
DR. BABASAHEB AMBEDKAR
TECHNOLOGICAL UNIVERSITY
LONERE, RAIGAD

BACHELOR OF ARCHITECTURE

REVISED SYLLABUS

A.Y. 2021-2022

(B14)

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, MAHARASHTRA

DETAILED SYLLABUS – BACHELOR OF ARCHITECTURE (B. Arch) 2021-22

IMPORTANT NOTES:

1. The content of the detailed syllabus is suggestive and not prescriptive. The nature and number of assignments, test, tutorials etc. are not specified intentionally. Every Institute and teacher should design these for their class. Every semester the exercises will be different and thus plagiarism could be avoided.
2. It is expected of all teachers to set up the exercises, tests and tutorials etc. in such a manner that they relate to student's own Design projects attempted in earlier semesters.
3. The detailed content for each course / subject in the document specifies the "Minimum" content to be disseminated to students. Every Institute depending on their Philosophy and Vision statement should make an attempt to go beyond this minimum content mentioned in the syllabus.
4. The content of each subject/course is divided into number of Credit point blocks relevant to the Credits allotted to that course/subject. For theory courses, the distribution of questions asked and marks allotted to topics should be proportionately spread over the content of each credit point in Mid Semester and Semester End Examinations. Questions asked and marks allotted to topics shall address all Credit point blocks of that course/subject at the Semester End Examinations.
5. For every "Elective" course / subject the student must attempt one of the two topics offered. His / her choice of the topic from amongst the two topics listed should be decided at the beginning of the semester and selected option to be filled in the Examination form.
6. However the student may choose to attend more than one topic if he / she desires in an effort to acquire more knowledge.
7. All courses / subjects are divided into three categories:
 - a. Theory courses / subjects (TH) – Student's work will comprise of class tests, tutorials, assignments done in the class +attempt a Paper in the Mid-Semester examinations + Attempt a Paper at the end of Semester examinations. The evaluation of student's performance will be marked separately for continuous assessment during the class sessions – CA1: before Mid-Sem Exams, Mid-Sem exams; CA2: After Mid-Sem exams and End – Sem exams. The marks for CA1, Mid-Sem exams and CA2 should be displayed and performance should be discussed with the students.
 - b. Studio Term Work courses (STW) - Student's work will comprise of class tests, tutorials, assignments done in the class. The assignments should reflect successful application of the knowledge in solving real life problems. The evaluation of student's performance will be marked separately for continuous assessment during the class sessions + assessment by an Internal & External Examiner at the End of Semester examinations where the student will not be present at the time of assessment. The work of the students shall be either in the form of manually drawn sheets, Journals, etc. or it shall be Acceptable in Digital format. Institutes have choice of selecting mode of submissions in any form.
 - c. Studio – Viva courses (SV) - Student's work will comprise of class tests, tutorials, assignments done in the class. The evaluation of student's progress will be marked separately for continuous assessment during the class sessions + Jury / Viva conducted by an Internal & External Examiner at the End of Semester examinations where the student will present his / her work in person. The work of the students shall be either in the form of manually drawn sheets, Journals or it shall be Acceptable in Digital format. Institutes have choice of selecting mode of submissions in any form.
8. The Internal & External examiner mentioned above is generally defined as follows:
 - a. Internal Examiner is the Teacher teaching that course / subject to that class during the semester.
 - b. External Examiner shall be a person not teaching in the concerned Institute. He / she should be a qualified Architect registered with the Council of Architecture, New Delhi and with a minimum of 5 years' experience in teaching – profession. For allied subjects the person could be an expert in that field with 5 years of experience. External examiner for course / subject "Thesis" shall be a qualified Architect registered with the Council of Architecture, New Delhi and with a minimum of 10 years' experience in teaching – profession.

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FINAL Teaching - Evaluation Scheme for B. Arch (October 2021)												
FIRST YEAR B.ARCH												
SEMESTER I												
Course Code	Subject / Course	L/w	S/w	T/w	CT	Cr	T M	CA1	MSE	CA2	ESE-P	ESE-SV/STW
BA21011S	Basic Design	0	10	10	SV	10	500	100	0	100	0	300
BA21012S	Building Construction Technology -I	0	4	4	SV	4	200	40	0	40	0	120
BA21013T	Building Materials -I	2	0	2	TH	2	100	10	20	10	60	0
BA21014T	Culture & Built Form-I	2	0	2	TH	2	100	10	20	10	60	0
BA21015T	Theory of Structure-I	2	0	2	TH	2	100	10	20	10	60	0
BA21016S	Model Making	0	2	2	STW	2	100	20	0	20	0	60
BA21017S	Architectural Drawing and Graphics-I	1	3	4	STW	4	200	40	0	40	0	120
BA21018S	Computer Studio -I	0	2	2	STW	2	100	20	0	20	0	60
BA21019S	ELECTIVE I (any one)- A. Sketching and rendering skills B. Communication Skills	1	1	2	STW	2	100	20	0	20	0	60
	Total	8	22	30		30	1500					
SEMESTER II												
Course Code	Subject / Course	L/w	S/w	T/w	CT	Cr	T M	CA1	MSE	CA2	ESE-P	ESE-SV/STW
BA21021S	Architectural Design I	0	10	10	SV	10	500	100	0	100	0	300
BA21022S	Building Construction Technology-II	0	4	4	SV	4	200	40	0	40	0	120
BA21023T	Building Materials -II	2	0	2	TH	2	100	10	20	10	60	0
BA21024T	Culture & Built Form-II	2	0	2	TH	2	100	10	20	10	60	0
BA21025T	Theory of Structure-II	2	0	2	TH	2	100	10	20	10	60	0
BA21026T	Environmental Science	2	0	2	TH	2	100	10	20	10	60	0
BA21027S	Architectural Drawing and Graphics-II	1	3	4	STW	4	200	40	0	40	0	120
BA21028S	Computer Studio - II	0	2	2	STW	2	100	20	0	20	0	60
BA21029S	ELECTIVE II (any one) A. Photography B. Craft studies	2	0	2	STW	2	100	20	0	20	0	60
	Total	11	19	30		30	1500					

Abbreviations:

