

**Dr. Babasaheb Ambedkar Technological University,
Lonere, Raigad**

Proposed Syllabus for Bachelor of Architecture

First Year Architecture

Date: 19th August 2017

Second Year Architecture

Date: 23rd March 2018

PREAMBLE

The academic council of **Dr.Babasaheb Ambedkar Technological University** aims at bridging the gap between the **Industry and the Institute** by framing a syllabus on the **Guidelines of Council of Architecture, India** and fine tuning the same with respect to the requirements of the building industry at the international and national level.

The students emerging out of the graduate level should be sound enough to proceed to masters in any part of the world and in any specific subject of his Masters on one hand and be suitable enough to support any good architectural practising office across the globe or alternatively has a platform to take off his own Professional Practice.

The Education is desired to be oriented to equip students with modern skills and techniques of designing structures and detail them further with precise constructional details, use of most suitable materials, examine the sustainability attributes and further specify the process of implementation with the value addition of conservation of energy flavoured with modern architectural concepts giving justice to the various spaces (within and around the built form), they are meant to perform.

The architectural institutes shall also educate the students on their **responsibility as a professional**, to create designs that shall adhere to all **the local regulations and laws of the land** and should provide **updated knowledge of procedures** to be followed from work commencement to completion.

The graduate course (B.Arch) shall be of Ten semesters (stage I & stage II) and the detailed subject wise pattern enclosed along with this preamble shall be strictly adhered to. The Council of Architecture stipulates that maximum students in each class be 40 only and sections may be added for additional intakes.

The libraries shall be equipped with internet facility with a computer lab to provide students networking opportunities with other Institutes/Universities across the world. Facebook /Twitter/Blogs/any other social media tool shall be used to create data that may be required time and again as student/faculty flow year on year.

The Institution shall encourage exchange programs of faculty and students with other Universities in India and abroad to help develop them and their valuable suggestions can be discussed and debated during BOS meetings to modify/amend syllabus or exam pattern if required.

Emphasis shall be given to live site visits, interactions with the client's promoters, contractors and also approving authorities and project managers to get feedback on drawings, details, specifications, selection of materials, techniques of constructions.

The institutes are expected to conduct **seminars on newer technologies and materials** by inviting players from the market/industry and faculty and the students should take it further through **interactive workshops**. The institutes shall also encourage students to attend conference and conventions of architectural organizations within India and Abroad.

The Institute shall guide students to leading architectural offices within and outside the Country for the internship course at stage I and shall conduct interactive feedback workshops for exchange of ideas and experience of the building industry and professional office working. The subject of Professional Practice shall be constantly updated based on changing trends and their expectation from professional architect's .Inviting leading architects to share on the above subject within the institute may help imbibing confidence within out-going graduates.

The BATU syllabus is composed by team of experts after thorough examination and comparative analysis of syllabi of colleges of architecture in India and intends to further modify or amend that may be required by the foreign universities offering BATU their accreditation in order to respond to rapidly changing industry, society and environment, national and international economic dimensions.

The Above architectural technology benchmark statement shall/may reflect these changes in the context of the building Industry, including the need to produce graduates that are employable yet adaptable, agile and flexible to respond to future challenges and changes.

List of Abbreviations		
Sr.No.	Acronym	Full form
1	TH	Theory
2	SWT	Sessional Work with Assessment
3	SV	Sessional Work with Viva
4	L	Theory Lecture
5	S	Studio
6	IA	Internal Assessment
7	MSE	Mid Semester Exam
8	ESE	End Semester Exam

Teaching Scheme:

Each Lecture to be conducted should be of 60 min duration.

Each Studio to be conducted should be of 60 min duration.

1 Credit Point = 1 Hour Lecture (For Theory subject)

1 Credit Point = 2 Hour Studio

Mandatory Passing Criteria:

All the rules and regulations for Allowed To Keep Terms (ATKT) from Dr. Babashaeb Ambedkar Technological University (DBATU) should apply till Third Year Architecture of the B.Arch course.

In addition for Architecture, it is **mandatory** for the student to pass all the subject heads till Third year (till Semester 6).

On passing in all the subject heads till Semester 6, the student will be admitted to Semester 7 i.e. Fourth Year Architecture.

Therefore, it is mandatory to pass in all subjects till Third Year Architecture.

The semesters that will be counted towards the Final Class of the student will be the Semester 7, Semester 8, Semester 9 and Semester 10. Performance of these 4 semesters will together determine the Class of the student.

The candidate admitted to B.Arch. course shall complete the first stage (Third Year) within 5 years of admission to the course.

The candidate admitted to B.Arch course having completed the First Stage shall complete the second stage (Fifth Year) within 8 years of admission to the course.

Reporting of Submissions by the students and Institutes:

All students should mandatorily submit the course work to the college, completed in the class at the end of the day through the servers to the college / university.

The evaluation of the work done in the class by the student should be done by the teacher on the same day and data to be maintained on the server.

Use of Computers:

The institutes can allow the use of computers as found suitable from 2nd semester onwards.

Study Tours:

Study tours can be organised by the institutes to make the student aware of the various aspects of architecture. At least 1 study tour per year should be organised.

Professional Training – Guidelines for selection of Office for Professional training:

1. The practical training of one year duration shall be carried out in the office of an experienced architect registered with the Council of Architecture.
2. The Professional Training can be done in India in any city as is suitable for the student.
3. The Professional Training can also be done in any Foreign Country as is suitable for the student. (This is not mandatory.) The architect / architectural firm has to fulfil all the criteria's of registrations similar to the Indian Counterpart.
4. The Principal Architect of the firm chosen for Practical Training has to have minimum professional experience of 10 years in good standing.
5. The student should be exposed to all aspects of Architectural Practice as is envisaged in the Comprehensive Architectural Services – Scope of Work during the training period.



Teaching and learning Process Matrix:

This matrix is to be used by the teachers and students to understand subject in detail.

It will unfold the desired skill sets required along with identification of teaching and learning process approach indicators.

It will also help teachers and students to evolve concepts and module development.

This is a tool recommended to be followed by subject teachers. It will create learning and understanding process of the subject.

Sr. No.	Subject Heads 	Subject -1	Subject -2	Subject-3	Subject -4
	Definitive questions for learning subjects 				
1	How does learning occur?				
2	What factors influence learning?				
3	What is role of learning?				
4	How does transfer occur?				
5	What type of learning are best explained by theory / drawing?				
6	How is technology used for learning in Architecture?				

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First Year Bachelor of Architecture

Semester -1

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SW/STW	Total	
AR10100001	Architecture Design-I	0	6	25	25	50	50	100	250	3
AR10100002	Architectural Drawing and Graphics-1 (Manual)	0	4	25	25	50	50	100	250	2
AR10100003	Building Construction Technology and Materials-I	2	2	25	25	50	50	100	250	3
AR10100004	Environmental Science-I (Focus on Built Form)	2	0	10	10	20	60	0	100	2
AR10100005	History of Architecture-I	2	0	10	10	20	60	0	100	2
AR10100006S	Basic Design and Visual Arts	0	4	30	30	0	0	90	150	2
AR10100007S	Model Making Workshop (Basic)	0	4	20	20	0	0	60	100	2
AR10100008S	Elective (Any -1)	0	4	20	20	0	0	60	100	2
	Personality Development									
	Sketching									
	Art in Public Spaces									
	Craft Studies									
	Total	6	24	165	165	190	270	510	1300	18

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First Year Bachelor of Architecture

Semester -2

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SW/STW	Total	
AR10020001	Architecture Design-II	0	8	30	30	60	60	120	300	4
AR10020002	Architectural Drawing and Graphics-II (Manual)	0	4	25	25	50	50	100	250	2
AR10020003	Building Construction Technology and Materials-II	2	2	25	25	50	50	100	250	3
AR10020004	Environmental Science-II (Focus on Built Form)	2	0	10	10	20	60	0	100	2
AR10020005	History of Architecture-II	2	0	10	10	20	60	0	100	2
AR10020006	Theory of structures 1	2	0	10	10	20	60	0	100	2
AR10020007S	Model Making Workshop (Basic)	0	4	20	20	0	0	60	100	2
AR10020008S	Elective (Any 1)	0	4	20	20	0	0	60	100	2
	Cultural Influences on Architecture design									
	Architecture Drawing & Graphics (Digital)									
	Photography									
	Art in Landscape & Architecture									
	Total	8	22	150	150	220	340	440	1300	19

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Second Year Bachelor of Architecture

Semester -3

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SV/STW	Total	
AR20030001	Architecture Design-III	2	6	30	30	60	60	120	300	5
AR20030002	Computer Applications in Architecture -I	0	2	20	20	0	0	60	100	1
AR20030003	Building Construction Technology and Materials-III	2	4	30	30	60	60	120	300	4
AR20030004	Building Services - I (Water Supply & Sanitation)	1	2	10	10	20	60	0	100	2
AR20030005	History of Architecture-III	1	2	10	10	20	60	0	100	2
AR20030006	Theory of structures 2	3	0	10	10	20	60	0	100	3
AR20030007S	Model Making Workshop (Carpentry))	0	2	20	20	0	0	60	100	1
AR20030008S	Elective (Any-1)	1	2	20	20	0	0	60	100	2
	Photography - Advance									
	Streetscapes									
	Architectural Journalism									
	Advance Basic Design									
	Total	10	20	150	150	180	300	420	1200	20

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Semester -4

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SV/STW	Total	
AR20040001	Architecture Design-IV	2	6	30	30	60	60	120	300	5
AR20040002	Computer Applications in Architecture -II	0	2	20	20	0	0	60	100	1
AR20040003	Building Construction Technology and Materials-IV	2	4	30	30	60	60	120	300	4
AR20040004	Building Services -II (Electrical, Illum.)	1	2	10	10	20	60	0	100	2
AR20040005	History of Architecture-IV	1	2	10	10	20	60	0	100	2
AR20040006	Theory of structures 3	3	0	10	10	20	60	0	100	3
AR20040007	Site Planning (Surveying & Levelling)	0	2	20	20	0	0	60	100	1
AR20040008S	Elective (Any-1)	1	2	20	20	0	0	60	100	2
	Critical Appreciation of Design									
	GIS									
	Advanced Computing									
	Emerging World Architecture									
	Total	10	20	150	150	180	300	420	1200	20

**Dr. Babasaheb Ambedkar Technological University,
Lonere, Raigad**

BACHELOR OF ARCHITECTURE

FIRST YEAR

SYLLABUS 2017

First Year Bachelor of Architecture

Semester -1

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SW/STW	Total	
AR10100001	Architecture Design-I	0	6	25	25	50	50	100	250	3

Course Objective

To introduce the student the fundamentals of architectural design.

To initiate creative thinking and its relationship with activity spaces.

To apply principles of Basic Design and Visual Arts to Architectural Design

To act as an interface between Basic design-1, Workshop-1 and Architectural Design Studio-1

Course Outcome

To understand human scale and proportion

Apply human scale and proportion in design

Course Content

Module-1

Anthropometry

Scale and Proportion

Measured drawing of Human Activity space - Case Study -Living Room, Bedroom, Kitchen, Toilet

Module -2

Iterative Design Process

Activities and their relation with space

Principles of Architectural Planning

Co -relation between form, function and structure

Module -3

Design process using various methods like Idea Matrix, Concept Mapping and Pre Design

Module -4

Design of elements of furniture using Anthropometric data from Module -1

Module-5

Design of Interactive spaces such as Living room, Courtyard, Bus Stop, Atrium, Community spaces and similar areas.

Studio Exercises

Exercises in order to experiment basic proportions, body relations and spatial concepts.

Layout of furniture based on anthropometrics. Anthropometrics for physically challenged persons. Exercises in order to experiment basic proportions, body relations and spatial concepts. Designing of basic building components (like kitchens, bedrooms, toilets etc.)

Design exercise on threshold conditions and small-scale domestic space. Students will learn skills in problem solving, visualization, oral, and graphic communication. Field trips to relevant architectural sites.

Mode of Examination

Theory Paper in the form of Time Problem of duration 4 hours and Sessional Work with Viva

Reference Books
1. Ching, F.D.K.; Architecture Form, Space and Order, Van Nostrand Reinhold Staff, New York, 1996.
2. Rudofsky, Bernard; Architecture without Architects, University of New Mexico Press, New Mexico
3. Rasmussen, Steen Eiler; Experiencing Architecture, The MIT Press, Cambridge, Massachusetts, 1977.
4. Watson, Donald / Crosbie, Michael J.; Time Savers Standards for Architectural Design, Mc Graw Hill, New York, 2005
5. Chiara, Joseph De / Crosbie, Michael J.; Time Savers Standards for Building Type, McGraw Professional Publishing, New York, 1973.
6. Harris, Charles W. / Dines, Nicholas T.; Time Savers Standards for Landscape Architecture, Mc Graw Hill, USA, 1998
7. Chiara, Joseph De / Panero, Julius / Zelink Martin; Time Savers Standards for Interior design and Space Planning, Mc Graw Hill, New York, 2001
8. Gideon, Siegfried; Space, time & Architecture, Harvard University Press

First Year Bachelor of Architecture

Semester -1

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SW/STW	Total	
AR10100002	Architectural Drawing and Graphics-1 (Manual)	0	4	25	25	50	50	100	250	2

Course Objective

To introduce and familiarize students with drafting tools and accessories and provide basic knowledge and skill to draft a drawing manually.

Developing drafting skills through different types of lines, their intensity and interpretation. Also understanding the scale of drawing, dimensioning, lettering techniques and layout of sheets.

Visualizing and drawing geometric forms in different positions using orthographic projections and sciography will help the student to understand and develop drawings for various design proposals.

Course Outcome

To recognize and select drawing tools and techniques for drafting basic drawing.

To identify a type of line, intensity, thickness, text to draw a shape. .

To implement a scale, dimension for a layout of sheet or drawing.

To demonstrate a line, plane or solid into drawing using orthographic projections.

To integrate the 2 dimensional drawings and 3 dimension form using development of surfaces.

To formulate the 2 dimension into 3 dimension drawing using metric projection.

Course Content

Module -1

Introduction

Drawing instruments and its uses

Sheet layout

Lines, lettering , scales and dimensioning

Geometric Shapes

Drawing of basic geometric shapes

Drawing of complex geometric shapes

Module -2

Orthographic Projections

Concept, Principle and Methods of Projections

Orthographic Projections of Point, Line and Plane

Projections of Solids in different positions

Application of Projection for preparing architectural drawings

Application of Sciography in 2 dimensional drawings with rendering techniques

Module -3

Sections of solids and its application to building drawings

Introduction of section of solids with simple forms

Concept and methods of drawing section of solids

Application of sections for simple building drawings

Section of complex form or structures

Module – 4

Development of Surfaces

Introduction to development of surfaces and its uses

Methods of development of surfaces

Development of lateral surfaces of simple solids as cube, cone, pyramids and prism.

