Prassana, Chandra, Project: Appraisal, Analysis. Financing, Implementation and review, 2017.

Reference books [RB]:

1. Alison, Dykstra, Construction Project Management: A Complete Introduction, 1st Edition, 2011
2. Portny, Stanley E. Project Management For Dummies, 4th Edition, 2013
3. Daniel, W. Halpin, Construction Management, 3rd Edition, 2005
4. Canter, M.R. , Resource Management for Construction: An Integrated Approach (Building & Surveying Series), 1993

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	CEN361
3.	**Course Title**	Fundamentals of GIS
4.	**Credits (L:T:P:S:C)**	3:0:0:0:3
5.	**Contact Hours (L:T:P:S)**	3:0:0:00
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Open Elective

8. Course Summary
The course introduces the basics of GIS.

9. Course Objective
The course provides wide knowledge about basics of GIS and its applications in various fields

10. Course Outcomes
The students will learn from this course:

- Basic understanding of GIS concepts, components.
- Analyzing geo-spatial data with various techniques and GIS tools
- Apply the concepts in solving environmental and engineering problems
- Create new information and theoretical knowledge after applying GIS tools

11. Curriculum

Unit-1: Introduction (8 Lectures)
Definition of GIS, Cartography and GIS, GIS database: spatial and attribute date; Spatial models: Semantics, spatial information, temporal information, conceptual models of spatial information, representation of geographic information: point, line and area futures, topology,

Unit-2: Components (12 Lectures)
Raster and vector data, raster to vector data conversion, map projection, analytical transformation, rubber sheet transformation, manual digitizing and semi-automatic line following digitizer; Remote sensing data as an input to GIS data;

Unit-3: Classifications and Functions (10 Lectures)
Attribute database: scale and source of inaccuracy; GIS functionality; data storage and data retrieval through query, generalization, classification, containment search within a spatial region;

Unit-4: Analysis (5 Lectures)
Overlay: arithmetical, logical and conditional overlay, buffers, inter visibility, aggregation; Network analysis;

Unit-5: Applications (4 Lectures)
Applications of GIS in planning and management of utility lines and in the filed of environmental engineering, geotechnical engineering, transportation engineering and water resources engineering.

Reference Books:
1. Stan Arnoff, Geographic Information Systems: A Management Perspective.
2. Robert laurini and Derek Thompson, Fundamentals of Spatial Information Systems.
3. Paul Longely, Geographical Information Systems, Vol. I and II, 1999

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN406
3.	**Course Title**	Architectural Design VIII
4.	**Credits (L:T:P:S:C)**	0:0:0:12:12
5.	**Contact Hours (L:T:P)**	0:0:0:12
6.	**Prerequisites (if any)**	AR401
7.	**Course Basket**	Professional Core

8. Course Summary

The course provides in-depth knowledge for the designing of any sustainable institutional building within the urban area.

9. Course Objective

- Understanding the theoretical and practical aspects of building design as per the specified scale and complexity with a three-dimensional form development.
- To work on context-based design problem also considering cost effective building technology and earthquake resistant structure.

10. Course Outcomes

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

- Understand the bio climatic design approach.
- Understand the impact of openings in a living space.
- Apply the inferences derived from various case studies to the assigned studio project.

11. Curriculum Content

UNIT 1: Designing for Sustainability (54 Studios)

Sustainable architecture and planning have become vital factor in the design of all buildings because the building activity is considered as one of the major pollutants of the natural environment. Study of the various techniques of Energy-efficient design and recycling technologies for water & wastes is mandatory as these have to be incorporated in the design proposals. Awareness about LEEDS rating and best practices is expected.

UNIT 2: Institutional Buildings (54 Studios)

These are buildings with complex spatial organizations, multifunctional spaces, large spans and variable circulation patterns. Environmental issues are emphasized, and the Design studio aims to inculcate the techniques of designing for sustainability. Students are expected to do the landscape layout in detail to develop appreciation of a holistic environmental design. Ex. College/single specialty Hospital/theatre etc.

UNIT 3: Urban Intervention Projects (54 Studios)

- Design of buildings/ building complexes in specific urban context such as heritage zones, near existing and within built environments.
- Redevelopment, rehabilitation and urban improvement projects.
- Development Projects such as Universities, District Centers and City Centers etc.

UNIT 4: Architectural Research-VIII (30 Studios)

Application of research in architectural design project.

Text book [TB]:

1. Norberg-Schulz, C., “Principles of Modern Architecture”, 2000.
2. Pickard Chilton, The Office Building of the Future, 2012.