L/w	Number of Clock Hours of Lectures per week for the Subject / Course
S/w	Number of Clock Hours of Studios per week for the Subject / Course
T/w	Total Number of Clock Hours per week for the Subject / Course
CT	Subject / Course Type: Theory (TH) or Studio Term Work (STW) or Studio Viva (SV)
Cr	Total Number of Credits allotted for the Subject / Course in the Semester
T M	Total Number of Marks allotted for the Subject / Course in the Semester
CA 1	Marks allotted for Continuous Assessment during the Semester before Mid Semester examinations the Subject / Course in the Semester
MSE	Marks allotted for Mid Semester examinations for the Subject / Course in the Semester
CA2	Marks allotted for Continuous Assessment during the Semester after Mid Semester examinations the Subject / Course in the Semester
ESE-P	Marks allotted for End of Semester examinations Paper for the Subject / Course in the Semester
ESE-S/STW	Marks allotted for End of Semester examinations Studio Sessional work or Studio Viva for the Subject / Course in the Semester

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Detailed Content

FIRST YEAR B. ARCH. - SEMESTER 1

BA21011S: Basic Design

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
I	BA21011S	Basic Design	0	10	10	SV	10	500	100	0	100	0	300

Learning Objectives:

After successful completion of this course, student should be able to:

- Understand the Elements & Principles of design as building blocks of creative design.
- Develop originality, expression, skill & creative thinking.
- Understand the relationship between grammars of Design & Architecture.
- Developing skills in manual presentation techniques.
- Understand Human scale & proportion.

Detailed Syllabus:

1.	<ul style="list-style-type: none"> • Understanding Visual Grammar. • Elements of design. • Principles of design. • Gestalt Principles.
2.	<ul style="list-style-type: none"> • Application of Elements of Design / visual grammar & gestalt principles in 2D composition. • Colour theory. • Use of specific colours in composition. • Texture & its application in design.
3.	<ul style="list-style-type: none"> • Generation techniques from 2D to 3D • 3D compositions based on principles of Design learnt in previous modules using different materials
4.	<ul style="list-style-type: none"> • Understanding positive & negative spaces in 2D & 3D composition. • Understanding Form, Shape, Mass, Volume. • Understanding use of light, shades & shadow.
5.	<ul style="list-style-type: none"> • Scale & Proportion. • Anthropometry.

Recommended Reading:

1.	Robert Sommer - Design Awareness.
2.	C.M. Deasy - Design for Human Affairs.
3.	Pierre Von Meiss - Elements of Architecture from form to place.
4.	Yatin Pandya - Elements of Space Making.
5.	Paul Lassau – Graphic Thinking for Architects and Planners.
6.	Peter Pearce, Structure in Nature – Strategy for Design.
7.	Peter Streens - Patterns in Nature.
8.	Anthony Antoniadis - Poetics in Architecture: Theory of design
9.	Am heim Rudolf - Visual Thinking.
10.	Jonathan A. Hale - Building Ideas. An introduction to Architectural Theory.
11.	William J.J. Synectics - The Development of Creative Capacity
12.	Elvadine R. Seligmanann - Reaching Students through Synectics: A Creative solution
13.	Jyoce, Bruce and Weil Marsha - Synetics Involving creative thought
14.	Ching Francis D. K. - A Visual Dictionary of Architecture.
15.	Ching Francis D. K. - Form Space and Order.

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BA21012S: Building Construction and Technology - I

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
I	BA21012S	Building Construction Technology - I	0	4	4	SV	4	200	40	0	40	0	120

Learning Objectives:

After successful completion of this course, student should be able to:

Understand principles of construction, Basics building systems and simple elements of buildings and their behavior. The course is visualized as having two essential components viz. Methods of construction, and a building workshop, which may be conducted within the college, and / or at specific venues outside. The principles and practices shall be applied in the studio for meaningful working details and drawings.

Detailed Syllabus:

1.	<ul style="list-style-type: none"> Simple tools, plant & machinery used in construction. Sequence of construction. Primary elements in buildings and their construction: Acquainting students with the terminology used in building construction. Components of a building (Building Envelop): Structural and functional components.
2.	<ul style="list-style-type: none"> Load bearing walls type construction –Principles of construction & their properties. Foundations, masonry Walls using various materials. Standard terms in brick, different types of bricks, bonds in brick-work (English, Flemish, Rat Trap Bond), Brick Pillars & Piers. Different types of stone Masonry, the function of through stone/ Headers, Bonder stone Composite Masonry etc. Foundation- Simple footings in bricks. Thumb rules. Foundations for load- bearing walls. Un coursed rubble masonry in foundation and plinth. Damp proof course, brick steps, Isolated R.C.C. footings plinth beams etc. Bearing Capacity of Soil. Methods to find out the Bearing Capacity
3.	Openings - Principles of construction of various types of arches, lintels, jali-work, etc. in brick, Stone masonry walls.

Recommended Reading:

1.	Elements of structure by Morgan
2.	Building Construction - B.C. Punmia
3.	Building Construction - Sushil Kumar
4.	Building Construction - Bindra & Arora
5.	Use of Bamboo and Reeds in construction. UNO Publication.
6.	Structure in Architecture by Salvadori
7.	Building construction by McKay W. B., Vol. 1 to 4
8.	Construction of Building by Barry, Vol. I to V
9.	Construction Technology by Chudley R. Vol. I to IV
10.	Building Construction Illustrated – Ching Francis D.K.
11.	Elementary Building Construction by Michell
12.	'Civil Engineers' Handbook' by Khanna

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BA21013T: Building Materials - I

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
I	BA21013T	Building Materials - I	2	0	2	TH	2	100	10	20	10	60	0

Learning Objectives:

After successful completion of this course, student should be able to:
Understand different materials used in construction, their properties, characteristics, behavior and their specific uses in the Building industry.

Detailed Syllabus:

1.	<ul style="list-style-type: none">• Study of Basic materials of construction such as Stone: Quarrying of stone, dressing of stone, Natural Bed. Sand – bulking of sand. Aggregates- grades and their use. Mud, clay, etc. Study the properties, characteristics, behavior and their specific uses in the Building industry.• Study of artificial materials of construction such as- Bricks- Manufacture of Bricks, their properties. Principles of construction of walls in bricks, stone and hollow concrete blocks.• Cement and Lime - Manufacture, processing, properties, testing of cement, storage of cement, and uses. Different types of cements, Importance of cement in construction.
2.	<ul style="list-style-type: none">• Timber: Classification of trees, characteristics of good timber, defects in timber, seasoning of timber, uses in building construction, market forms etc.