Development of complex solids, when two or more simple solids are joined together.

Studio Exercises

Suitable exercises on all the Modules mentioned above

Mode of Examination

Theory Paper with 3 hour duration.

Sessional Work with Viva.

Reference Books

1. Ching Francis D.K.: Architectural Graphics

2. Kelsey W. E.: Geometrical & Building Drawing

3. Leslie Martin: Architectural graphics

4. B. James: Essential of Drafting

5. H. Joseph and Morris: Practical plane and solid geometry

6. Gill Robert: Rendering with pen and ink

7. Burden Ernest: Architectural Delineation.

8. Burden Ernest: Architectural Delineation. Gill, Robert W.; Manual of Rendering with Pen and Ink, Thames and Hudson, London, 1997.

9. JaxThemier, B.W., "How to Paint and Draw", Thames and Hudson, 1985.

First Year Bachelor of Architecture

Semester -1

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE- Paper	ESE- SW/STW	Total	
AR10100003	Building Construction Technology and Materials-I	2	2	25	25	50	50	100	250	3

Course Objective

To familiarize students with building elements of superstructure and foundations, materials and construction techniques
 Introduction to elementary building construction methods and their applications
 To understand the execution process of each building element

Course Outcome

To define basic building elements.
 To recognize the various types of masonry and foundation made up of suitable materials.
 To be aware of the properties and applications of various materials.
 To understand the construction of openings in various types of masonry.
 Distinguish between various types of structures.

Course Content

Module -1

Introduction to materials used in civil construction.
 Bricks, Sand, Aggregate, Lime, Cement, Water, Stone and reinforcement Steel
 Properties of materials and Quality tests of materials

Module -2

Introduction to various elements of building from foundation to roof.

Module -3

Building Envelope
 Brick Masonry- All types of Bonds
 Stone Masonry-All types
 Composite Masonry- All types
 Right angles in all types of masonry, T-Junctions and Corbelling

Module – 4

Arches
 Various types of Arches
 Lintels
 Constructing openings in Walls as mentioned in Module -2

Module – 5

Introduction to Types of structures- Load Bearing Structure and Frame Structure
 Introduction to Types of Foundations- Shallow and Deep foundations
 Types of Soil
 Shallow foundations-Isolated, Combined and Raft foundations and Spread Foundations

Deep Foundations- Construction of Grillage foundations, Caisson foundations

Equipment for Deep foundations

Studio Exercises

Suitable exercises on all the Modules mentioned above

Mode of Examination

Theory Paper with 3 hour duration.

Sessional Work with Viva.

Reference Books

1. 'Elements of Structure' by Morgan.
2. 'Structure in Architecture' by Salvadori.
3. 'Building Construction' by Mackay W. B., Vol. 1 – 4.
4. 'Building Construction' by Barry, Vol. 1 – 5.
5. 'Construction Technology' by Chudley, Vol. 1 – 6.
6. 'Building construction Illustrated' by Ching Francis D. K.
7. 'Elementary Building Construction' by Michell.
8. 'Structure and Fabric' by Everet
9. 'Engineering Materials' by Chaudhary.
10. 'Building Construction Materials' by M. V. Naik.
11. 'Civil Engineers' Handbook' by Khanna
12. 'Vastu Rachan' by Y. S. Sane.
13. National Building Code and I.S.I. Specifications
14. 'Materials and Finishes' by Everet.
15. 'A to Z Building Materials in Architecture' by Hornbostle.
16. 'Elements of Structure' by Morgan
17. Engg. Materials – K.S.Rangwala.
18. Engg. Materials – B.K.Agarwal
19. Building Materials – S.K.Duggal.
20. Building Construction –Sushil Kumar.
21. Building Construction –Bindra Arora.

First Year Bachelor of Architecture

Semester -1

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SW/STW	Total	
AR10100004	Environmental Science-I (Focus on Built Form)	2	0	10	10	20	60	0	100	2

Course Objective

To obtain knowledge required for understanding the influence of climate on architecture.

To familiarize students with the design and settings for buildings for daylight and factors that influence temperature.

The students are exposed to the various design strategies for building in different types of climatic zones.

To be dealt with reference to Architectural Design Studio

Course Outcome

List the different elements of climate

Classify the factors of comfort

Infer the impact of climatic forces on built structures

Examine through mathematical formulae the thermal comforts levels of built form

Assess the effects of site, sun and wind in building response

Design of shelters in different climatic conditions.

Course Content

Module -1

Introduction

Climate and Weather

Elements of Climate

Classification of tropical climates

Climate balanced Architecture

Module -2

Bio-Climatic Approach

Human Comfort- definitions and concepts

Thermal Comfort Factors

Bioclimatic Requirements

Relation of climatic elements to comfort

The Bio-Climatic Chart

Module – 3

Environment And Building Forms

Impact of External forces on Building

Reading of Psychometric chart and its applicability.

Building configuration and climate response.

Module – 4

Site & Building Design

Site Selection, Site Planning

Building Orientation and Placement

Effect of Landscaping

Module – 5

Sun & Building Design

Basic Principles of Heat Transfer

Numerical based on heat transfer in buildings

Day lighting & Solar Control

Thermal Insulation

Module – 6

Wind & Building Design

Wind effect and Air Flow Pattern

Ventilation Techniques

Air movement around the buildings

Stack Effect and Thermally induced air currents

Module – 7

Architectural Application

Shelter for warm-humid climates

Shelter for hot-dry climates

Shelter for composite climate

Shelter for cold –cloudy and cold- sunny climates.

Application of software in climate responsive design

Studio Exercises

Suitable exercises on all the Modules mentioned above

Suitable Case studies to be conducted

Mode of Examination

Theory Paper of 3 hour duration

Reference Books

1.An Introduction To Building Physics by Narashimhan

2.Manual Of Tropical Housing And Building – Part I – Climatic Design by O.H. Koenigsberger

3.Housing Climate & Comfort by M.Evans

4.Man, Climate And Architecture, Applied Science, Banking Essex by B. Givoni

5.Climatic Design by Donald Watson

First Year Bachelor of Architecture

Semester -1

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE- Paper	ESE- SW/STW	Total	
AR10100005	History of Architecture-I	2	0	10	10	20	60	0	100	2

Course Objective

To introduce student to architectural development with reference to time, space and people

To introduce students to the historical architecture of various civilisations till 0 C.E. across the world.

Evolution of built forms manifested in spatial and formal abstraction, landscape, structural construction and material order, symbols and meanings with respect to Society, Culture, Climate, Land, Technology

Course Outcome

To recognize importance of architecture and design through time and across cultures

Identify different styles of historic architecture.

Identify prominent / important historic buildings by their components / style of design

Describe prominent / important historic buildings

Analyse the contributing factors for the design development of different styles.

Compare and Contrast various styles on the basis of the contributing factors responsible for their development

Identifying contemporary buildings in the historic architectural styles

Note: History of Architecture to be taught with reference to various styles of architecture. Appropriate examples should be included to explain it.

Course Content

Module -1

Introduction to Ancient Civilizations their social systems and culture (Till 0 C.E)

Pre-History

Palaeolithic, Mesolithic, Neolithic, Neanderthal rituals, settled farming, hunter gatherer shelters

Settlements locations- river banks, valleys, fertile soils.

Underlying values of relationships between Man, Nature and Society.

Module -2

River valley Civilisation - Mesopotamian Civilization

Salient features of Ziggurats and their development

Generic Temple Layout

Palace Complex/Citadel

Module -3

River valley Civilisation - Egyptian Civilization

Salient features of important buildings

Temples & temple complexes - Cult Temple and Mortuary Temple

Mastaba – development and typical components

Pyramids ,Standard mortuary complex layout of pyramids

Module – 4

River valley Civilisation – Indus Valley Civilization, Yellow River Valley Civilisation - China

Salient features of important buildings

Public Buildings

Citadel

Module -5

Aryan invasion, tribal republics, rise of Magadha, religious philosophies- Upanishads, Jainism, Buddhism. Spread of Buddhism in Mauryan kingdom, Stupa at Sanchi, Rock cut architecture, Buddhist architecture

Module -6

Greek Architecture

Classical Order – Doric, Ionic, Corinthian

Salient features of important buildings

Temple types on basis of column layout

Discussion of Hellenic Temple (Parthenon, Athens) versus Hellenistic Temple (Athena Polias, Priene)

Public Buildings and Square – Agora, Stoa, Prytaneum, Bouleuterion, Tholos, Gymnasium, Theatre

Module -7

Roman Architecture

Introduction to Roman civilization, their social systems and cultures

Contribution in new materials and new construction/structural systems, eg, Pozzolana, Cementae, Stone Blocks, Stone Masonry, Arch, Vault, Dome

Salient features of important buildings

Forums of Rome

Aqueduct

Theatres

Baths

Basilicas

Module -8

Meso American

Studio Exercises

Suitable exercises on all the Modules mentioned above

Mode of Examination

Theory Paper with 3 hour duration.

Sessional Work with Assessment.

Reference Books

History Of Architecture by Sir Bannister Fletcher

The Story Of Architecture by Patrick Nuttgens

Space, Time And Architecture by Siegfried Gideon

First Year Bachelor of Architecture

Semester -1

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SW/STW	Total	
AR10100006S	Basic Design and Visual Arts	0	4	30	30	0	0	90	150	2

Course Objective

To familiarize the student with visual grammar, methods of visual composition and various mediums

To develop skills in manual presentation techniques,

To act as an interface between Basic design-1, Workshop-1 and Architectural Design Studio-1

Course Outcome

Develop principles of 2 dimensional and 3 dimensional composition

Develop manual presentation techniques

Use of colours in design

Course Content

Module -1

Relationship of Surface, Form, Masses.

Relationship of Point, Line, Motion, Light, Shade.

Module -2

Colour Theory

Explore the use of colour in design in context to emotional quotient and context

Module -3

Fundamental principles of design, Creativity tools like Synectics

Balance, Harmony, Rhythm, Contrast, Symmetry, Scale, proportions, colours, tones, textures etc

Module -4

Sketching

Sketching using Pencil (Black and White) and Colour Pencil

Sketching using Pen, Watercolour and any other suitable medium

Free Hand presentations and rendering techniques

Module -5

2D Compositions

3D Compositions

Sculpture

Study of solids & voids to evolve sculptural forms & spaces

Module -6

Textures

Study of various textures and their use in architectural design

Studio Exercises

Suitable exercises on all the Modules mentioned above (Min 5 on each module on A2 Size)

Mode of Examination

Sessional Work with Viva.

Reference Books

1. Ching Francis D. K., Form Space and Order.
2. Ching Francis D. K., A Visual Dictionary of Architecture.
3. John R. Mather -Climatology: Fundamentals and Application.
4. Christopher Alexander- Pattern Language
5. Robert Sommer. -Design Awareness.
6. C.M. Deasy -Design for Human Affairs.
7. Pierre Von Meiss -Elements of Architecture from form to place.
8. Yatin Pandya- Elements of Space Making.
9. Paul Lassau – Graphic Thinking for Architects and Planners.
10. Peter Pearce, Structure in Nature – Strategy for Design.
11. Peter Streens, Patterns in Nature.
12. Anthony Antoniadis - Poetics in Architecture: Theory of design
14. Am heim Rudolf, Visual Thinking.
15. John R. Mather -Climatology: Fundamentals and Application.15
16. Maxwell Fry And Jane Drew -Tropical Architecture.
17. Paul Lassau - Graphic thinking for Architects and planners.
18. Jonathan A. Hale -Building Ideas. An introduction to Architectural Theory.
19. William J.J. Synectics: The Development of Creative Capacity (New York Harper and Row Publisher,1961)
20. Elvadine R. Seligmanann : Reaching Students through Synectics: A Creative solution (University of North Colorado) May 10 2007.
21. Jyoce, Bruce and Weil Marsha .Synetics Involving creative thought (Boston Massachusetts: Allan Bacon Publishers, 1996)
22. Tassoul, M (2006) Creative Facilitation: A Delft Approach. VSSD
23. https://www.free_esl.com

First Year Bachelor of Architecture

Semester -1

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SW/STW	Total	
AR10100007S	Model Making Workshop (Basic)	0	4	20	20	0	0	60	100	2

Course Objective

To familiarise students with different types of materials and manufacturing techniques for creating art forms/ models.

To introduce use different kinds of tools and machinery for production of design models.

To act as an interface between Basic design-1, Building Construction and Materials-1 and Architectural Design Studio-1

Course Outcome

To become aware about the usage of various materials for production of art work.

To apply different mediums and machine tools for production various types of art work.

To create art forms with different mediums.

Course Content

Module -1

Introduction to various materials for model making

Materials like paper, thermocol, clay, ceramic, plastic sheet, sheet metal, wood etc

Module -2

Selection of material for model making

Understanding the Applicability of Scale and Proportion through models

Module -3

Implementing the geometric shapes

Implementing the solid shapes

Module – 4

Introduction to various tools for model making

Application of tools, suitability and safety precautions

Studio Exercises

Models to be created for Basic design-1, Building Construction and Materials-1, History of Architecture-1 and Architectural Design Studio-1

Mode of Examination

No Theory paper

Sessional Work with Assessment.

Reference Books

1. John Taylor, Model Building for Architects and Engineers.

2. Rolf Janke, Architectural Models. Sandeep Singh, Beginning Google Sketch up.

First Year Bachelor of Architecture

Semester -1

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE- Paper	ESE- SW/STW	Total	
AR10100008S	Elective (Any -1) Personality Development	0	4	20	20	0	0	60	100	2

Course Objective

To create awareness about effective personality and imbibe in the student the need for professional self-presentation

To imbibe the values of responsible professional

To instil the importance of body language, sharing of thoughts and communication

Course Outcome

Gain confidence in making public presentations.

To analyse and express individual opinions and views.

To present oneself professionally in the industry.

To express ideas and views through oral and written mediums.

To initiate thinking process.

Identifies the important aspects on verbal communication.

Compares differences in intents within communication.

Interprets the verbal and non-verbal communications.

Able to revise judgments and change behaviour in light of new evidence.

Course Content

Module -1

English- as a medium of expression.

Essay writing, Articles to be written in English on current topics

Module -2

Body Language - as a mode of communication

Study of Body language, facial expression, inferences from body language.

