LINGAYAS VIDYAPEETH
SCHOOL OF ARCHITECTURE AND PLANNING
ODD Semester Teaching Scheme

B.Arch 2018 Batch				
B.ARCH, Semester-I- First year				
Theory				
S. No.	**Subject Code**	**Subject Name**	**L-T-P**	**Credits Assigned**
1	ARC-101	Principles of Architecture - I	2-0-0	2
2	ARC-102	History of Architecture - I	2-0-0	2
3	ARC-103	Architectural Psychology	2-0-0	2
4	CEA-101	Environmental Science and Ecology	2-0-0	2
5	CEA-102	Structures in Architecture - I	2-0-0	2
Practical				
S. No.	**Subject Code**	**Subject Name**	**L-T-P**	**Credits Assigned**
6	ARC-154	Basic Design and Visual Arts - I	1-0-4	3
7	ARC-155	Architectural Drawing and Graphics - I	1-0-4	3
8	ARC-156	Building Material & Construction - I	1-0-4	3
9	ARC- 157	Model Making Workshop - I	1-0-2	2
10	ARC-158	Computer Application in Architecture - I	1-0-2	2
11	PDP-101	Induction & Nurturing Hobbies	0-0-2	1
			TOTAL HOURS	TOTAL CREDITS
			15-0-18	24

LINGAYAS VIDYAPEETH
SCHOOL OF ARCHITECTURE AND PLANNING
EVEN Semester Teaching Scheme

B.Arch 2018 Batch				
B.ARCH, Semester-II- First year				
Theory				
S. No.	**Subject Code**	**Subject Name**	**L-T-P**	**Credits Assigned**
1	ARC-110	Principles of Architecture - II	2-0-0	2
2	ARC-111	History of Architecture - II	2-0-0	2
3	ARC-112	Sociology in Architecture	2-0-0	2
4	CEA-103	Structures in Architecture - II	2-0-0	2
Practical				
S. No.	**Subject Code**	**Subject Name**	**L-T-P**	**Credits Assigned**
5	ARC-164	Basic Design and Visual Arts - II	1-0-4	3
6	ARC-165	Architectural Drawing and Graphics - II	1-0-4	3
7	ARC-166	Building Material & Construction II	1-0-4	3
8	ARC-167	Model Making Workshop - II	1-0-2	2
9	ARC-168	Computer Application in Architecture - II	1-0-2	2
10	PDP-102	People Connect	0-0-2	1
			TOTAL HOURS	TOTAL CREDITS
			13-0-18	22

LINGAYAS VIDYAPEETH
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ODD Semester Teaching Scheme

B.Arch 2018 Batch				
B.ARCH, Semester-III-Second Year				
Theory				
S. No.	**Subject Code**	**Subject Name**	**L-T-P**	**Credits Assigned**
1	ARC-201	History of Architecture-III	2-0-0	2
2	ARC-202	Building Services-I	2-0-0	2
3	ARC-203	Building Sciences	2-0-0	2
4	CEA -211	Structures in Architecture-III	2-0-0	2
Practical				
S. No.	**Subject Code**	**Subject Name**	**L-T-P**	**Credits Assigned**
5	ARC-255	Architectural Design-I	2-0-6	5
6	ARC-256	Building Material & Construction III	1-0-4	3
7	ARC-257	Computer Applications in Architecture-III	1-0-2	2
8	CEA -260	Surveying	0-0-4	2
9	PDP-201	Personality Development & Grooming	0-0-2	1
			TOTAL HOURS	TOTAL CREDITS
			12-0-18	21

LINGAYAS VIDYAPEETH
SCHOOL OF ARCHITECTURE AND PLANNING
EVEN Semester Teaching Scheme

B.Arch 2018 Batch				
B.ARCH, Semester-IV-Second Year				
Theory				
S. No.	**Subject Code**	**Subject Name**	**L-T-P**	**Credits Assigned**
1	ARC-210	History of Architecture-IV	2-0-0	2
2	ARC-211	Building Services-II	2-0-0	2
3	ARC-212/ ARC-213	Vernacular Architecture/Energy Efficient Architecture	2-0-0	2
4	CEA -212	Structures in Architecture-IV	2-0-0	2
Practical				
S. No.	**Subject Code**	**Subject Name**	**L-T-P**	**Credits Assigned**
5	ARC-265	Architectural Design-II	1-0-8	5
6	ARC-266	Building Material & Construction -IV	1-0-4	3
8	ARC-267	Measured Drawing	1-0-4	3
7	ARC-268	Computer Applications in Architecture-IV	1-0-2	2
8	PDP-202	Life Skills	0-0-2	1
			TOTAL HOURS	TOTAL CREDITS
			12-0-20	22

LINGAYAS VIDYAPEETH
SCHOOL OF ARCHITECTURE AND PLANNING
ODD Semester Teaching Scheme

B.Arch 2018 Batch				
B.ARCH, Semester-V-Third Year				
Theory				
S. No.	**Subject Code**	**Subject Name**	**L-T-P**	**Credits Assigned**
1	ARC-301	Principles of Human Settlements I	2-0-0	2
2	ARC-302	Building Services III	2-0-0	2
3	CEA -311	Structures in Architecture - V	2-0-0	2
Practical				
S. No.	**Subject Code**	**Subject Name**	**L-T-P**	**Credits Assigned**
4	ARC-354	Site Planning and Landscape Design	2-0-4	4
5	ARC-355	Architectural Design III	2-0-8	6
6	ARC-356	BuildingConstruction and Technology-V	1-0-4	3
7	PDP-301	Leadership & Entrepreneurship Developmer	0-0-2	1
			TOTAL HOURS	TOTAL CREDITS
			11-0-18	20

LINGAYAS VIDYAPEETH
SCHOOL OF ARCHITECTURE AND PLANNING
EVEN Semester Teaching Scheme

B.Arch 2018 Batch				
B.ARCH,Semester-VI-Third Year				
S. No.	**Subject Code**	**Subject Name**	**L-T-P**	**Credit**
1	ARC-372	Building Structures-VI	0-0-2	1
2	ARC-314	Human Values	0-0-2	1
3	ARC-315	Building Economics	0-0-2	1
4	ARC-370	Architectural Design-VI	0-0-20	10
5	ARC-371	Building Construction VI	0-0-4	2
6	ARC-368	Computer Application in Architecture VI	0-0-4	2
7	ARC-369	Research/dissertation	0-0-2	1
8	ARC-380	Winter Internship-II		2
			Total Credits	20

LINGAYAS VIDYAPEETH
SCHOOL OF ARCHITECTURE AND PLANNING
ODD Semester Teaching Scheme

B.Arch 2018 Batch				
B.ARCH,Semester-VII-Fourth Year				
S. No.	**Subject Code**	**Subject Name**	**L-T-P**	**Credit**
1	ARC- 406	Environmental Studies	0-0-2	1
2	ARC- 407	Project Management	0-0-2	1
3	ARC-408	Product Design (Elective-1)	0-0-4	2
	ARC -409	Art Appreciation (Elective-1)	0-0-4	2
4	ARC- 410	Low Cost Architecture (Elective 2)	0-0-4	2
	ARC -411	Architectural Journalism(Elective 2)	0-0-4	2
5	ARC-460	Architectural Design VII	0-0-16	8
6	ARC-461	Building Construction VII	0-0-4	2
7	ARC- 459	Resesarch /Dissertation	0-0-4	2
			Total Credits	**18**

LINGAYAS VIDYAPEETH
SCHOOL OF ARCHITECTURE AND PLANNING
EVEN Semester Teaching Scheme

B.Arch 2018 Batch				
B.ARCH,Semester-VIII-Fourth Year				
S. No.	**Subject Code**	**Subject Name**	**L-T-P**	**Credit**
1	ARC-480	Professional Office Training		22

LINGAYAS VIDYAPEETH
SCHOOL OF ARCHITECTURE AND PLANNING
ODD Semester Teaching Scheme

B.Arch 2018 Batch				
B.ARCH,Semester-IX-FIFTH Year				
S. No.	**Subject Code**	**Subject Name**	**L-T-P**	**Credit**
1	ARC-502	Professional Practice -I	0-0-4	2
2	ARC-503	Disaster Mitigation & Management (Elective	0-0-4	2
	ARC-504	Sustainable Cities & Energy Compliance (Ele	0-0-4	2
3	ARC-505	Transport Planning (Elective 4)	0-0-4	2
	ARC-506	Urban & Regional Planning (Elective 4)	0-0-4	2
4	ARC-557	Architectural Design IX	0-0-24	12
			Total Credits	18

LINGAYAS VIDYAPEETH
SCHOOL OF ARCHITECTURE AND PLANNING
EVEN Semester Teaching Scheme

B.Arch 2018 Batch				
B.ARCH,Semester-X-FIFTH Year				
S. No.	**Subject Code**	**Subject Name**	**L-T-P**	**Credit**
1	ARC-515	Professional Practice -II	0-0-4	2
2	ARC-565	Thesis	0-0-44	22
			Total Credits	24

Lingaya's Vidyapeeth

Bachelor in Architecture (2018 Batch)
B.Arch (Ist SEMESTER)

Course code	Course title	L	T	P	Credits
ARC-101	PRINCIPLES OF ARCHITECTURE - I	2	0	0	2

Course Objectives:

- To introduce the student to the world of architecture and establish the key elements involved in the creation of aesthetically appealing and practically appropriate architecture.
- The subject is designed to provide an insight into the principles and processes that underpin the discipline of architecture.
- It is aimed to teach students the key practical and theoretical influences that inform architectural practice enabling students to understand and analyse architecture.

UNIT-1: **[6]**

INTRODUCTION TO ARCHITECTURE: Description of architecture; architecture compared to visual and temporal arts; architecture and science and technology; Architecture and social science; the work of an architect compared to that of an artist, technologist and a designer/craftsman, scope of architecture; definition and concepts of architecture.

UNIT-2: **[4]**

ARCHITECTURE AS AN OCCUPATION: Types of architectural projects, career opportunities in the field of architecture, role, responsibilities and duties of an architect in a building project.

UNIT-3: **[10]**

ELEMENTS OF DESIGN –

FUNCTIONAL Study of functional, aesthetic and structural components of architecture: parameters of design; anthropometrics; human activity and the use of spaces; spaces – their relation, interaction and information in a structure.

AESTHETIC: Elements and principles of visual composition, forms; functions of spaces and their flexibility; natural forms and shapes and their relation in designing; problems related to the understanding of the elements of architectural design; concepts of space and form and their perception; ordering principles.

STRUCTURAL: Elements of structure; elements of construction and their thoughtful use to enhance designs;

UNIT-4: [4]

ANALYSIS OF BUILDINGS: Analysis of architectural buildings through literature reviews and case studies, based on the functional, aesthetic and structural parameters.

UNIT-5: [4]

DESIGN PROCESS: Integration of aesthetics and function; understanding of formative ideas, organization concepts, spatial characteristics; massing and circulation in design analysis

TEXT BOOKS/REFERENCE BOOKS:

1. Snyder, J and Catanese, A, "Introduction to Architecture", McGraw-Hill, 1979
2. Farrelly, Lorraine, "The Fundamentals of Architecture", Ava Publishing, 2007
3. Voordt and Wegen, "Architecture in Use", Architectural Press, 2005
4. Smithies, K.W., "Principles of Design in Architecture", Van Nostrand Reinhold Co, 1981
5. Roger H. Clark and Michael Pause, "Precedents in Architecture", Van Nostrand Reinhold Co, 1996

Course outcomes:	
1.	Awareness of basic aspects and expectations of the career as an architect , exact notes and data on role and responsibility
2.	Students know about the initial process of designing , understanding and application of ideas and calculation basics for a design
3.	Selection of various famous buildings with their specific data and complete study for better understanding of pre existing architectural marvels.

Course code	Course title	L	T	P	Credits
ARC-102	HISTORY OF ARCHITECTURE - I	2	0	0	2

Course Objectives:

- History of Architecture provides the connection, context, and roots central for the identity of who we were, who we are, and who we might be. Since architecture is a coherent chain of events, styles, tendencies, beliefs and techniques,
- Studying history of architecture enables the student to gain a direct understanding of how and why architecture is made today, and clues to how architecture can be tomorrow.

UNIT-1: [4]

INTRODUCTION TO ANCIENT WORLD ARCHITECTURE: Art and culture of pre-historic man; stone henge; a brief outline of the Neolithic revolution and its impact on built forms– brief study of a few ancient settlements – Jericho, Catal Huyuk, Hassuna, Koln-Lindenthal & Skara Brae.

UNIT-2: [4]

ART AND ARCHITECTURE OF EGYPT: Evolution of Egyptian architecture- factors affecting development; spatial planning and characteristic features; tombs- mastabas, pyramids; temples; sphinx, obelisks etc.

UNIT-3: [4]

ART AND ARCHITECTURE OF MESOPOTAMIA: Factors affecting the development of art and architecture of Mesopotamia; spatial planning and characteristic features of the architecture of Sumerian, Babylonian, Assyrian and Persian periods; Ziggurats etc

UNIT-4: [6]

ART AND ARCHITECTURE OF GREECE & ROME: Evolution of Greek architecture- factors affecting development; characteristic features of Aegean and Helladic architecture; Hellanic and Hellenistic periods; Greek classic orders; agora and other important public buildings/ spaces. Evolution of Roman architecture- factors affecting development; characteristic features Roman classic orders; forums; basilicas; coliseum and other important public buildings/ spaces.

UNIT-5: [10]

EARLY CHRISTIAN ARCHITECTURE , ROMANESQUE AND GOTHIC ARCHITECTURE: Factors affecting evolution and development of early Christian and Byzantine, characteristic features basilican church and centralized church typology Factors affecting evolution and development of Romanesque and Gothic architecture, characteristic features and typical examples, spatial planning, construction and other features- rib and panel vaulting etc; church and the precinct, cathedrals, monastic establishments, parish churches; elements of special attributes .English and French church planning; secular architecture- manor houses, castles; town planning principles.

TEXT BOOKS/REFERENCE BOOKS:

1. Cruickshank, D., Fletcher, B., Saint A., “Banister Fletcher's - A History of Architecture”, Architectural Press, 1996.
2. Risebero, Bill, “ The Story of Western Architecture”, MIT Press, 2001

3. Ching Francis D.K., Jarzombek, Mark M., Prakash, Vikramaditya, "A Global History of Architecture", Wiley, 2006.

4. Hiraskar, G.K., "The Great Ages of World Architecture (with Introduction to Landscape Architecture)", Dhanpat Rai Publications (P) Ltd, 2009

Course outcomes:	
1.	This central thought of the civilization has permeated the students in various related fields such as religion, arts, science, literature, social and economic setup, which in turn were instrumental to the evolution of architecture specific to the area
2.	Prehistoric age and Early Civilizations, attempts at sensitizing the students to view architecture as one of the many products of the civilization.

Course code	Course title	L	T	P	Credits
ARC-103	ARCHITECTURAL PSYCHOLOGY	2	0	0	2

Course Objectives:

- This course is aimed at helping the student understand the built environment by providing a look at architecture within the framework of human sciences:
- Human psychology and society influence and inform architecture and how in turn architecture affects our lives.
- Students develop critical observation skills and investigate buildings as manifestations of religious, social, and personal values.

UNIT-1: [8]

ENVIRONMENTAL PSYCHOLOGY &PERCEPTION: Relation to architecture and planning; meaning of environment; measurement of environmental stimuli from psychological aspect; behavioral effects of environmental conditions: physical - noise, temperature and air pollution; social- overcrowding and isolation; extra ordinary- catastrophe. spatial perception: perception of distance, size and movement; meaning of colour and form; depth perception; visual illusions in architecture; spatial thinking- social and cultural influences on environmental perception.

UNIT-2: [6]

TERRITORIAL BEHAVIOUR AND PERSONAL SPACE: Concept of personal space and territoriality, individual and situational as determinants of personal space; consequences of too much or too little of personal space; personal space and environmental space as implications for design aspects; adaptation to environment - behavioral aspects of adaptation to familiar and unfamiliar environment; spatial experience; living requirements and satisfaction, etc.

UNIT-3: [6]

ARCHITECTURAL PSYCHOLOGY & PSYCHOLOGICAL AESTHETICS: Psychological effects of various architectural means: line, form, space, textures, colour, light, scale etc; case studies. Measurement of communication through art and architecture; signs and symbols in architecture; determination of pleasantness and unpleasantness as psychological factors in environmental design.

UNIT-4: [6]

ENVIRONMENTAL SETTINGS: Nature and effects of home, work, educational or institutional (e.g. nursing home, hospital, prison, etc.) environments as they affect human health and cognitive functioning; restorative effects of natural environments

UNIT-5: [2]

LOCAL IDENTITY: Concept of local identity, globalization and identity, maintaining a distinct identity in a globalised world etc.

Course outcomes:	
1.	Detail study of spaces, behavior, environmental aspects etc
2.	Understanding of environmental settings and its impacts on human health, functioning and restorative effects.
3.	Theory and understanding on local identity , globalization in architectural terms.

TEXT BOOK: Parmar, V. S., "Design Fundamentals in Architecture", Somaiya Publications Pvt. Ltd., 1973.

REFERENCE BOOKS

1. Bell, P.A., Greene, T.C., Fisher, J.D., & Baum, A. "Environmental Psychology", 5th edition, Harcourt, Inc.: Fort Worth, TX, 2001.
2. Gallagher, W., "The Power of Place", Harper Perennial, New York, 1994.
3. Rapoport, Amos, "House Form and Culture", Prentice Hall, 1969.
4. Broadbent, Geoffrey. "Design in Architecture: Architecture and the Human Sciences", John Wiley and Sons, 1973.

Course code	Course title	L	T	P	Credits
CEA -101	ENVIRONMENTAL SCIENCE AND ECOLOGY	2	0	0	2

Course Objectives:

- Environmental Studies is a multidisciplinary area, the issues of which everyone should know.
- The aim of the course is to make everyone aware of environmental issues like continuing problems of pollution, loss of forest, solid waste disposal, and degradation of environment. Issues like economic productivity and national security, global warming, the depletion of ozone layer and loss of biodiversity are other serious concerns before mankind.

UNIT-1: **[6]**

ENVIRONMENTAL STUDIES & ECOSYSTEMS: Basic definitions related to environment; scope, vis-à-vis environmental science and environmental engineering; causes of environmental degradation, atmospheric composition and associated spheres, habitat and climate; objective, goals and principles involved in environmental education, environmental awareness, environmental ethics, environmental organization and their involvement. Concept of an ecosystem, structure and function of an ecosystem, producers, consumers and decomposers, energy flow in the ecosystem, ecological succession, food chains, food webs and ecological pyramids; characteristic features, structure and function of the following ecosystem - forest ecosystem, grassland ecosystem desert ecosystem and aquatic ecosystems.