Reference books [RB]:

1. Ching, F.D.K., “A Visual Dictionary of Architecture”, 2nd Edition, 2011.
2. Coulson, Jonathan, Roberts, Paul and Taylor, Isabelle, University Planning and Architecture: The Search for Perfection, 1st Edition, 2010.

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN408
3.	**Course Title**	Professional Practice I
4.	**Credits (L:T:P:S:C)**	2:0:0:0:2
5.	**Contact Hours (L:T:P)**	2:0:0:0
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Professional Ability Enhancement

8. Course Summary

The course provides knowledge about the acts, amendments, rules, regulations, bye-laws, and various other legal aspects related to the professional of architecture.

9. Course Objective

The course will develop attitude towards highest standards of professionalism, integrity, and competence.

10. Course Outcomes

At the end of the course, the student can:

- Develop the practice and office management
- Identify and define the legal provisions for architectural practice
- Appraise the morals and ethics in architectural profession
- Acknowledge the social responsibilities and duties of an architect
- Comply with social norms and responsibilities.

11. Curriculum Content

UNIT 1: Legalities of Profession (8 Hours)

- Architectural profession and legalities
- Identify and discuss the provisions of architectural practice in various acts namely, The Architects Act 1972, Labour Laws in India, The Companies Act 2013, The Arbitration and Conciliation Act 1996, Indian Copyright act 1957.
- Role of Professional Bodies
- History of Architecture Profession in India, Ancient Indian texts on duties of architect and architecture profession

UNIT 2: Morals and Ethics of Practice (8 Hours)

- Code of ethics for architectural practice, Moral duties of an architect
- Standards of professionalism, integrity, and competence, discussions on provisions of Competition Commission of India
- Architectural practice and building byelaws & national building code

UNIT 3: Social Responsibilities and Duties (8 Hours)

- Social responsibilities of profession, Contributions to non-profit organizations, Public awareness of important architectural issues
- Architecture as an agent of change- socio-economic perspective

UNIT 4: Architectural Competition (8 Hours)

Types of competitions; need and procedure for conducting competitions.

Text book [TB]:

1. Dr. R H. Namavati, Professional Practice: With Elements of Estimating, Valuation, Contract and Arbitration, 1st Edition, 2016.
2. IIA, Handbook on Professional Practice.

Reference books [RB]:

1. CMDA-Development control rules for CMA
2. BN Dutta, Estimating and Costing, 28th Edition, 2020.

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN405
3.	**Course Title**	Working Drawing
4.	**Credits (L:T:P:S:C)**	0:0:0:7:7
5.	**Contact Hours (L:T:P)**	0:0:0:7
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Skill Enhancement

8. Course Summary

The course provides knowledge about the various accurate drafting of drawings, which are good for construction.

9. Course Objective

- The Design of a building prepared needs to be executed and constructed on the site.
- The building drawings so prepared become part of the contract documents with proper labelling and dimensioning, specifications, detailing.
- The drawings shall be based on building design prepared as design studio assignment in the previous semester.
- The learning of building material and construction will be implemented for preparing various drawings throughout the semester.

10. Course Outcomes

At the end of the course, the student can:

- Preparation of drawings with illustrations
- Site visit and case studies to know the various details
- Data collection from the market survey regarding construction material and detailing.

11. Curriculum Content

UNIT 1: Structural Layout Drawings (10 Studios)

- Preparing detail drawing for layout of the building with respect to the site.
- Illustrate and prepare drawings for layout of the foundations.
- Preparation of detail layout of the beam and columns, or structural member as per the design.

UNIT 2: Architectural Drawings at Building Level (15 Studios)

- Preparation of detail floor level plan/s and roof level plan required for the execution of work on the site.
- Preparation of drawing giving detail of Section/s and Elevation/s to depict building heights, projections and floor levels.

UNIT 3: Architectural Drawings of Opening (10 Studios)

- Design and prepare detail drawings of doors, windows, openings with specifications of materials.
- Detail drawing for the grill, jail work etc. as required for the building.

UNIT 4: Architectural Drawings of Vertical Circulation as Staircase/ Lift Etc (15 Studios)

- Preparation of drawing for the layout of staircase, its detail and specification for the execution on the site as per the design.
- Illustration drawing of the handrail, baluster, rail fitting etc. as per the design.

