

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

BACHELOR OF ARCHITECTURE

SECOND YEAR

SYLLABUS 2017

Dr. Babasaheb Ambedkar Technological University

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

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

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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

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Semester -3

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		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 Giyas-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 : Humanyuns Tomb, Fatehpur Sikri, Taj Mahal, Jami Masjid at Delhi, Shahajanabad 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 - Eliabethan England – Hardwick Hall, St Paul's Cathedral
Baroque style – St. Petersburg, Russia, Rococco Style.

Module – 6

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

Module -7

Americas – Tenochtitlan Incas - Macchu Pichu
India - Vijayanagara style, Meenaskshi 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 Portugese 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

Magzines

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.

Dr. Babasaheb Ambedkar Technological University

Second Year Bachelor of Architecture

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

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

Magzines

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 naps, 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
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