UNIT-2: **[6]**

NATURAL RESOURCES: Renewable and non-renewable resources; forest resources, over-exploitation, and deforestation / afforestation; water resources, impact of over-utilization of surface and ground water, floods, drought, conflicts over water, dams; mineral resources: dereliction of mines, environmental effects of extracting and using mineral resources; food resources, modern agriculture and its impact, problem associated with fertilizer and pesticide, water logging, salinity ; energy resources, renewable, non-renewable energy sources, solar energy, wind energy, hydro energy, biomass energy, geothermal energy, nuclear energy and its associated hazards; land as a resource, land degradation, man induced landslides, soil erosion and desertification

UNIT-3: **[4]**

BIODIVERSITY AND ITS CONSERVATION: Bio-geographical classification of India; biodiversity at global, national and local levels, India as a mega-diversity nation, hot-spots of biodiversity; value of biodiversity-consumptive use, productive use, social, ethical aesthetic and

option values; threats to biodiversity; conservation of biodiversity: in-situ and ex-situ conservation of biodiversity.

UNIT-4: [6]

ENVIRONMENTAL POLLUTION& SOCIAL ISSUES: Causes, effects and control measures of air pollution, water pollution, soil pollution, marine pollution, noise pollution, thermal pollution, solid waste management, e-waste management; disaster management – floods, earthquake, cyclone and landslides. Water conservation, rain water harvesting, watershed management; climate change, global warming, acid rain, ozone layer depletion; Environmental Protection Act, Air (Prevention and Control of Pollution) Act, Water (Prevention and Control of Pollution) Act, Wildlife Protection Act, Forest Conservation Act.

UNIT-5: [6]

HUMAN POPULATION AND THE ENVIRONMENT: Population growth, population explosion – family welfare programmes ; role of information technology in environment and human health; case studies, Chipko movement, Saradar Sarovar dam, mining and quarrying in Udaipur, salinity and water logging in Punjab, Haryana and Rajasthan, Bhopal gas tragedy, Chernobyl nuclear disaster, arsenic pollution in ground water

TEXT BOOKS/REFERENCE BOOKS:

1. Agarwal, K. C., "Environmental Biology", Nidi Publ. Ltd., 2001
2. Brunner R. C., "Hazardous Waste Incineration", McGraw Hill, 1989.
3. Cunningham, W.P., Cooper, T.H. Gorhani, E. and Hepworth, M.T., "Environmental Encyclopedia", Jaico Publ. House, 2001.
4. Kaushik, Anubha, and Kaushik, C.P., "Perspectives in Environmental Studies", New Age International Publishers, 2004

Course outcomes:	
1.	Modern Science of Climatology in the context of climate and weather as determinants of Design and Form of Habitat and Landscape throughout the ages at the Macro and Micro levels.
2.	Students have knowledge and application to building design as per the environment.
3.	Detail knowledge on environmental pollution types, causes and various measures to prevent them.

Course code	Course title	L	T	P	Credits
CEA-102	STRUCTURES IN ARCHITECTURE - I	2	0	0	2

Course Objectives:

- To introduce the basic concept of structures and enable the students to analyse, understand the fundamentals and working of various parts of different structural systems

UNIT-1: [8]

ELEMENTS OF STATICS: Law of Parallelogram of Forces, Resolution of Forces, Law of Triangular of forces, Polygon of forces, Theorem of Resolved parts, Resultant of a Number of Concurrent Coplanar forces, Moment of a Force.

UNIT-2: [8]

SIMPLE STRESSES AND STRAINS: Elasticity, Stress, Strain, Types of Stresses, Elastic Limit, Hooke's Law, Modulus of Elasticity, Stresses in Composite Bars, Primary or Linear Strain, Poisson's ratio, Shear Stress, Principal stresses and strains

UNIT-3: [4]

SHEAR FORCE AND BENDING MOMENT: Beams, Shear Force and Bending Moment, Moment of Resistance, SF and BM diagrams for simple cases

UNIT-4: [4]

CENTER OF GRAVITY AND MOMENT OF INERTIA: Definitions, Methods of Finding CoG of Simple Figures, Center of Parallel Forces, Important Theorems, Section Modulus, Calculation of MI by first Principal and its application, MI of composite sections

UNIT-5: [4]

TYPES OF LOADS: Concepts and definitions of dead load, imposed load, seismic load, wind load and snow load as per IS 875-1987 (Part I-V) and IS 1893-2002

TEXT BOOKS/REFERENCE BOOKS:

1. Engineering Mechanics and Strength of Materials; R.K. Bansal
2. Strength of Materials; R.S. Khurmi
3. Applied Mechanics and Strength of Materials; R.S. Khurmi
4. Civil Engineering Handbook; P.N. Khanna

Course outcomes:	
1.	This course is to provide the students with basic concept of mathematical principles, leading to primarily an easy understanding of various topics under "STRUCTURE
2.	The course also provides basic clues to mathematical models and research techniques in the field of architecture.

Course code	Course title	L	T	P	Credits
ARC-154	BASIC DESIGN & VISUAL ARTS - I	1	0	4	3

Course Objectives:

- The course Basic design is aimed at imparting a good base in design through thoughtful designing of simple two dimensional and three dimensional compositions. Also, the Visual Arts component intends to acquaint the students with various drawing principles and artistic techniques; how to sketch and draw at all stages of the design process.

COURSE CONTENT:- **[70]**

PART-I: BASIC DESIGN

1. To study the elements of visual composition.
2. To study the principles of visual composition.
3. To study the Ordering principles.
4. To study the colour wheel, colour schemes and its application on architectural forms and spaces; principles of harmony and contrast and degree of chromatism.
5. To study textures and textures schemes.
6. To study and demonstrate the application of basic design in architecture: Adopt compositions, murals and sculptures for semi recreational and semi functional architectural spaces.

PART-II: VISUAL ARTS

1. To study the basic elements of free hand sketching.
2. To learn the various sketching techniques and mediums in pencil and ink.
3. To learn how to build a sketch - composing a view, establishing structure, scale, layering tonal values, adding details; achieving spatial depth in drawings; sighting techniques.
4. Free hand Sketching of furniture pieces, parts of building in relation with human scale and proportions.
5. Free hand Sketching of architectural elements and landscapes.

TEXT BOOKS/REFERENCE BOOKS:

1.Ching, Francis D. K., "Architecture: Form, Space, and Order", Wiley and Sons, 2007.

2.Wallschlaeger, C and Snyder, S.B., "Basic Visual Concepts and Principles for Artists, Architects and Designers", McGraw Hill, 1992.

3.Laseau, P, "Graphic Thinking For Architects and Designers", John Wiley and Sons, 2001

4.Ching, Francis D. K., "Drawing: A Creative Process", Wiley and Sons,1989

5.Farrelly Lorraine, "Basic Architecture 01: Representational Techniques", Ava Publishing, 2008.

6.Evans, Ray, "Drawing and Painting Architecture", Van Nostrand Reinhold Company, 1983.

Course outcomes:	
1.	The most initial stage of designing this exercise teach compositions, colors contrast and various design elements and other fundamentals of designing.
2.	Application of design principles in two dimensional and three dimensional compositions.

Course code	Course title	L	T	P	Credits
ARC-155	ARCHITECTURAL DRAWING & GRAPHICS - I	1	0	4	3

Course Objectives:

- Architectural drawing and graphics is the primary medium for development and communicating design concepts.
- The students are trained to develop imaginative and three dimensional spatial capabilities and acquire the skill of reading plans, sections and elevations and understanding the the drawing conventions and symbols used in them

COURSE CONTENT:- **[70]**

1. To understand and learn about the various drafting tools required in architectural drafting - pencils, grades of graphite leads, technical pens etc.
2. To study the various drafting techniques, line quality etc.
3. To learn about the drafting procedure and exercises on architectural letterings.
4. To construct architectural scales and apply them to real object and drawings (Plain scale, diagonal scale, comparative scales).
5. To introduce the principles of orthographic projections and prepare drawings on orthographic projection of simple regular two dimension shapes.
6. To prepare drawings on orthographic projection of complex solids, hollow object and sections.
7. To study the principles and techniques of axonometric, oblique and isometric views and construct three dimensional views of basic and complex geometrical shapes.
8. To study the interpenetration of solids.
9. To study the development of surfaces.

10. To study the sections of solids.

TEXT BOOKS/REFERENCE BOOKS:

1. Bhatt, N.D., "Engineering Drawing: Plane and Solid Geometry", Charotar Publishing House,
2. Leslie, Martin C., "Architectural Graphics", Macmillan Pub Co, 1970.
3. Parkinson, A.C., "A First Year Engg. Drawing", Sir Issac Pitman and Sons.
4. Black, Earl D., "Engineering and Technical Drawing", Van Nostrand Reinhold Co., 1972.
5. Ching, Francis D. K., "Architectural Graphics", Van Nostrand Reinhold, 2003.

Course outcomes:	
1.	Students shall be familiarized with a range of techniques of expression beginning with manual drawing

Course code	Course title	L	T	P	Credits
ARC-156	BUILDING MATERIAL & CONSTRUCTION -I	1	0	4	3

Course Objectives:
➢ To give an introduction to building elements and expose the student to the process of building construction

COURSE CONTENT:- [70]

1. To introduce the various terminologies used in brick masonry works.
2. To study and prepare drawings of bonds in brick masonry; bonds in columns, corners and junctions, jointing and pointing; buttresses; sills; jambs; corbels; copings;
3. To study and prepare drawings of cavity walls and reinforced brickwork.
4. To study the various tools used in brick masonry works
5. To study the defects in brick masonry: cracking in brick walls etc; supervising brick masonry works.
6. To study and prepare drawings on various stone masonry works: Rubble masonry, Ashlar masonry etc.
7. To study the type of walling and joints, dressing of stone surfaces; coping; supervising stone masonry works.
8. To study various types of composite masonry.
9. To demonstrate various quality test of bricks, stones and timber.
10. To study and prepare drawings on simple foundation for masonry load bearing walls and piers.

11. **CLAY AND CLAY MATERIALS:** Bricks, terracotta, tiles etc; Bricks: types of bricks; study of properties of constituent components, manufacturing process, quality test of bricks.
12. **RURAL AND TRADITIONAL MATERIALS (Mud & Stone):** Mud: mud as a building material; soil stabilization: need for soil stabilization, stabilized soil blocks; rural materials: bamboo, casuarina, coconut, palm, hay, coir – properties and uses;
13. **Types of stones**; study of properties of constituent components; methods of quarrying of stones; properties and uses of principal building stones.
14. **LIME, CEMENT AND CEMENT PRODUCTS:** Lime: uses and properties; preparation of lime mortar; functions and requirements of a good mortar; mix properties for various works; **Concrete**: study of properties of constituent components, manufacturing process, quality tests of cement, lime, sand, aggregates, concrete and mortar.

TEXT BOOKS/REFERENCE BOOKS:

1.Rangwala, S. C., "Engineering Materials (Material Science)", Charotar Publishing House, 2007.

2.Rangwala, S. C., "Building Construction", Charotar Publishing House, 2007

3.McKay, W.B., "Building Construction Volume I, II, III and IV", Longmans, 1955

4.Ching, Francis D. K. and Adams, Cassandra, "Building Construction Illustrated", Wiley and Sons,

5.Barry, R**,** "The Construction of Buildings", the English Language Book Society and Crosby Lockwood, 1976

6.Chudley, Roy, "Construction Technology", Longman, 2005

Course outcomes:	
1.	Students explore the process of building construction, the components of buildings and the materials, skill and equipment used in shaping them.
2.	Introduction to building construction. Walls, brick works and joints and composite masonry are covered

Course code	Course title	L	T	P	Credits
ARC-157	MODEL MAKING WORKSHOP - I	1	0	2	2

Course Objectives:
➢ Modeling allows an architect to explore an idea in a three dimensional form, allowing communication of the idea in an accessible way.

COURSE CONTENT:- **[42]**

1. To introduce the carpentry tools, processes, joints and wood working machines.
2. To prepare simple three dimensional objects like cubes pyramids etc.
3. To create complex three dimensional forms for models using carpentry methods.
4. To demonstrate the use of carpentry tools in making joints such as dovetail joint, mortise and tenon joint, lap joint, butt joint etc to be used for making furniture.
5. To demonstrate fixing of plywood, blockboards, commercial boards etc.
6. To study the application of plywood, blockboards, commercial boards etc. in furniture.
7. To introduce the various welding equipments, processes and its applications.
8. To introduce to metallic sections, joinery tools, joinery processes and working with them.
9. To prepare joints (Lap and butt) by metal arc welding.
10. To learn and use various painting methods-brush, spray, hot spray etc.

TEXT BOOKS/REFERENCE BOOKS:

1. Raghuwanshi, B.S., "A Course in Workshop Technology - Vol. I and II", Dhanpat Rai and Co, 2001.
2. Hazra and Chaudhary, "Workshop Technology - Vol. I and II", Asian Book Comp, 1998.

Course outcomes:	
1.	Along with introduction to carpentry tools, fixing, and preparation of joints in detail and understanding.

Course code	Course title	L	T	P	Credits
ARC-158	COMPUTER APPLICATIONS IN ARCHITECTURE - I	1	0	2	2

Course Objectives:
➢ This course will enable the students to understand the basics of computer and to know the basics of MSOffice, enabling the student prepare simple and interactive presentations using computers.

COURSE CONTENT:- [42]

1. To introduce and study about the basics of computer hardware and software components; computer terminology.
2. To introduce and study about windows and its applications.
3. To learn the concepts of Internet, server types, connectivity; applications of internet- using e-mail, browsing etc.
4. To understand the concepts of e-commerce.
5. To study in detail Microsoft Word; To Create a document with all formatting effects.
6. Exercises on document preparation using MS Word
7. Create a document with tables, labels in MS word and to create a document to send mails using mail merge option.
8. To learn about the concept of spreadsheet/ worksheets, charts, formulas, functions etc using MS Excel.
9. To Create an Excel File to analyze the student‟s performance. Create a chart for the above data to depict it diagrammatically.
10. Create Excel sheet to use built-in-function.
11. To prepare slide shows and presentations using MS PowerPoint;
12. To create architectural presentations using computers: communicating information, presentation sequence, symbols, lettering and presentation formats etc.
13. To Create a Power Point presentation with varying animation effects with timer.

TEXT BOOKS/REFERENCE BOOKS:

1. Wallace, Wang, “Office 2010 for Dummies”, Wiley, 2010
2. Rajaraman, V., “Fundamentals of Computer”, Prentice Hall, 2004
3. Icon, Alexis and Leon, Mathew, “Internet for Everyone” Leon Techworld, 1997
4. Press, Barry and Press, Marcia, “Teach Yourself all about Computers”, IDG Books India, 20
5. Mansfield, R., “The Compact Guide to Microsoft Office”, BPB Publishers,1994

Course outcomes:	
1.	Introduction to basic software and hardware, and detail understanding of Microsoft power point presentations

Lingaya's Vidyapeeth

Bachelor in Architecture (2018 Batch)

B.Arch (IInd SEMESTER)

Course code	Course title	L	T	P	Credits
ARC-110	PRINCIPLES OF ARCHITECTURE-II	2	0	0	2

Course Objectives:

- To introduce the student to the world of architecture and establish the key elements involved in the creation of aesthetically appealing and practically appropriate architecture.
- The subject is designed to provide an insight into the principles and processes that underpin the discipline of architecture.
- It is aimed to teach students the key practical and theoretical influences that inform architectural practice enabling students to understand and analyze architecture.

UNIT-1: **[6]**

FACTORS INFLUENCING ARCHITECTURE: Climate, topography, materials, economics, socio-cultural and technological influences etc

UNIT-2: **[4]**

ARCHITECTS & THEIR THEORIES ON ARCHITECTURE THROUGH THE AGES: Brief introduction to the styles propagated by architects from antiquity to modernism. Philosophy of architecture as propagated by some leading architects; study of selected writings and buildings.

UNIT-3: **[6]**

ARCHITECTURE CRITICISM: Introduction and need for architecture criticism in the academy of architects; criticism in day - to - day transaction, architecture criticism a societal perspective; types and characteristics, crux of normative criticism, interpretive criticism, description criticism, peer criticism.

UNIT-4: **[4]**

VERNACULAR AND RURAL ARCHITECTURE: Introduction to vernacular and rural architecture and its characteristics; rural environment and its architectural considerations; study of exemplary cases.

UNIT-5: [8]

CASE STUDIES & ANALYSIS OF BUILDINGS: Case studies of some old and new classical architectural projects from India and aboard with special focus on the above mentioned points. Analysis of architectural projects of various scales and types based on the above mentioned points.

TEXT BOOKS/REFERENCE BOOKS:

1. Snyder,J and Catanese, A, "Introduction to Architecture", McGraw-Hill, 1979

2. Farrelly, Lorraine, "The Fundamentals of Architecture", Ava Publishing, 2007

3. Voordt and Wegen, "Architecture in Use", Architectural Press, 2005

4. Smithies, K.W., "Principles of Design in Architecture", Van Nostrand Reinhold Co, 1981

5. Roger H. Clark and Michael Pause, "Precedents in Architecture", Van Nostrand Reinhold Co, 1996

6. Pevsner Nikolaus, "Canons of Criticism", Penguin, Harmonds worth, 1971

Course outcomes:	
1.	This principal of architecture curriculum along with introduction to factors influencing will provide detail on vernacular, rural, and lastly a case study which covers the related issues.

Course code	Course title	L	T	P	Credits
ARC-111	HISTORY OF ARCHITECTURE-II	2	0	0	2

Course Objectives:

- History of Architecture provides the connection, context, and roots central for the identity of who we were, who we are, and who we might be. Since architecture is a coherent chain of events, styles, tendencies, beliefs and techniques,
- Studying history of architecture enables the student to gain a direct understanding of how and why architecture is made today, and clues to how architecture can be tomorrow.

UNIT-1: [4]

ANCIENT ARCHITECTURE: Early Indian architecture up to 3rd century A.D; Indus valley civilization; study of Mohenjodaro and Harrapan architecture and planning; Vedic architecture of India; Vastu purush mandala and other canons of Hindu architecture.

UNIT-2: [8]

INDIAN TEMPLE ARCHITECTURE & INDO-ARYAN TEMPLE ARCHITECTURE: Temples: spatial arrangements, construction, ornamentation; elements of special attributes: columns, shikharas; temple complex etc Characteristic features and typical examples of Indo-Aryan temple architecture- temples of Orissa, Kashmir, M.P, Gujarat.

UNIT-3: [6]

CENTRAL HINDU TEMPLE ARCHITECTURE & DRAVIDIAN ARCHITECTURE: Early chalukyan architecture, the Rashtrakuta style and the Hoysala architecture – salient features and typical examples. Characteristic features and typical examples of Pallava, Pandava, Chola, Vijayanagar and Madura styles.