Module -3

Public Speaking/Debate - as a mode of promotion of ideas

Public speaking / debate to be conducted on current issues. Each student to speak in public so as to gain confidence in speaking as well as to loose stage fright.

Module – 4

Group discussion- as a mode of exchange of ideas

Group discussion sessions to be organised in group of 5 students. Any suitable topic to be discussed. Preferably the group should be heterogeneous consisting of students and teachers or students from senior classes.

Studio Exercises

Assignments related to above mentioned modules. Minimum 10-15 assignments in the form of essays, articles and workshops

Mode of Examination
No Theory Paper
Sessional Work with Viva
Reference Books
1: Steve Jobs, by Walter Isaacson
2: I can Win, Shiv Khera
3: Alchemist, Paulo Coelho
4: Books on Soft Skills
5: Books on Body Language
6: Autobiographies, Magazines on current issues, English Grammar

First Year Bachelor of Architecture

Semester -1

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE- Paper	ESE- SW/STW	Total	
AR10100008S	Elective (Any -1) Sketching	0	4	20	20	0	0	60	100	2

Course Objective

To develop basic design and expressional skills, visual and perceptual skills, Manual skills of use.

Skills involved in different media and techniques shall be studied for this purpose

To act as an interface between Basic design-1 and Architectural Design Studio-1

Course Outcome

To become aware about the usage of various skills for development of design process.

To use different mediums and techniques for production various types of art work.

Course Content

Module -1

Observation and recording through drawing using. Sketching and Object drawing, drawing from memory.

Observation and recording through drawing using brush, crayons, paint.

Using various paints like Water based, Oil based, etc. Colour theory.

Module -2

Drawing simple geometric objects, complex geometries and objects in nature.

Contour drawing, Outdoor sketching exercises, etc.

Line drawing, shade and shading techniques, using pencil, pen, paint, brush, charcoal, crayons etc.

Module -3

Abstraction of perceived images, conceptual statements using different media, like pen & paper, brush & paint etc.

Module – 4

Perspectives of formal geometric solids and spaces and informal geometries, rendering techniques and use of colour.

Studio Exercises

Assignments related to above mentioned modules. Minimum 20-25 assignments in the form sketches

Mode of Examination

No Theory Paper

Sessional Work with Viva

Reference Books

1: Steve Jobs, by Walter Isaacson

2: I can Win, Shiv Khera

3: Alchemist, Paulo Coelho

4: Books on Soft Skills

5: Books on Body Language

6: Autobiographies, Magazines on current issues, English Grammar

First Year Bachelor of Architecture
Semester -1

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SW/STW	Total	
AR10100008S	Elective (Any -1) Art in Public Spaces	0	4	20	20	0	0	60	100	2

Course Objective

To understand reference and relevance of Art in Public Spaces.

To create awareness about Public spaces and their aesthetics.

Course Outcome

To analyse the Public Space in relation to Art.

Design Public Space.

To use Art as medium of expression in Public Space.

Course Content

Module -1

Evolution , Necessity of art in Public Spaces

Use of Public Space

Module -2

Types of art in public places

Murals, Sculptures, Paintings, Statues etc

Module -3

Usable art in Public Space

Furniture, Water Bodies, Landscape

Module - 4

Concepts of Public Art and aesthetics

City Squares, City Gardens, Water fronts, Large gathering spaces

Studio Exercises

Assignments related to above mentioned modules. Minimum 10-15 assignments in the form of workshops and Case Study.

Mode of Examination

No Theory Paper

Sessional Work with Viva

Reference Books

1: Art, Space and the City, Malcom Miles

2: The uses of Art in Public Space, Edited by Julia Lassau and Quentin Stevens

3: Public Art by the Book, Edited by Barbara Goldstein

4: Urban Interventions- Personal projects in Public Spaces, Edited by Robert Klanten, S.Khmann and M.Hubner

First Year Bachelor of Architecture
Semester -1

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE- Paper	ESE- SW/STW	Total	
AR10100008S	Elective (Any -1) Craft Studies	0	4	20	20	0	0	60	100	2

Course Objective

To enable students to explore the linkages between environment, craft traditions and society through field studies

Course Outcome

To become aware of how craft traditions are influenced by environment and society and vice-versa.

Course Content

Module -1

Identifying a craft process with respect to materials used, stages of process, techniques used to handle materials through various tools

Module -2

The history of a particular craft tradition, its geographical distribution, myths and legends associated with different influences on the craft and patterns of patronage etc. may be discussed.

Module -3

To understand the process of creating craft objects from start to finish and documenting it.

Documenting crafts in their own locality / home / state to enable students to understand the design and function of craft traditions in their daily life.

Module -4

To equip students with the tools to extend craft traditions to wider applications.

Students can develop their creative innovation skills and can choose any development topic to translate theory into practice.

Studio Exercises

Assignments related to above mentioned modules. Minimum 10-15 assignments in the form of workshops and Case Study.

Mode of Examination

No Theory Paper

Sessional Work with Viva

Reference Books

1: Art, Space and the City, Malcom Miles

2: The uses of Art in Public Space, Edited by Julia Lassau and Quentin Stevens

3: Public Art by the Book, Edited by Barbara Goldstein

4: Urban Interventions- Personal projects in Public Spaces, Edited by Robert Klanten, S.Khmann and M.Hubner

First Year Bachelor of Architecture

Semester -2

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE- Paper	ESE- SW/STW	Total	
AR10020001	Architecture Design-II	0	8	30	30	60	60	120	300	4

Course Objective

To introduce the student the fundamentals of architectural design.

To initiate creative thinking and its relationship with activity spaces.

To apply principles of Basic Design and Visual Arts to Architectural Design

To act as an interface between Basic design-1, Workshop-1 and Architectural Design Studio-1

Course Outcome

The application of the architectural design process for small scale projects of human habitat.

To transform the human behavioural needs into architectural program requirements.

To compose the architectural spaces in a design project

To communicate architectural drawings with the help of various mediums

Course Content

Module-1

Design process using various methods like Idea Matrix, Concept Mapping and Pre Design

Module-2

Analysis of User / Client living / behavioural profile

Questionnaire to extract client requirements

Case study

Module -3

Identify user requirements of space

Deriving the requirements of the space

Transform the behavioural requirements into space form

Module -4

Design and Planning of Space

Distribution of the human activity spaces along the context considering the context as visual

Analyse the relationship among the spaces

Verbal presentation on planning of built environment with different mediums

Module-5

Detail design

Application of building materials with colour and texture in detail design

Studio Exercises

Design of Ground +1 Bungalow / Farm house approx 150 sq.m.

Design of Simple activity spaces such as College Canteen, Small Office, Creche/ Day Care Center etc

Mode of Examination

Theory Paper with 4 hour duration.

Sessional Work with Viva.

Reference Books

1. Ching, F.D.K.; Architecture Form, Space and Order, Van Nostrand Reinhold Staff, New York, 1996.
2. Rudofsky, Bernard; Architecture without Architects, University of New Mexico Press, New Mexico
3. Rasmussen, Steen Eiler; Experiencing Architecture, The MIT Press, Cambridge, Massachusetts, 1977.
4. Watson, Donald / Crosbie, Michael J.; Time Savers Standards for Architectural Design, Mc Graw Hill, New York, 2005
5. Chiara, Joseph De / Crosbie, Michael J.; Time Savers Standards for Building Type, McGraw Professional Publishing, New York, 1973.
6. Harris, Charles W. / Dines, Nicholas T.; Time Savers Standards for Landscape Architecture, Mc Graw Hill, USA, 1998
7. Chiara, Joseph De / Panero, Julius / Zelink Martin; Time Savers Standards for Interior design and Space Planning, Mc Graw Hill, New York, 2001
8. Gideon, Siegfried; Space, time & Architecture, Harvard University Press

First Year Bachelor of Architecture

Semester -2

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SW/STW	Total	
AR10020002	Architectural Drawing and Graphics-II (Manual)	0	4	25	25	50	50	100	250	2

Course Objective

Students will be introduced to a variety of tools and techniques for visual expression with emphasis on manual drawing.

To develop essential manual skills such as proficiency in drawing, largely used as primary mode of communication of ideas in architectural design.

Course Outcome

Recognize the need to combine the use of manual drawing tools and techniques for drafting and freehand drawing for architectural design communication.

Apply the projected drawing method of exterior and interior perspective.

Construct one and two point perspective drawings from floor plans and elevations.

Produce by Drawing/sketching 3- Dimensional Architectural drawings using and freehand techniques.

Demonstrate an understanding of furniture, people and accessories in one and two point projected perspective drawing.

Construct conceptual and presentation drawings as a design presentation tool for various purposes.

Course Content

Module -1

3D representation of Solids

Isometric views

Axonometric Views

Oblique Views

Module -2

Basics of Perspective Drawing

Anatomy of perspective: Station point, Eye level, Cone of vision, Picture plane, Horizon line, Ground line, Vanishing points

Types of perspectives : One point, Two point, Three point

Module -3

Perspectives for Building Exteriors

2 point perspectives of building exterior

3 point perspectives of building exterior

Perspectives of Interior space

Preparation of perspectives using Diagonal Method, Grid Method, approximate method

Module – 4

Rendering Techniques for perspectives

Rendering using various mediums such as Pen and Ink, Water colour, Poster Colour, Pencil Colour, Crayons

Module – 5

Basics of Sciography Drawing.

Application of Sciography in 2 dimensional drawings with rendering techniques

Studio Exercises

Suitable exercises on all the Modules mentioned above

Mode of Examination

Theory Paper of 3 hour duration

Sessional Work with Viva

Reference Books

1. Ching Francis D.K.: Architectural Graphics

2. Kelsey W. E.: Geometrical & Building Drawing

3. Leslie Martin: Architectural graphics

4. B. James: Essential of Drafting

5. H. Joseph and Morris: Practical plane and solid geometry

6. Gill Robert: Rendering with pen and ink

7. Burden Ernest: Architectural Delineation.

8. Burden Ernest: Architectural Delineation. Gill, Robert W.; Manual of Rendering with Pen and Ink, Thames and Hudson, London, 1997.

9. JaxThemier, B.W., "How to Paint and Draw", Thames and Hudson, 1985.

First Year Bachelor of Architecture
Semester -2

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE- Paper	ESE- SW/STW	Total	
AR10020003	Building Construction Technology and Materials-II	2	2	25	25	50	50	100	250	3

Course Objective

- To introduce the construction methodology of structures
- To understand various types of structures
- To understand the execution process of each building element

Course Outcome

- To develop understanding about complex foundations and the constructions techniques involved
- Understand various construction materials.
- Recognise various building envelop systems and their application

Course Content

Module -1

- Introduction to materials used in civil construction.
- Concrete, Mortar, Structural Steel, Mild Steel, Glass, Aluminium, PVC, u-PVC
- Properties of materials and Quality tests of materials

Module -2

- Building Envelope
- Cavity Walls
- Precast partition walls
- Internal partition walls in Gypsum

Module -3

- External Wall Section
- Construction details of external brick wall section

Module -4

- Construction of Load Bearing Structure- Foundation and Super structure
- Ground Floor Structure in Load Bearing

Module – 5

- Composite Masonry- Stone, Brick
- External Cladding Materials and their details of Application
- Stone Masonry

Studio Exercises

- Suitable exercises on all the Modules mentioned above

Mode of Examination

Theory Paper of 3 hour duration

Sessional Work with Viva

Reference Books

1. 'Elements of Structure' by Morgan.
2. 'Structure in Architecture' by Salvadori.
3. 'Building Construction' by Mackay W. B., Vol. 1 – 4.
4. 'Building Construction' by Barry, Vol. 1 – 5.
5. 'Construction Technology' by Chudley, Vol. 1 – 6.
6. 'Building construction Illustrated' by Ching Francis D. K.
7. 'Elementary Building Construction' by Michell.
8. 'Structure and Fabric' by Everet
9. 'Engineering Materials' by Chaudhary.
10. 'Building Construction Materials' by M. V. Naik.
11. 'Civil Engineers' Handbook' by Khanna
12. 'Vastu Rachan' by Y. S. Sane.
13. National Building Code and I.S.I. Specifications
14. 'Materials and Finishes' by Everet.
15. 'A to Z Building Materials in Architecture' by Hornbostle.
16. 'Elements of Structure' by Morgan
17. ENGG.MATERIALS – K.S.RANGWALA.
18. ENGG.MATERIALS – B.K.AGARWAL
19. BUILDING.MATERIALS – S.K.DUGGAL.
20. BUILDING CONSTRUCTION –SUSHIL KUMAR.
21. BUILDING CONSTRUCTION –BINDRA ARORA.

First Year Bachelor of Architecture

Semester -2

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE- Paper	ESE- SW/STW	Total	
AR10020004	Environmental Science-II (Focus on Built Form)	2	0	10	10	20	60	0	100	2

Course Objective

To provide fundamental knowledge about natural and built environment.

To introduce the students to fundamental concepts to understand environmental processes

An attempt to have a detailed understanding of India's natural environment and the threats to them

Course Outcome

To make the students aware about the scientific knowledge and current debates on the environment at three nested scales, including their interlink ages – Global, Regional and Local.

To enable the students to understand cause-and-effect relationships between various human, natural and climatic factors that impinges upon ecological systems and their linkages.

To familiarize students with global & national environmental issues, the scale of impacts, important conventions, laws and policies in the field of biodiversity, and environmental protection.

To integrate with higher level studios that have complex briefs, including environmental and ecological concerns.

Course Content

Module -1

Fundamentals of Environment & Ecology

Environment definition, Environmental Segments, Concepts of Ecosystem: Fundamentals of Ecology and Ecosystem, Components of ecosystem, definition of Ecology, ecosystem processes in a site, Organisms and the Environment, Habitat and Niche, Environmental Factors, Ecological Adaptations, Population, Biotic Community and Succession

Introduction, types, characteristic features, structure and function of different ecosystems: Forest, Grassland, Desert and Aquatic ecosystem

Effects of human activities on environment: Agriculture, Housing, Industry, Mining and Transportation activities

Cite the known threats to India's & the World's Biological Diversity

Module -2

India's Bio-geographic regions

List India's Biological Diversity in relation to the physio-geographic regions

Identification of Principal Bio-geographic Zones of India and their description

List of Eco-regions of India –Floristic and Physiographic (eg. IMI0301 etc.)