Recommended Reading:

1.	Elements of structure by Morgan
2.	Building Materials by Rangwala
3.	Building Materials in India (50 years)
4.	Structure in Architecture by Salvadori
5.	Building construction by Mckay W. B., Vol. 1 to 4
6.	Construction of Building by Barry, Vol. I to V
7.	Construction Technology by Chudley R. Vol. I to IV
8.	Building Construction Illustrated – Ching Francis D.K.
9.	Elementary Building Construction by Michell

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BA21014T: Culture & Built Form - I

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
I	BA21014T	Culture & Built Form-I	2	0	2	TH	2	100	10	20	10	60	0

Learning Objectives:

After successful completion of this course, student should be able to:
 Identify architectural aspects in cultural contexts and under laying value systems of any society. The inter-dependencies of Society & Culture and its co- relation with the built form. Hierarchies in social organizations & their evolution over time. The capacity to understand habitat and differentiate it as natural and man-made. To have an understanding of factors those affect - growth of human settlements (through study of culture, biological, geological, geographical, demographical and anthropological studies). The focus is only in the context as an overview of History of Culture evolution of built forms.

Detailed Syllabus:

1.	<ul style="list-style-type: none"> • Various notions of spatial and temporal habitation, Man-Nature relations will be explored to highlight the idea that architecture is a cultural construct. Evolution of built forms manifested in spatial and formal abstraction, landscape, structural construction and material order, symbols and meanings with respect to: Society, Culture, Climate, Land, Technology. • Pre-Historic Age –Stone Ages (Paleolithic, Neolithic, Mesolithic) periods. Hunter gatherer shelter and settled farming. Settlement locations – River Banks, valleys, fertile soil. Transition from Grassland Steppe to Water Centric Civilizations, Cultic Developments, Religious Centers – e.g. Gobekli Tepe and Malta, Evolution of shelter and Art forms showing the relationship between Man, nature and Society • Introduction to Ancient Civilizations their social systems and culture. River bank / River Valley civilizations • Mesopotamian Civilization: 4500 BCE: Urbanisation in the Fertile Crescent Transition from Sumer-Akkad- Babylon- NeoBabylon Civilisations Salient features – Temples, Palace Complex, Concepts of Citadel, Fortifications, Ziggurats • Egyptian Civilization: 4000 BCE: Landscape and culture of ancient Egypt Religion and Rituals, Beliefs and practices and its impact on Architecture The extents of Old Kingdom, Mastaba – development and typical components, Evolution of Pyramids – Complexes, Initial Temple Typology, Social Structure and Belief System, Role of a Pharaoh.
2.	<ul style="list-style-type: none"> • Early Civilizations 3500 BCE – Indus Valley • Transition from Ghaggar Hakra – Indus Sarasvati Civilization, Political, Social and Cultural life. City planning, pattern of settlement and public buildings. E.g. Great bath, Granary, Water supply and drainage system • Vedic Architecture-(1500 BCE to 500 BCE): Introduction to Vedic era, society and culture, later Vedic era: Jana Padas, rise of Mahajanapadas, Fortifications of Magadha, Early Ghats of Varanasi, Trade Routes, Architectural treaties and writings: Vedas, Upanishads, Brahmanas, Aranyakas, Village & Dwellings culture, Vedic-primitive dwelling, pillars, Stupas, Gateways • Yellow valley civilization – 3500 BCE: China - Chinese culture and Social system – Banpo • Meso American Civilisation: Olmec Culture – 1500 BCE to 400 BCE

Recommended Reading:

1.	Geoffrey and Susan Jellicoe, "Landscape of Man"
2.	Spiro Kostof "History of Architecture"
3.	Global History of Architecture – Franchis Ching
4.	Sir Banister Fletcher: History of Architecture: University of London.
5.	Spiro Kostof – History of Architecture - Setting and Rituals – Oxford Press
6.	Leland Emroth – Understanding Architecture - Its Elements, Meaning
7.	Sapiens – Yuval Noah Harari
8.	Land of Seven Rivers – Sanjeev Sanyal

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BA21015T: Theory of Structures – I.

Course Information:

Sem	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
I	BA21015T	Theory of Structures -I	2	0	2	TH	2	100	10	20	10	60	0

Learning Objectives:

After successful completion of this course, student should be able to:
 Understand the structural systems and their behavior.

Detailed Syllabus:

1.	<ul style="list-style-type: none"> Glossary of technical terminology used. Introduction to Structure of Natural & Man made forms. Intuitive understanding of structural behavior of Natural & Man made forms. Relationship of Natural form & Man made forms. Functions of structures. Primary and secondary forces acting on structures. Gravitational force, Live load, Wind load. Effect of temperature variations. Types of supports and their characteristics. Introduction to Primary elements of structure and their behavior. Supports and Loads: Supports, Definition, Reactions offered by Simple, Fixed, Hinged and Roller Support. Beams classified as Simply Supported, Cantilever, Over Hanging, Propped Cantilever, Fixed and Continuous. Loads Classified as U.D.L, Point Load & Varying Load. Loads Classified as Dead, Live, Wind, Snow, Seismic. Introduction to Densities of Material and Calculation of Dead loads on a Beam from slab, Brick work above to act as U.D.L and from an abutting beam as a Point Load Support Reactions. For Simply Supported Beams and Cantilevered Beams only. Loading limited to Point Loads and U.D.L only Factor of safety and factors affecting it. Characteristics of structures – strength, stiffness and stability.
2.	<ul style="list-style-type: none"> Analysis and design. Criteria for design. Primary elements of structure and their behavior. Factor of safety and factors affecting it. Characteristics of structures – strength, stiffness and stability. Factors affecting them and ways of satisfying these requirements. Centre of Gravity: Definition of Centre of Gravity and Centroid. C.G of Regular Shapes. Computing of C.G of complex Shapes limited to Standard Steel Sections like C, T, L, I and Compound Sections. Moment of Inertia: Definition of Moment of Inertia and M.I of Standard Shapes. Parallel Axis Theorem, Perpendicular Axis Theorem, Radius of Gyration. Computing M.I of Complex Shapes Limited to C, T, L, I and Compound Sections using these Shapes.

Recommended Reading:

1.	Strength of Materials – by Khurmi R.S.
2.	Applied Mechanics and Strength of Material – by Khurmi. R. S.
3.	Strength of Materials by Amol Dongre
4.	Structure in Architecture – Salvadon and Heller.
5.	R.C.C. Design – Khurmi, Punmia, Sushilkumar.
6.	Elements of Structures – Morgan.

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BA21016S: Model Making.

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
I	BA21016S	Model Making	0	2	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to:
Understand and use different materials, tools and machinery for making models. Understand the importance of scaled models to know the geometry of simple and complex built forms.