UNIT-4: [6]

BUDDHIST ARCHITECTURE IN INDIA: Development and characteristic features; stupas; Buddhist order- Ashoka pillars; Chaityas; rock cut architecture; Viharas etc.

UNIT-5: [4]

JAIN ARCHITECTURE IN INDIA: Development and characteristic features; Jain temple architecture etc.

TEXT BOOKS/REFERENCE BOOKS:

1. Grover, S. K., "Buddhist and Hindu Architecture in India", CBS, 2008.
2. Thapar, B., "Introduction to Indian Architecture", Periplus Editions, 2005.
3. Surendra S.,Indian Architecture:Hindu, Buddhist and Jain"Ajanta Offset and Packaging Ltd.,
4. Maheshwari and Garg, "Ancient Indian Architecture", CBS, 2003.

Course outcomes:	
1.	Ancient architecture, focusing on Indian architecture it covers in depth of Hindu, Buddhist and jain architecture
2.	The emphasis of the discussions is on the nature and essence of the architectural product, related as far as possible to history of the process of their conceptualization, and process of construction. Use of the concepts of Style/ Typology/Morphology in histories of architecture

Course code	Course title	L	T	P	Credits
ARC-112	SOCIOLOGY IN ARCHITECTURE	2	0	0	2

Course Objectives:

- To examines how architectural forms both influence and react to socio-cultural phenomena.
- To inform architecture students in all phases of the design process, including the pre-design and programming, design, construction, and post-construction phases.

UNIT-1: **[4]**

INTRODUCTION TO SOCIOLOGY: Man and his social and physical environment; social groups and social structure; utility and relation with architecture;

UNIT-2: **[6]**

CULTURE ,SOCIETY & INDIAN COMMUNITIES: Meaning of culture and society, influence of socio-cultural patterns on architecture, case studies. Rural and urban communities; their social structures and problems; cultural heritage; rituals and community gathering etc.

UNIT-3: **[8]**

URBANIZATION & COMPARISON OF URBANIZATION: Trend and characteristics; dynamics of urban growth and social change; urban attitude, value and behavior; patterns of urbanization in India; migration studies; problems arising out of urbanization etc. Comparison of urbanization in underdeveloped countries with that in the west – salient features and characteristics

UNIT-4: **[4]**

SOCIAL ASPECT OF PHYSICAL ENVIRONMENT: Its implications and limitations in buildings; neighborhood planning; slum improvements and city fabric.

UNIT-5: **[4]**

COMMUNITY PARTICIPATION: Significance of public opinion and participation

Note: Assignments would be in the form of case studies comprising the sociological study of communities with their habitat and built environment

TEXT BOOK

Madan, G. R., “Indian Social Problems: Vol - 1 and 2”, Allied Publishers Pvt Ltd, 2003.

REFERENCE BOOKS

1. Rapoport, Amos, “House Form and Culture”, Prentice Hall, 1969
2. Broadbent, Geoffrey. “Design in Architecture: Architecture and the Human Sciences”, John Wiley and Sons, 1973

3. Prakasa Rao, VLS, “Urbanisation in India”, Concept Publishing Company, New Delhi, 1983.
4. Desai A.R., “Rural Sociology”, Popular Prakashan, Bombay, 1984.
5. Smelsa, “Sociology”, Prentice Hall, New Jersey, 1981.

Course outcomes:	
1.	Students familiarize with basic concepts/ theories of sociology/ psychology as relevant to architecture.
2.	Develop a language and vocabulary for discussions/ analysis on the sociological/ psychologicaldimensions of architecture

Course code	Course title	L	T	P	Credits
CEA-103	STRUCTURES IN ARCHITECTURE - II	2	0	0	2

Course Objectives:

- To introduce the basic concept of structures and enable the students to analyze, understand the fundamentals and working of various parts of different structural systems

UNIT-1: [4]

BENDING STRESSES IN BEAM: Introduction, Theory of Simple bending, assumptions in the theory, illustrative examples.

UNIT-2: [4]

DEFLECTION OF BEAMS: Deflection in simply supported beams and cantilever beams; double integration method and area moment method, illustrative examples.

UNIT-3: [6]

ANALYSIS OF STRESS: Introduction, principal stresses and principal planes, maximum shear stress, circular diagram for stresses, Mohr’s circle, illustrative examples.

UNIT-4: [8]

SHEAR FORCE AND BENDING MOMENT: Types of supports, relationship between bending moment, shear force and load; shear force and bending moment diagrams in case of simply supported beams and cantilevers with distributed and point loads; simply supported beams with overhangs, moments applied to cantilevers and beams, illustrative examples.

UNIT-5: **[6]**

COLUMNS: Introduction, modes of failure, elastic instability, Euler's theory, End conditions and effective length, radius of gyration, slenderness ratio, strut and column, long column under eccentric loading, , illustrative examples.

TEXT BOOKS/REFERENCE BOOKS:

1. Khurmi, R.S., "Theory of Structures", S. Chand and Company, New Delhi, 2005
2. Khurmi, R.S. "Strength of Materials", S. Chand and Company, New Delhi, 2010
3. Punmia, B.C., "Strength of Materials and Mechanics of Structure", Standard Publishers and Distributors, 1971

Course outcomes:	
1.	Students have a feel for structural principles as they relate to a building design
2.	Enable to make an informed choice regarding the most appropriate structural system for the building
3.	Develop a reasonable understanding of its operational and economic implications.

Course code	Course title	L	T	P	Credits
ARC-164	BASIC DESIGN AND VISUAL ARTS - II	1	0	4	3

Course Objectives:

- The course Basic design is aimed at imparting a good base in design through thoughtful designing of simple two dimensional and three dimensional compositions.
- Visual Arts component intends to acquaint the students with various drawing principles and artistic techniques; how to sketch and draw at all stages of the design process

COURSE CONTENT:- [70]

PART-I: BASIC DESIGN

1. To study various linear forms for outdoor and indoor architectural spaces.
2. To study planer forms and explore the adoptability of these sculptures to architectural functions.
3. To Study solids and voids: creation of abstract and semi abstract symbolic sculptural forms and spaces.
4. To study the Transformation of forms - dimensional transformation, subtractive, additive forms, organization of additive forms.

5. To study the Articulation of forms- analytical study of the sculptural building forms and its critical appraisal of visual character.
6. To study architectural spaces: Elements defining spaces; factors affecting qualities of architectural spaces; spatial relationships and spatial organizations; movement through space.
7. To study and demonstrate the application of basic design in architecture: Adopt compositions, murals and sculptures for semi recreational and semi functional architectural spaces.

SUGGESTED STUDIO EXCERCISES:

Integration of construction and building material

Gate design, Bus stop, Kiosk, Mother dairy, Guard room, ATM room, Exhibition stalls, Milk booths.

PART-II: VISUAL ARTS

1. To study the effects and techniques of creating tonal values – hatching, cross hatching, scribbling, stippling; visual texture and grain.
2. To study the interaction of light with objects and surfaces; shade and shadows; modeling form.
3. To demonstrate the use of tonal values in architectural drawings.
4. To understand the application of free hand sketching in the design process: conceptual sketches, analytical sketches, observational sketches, contour drawings; parti diagrams; serial views; travel sketching; diagramming.
5. To study the importance of context in architectural drawings: importance of context in views and drawings; elements of context – drawing human figures; furniture and furnishings; vehicles; landscape elements.

TEXT BOOKS/REFERENCE BOOKS:

1. Ching, Francis D. K., “Architecture: Form, Space, and Order”, Wiley and Sons, 2007.
2. Wallschlaeger, C and Snyder, S.B., “Basic Visual Concepts and Principles for Artists, Architects and Designers”, McGraw Hill, 1992.
3. Laseau, P, “Graphic Thinking For Architects and Designers”, John Wiley and Sons, 2001
4. Ching, Francis D. K., “Drawing: A Creative Process”, Wiley and Sons,1989
5. Farrelly Lorraine,“Basic Architecture 01:Representational Techniques”,Ava Publishing,
6. Ching, Francis D. K., “Architectural Graphics”, Van Nostrand Reinhold, 2003

Course outcomes:	
1.	Students develop analytical and critical skills for looking at art and architecture.

2.	Students know the fundamental principles of architecture and architectural design,
3.	Understanding of Ideas, Concept, Form, Function and Meaning with respect to architecture

Course code	Course title	L	T	P	Credits
ARC-165	ARCHITECTURAL DRAWING & GRAPHICS -II	1	0	4	3

Course Objectives:

- Architectural drawing and graphics is the primary medium for development and communicating design concepts.
- Through this course the students are trained to develop imaginative and three dimensional spatial capabilities and acquire the skill of reading plans, sections and elevations .
- Understanding the drawing conventions and symbols used in them.

COURSE CONTENT:- **[70]**

1. To study the basic terms, principles, types and techniques of geometrical perspective drawing; linear perspectives: one, two and three point perspective.
2. To prepare perspective by measuring point method, angular and parallel perspective.
3. To prepare drawings on the presentation of interior and exterior views in one point perspective and section perspectives.
4. To prepare drawings using two point perspectives for simple objects, inclined planes, cylindrical objects, arches and other circular forms etc.
5. To introduce the basic principles of sciography and its application to the field of architecture.
6. To prepare drawings demonstrating sciography of two dimensional objects in plan and elevation.
7. To prepare drawings demonstrating sciography of three dimensional objects in plan, elevation and views (Isometric and perspective).
8. To study the various graphics codes and symbols used in architectural drawings: graphic conventions for scale, orientation, materials, line thicknesses and line types, symbols representing doors and windows, staircases, centerlines, property lines etc.
9. To study the different types of plans used in architectural drawings: site plan, location plan, floor plans, roof/ terrace plan, reflected ceiling plan; sections - design and construction; elevations.

10. To introduce the various types of architectural drawings – feasibility study drawings; conceptual drawings; presentation drawings; working drawings; specialized drawings.

TEXT BOOKS/REFERENCE BOOKS:

1. Gill, Robert W., "Basic Perspective", Thames and Hudson, 1974
2. Malik, Shankar, "Perspective and Sciography", Allied Publishers, 1994
3. Leslie, Martin C., "Architectural Graphics", Macmillan Pub Co, 1970
4. Ching, Francis D. K., "Architectural Graphics", Van Nostrand Reinhold, 2003

Course outcomes:	
1.	Students can learn the Graphic representation of concepts and design principles of two dimensional and three dimensional composition.
2.	Learning principles of development of lateral surfaces of solids, applying them to work out and drawing developed surfaces of simple geometric solids

Course code	Course title	L	T	P	Credits
ARC-166	BUILDING MATERIAL & CONSTRUCTION - II	1	0	4	3

Course Objectives:
➢ To give an introduction to building elements and expose the student to the process of building construction.

COURSE CONTENT:- [70]

1. To study and prepare drawings on various types of joinery used in carpentry.
2. To study various types of wooden doors: ledged, braced and battened, paneled, glazed, flush, sliding doors, revolving; doors with and without fanlight etc;
3. To study various types of wooden windows: fixed, side and top hung, casement, pivoted, louvered, bay, dormer, ventilators and fanlights etc.
4. To study and prepare drawings of the various types of metal (pressed steel and z-section) doors and windows.
5. To study methods of mosquito proofing of doors and windows.
6. To study and prepare drawings of the various fixtures and fastenings commonly used in doors and windows.

7. To introduce the various terminology of arches.
8. To prepare drawings on the various type of arches.
9. To study the procedure of centering of arches.
10. To study and prepare drawings on the types of lintels and sunshades.
11. **TIMBER:** Study of properties of timber, uses, seasoning process, quality tests; types of timber and defects in timber; protection from termites; techniques of preserving and finishing of timber; plywood, particle boards, block boards, PVC, laminates etc.
12. **GLASS:** Types of glass (plate, tinted, heat absorbing etc; structural glass bricks and glass crete; fiber glass and glass wool etc; properties, varieties and uses.

Note: Sessional will be in the form of reports, drawings and models. There shall be regular visits to construction sites.

TEXT BOOKS/REFERENCE BOOKS:

1. McKay, W.B., "Building Construction Volume I, II, III and IV", Longmans, 1955
2. Ching, Francis D. K. and Adams, Cassandra, "Building Construction Illustrated", Wiley and Sons, 2000
3. Barry, R, "The Construction of Buildings", The English Language Book Society and Crosby Lockwood, 1976
4. Chudley, Roy, "Construction Technology", Longman, 2005
5. Arora, S.P. and Bindra, S.P., "The Text book of Building Construction", Dhanpat Rai Publications,
   2009.

Course outcomes:	
1.	Awareness about the role of Wood in Building Industry.
2.	Know about different typology of Doors , Windows and their fixing Details

Course code	Course title	L	T	P	Credits
ARC-167	MODEL MAKING WORKSHOP - II	1	0	2	2

Course Objectives:
➢ Modeling allows an architect to explore an idea in a three dimensional form, allowing communication of the idea in an accessible way.

COURSE CONTENT:- [42]

1. To introduce the various materials used in architectural model making.
2. To introduce the various techniques of model making.
3. To model with paper, card board, mount board, thermocol, styrofoam, softwood, acrylic sheets and wire.
4. To study the development of simple and composite form, experiments on three dimensional forms such as cubes, pyramids, tetrahedron and forms to understand the spaces conceived by them.
5. To create organic forms by using clay, plaster of paris, metal scrap, jute fiber etc. for study of forms.
6. To study about murals.
7. To introduce and make various types of architectural models – concept models; development models etc.
8. To introduce the concept of illuminated models.
9. To work on sectional models.
10. To study and make presentation models using various materials etc.

Note: Students are required to prepare block models of groups of buildings including roads and landscaped open spaces and detailed models of buildings from given set of drawings.

TEXT BOOKS/REFERENCE BOOKS:

1. Morris, M., "Architecture and the Miniature: Models", John Wiley and Sons, 2000

2. Sutherland, Martha, " Model Making: A Basic Guide", W.W. Norton and Co, 1999

3. Mills, Criss B., "Designing with Models : A Studio Guide to Making and Using Architectural Models", Thomson and Wadsworth, 2000

Course outcomes:	
1.	Basic skills for preparing architectural models and art project while in calculating value for good craftsmanship.

Course code	Course title	L	T	P	Credits
ARC-168	COMPUTER APPLICATION IN ARCHITECTURE- II	1	0	2	2

Course Objectives:

- The objective of introducing this course is to promote computer knowledge and applications in architecture.
- This course will familiarize the students to the concepts CAD and will enable them to present Computer Aided Architectural Drawings in both 2D & 3D.

COURSE CONTENT:- [42]

1. To introduce to the basics of CAD and the fundamentals of 2D drafting.

2. To introduce different 2D object drawing methods, editing objects and modifying their associated properties.

3. Exercises on text annotation and dimensioning, defining text and dimension styles.

4. To learn about the concept of blocks and object grouping; styles and organizing objects in layers.

5. To create and customize hatch patterns; introduction to symbol libraries.

6. To study drawing unit association, scaling, associating limits

7. To introduce the different View management techniques, Concept of UCS and Icon management

8. To introduce the concept of model space and organize drawings in custom layouts.

9. Exercises on the use of templates.

10. To learn about the database concepts, attributes and scripts, concepts of OLE

11. To learn about importing/ exporting files to and from CAD.

12. To learn printing and plotting using CAD.

13. To introduce Auto LISP.

14. To introduce the different types of 3D modeling techniques- Solid creation; Editing; Creating complex solids; Boolean operations on solids.

15. Exercises on shading – Rendering, Material mapping, Environment attributes

TEXT BOOKS/REFERENCE BOOKS:

1. Kyles, Shannon R., “AutoCAD Workbook for Architects and Engineers”, Wiley-Blackwell, 2008.

2. Saka, Tuna, “AutoCAD for architecture”, Prentice Hall, 2002

Course outcomes:	
1.	Basic drawing and editing commands for 2D drawings, application of Auto CAD commands.
2.	Advanced 3D drawings using Auto CAD, Use of layers and blocks exercise on simple working drawings

Lingaya's Vidyapeeth

Bachelor in Architecture (2018 Batch)

B.Arch (IIIrd SEMESTER)

Course code	Course title	L	T	P	Credits
ARC-201	HISTORY OF ARCHITECTURE III	2	0	0	2

Course Objectives:

- History of Architecture provides the connection, context, and roots central for the identity of who we were, who we are, and who we might be.
- Since architecture is a coherent chain of events, styles, tendencies, beliefs and techniques, studying history of architecture enables the student to gain a direct understanding of how and why architecture is made today, and clues to how architecture can be tomorrow.
- To introduce architectural vocabulary and provide an understanding of various architectural styles and their salient features.

UNIT-1: [6]

INDO-ISLAMIC ARCHITECTURE:

Introduction to Islamic culture in India, salient features of Islam, Islamic culture compared to other religions - Muslim invasion of India; socio-political influence;Building types: mosques, tombs; architectural character: spatial arrangements, structural system, constructional features, surface ornamentations, fenestration details; elements of special attributes: arch, dome etc.

UNIT-2: [6]

ISLAMIC ARCHITECTURE – IMPERIAL STYLE, PROVINCIAL STYLES & MUGHAL ARCHITECTURE:

Influences on Islamic Architecture - evolution of the Islamic Arch, salient features of an Indian mosque; development of the Imperial style by the kings of the Slave dynasty and the provincial styles in different regions – typical examples and characteristic features.

Development of the Mughal style under the different rulers - Babur, Humayun, Akbar, Jahangir, Shahjahan, Aurangazeb; typical examples and salient features.

UNIT-3: [6]

ARCHITECTURE IN COLONIAL INDIA:

Styles and trends of architecture brought by Britishers to India and their evolution; characteristics of British colonial architecture; monumental buildings of the colonial period; architectural character of Indo-Saracenic and classical revival; Later colonial period: Contribution of Edwin Lutyens & Herbert Baker to the layout and architecture of New Delhi.

UNIT-4: [4]

THE TREND IN INDIAN ARCHITECTURE AFTER 1970:

Principles and works of Balakrishna Doshi, Charles Correa, Anant Raje, Raj Rewal and Laurie Baker with suitable examples.

UNIT-5: [6]

RENAISSANCE & POST RENAISSANCE ARCHITECTURE:

Birth of Renaissance and its impact on architectural style revivalism and synthesis of classical features; Churches, Palazzo, villa: spatial planning, construction and other architectural features; town planning principles; French and British Renaissance; High Renaissance and Mannerism.

Baroque architecture; works of Brunelleschi, Alberti, Bramante, Michelangelo, Palladio & Bernini, Inigo Jones; Arts and crafts and Art Nouveau movements and their impact on architecture; principles and works of Horta, Guimard, Macintosh and Antonio Gaudi.