Distinguish Between Floristic differences in an eco-region say Narmada Valley Dry Deciduous Forest, say Topical Moist Deciduous Forest (Pachmarhi)

Evaluate the importance of biological diversity to all Life – Interconnections between Biological diversity and Human life – sustenance

Module – 3

Environmental Degradation and Human Impacts

Analyse Global Climate Change & impacts – with respect to your rural/urban community (Increased risk/

vulnerabilities)

Analyse the impacts of environmental degradation on traditional communities by abstracting from published reports. Write an essay on the theme

Module – 4

Applications of Ecological Methods and Techniques in Architecture

Develop a Site Plan for Wildlife, Landscape and environmental conservation

Develop a Master Plan for Wildlife, Landscape and environmental conservation

Module – 5

Techniques and Details

Rain water harvesting (contour bunds, wells, bunds, etc.)

Techniques of waste water management (house level, bio swales etc.)

Ecological planting (planting for wildlife, land improvement etc.)

Module – 6

Environmental Movements

Environment movements in world and in India (Chipko movement etc)

Environmental activists and their contribution (water conservation movements)

Studio Exercises

Suitable exercises on all the Modules mentioned above

Suitable Case studies to be conducted

Illustrated Lectures, Texts, Case Studies and examples

Mode of Examination

Theory Paper of 3 hour duration

Sessional Work with Assessment

Reference Books

1: Rio Declaration on Environment and Development

2: Environmental Impact Assessment – A guide to best professional practices, Charles H.Eccleston

3: Hand book of Environmental Impact Assessment, Judith Petts

4: Illustrated Lectures, Films, and Introduction of Texts on Environmental Science and Human Ecology

First Year Bachelor of Architecture

Semester -2

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SW/STW	Total	
AR10020005	History of Architecture-II	2	0	10	10	20	60	0	100	2

Course Objective

To provide analytical tool to students to overview the historical evolution of designing and construction technique.

To understand the expanse of styles spread across the time period from 0 C.E.to 1300 C.E. in India, East Asia, West Asia, Europe, Africa & America.

Course Outcome

Identify different styles of historic architecture.

Identify prominent / important historic buildings by their components / style of design.

Describe prominent / important historic buildings

Analyse the contributing factors for the design development of different styles

Compare and Contrast various styles on the basis of the contributing factors responsible for their development

Design buildings in the historic architectural styles.

Course Content

Module -1

India

Brahminical resurgence

Buddhist monuments

Cave architecture

Architecture of Gupta period

Chalukya Period

Pallava period

Chola and Pandyas development of temple styles

Shankaracharya in South

Module -2

Islamic invasions in North

Nagara temple style developed

Slave dynasty founded

Era of saints Dnyaneshwar, Tukaram

Independent Muslim states founded

Module -3

West Asia

Trade between India, Asia, Europe

Zoroastrianism in Iran

Buddhism in Afghanistan

Sassanid rule in Persia

Spread of Islam, Caliphates, Arab renaissance

Mongol invasion, Destruction of Baghdad by Genghis Khan, Mongols rule over West Asia, Ottoman rule starts.

Module – 4

East Asia

Invention of Paper, First writings

Buddhism in China, Srilanka , Japan

Buddhist influence in Chinese art & arch.

Nara civilization in Japan

Angkor Wat in Cambodia

Planned city of Peking capital of Ming dynasty.

Module – 5

EUROPE – Christianity spreads in Rome

Fall of Roman Empire

Dark Ages begin, Crusades.

Rise of monasteries,

Moorish rule in Spain, The Alhambra

Module – 6

Romanesque architecture

Early Christian & Romanesque Architecture

Introduction to society and culture of 400 -1150 AD in Europe

Early Christian Architecture

Development of Early Christian Church from Roman Basilica

Salient building – St. Peter's Basilica

Romanesque Architecture

Development of Romanesque architecture from Early Christian architecture

Module -7

Gothic Architecture

Introduction to society and culture of 1150 – 1350 AD in Europe

Development of Gothic church and its new elements

Pointed Arch window

Different arch types – lancet, equilateral, depressed

Trefoil arch

Cluster column and intersecting vault roof

Clerestory window and triforium

Flying buttress

Glazed window, stone and metal trellis, flamboyant window, rose window

Entrance of church

Salient features of important buildings

Cathedrals of St. Dennis

Cathedrals of Chartres

Cathedrals of Notre Dame (Paris)

Cathedrals of Reims

Module -8

Africa:

Kingdom of Ghana, Rapid spread of Islam

America : Mayan cities, Peak of Mayan empire, Peak of Chimu empire, Inca rule begins, Beginning of Aztec rule

Mode of Examination

Theory Paper of 3 hour duration

Sessional Work with Assessment

Reference Books

History Of Architecture by Sir Bannister Fletcher

The Story Of Architecture by Patrick Nuttgens

Space, Time And Architecture by Siegfried Gideon

Architecture Of Mughal India by Catherine Asher

Indian Architecture (Buddhist Hindu) Vol. 1 by P. Brown

Indian Architecture (Islamic Period) Vol. II by Percy Brown

A History Of Indian And Eastern Architecture by J. A. Fergusson

The Architecture Of India, Buddhist & Hindu by S. Grover

The Architecture Of India (Islamic) by S. Grover

Islamic Architecture, Form, Function and Meaning by Robert Hillenbrand

The Hindu Temple by George Michell,

Architecture Of the Islamic World by George Michell

Architecture Of World , India by Henry Sterlin

Architecture Of World, India (Islamic) by Henry Sterlin

The History Of Architecture In India by Christopher Tadgell

The tradition Of Indian Architecture Continuity, Controversy – Change since 1850 by G.H.R.Tillotson

First Year Bachelor of Architecture

Semester -2

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE- Paper	ESE- SW/STW	Total	
AR10020006	Theory of structures 1	2	0	10	10	20	60	0	100	2

Course Objective

To Introduce Applied Mechanics as an important Subject for Architecture.

The course would enable students to understand various principles of strength of materials especially in the case of beams, columns and trusses

To Understand Different Systems of Forces and their Equilibrium and that a Building is a System of Forces in Equilibrium.

To Introduce and Understand Concepts of Support, Support Reactions, Beams, Loads, Bending and Shear.

Course Outcome

Understand basis applied mechanics.

To calculate Shear Force and Bending Moment in structural members.

Course Content

Module -1

Forces

Applied Mechanics, Statics and Dynamics. Importance of Study.

Forces, Definition, Effects, Different Systems, Principle of Transmissibility and Superimposition of Forces. Resolution and Composition of Forces.

Equilibrium of Concurrent Forces. Parallelogram, Polygonal & Triangular Law of Forces Lami's Theorem. Analytical and Graphical Solution of Forces. Resultant and Equilibrant of a System of Concurrent Forces

Equilibrium of Non Concurrent Forces. Varignon's Principle. Resultant of a system of noncurrent forces as in a beam.

Module -2

Centre of Gravity

Definition of Centre of Gravity and Centroid. C.G of Regular Shapes. Computing of C.G of complex Shapes limited to Standard Steel Sections like C, T, L, I and Compound Sections

Module -3

Moment of Inertia

Definition of Moment of Inertia and M.I of Standard Shapes. Parallel Axis Theorem, Perpendicular Axis Theorem, Radius of Gyration. Computing M.I of Complex Shapes Limited to C,T,L,I and Compound Sections using these Shapes

Supports and Loads

Supports, Definition, Reactions offered by Simple, Fixed, Hinged and Roller Support.

Statically Indeterminate and Determinate Structures and Degree of Indeterminacy. Beams classified as Simply Supported, Cantilever, Over Hanging, Propped Cantilever, Fixed and Continuous.

Loads Classified as U.D.L, Point Load & Varying Load.

Loads Classified as Dead, Live, Wind, Snow, Seismic. Introduction to Densities of Material and Calculation of Dead loads on a Beam from slab, Brick work above to act as U.D.L and from a abutting beam as a Point Load

Support Reactions. For Simply Supported Beams and Cantilevered Beams only. Loading limited to Point Loads and U.D.L only

Module – 4

Shear Force and Bending Moment

Shear Force and S.F.Diagram & B.M.D and B.M.Diagram for :: Simple Support with an U.D.L., Simple Support with a Central Point Load, Simple Support with an eccentric point Load, Cantilever with a full U.D.L, Cantilever with a Point Load.

S.F.D and B.M.D of a Simple Supported Beam and Over Hanging Beams with U.D.L and Point Loads. Point of Zero Shear, Point Of Max S.F and B.M max. Point of Contra flexure

Relationship between S.F.D and B.M.D

Studio Exercises

Suitable exercises on all the Modules mentioned above

Mode of Examination

Theory Paper with 3 hour duration.

Reference Books

1. Engineering mechanics by A. K. Tayal
2. Mechanics of structure Vol. I By Junnarkar.
3. Design of steel structures-Vazirani – Rathwani.
4. Design of steel structures- L.S. Negi.
5. R.C.C. Design – Khurmi, Punmia, Sushilkumar.
6. Elements of Structures – Morgan.
7. Structure in Architecture – Salvadon and Heller.
8. Structure Decisions – F. Rosenthal
9. Strength of Materials by Amol Dongre.
- 10.Engineering Mechanics – RK Bansal and Sanjay Bansal , Laxmi publications, New Delhi.
- 11.Engineering Mechanics - F.L. Singer, Harper Collins publications.
12. Khurmi, R.S.; Strength of Materials, S. Chand & Company, New Delhi, 2001.
- 13.Ramamrutham, S.; Strength of Materials, Dhanpat Rai Publication, New Delhi, 1998

First Year Bachelor of Architecture
Semester -2

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE- Paper	ESE- SW/STW	Total	
AR10020007S	Model Making Workshop (Basic)	0	4	20	20	0	0	60	100	2

Course Objective

To familiarise students with different types of materials for civil works

To introduce use different kinds of tools and machinery civil works

To act as an interface between Basic Design and Visual Arts-1, Building Construction and Materials-1 and Architectural Design Studio-1

Course Outcome

Use tools and equipment for civil works.

To recognize the actual construction process of civil works.

Course Content

Module -1

Creating scale models for Basic Design using suitable material

Module -2

Creating Building elements using actual materials for construction

Students to construct scale models of construction of Building elements

Module -3

Understanding the tools used in construction industry.

Understanding application of the construction methodology

Module – 4

Analysis of Art work from history of Architecture using models

Studio Exercises

Models to be created for Basic design-2, Building Construction and Materials-2, History of Architecture-2 and Architectural Design Studio-2

Module -3 to be done in group of 5 students under the guidance of subject teacher

Mode of Examination

Sessional Work with assessment

Reference Books

All books for Basic Design, Building Construction and Materials, History of Architecture and Architectural Design Studio.

First Year Bachelor of Architecture
Semester -2

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE- Paper	ESE- SW/STW	Total	
AR10020008S	Elective (Any 1) Cultural Influences on Architecture design	0	4	20	20	0	0	60	100	2

Course Objective

- To appraise about architecture and its relationship to its historical, political, social, economic, technological contexts
- To Interpret the aesthetics related to more general systems of ordering within a particular society or group
- To recognize architecture to be approached as a cultural practice.
- To gain understanding of society, culture and civilization

Course Outcome

- To recognize importance of architecture and design through time and across cultures.
- To comprehend what have been the major issues in the development of architectural design in socio- cultural context.
- To appraise about architecture and its relationship to its historical, political, social, economic, technological contexts.
- To Interpret the aesthetics related to more general systems of ordering within a particular society or group

Course Content

Module -1

- Culture
- Introduction to Sociology and its relationship to architecture
- Different theories about culture and social identity with reference to architecture
- Socio-economic systems, Political systems
- Forms of social organization

Module -2

- Architectural Traditions
- Cosmological models and architectural form
- Articulation of people and built environments

Module -3

- Classical architecture
- Vernacular architecture

Module – 4

- Society and Civilisation
- Socio-economic its relationship to architecture
- Political systems and its relationship to architecture
- Social and cultural aspects of building practices

Studio Exercises

- Suitable exercises on all the Modules mentioned above

Mode of Examination

- No Theory Paper

Sessional Work with Viva
Reference Books
Conformity and Conflict: Readings in Cultural Anthropology by McCurdy, David W., Dianna Shandy, and James Spradley, eds.
Case examples of research on cultural anthropology
House, Form and Culture by Amos Rapoport
Case studies of various examples from India
Case studies of various examples on social and cultural issues relating to architectural history in India and world.
Architecture in Cultural Change: Essays in Built Form and Culture Research by David G. (ed). Saile (Author)

First Year Bachelor of Architecture
Semester -2

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SW/STW	Total	
AR10020008S	Elective (Any 1) Architecture Drawing & Graphics (Digital)	0	4	20	20	0	0	60	100	2

Course Objective

To study Architectural drawing and graphics with computer as a tool

To understand use of computers as tool for drawing

To understand architectural drawing in relation to use of software.

To understand presentation techniques using software

Focus on 2D Drawing

Course Outcome

Develop understanding of computer aided drafting.

Comprehends computer aided drafting and its parameter as tools and its application in architecture.

Evaluates CAD techniques for quicker methods and presentation skills.

Demonstrate the concepts of CAD drafting methods and techniques in 2D.

Course Content

Module-1

Basics of Computers

Introduction to use of computers in architecture

Computer operating systems.

Module -2

Computer aided drafting

Introduction and use of Computer aided drafting (CAD)

Use of CAD Base software's such as AutoCAD and similar software's

Module -3

2D Drawing using CAD software's

Orthographic projections, Development of surfaces, Solids as covered in ADG-1

Module-4

Drafting and Printing

Model space , Paper space, Parametric

Blocks, Attributes, Templates

Printing to the scale

Studio Exercises

Similar exercises from ADG-1 to be done using CAD software

Mode of Examination

Theory paper of 3 hour duration

Sessional work with Viva

Reference Books

1.Fundamentals Of Three-Dimensional Computer Graphics by Watt

2.Computer Aided Design guide For Architecture, Engineering And Construction by Aouad

3.Latest versions of AutoCAD

4. Architectural drawing: a visual compendium of types and methods; Rendow Yee; John Wiley and Sons, 2007

5. Architectural Graphics; Francis D. Ching; John Wiley and Sons, 2009

First Year Bachelor of Architecture
Semester -2

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SW/STW	Total	
AR10020008S	Elective (Any 1) Photography	0	4	20	20	0	0	60	100	2

Course Objective

To understand photography as a medium of expression

To understand photography in relation to architecture

Course Outcome

Use of Photography with architectural projects.

Using photography as a tool of expression.

Create photographic effects.

Use of Photography with architectural projects.

Use various modes of photography such as Still photography and Motion photography.

Documentation in digital format.

Course Content

Module -1

History of photography

Module -2

Different types of Cameras and lenses. Optical materials, Plastic/glass, lens coating, Types of lenses Normal / Standard, Wide angle, Fish Eye lenses, Zoom, Micro Lenses, Macro Lenses, Faults in lenses, aberrations, resolution, Flare and Ghost image.