Detailed Syllabus:

1.	Introduction to various materials for model making like paper, thermocol, clay, ceramic, plastic sheet, sheet metal, wood etc. Selection of material for model making. Introduction to various tools for model making Application of tools, suitability and safety precautions
2.	Understanding the Applicability of Scale and Proportion through models. Implementing the geometric shapes. Implementing the solid shapes. Creating scale models

Recommended Reading:

1.	John Taylor, Model Building for Architects and Engineers.
2.	RolfJanke, Architectural Models.
3.	The complete book of drawing techniques, by Eugene Felder & Emmett Elvin
4.	Paper Scissor Glue by Catherine Norman, Ryland Peters & Small
5.	Color on Metal by Tim Mc Creight & Nicole Bsullak
6.	A Handbook of Techniques and Materials for Architects and Designers by Norma Trudeau
7.	Architectural Model making by Nick Dunn
8.	Folding Techniques for Designers: From Sheet to Form by Paul Jackson
9.	An Architectural model by Will Strange
10.	Construction and Design Manual: Architectural Models by Pyo Mi Young

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BA21017S: Architectural Drawing & Graphics - I

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
I	BA21017S	Architectural Drawing & Graphics-I	1	3	4	STW	4	200	40	0	40	0	120

Learning Objectives:

After successful completion of this course, student should be able to:
 Understand Importance of technical drawings as medium of communication, as basic vocabulary in architecture. Learning skills and techniques to think and represent elements of design through 2D and 3D geometry. To develop understanding of three dimensional objects and their surfaces during intersections.

Detailed Syllabus:

1.	<ul style="list-style-type: none"> Getting acquainted with necessary instruments of drawing. Learning to draw straight and curved lines with different qualities. Lettering and annotation techniques in technical drawings. Learning to draw straight and curved lines with different qualities. Architectural annotation including representation of various building materials & building components. Introduction to Descriptive Geometry, study of reference planes. Meaning of terms Plan, Elevation, and Section and understanding them by drawing simple objects through theory of 'Orthographic Projections' of lines, planes and solids.
2.	<ul style="list-style-type: none"> Principles of development of lateral surfaces of solids like cube, cone, pyramids and prism etc. Applying them to draw and develop surfaces of simple geometric solids and using them to make models. Development of truncated simple objects, Boolean objects and operations. Representing Interpenetration of solids through Orthographic drawings. Different ways of presentation of solids in 3D projections such as Axonometric and Isometric views.

Recommended Reading:

1.	Architectural Graphics : C. Leslie Martin
2.	Perspective for the Architect : Thames and Hudson
3.	Rendering with Pen and Ink, Jacoby
4.	Architectural Graphics – Ching Frank
5.	Sketchbook by MilindMulik
6.	Pencil Sketching - Vyaktichitre by Pundalik Vaze
7.	Water Colour by MilindMulik
8.	Colour Pencil by Rahul Deshpande & Gopal Nandurkar
9.	Engineering Drawing : N.D.Bhatt
10	Burden Ernest: Architectural Delineation. Gill, Robert W.; Manual of Rendering with Pen and Ink, Thames and Hudson, London,1997.
11	Ching Francis D.K.: Architectural Graphics
12	"How to Paint and Draw", Thames and Hudson, 1985.
13	H. Joseph and Morris: Practical plane and solid geometry
14	Gill Robert: Rendering with pen and ink

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BA21018S: Computer Studio-I

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
I	BA21018S	Computer Studio-I	0	2	2	STW	2	100	20	0	20	0	60

Learning Objectives:

To study Architectural Drawing & graphics with computer as a tool. To understand use of computers as tool for drawing. To understand architectural drawing in relation to use of software. To understand presentation techniques using software. Develop understanding of computer aided drafting. Comprehends CAD drafting and its parameters as tools and its application in architecture. Evaluates CAD techniques for quicker methods and presentation skills. Focus on 2D drafting.

Detailed Syllabus:

1.	Basics of Computers <ul style="list-style-type: none">• Introduction to use of computers in architecture• Computer operating systems.
2	Word processing, spreadsheet and presentation software <ul style="list-style-type: none">• Application of Word processing, spreadsheet and presentation software in architectural Practice
3	Cad. <ul style="list-style-type: none">• Introduction to Interface of software• Introduction to drafting, formatting, modifying tools
4	Image processing software <ul style="list-style-type: none">• Application in editing photos and pdfs (Introduction to formatting tools)• Introduction to formats for saving and exporting files/ printing of files

Recommended Reading:

1.	Computer Aided Design guide For Architecture, Engineering And Construction by Aouad
2.	Architectural drawing: a visual compendium of types and methods; Rendow Yee; John Wiley and Sons, 2007
3.	Architectural Graphics; Francis D. Ching; John Wiley and Sons, 2009
4.	Fundamentals Of Three-Dimensional Computer Graphics by Watt

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BA21019S: Electives – I (A) Sketching & Rendering Skills

ANY ONE OF THE ELECTIVES (A) or (B)

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
I	BA21019S (A)	Electives – I (A) Sketching & Rendering Skills	1	1	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to:
Develop basic design and expressional skills, visual and perceptual skills, Manual skills of use. Skills involved in different media and techniques shall be studied for this purpose. To become aware about the usage of various skills for development of design process. To use different mediums and techniques for production various types of art work.

Detailed Syllabus:

1.	Observation and recording through drawing using. Sketching and Object drawing, drawing from memory. Observation and recording through drawing using brush, crayons, paint. Using various paints like Water based, Oil based, etc. Line drawing, shade and shading techniques, using pencil, pen, paint, brush, charcoal, crayons etc.
2.	Drawing simple geometric objects, complex geometries and objects in nature. Contour drawing, Outdoor sketching exercises, etc. Perspectives of formal geometric solids and spaces and informal geometries, rendering techniques and use of colour.

Recommended Reading:

1.	Rendering with Pen and Ink, Jacoby
2.	Architectural Graphics – Ching Frank
3.	Sketchbook by Milind Mulik
4.	Pencil Sketching - Vyaktichitre by Pundalik Vaze
5.	Water Colour by Milind Mulik
6.	Gill Robert: Rendering with pen and ink

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DETAILED SYLLABUS – BACHELOR OF ARCHITECTURE (B. Arch) 2021-22

BA21019S: Electives – I (B) Communication Skills

ANY ONE OF THE ELECTIVES (A) or (B)

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
I	BA21019S (B)	Electives – I (B) Communication Skills	1	1	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to:
Develop listening skills and understand the subject matter. Develop the skills to read and comprehend better any written material. Develop an ability to express thoughts in words. Develop effective verbal and non-verbal skills.