Note: An educational tour/ study tour to the places of architectural interest / building appraisal shall be organized as per the programme. The documentation shall be done in the form of photographs / slides and sketches presented in form of a seminar and written report immediately after the tour / building appraisal.

TEXT BOOKS/REFERENCE BOOKS:

1. Brown, Percy, "Indian Architecture (Islamic period)", DB Taraporevala Sons & Co, Mumbai, 1983.
2. Hambly, Gavin, “Cities Of Mughal India”, Ubs Publisher's Distributors, 1968

3.Grover,S, “The Architecture of India (Islamic)”, Vikas Publishing House Pvt. Ltd., New Delhi, 1981.

4.Michell, G. “Architecture of the Islamic World (its history and social meaning)”, Thames and Hudson, London, 1978.

5.Hillenbrand, Robert, “Islamic Architecture, Form, Function and Meaning”, Edinburgh University Press,

6. Nath, R., “History of Mughal Architecture”, Abhinav Publicaitons, New Delhi, 1985

Course outcomes:	
1.	Students will also know about the design variables, construction techniques materials and craftsmanship used in the historical buildings of this great country.
2.	The students will develop the ability to sketch plans, sections, elevations and other architectural details of heritage buildings in India.

Course code	Course title	L	T	P	Credits
ARC-202	BUILDING SERVICE- I	2	0	0	2

Course Objectives:

- Building Services are the dynamics in a static structure, providing movement, communications, facilities and comfort. As they are unavoidable and absolutely necessary,
- It is imperative that architects and all those who are concerned with the construction of buildings have a knowledge and appreciation of the subject.

UNIT-1: [6]

WATER SUPPLY AT A CITY AND BUILDING LEVEL: Demand of water for various purposes as per BIS standards, per capita demand , DETECTION OF leakage and wastage of water and its preventive measures; sources and method of water supply - BRIEF OF catchment areas, reservoirs, and their location; system of water supply-Continuous, intermittent, their advantages and disadvantages; water purification systems, control systems, supply for a neighborhood and town. Tapping of water; storage and distribution of water in premises; boosting water, gravity and pressure distribution by storage tanks of individual buildings; service connections, types and sizes of pipes, piping network, materials, joinery, water supply fixture and installations, installation of network both open and concealed; water supply for multi storied buildings.

UNIT-2: [4]

HOT WATER SUPPLY: Direct and indirect systems of hot water supply, their components and equipment's used for the same; insulation of piping work and safety devices; solar heating.

UNIT-3: [6]

SITE DRAINAGE AND SANITATION SYSTEMS: Site planning from drainage point of view; storm water drains, details of construction OF DRAINS, water entrances, gullies, open drains, gradients, rainfall maintenance; storm water and roof drainage systems and their installations; underground drainage systems with application of ventilation, self cleansing velocity, laying of drains to required gradients and testing of drains. Study of sanitary fittings with reference to use, materials and functions; traps and their uses, classification of traps as per use and shape; pipes and piping systems, vent and anti-siphonage systems, jointing and installations; disposal of sewage within the premises using septic tanks, inspection chambers, effluent treatment plants, their function and layouts; sewage and sewage treatment plants; connection of house sewers to municipal sewers, ventilation of sewers;

UNIT-4: [6]

SOLID WASTE DISPOSAL: Collection, treatment and disposal of organic and inorganic waste, urban solid waste treatment systems, traditional methods, garbage chutes, sanitary landfills,

vermicomposting, incineration, pyrolysis-advantages and limitations etc; garbage disposal in multi – storied buildings, dry and wet treatment; treatment of industrial refuse; refuse and pollution problems.

UNIT-5: **[6]**

DESIGNING PLUMBING AND SANITARY LAYOUTS: Designing of toilet blocks in residential buildings, showing both Indian and European W.Cs and in public buildings; preparation of working drawings showing complete details of fittings and plumbing required for water supply and drainage; with all required calculations.

Note: Assignments can be in form of compiling required information from site visits, market surveys and other sources.

TEXT BOOKS/REFERENCE BOOKS:

- Rangwala, S.C., "Water Supply and Sanitary Engineering", Charotar publishing house.
- Shah, Charanjit, "Water Supply and Sanitary Engineering", Galgotia publishers.
- Wise, A.F.E., &Swaffield, J.A., "Water Sanitary Services for Buildings", Longman Scientific and Technical, Harlow, 1995.
- Greeno, Roger, "Building Services Technology and Design", Longman Scientific and Technical, Harlow, 1997.
- Chatterjee, A.K., "Water Supply and Sanitary Engineering", Khanna publishers, New Delhi, 1986.
- "Hand Book on Water Supply and Drainage (with special emphasis on plumbing)", Bureau of Indian standards, New Delhi .

Course outcomes:	
1.	Knowledge of environmental support systems as they apply to human habitat, with special reference
2.	Students have thorough understanding on water supply and waste water management, in residential unit, small campus, commercial buildings.
3.	Students are aware of best practices for Solid waste management

Course code	Course title	L	T	P	Credits
ARC-203	BUILDING SCIENCES	2	0	0	2

Course Objectives:
➢ Architecture and climate have always been linked in a pattern of mutual influence. In its role as a provider of shelter, architecture intentionally modifies the climate of an immediate area – and traditionally, its design has been shaped by the stresses and opportunities inherent in the regional climate.

UNIT-1: **[4]**

CLIMATE &THERMAL COMFORT: Introduction to climate as a factor of human shelter, comfort and environment; its classification as global, macro and micro climate; elements of climate; thermal balance of the human body, thermal comfort indices: effective temperature, CET, comfort zone & calculation of overheated & under heated periods

UNIT-2: **[6]**

PRINCIPLES OF THERMAL DESIGN IN BUILDINGS: Thermal quantities: heat flow rate, conductivity (k–value) & resistivity, conductance through a multi-layered body, surface conductance, transmittance: calculation of U- value**,** convection , radiation , concept of sol-air temperature & solar gain factor; exercises in heat loss & heat gain in building assuming steady state assumption (thermal balance equation); periodic heat flow in building: time lag & decrement factor & its application in selection of appropriate materials for walls & roof; effect of insulation & cavity on time lag & its practical use

UNIT-3: **[6]**

VENTILATION & DAYLIGHTING: Functions of ventilation stack effect due to the thermal forces, wind velocity: wind rose diagram, wind pressure; air movement through building and around buildings; factors affecting indoor air flow, wind shadow etc.; The nature of light**,** its transmission, reflection, coloured light, the munsell system; photometric quantities, illumination, day lighting prediction, the daylight design graph

UNIT-4: **[6]**

SOLAR GEOMETRY & USE OF SOLAR ENERGY: Study of solar control with references to solar charts, sun path diagrams; methods of calculating and designing of shading devices; introduction to concepts of solar energy utilization in heating water such as Flat Plate collectors; introduction to use of solar energy in lighting in buildings such as Photovoltaic cells; solar passive strategies-Principals of natural light and natural ventilation.

UNIT-5: **[6]**

DESIGN FOR CLIMATIC TYPES& GREEN BUILDING CONCEPTS: Study of analysis of climatic zones in India along with data analysis; design strategies for Indian climate zones - building design & lay out planning consideration; study of climatic zones along with traditional dwelling units; study measurement and analysis of micro climatic elements and its use for a Designer; Introduction to the concepts of green buildings and energy conscious architecture; introduction to ECBC rules, Energy audit and Green buildings rating eg. TERI Griha, LEED etc.

NOTE: Assignments can be in the form of:

1. Exercises on achieving the required indoor temperature by varying the components of composite materials according to the U values.

2. Exercises on design of small buildings for various climates

TEXT BOOKS/REFERENCE BOOKS:

1.Koenigsberger & Ingersol, "Manual of Tropical Housing and Building: Climatic Design", Universities Press,

2.Evans, M., "Housing, Climate and Comfort", Architectural Press, 1980

3.Arvind Krishan et al, "Climate Responsive Architecture: A Design Handbook for Energy Efficient Buildings", Tata McGraw Hill, 1999.

4.Givoni, B., "Man, Climate and Architecture", Elsevier Publishing Company Limited, 1969.

5.Watson & Labs, "Climatic Design", Mcgraw Hill, NewYork, 1983.

Course code	Course title	L	T	P	Credits
CEA-211	STRUCTURES IN ARCHITECTURE III	2	0	0	2

Course Objectives:
➢ To introduce the basic concept of steel structures and enable the students to analyze, understand the fundamentals and working of various parts of these structural systems.

UNIT-1: [6]

MODULE 1: STEEL STRUCTURES: Types of steel structures, Framed and Shell structures, Properties of Indian standard rolled steel section; useof IS 800 and steel tables; permissible stresses in tension, compression and shear.

UNIT-2: [4]

MODULE 2: CONNECTIONS: Welded and riveted connections–types of failure; design ofwelded and riveted connections for members subjected to axial forces

UNIT-3: [6]

MODULE 3: TENSION AND COMPRESSION MEMBERS: Steel structures –Tension and compression members; design of single angle and double angle sections in tension; design of compression members; slenderness ratio; design of simple and compound sections; design of lacings and battens.

UNIT-4: [6]

MODULE 4: BEAMS: Principal Stresses, allowable stresses, General specifications, Designof laterally supported beams.

UNIT-5: [6]

MODULE 5: STEEL ROOF TRUSSES: Types of roof trusses–Selection of trussesaccording to the span; estimation of gravity loads and wind loads; use of BIS and book SP-38 in analyzing and design of trusses, gusseted plate connections.

TEXT BOOKS/REFERENCE BOOKS:

1.Ramachandra .S, "Design of Steel Structures Vol. I", Standard publication, New Delhi, 1992

2.Arya .A.S and Ajamani .J.L, "Design of Steel Strctures", Nem Chand and Bros, Roorkee, 1999

3.Design of Steel Structures by S.Ramamruthan

4.Vazirani .V.N, and Ratwani .M.M, "Steel structures", Khanna Publications, New Delhi, 1995

5.Duggal, "Design of Steel structures", Tata McGraw Hill Company, New Delhi, 2000

6.Dayaratnam .P, "Design of Steel Structures", Wheelers Publishing Company Co. Ltd, 1990

7."Handbook of Typified Designs for Structures with steel roof trusses, SP 38 1987", BIS, New Delhi,1987

Course outcomes:	
1.	Development of the basic understanding of the forces & its effects in simple building structural systems in Steel
2.	Knowledge about the structural behaviour of various roof configurations & built form is also gathered.

Course code	Course title	L	T	P	Credits
ARC-255	ARCHITECTURAL DESIGN- I	2	0	6	5

Course Objectives:
➢ To introduce the students to the various approaches to design process and to impart understanding of a range of design parameters related to site conditions, social aspects, user groups along with functional and aesthetic aspects

COURSE CONTENT:- [112]

IMPORTANCE OF LITERATURE AND CASE STUDIES IN THE DESIGN PROCESS:

Study of a given space through elementary measured drawings, sketching and photography. At least one project to study, analyze and compare private residential typologies and/or a small building of public use with respect to the spaces, their inter-relation, scale, ambience, technology and material for construction etc. e.g. Havelis, apartments, bungalows, row houses etc Synthesis of observations of case studies in design of an architectural form with a specific function

CLIMATE RESPONSIVE ARCHITECTURE

Design of a simple building for public activity incorporating elements of thermal comfort, ventilation, day lighting and design for various climatic types e.g. moderate, hot & humid, cold & hot climate considering the social and physical environment and methods of construction like timber construction emerging out of the traditional way of life of the people of the given place. This introduction to other role players in the architectural processes i.e. the client and the user. E.g. Architect House, Resort, Post Office, Bank etc.

Course outcomes:	
1.	The students will endeavour to acquire an understanding of the determinants of the built form such as social imperatives, environmental concern and craft of building.
2.	The student develops the ability to successfully design independent residential buildings in urban areas with concepts that respond to personal preference & taste, family lifestyle, culture & site conditions.
3.	Derivation of concepts and strategies will then lead to deliberate responses in the shape of a specific design proposal with the help of organizational and communicative skills.

Course code	Course title	L	T	P	Credits
ARC-256	BUILDING MATERIAL & CONSTRUCTION -III	1	0	4	3

Course Objectives:
➢ To give an introduction to building elements and expose the student to the process of building construction

COURSE CONTENT:- [70]

1. To introduce the various terminology of staircases.
2. To study and prepare drawings of various types of timber staircases- single, double (Dog legged and open well) and Triple flight stairways in stone and timber.

3. To design handrail and balusters using different materials and study the various methods of fixing them.
4. To prepare drawings on details of joints in timber staircases.
5. To prepare drawings on the different types of timber floors- Single, double and framed floors with joints between joist with wall plate.
6. To prepare drawings on the different types of timber floors- Single, double and framed floors with joist with beam and sub beam with main beam.
7. To study strutting of joists.
8. To study various terminologies and prepare drawings on the classifications of timber roofs.
9. Study of timber trusses: King post and queen post trusses with details of joints.
10. To prepare drawings on Built-up and Composite roof truss.
11. Study of different sheet roof covering material viz. asbestos cement, galvanised iron, aluminium, asphaltic, fibreglass reinforced plastic, polycarbonate and other, along with fixing details.
12. To prepare drawings on the detail of eaves projection with soft boarding and alternative detail of gutter at eaves etc.
13. To study the different types of partitions and their properties.
14. To prepare drawings on Joinery details and constructional techniques involved in timber partitions, single and double skinned partitions, partially glazed partitions.
15. **MATERIALS FOR FLOORING AND ROOFING :** Different flooring & paving materials and types that are cast-in-situ viz. Mud flooring, Brick flooring, Indian Patent Stone finish, Terrazzo flooring, red oxide flooring etc. and readymade tiles available in market viz. natural stone tiles / slabs, plain & mosaic cement tiles / blocks, ceramic tiles, vitrified tiles and other modern materials, including the process of providing or laying the flooring or pavement; floor finishes of various materials viz. carpet, linoleum, rubber, PVC etc. : Roofing of Mangalore tile, pan tiles, slate, corrugated asbestos sheet etc.
16. **DAMP PROOFING, WATER PROOFING AND MISCELLANEOUS:** Hot applied and cold applied; emulsified asphalt, bentonite clay, butyl rubber, silicones, vinyls, epoxy resins and metallic water proofing materials, their properties and uses; water proofing membranes such as rag, asbestos, glass felt, plastic and synthetic rubber- vinyl, butyl rubber, neoprene, polyvinyl chilnide; prefabricated membranes sheet lead, asphalt their properties and uses. Anti termite treatment to foundations, masonry and wood work; sound insulating materials- gypsum; recent advances in building materials.

Note: Sessionals will be in the form of reports, drawings and models. There shall be regular visits to construction sites.

TEXT BOOKS/REFERENCE BOOKS:

1. Rangwala, S. C., "Building Construction", Charotar Publishing House, 2007
2. McKay, W.B., "Building Construction Volume I, II, III and IV", Longmans, 1955
3. Ching, Francis D. K. and Adams, Cassandra, "Building Construction Illustrated", Wiley and Sons, 2000
4. Barry, R**,** "The Construction of Buildings", The English Language Book Society and Crosby Lockwood, 1976
5. Chudley, Roy, "Construction Technology", Longman, 2005

Course outcomes:	
1.	Students will examine the critical role of materials and methods for the design and construction of buildings
2.	Students will get exposed to rural and traditional materials and their construction techniques.
3.	They learn to represent the different building components, Staircases, damp proofing & water proofing in various applications through relevant drawings.

Course code	Course title	L	T	P	Credits
ARC-257	COMPUTER APPLICATIONS IN ARCHITECTURE -III	1	0	2	2

Course Objectives:

- Communicating design concepts and project status to clients, regulators, and colleagues can be challenging.
- This course will enable the students to understand the basics of Photoshop, the professional image-editing standard
- Permitting the student groundbreaking new creative options to realize their vision and an unprecedented level of customization to streamline their workflow.

COURSE CONTENT:- **[42]**

1.To study the basics of Adobe Photoshop; Selection, Slice, Painting tools
2. To scan an image into Photoshop CS3; check the scan quality and resolution; crop the image to final size and orientation.
3. To adjust the brightness, contrast and tonal range of the image; sharpen the overall focus of the image etc
4. To learn working with Layers and use layers to create a logo or collage for a PowerPoint presentation.
5. Exercises on Basic and Advanced Retouching: - Color manipulations, - levels, curves, patch tool, cropping, special color effects: black and white, sepia, grainy
6. Exercises on designing simple Web Pages by using Slice Tool.
7. Exercises involving the designing of Logos by using Texts and Paints professionally.
8. To transfer CAD drawings into Photoshop while preserving graphic scale.
9. To enhance drawings using patterns, strokes, color overlays, fill layers, inner and drop shadows, clipping groups, adjustment layers etc
10. Exercises on rendering plans, elevation and sections using Photoshop
11. To render elements from 3ds Max as layers in Photoshop and learn how to create realistic auto-blending color-matched skies, greenery, trees etc
12. Exercises on rendering 3D views using Photoshop.
13. Presentation techniques for portfolio, design sheets etc using Photoshop

TEXT BOOKS/REFERENCE BOOKS:

1. Galer, M. & Andrews, P., "Photoshop CS3 Essential Skills", Elsevier, 2007

2. Sondermann, H., "Photoshop in Architectural Graphics", Springer, 2009

3. Alten, "Adobe Photoshop CS3: Classroom in a Book", Peachpit Press, 2007

Course outcomes:	
1.	Exposure to CAD and Photoshop will help students to produce their operation and critical parameters.
2.	Presentations for large gatherings, corporate clients-using CAD drawings, pictures, 3D images, text etc

Course code	Course title	L	T	P	Credits
CEA-260	SURVEYING	0	0	4	2

Course Objectives:
➢ This course intends to make the student familiar with locating the object positions in horizontal and vertical plane with desired accuracy as needed for architectural profession and to prepare and interpret survey drawings.

COURSE CONTENT:- **[56]**

1. Standardization of pace length; to estimate horizontal distance by pacing; study of metric chain and long distance measurement by a chain.
2. Exercises on direct and indirect ranging.
3. Chain survey of given area
4. Study of prismatic and surveyor's compass
5. Chain and compass surveying
6. To carry out fly leveling for establishment of a benchmark.
7. To carry out profile leveling for a proposed road and its cross section.
8. To carry out contour survey by square method.
9. To study plane table and its accessories and carry out plane table survey by radiation, intersection and by transversing methods.
10. To solve two and three point problems.
11. To find out Tacheometric constants of Dumpy level/ Theodolite.
12. To find out horizontal and vertical angle by Theodolite.
13. To carry out transversing by Theodolite
14. To practice Transiting, elongation of line, taking bearing and marking north direction on ground.