Module -3

Art of photography and great photographers of the world

Module – 4

Effects

Effect of lighting, Effect of filters in Photographs

Lighting for form and shape, Lighting for texture, Lighting for Still Life, Lighting for a product, High Key lighting, Low Key Lighting, Night Photography.

Module – 5

Digital photography-Still and Motion

Module – 6

Film based photography

Module – 7

Editing and Mixing of visuals

Module – 8

Documenting architectural work through photography

Studio Exercises

Assignments related to above mentioned modules. Minimum 10-15 assignments.

Mode of Examination

No Theory Paper

Sessional Work with Viva

Reference Books

1: The 35mm Handbook-Michael Freeman

2: Focal encyclopaedia of Photography, Focal press

3: Basic Photography, M.J.Langford, Focal press

4: Advanced Photography (Vol-1 and Vol -2), M.J.Langford, Focal press

5: Creative Colour Photography Techniques- Marshall Cavendish

6: Digital Photography in Available Light- Essential Skills, Mark Galer, Focal Press

7: The Art of Digital Photography, John Hedgecoe, DK Ltd, UK

8: Mastering Digital SLR Photography, David D.Bush, Thomson

9: Understanding Exposure, Bryan Peterson, Amphoto Books

10: Learning to see creatively, Bryan Peterson, Amphoto Books

11: The Art of Photography : An approach to Personal Expression, Rocky Nook

12: The Photographer's Eye, Michael Freeman, Focal Press

13: Architectural Photography, Adrian Schulz, Rocky Nook

14: The Beginners Photography Guide, DK

First Year Bachelor of Architecture
Semester -2

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE- Paper	ESE- SW/STW	Total	
AR10020008S	Elective (Any 1) Art in Landscape & Architecture	0	4	20	20	0	0	60	100	2

Course Objective

To understand reference and relevance of Art in Architecture and Landscape

To create awareness about Art form that can be used in Architecture and Landscape

Course Outcome

Relate Art, Architecture and Landscape.

Use various art forms in architecture and landscape.

Course Content

Module -1

Role of Art in Architecture and Landscape

Module -2

Symbiotic relationship of art ,architecture and Landscape

Identify, evaluate the relationship

Module -3

Application of different art forms in architecture and Landscape

Use of Murals, Sculptures, Paintings, Statues etc.

Module – 4

Works of different artists and architects that reflect the inter relationship.

Study of various landmark structures with reference to us of Art work

Studio Exercises

Assignments related to above mentioned modules. Minimum 10-15 assignments in the form of workshops and Case Study.

Mode of Examination

No Theory Paper

Sessional Work with Viva

Reference Books

Literature available on above modules

BACHELOR OF ARCHITECTURE

SECOND YEAR

SYLLABUS 2017

Second Year Bachelor of Architecture**Semester -3**

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE- Paper	ESE- SW/STW	Total	
AR20030001	Architecture Design-III	2	6	30	30	60	60	120	300	5

Course Objective

To study design in continuation with the previous semesters.

To understand architectural and aesthetics in relation with architectural and functional aspects.

To understand Bye laws in strict application.

To understand site features and incorporate those in design.

Course Outcome

To design complex architectural spaces.

To conduct Site analysis.

To formulate design proposal.

Course Content**Module -1**

Introduction to Design Thinking and its implementation in design

Requirement Matrix

Module -2

Context and Physical Environment

The study of the context and elements of built and un- built spaces in an observable setting to develop the understanding of socio-cultural attributes of the physical environment, methods of construction emerging out of the way of life of the people in a given place including topographical and climatic survey.

Climate responsive techniques

To apply climate responsive techniques.

Module -3

Site analysis w.r.t to surroundings; zoning and activity distribution;

Circulation and activity relationships

Achieving performance integrity through functional adjacencies

Elementary services of water and drainage

Module -4

Materials

Innovative use of traditional materials available locally such as timber, bamboo, stone, brick

Studio Exercises

Design of 1 no Major and 1 no Minor Project

Such as Primary School, Health Care Centre, Vegetable market or similar as per the choice of the Institute

Mode of Examination

Theory Paper of 6 hour duration – Time Problem

Sessional Work with Viva

Reference Books

1. Ching, F.D.K.; Architecture Form, Space and Order, Van Nostrand Reinhold Staff, New York, 1996
2. Rudofsky, Bernard; Architecture without Architects, University of New Mexico Press, New Mexico.
3. Rasmussen, Steen Eiler; Experiencing Architecture, The MIT Press, Cambridge,Massachusetts, 1977
4. Watson, Donald / Crosbie,Michael J.; Time Savers Standards for Architectural Design,Mc Graw Hill, New York, 2005.
5. Chiara, Joseph De / Crosbie, Michael J.; Time Savers Standards for Building Type, Mc Graw Professional Publishing, New York, 1973
6. Harris, Charles W. / Dines, Nicholas T.; Time Savers Standards for Landscape Architecture, Mc Graw Hill, USA, 1998.
7. Chiara, Joseph De / Panero, Julius / Zelink Martin; Time Savers Standards for Interior Design and Space Planning, Mc Graw Hill, New York, 2001.
8. Gideon, Siegfried; Space, Time & Architecture, Harvard University Press

Second Year Bachelor of Architecture**Semester -3**

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SW/STW	Total	
AR20030002	Computer Applications in Architecture -I	0	2	20	20	0	0	60	100	1

Course Objective

To study Architectural drawing and graphics in continuation with the previous semesters.

To understand use of computers for reports, presentations and spread sheets etc.

To understand architectural drawing in relation to use of software.

To understand presentation techniques using software.

Focus on 2D Drawings.

Course Outcome

Develop understanding of computer for creating reports, presentation techniques and organization of data in tabular form.

Comprehends computer aided drafting and its parameter as tools and its application in architecture.

Evaluates CAD techniques for quicker methods and presentation skills.

Demonstrate the concepts of CAD drafting methods and techniques in 2D.

Course Content**Module-1**

Basics of Computers

Introduction to use of computers in architecture

Computer operating systems.

Module -2

Application of Microsoft Office in architectural education.

Introduction to create reports, analysis and storage of data in a spreadsheet and different presentation techniques for presentation using computers.

Module -3

Computer aided drafting

Introduction and use of Computer aided drafting (CAD)

Use of CAD Base software's such as AutoCAD and similar software's

Module-4

Drafting and Printing

Model space , Paper space, Parametric

Blocks, Attributes, Templates

Printing to the scale

Studio Exercises

Similar exercises from ADG-1 to be done using CAD software

Mode of Examination

No Theory paper

Sessional work with Viva

Reference Books

1.Fundamentals Of Three-Dimensional Computer Graphics by Watt

2.Computer Aided Design guide For Architecture, Engineering And Construction by Aouad

3.Latest versions of AutoCAD

4. Architectural drawing: a visual compendium of types and methods; Rendow Yee; John Wiley and Sons, 2007

5. Architectural Graphics; Francis D. Ching; John Wiley and Sons, 2009

Second Year Bachelor of Architecture

Semester -3

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SW/STW	Total	
AR20030003	Building Construction Technology and Materials-III	2	4	30	30	60	60	120	300	4

Course Objective

To introduce the construction methodology of Timber structures

To understand the execution process of each building element using Timber as primary material

To understand construction materials used for protection of building such as waterproofing, paints, plaster.

Course Outcome

Understand construction using timber as a material

Course Content

Module -1

Introduction to materials used in civil construction.

Timber

Structure and timber trees, varieties of timber, defects in timber, decay of timber, Qualities of timber for construction, seasoning, storage and preservation of timber, properties and strength of manufactured products, veneers, plywood, block boards, fibreboard, etc.

Clay Products

Flooring and roofing tiles, their properties, manufacturing process, laying of tiles, etc.. Clay products like terra-cotta, earthenware, stoneware, porcelain, mud – its stabilization and uses, etc.

Waterproofing

Water proofing materials and systems for basement

Importance, stages, methods and techniques of waterproofing,

Chemicals in Construction (Admixtures, Sealants)

Paints and Surface finishes

Composition, properties and methods of application of different types of paints: Oil, synthetic enamels, acrylic and other plastic emulsions and formulations, interior and exterior grade paints. Natural and synthetic clear varnishes, French polish. Cement based paints

Plaster- Internal Plaster and External Plaster

Properties of above mentioned materials and Quality tests of materials

Module -2

Timber Construction

Joinery Details

Different types of joints in timber and their applications to understand the function of joints with respect to load condition. (Lengthening and widening joints, Lap joints, tongue and grooved joints, mortise and tenoned joints, Haunched tenon and mortise joints, dove tail joints, oblique tenon joints, etc.)

Module -3

Timber Construction

Timber Floors

Timber Staircase- Dog legged Staircase

Timber Roof

Timber Partitions

Temporary Structures work sheds, construction of compound fences, gates, grills in wood, steel etc.

Module – 4

Doors and Windows

Classification of doors; (a) panelled doors. (b) ledged and battened doors, (c) ledged, braced and battened doors, (d) framed, ledged, braced, and battened doors (e) flush doors

Timber windows; Casement window and its details

Studio Exercises

Suitable exercises on all the Modules mentioned above

Each module should include market surveys and construction site visits compulsorily.

Mode of Examination

Theory Paper of 3 hour duration

Sessional work with Viva

Reference Books

1. 'Elements of Structure' by Morgan.
2. 'Structure in Architecture' by Salvadori.
3. 'Building Construction' by Mackay W. B., Vol. 1 – 4.
4. 'Building Construction' by Barry, Vol. 1 – 5.
5. 'Construction Technology' by Chudley, Vol. 1 – 6.
6. 'Building construction Illustrated' by Ching Francis D. K.
7. 'Elementary Building Construction' by Michell.
8. 'Structure and Fabric' by Everet
9. 'Engineering Materials' by Chaudhary.
10. 'Building Construction Materials' by M. V. Naik.
11. 'Civil Engineers' Handbook' by Khanna
12. 'Vastu Rachan' by Y. S. Sane.
13. National Building Code and I.S.I. Specifications
14. 'Materials and Finishes' by Everet.
15. 'A to Z Building Materials in Architecture' by Hornbostle.
16. 'Elements of Structure' by Morgan
17. ENGG.MATERIALS – K.S.RANGWALA.
18. ENGG.MATERIALS – B.K.AGARWAL
19. BUILDING.MATERIALS – S.K.DUGGAL.
20. BUILDING CONSTRUCTION –SUSHIL KUMAR.
21. BUILDING CONSTRUCTION –BINDRA ARORA.
22. Allen, Edward., Fundamentals of Building Construction : Materials and Methods, John Wiley & Sons, New York, 1999.
23. Punamia B.C., Building Construction, Laxmi Publications (P) Ltd, New Delhi, 1993.
24. Published material from HUDCO, CBRI (Roorkee), Development Alternatives, etc

Second Year Bachelor of Architecture
Semester -3

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SW/STW	Total	
AR20030004	Building Services - I (Water Supply & Sanitation)	1	2	10	10	20	60	0	100	2

Course Objective

To give architects an overview and introduction to Plumbing systems; and architectural considerations and their coordination with other services and architectural designs.

To introduce students to following Building Services in low, medium and high rise buildings and inculcate in them the integration of services in architectural design.

Course Outcome

Discuss the active and passive components of plumbing

Value the importance of building services

Develop understanding of water supply system at city levels

Design of water-sewer system in buildings (except hydraulics design calculation parts)

Course Content

Module -1

Importance of Building Services

Importance of water supply and sewerage.

Historical overview of development of water/ sewerage systems

Module -2

Water Supply for Urban Area, Sources of water

Quality of water, impurities in water and its treatment.

Water demand calculations; norms and standards.

Water storage, overhead tank, and sump.

Water distribution system at city/ neighbourhood overview.

Water treatment plant

Types of water distribution networks

Water pipe materials, apparatus, joints, fixtures and valves.

Guidelines for laying of water mains, distribution.

Various control valves

Module – 3

Domestic Water Supply

Principles of water supply in domestic buildings

Water supply in low-rise and multi-storeyed buildings.

Pipe materials, fixtures, joints, equipment's

Roof top water drainage

Module – 4

Taps, faucets and other fittings

Bib taps (ordinary, Screw down , half turn , quarter turn using ceramic disks) variations such as pillar taps , angle valves , shower roses etc.

Mixing units for wash-hand basins, kitchen sinks, shower units, baths etc. (Both of valve and diverter type and single lever type)

Flushing cisterns and flush valves.

Module – 5

Hot Water Supply System, Hot-cold water supply network and connections.

Systems of hot water supply using conventional and non-conventional energy sources.

Circulation systems i.e. ring system, up feed systems, drop system etc.]

Insulation of piping and safety devices.

Module – 6

Domestic Sewage System

Principles of domestic sewer systems norms and standards.

Types of pipe systems.

Types of traps, use and water seal.

Domestic sewer conveyance network.

Components of sewer conveyance network.

Basic terminology, Gully trap, inspection chamber, intercepting trap, man holes etc.

Calculation for Gradient and slope in sewage disposal.

Various sanitary fixtures and its connections.

Sewage disposal to septic tank, cess pool, soak pit.

Connection of house drainage to public sewer.

Module – 7

Rain Water and Storm Water Disposal System

Techniques to divide surface area for rain water disposal

Details of collection point/ Khurra

Conveyance network for waste / rain water.

Apparatus for conveyance of water, catch basin, gully traps, calculation for gradient/ slopes.

Studio Exercises

Suitable exercises on all the Modules mentioned above

Suitable Case studies to be conducted

Design of Domestic Water Supply and Sewage Network

Applications of knowledge water supply and sewage design

Preparation of drawings excluding hydraulic design

Mode of Examination

Theory Paper of 3 hour duration

Sessional Work with assessment

Reference Books

Plumbing Engineering by Dr. Subhash Patil

International Plumbing Code by Indian Code Council

Building Construction Illustrated by Dr. F.D.K Ching

Building Construction by Sushil Kumar

Building Construction by B.C Punmia

Building Construction by Rangwala

Second Year Bachelor of Architecture

Semester -3

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SW/STW	Total	
AR20030005	History of Architecture-III	1	2	10	10	20	60	0	100	2

Course Objective

To provide analytical tool to students to overview the historical evolution of designing and construction technique

Architectural developments from 1300 CE to 1800 CE, in India, East Asia, West Asia, Europe & America. Development of architecture and structural systems based on knowledge of materials and technology developed from 1300 CE to 1800 CE contextual to the social and cultural history of the place.

Course Outcome

Identify different styles of historic architecture.