Detailed Syllabus:

1.	<ul style="list-style-type: none">• Writing Skills: Review of films/books/structures/poetry. Formal Letters, Reports, Story writing, Script Writing• Listening Skills: Understanding the topic, catching the gist of spoken words, important keywords and moral of the story
2.	<ul style="list-style-type: none">• Reading Skills: Comprehension, Skimming & Scanning, Fast Reading, Keywords identification, Synonyms & Antonyms, Understanding the context.• Speaking Skills: Presentation, Appropriate salutations and signing off presentations, Body Language, Speaking to Seniors, Juniors and Peers, Phone etiquettes, Appropriate attire for different occasions

Recommended Reading:

1.	The Identity of the Architect: Culture and Communication (Architectural Design) by Laura Iloniemi.
2.	Writing Architecture: A Practical Guide to Clear Communication about the Built Environment by Carter Wiseman.
3.	Book on Autobiographies, Magazines on current issues, English Grammar, Body Language, Soft Skills.
4.	I can Win, Shiv Khera.

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FIRST YEAR B. ARCH. - SEMESTER 2

BA21021S: Architectural Design - I

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
II	BA21021S	Architectural Design - I	0	10	10	SV	10	500	100	0	100	0	300

Learning Objectives:

After successful completion of this course, student should be able to:
 Develop basic skills of design and design expression. To introduce the students to the field of architecture, its scope and fundamentals. Introduction to design grammar and principles of design. Application & Importance of these in Design.

Detailed Syllabus:

1.	Understanding Design Process. Use of Matrix, Concept, Idea Board & Pre-design. Relationship between form, function, space, concept & structure. Introduction of Fundamentals of architecture -function , structure ,culture and environment and their integration into the architectural form
2.	Program interpretation. Relationship between materials and structural systems.
3.	Structure as order, Light, Movement and Gravity as determinants of structure. Ability to see abstraction in a corporeal form of a building. Applying Anthropometric Data to functional space. Study of Habitable Rooms/Spaces w.r.t. Anthropometry.
4.	Designing furniture w.r.t. to Anthropometric Data, Concept & function.
5.	Three dimensional projects – developed through models, sketch, drawing, rendering, abstract composition used as basis for development of ideas.
Studio Exercises suggested: Design of Single function Interactive Space	

Recommended Reading:

1.	Robert Sommer - Design Awareness.
2.	C.M. Deasy - Design for Human Affairs.
3.	Pierre Von Meiss - Elements of Architecture from form to place.
4.	Yatin Pandya - Elements of Space Making.
5.	Paul Lassau – Graphic Thinking for Architects and Planners.
6.	Peter Pearce, Structure in Nature – Strategy for Design.
7.	Peter Streens, Patterns in Nature.
8.	Anthony Antoniadis - Poetics in Architecture: Theory of design
9.	Am heim Rudolf, Visual Thinking.
10.	Jonathan A. Hale -Building Ideas - An introduction to Architectural Theory.
11.	William J.J. Synectics: The Development of Creative Capacity
12.	Elvadine R. Seligmanann: Reaching Students through Synectics: A Creative solution
13.	Parmar - Design Fundamentals in Architecture

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BA21022S: Building Construction and Technology - II

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
II	BA21022S	Building Construction Technology - II	0	4	4	SV	4	200	40	0	40	0	120

Learning Objectives:

After successful completion of this course, student should be able to:
Understand materials used in construction, principles of construction, building systems and simple elements of buildings and their behavior and Study of Standard Construction practices adopted.

Detailed Syllabus:

1.	• Construction of floors in various materials like wood, steel, principles of construction and support system.
2.	• Construction of Roofs - Simple roofs & trusses in wood & steel. Different roofing materials used, their characteristics-properties and details of construction.
3.	• Construction of Staircases in wood, steel, decorative staircases & ramps. Principles, codes and planning of Staircases & ramps.

Recommended Reading:

1.	Elements of structure by Morgan
2.	Building construction by B.C. Punmia
3.	Building construction by Bindra & Arora
4.	Building construction by Sushil Kumar
5.	Structure in Architecture by Salvadori
6.	Building construction by McKay W. B., Vol. 1 to 4
7.	Construction of Building by Barry, Vol. I to V
8.	Construction Technology by Chudley R. Vol. I to IV
9.	Building Construction Illustrated – Ching Francis D.K.
10.	Elementary Building Construction by Michell

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BA21023T: Building Materials - II

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
II	BA21023T	Building Materials - II	2	0	2	TH	2	100	10	20	10	60	0

Learning Objectives:

After successful completion of this course, student should be able to:
Understand different materials used in construction, their properties, characteristics, behavior and their specific uses in the Building industry.

Detailed Syllabus:

1.	<ul style="list-style-type: none">• Cement Concrete:-Plain Cement Concrete. Ingredients of concrete. Types of concrete. Uses and Proportions. Curing methods. Qualities of good concrete. Reinforced Cement Concrete. Light-weight Concrete. Methods of Guniting.• Floor Finishes - Brick, Stone, Concrete, Timber. Various artificial tiles. Indian Patent Stone.• Different types and methods of Plastering and Pointing.
2.	<ul style="list-style-type: none">• Ferrous metals like Iron, Steel. Study the manufacture, characteristics, properties & use of these materials in building.• Non-Ferrous metals, Glass, Study the manufacture, characteristics, properties & use of these materials in building.• Roofing Materials – Asbestos Cement Sheets, Galvanized Iron Sheets, Mangalore Tiles, Pan Tiles, Slates Half round country tiles etc.

Recommended Reading:

1.	Building construction by McKay W. B., Vol. 1 to 4
2.	Construction of Building by Barry, Vol. I to V
3.	Construction Technology by Chudley R. Vol. I to IV
4.	Building Construction Illustrated – Ching Francis D.K.
5.	Elementary Building Construction by Michell
6.	Engineering Material – Chaudhary
7.	Building Construction Materials – M. V. Naik
8.	Civil Engineer's Hand Book – Khanna
9.	Building materials by Rangwala

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BA21024T: Culture & Built Form – II.