TEXT BOOKS/REFERENCE BOOKS:

1. Basak, “Surveying and Levelling”, Tata McGraw-Hill, 2004
2. Rangwala, “Surveying and Levelling”, Charotar Publishing House Pvt. Ltd., 2005
3. Punmia et al, “Surveying - Volume 1 & 2”, Firewall Media, 2005

Course outcomes:	
1.	Knowledge of interpretation and preparation of contour maps
2.	Site modeling with total station. Exercises in setting out of building works

Lingaya's Vidyapeeth

Bachelor in Architecture (2018 Batch)

B.Arch (IV SEMESTER)

Course code	Course title	L	T	P	Credits
ARC-210	HISTORY OF ARCHITECTURE - IV	2	0	0	2

Course Objectives:

- This course introduces the students to various design philosophies of Modern & Post Modern architecture
- To provide a comprehensive knowledge of contemporary design philosophies in the development of novel architectural forms and designs

UNIT-1: [4]

EVOLUTION OF MODERN ARCHITECTURE:-Reasons for the evolution of Modern architecture, origins: Neo Classicism, enlightenment, social revolutions, revivalism; Industrial revolution and its impact,Emergence of new building typologies, new materials and technologies: history of steel, glass and concrete.

UNIT-2: [8]

EVOLUTION OF MODERNISM: Developments in Germany: Deutscher Werkbund, principles and works of Peter Behrens, German expressionism and the works of Walter Gropius and Erich Mendelsohn; Bauhaus school and its impact; Russian Architecture after revolution (1917 – 1934);The futurism of Antonio Sant'Elia; Cubism and its impact on architecture, De stijl movement of Netherlands. Post Modernism: Criticisms of Modern Architecture; Post Modernism, collage, technology and new science, Pop art, Deconstruction, Critical Regionalism with examples; Critics of modern movement: Robert Venturi, Christopher Alexander, Aldo Rossi and Jane Jacob; emergence of later trends in modern architecture: Brutalism, Archigram, and Metabolism in architecture.

UNIT-3: [4]

THE INTERNATIONAL STYLE: Emergence of International style of architecture; principles and works of Le Corbusier, Rohe, Johnson;Organic Architecture: Early works of F.L.Wright; Chicago school; Art deco.

UNIT-4: [6]

CONTEMPORARY ARCHITECTURE IN INDIA:-The impact of International style of architecture in independent India, works of Le Corbusier and Louis Kahn in India with examples, their impact on architecture of fifties and sixties.

UNIT-5: [6]

POST-NEHRUVIAN MODERNIST ARCHITECTURE:-Modernism, utilitarian modernism and neo-modernism, brutalism; criticisms on the modern movement in India; countering the stigma of colonialism; critical regionalism and the neo-vernacular; the community architectural movement;

Integrating the new and the old; revivalism in religious and secular buildings; revivalism and post-modernism.

Note: An educational tour/ study tour to the places of architectural interest / building appraisal shall be organized as per the programme. The documentation shall be done in the form of photographs / slides and sketches presented in form of a seminar and written report immediately after the tour / building appraisal.

TEXT BOOKS/REFERENCE BOOKS:

1. Frampton K, "Modern Architecture: A Critical History", Thames and Hudson, London.
2. Lang, Desai, Desai, "Architecture & Independence", Oxford University Press, New Delhi.
3. Bhatt, V. and Scriver, P. , "Contemporary Indian Architecture: After the Masters", Mapin, Ahmedabad
4. Lang, "A concise history of modern architecture in India", Orient Blackswan, 2002
5. Sarbjit Bahga et al, "Modern Architecture in India", Galgotia Publishing Company, New Delhi.

Course outcomes:	
1.	The student acquires general understanding of the basic terminology of the subject and know the chronology and typology of architecture in the 20th/21st century
2.	Identify the architectural theories and socio-economic and cultural conditions of their emergence.
3.	The student know the life and masterpieces of the most renowned Architects of that Era.

Course code	Course title	L	T	P	Credits
ARC-211	BUILDING SERVICE II	2	0	0	2

Course Objectives:
➢ To create awareness about the importance of electrical services in buildings and to develop technical and practical knowledge in these services

UNIT-1: [6]

PRINCIPLES OF ILLUMINATION: Light - electromagnetic radiation, Visual tasks - factors affecting visual tasks, visual task requirements; modern theory of light and colour; synthesis of light, additive and subtractive synthesis of colour; luminous flux, candle, solid angle illumination, utilization factor, depreciation factor, MSCP, MHCP; laws of illumination: Illumination from point, line and surface sources; environment and glare.

UNIT-2: [6]

ILLUMINATION SYSTEMSAND LIGHTING DESIGN: Standards of Lighting and Visual comfort; different illumination systems such as direct, indirect, diffused; classification of lighting: daylight, artificial light sources; incandescent, fluorescent; arc lamps and lasers; spectral energy distribution, luminous efficiency, colour temperature, colour rendering.Design of modern lighting; Interior lighting- industrial, office, residential, commercial etc; exterior lighting- flood, street, transport; lighting for displays, neon signs, LED-LCD display beacons special features and minimum level of illumination required for physically handicapped and elderly in building types.

UNIT-3: [4]

LIGHT FITTINGS/ LUMINARIES: Applications of lighting systems with reference to levels of illumination for various uses and lumen method calculations; all types of energy efficient lamps, optic fiber, led etc.

UNIT-4: [6]

ELECTRICAL SYSTEMS: Basic of electricity, single/Three phase supply, generation and distribution of electric power in urban areas, substations for small schemes in industrial units; protective devices in electrical Installation; earthing for safety, types of earthing, ISI Specifications. building wiring systems, types of wires, wiring systems and their choice; planning electrical wiring for building, electrical load estimation; safety methods and measures to be adopted, study of relevant I.S. Codes

UNIT-5: [6]

ELECTRICAL INSTALLATIONS: Principles of electrical installation in buildings, branch circuit; main and distribution boards, transformers and switch gears; layout of Substations; .Designing and preparing a complete electrical layout and illumination detailing for an interior design project, with all required calculations; electrical system installations from the supply mains to individual outlet points, including meter board, distribution board and layout of points with load calculations; electrical wiring systems including different material specification; electrical control and safety devices etc.

NOTE: Assignments can be in the form of compiling of required information collected from site visits, market surveys and finding out latest trends and materials for the same.

TEXT BOOKS/REFERENCE BOOKS:

1. Hopkinson, R.G., "Architectural Physics: Lighting", London, 1963.
2. “Philips Lighting in Architectural Design”, McGraw Hill, New York, 1964.
3. Hopkinson and Kay, “The Lighting of Buildings”, Faber and Faber, London, 1969.
4. Pritchard, D.C., "Lighting", Longman Scientific & Technical, Harlow, 1995.

Course outcomes:	
1.	Students have thorough understanding on Electrical supply
2.	Students are aware of best practices for Electrical management

Course code	Course title	L	T	P	Credits
ARC-212	VERNACULAR ARCHITECTURE (ELECTIVE)	2	0	0	2

Course Objectives:
➢ To expose the students to traditional architecture of the various parts of the country ➢ Impart knowledge of the planning aspects, materials used in construction, constructional details and settlement planning of the settlements in various parts of the country.

UNIT-1: **[6]**

INTRODUCTION: Approaches and concepts to the study of Vernacular architecture; advantages and possible application; Introduction to Kutcha architecture and Pucca architecture; tribal settlements. **VERNACULAR ARCHITECTURE IN THE WORLD**: Factors that contributed to their evolution; Middle East, Africa, Far East etc

UNIT-2: **[4]**

VERNACULAR ARCHITECTURE IN INDIA - DRAVIDIAN SOUTH :Planning aspects, materials of construction, constructional details & settlement planning of Kerala/ TamilNadu/ Karnataka / Andhra Pradesh; religious practices, beliefs, culture & climatic factors influencing the planning of the above.

UNIT-3: **[6]**

WESTERN REGION: Planning aspects, materials used constructional details, climatic factors influencing the planning buildings in Rajasthan; primitive forms, symbolism, colour, folk art etc in the architecture of the deserts of Kutch & Gujarat state; vernacular architecture of Goa.

UNIT-4: **[6]**

NORTHERN INDIA: Factors influencing the planning aspects, materials of construction & constructional details of buildings in Kashmir - Dhoongas (Boathouses), bridges; Himachal Pradesh / Uttar Pradesh. **EASTERN INDIA**: Planning aspects, materials used constructional details, climatic factors influencing the planning buildings in Bengal / Nagaland

UNIT-5: **[6]**

INFLUENCE ON MODERN ARCHITECTURE: Examples from the works of Frank Lloyd Wright, Green Broken &HasanFathy, GeofferyBawa; possible applications of vernacular architectural techniques today.

TEXT BOOKS/REFERENCE BOOKS:

1. Jain, K. & Jain, M., “Architecture of the Indian desert”, Aadi Centre, Ahmedabad
2. Michell, G., “The Royal Palaces of India”, Thames and Hudson Ltd., London

3. Pramar, V.S., “Haveli – Wooden houses & mansions of Gujarat”, Mapin Publishing Pvt. Ltd., Ahmedabad
4. Tillotsum, G.H.R. “The Tradition of Indian architecture – Continuity & Controversy – Change since 1850”, Oxford University Press, Delhi
5. Oliver, "Encyclopedia of Vernacular Architecture of the world (3 Vol. Set)", Cambridge University Press, U.K., 1997.

Course outcomes:	
1.	The students will able to identify and conserve the untapped values and principles in the evolution of new theories for architectural creations.
2.	Highlight needs and various ways of vernacular building research, analysis, presentation of finding and its application to contemporary building

Course code	Course title	L	T	P	Credits
ARC-213	ENERGY EFFICIENT ARCHITECTURE (Elective)	2	0	0	2

Course Objectives:

- A growing global concern for the conservation of energy & environment has led to the importance on sustainable habitats as a key solution to growing urban concerns.
- This course aims at creating awareness of designing energy efficient building envelopes that respond to the climate of a place, create environment – friendly and energy efficient building by actively harnessing renewable nature sources of energy (solar energy etc) and utilizing materials that least pollute the environment

UNIT-1: [6]

CLIMATE & SHELTER: Over view of the different Passive Solar Techniques & Climate responsive design features adopted in the traditional / vernacular architecture of various places in different climate zones; control of Micro-climate around the building by settlement pattern, built form; open space relationship & facade articulation; appropriate use of building materials in historic buildings.

UNIT-2: [6]

SOLAR ENERGY & BUILDING: Solar geometry and built form; various techniques of shading to reduce heat gain in tropical climate; methods of maximizing exposure to solar radiation in cold & temperature climate; heating & cooling loads; energy estimates; energy conservation; efficient day lighting; Solar Water heating system; exercises on heating and cooling load calculations in buildings.

UNIT-3: [6]

PASSIVE SOLAR HEATING: General principles, direct gain systems - glazed walls, bay windows, attached sun spaces etc; indirect gain systems - water wall, solar chimney, roof pond, roof radiation trap, solarium etc; isolated gain systems - natural convective loop etc.

UNIT-4: [6]

PASSIVE COOLING CONCEPTS: General principles: Evaporative cooling, nocturnal radiation cooling, Passive desiccant cooling, induced ventilation, earth sheltering, berming, wind towers, earth, air tunnels, curved roofs & air vents; Insulation, vary Thermal wall etc.

UNIT-5: [4]

ENERGY MANAGEMENT OF BUILDINGS: Introduction to energy management of buildings and energy audit of buildings; aims and main aspects. Case study and overall design concepts

TEXT BOOKS/REFERENCE BOOKS:

- Arvind Krishnan et al, "Climate Responsive Architecture", Tata Mcgraw Hill, New Delhi, 2001.
- Ritchie, James D., "Successful Alternate Energy Methods", Structures Publishing Co., Michigan, 1980
- Majunder, Mili "Energy Efficient Building in India", Thomson Press, New Delhi, 2001

Course outcomes:	
1.	The student understand the importance, installation and working of essential services in buildings.
2.	Knowledge of building services help in generating a cleaner and healthier built environment

Course code	Course title	L	T	P	Credits
CEA-212	STRUCTURES IN ARCHITECTURE IV	2	0	0	2

Course Objectives:

- To introduce the basic concept of structures and enable the students to analyze, understand the fundamentals and working of various parts of different structural systems.

UNIT-1: [6]

CONCEPTS & DESIGN OF R.C.C STRUCTURES

Introduction to concepts of R.C.C. structure and structural components like tie, stirrups, beams, arch, vault, dome etc; type of structures and structural framing, rigid jointed, pin jointed etc.

Permissible stresses - limit states; characteristic strength and load; partial safety factor; deflection; modification factors.

UNIT-2: [6]

R.C.C BEAMS - Design principles of limit state methods; design of singly reinforced, doubly

reinforced, T & L beams by LSD method with IS code specifications; design for shear, illustrative examples.

UNIT-3: **[6]**

R.C.C SLABS - One way and two way slabs for different edge conditions; continuous slabs - IS code specifications, illustrative examples.
R.C.C COLUMNS - Reduction factors; compression members and slender columns; design of columns - columns with helical reinforcement, IS code specifications, illustrative examples.

UNIT-4: **[4]**

R.C.C STAIRCASES – Types; design as per IS code specifications, illustrative examples.

UNIT-5: **[6]**

R.C.C FOOTINGS - Design of isolated footings - square, rectangular and circular footings; strip footings; combined footings, illustrative examples.

REFERENCE BOOKS

1. Jain, Ashok. K., "Reinforced concrete structures", New Chand & Bros, Roorkee, 1992.
2. Shah, H.J., "Reinforced concrete - Vol I", Charotar Publishing House, Anand, 1994
3. Sinha, N.C. & Roy, S.K., "Reinforced Concrete Structures", S. Chand & Company Ltd., New Delhi, 1983.

Course outcomes:	
1.	The architecture student should understand the process of limit state method of structural design off RCC structures
2.	Develop the ability to interpret structural drawings to the contractor in the building site

Course code	Course title	L	T	P	Credits
ARC-265	ARCHITECTURAL DESIGN - II	1	0	8	5

Course Objectives:

- The course Architectural Design – II intends to encourage students to develop an understanding of cultural expressions & its varied manifestations in the built environment.
- Design exercises that explore Architecture as responding to Social issues such as Culture, History, Religion, Politics etc have been introduced.
- Students would also be exposed to design exercises involving small Architectural design problems involving simple spatial organizations starting from single space and progressing to small functional grouping of spaces

COURSE CONTENT:- **[126]**

VERNACULAR ARCHITECTURE & ENERGY EFFIECIENT ARCHITECTURE: Design of a building for public activity considering the social and physical environment and methods of construction like RCC Construction installing various building services like electrical etc. Incorporating various energy efficient measures and vernacular architecture features and techniques.

CONTEXT OF A SETTLEMENT Contextual architectural proposal by studying a settlement and working on an architectural program in that settlement. To understand the linkages between Occupation, Social structure and Religious beliefs and its physical manifestation in the form of the settlement. Design of a small building of public use in the settlement. The public use to be determined through settlement studies, surveys etc. Principles of sociology and community participation to be explored. E.g. Primary School, Community Centre, Commercial Complex Etc.

REFERENCE BOOKS

1. Lin, "Drawing & Designing with Confidence – A Step by Step Guide", John Wiley and sons, USA, 1998.
2. Chiara and Callender, "Time Saver Standards for Building Types", McGraw Hill Co., N.Y., 1973.
3. Edward. D., Mills, "Planning the Architects Hand Book", Butterworth, London, 1985.
4. Isaac, "Approach to Architectural Design", Butter worth & Co. Ltd., London, 1977

Course outcomes:	
1.	Develops the capacity to design public buildings that respond to a particular educational philosophy
2.	Generate concepts for various activities and explore the integration of classroom spaces with outdoor play areas

Course code	Course title	L	T	P	Credits
ARC-266	BUILDING MATERIAL & CONSTRUCTION - IV	1	0	4	3

Course Objectives:
➢ To give an introduction to building elements and expose the student to the process of building construction.

COURSE CONTENT:- **[70]**

1. To prepare drawings on Flat roof construction in R.C.C. and composite materials.
2. To prepare drawings on R.C.C. slab beams.
3. To study and prepare drawings on R.C.C lintels and chajjas including cantilevers.
4. To prepare drawings on R.C.C. columns.
5. To prepare drawings on R.C.C. footings.
6. To study about various types of R.C.C staircases.

7. To design a Staircase and provide details of balustrade fixing, materials used etc.
8. To prepare drawings on Precast components i.e. masonry blocks, hollow blocks, jallis, shelving units, slabs and pre-stressed units
9. To draw a section through a five storied building showing all components.
10. To study mild steel roof trusses and details of roof coverings and gutters.
11. To study the principles of temporary works such as shuttering, centering, scaffolding and form work.
12. **PAINTS, VARNISHES AND DISTEMPERS:** Constituents of oil paint, characteristics of a good paint; types of paint; process of painting different surfaces; types of varnish; methods of applying varnish; French polish; dry distemper; oil bound distemper; wax polishing, putty.

13.METALS: Study of properties of constituent components, manufacturing process, quality test of ferrous and non-ferrous metals (lead, copper, zinc, tin, Al & Steel); weathering effects on such metals, preventive measures. Usage in building Industry.

REFERENCE BOOKS

1. Rangwala, S. C., "Building Construction", Charotar Publishing House, 2007

2. McKay, W.B., "Building Construction Volume I, II, III and IV", Longmans, 1955

3. Ching, Francis D. K. and Adams, Cassandra, "Building Construction Illustrated", Wiley and Sons, 2000

4. Barry, R**,** "The Construction of Buildings", The English Language Book Society and Crosby Lockwood, 1976

5. Chudley, Roy, "Construction Technology", Longman, 2005

6. Arora, S.P. and Bindra, S.P., "The Text book of Building Construction", Dhanpat Rai Publications, 2009.

Course outcomes:	
1.	The students will gain knowledge of material properties and construction techniques of Glass, concrete, RCC and special concreting methods and appropriate material and technology.
2.	Get exposed to the advanced construction systems developed by research organizations in India

Course code	Course title	L	T	P	Credits
ARC-267	MEASURED DRAWING	1	0	4	3

Course Objectives:
To enable the students to learn how to measure and then draw an Existing building / Structure / Interior space / Landscape etc. as much near to the actual.

COURSE CONTENTT: **[70]**

This measurement work is done in a group / team . This measure drawing is indeed use full for the students of architecture to learn various aspects of Historical or old buildings.
Study their architectural features and then draw the same to scale and prepare a drawing / document for record. Mostly in practice this technology is effectively used to reconstruct dilapidated or old /historic structures including their repairs , reconstruction or addition / alterations etc.
It would help them work in a team and produce work in a coordinated manner as is often required in the field.