UNIT 5: Architectural Drawings for Landscape and Site Development (10 Studios)

- Preparation of drawing for the landscape layouts at the building level and at site level as per the design.
- Detailing of the site for example different level on the site, as required for the site development.

UNIT 6: Building Services Drawings (20 Studios)

Plumbing layout of kitchen and toilet, electrical layout
Small building block should be taken for preparing all sets of working drawing

Text book [TB]:

1. Francis D.K. Ching, Architectural Graphics, 6th Edition, 2015.
2. American Institute of Architects, Nina M. Giglio, Dennis J. Hall, Architectural Graphics Standard for Residential Construction, 2nd Edition, 2010.

Reference books [RB]:

1. Ralph W. Liebing, Architectural Working Drawing, 4th Edition, 1999.
2. Travis Kelly Wilson, Drafting & Design: Basics for Interior Design, 1st Edition, 2011

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN413
3.	**Course Title**	Dissertation
4.	**Credits (L:T:P:S:C)**	0:0:0:2:2
5.	**Contact Hours (L:T:P:S)**	0:0:0:2
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Professional Ability Enhancement

8. Course Summary

The course helps the students to identify the thesis project and to learn the writing skills in order to present the work in a systematic manner.

9. Course Objective

- To enable students for establishing strong theoretical foundation and orient them for research study.
- To enable students to finalize their research topics which will be aligned to their final thesis project.

10. Course Outcomes

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

- Conduct case studies and literature review of the topics of their interest.
- Present their study before the panel of experts and defend the rationale and viability of the study.
- Prepare a dissertation report.

11. Curriculum Content

UNIT: Introduction (32 Hours)

Students will be asked to select the topic of their interest and to be finalized by the faculty members. The topic should be related to architecture or allied areas. This dissertation will be a pre thesis study and students will encouraged to carry forward the learning and apply the same in thesis project.

Reference books [RB]:

1. Borden, I and Ray, K.R, The Dissertation: an architecture students' handbook. 2nd Edition. Oxford: Architectural Press, 2000.
2. Fink, A, Conducting research literature reviews: from the internet to paper. 5th Edition, 2019.

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN445
3.	**Course Title**	Building Economics
4.	**Credits (L:T:P:S:C)**	0:0:0:3:3
5.	**Contact Hours (L:T:P:S)**	0:0:0:3
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Professional Elective

8. Course Summary

The course will introduce the basic of building economics.

9. Course Objective

The course will provide an understanding of the economics aspects of building projects.

10. Course Outcomes

The students should be able to:

- Understand the basics of building economics
- Understand the elements of project costing and benefits of buildings.
- Evaluate the economic performance of buildings.
- Understand the feasibility process

11. Curriculum

Unit I: Elementary Concepts Of Economics (6 Lectures)
Utility, Demand and Supply, Wants, Cost, Value, Price, Micro & macro Economics

Unit II: Meaning & Scope Of Building Economics (6 Lectures)
Issues and importance of Building Economics

Unit III: Project Costing (9 Lectures)
Initial Costing, Elements of Cost Components, Furniture Costing, Different Types of Costs and their impact on Building Projects, Non Monetary cost.

Unit IV: Benefits Of Buildings (9 Lectures)
Monetary and Non Monetary benefits of buildings

Unit V: Economic Performance Of Building (9 Lectures)
Types of Economic Performance, Accounting for Risks & Uncertainty , Techniques of Performance , Analysis , Cost Benefit Analysis, Rate of Return Analysis etc

Unit VI: Feasibility Analysis (9 Lectures)
Concept and Types of Feasibility, Feasibility Analysis world (Asia, America, Europe)

Reference Books:

1.Thorbjoern Mann, Building Economics for Architects

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN447
3.	**Course Title**	Sustainable Cities and Communities
4.	**Credits (L:T:P:S:C)**	0:0:0:3:3
5.	**Contact Hours (L:T:P:S)**	0:0:0:3
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Professional Elective

8. Course Summary

The course will provide the knowledge about the green concept and sustainable development.

9. Course Objective

The course is intended to introduce the concept of sustainability for cities and communities.

10. Course Outcomes

The student will be able to

- Understand the concept of sustainability.
- Explore the various dimensions of sustainability in cities and communities.
- Recognize the sustainable practices of rural communities which are also relevant for urban regions.

10. Curriculum

Unit 1 : INTRODUCTION (9 Lectures)

Introduction to green concept and its need at present time. Green cities or sustainable cities: is there any difference? Sustainable communities from history.