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
II	BA21024T	Culture & Built Form - II	2	0	2	TH	2	100	10	20	10	60	0

Learning Objectives:

After successful completion of this course, student should be able to:
 Identify architectural aspects in cultural contexts and under laying value systems of any society. The inter-dependencies of Society & Culture and its co- relation with the built form. Hierarchies in social organizations & their evolution over time. The capacity to understand habitat and differentiate it as natural and man-made. To have an understanding of factors those affect - growth of human settlements (through study of culture, biological, geological, geographical, demographical and anthropological studies). The focus is on an overview of History of Culture evolution of built forms in that context only.

Detailed Syllabus:

1.	<ul style="list-style-type: none"> • Developments in Europe: 2700 BCE – 146 BCE: Aegean Civilization – Minoan and Mycenaean Cultures Geographical and Cultural landscape of Crete island, Pre palatial period – Post Palatial Period, Palace of Knossos, Minoan Trade, Downfall of Minoan Civilization. Mycenaean Civilization – Art of fortification, cyclopean masonry, Citadel, Concepts of Burial Tholos, techniques of corbelling, Lion’s gate, Throne Room, transitioning into Classical period • Hittite Period 1600 BCE– 500 BCE, Etruscan Period: Early temple typology of Etruscan temples, Wooden influence in Early Architecture, The tumuli- Burial mounds, Isolated city assemblies of Necropolis • Egyptian Civilization 1500: The New Kingdom developments: Centers at Saqqara, Amarna, Karnak, Abu simbel, Principal temple and Procession Routes, Mortuary Complexes, Architectural Elements: Column order: Designing Methods, Hypostyle Hall, Clerestory, Detailed Temple complexes: karnak, Luxor, Horos • Greek Civilization: Classical Architectural Developments: Classical Orders – Doric, Ionic, Corinthian, Salient features of important buildings. Temple types on basis of column layout – case example of Acropolis, Athens. Discussion of Hellenic Temple (Parthenon, Athens) versus Hellenistic Temple (Athena Polias, Priene). Public Buildings and Square – Agora, Stoa, Prytaneum, Bouleuterion, Tholos, Gymnasium, Theatre • Roman Civilization: Introduction to Roman civilization, their social systems and cultures. Roman – republic and Empire. Roman Life style, religion and Social system. Roman urban Planning – Art and Architecture as imperial propaganda. Contribution in new materials and new construction/structural systems, e.g., Pozzolana, Stone Masonry, Arch, Vault, Dome, Architectural characters and orders. Salient features of important buildings - Theatre, Thermae, Villas, Temples, Circus and Aqueducts
2.	<ul style="list-style-type: none"> • Developments of West Asia (Neo-Babylonian & Persian): Geography of open terrains of Mesopotamia, Assyria and Neo Babylon bifurcation, Palatial Architecture – Khorsabad and Summer Palace, Fortifications and Gates, Formation of Persian Empire – Achaemenid Dynasties – Political Extent of Alexander until Indian Subcontinent, Trade relationships of Europe – Persia – Egypt – Central Asia, Pasargadae, Palace complex at Persepolis, Tomb Typology, City of Alexandria, and Phoenician colonies around Greek • Architecture of the Early, Buddhist and Jain Period: Political dynamics of Mauryan Period, Eurasian Trade, Palatial Complex at pataliputra, Early Vedic Architecture- Composition of a Column, Chaitya Window, Torana, Different city Layouts - Religious split – Hinduism, Buddhism and Jainism, Development of Rock-Cut, Architecture, Cave cutting Hiatus, Barabar Hill caves, Mahayana & Hinayana Split, Buddhist Architectural Elements: Stupa, Chaitya, Vihara, Stupa Complexes, Range of Caves in West(Satvahana), East and North (Mauryan & Gandhara) • Architecture of Imperial Rome: City Structure of Pompeii, City Layout fortifications, planning, Grids, drainage Patterns, gates, Residential Quarters, Palaces, villas, Republican Tombs, Concept of Roman Forum- Trajan Cesar and Augustus, Roman Column Order, Concepts established by Vitruvius, Post Augustus Rome: Nero’s Palace, Palace of Domitian, Diocletian, Hadrian’s Villa, Roman Colonies: e.g. Turkey, Roman Baths • Religious Philosophies: Dark Ages in Europe: Fall of the Roman Empire, Fundamentals of Judaism, Fire temples and Altars, Temple of Solomon, Concepts of Polytheism and Monotheism, Rise of Christianity

Recommended Reading:

1.	Geoffrey and Susan Jellicoe, “Landscape of Man”
2.	Spiro Kostof “History of Architecture”
3.	Global History of Architecture – Franchis Ching
4.	Indian Architecture – Percy Brown

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5.	History of Architecture – Bannister Fletcher
6.	The Architecture of India – Buddhist & Hindu by Satish Grover
7.	The History of Architecture in India by Christopher Tadgell
8.	Space, Time and Architecture by Siegfried Gidson
9.	Architecture of world, India by Henry Sterlin
10.	The Hindu Temple by George Michell

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BA21025T: Theory of Structures - II

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
II	BA21025T	Theory of Structures - II	2	0	2	TH	2	100	10	20	10	60	0

Learning Objectives:

After successful completion of this course, student should be able to:
 Develop an intuitive understanding of structures. Behavior of materials and basic structural systems in response to the forces of nature acting upon man-made objects.

Detailed Syllabus:

1.	<ul style="list-style-type: none"> Introduction to basic structural systems such as post-beam, bearing wall systems, trusses, rigid frames etc. and analyzing their structural behavior. Distribution of load through elements of the systems, transfer of loads. Elastic, Plastic, Brittle and Ductile Materials. Yield Stress, Factor of Safety and Working or Permissible Stress. Bending Stresses. Theory of Simple Bending. Assumptions, Flexural Formula, Stress Distribution across a Section and across the span of the Beam. Modulus of Resistance. Section Modulus, Shear Stresses, Formula, Shear Stress Distribution across a Rectangular, Circular, T, C, L, I Section. Shear Force and Bending Moment: Shear Force and S.F. Diagram & B.M.D and B.M. Diagram for: Simple Support with an U.D.L., Simple Support with a Central Point Load, Simple Support with an eccentric point Load, Cantilever with a full U.D.L, Cantilever with a Point Load. S.F.D and B.M.D of a Simple Supported Beam and Over Hanging Beams with U.D.L and Point Loads. Point of Zero Shear, Point Of Max S.F and B.M max. Point of Contra flexure. Relationship between S.F.D and B.M.D
2.	<ul style="list-style-type: none"> Analysis of Columns: Euler's and Rankine's Theory for Buckling and Crushing Failure in Columns. Assumptions and Limitations. Concepts of End Conditions, Slenderness Ratio. No Derivations, Simple Problems only. Deflection in Beams: Deflection. Concept of Slope and Deflection. Macaulays Method for a S.S Beam with Full U.D.L only. Application in Problems based on point load and UDL only

Recommended Reading:

1.	Strength of Materials – by Khurmi R.S.
2.	Applied Mechanics and Strength of Material – by Khurmi. R. S.
3.	Strength of Materials by Amol Dongre
4.	Structure in Architecture – Salvadon and Heller.
5.	Elements of Structures – Morgan.
6.	R.C.C. Design – Khurmi, Punmia, Sushilkumar.