EXERCISES

1. Selection of a Existing Space / Building or a Historic monument, surveying and taking all possible measurements of the same .
2. Preparation in the form of sketches -- Key plans, plans, elevations and other details at site.
3. Preparation of hand drafted to the scale drawings referring all the above.
4. Documentation of literature obtained from site or elsewhere and the Measure drawing prepared.

TEXT BOOKS / REFERENCE BOOKS:

- Measured drawing for architects, Robert Chitham.
- Architectural Details and Measured Drawings of Houses of the Twenties (Dover Architecture), by William A. Radford

Course outcomes:	
1.	The students will able to measure the existing structure and prepare a drawing / document for record.

Course code	Course title	L	T	P	Credits
ARC-268	COMPUTER APPLICATIONS IN ARCHITECTURE - IV	1	0	2	2

Course Objectives:
➢ The objective of introducing this course is to promote computer knowledge and applications in architecture. ➢ This course will familiarize the students to the concepts of parametric modeling, or BIM, through Autodesk REVIT or similar software, ➢ Enable them to create Computer Aided rendered Architectural Drawings in 3D.

COURSE CONTENT:- **[42]**

1. To introduce the new features of REVIT, editing and working with families in a Project.
2. To introduce the concepts of REVIT, creating a shared Family, Project and System settings.
3. To create the basic model, creating the basic structural system – walls, columns, beams, roofs etc.
4. To add doors, windows, openings, stairs, railings, curtain systems etc
5. To create drawings, creating detail from building model, scheduling, annotating and dimensioning.
6. To study about Viewing the Model
7. Exercises on Applying Materials and textures and creating a perspective views
8. Exercises on rendering an exterior view and an interior view.
9. Exercises on applying lights in an Interior and creating shadows
10. Exercises on creating and recording Walkthroughs, creating 3D cutaways with Section Boxes
11. To create an Interior of a given architectural drawing by using the above mentioned tools and commands.
12. To apply the above mentioned tools and commands to create rendered exterior views of a given architectural drawing.

REFERENCE BOOKS

1. Fox & Balding, “Introducing and Implementing Revit Architecture”, Cengage Learning, 2008

2. Autodesk REVIT 9.1 Manual, Autodesk publications

3. REVIT 9.1 Tutorials, Autodesk publications

Course outcomes:	
1.	Students will understand the concepts of architectural drawing as well as representation skills; through REVIT.
2.	Creating and recording Walkthroughs, creating 3D and commands to create rendered exterior views of a given architectural drawing.

Lingaya's Vidyapeeth

Bachelor in Architecture (2018 Batch)

B.Arch (FIFTH SEMESTER)

Course code	Course title	L	T	P	Credits
ARC-301	PRINCIPLES OF HUMAN SETTLEMENTS-I	2	0	0	2

Course Objectives:
The course aims at introducing the history of development of settlement planning and also gives emphasis on tracing broad principles of settlement design.

UNIT-1:INTRODUCTION **[4]**

Human Settlement Science - objective, scope & relations with architecture; man's role in designing and developing settlements; various factors influencing developmentof settlements.

UNIT-2: SETTLEMENT PLANNING IN ANCIENT INDIA **[6]**

General information of various settlement planning principles Indus valley city, typical Hindu Aryan city, typical Dravidian temple city. Settlement planning principles developed and contributed by Egyptians, Greeks and roman etc. Classical European city, medieval European city, Europeanrenaissance city; study of selected historical examples of villages, towns, forts, palaces, gardens, public places etc.

UNIT-3:PLANNING IN THE PRE INDEPENDENT INDIA **[6]**

Contribution of Mughal andBritish; typical Muslim city in India, baazar based traditional city; British colonial city.

UNIT-4:MODERN PLANNING PRINCIPLES **[6]**

Ebenezer Howard - Garden citymovement, Patrick Geddes, Dr.C.A.Doxiades, LeCorbusier, Soria Y Mata - Linear city Clarence, A. Perry - The neighbourhood concept.

UNIT-5:URBAN & RURAL SETTLEMENTS **[6]**

Their differences, origin, evolution andgrowth of settlements: site and situation, major function of a city, city forming and city serving functions; the relationship between urban and rural areas.

TEXT BOOKS/REFERENCE BOOKS:

- Burn, Stanly & Williams, Jack, "Cities of the World, - World Regional Urban Development", Harper & Row, New York, 1983.
- Keeble, Lewis, "Principles and Practice of Town and Country Planning", The Estates Gazette Ltd. London, 1972.

Course outcomes:	
1.	The student will understand and familiarize the planning concepts of eminent town planners, will be acquainted with the current issues in urban planning
2.	They will be exposed to classification of settlements, land-use, zoning, types of development plan and familiarize the students with simple Town planning techniques.

Course code	Course title	L	T	P	Credits
ARC-302	BUILDING SERVICES - III	2	0	0	2

Course Objectives:
This course is intended to integrate the knowledge of mechanical services in building

UNIT-1: INTRODUCTION [8]

Introduction of mechanical services, it's internal and external components, their functions and principles of air- conditioning. AIR CONDITIONING: Introduction; comfort conditions within built environment; basic refrigeration systems; refrigeration system components, vapor compression cycle; concept of cooling load, introduction to calculation of cooling load; concept of zoning; air-conditioning methods , equipments and ducting: their space requirements and placements. TYPES OF AC UNITS: Unit type equipment: (i) room A.C. & (ii) split A.C.; Package units: (i) fully self contained (factory made) & (ii) split type units; central DX plants and central chilled water plants; schematic details of various systems, comparison of various systems; space data of A.C. equipment rooms.

UNIT-2: VERTICAL TRANSPORTATION: [6]

Lifts, moving walkways and escalators, their layouts; Lifts: types of lifts, dimension of lifts; traffic analysis, calculation of round trip time and selection of lifts. Hoist way/shaft/well, machine room & pit, arrangement of lifts; Escalators - characteristics, dimensions and arrangements of escalators

UNIT-3:L.P.G / BIO-GAS INSTALLATIONS: [4]

Their location and layouts in residential and non-residential buildings.

UNIT-4:FIRE SAFETY: [6]

Causes of fire, mechanism of fire spread in buildings, classification of fire.grades of fire hazard – personal hazard, internal hazard & exposure hazard classification of building based on occupancy; high temperature effects and combustibility of building materials and structure.

UNIT-5:FIRE RESISTANCE OF BUILDINGS [4]

Fire escape staircases and fire fighting equipments/ alarms- their spatial requirements and locations; passive and active fire precautions; site planning, heat sensitive detectors, fire alarm system, means of escape. fire fighting installations: hose reel, internal hydrant system, CO2 system, wet risers, etc

TEXT BOOKS/REFERENCE BOOKS:

- McKay, W.B., "Building Construction Volume I, II, III and IV", Longmans, UK, 1955.
- Ching, Francis D. K., Adams, Cassandra, "Building Construction Illustrated", Wiley & Sons, Incorporated, John.
- Barry. R., "The construction of Buildings", The English Language Book society and Crosby Lockwood, London, 1976.
- Chudley, Roy, "Construction Technology", Longman, 2005.
- Arora, S.P. &Bindra, S.P., "The text book of Building Construction", DhanpatRai Publications, 2009.

Course outcomes:	
1.	The student understand the importance, installation and working of essential services in buildings, and a way building services help in generating a cleaner and healthier built environment.

Course code	Course title	L	T	P	Credits
CEA -311	STRUCTURES IN ARCHITECTURE - V	2	0	0	2

Course Objectives:
The objective of the course is to develop a feel for structural principles as they relate to a building design, to enable him to make an informed choice regarding the most appropriate structural system for this building and to develop a reasonable understanding of its operational and economic implications.

UNIT-1: DETERMINATE AND INDERMINATE STRUCTURES [4]

Definitions, Degree of Redundancy and Examples, Externally Indeterminate Structures, Internally Indeterminate Structures, Difference between determinate and indeterminate structures, Indeterminacy of truss beams, Portal Frames.

UNIT-2: WORKING STRESS METHOD [6]

Introduction to Working Stress Method Singly Reinforced Beams: Introduction, Bending ofBeam Assumptions, Moment of Resistance, Modes of Failure, Maximum Depth of Neutral Axis, Limiting Values of Tension Steel and Moment of Resistance, Minimum and Maximum Tension Reinforcement, Effective Span, Type of Problem .Doubly Reinforced Beams: Introduction, Problems, Stress and Compression, Reinforced Design Stress, Minimum and Maximum Reinforcement. Flanged Beams: Introduction, Effective Width of Flange, Minimum and Maximum Reinforcement

UNIT-3:LIMIT STATE METHOD **[6]**

Limit State Method vs Working Stress Method, Introduction, Limit State, Characteristic Strength and Characteristic Load, Design Values, Partial Safety Factor, Factored Loads, Stress-Strain Relationship for Concrete and Steel, Yield Stress .Theory and Design of Singly Reinforced, Doubly Reinforced and T-Beam(Limit State Method)

UNIT-4: ELEMENTS OF SOIL MECHANICS **[6]**

Soil as a Three Phase System, Density of Soil, Unit Weight, Moisture Content, Void Ratio, Porosity, Degree of Saturation, Different Types of Soils, Bearing Capacity

RETAINING WALLS:Types, Active Earth Pressure, Passive Earth Pressure

UNIT-5: FOUNDATION ENGINEERING **[6]**

Spread Footing, Isolated Footing, Combined Footing, Raft Foundation, Pile Foundations including Under Reamed Piles, Grillage Foundation,Construction of Foundation in Water Logged Areas including Dewatering of soil or soils having harmful salts.

TEXT BOOKS / REFERENCE BOOKS:

- Jain,A.K., Elementary Structural Analysis, Nem Chand Bros. Roorkee.
- Jain, O.P. and Jain B.K., Theory of Structures, Vol. 1, Nem Chand Bros. Roorkee.

Course outcomes:	
1.	Introduce students to various materials and their intrinsic properties.
2.	Understand how various materials function when loaded
3.	To understand how different materials interact with each other

Course code	Course title	L	T	P	Credits
ARC-354	SITE PLANNING AND LANDSCAPE DESIGN	2	0	4	4

Course Objectives:
This course intends to develop an understanding of Site Planning and landscape architecture to compliment architectural design.

COURSE CONTENT: **[84]**

1. To introduce site planning, its scope and role; environmental/ regional context in site planning and landscape design.
2. To highlight the importance of site analysis and study the various onsite and offsite factors of a site. (Factors involved accessibility, size and shape of sites; confirming and non-conforming uses; climate and topography, infrastructure available, sources of water supply and means of disposal system, architectural and visual aspects).
3. To prepare site analysis diagrams.
4. To prepare contour drawings and understand the concepts of surface drainage and watershed.
5. To study various factors affecting site planning and landscape design: geological setup, topography, slope, drainage network, flora and fauna.
6. Preparation of maps of matrix analysis, composite analysis, locality plans, topographical analysis.
7. Design exercise incorporating the following: Access network, parking and service planning, service layouts and trenching; Landscape constructions: pavings, curbs, edgings, drains, trees, plants in paved areas, landscape furniture etc; ponds, pools, waterways and fountains.
8. Study oriented work involving study of the use of outdoor spaces by different user groups, landscape elements, street furniture, etc.
9. To study and prepare the ecological profile of an area.
10. To study architectural examples where nature is an integral part of the design:-

- Introduction of landscape architecture and major garden styles
- Basic elements of landscape- land , water & vegetation
- Study and detailing of hard and soft landscape
- Services related to landscape-plumbing, electrical, sewage, water supply
- Plant material- trees, shrubs, ground cover and indoor plants
- Grading and slopes
- Landscape design concept of various countries-Europe, Japan, India, China,Renaissance

Course code	Course title	L	T	P	Credits
ARC-355	ARCHITECTURAL DESIGN - III	2	0	8	6

Course Objectives:
To educate students about urban development control for multi-storied structure by using codes and building bye-laws.

COURSE CONTENT: [140]

DESIGN OF A MULTI-FUNCTIONAL PUBLIC BUILDING IN THE URBANSETTINGS :

- To highlight Projects to include buildings or building complexes with multi - use public activities, i.e. campus design with more than one building accommodated in the same premises.
- Introduction to urban development controls, codes and bye-laws; exercise in articulation and manipulation of programmed needs; criticism and evaluation of alternative concepts, understanding of complex relationship between the form, function, structure and aesthetics in a building, Contextual Design,decision-making process; use of computers as an aid to Design.
- e.g: Campus design (single or multistoried type) in urban settlement such as courts, college/ university campus, commercial complex, etc.

Nature based architecture with integration of site planning and landscape, building construction and services.

- Design of a holiday resort, beach resort, sparesort, weekend cottages etc on sites of natural abundance.
- Demonstration of use of natural elements on and off site as propagator of design concept; site development by exploiting natural forms etc; contextual design.

TEXT BOOKS / REFERENCE BOOKS:

1. Kanvinde& Miller, “Campus Design in India: Experience of a Developing Nation”,

Jostens/American Yearbook Company, 1969

2. Dober R., “Campus Planning”, Reinhold Pub. Corp., 1968

3. Spreiregen, Paul D. “Urban Design: The Architecture of towns and cities”, R.E. Krieger

4. Zevi, Bruno, “Modern Language of Architecture”, Da Capo Press, 1994

5. YoshinobuAshihara “Exterior design in Architecture”, Van Nostrand Reinhold,1981.

Course outcomes:	
1.	Understanding the making and meaning of spaces and how spaces relate to one another
2.	To begin to question the idea of “built expression” and “meaning” with respect to materials in architecture

Course code	Course title	L	T	P	Credits
ARC-356	BUILDING CONSTRUCTION AND TECHNOLOGY-V	1	0	4	3

Course Objectives:
To give an introduction to building elements and expose the student to the process of building construction

COURSE CONTENT: [70]

1. To study different types of partitions and their properties.
2. To study and prepare drawings on the joinery details and constructional techniques involved in timber partitions, single and double skinned partitions, partially glazed partitions.
3. To study various types of aluminum partitions, its extrusions & details of components for partitions.
4. To study aluminum panels for partitions, cladding component for various structures, aluminum grill modules.
5. To study and prepare drawings on various types of wall finishes - external facing and veneers - stone facing, wall facing, wall tiling, and cement concrete facing - methods of construction and details pertaining to the same.
6. To introduce fixing devices in walls, ceilings and floors of solid construction.
7. To understand the purpose and functions of joints in building construction and to prepare drawings on the types of joints that occur in buildings.
8. To prepare drawings on expansion joints in Brick walls and R.C.C. framed structures and its construction details and materials involved in the construction.
9. To study different types of roofing of industrial buildings.
10. To understand and prepare drawings on the construction details of Curtain walls in glass, aluminum, precast concrete units etc.

TEXT BOOKS / REFERENCE BOOKS:

- Rangwala, S. C., “Building Construction”, Charotar Publishing House, 2007.
- McKay, W.B., “Building Construction Volume I, II, III and IV”, Longmans, UK, 1955.
- Ching, Francis D. K., Adams, Cassandra, “Building Construction Illustrated”, Wiley & Sons, Incorporated, John.
- Barry. R., “The construction of Buildings”, The English Language Book society and Crosby Lockwood, London, 1976..
- Arora, S.P. &Bindra, S.P., “The text book of Building Construction”, DhanpatRai Publications, 2009.

Course outcomes:	
1.	Knowledge of Different Material used for Construction and their fixing Details.
2.	Understanding the expansion joints used for large scale buildings.

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Bachelor in Architecture (2018 Batch)

B.Arch (SIXTH SEMESTER)

Module 26 ARMO 3006		**M26: Prefab**
Contacts Hours		**50 (2 Weeks)**
Subject Code	**Subject Name**	**Max Marks**
ARC-370	Architectural Design-VI	15
ARC-371	Building Construction-VI	30

COURSE OUTCOMES

Architectural Graduate will be able to:		**Knowledge domain and level**	**Evaluation Method**
1	Analyze defects and remedies in buildings	K4 in Cognitive domain	Rubric/Viva
2	Analyze retrofitting in buildings	K4 in Cognitive domain	Rubric/Viva
3	Analyze prefabricated speedy construction in a building	K4 in Cognitive domain	Rubric/Viva
4	Apply basic concepts of modular construction	K3 in Cognitive domain	Rubric/Viva
5	Appreciate the role of prefab construction in respect of technology, culture, time and environment	A3 in Affective domain	Rubric/Viva

COURSE OBJECTIVES

1. To develop and include universal design principles
2. Designing in light weight construction – concrete, pre tensioning, post tensioning
3. Defects and remedies

Project: Analysis of buildings constructed through speedy construction

ARC-370 Architectural Design-VI

Defects in Building

Analyze defects in building and understanding the role of advanced construction techniques. Defects in buildings and their remedies.

Universal Design- People needs

Principles of Universal Design,Universal Design Definition, seven principles:-Equitable Use Flexibility in Use, Simple and Intuitive, Perceptible Information, Tolerance for Error, Low Physical Effort, Size and Space.

ARC-371 Building Construction-VI

Unit1-Prefabrication Systems

Open prefab system, large panel prefab system, joints, pre-casting methods, materials, on-site and off-site prefabrication, components, etc.

Unit 2-Pre-stressed Concrete

Introduction, methods of pre-stressing and their application to large-space structures.

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

Module 27 ARMO 3007		M27: Tall Buildings
Contacts Hours		**72 (2 Weeks)**
Subject Code	**Subject Name**	**Max Marks**
ARC-370	Architectural Design-VI	10
ARC-371	Building Construction-VI	15
ARC-314	Human Values	80
ARC-372	Building Structures-VI	25

COURSE OUTCOMES

Architectural Graduate will be able to:		Knowledge domain and level	Evaluation Method
1	Design core of a tall building	K6 in Cognitive domain	Rubric/Viva
2	Analyze structural system of a tall building	K4 in Cognitive domain	Rubric/Viva
3	Illustrate evolution of mega structures	K3 in Cognitive domain	Rubric/Viva
4	Analyze building on the basis of earthquake and dynamic loads	K4 in Cognitive domain	Rubric/Viva
5	Appreciate the role of services in tall building design	A3 in Affective domain	Rubric/Viva

COURSE OBJECTIVES

To design tall building core, earthquake resistant structures, structural grids- diagrid, tensegrity, fire proofing, historic evolution of tall buildings, contemporary mega structures

Project: Design core of a Tall Building

ARC-370 Architectural Design-VI

Documentaries of Megastructures for analysis of high rise structures. Understanding structural grids, form geometry

ARC-371 Building Construction-VI

Industrial Construction Structural Steel Works:Portal Frame Construction,
Construction for tall buildings

ARC-372 Building Structure-VI

UNIT 1 INTRODUCTION TO HIGH-RISE BUILDINGS AND STRUCTURAL SYSTEMS

Height analysis, plan shapes, grids and core design - Foundations and soil conditions - Construction sequencing, building skin and envelope - Design philosophy, structural loading, sequential loading, materials, high performance concrete – Fibre reinforced concrete, High strength concrete, Light weight concrete - Loading and movement Gravity Loading, Dead and Live load - Methods of Live load reduction – impact, gravity loading, construction loads, wind loading – Static and dynamic approach – Earth quake loading – Equivalent lateral force, model analysis, combinations of loading – Working stress design, limit state design, plastic design - Codes & Standards - Tensile structures in high-rise.