Identify prominent / important historic buildings by their components / style of design

Describe prominent / important historic buildings

Analyse the contributing factors for the design development of different styles

Compare and Contrast various styles on the basis of the contributing factors responsible for their development

Design buildings in the historic architectural styles.

Course Content- 1300 CE to 1800 CE

Module -1

Deccan Sultanates - 1250-1526

The Tughlak Dynasty (1320 - 1414) - Tughlaqabad Fort , Hauz Khas, Tomb of Gias-ud-din Tughlaq.

The Sayyad Dynasty (1414 - 1450) - Tomb of Mubarak Shah.

The Lodhi Dynasty (1451 - 1526) - Tomb of Sikander Lodi, Gumbads

Provincial style – Deccan – Gulbarga (1347 to 1422) Jami Masjid at Gulbarga Half Gumbaz, Bidar 1422 to 1512 – Bidar fort, Tomb of Muhmad Gawan

Bijapur – 16th & 17th Century - Gol Gumbaz, Imbrahim Rouza, Golkonda 1512 to 1687 - Char Minar, Golkonda fort, Tomb of Sultan Muhammad, Khandesh - 15th & 16th Century – Jami Masjid at Burhanpur. Bibi ki Masjid.

Provincial style : Gujarat - Jami Masjid at Ahmedabad, Teen Darwaza, Sarkhej Rouza Bai Hari Wav, Sidi Sayyid Masjid, Jami Masjid at Champaner

Provincial style – Jaunpur – Atala Masjid, Jami Masjid & Bengal – Dakhil Darwaza

Module -2

West Asia - Ottoman Empire - 1281-1923

Introduction to society and culture of Ottoman Empire from 1281 CE to 1923 in West Asia

Development of Islamic Architecture and its new elements

Topkapi palace, Suleymaniye Complex, Hammam, Water cistern, Sinan's Tomb, Sehzade Mosque, Grand Bazar, Mihrimah Mosque

Module -3

Provincial style : Gulbarga – Jami Masjid, Haft Gumbaz

Provincial style – Malwa region - Jami Masjid Mandu ,Tomb of Hoshang Shah, Hindola Mahal, Jahaz Mahal, Roopmati Palace, Baz Bahadur Palace.

Mughal Dynasty : 1526-1858 : Humayun's Tomb, Fatehpur Sikri, Taj Mahal, Jami Masjid at Delhi, Shahjahanabad
 Hill Forts - Maratha Forts : Shivaji Empire – Rajgad fort, Raigad fort/ Rajput fort : Chittorgarh fort/ Gwalior fort.
 Land Forts - Agra Fort, Delhi Fort, Lahore Fort
 Sea Forts - Vijaydurg Fort, Sindhudurg fort.

Module – 4

Basic Introduction to Renaissance Architecture and its Classical Revivalism, Neo-Classicism
 Introduction to society and culture of 1400 -1800 CE
 Division of Renaissance architecture into Early, Mature and Late periods
 Contribution in structural system, e.g., ribbed dome, lantern dome

Module – 5

Revival of classical orders and principles – Neo-Classicism
 Italian Renaissance - Pazzi Chapel, Tempietto, St Peter's Basilica, Medici palace, Florence, Italy, Versailles
 English Renaissance - Elizabethan England – Hardwick Hall, St Paul's Cathedral
 Baroque style – St. Petersburg, Russia, Rococo Style.

Module – 6

East Asia - Ming Dynasty – China(1368-1644) - The Forbidden city (1420-1908)
 West Asia – Architectural Developments in Samarkand - Bibi Khanum Friday Mosque, Ulugh Beg Madrasa & Isfahan – Masjid-i-Shah Mosque, Main square.

Module -7

Americas – Tenochtitlan Incas - Macchu Pichu
 India - Vijayanagara style, Meenakshi Sunderesvara Temple 1623-59
 1. Vijaynagar style (1350 -1565 CE) – Hampi 2. Late Pandya style or Madura style (1565 – 1600 CE)

Module -8

Colonial Architecture
 Colonial architecture, Indo Saracenic architecture, Indo gothic, French, Dutch and Portuguese architecture in India
 Architectural Treaties and Writings
 Architectural features
 Prominent Sites, French colony Pondicherry, The Basilica of Bom Jesus (Good Jesus), Goa Portuguese, Old Amritsar : Golden Temple (1764 & after), Chhatrapati Shivaji terminus
 British Colonial Architecture – Fort Mumbai, Sion Fort, Sewri Fort, Fort George Chennai – 1639, Fort William – Calcutta, 1696.

Studio Exercises

Suitable exercises on all the Modules mentioned above

Mode of Examination

Theory Paper of 3 hour duration
 Sessional Work with Assessment

Reference Books

History Of Architecture by Sir Bannister Fletcher
 The Story Of Architecture by Patrick Nuttgens
 Space, Time And Architecture by Siegfried Gideon
 Architecture Of Mughal India by Catherine Asher
 Indian Architecture (Buddhist Hindu) Vol. 1 by P. Brown
 Indian Architecture (Islamic Period) Vol. II by Percy Brown

A History Of Indian And Eastern Architecture by J. A. Fergusson

The Architecture Of India, Buddhist & Hindu by S. Grover

The Architecture Of India (Islamic) by S. Grover

Islamic Architecture, Form, Function and Meaning by Robert Hillenbrand

The Hindu Temple by George Michell

Architecture Of the Islamic World by George Michell

Architecture Of World , India by Henry Sterlin

The History Of Architecture In India by Christopher Tadgell

The tradition Of Indian Architecture Continuity, Controversy – Change since 1850 by G.H.R. Tillotson

Second Year Bachelor of Architecture
Semester -3

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SW/STW	Total	
AR20030006	Theory of structures 2	3	0	10	10	20	60	0	100	3

Course Objective

To Analyse the forces in a Frame.

To Study and analyse the stresses in various Building Elements like Columns and Beams.

To Study the deflection effect of loads on Beams.

To Study Combined Stresses on Eccentrically Loaded Columns and Apply the Same to the Design of Foundations of Load Bearing Walls.

Course Outcome

Understand Frame structure.

Understand Stresses in Frames and trusses.

Understand deflection in structural members.

Course Content

Module -1

Simple Stresses and Strains

Linear Stresses and Strains. Hooke's Law. Stress Strain Diagram for Various Materials. Lateral Strain, Poisson's Ratio, and. Elongation of Long Rods, Volumetric Strain, Bulk Modulus. Shear Stress. Modulus of Rigidity. Relationship between various Moduli. Composite Materials, Modulus Ratio and Equivalent Area e.g. R.C.C Column with Concrete and Steel.

Elastic, Plastic, Brittle and Ductile Materials. Yield Stress, Factor of Safety and Working or Permissible or Safe Stress.

Module -2

Spanning Members

Bending Stresses. Theory of Simple Bending. Assumptions, Flexural Formula, Stress Distribution across a Section and across the span of the Beam. Modulus of Resistance. Section Modulus and how M.R is proportional to square of depth.

Shear Stresses. Formula, Shear Stress Distribution across a Rectangular, Circular, T, C, L, I Section.

Module -3

Deflection

Deflection. Concept of Slope and Deflection. Double Integration Method and Derivation of Formula for a S.S Beam with Full U.D.L only. Formula for Deflection and Slope in the Standard cases (studied in Sem. I). Application in Problems. a. Propped Cantilever. Use Deflection to Find Reactions in this case of a Statically Indeterminate Structure.

Module - 4

Combined Stresses

Compressive Members Subjected to Eccentric Loading. Stresses developed at four corners

Middle third Rule, Kernel of a Column. Application of Middle Third Rule in Foundations.

Application of the theory to Chimneys.

Module – 5

Frames and Trusses.-1

Introduction of Trusses as a Building Element and Why Important.

Perfect and Imperfect Frames. Redundant Members.

Analytical Solutions. – Method of Joints, Method of Sections

Module – 6

Frames and Trusses.-2

Graphical Solution of Frames

Studio Exercises

Suitable exercises on all the Modules mentioned above

Mode of Examination

Theory Paper of 3 hour duration

Sessional Work with Assessment

Reference Books

1. Engineering mechanics by A. K. Tayal

2. Mechanics of structure Vol. I By Junnarkar.

3. Design of steel structures-Vazirani – Rathwani.

4. Design of steel structures- L.S. Negi.

5. R.C.C. Design – Khurmi, Punmia, Sushilkumar.

6. Elements of Structures – Morgan.

7. Structure in Architecture – Salvadon and Heller.

8. Structure Decisions – F. Rosenthal

9. Strength of Materials by Amol Dongre.

10.Engineering Mechanics – RK Bansal and Sanjay Bansal , Laxmi publications, New Delhi.

11.Engineering Mechanics - F.L. Singer, Harper Collins publications.

12. Khurmi, R.S.; Strength of Materials, S. Chand & Company, New Delhi, 2001.

13.Ramamrutham, S.; Strength of Materials, Dhanpat Rai Publication, New Delhi, 1998

14.Design of steel structures-Vazirani – Rathwani

Second Year Bachelor of Architecture
Semester -3

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SW/STW	Total	
AR20030007S	Model Making Workshop (Carpentry))	0	2	20	20	0	0	60	100	1

Course Objective

To familiarise students with different types of materials for Carpentry works

To introduce use different kinds of tools and machinery civil works, Carpentry Works

To act as an interface between Building Construction and Materials-3 and Architectural Design Studio-3

Course Outcome

To use tools for carpentry.

Understand timber construction in practical way.

Use timber as a material.

Course Content

Module -1

Creating Building elements using actual materials for construction

Students to construct scale models of construction of Building elements such as Timber roof, Timber staircase, Timber Partitions ,Doors, Windows etc

Module -2

Understanding the tools used in carpentry industry.

Understanding application of the construction methodology

Module – 3

Analysis of Art work from history of Architecture with special focus on Timber construction

Module -4

Site Visits

Case Studies

Studio Exercises

Models to be created for Building Construction and Materials-3,History of Architecture -2 and Architectural Design Studio-3

Module -2 to be done in group of 5 students under the guidance of subject teacher

Mode of Examination

Sessional Work with Assessment

Reference Books

1.The complete book of drawing techniques, by Eugene Felder & Emmett Elvin

2.Paper Scissor Glue by Catherine Norman, Ryland Peters & Small

3.Color on Metal by Tim Mc Creight & Nicole Bsullak

4. Books for Building Construction technology and Materials

Second Year Bachelor of Architecture**Semester -3**

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SW/STW	Total	
AR20030008S	Elective (Any-1) Photography - Advance	1	2	20	20	0	0	60	100	2

Course Objective

To understand photography as a medium of expression- Advance level

To understand photography in relation to architecture- Advance level

Course Outcome

Use of Photography with architectural projects.

Using photography as a tool of expression.

Create photographic effects.

Use of Photography with architectural projects.

Use various modes of photography such as Still photography and Motion photography.

Documentation in digital format.

Use advance techniques for photography to create effects in presentation and documentation

Course Content**Module -1**

Camera settings for various locations and environments

Module -2

Shutter speed and Exposure

Module -3

White Balance and Colour temperature, Composition for photography, Golden spiral

Module – 4

Introduction to Raw

Adjusting and processing RAW files and retouching images

Module – 5

Understanding Light and Magic hour,

Module – 6

Landscape photography, preparing for landscape shoots,

Module – 7

Night photography

Module – 8

Documenting architectural work through photography

Image editing techniques

Studio Exercises

Assignments related to above mentioned modules. Minimum 10-15 assignments.

Mode of Examination

No Theory Paper

Sessional Work with Viva

Reference Books

1: The 35mm Handbook-Michael Freeman

2: Focal encyclopaedia of Photography, Focal press

3: Basic Photography, M.J.Langford, Focal press

4: Advanced Photography (Vol-1 and Vol -2), M.J.Langford, Focal press

5: Creative Colour Photography Techniques- Marshall Cavendish

6: Digital Photography in Available Light- Essential Skills, Mark Galer, Focal Press

7: The Art of Digital Photography, John Hedgecoe, DK Ltd, UK

8: Mastering Digital SLR Photography, David D.Bush, Thomson

9: Understanding Exposure, Bryan Peterson, Amphoto Books

10: Learning to see creatively, Bryan Peterson, Amphoto Books

11: The Art of Photography : An approach to Personal Expression, Rocky Nook

12: The Photographer's Eye, Michael Freeman, Focal Press

13: Architectural Photography, Adrian Schulz, Rocky Nook

14: The Beginners Photography Guide, DK

Second Year Bachelor of Architecture
Semester -3

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SW/STW	Total	
AR20030008S	Elective (Any-1) Streetscapes	1	2	20	20	0	0	60	100	2

Course Objective

To understand the importance of Street scape in Architectural design and Urban design.

To introduce student to some parameters of Urban design with emphasis on streets and connectivity design.

Course Outcome

To design street scape for the project.

Use street as a Design feature.

Course Content

Module -1

Introduction to Street scape

Historical significance of street scape in India.

Need and importance of connectivity in Urban design.

Criteria for design of street- Width, Length, Population etc.

Module -2

Traffic and design linkages

Understanding modes of transport and its relation to the design of streets, roads, highways, expressways etc.

Module – 3

Street Vegetation

Landscape linkages

Facades and linkage between street vegetation, landscape and traffic.

Module – 4

Signage

Requirement of signage and its design.

Studio Exercises

Suitable exercises on all the Modules mentioned above

Case studies, Book studies of Streets in India and Abroad

Mode of Examination

No Theory Paper

Sessional Work with Viva

Reference Books

1: Urban Streetscape Design, Petra Funk

2: Urban Spaces : Plazas, Squares and Streetscapes, Chris van Uffelen

Second Year Bachelor of Architecture

Semester -3

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SW/STW	Total	
AR20030008S	Elective (Any-1) Architectural Journalism	1	2	20	20	0	0	60	100	2

Course Objective

Architectural Journalism is gradually developing as a niche of writing about architecture and design

As architecture often represents the society we live in, it also calls for a narrator, the role of which is interestingly taken up by the Architectural Journalist and Critic

To expose the students to focused architectural writing within the parameters of journalism

To equip the students to communicate effectively emphasizing both on written and verbal communication

To expose the students to multimedia communication and various publications

Course Outcome

Expose the students to architectural journalism works of Architectural journalists in India as well as abroad.

Prepare report on architecture and related topics

Work as Architectural Journalist for print and digital media.

Course Content

Module -1

Introduction

Introduction to Architectural Journalism, the need for the subject

Introduction to Journalism

Module -2

Skills for Journalism

Reporting, Editing, Features and Editorial Writing, Scripting for Broadcast Journalism, Event Coverage.