Unit 2: ISSUE OF CLIMATE CHANGE & DEPLETING RESOURCES (12 Studios)

Factors responsible for climate change, overuse of resources by communities and its affects. Good practices of rural regions which can be adopted in cities to mitigate the climate change process

Unit 3: SUSTAINABLE DEVELOPMENT OF CITIES & COMMUNITIES (12 Studios)

Sustainable site selection and development. Sustainable building materials and technologies. Low impact construction. Bio Mimicry. Dimensions of sustainable cities and sustainable community

Unit 4: CASE STUDY (15 Studios)

Case studies of eco cities and communities.

Text Books:

1. J. Sengupta, Cost Effective Building Materials from Industrial and Agricultural Wastes
2. Proceedings of Winter School on Alternative Building Materials, Vidisha, India, 2005

Reference Books:

1. Clark II & Wooddrow W., Sustainable Communities

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN448
3.	**Course Title**	Visual Communication
4.	**Credits (L:T:P:S:C)**	0:0:0:3:3
5.	**Contact Hours (L:T:P:S)**	0:0:0:3
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Professional Elective

8. Course Summary

The course introduces the introduction and application of visual communication in architecture field.

9. Course Objective

Communicating architecture by visuals. Psychology; Visual theories; Architectural implications of virtual environment; Digital arts and presentations/ Media Elements of Visual design. Discussion and analysis of various types of communication media including visual identities; Study and application of drawing and other communication skills for architects;

10. Course Outcome

The students should be able to:

- Use industry recognized computer graphic software to design graphical images
- Create brand identity related to architectural design
- Learn to provide constructive criticism, known as "critiques," when evaluating the design work of peers

Unit 1 :THEORY OF VISUAL COMMUNICATION (9 Lectures)

- Introduction & meaning of visual communication
- Visual communication theories
- Psychology of visual language
- Elements of visual design

Unit 2 : VIRTUAL ENVIRONMENT (12 Lectures)

Introduction, Architectural implications

Unit 3 : APPLICATION IN ARCHTECTURE (15 Lectures)

- Discussion & analysis of various types of communications
- Media including visual identities
- Study & application of drawing & other communication skills for architects
- Digital arts & presentations

Unit 4 :USE OF COMPUTERS IN VISUAL COMMUNICATION (12 Lectures)

- Vector and raster graphics, how to design with specific audiences in mind, and edit images using some of the most commonly used photo editing software in the visual design industry.
- Elements and principles of design, color theory, visual perception theories, typography, symbols, brand identity, logos, and information design.

Text Books:

1. Meredith Davis and Jamer, Hunt Visual Communication Design: An Introduction to Design Concepts in Everyday Experience
2. Gavin Ambrose, Design Thinking for Visual Communication

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN449
3.	**Course Title**	Adaptive Reuse of Buildings
4.	**Credits (L:T:P:S:C)**	0:0:0:3:3
5.	**Contact Hours (L:T:P:S)**	0:0:0:3
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Professional Elective

8. Course Summary

The course will provide the knowledge about the adaptive reuse of buildings.

9. Course Objective

To understand the theoretical and practical background for a systematic process to support adaptive re-use of built environment for sustainable development.

10. Course Outcomes

The students will be able to-

- Understand the concept and need of adaptive reuse for sustainable development.
- Understand the application of adaptive reuse through case studies.
- Develop a project by applying the adaptive reuse strategies.

11. Curriculum

UNIT 1: Introduction (9 Lectures)

Introduction to the concept of adaptive reuse history and various theories of adaptive reuse. Understanding adaptive re-use of buildings as a key to sustainable development. To explore the relationship between financial, environmental and social parameters associated with the adaptive re-use of buildings.

UNIT 2: Case studies (12 Studios)

Understanding the application of the concept of adaptive-reuse through various case studies (within the country and abroad). Critical appraisal of the design approach of the case studies. Case studies should include examples of domestic, commercial, industrial, ecclesiastical and public building types. Analysis of the case studies should be based on the spatial attributes, structural knowledge and materiality of the existing structures and the strategies and tactics of adaptive reuse in architecture.

UNIT 3. Design generation processes in Adaptive re-use (12 Studios)

Analysis of the existing structure - Importance of building assessment report process of documentation and condition mapping in deciding design recommendations. Understanding the design logic. Role of various parameters in concept generation. Strategies for re-modelling.

UNIT 4. Adaptive re-use of heritage buildings (15 Studios)

Understanding Adaptive re-use as an important strategy towards conservation of built heritage. Appreciation of the various values (architectural, cultural, historical, associational, social, etc.) that is associated with heritage buildings. Developing an ethical approach for adaptive re-use.