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BA21026T: Environmental Science

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
II	BA21026T	Environmental Science	2	0	2	TH	2	100	10	20	10	60	0

Learning Objectives:

After successful completion of this course, student should be able to:

- To provide fundamental knowledge about natural environment.
- To introduce the students to fundamental concepts to understand environmental processes
- To make students aware about the cause and effect relationship between natural environment and built environment
- To introduce students to term sustainable development

Detailed Syllabus:

1.	<ul style="list-style-type: none">• Fundamentals of Environment and ecology- Concepts such as environment, atmosphere, ecology, ecosystem, biodiversity.• Environmental processes- Carbon cycle, nitrogen cycle, oxygen cycle, water cycle, food chain Habitat and Niche• Natural resources – Renewable and nonrenewable resources, Energy resources, food resources, Water and land sources, Use of natural resources in overall development of mankind. Bio-geographic regions of India
2.	<ul style="list-style-type: none">• Impacts of human interference on environment- Impacts of Agriculture, housing, mining, transportation activities and waste generation, Air , water and land pollution , loss of biodiversity, climate change , global warming.• Impact of environmental degradation on human development and need of sustainable development- Health hazards, quality of life, social conflicts, inequalities, need of sustainable development, sustainable development goals.• Relation between Built and natural environment- Resource utilization, resource conservation, ways of reducing harmful environmental impacts through Architecture.

Recommended Reading:

1.	Textbook for environmental studies by Erach Bharucha
2.	Report of the World Commission on Environment and Development: Our Common Future
3.	Housing Climate & Comfort by M.Evans
4.	Manual Of Tropical Housing And Building by O.H. Koenigsberger

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BA21027S: Architectural Drawing & Graphics – II.

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
II	BA21027S	Architectural Drawing & Graphics-II	1	3	4	STW	4	200	40	0	40	0	120

Learning Objectives:

After successful completion of this course, student should be able to:
Represent objects through 2D and 3D geometry, using paper & pen/pencil & Computers.

Detailed Syllabus:

1.	<ul style="list-style-type: none">Metric Projections in 3D from 2D--Introduction, concept & methods. Isometric, Axonometric and Oblique projections/view of various three dimensional geometrical objects forms. Basics of Perspective Drawing, Methods of drawing Perspective, Perspective and relatively realistic representations. Introduction to concepts such as station point, picture plane, eye level, center of vision, cone of vision, vanishing point etc. One point, two point, three point perspectives. Introduction to concept of bird's eye view, worm's eye view etc. Interior & Exterior perspective view of a building.
2.	<ul style="list-style-type: none">Basics of Sciography, Principles of Sciography (shades & shadows) of lines, planes and simple solid objects. Sciography and methods of representing it in 2D projections. Sciography of architectural elements & building in 2- dimension.Introduction to various mediums. Rendering with various medium such as Pen & Ink, Water colour, Poster colour, Pencil colour etc.

Recommended Reading:

1.	Architectural Graphics : C. Leslie Martin
2.	Perspective for the Architect : Thames and Hudson
3.	Rendering with Pen and Ink, Jacoby
4.	Architectural Graphics – Ching Frank
5.	Sketchbook by Milind Mulik
6.	Pencil Sketching - Vyaktichitre by Pundalik Vaze
7.	Water Colour by Milind Mulik
8.	Colour Pencil by Rahul Deshpande & Gopal Nandurkar
9.	H. Joseph and Morris: Practical plane and solid geometry
10.	Gill Robert: Rendering with pen and ink
11.	Engineering Drawing by N.D. Bhatt

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BA21028S: Computer Studio-II

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
II	BA21028S	Computer Studio-II	0	2	2	STW	2	100	20	0	20	0	60

Learning Objectives:

To study Architectural drawing and graphics digitally. To understand use of computers as tool for drafting. To understand architectural drawing in relation to use of softwares. To understand presentation techniques using softwares. Focus on 2D drawings

Comprehend computer aided drafting and its parameter as tools and its application in architecture. Evaluate CAD techniques for quicker methods and presentation skills. Demonstrate the concepts of CAD drafting methods and techniques in 2D.

Detailed Syllabus:

1.	CAD Introduction to Advance commands in CAD Computer operating systems. Introduction to Blocks, W blocks, Ref edit Introduction to scale and plotting. Introduction to formats for saving and exporting files/ printing of files. Introduction to formats for importing files from other format.
2	Vector graphics software Introduction to Interface of software. Application in making and editing drawings and PDFs (Introduction to formatting tools). Introduction to formats for saving and exporting files/ printing of files. Introduction to formats for importing files from other format.
3	3D Visualization software Introduction to Interface of software, modeling, formatting, modifying tools, scale and plotting of 3D model generated.

Recommended Reading:

1.	Computer Aided Design guide For Architecture, Engineering And Construction by Aouad
2.	Architectural drawing: a visual compendium of types and methods; Rendow Yee; John Wiley and Sons, 2007
3.	Architectural Graphics; Francis D. Ching; John Wiley and Sons, 2009
4.	Fundamentals Of Three-Dimensional Computer Graphics by Watt

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BA21029S: Electives – II (A) Photography

ANY ONE OF THE ELECTIVES (A) or (B)

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
II	BA21029S (A)	Electives – II (A) Photography	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to:
Understand photography as a medium of expression in relation to Architecture. Use various modes of photography such as Still photography. Documentation in digital format.