UNIT 2 BEHAVIOR OF VARIOUS STRUCTURAL SYSTEMS

Factors affecting growth, height and structural form – High rise behavior, rigid frames, braced forms, infilled frames, shear walls, coupled shear walls, wall frames, tubular, cores, outrigger- braced and hybrid mega systems.

UNIT 3 DISASTER RESISTANT STRUCTURES

Overall buckling analysis of frames, wall frames - Approximate methods, second order effects of gravity of loading, simultaneous first order and P delta analysis, translational, torsional instability, out of plumb effects, stiffness of member in stability, effect of foundation rotation - Case study of a high-rise structure with 3D model analysis.

UNIT 4 PREFABRICATED STRUCTURES

Specific requirements for planning and layout of prefabricates plant, IS code specification - Design Principles, modular coordination, standardization, disuniting of prefabricates production, transportation and erection, stages of loading and code provisions, safety factors - Reinforced concrete - Prefabricated structures, wall panel types and two way fabricated slabs, partial and curtain walls, trusses, shells, crane - gantry systems - Floor slabs and roofs, types of floor slabs, cored and panel types and two way systems, stair case slab , insulation requirements, joints, their behavior and reinforcement requirements – Walls, types of wall panels blocks and large panels, curtain – Partition and load bearing walls, wall joints - Behavior and design, leak prevention, joint sealant, sandwich wall panels.

ARC-314 Human Values

UNIT 1: Course Introduction - Need, Basic LVidelines, Content and Process for Value Education

1. Understanding the need, basic LVidelines, content and process for Value Education
2. Self Exploration–what is it? - its content and process; 'Natural Acceptance' and Experiential Validation- as the mechanism for self exploration

3. Continuous Happiness and Prosperity- A look at basic Human Aspirations

4. Right understanding, Relationship and Physical Facilities- the basic requirements for fulfillment of aspirations of every human being with their correct priority

5. Understanding Happiness and Prosperity correctly- A critical appraisal of the current scenario

6. Method to fulfill the above human aspirations: understanding and living in **harmony** at various levels

UNIT 2: Understanding Harmony in the Human Being - Harmony in Myself!

7. Understanding human being as a co-existence of the sentient 'I' and the material 'Body'

8. Understanding the needs of Self ('I') and 'Body' - *Sukh* and *Suvidha*

9. Understanding the Body as an instrument of 'I' (I being the doer, seer and enjoyer)
10. Understanding the characteristics and activities of 'I' and harmony in 'I'

11. Understanding the harmony of I with the Body: *Sanyam* and *Swasthya*; correct appraisal of Physical needs, meaning of Prosperity in detail
12. Programs to ensure *Sanyam* and *Swasthya*

- Practice Exercises and Case Studies will be taken up in Practice Sessions.

UNIT 3: Understanding Harmony in the Family and Society- Harmony in Human-Human Relationship

13. Understanding Harmony in the family – the basic unit of human interaction

14. Understanding values in human-human relationship; meaning of *Nyaya* and program for its fulfillment to ensure *Ubhay-tripti*;
Trust (*Vishwas)* and Respect (*Samman)* as the foundational values of relationship

15. Understanding the meaning of *Vishwas*; Difference between intention and competence

16. Understanding the meaning of *Samman*, Difference between respect and differentiation; the other salient values in relationship

17. Understanding the harmony in the society (society being an extension of family): *Samadhan, Samridhi, Abhay, Sah-astitva* as comprehensive Human Goals

18. Visualizing a universal harmonious order in society- Undivided Society (*AkhandSamaj),* Universal Order (*Sarvabhaum Vyawastha)*- from family to world family!

    - Practice Exercises and Case Studies will be taken up in Practice Sessions.

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

Module 28 ARMO 3008		M28: Neighborhood
Contacts Hours		**216 (6 Weeks)**
Subject Code	**Subject Name**	**Max Marks**
ARC-370	Architectural Design-VI	40
ARC-372	Building Structures-VI	55
ARC-315	Building Economics	50
ARC-314	Human Values	20
ARC-368	Computer Application in Architecture-VI	30

COURSE OUTCOMES

Architectural Graduate will be able to:		Knowledge domain and level	Evaluation Method
1	Apply basic theory of design	K3 in Cognitive domain	Rubric/Viva
2	Analyze advance structural concepts	K3 in Cognitive domain	Rubric/Viva
3	Analyze advance services concepts-(automation)	K3 in Cognitive domain	Rubric/Viva
4	Illustrate basic concept of neighborhood and masterplans	K3 in Cognitive domain	Rubric/Viva
5	Design vertical housing	K6 in Cognitive domain	Rubric/Viva

COURSE OBJECTIVES

1.Including building services and structural system

2.Area calculation, building byelaws, FAR/FSI, Height restrictions, covered area.

Project: mid rise/low rise housing

ARC-370 Architectural Design-VI

Design of a medium to high-rise building in a dense urban setting. The problem shouldattempt to bring out a comprehension of the framework that outlines a building interior, thestructural system and the services core, and the relation of this interior with the exteriorenvironment through the building skin. The project should be of high services complexity withmechanical systems for space conditioning, parking and other services, and include theintegration of active energy systems

ARC-315 Building Economics

Elementary concepts of economics

Introduction to economics- Definitions, Needs & Wants, Nature & Scope of Economics.
Division of economics – Micro Economics - Scarcity, Utility - Marginal, Total & Average. Laws of Demand and Supply.
Macro Economics - Economic system in India.

Economics in relation to architecture,engineering and other sciences

Meaning and scope of building economics, Issues and challenges associated with building projects. Building Efficiency, Building Life-cycle. Costs and Benefits of Building - Monetary and Non Monetary.

ARC-314 Human Values

UNIT 4: Understanding Harmony in the Nature and Existence - Whole existence as Co-existence

1. Understanding the harmony in the Nature
2. Interconnectedness and mutual fulfillment among the four orders of nature-recyclability and self-reLVlation in nature
3. Understanding Existence as Co-existence (*Sah-astitva*) of mutually interacting units in all-pervasive space
4. Holistic perception of harmony at all levels of existence
    a. Practice Exercises and Case Studies will be taken up in Practice Sessions.

UNIT 5: Implications of the above Holistic Understanding of Harmony on Professional Ethics

23. Natural acceptance of human values
24. Definitiveness of Ethical Human Conduct

25. Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order
26. Competence in professional ethics:

    a) Ability to utilize the professional competence for augmenting universal human order

    b) Ability to identify the scope and characteristics of people-friendly and eco-friendly production systems,

    c) Ability to identify and develop appropriate technologies and management patterns for above production systems.

27. Case studies of typical holistic technologies, management models and production systems

28. Strategy for transition from the present state to Universal Human Order:

    a) At the level of individual: as socially and ecologically responsible engineers, technologists and managers

    b) At the level of society: as mutually enriching institutions and organizations

ARC-368 Computer Application in Architecture-VI

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

Module 29 ARMO 3009		M29: Agora
Contacts Hours		**216 (6 Weeks)**
Subject Code	**Subject Name**	**Max Marks**
ARC-370	Architectural Design-VI	35
ARC-371	Building Construction-VI	25
ARC-315	Building Economics	50
ARC-369	Research/Dissertation-I	55
ARC-368	Computer Application in Architecture-VI	35

COURSE OUTCOMES

Architectural Graduate will be able to:		**Knowledge domain and level**	**Evaluation Method**
1	Analyse theory of design	K3 in Cognitive domain	Rubric/Viva
2	Analyse basic concepts of waste management	K3 in Cognitive domain	Rubric/Viva
3	Design a landscaped central court of vertical housing	K6 in Cognitive domain	Rubric/Viva
4	Write a dissertation	K5 in Cognitive domain	Rubric/Viva
5	Design a shopping mall	K6 in Cognitive domain	Rubric/Viva

COURSE OBJECTIVES

1. Study and analysis of a live site for site services and site planning.
2. Planning and designing of a campus.

Project: Institutional building complex

ARC-370 Architectural Design-VI(130 Contact Periods)

problem of a complex building involving a high level of services and advanced structuralsystems eg. Sports complex, institutional campus.Exercises in simulation and conceptual modeling shall be conducted.The studio will also focus on sustainable design principles, including waste recycling, rain waterHarvesting, site planning principles and landscaping.

ARC-371 Building Construction-VI

Unit 1-Lightweight constructions

Hollow bricks, slabs, party wall and shell roofs.

Unit 2 Speedy Construction Methods

Types of floor construction - Beam & Slab, Waffle Grid Slab, Drop Beam & Slab, Flush Slab, Lift Slab Construction; Cast-in-situ service & stair cores; Cross wall & Box frame construction.

ARC-315 Building Economics

Project Financing Equity, Financing Institutions in Financing Process, Interim Finance and Permanent Financing, Bank Loan - Simple Interest and Compound Interest. Types of Mortgage, Lease Arrangements.

Module-4 Economic performance of building

Decision Making using techniques of economic performance to measuretangible and non-tangible issues - Cost-Benefit Analysis, Incremental Analysis and Multi-criteria Analysis.

ARC-369 Research/Dissertation-I

ARC-368 Computer Application in Architecture-VI

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

Module 30 ARMO 3010		M30: Management
Contacts Hours		**72 (2 Weeks)**
Subject Code	**Subject Name**	**Max Marks**
ARC-371	Building Construction-VI	30
ARC-372	Building Structures-VI	20
ARC-369	Research/Dissertation-I	45
ARC-368	Computer Application in Architecture-VI	35

COURSE OUTCOMES

Architectural Graduate will be able to:		Knowledge domain and level	Evaluation Method
1	Analyse building specifications	K4 in Cognitive domain	Rubric/Viva
2	Analyse building estimation and costing	K4 in Cognitive domain	Rubric/Viva
3	Appreciate the role of economics in built environment	K3 in Cognitive domain	Rubric/Viva
4	Apply building byelaws to their design	K3 in Cognitive domain	Rubric/Viva
5	Make a detail working drawing of shopping mall	K6 in Cognitive domain	Rubric/Viva

COURSE OBJECTIVES

1.
2.

Project: Reports/Research/dissertation

ARC-371 Building Construction-VI
ARC-372 Building Structures-VI

ARC-369 Research/Dissertation-I

Unit I Introduction Aspects of Analysis of an Architectural project

Unit II

Technical Writing Critical Appreciation of a Project: Analyzing on the basis of site, Built Form and Space, Spatial Organization, Materials and Techniques, Elements and Special Characteristics, Activity Pattern.

Unit III

Book Reviews Review of Book with presentation of the précis.

ARC-368 Computer Application in Architecture-VI

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

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B.Arch (VII SEMESTER)

Module 31 ARMO 4001		**M31: Resurgence**
Contacts Hours		**72 (2 Weeks)**
Subject Code	**Subject Name**	**Max Marks**
ARC-406	Environmental Studies	100
ARC-459	Research/Dissertation	50

COURSE OUTCOMES

Architectural Graduate will be able to:		**Knowledge domain and level**	**Evaluation Method**
1	Apply basic concepts of environment and ecology	K3 in Cognitive domain	Rubric/Viva
2	Evaluate the impact of environmental pollution	K5 in Cognitive domain	Rubric/Viva
3	Apply basic concepts of environmental laws and reLVlations	K3 in Cognitive domain	Rubric/Viva
4	Make Environmental impact assessment reports	K6 in Cognitive domain	Rubric/Viva
5	Value the role of sustainability in built environment	A3 in Affective domain	Rubric/Viva

COURSE OBJECTIVES

1.
2.

Project: project assessment

ARC-406 Environmental Studies

Unit-I: Ecology & Ecosystem

Concept of Ecology & Ecosystem, Resource analysis for various ecosystems and development imperatives (land, geology, soil, climate, water. vegetation) characteristics, exploitation, causative factors for degradation, analytical techniques.

Unit-II: Environmental Pollution

Definition, causes, effects, standard parameters and control measures of Air, Water, Soil, Noise, Marine, Thermal, Nuclear and Light pollution.

Causes, effects and control measures of urban and industrial waste.

Physical, Chemical and Biological transformation of pollutants.

Unit-III: Introduction to EIA & EMP

Role of EIA in the Planning and decision making process, definition and need, evolution and objectives, tasks and scope, methods of EIA; advantages and limitations.

EMP, Best practices in Environmental Protection and Conservation.

Unit-IV: Environmental Laws and ReLVlations

Introduction to Environmental Protection Act, Air (Prevention and Control of Pollution) Act, Water (Prevention and control of Pollution) Act, Wildlife Protection Act, Factories Act, Forest Conservation Act, Issues involved in enforcement of environmental legislation, MoEF LVidelines.

Sustainability

Unit I

Introduction to sustainability &Intelligent buildings Social, economic, environmental factors, ecological footprint, local and worldwide sustainable benchmarks, building ecosystem, building life

cycle Concept. Concept of intelligent buildings, energy efficiency, vertical transportation systems, communication systems, security systems, building automation and lighting systems.

Unit II

Sustainable design Principles and strategies, site design, energy management, renewable energy, sustainable material selection, water management, indoor air quality, alternative energy, environmental systems, environmental assessment methods.

Unit III

Building Management Systems (BMS) Methods to control, monitor and optimize building services, eg., lighting, heating, security, CCTV and alarm systems, access control, audio-visual and entertainment systems, ventilation, filtration and climate control, etc., even time & attendance control and reporting (notably staff movement and availability).

Unit IV

Energymanagement inservices

ARC-459 Research/Dissertation

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

Module 32 ARMO 4002		M32: Ocular
Contacts Hours		72 (2 Weeks)
Subject Code	**Subject Name**	**Max Marks**
ARC-408	Product Design*1	100
ARC-409	Art Appreciation*1	-

COURSE OUTCOMES

Architectural Graduate will be able to:		Knowledge domain and level	Evaluation Method
1	Apply basic concept of the elective topic	K3 in Cognitive domain	Rubric/Viva
2	Appreciate the role of Elective topic in global scenario	K3 in Cognitive domain	Rubric/Viva
3	Internalize the values of the topic	A5 in Affective domain	Rubric/Viva
4	Conduct the surveys on the topic given	P5 in psychomotor domain	Rubric/Viva
5	Present the researched topic in an seminar	K6 in Cognitive domain	Rubric/Viva

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

ARC-408 Product Design (Elective I-A)
ARC-409 Art Appreciation (Elective I-A)

Module 33 ARMO 4003		M33: Hospitality
Contacts Hours		**216 (6 Weeks)**
Subject Code	**Subject Name**	**Max Marks**
ARC-460	Architectural Design-VII	45
ARC-461	Building Construction-VII	50
ARC-407	Project Management	50
ARC-459	Research/Dissertation	50

COURSE OUTCOMES

Architectural Graduate will be able to:		Knowledge domain and level	Evaluation Method
1	Design a hotel with convention center	K6 in Cognitive domain	
2	Apply basic concepts of service floor and safety in built environment	K3 in Cognitive domain	Rubric/Viva
3	Design indoor recreational facilities	K6 in Cognitive domain	Rubric/Viva
4	Application of waste management techniques in hotel	K3 in Cognitive domain	Rubric/Viva
5	Make a detail working drawing of service floor	K6 in Cognitive domain	Rubric/Viva

COURSE OBJECTIVES

1.

Project: Hotel, Haat,

ARC-460 Architectural Design-VII

Concept

ARC-461 Building Construction-VII

Machinery ,Advanced Building Technology

Introduction of pre-stressing, prefabrication & systems building.Jointing, tolerances and modular co-ordination.Mass production, transportation, storage and handling of materials. Characteristics, performance and application of mechanized construction equipment. Advanced vernacular construction techniques.

ARC-407 Project Management

Introduction to Project Management. Project Planning, feasibility studies,
project report, project financing, Project organization, process and structure and personnel selection, responsibilities of the project manager. Project implementation, Site investigations, layout, site organisation, networking techniques, PERT/CPM, LOD, time-cost analysis, value engineering, Project monitoring, cost control, manpower management, safety and labour laws.

ARC-459 Research/Dissertation

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

Module 34 ARMO 4004		M34: Health Care
Contacts Hours		216 (6 Weeks)
Subject Code	Subject Name	Max Marks
ARC-460	Architectural Design-VII	55
ARC-461	Building Construction-VII	50
ARC-407	Project Management	50

COURSE OUTCOMES

Architectural Graduate will be able to:		Knowledge domain and level	Evaluation Method
1	Design a hospital	K6 in Cognitive domain	Rubric/Viva
2	Illustrate low cost constructional techniques	K3 in Cognitive domain	Rubric/Viva
3	Apply basic concepts of hospital information system	K3 in Cognitive domain	Rubric/Viva
4	Design healing landscapes	K6 in Cognitive domain	Rubric/Viva
5	Internalize the values of hygiene and social care	A5 in Affective domain	Rubric/Viva

COURSE OBJECTIVES

1.

Project:Hospital

ARC-460 Architectural Design-VII

(Working Drawings, GFC Drawings)

Preparation of architectural GFC drawings and details of a medium / large project.Preparation of electrical drawings, water supply and sanitary drawings, structural drawings of a small project. Specifications of building materials and simple construction as separate document or annotated on the working drawings.

ARC-461 Building Construction-VII

Defects and Remedies

The study of various defects in buildings and their remedies, Defects caused by dampness, applied forces and changes in size.

ARC-407 Project Management

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

Module 35 ARMO 4005		M35:Perception
Contacts Hours		72 (2 Weeks)
Subject Code	Subject Name	Max Marks
ARC-410	Low Cost Architecture*2	100
ARC-411	Architectural Journalism*2	-

COURSE OUTCOMES

Architectural Graduate will be able to:		Knowledge domain and level	Evaluation Method
1	Apply basic concept of the elective topic	K3 in Cognitive domain	Rubric/Viva
2	Appreciate the role of Elective topic in global scenario	K3 in Cognitive domain	Rubric/Viva
3	Internalize the values of the elective topic	A5 in Affective domain	Rubric/Viva
4	Conduct the surveys related to elective topic	P5 in psychomotor domain	Rubric/Viva
5	Present research work through seminar	K6 in Cognitive domain	Rubric/Viva

COURSE OBJECTIVES

1.

Project: Report

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ARC-410 Low Cost Architecture (Elective II-A)

UNIT I

- An introduction to the subject to understand the various building techniques adopted in different climatic zones of the country, which resulting in varied vernacular expressions.
- Use of cost effective technologies through the use of local materials, up gradation of traditional technologies, prefabrication etc.