Note: The culmination of the elective could be a smaller scale adaptive re-use project done by the students inculcating all the ideas covered throughout the subject. - Field visits and case studies help on better understanding of the concept of adaptive re-use.

Reference Books:

1. Liliane Wong, Adaptive Reuse: Extending the Lives of Buildings, 2016,
2. J. Stanley Rabun, Building Evaluation for Adaptive Reuse and Preservation, 2009,
3. Robert W. Burchell, The Adaptive Reuse Handbook.
4. Chris Van Uffelen, Re-use Architecture, 2010
5. Robert T. Ratay, Structural Condition Assessment, 2005

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	Mechanical
2.	**Course Code**	MEN446
3.	**Course Title**	Product Design and Development
4.	**Credits (L:T:P:S:C)**	3:0:0:0:0
5.	**Contact Hours (L:T:P:S)**	3:0:0:0
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Professional Elective

8. Course Summary

The focus of Product Design and Development is integration of the marketing, design, and manufacturing functions of the firm in creating a new product. At the end of this course the student is expected to demonstrate an understanding of the overview of all the product development processes and knowledge of concept generation and selection tools.

9. Course Objectives

- Competence with a set of tools and methods for product design and development.
- Awareness of the role of multiple functions in creating a new product (e.g. marketing, finance, industrial design, engineering, production).
- Confidence in your own abilities to create a new product

10. Course Outcomes

On successful completion of the course, students will be able to achieve the following:

- To understand the innovation, product design process, user study, need/problem identification, development of design brief.
- To understand competitive benchmarking, aspects of human factors in product design, tools for creative concept generation, and prototyping/model making and evaluation techniques for user-product interaction.
- This course will be explained with lectures including case studies and hands-on exercises. This will help students to generate creative ideas in to product design, considering human factors aspects

10. Curriculum

UNIT 1:

Significance of product design, need for developing products, product design and development process, the importance of engineering design, sequential engineering design method, relevance of product lifecycle issues in design, the challenges of product development.

Product Planning and Project Selection: generic product development process, Identifying opportunities, evaluate and prioritize projects, allocation of resources, various phases of product development-planning for products.

UNIT 2:

Identifying Customer Needs voice of customer, customer populations, Interpret raw data in terms of customers need, hierarchy of human needs, need gathering methods, establish the relative importance of needs.

Product Specifications: Establish target specifications, setting final specifications

Concept Generation: Activities of concept generation, clarifying problem, search both internally and externally, explore the output

UNIT 3:

Industrial Design: Assessing need for industrial design, industrial design process, management, assessing quality of industrial design, human factors design, user friendly design

Concept Selection: Overview, concept screening and concept scoring, methods of selection, case studies.

UNIT 4:

Theory of inventive problem solving (TRIZ): Fundamentals, methods and techniques, General Theory of Innovation and TRIZ, Value engineering Applications in Product development and design, Model based technology for generating innovative ideas measurement of customer's response.

Concept Testing: Elements of testing: qualitative and quantitative methods including survey.

UNIT 5:

Intellectual Property: Elements and outline, patenting procedures, claim procedure.

Design for Environment: Impact, regulations from government, ISO system, case studies.

Text book [TB]:

l. Anita Goyal, Karl T Ulrich, Steven D Eppinger, "Product Design and Development", Tata McGraw-Hill Education, 4th Edition, 2009.

2. Kevin Otto, Kristin Wood, "Product Design", Pearson Education, Indian Reprint 2004.

Reference books [RBI:

l. Yousef Haik, T. M. M. Shahin, "Engineering Design Process Cengage Learning, 2010", 2nd Edition Reprint.

2. Kevin Otto, Kristin Wood, "Product Design", Pearson Education Indian Reprint 2004.

3. Clive L.Dym, Patrick Little, "Engineering Design: A Project-based Introduction", John Wiley & sons, 3rd Edition 2009.

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	Mechanical
2.	**Course Code**	MEN449
3.	**Course Title**	Total Quality Management
4.	**Credits (L:T:P:S:C)**	3:0:0:0:0
5.	**Contact Hours (L:T:P:S)**	3:0:0:0
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Professional Elective

8. Course Summary

The course will provide knowledge about total quality management.

9. Course Objectives

To facilitate the understanding of total quality management principles and processes.