Module – 3

Architectural Journalism

Architectural Piece to be a conglomeration of facts about a building and an architect along with the experience of the user

Detail review of Elements of Architecture

Module – 4

Structure of Architectural journals

Writing descriptive and analytical reports

Editing write ups, Photo journalism,

Books reviews, Page compositions, The public process. Electronic media.

Studio Exercises

Suitable exercises on all the Modules mentioned above

Mode of Examination

No Theory Paper

Sessional Work with Viva

Reference Books

1. Architectural Criticism and Journalism : Global Perspectives by Mohammad al-Asad & Majd Musa

2. Writing about Architecture by Alexandra Lange

3. Thinking Design by S. Balaram

4. Architectural Theory- An anthology from (1871-2005), edited by Harry Francis Mallgrave and Christina Contandriopoulos

5. Visual Thinking by Rudolf Arnheim

6. Forty ways to think about architecture: Architectural history and theory today edited by Iain Borden, Murray Fraser and Barbara Pennes

Magazines

Domus

Architecture + design

Marg

Discover India

Heritage India

Architectural Record

Indian Architect and Builder

Architectural Digest

Second Year Bachelor of Architecture
Semester -3

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE- Paper	ESE- SW/STW	Total	
AR20030008S	Elective (Any-1) Advance Basic Design	1	2	20	20	0	0	60	100	2

Course Objective

To understand the principles of basic design in relation to the built form in architecture
Understanding 2D and 3D compositions using basic design principles

Course Outcome

Understanding 2D and 3D compositions using basic design principles
Application and Use of texture, shape and composition in design
Application and Use of point , line and light in design
Apply principles of basic design in Architectural design

Course Content

Module -1

Use of lines in architecture Case study and application

Module -2

Forms in Architecture Case Study and Application

Bio-morphic forms

Module -3

Space and Organic connections between spaces, Perceptual spaces,

Module -4

2D Compositions, Two-dimensional composition, basic shapes and combinations of them, free size and technique (light and shadow, gluing, painting, etc)

Module -5

3D Compositions

Sculpture

Study of solids & voids to evolve sculptural forms & spaces

Module -6

Textures, Texture collage and assemblage from various materials (relief)

Study of various textures and their use in architectural design

Four compositions, low paper reliefs with four techniques: cutting, weaving, tearing, wrinkling, morphological expression from the same material

Studio Exercises

Suitable exercises on all the Modules mentioned above (Min 5 on each module on A2 Size)

Mode of Examination

Sessional Work with Viva.

Second Year Bachelor of Architecture

Semester -4

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SW/STW	Total	
AR20040001	Architecture Design-IV	2	6	30	30	60	60	120	300	5

Course Objective

To study design in continuation with the previous semesters.

To understand architectural and aesthetics in relation with architectural and functional aspects.

To understand Bye laws in strict application.

To understand site features and incorporate those in design.

Course Outcome

To design complex architectural spaces.

To conduct Site analysis.

To formulate design proposal.

Course Content

Module-1

Complex architectural spaces

Multiple layering of architectural space (without aid of mechanical means of vertical transport), its relationship with structure, technology and resultant built form; Concept of earthquake resilient structural systems for indigenous applications.

Module -2

Site analysis w.r.t to surroundings; zoning and activity distribution; Circulation and activity relationships through adjacencies, achieving performance integrity through functional adjacencies and elementary services of water and drainage.

Module -3

Structural system in Built Form

Introduction to Multi storeyed building design

Horizontal and Vertical circulation

Concept of Circulation and modes of circulation in low rise structures.

Barrier free environment.

Special needs of Physically challenged persons.

Module-4

Design development and Design proposal

Relation to various functional aspects of the design problem: Use of bubble diagrams, flow diagrams, zoning of site, etc.

Conceptual Design and Final design proposal

Finalization of design proposals: schematic 2D/ 3D / single line/ conceptual level site plan, floor plan, elevations and sections should be finalized

Studio Exercises

Design of 1 no Major and 1 no Minor Project

Major project to be Min Ground +4 structures with area 5000 to 8000 sq.m.

Minor project to be Min Ground +1 Structure with area 1000-1200 sq.m.

Focus on design spaces such as Shopping complex, Office Complex, etc or similar as per the choice of the Institute.

Mode of Examination

Theory Paper of 6 hour duration – Time Problem

Sessional Work with Viva

Reference Books

1. Ching, F.D.K.; Architecture Form, Space and Order, Van Nostrand Reinhold Staff, New York, 1996.
2. Rudofsky, Bernard; Architecture without Architects, University of New Mexico Press, New Mexico
3. Rasmussen, Steen Eiler; Experiencing Architecture, The MIT Press, Cambridge, Massachusetts, 1977.
4. Watson, Donald / Crosbie, Michael J.; Time Savers Standards for Architectural Design, Mc Graw Hill, New York, 2005
5. Chiara, Joseph De / Crosbie, Michael J.; Time Savers Standards for Building Type, McGraw Professional Publishing, New York, 1973.
6. Harris, Charles W. / Dines, Nicholas T.; Time Savers Standards for Landscape Architecture, Mc Graw Hill, USA, 1998
7. Chiara, Joseph De / Panero, Julius / Zelink Martin; Time Savers Standards for Interior design and Space Planning, Mc Graw Hill, New York, 2001
8. Gideon, Siegfried; Space, time & Architecture, Harvard University Press

Second Year Bachelor of Architecture

Semester -4

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SW/STW	Total	
AR20040002	Computer Applications in Architecture -II	0	2	20	20	0	0	60	100	1

Course Objective

To study Architectural drawing and graphics in continuation with the previous semesters.

To understand use of computers as tool for drawing

To understand architectural drawing in relation to use of software's.

To understand presentation techniques using software's

Focus on 3D Drawing

Course Outcome

Demonstrate the concepts of CAD drafting methods and techniques in 2D and 3D through various architectural projects of progressive complexity.

Use computer as a tool to generate drawings and presentations.

Course Content

Module-1

Introduction, Importance and use of 3D softwares like AutoCAD, Trimble Sketchup or similar software's used in the industry.

Module -2

Introduction to AutoCAD 3D and Trimble Sketchup etc.

Generation of models Using Trimble Sketchup for presentation and analysis of design.

Module -3

Introduction to Rendering and presentation softwares like Adobe Photoshop, Corel Draw etc.

Application of Editing and presentation of previous semester's design project.

Module -4

Rendering and Printing

Application of Materials, textures, Surroundings, lighting etc. to generate realistic model.

Module -5

Importance of BIM softwares like Revit Architecture in Industry.

Application of Revit Architecture in design of previous semester's design project.

Studio Exercises

Similar exercises from ADG-2 to be done using CAD software

Mode of Examination

No Theory Paper

Sessional Work with Viva

Reference Books
1.Fundamentals Of Three-Dimensional Computer Graphics by Watt
2.Computer Aided Design guide For Architecture, Engineering And Construction by Aouad
3. Latest versions of AutoCAD, 3D Max, Google Sketch up, Photoshop, Corel Draw.

Second Year Bachelor of Architecture

Semester -4

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SW/STW	Total	
AR20040003	Building Construction Technology and Materials-IV	2	4	30	30	60	60	120	300	4

Course Objective

- To introduce the construction methodology of Reinforced Cement Concrete (RCC) Structures
- To understand the execution process of each building element using RCC as primary material

Course Outcome

- Understand materials and their use in construction.
- To comprehend RCC Structural system in construction.
- To comprehend the various modes of vertical circulation through live examples

Course Content

Module -1

- Introduction to materials used in civil construction.
- Advance Concrete technology
- Types of Concrete
- Application of Concrete for various elements
- Cladding Materials
- Details of cladding of wall with stone, tiles, timber and steel framing
- Insulation Materials
- Materials for Sound Insulation, Thermal Insulation
- Properties of above mentioned materials and Quality tests of materials

Module -2

- Introduction to RCC elements like Columns, Beams and Slabs
- Reinforcement detailing of RCC building elements like columns, beams and slabs
- Deep Foundations
- Construction of Grillage foundations, Piles foundations, Caisson foundations
- Equipment for Deep foundations

Module -3

- RCC Staircase
- Types of Staircase- Dog-legged staircase, Open well staircase, Quarter Turn Staircase, Spiral, Circular, Folded Plate staircase
- Description of staircases, technical terminology involved, classification of staircases based on shape, material and its construction details.
- Reinforcement detailing of RCC Staircase of above mentioned staircase

Module – 4

- Elevators
- Design criteria for provision of Elevators

Details of construction

Escalators, Travellators and Auto Walks

Installation, working mechanism of Escalators, Travellators and Autowalks

Studio Exercises

Suitable exercises on all the Modules mentioned above

Each module should include market surveys and construction site visits compulsorily.

Mode of Examination

Theory Paper of 3 hour duration

Sessional Work with Viva

Reference Books

1. 'Elements of Structure' by Morgan.
2. 'Structure in Architecture' by Salvadori.
3. 'Building Construction' by Mackay W. B., Vol. 1 – 4.
4. 'Building Construction' by Barry, Vol. 1 – 5.
5. 'Construction Technology' by Chudley, Vol. 1 – 6.
6. 'Building construction Illustrated' by Ching Francis D. K.
7. 'Elementary Building Construction' by Michell.
8. 'Structure and Fabric' by Everet
9. 'Engineering Materials' by Chaudhary.
10. 'Building Construction Materials' by M. V. Naik.
11. 'Civil Engineers' Handbook' by Khanna
12. 'Vastu Rachan' by Y. S. Sane.
13. National Building Code and I.S.I. Specifications
14. 'Materials and Finishes' by Everet.
15. 'A to Z Building Materials in Architecture' by Hornbostle.
16. 'Elements of Structure' by Morgan
17. ENGG.MATERIALS – K.S.RANGWALA.
18. ENGG.MATERIALS – B.K.AGARWAL
19. BUILDING.MATERIALS – S.K.DUGGAL.
20. BUILDING CONSTRUCTION –SUSHIL KUMAR.
21. BUILDING CONSTRUCTION –BINDRA ARORA.

Second Year Bachelor of Architecture
Semester -4

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SW/STW	Total	
AR20040004	Building Services -II (Electrical, Illum.)	1	2	10	10	20	60	0	100	2

Course Objective

To understand various systems of Electrical services, Illumination, ventilation services; and its design application for a small and large building.

An architect's role may range from designing services for a less complex structure to incorporating engineering solutions / designs provided by respective consultants in their design programme and to deliberate with them in order to provide best possible solution.

The subject will be taught is congruence with the Design studio and assignments for the subject will be linked to the design exercises to achieve higher level of learning and understanding the practical application of the same.

Module -1

Importance of Building Services

Importance of Electrical, and illumination

Historical overview of development of Electrical and, illumination.

Module -2

Electrical Services

Basic principles of electricity

Electricity demand calculations; norms and standards

High side electrical system at site level - Transformers and switch gears – Layout of substations

Electrical distribution system at site level overview

Types of distribution networks at site level and building level.

Planning electrical wiring for building – Main and distribution boards

Types of wires, wiring systems and conduit

Fixing of electrical fixtures and switches

Materials, apparatus, joints, fixtures and breakers –Market survey

Low voltage supply (data and telephone)

Module – 3

Illumination

Visual tasks – Factors affecting visual tasks

Modern theory of light and colour – Synthesis of light

Additive and subtractive synthesis of colour – Luminous flux – Candela – Solid angle illumination – Utilisation factor – Depreciation factor

Classification of lighting – Artificial light sources – Spectral energy distribution – Luminous efficiency – Colour temperature – Colour rendering.

Design of modern lighting – Lighting for stores, offices, schools, hospitals and house lighting. Elementary idea of special features required and minimum level of illumination required for physically handicapped and elderly in building types

Module – 4

Fundamentals of Heating, Ventilation and Air Conditioning

Basic principles, laws and terminologies related to HVAC.

Psychometric chart and comfort zone.

Evaporative cooling systems of air conditioning.

Refrigerant Cycle (Vapour Compression System) and its reversal.

Components of Mechanical Vapour Compression Refrigeration Systems.

Natural and artificial ventilation

Module – 5

Types of Air Conditioning Systems

Window Air Conditioners

Split Air Conditioners

Packaged Air Conditioners

Direct Expansion Air Conditioning Systems

Central or All-water Air Conditioning Systems

Selection criteria, design / structural considerations and energy requirements for above mentioned air conditioning systems.

Module – 6

Emerging Trends in HVAC and other Miscellaneous Topics

Passive Heating and Cooling Systems

Energy Saving through Design, Operation and Maintenance

Emerging Technologies – VRV, VRF, Heat Recovery Systems, etc.

Developing Air Conditioning layouts for their current design exercise.

Coordination with other services, architectural and structural designs.

Studio Exercises

Suitable exercises on all the Modules mentioned above

Suitable Case studies to be conducted

Co-Ordination of Building Services

Co-ordination of building services with other service layouts, architectural layouts and structural layouts

Preparation of Co-ordination drawings.

Mode of Examination

Theory Paper of 3 hour duration

Sessional Work with Assessment

Reference Books

National Building Code 2016

Mechanical and Electrical Equipment for Buildings by Walter T. Grondzik, Alison G. Kwok, Benjamin Stein

Basic Refrigeration and Air Conditioning by A. Ananthanarayana.

Building Construction by Rangwala.

Architectural Acoustics by M. David Egan

Second Year Bachelor of Architecture
Semester -4

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SW/STW	Total	
AR20040005	History of Architecture-IV	1	2	10	10	20	60	0	100	2

Course Objective

To understand church architecture as evolving within specific context including aspects of society, religion, politics and climate

To gain knowledge of the development of architectural form with reference to technology, style and character in the western world through the evolution of the church from early Christian times up to the renaissance period

Course Outcome

To inform about the development of architecture in western world through the evolution of Christianity as a religion and the cultural and contextual determinants that produced that Architecture and further course of time its influence on rest part of the world.

Course Content

Module -1

Byzantine Architecture- Architectural characters, Forms, Dome technology and material used

Early & Late Christian Era

Typical examples viz. St. Peters Rome (basilica), Lateran Baptistery Rome, St. Lorenzo Rome and Hagia Sophia

Module -2

Romanesque in Europe – Development of style as Architectural characters

North Italy, central, southern Italy Sicily cathedral

Typical style illustrating the style – Pisa Cathedral complex, S. Pavia, S. Michelle

Module -3

Romanesque in France – Architectural characters

North and South France cathedrals

Typical examples such as Angouleme Cathedral & Abbey Aux Home Cathedral

Romanesque in British Isles – Secular and Non-Secular Buildings

Typical examples such as – Canterbury Cathedral, Durham Cathedral, Norman Castles- Tower of London, Windsor Castle and Manor Houses.