UNIT II

- Need for low cost construction, both in the rural and the urban sectors.
- Innovations of building techniques for low cost construction.
- Analysis of space norms for low cost buildings.

UNIT III

- Study of usages pattern of low cost buildings by the habitants.
- Comparative analysis of building materials and costing.
- Works of Laurie Baker, Hassan Fathy and other prominent architects.

NOTE The time mentioned at the end of each of the above units indicates the tentative time taken to complete each. The marks for sessional work may be divided accordingly.

REFERENCE BOOKS

- “Building Systems for Low Income Housing”, Ashok Kumar Jain; Management Publishing House, 1992

- “Low Cost Housing in Developing Countries”, LVru Charan Mathur; For Centre for Science & Technology of the Non-Aligned and Other Developing Countries, Oxford & IBH Publishing Company, 1993

ARC-411 Architectural Journalism (Elective II-B)

Unit I

Introduction to Architectural Journalism

What is Journalism and its importance?? Relation betweenArchitectural Journalism. Reading contemporary and historical writings by Journalists and critics, study their approaches.

Unit II

Introduction to Architectural writing

Writing on different articles, on buildings and social issues
Reports on building under construction
Learn how to gather info and do research for stories

Unit III

Structure of Architectural Journalism and Photo Journalism

Learning of documentation of collected info, content writing, formatting, Page composition
Learning the technique of how the photographs are supporting the write-ups about built environment, to help them understand the expression of pictorial, verbal and visual relationship of architecture journalism

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

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B.Arch (VIII SEMESTER)

Module 36 ARMO 4006		**M36: Professional Training**
Contacts Hours		**22 Weeks)**
Subject Code	**Subject Name**	**Max Marks**
ARC-480	Professional Training	100

COURSE OUTCOMES

Architectural Graduate will be able to:		**Knowledge domain and level**	**Evaluation Method**
1	Test the theories taught	K5 in Cognitive domain	Rubric/Viva
2	Appraise the relation between the site work and drawings	K5 in Cognitive domain	Rubric/Viva
3	Inculcate teamwork	A4 in Affective domain	Rubric/Viva
4	Devise a procedure for accomplishing a task	K6 in Cognitive domain	Rubric/Viva
5	Display self-reliance, work ethics in an office	A5 in Affective domain	Rubric/Viva

COURSE OBJECTIVES

1.
2.

Project: Training portfolio

ARC-480 Professional Training

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

Lingaya's Vidyapeeth

Bachelor in Architecture (2018 Batch)
B.Arch (IX SEMESTER)

Module 37 ARMO 5001		**M37: AMENABLE**
Contacts Hours		**72 (2 Weeks)**
Subject Code	**Subject Name**	**Max Marks**
ARC-503	Disaster Mitigation & Management*3	85
ARC-504	Sustainable Cities & Energy Compliance*3	-
ARC-502	Professional Practice-I	15

COURSE OUTCOMES

Architectural Graduate will be able to:		**Knowledge domain and level**	**Evaluation Method**
1	Apply basic concepts of the Sustainable Cities & Energy Compliance	K3 in Cognitive domain	Rubric/Viva
2	Appreciate the role of Sustainable Cities & Energy Compliance in global scenario	K3 in Cognitive domain	Rubric/Viva
3	Internalize the values of the Sustainable Cities & Energy Compliance	A5 in Affective domain	Rubric/Viva
4	Conduct the surveys related to the Sustainable Cities & Energy Compliance	P5 in psychomotor domain	Rubric/Viva
5	Present research work through seminar	K6 in Cognitive domain	Rubric/Viva

Project:

COURSE CONTENT

ARC-503 Disaster Mitigation & Management (Elective III-A)

Unit-1 Introduction to Hazards & Disasters
Introduction to disaster management, Indian scenario, Understanding ofdisaster, Hazard and its classification, Vulnerability, Capacity, Risk.Various types of disasters.To understand in detail for the causes, adverse effects, distribution patterns,mitigation measures of Earthquake, Tsunami, Cyclone, Flood and Landslide.Disaster management cycle.

Unit -II Case Studies
Studies to understand above mentioned disasters (National as well asInternational) occurred in past and their inferences.

Unit -III Disaster Preparedness
Disaster Management Act, LVidelines, NDMA.Vulnerability Assessment & Warning systems for above said disaster types.

Unit -IV Disaster Response

Programmes and strategies for disaster reduction. Communications.

Unit -V Disaster Mitigation
Pre disaster, emergency, transition, and recovery. Disaster management plan,Natural crisis management committee, State crisis management group.

Unit -VII Disaster Resistant Construction Techniques
Risk reduction measures through land use control, site planning and landmanagement, design and construction of structures for above mentioneddisasters.

Unit-VI: DISASTER RISK MANAGEMENT IN INDIA
1. Evolution of Disaster Management in India
2. To understand the institutional and legal framework for India
3. Policy and Programmers for Disaster In India
4. Roles and Responsibilities of Panchayat, urban and Local bodies in DisasterManagement
5. community participation, public awareness
6. Indian Case Studies

ARC-504 Sustainable Cities & Energy Compilance (Elective III-B)

People, Environment & Buildings

Relationship between people and environment, impact of people on environment and vice versa, extent of the energy and environmental crises facing the world ,Need for implementing energy efficiency on an international, national and individual basis in the context of the building industry & environmental issues. Introduction to Indoor environment – spatial environment, Thermal environment, visual environment, sonic environment and olfactory environment.

Climate and Built form Responses

Global climate factors, elements of climate, classification of climate zones, desirable conditions, principals of thermal conditions and STI, body heat exchange, thermal balance, psychometric chart, sun path, sun angles ,SAP, sunshine hours, and solar noon, declination, extraterrestrial radiation, solar constant, radiation on different of different directions with different inclination of walls. Radiation spectrum, spectral sensitivity of eye, visual cone and comfort, daylight assessment, types of reflection, glare and quality and spread of light in buildings. Sound waves, audible range of sounds, equal loudness controls, noise reduction systems, sound transmission path.

Emphasis on responses related to cultural, strategic, technological, social and physical with specific reference to climate and built forms.

Traditional Wisdom and Sustainable Concepts

Socio-cultural aspects in the spatial formation of traditional buildings under different climate zones in India. Concepts of 'Sacred build-up and Landscape', An Architectural and Theological Interface, Indigenous knowledge, antiquity, Indian vernacular architecture concepts covering informal, functional architecture of structures, built of local materials and designs to meet the needs of the local people and the intricate variations in local social customs, craftsmanship and climate.

The Architectural concepts may have to emphasize local conditions, geography of region and peoples mind to emphasize traditional wisdom and sustainable concepts.

Sustainable Built Environment, Issues and approaches

Building on the general appreciation of this area in the core studies, students will be required to have a greater insight into matters relating to specific issues concerning the environment and the ecology. An appreciation of particular issues relating to urban and rural morphological sensitivity will be expected. Scarce material/physical resources should be discussed in the context of (a) choice of materials and (b) diminishing natural resources as should eco-friendly and 'safe' materials with specific reference to thermal, visual comforts. Besides, Students should have an appreciation of aesthetic issues in the built environment. The participants should also have knowledge of the principal considerations involved in the evaluation or survey of built up environment intended for sustainable concepts. They should be familiar with safety considerations relating to the built environment.

Water and Built Forms, Land and Vegetation

Introduction, water demand, growing water misuse, pollution, threat to environment, social implications, sustainability of water recourses, ground water management, issues related to urban water supply. Running water and underground water; channel networks and drainage basins, hill slope geomorphology.

Introduction, land forms, Grazing lands, soil erosion, deforestation, air pollution.
Growing concerns of vegetation due to excessive usage, impact of vegetation on soil erosion, prevention of erosion, livestock management, sustainability of urban landscape, wet lands, and sustainable agriculture.

ARC-502 Professional Practice-I

Unit I Role of Professional Bodies

The Indian Institute of Architects, its working constitution and byelaws, categories of membership, election procedures. The Uttar Pradesh Architects Association.

Module 38 ARMO 5002		M38: Smart Cities
Contacts Hours		**72 (2 Weeks)**
Subject Code	**Subject Name**	**Max Marks**
ARC-503	Disaster Mitigation & Management*3	15
ARC-504	Sustainable Cities & Energy Compliance*3	-
ARC-557	Architectural Design-IX	10
ARC-502	Professional Practice-I	35

COURSE OUTCOMES

Architectural Graduate will be able to:		**Knowledge domain and level**	**Evaluation Method**
1	Illustrate basic concepts of smart city	K3 in Cognitive domain	Rubric/Viva
2	Illustrate basic concepts of resilient city	K3 in Cognitive domain	Rubric/Viva
3	Illustrate the contemporary trends in urban development	K3 in Cognitive domain	Rubric/Viva
4	Apply basic concepts of internet of things related to urban context	K3 in Cognitive domain	Rubric/Viva
5	Internalize the values of vision/ mission of govt. policies related to urban fabric	A5 in Affective domain	Rubric/Viva

COURSE OBJECTIVES

Project:

COURSE CONTENT

ARC-503 Disaster Mitigation & Management (Elective III-A)

Project Work: (Field Work, Case Studies)
The project /fieldwork is meant for students to understand vulnerabilities and to work on reducing disaster risks and to build a culture of safety. Projects are conceived creatively based on the geographic location and hazard profile of given region

ARC-504 Sustainable Cities & Energy Compliance (Elective III-B)

Solar Passive Design (Concepts, Strategies & Services)

Introduction of passive solar architecture, appreciation of Built form for different climates, building clusters and solar exposure, thermal environment. Types of passive systems, direct gain, thermal storage wall, attached green house, thermal storage roof and convective loop.
Modern and postmodern passive architecture, methods, strategies, systems, and construction details emphasizing the passive architecture and non-active services.

ARC-557 Architectural Design-IX

ARC-502 Professional Practice-I

Unit I Architects' Act 1972
Detail study of the Act, Council of Architecture; Procedures of membership.

Unit II

Scale of charges Conditions of engagement of an architect – Duties; Responsibilities and liabilities of a professional architect; Scale of charges, mode of payment etc

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

Module 39 ARMO 5003		M39: Urban Design
Contacts Hours		216 (6 Weeks)
Subject Code	Subject Name	Max Marks
ARC-557	Architectural Design-IX	40
ARC-5002	Professional Practice-I	50

COURSE OUTCOMES

Architectural Graduate will be able to:		Knowledge domain and level	Evaluation Method
1	Appreciate basic concepts of urban design	K3 in Cognitive domain	Rubric/Viva
2	Value the role of urban systems in society	A3 in Affective domain	Rubric/Viva
3	Illustrate history of urban design	K3 in Cognitive domain	Rubric/Viva
4	Illustrate concepts of professional practice	K3 in Cognitive domain	Rubric/Viva
5	Design intervention in a bazzar street	K6 in Cognitive domain	Rubric/Viva

COURSE OBJECTIVES

Project:

COURSE CONTENT

ARC-557 Architectural Design IX

Project: Urban Space Analysis

Unit 1: STUDY AND ANALYSIS OF URBAN SPACES, MODERN CONCEPTS IN URBAN DESIGN

A brief study and analysis of urban space.
Study of Urban design theories of Christopher Alaxander, Jane Jacob, Gordon Cullen and Kevin Lynch. Relevance of historic concepts of urban design in the present context-Critical analysis of Indian cities
& understanding the urban design projects of Singapore, China & United States.

Unit 2: BASIC PRINCIPLES & TECHNIQUES IN URBAN DESIGN

Components in urban design composition. Urban scale, mass and space, definition of urban fabric,visual surveys and their influence for urban design, various methods of conducting a visual survey.
Definition and purpose of open spaces and their hierarchy in urban design-hierarchy of utility spacesfor residential, commercial, recreational and industrial use. Special focus on streets-Expressive qualityof built forms, spaces in public domain.

UNIT 3: RENEWAL, RE-DEVELOPEMENT AND FORMULATING URBAN DESIGN

Definition and need for urban renewal and re-developement, scope for urban renewal in Indiachallenges and implementation methods of urban renewal for Indian historic towns and cities, impactof public participation. Analysis and formulation of urban design LVidelines for new developments.
National and international case studies for urban renewal.

ARC-502 Professional Practice-I

Unit -I Code of Professional conduct & Architectural Competition
Clauses governing conduct of professional architect.Types of competitions; need and procedure for conducting competitions.

Unit -II Tender and Contract
Type of building contracts, their demands. Preparation of tender documents, method of inviting tenders, opening of tenders, preparation of comparative statement recommendation and award of projects, preparation of contract documents, general conditions of contract, interim certificates, defect liability period, retention amount and virtual completion.
Unit -III Easements
Introduction to various easement process and precautions to protect easement rights.

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

Module 40 ARMO 5004		M40: Mixed Use Development
Contacts Hours		**216 (6 Weeks)**
Subject Code	**Subject Name**	**Max Marks**
ARC-557	Architectural Design IX	45
ARC-505	Transport Planning*4	15
ARC-506	Urban & Regional Planning*4	-

COURSE OUTCOMES

Architectural Graduate will be able to:		Knowledge domain and level	Evaluation Method
1	Illustrate concepts of various Land Uses and land planning	K3 in Cognitive domain	Rubric/Viva
2	Apply basic concepts of town planning	K3 in Cognitive domain	Rubric/Viva
3	Design intervention in transit oriented development	K6 in Cognitive domain	Rubric/Viva
4	Develop a vision document for mixed land use	K6 in Cognitive domain	Rubric/Viva
5	Integrate social, ecological and economic concerns	A4 in Affective domain	Rubric/Viva

COURSE OBJECTIVES

Project:

COURSE CONTENT

ARC-557 Architectural Design IX

Project: Urban Design Intervention

Design intervention into an existing urban precinct. Creating proposal document, drawings, maps and 3D physical model for proposed project. Urban outdoor lighting, urban green infrastructure, acoustic consideration for urban fabric, air quality at street level.

ARC-505 Transport Planning (Elective IV-A)

Unit I Introduction:
Transport and Socioeconomic Activities, Historical Development of Transport, Transportation in the Cities, Freight Transportation, Future Developments

ARC-506 Urban & Regional Planning (Elective IV-A)

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

Module 41 ARMO 5005		M41: Sprawl
Contacts Hours		**72 (2 Weeks)**
Subject Code	**Subject Name**	**Max Marks**
ARC-557	Architectural Design IX	05
ARC-505	Transport Planning*4	85
ARC-506	Urban & Regional Planning*4	-

COURSE OUTCOMES

Architectural Graduate will be able to:		Knowledge domain and level	Evaluation Method
1	Apply basic concept of the elective topic	K3 in Cognitive domain	Rubric/Viva
2	Appreciate the role of Elective topic in global scenario	K3 in Cognitive domain	Rubric/Viva
3	Internalize the values of the elective	A5 in Affective domain	Rubric/Viva
4	Conduct the surveys related to elective	P5 in psychomotor domain	Rubric/Viva
5	Present research work through seminar	K6 in Cognitive domain	Rubric/Viva

COURSE OBJECTIVES

Project:

COURSE CONTENT

ARC-557 Architectural Design IX

ARC-505 Transport Planning (Elective IV-A)

Unit I

Urban Transportation System Planning- Conceptual Aspects:
Transport Planning Process, Problem Definition, Solution Generation, Solution Analysis, Evaluation and Choice, Implementation, Sequence of Activities Involved in Transport analysis.

Unit II

Trip Generation Analysis: Trip Production Analysis, Category Analysis, Trip Attraction Modelling. Mode Choice Modelling: Influencing Factors, Earlier Modal Split Models, Trip-End Type Modal Split Model, Trip-Interchange Modal Split Model, Disaggregate Mode-Choice Model, Logit Model of Mode Choice, Binary Choice Situations, Multinomial Logit Model, Model calibration, Case studies.

Unit III

Route Assignment:
Description of transport network, Route Choice Behaviour, The Minimum Path, Minimum Path Algorithm, Route Assignment Techniques, All-or-Nothing Assignment, Multipath Traffic Assignment, Capacity-Restrained Traffic Assignment

Unit IV

Transportation Surveys
Definition of Study Area, Zoning, Types of Movements, Types of Surveys, Home- Interview Survey, Commercial Vehicle Survey, Intermediate Public Transport Survey, Public Transport Survey, Roadside-Interview Survey, Cordon-Line Survey, Post-Card Questionnaire Survey, Registration-Number Survey, Tag-on- Vehicle Survey.

Unit V
Transport Related Land-Use Models:
Development of Land - Use models, The Lowry Model, Application of Lowry Model.

Unit VI
Urban Structure:
Urban Activity Systems, Urban Movement Hierarchies, Types of Urban Structure, Centripetal-Type Urban Structure, Grid- Type Urban Structure, Linear-Type Urban Structure, Directional Grid Urban Structure.

ARC-506 Urban & Regional Planning (Elective IV-A)

Lingaya's Vidyapeeth

Bachelor in Architecture (2018 Batch)
B.Arch (X SEMESTER)

Module 42 ARMO 5006		**M42:Architectural Thesis**
Contacts Hours		**936 (26 Weeks)**
Subject Code	**Subject Name**	**Max Marks**
ARC-565	Thesis	100
ARC-515	Professional Practice-II	100

COURSE OUTCOMES

Architectural Graduate will be able to:		**Knowledge domain and level**	**Evaluation Method**
1	Design architectural project in totality	K6 in Cognitive domain	Rubric/Viva
2	Communicate the thesis proposal to expert jury	K3 in Cognitive domain	Rubric/Viva
3	Write thesis report	K6 in Cognitive domain	Rubric/Viva
4	Make scale model of the design thesis	K6 in Cognitive domain	Rubric/Viva
5	Value the role of time management in architectural project	A3 in Affective domain	Rubric/Viva

COURSE OBJECTIVES

1. To prepare a student to independently handle and present all aspects of an architectural design, from its evolution

to final solution in totality.

2. To understand the importance of the evolutionary stages of a design process and various techniques required for

a successful presentation of an architectural design.

3. To develop in students the ability to handle specific aspects / thrust area of design relevant to the topic2.

Project: Thesis

ARC-565 Thesis (400 Contact Periods)

ARC-515 Professional Practice-II

Units I-Valuation Valuation of immovable properties, elements of valuation and factors affecting valuation; Techniques of valuation of landed and building property; Value classification and types of valuation.

Units II-Arbitration Arbitration, Arbitrator, Umpire, Nature of arbitration. Appointment, Conduct, Powers, and duties of arbitrators and umpires; Procedure of arbitration and preparation of awards.

Units IV-Law related to Land

The land acquisition Act, UP Urban Development Act 1973

Units IV-Law of Control

The Partnership Act, 1932

Units V-Law related to Conservation

The elements of the Ancient monument,(site remains) Act 1956

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	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.