10. Course Outcomes

At the end of the course the student can:

- To facilitate the understanding of total quality management principles and processes.
- Student will learn about ISO systems
- Student will learn about various quality tools to improve products quality

11. Curriculum

UNIT 1:

Introduction, need for quality, evolution of quality; Definitions of quality, product quality and service quality; Basic concepts of TQM, TQM framework, contributions of Deming, Juran and Crosby. Barriers to TQM; Quality statements, customer focus, customer orientation & satisfaction, customer complaints, customer retention; costs to quality.

UNIT 2:

TQM principles; leadership, strategic quality planning; Quality councils- employee involvement, motivation; Empowerment; Team and Teamwork; Quality circles, recognition and reward, performance appraisal; Continuous process improvement; PDCE cycle, 5S, Kaizen; Supplier partnership, Partnering, Supplier rating & selection.

UNIT 3:

The seven traditional tools of quality; New management tools; Six sigma- concepts, methodology, applications to manufacturing, service sector including IT, Bench marking process; FMEA- stages, types.

UNIT 4:

TQM tools and techniques, control charts, process capability, concepts of six sigma, Quality Function Development (QFD), Taguchi quality loss function; TPM- concepts, improvement needs, performance measures.

UNIT 5:

Quality systems, need for ISO 9000, ISO 9001-9008; Quality system- elements, documentation, Quality auditing, QS 9000, ISO 14000- concepts, requirements and benefits; TQM implementation in manufacturing and service sectors.

Text book [TB]:

1. Besterfield D.H. et al., Total quality Management, 3rd ed., Pearson Education Asia, 2006.

1. Evans J.R. and Lindsay W.M., The management and Control of Quality, 8th ed., first Indian edition, Cengage Learning, 2012.
2. Subburaj Ramasamy, McGraw-Hill Education, 2012 - Total quality management.

References Books [RB]:

1. Janakiraman B. and Gopal R.K., Total Quality Management, Prentice Hall India, 2006.
2. Suganthi L. and Samuel A., Total Quality Management, Prentice Hall India, 2006

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN501
3.	**Course Title**	Practical Training
4.	**Credits (L:T:P:S:C)**	- - - -:26
5.	**Contact Hours (L:T:P:S)**	- - - -
6.	**Prerequisites (if any)**	None
7.	**Course Basket**	Professional Ability Enhancement

8. Course Summary

The course will provide the understanding of practical aspects on professional architecture.

9. Course Objective:

The students shall have to go for practical training in an architectural firm/ organization working in the field of architecture. They have to work under an experienced architect registered with COA and the training would include the process of development of conceptual ideas, presentation skills, involvement in office discussions, client meetings, development of concepts into working drawings, tendering procedure and site supervision etc.

10. Course Outcomes

At the end of the course:

The students would be able to understand the practical aspects of architecture profession and office management.

11. Curriculum

The student will work on preparation of sketch design, municipal drawings, working drawings and detailing. They will also go for site supervision and discussion with clients and MEP consultants. Every student is expected to record their completed tasks in a log book on daily basis which should be signed by the supervising architect. The student will also prepare a training report which will contain the drawings of the projects handled by the student during training period.

Course Structure and Syllabus of B.Arch
Applicable for Batch 2023-28

1.	**Department offering the course**	SoAP
2.	**Course Code**	ARN502
3.	**Course Title**	Architectural Thesis
4.	**Credits (L:T:P:S:C)**	- - - -:18
5.	**Contact Hours (L:T:P:S)**	- - - -
6.	**Prerequisites (if any)**	ARN501
7.	**Course Basket**	Professional Core

8. Course Summary

The course will provide a comprehensive learning of building project design and execution.

9. Course Objective:

This is culmination of undergraduate studies and hence shall display the capability of the candidate to conceive/ formulate a design project and provide solution, aptly demonstrated through supporting research. The main areas of study and research can include advanced architectural design, including contemporary design processes, urban design, environmental design, conservation and heritage precincts, housing etc. However, the specific thrust should be architectural design of built environment. Preparation of presentation drawings, working drawings, detailed drawings and study model are part of the requirements for submission.

10. Course Outcomes

At the end of the course:

The students would be able to understand the evolution of architectural project from design to execution. The student will be able to handle a complete design project in a practicable manner and apply the creative skill.

11. Curriculum

The student will work on a project of his interest duly approved by the thesis committee of the school. He/she will have to submit three proposals out of which one will be approved by the committee. The student will conduct the case studies relevant to the project and prepare design program for the project.