Module – 4

Gothic Style in France

Typical example of religious buildings and secular buildings.

Gothic style in British Isles

Typical example of religious and secular nature

Gothic style in Italy – Examples of religion type

Module – 5

Renaissance in Italy – Its birth and impact

Early renaissance – development of style at Florence, Rome and Venice

Works of Brunelleschi, Leon Albert, Palladio, Bramante, Bernini and Michelangelo

High renaissance and Proto Baroque – Classical buildings of Florence, Rome and Venice

Baroque and Rococo – Reformation in style examples of Florence, Rome & Venice

Module – 6

Renaissance in France – Architectural character of secular and Religious buildings

Early period, Classical period and late period

Typical examples such as Chateau-de-Chambord, Palace Louvre and the pantheon Paris

Renaissance in British Isles- religious and secular buildings

Early and Late renaissance and its Examples

Studio Exercises

Suitable exercises on all the Modules mentioned above

Reference Books

1. History of Architecture by Percy Brown
2. History of Architecture by Sir Bannister Fletcher
3. The great ages of world Architecture by G.K.Hiraskar.

Second Year Bachelor of Architecture
Semester -4

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SW/STW	Total	
AR20040006	Theory of structures 3	3	0	10	10	20	60	0	100	3

Course Objective

To understand the concept of Buckling and Crushing in Columns.

To understand Fixity at supports and Concept of Continuity over supports and Negative Bending Moments

To understand the principles of Load Bearing Construction, Use of Arches and Lintels

To Study the strength of one Material - Steel and the use of these material as Beams, and Columns or as members of a Truss.

Design By Working Stress Method

Course Outcome

Analyse columns, beams as structural members

Use working stress method of design.

Understand design of steel structure.

Course Content

Module -1

Analysis of Columns

Euler's and Rankine's Theory for Buckling and Crushing Failure in Columns. Assumptions and Limitations. Concepts of End Conditions, Slenderness Ratio. No Derivations, Simple Problems only.

Module -2

Analysis of Fixed Beams and Continuous Beams

Fixed Beam as a statically in-determinate structure. Concept of Negative Bending Moment at supports. Fixed End Reactions (No derivations). Simple Problems with full u.d.l and one or two point Loads

Continuous Beams. Concept of continuity over supports and Typical B.M.D to explain the negative B.M.D over supports. Enlist methods for computing B.M.D. Theory only. No problems

Module -3

Loading on Structures, Transfer of loads, Load Bearing Constructions

Loads classified as Live Loads (as per occupancy), Dead Loads (Densities), Wind Loads (Wind Pressure Tables, Reversal of Stresses), Snow Load, and Seismic Loads. Loads Transfer from Slab to Beam to Columns to Footing. Beam Loads to Include Brick wall Loads.

Principles of Load Bearing Constructions. Load Transfer in Arches – Different Kinds of Hinged Arches. Load Transfer across Lintels. Theory only – No Problems.

Module – 4

Methods of Design –Working Stress Method

Explanation, Assumptions, Factors of Safety, Limitations. And Advantages.

Module – 5

Design of Steel structures

Introduction to I.S.800. (W.S. Method). Different Grades and Properties of Steel

Steel Tables- Different Sections Available and their applications. Reading of Steel Tables.

Design of Steel Girders – Using I sections

Design of Steel Stanchions – Using I Sections and C.

Design of Compression Member and Tension Members of a Roof Truss Using Angle Sections.

Module – 6

Connections in Structural Steel

Riveting, Welding, And Bolting. Advantages and Disadvantages.

Numerical problems on welding and bolting only.

Studio Exercises

Suitable exercises on all the Modules mentioned above

Mode of Examination

Theory Paper of 3 hour duration

Sessional Work with Assessment

Reference Books

1. Engineering mechanics by A. K. Tayal

2. Mechanics of structure Vol. I By Junnarkar.

3. Design of steel structures-Vazirani – Rathwani.

4. Design of steel structures- L.S. Negi.

5. R.C.C. Design – Khurmi, Punmia, Sushilkumar.

6. Elements of Structures – Morgan.

7. Structure in Architecture – Salvadon and Heller.

8. Structure Decisions – F. Rosenthal

9. Strength of Materials by Amol Dongre.

10. Engineering Mechanics – RK Bansal and Sanjay Bansal , Laxmi publications, New Delhi.

11. Engineering Mechanics - F.L. Singer, Harper Collins publications.

12. Khurmi, R.S.; Strength of Materials, S. Chand & Company, New Delhi, 2001.

13. Ramamrutham, S.; Strength of Materials, Dhanpat Rai Publication, New Delhi, 1998

14. Design of steel structures-Vazirani – Rathwani

Second Year Bachelor of Architecture
Semester -4

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SW/STW	Total	
AR20040007	Site Planning (Surveying & Levelling)	0	2	20	20	0	0	60	100	1

Course Objective

To enable the appreciation of site and its elements, and to equip students with the various types of techniques of site surveying as well as to introduce them to aspects of site planning and site analysis

To understand various techniques of site surveying

To understand importance of site and its content in Architectural creations

To orient the students to several influencing factors which govern the siting of building or group of building in given site.

To orient the students the methodology of preparing a site analysis diagram. This will serve as a prelude to any Architectural creation.

Course Outcome

Understand the physical features at site

To explore site conditions to benefit the Architectural design

Understand the importance of site analysis

Course Content

Module -1

Definition of plot, site, land and region

Units of measurements

Reconnaissance and need for surveying

Chain survey ,Compass survey, Plane table and Theodolite surveys

Various equipment's used in Surveying

Module -2

Total Station Survey

Module -3

Importance of site analysis-factors involved. Accessibility, size and shape of sites.

Climate and topography

Infrastructures available, sources of water supply and means of disposal systems,

Architectural and visual aspects

Preparation of analysis diagram.

Module -4

Lay of the land

Contours, Water shed, Surface drainage

Module -5

Organization of vehicular and pedestrian circulation

Types of roads, hierarchy of networks, road widths

Parking regulations, turning radii and street intersections.

Studio Exercises

Suitable exercises on all the Modules mentioned above

Site observation report, field book with observations and reading/maps /contour survey.

Mode of Examination

No Theory Paper

Sessional Work with Term work

Reference Books

Site planning by Kelvin Linch

Surveying and levelling by B.C. Punmia

Surveying and levelling by N.N.Basak

Surveying and Levelling by Kulkarni and Kanitkar

Second Year Bachelor of Architecture
Semester -4

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SW/STW	Total	
AR20040008S	Elective (Any-1) Critical Appreciation of Design	1	2	20	20	0	0	60	100	2

Course Objective

To introduce medium of understanding art and architecture with criticism and critical appreciation as tools to study, understand and judge any piece of art or architecture.

To develop analytical skills in art appreciation.

To enable the students to understand that critics help viewers perceive, interpret and judge artworks.

Course Outcome

Understanding philosophical aspects of art from a historical perspective.

The students will learn various art forms, genres and historical periods

The students will develop analytical skills in art appreciation.

The students will be sensitized to various artistic expressions.

Instil a critical approach towards art and architecture.

Demonstrate skill in appreciation of art and architecture.

Develop skill in analysing art forms and architectural design.

Course Content

Module -1

Basics of Critical Appreciation, Philosophical Approach To Art Appreciation

Necessity of Critical Appreciation, Historical review of aesthetic theories and concepts

Intent, Language, Content, References, Study of seminal texts in aesthetic theoretical works

Module -2

References of Critical appreciation in Art work, Films, Documentaries

Introduction to Architectural Criticism

Introduction and study of various Architectural Critics- Ada Louise Huxtable, Lewis Mumford, Paul Goldberger, etc

Module -3

Elements of art and principles of art

Identify the elements of art and principles of art in a piece of artwork.

Understanding different objectives of Architectural Criticism- activist, inform, instil action

Module – 4

Historical survey and analysis of the arts

Survey and comparative analysis of Indian high art.

Survey and comparative analysis of folk traditions of indigenous communities

Survey of contemporary art and influences

Art criticism, Describing an artwork, Analysing an artwork ,Interpreting an artwork, Judging an artwork

Studio Exercises

Assignments related to above mentioned modules. Minimum 10-15 assignments in the form of workshops and Case Study.

Student should choose an eminent architect of his choice and critically appreciate the building designs and works of the architect. Proper documentation of analysis should be prepared of the projects.

Mode of Examination

No Theory Paper

Sessional Work with Viva

Reference Books

Ways Of Seeing by John Berger

Introduction To Indian Art by Ananda k Coomaraswamy

Understanding Art by Mittler Ragans

Looking at pictures- Purnell Library of knowledge

Architectural Criticism and Journalism : Global Perspectives by Mohammad al-Asad & Majd Musa

Image by Gavin Ambrose, Paul Harris

Writing about Architecture by Alexandra Lange

Visual Thinking by Rudolf Arnheim

Forty ways to think about architecture: Architectural history and theory today edited by Iain Borden, Murray Fraser and Barbara Pennes

Magazines

Domus, Architecture + design, Marg, Discover India, Heritage India, Architectural Record, Indian Architect and Builder

Second Year Bachelor of Architecture
Semester -4

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SW/STW	Total	
AR20040008S	Elective (Any-1) GIS	1	2	20	20	0	0	60	100	2

Course Objective

To create awareness about software system for environmental management.

Course Outcome

To use GIS for environmental management

Course Content

Module -1

Introduction to Geographic Information sciences

History, Domains for GIS, Definitions of GIS, Components of a GIS, Comparisons of various software, Hardware requirements, Digital cartography and conventional CAD.

Module -2

Data models and Data structure.

Conceptual models of real world, entities or fields, Vector data models, Tessellation of continuous fields, raster data models, Use of models- Cadastre, Utility networks, land cover, soil maps, Introduction to data structure, Vector data structure and Raster data structures. Hierarchical database Structure, Network data structure, Relational data structure, object oriented database structure.

Module – 3

Introduction to data input, data capture methods.

Digitization, rasterisation, attributes or feature code inputting, verification and editing methods. Creation of continuous surfaces and simple analysis of Environmental problems. Mountainous environment land-use studies. Introduction to Remote sensing and Environmental mapping. Growth and change in land-use. Comparison of land uses of different periods.

Module – 4

Exercises in database

Query, distance and context operators, Cost distance and least cost pathways, Boolean operations on maps, remote sensed data explorations, supervised and unsupervised classification and principal component analysis.

Studio Exercises

Suitable exercises on all the Modules mentioned above

Mode of Examination

No Theory Paper
Sessional Work with Viva
Reference Books
GIS for Smart Cities, Vinod Kumar T.M, Copal Publications, Delhi.

Second Year Bachelor of Architecture
Semester -4

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SW/STW	Total	
AR20040008S	Elective (Any-1) Advanced Computing	1	2	20	20	0	0	60	100	2

Course Objective

The subject intends to introduce techniques for further refinement of computer generated graphics covered in Architectural Drawing and Graphics -3 and 4

This course also trains students for developing photorealistic modelling using popular software in the field of architecture

Advanced technologies and concepts using computers as an essential tool are also introduced such as Building Information Modelling

Course Outcome

To recognize the need to combine the use of CAD tools and techniques for architectural design communication

To produce architectural drawings using CAD and illustration software programs

To demonstrate knowledge of relevant industry standards and their application in architectural drawings and documents

To construct conceptual and presentation renderings as a design presentation tool for various purposes

To evaluate which software or technique is most effective for a particular goal

Course Content

Module -1

Image Editing Methods and Techniques

To edit and develop images in a raster format through adjustments in image clarity, quality and layers

Image and photo montage and its various methods and techniques

Image as a vector and editing of its vector properties and compatibility with line drawings

Processing of architectural renderings using image outputs from other software.

Adding entourage to images developed from 3-d modelling software.

Module -2

Walk through and Virtual Reality

To develop animation and photo realistic animations and short movies

Introduction to Techniques of Virtual Reality in Architecture

Virtual Reality, Augmented Reality, and Mixed Reality techniques

Module – 3

Visual Composition

Composition and presentation through different vector based and page setting tools

Combining photo editing, modelling and rendering and presentation methods to produce photo realistic brochures and documents

Development of concepts to real proposed scenarios through computer aided software's

Module – 4

Building Information Modelling (BIM)

Importance of Building Information Modelling (BIM)

Using software's for Building Information modelling such as Revit, Archicad or similar industry software's.

Studio Exercises

Suitable exercises on all the Modules mentioned above

Mode of Examination

No Theory Paper

Sessional Work with Viva

Reference Books

Computer Graphics & Animation by M.C. Trivedi (Jaico Publishing House; First edition, 22 January 2009)

Representational Techniques for Architecture (Basics Architecture) by Lorraine Farrelly Nicola Crowson, (Bloombury; 2nd Revised edition edition, 18 Dec. 2014)

Second Year Bachelor of Architecture
Semester -4

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SW/STW	Total	
AR20040008S	Elective (Any-1) Emerging World Architecture	1	2	20	20	0	0	60	100	2

Course Objective

- To introduce the design aspects in the current building design.
- To study projects with reference to modern and current context of design
- To study use and applicability of advance building technology.
- To study use of modern materials as a mode of expression of architecture.
- To study current parameters in building design.
- To understand and refer to International concepts

Course Outcome

- Understand current emerging modern building design.
- Relate to the current aspects of building functions.
- Relate to changes in the building design from International perspective.

Course Content

Module -1

- Introduction to architectural design post 1960 to 2017
- Introduction to Modern infrastructure projects

Module -2

- Trans World Flight Centre, USA
- United States Air Force Academy Cadet Chapel, USA
- Cathedral of Brasilia, Oscar Niemeyer
- Seagram Building,

Module -3

- Walt Disney Concert Hall, USA
- Guggenheim Museum, Bilbao, Spain
- Petronas Tower, Malaysia
- Central Plaza, Hong Kong
- Bank of China Tower, Hong Kong

Module -4

- Beijing National Stadium, China
- Mumbai's Cybertecture Egg, Mumbai
- Kingdom Center, Riyadh
- CCTV Headquarters, Beijing, China
- National Center for Performing Arts, Beijing, China

Module -5

- Chhatrapati Shivaji International Airport, Mumbai
- Antilia, Mumbai

One World Trade Center, New York

Changi Airport , Singapore,

Burj Al Arab, Dubai

Studio Exercises

Suitable exercises on all the Modules mentioned above

Mode of Examination

Theory Paper of 3 hour duration

Reference Books

Literature on the structures mentioned above