Detailed Syllabus:

1.	Different types of Cameras and lenses. Optical materials, Plastic/glass, lens coating, Types of lenses Normal /Standard, Wide angle, Fish Eye lenses, Zoom, Micro Lenses, Macro Lenses, Faults in lenses, aberrations, resolution, Flare and Ghost image. Lighting for form and shape, Lighting for texture, Lighting for Still Life, Lighting for a product, High Key lighting, Low Key Lighting, Night Photography.
2.	Digital photography, Editing and Mixing of visuals, Documenting architectural work through photography

Recommended Reading:

1.	The 35mm Handbook-Michael Freeman
2.	Focal encyclopedia of Photography, Focal press
3.	Basic Photography, M.J. Langford, Focal press
4.	Advanced Photography (Vol-1 and Vol -2), M.J. Langford, Focal press
5.	Creative Colour Photography Techniques- Marshall Cavendish
6.	Digital Photography in Available Light- Essential Skills, Mark Galer, Focal Press
7.	The Art of Digital Photography, John Hedgecoe, DK Ltd, UK
8.	Mastering Digital SLR Photography, David D.Bush, Thomson
9.	Understanding Exposure, Bryan Peterson, Amphoto Books
10.	Learning to see creatively, Bryan Peterson, Amphoto Books
11.	The Art of Photography : An approach to Personal Expression, Rocky Nook
12.	The Photographer's Eye, Michael Freeman, Focal Press
13.	Architectural Photography, Adrian Schulz, Rocky Nook
14.	The Beginners Photography Guide, DK

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BA21029S: Electives – II (B) Craft Studies

ANY ONE OF THE ELECTIVES (A) or (B)

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
II	BA21029S (B)	Electives – II (B) Craft Studies	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to:
Become aware of how craft traditions are influenced by environment and society and vice-versa.

Detailed Syllabus:

1.	Introduction to craft with respect to materials used, stages of process, techniques used to handle materials through various tools.
2.	The history of a particular craft tradition, its geographical distribution, influences of different myths and legends associated with craft, patterns of patronage etc
3.	Process of creating craft objects. Extending craft traditions to wider applications

Recommended Reading:

1.	Art, Space and the City, Malcom Miles
2.	The uses of Art in Public Space, Edited by Julia Lassau and Quentin Stevens
3.	Public Art by the Book, Edited by Barbara Goldstein
4.	Urban Interventions- Personal projects in Public Spaces, Edited by Robert Klanten, S.Khmann and M.Hubner

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FINAL Teaching - Evaluation Scheme for B. Arch (October 2021)												
SECOND YEAR B.ARCH												
SEMESTER III												
Course Code	Subject / Course	L/w	S/w	T/w	CT	Cr	T M	CA1	MSE	CA2	ESE-P	ESE-SV/STW
BA21031S	Architectural Design II	0	10	10	SV	10	500	100	0	100	0	300
BA21032S	Building Construction Technology-III	0	4	4	SV	4	200	40	0	40	0	120
BA21033T	Building Materials -III	2	0	2	TH	2	100	10	20	10	60	0
BA21034T	Culture & Built Form-III	2	0	2	TH	2	100	10	20	10	60	0
BA21035T	Theory of Structure-III	2	0	2	TH	2	100	10	20	10	60	0
BA21036T	Building Services - I	2	0	2	TH	2	100	10	20	10	60	0
BA21037S	Architectural Drawing and Graphics-III	1	3	4	STW	4	200	40	0	40	0	120
BA21038S	Climatology	2	0	2	STW	2	100	20	0	20	0	60
BA21039S	Elective III (any one) A. Barrier free Architecture B. Art in Architecture	2	0	2	STW	2	100	20	0	20	0	60
Total		13	17	30		30	1500					
SEMESTER IV												
Course Code	Subject / Course	L/w	S/w	T/w	CT	Cr	T M	CA1	MSE	CA2	ESE-P	ESE-SV/STW
BA21041S	Architectural Design III	0	10	10	SV	10	500	100	0	100	0	300
BA21042S	Building Construction Technology-IV	0	4	4	SV	4	200	40	0	40	0	120
BA21043T	Building Materials -IV	2	0	2	TH	2	100	10	20	10	60	0
BA21044T	Culture & Built Form-IV	2	0	2	TH	2	100	10	20	10	60	0
BA21045T	Theory of Structure-IV	2	0	2	TH	2	100	10	20	10	60	0
BA21046T	Building Services - II	2	0	2	TH	2	100	10	20	10	60	0
BA21047S	Surveying and leveling	0	2	2	STW	2	100	20	0	20	0	60
BA21048S	Environmental Lab and its Application in Architecture	2	2	4	STW	4	200	40	0	40	0	120
BA21049S	Elective IV (any one)- A. Architectural Design with Glass B. Theory of Design	2	0	2	STW	2	100	20	0	20	0	60
Total		12	18	30		30	1500					

Abbreviations:

L/w	Number of Clock Hours of Lectures per week for the Subject / Course
S/w	Number of Clock Hours of Studios per week for the Subject / Course
T/ w	Total Number of Clock Hours per week for the Subject / Course
CT	Subject / Course Type: Theory (TH) or Studio Term Work (STW) or Studio Viva (SV)
Cr	Total Number of Credits allotted for the Subject / Course in the Semester
T M	Total Number of Marks allotted for the Subject / Course in the Semester
CA 1	Marks allotted for Continuous Assessment during the Semester before Mid Semester examinations the Subject / Course in the Semester
MSE	Marks allotted for Mid Semester examinations for the Subject / Course in the Semester
CA2	Marks allotted for Continuous Assessment during the Semester after Mid Semester examinations the Subject / Course in the Semester
ESE-P	Marks allotted for End of Semester examinations Paper for the Subject / Course in the Semester
ESE-SV/STW	Marks allotted for End of Semester examinations Studio Sessional work or Studio Viva for the Subject / Course in the Semester

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DETAILED SYLLABUS – BACHELOR OF ARCHITECTURE (B. Arch) 2021-22

Detailed content

SECOND YEAR B. ARCH. - SEMESTER 3

BA21031S: Architectural Design - II

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Paper	ESE-SV/STW
III	BA21031S	Architectural Design -II	0	10	10	SV	10	500	100	0	100	0	300

Course Pre-requisite:

A Student will be able to attempt this course only if he / she has completed (attended the course; submitted the work) of “BA21021S Architectural Design - I” course / subject of semester II - First year Architecture.

Learning Objectives:

After successful completion of this course, student should be able to:
 Develop basic skills of design and design expression. Introduction to design grammar and principles of design.
Design Agenda: Climate /user centric Multifunctional single unit (Dwelling).

Detailed Syllabus:

1	Introduction to design thought process. Matrix, Idea board & formulating Requirements. Site Analysis. Study of Context, Physical environment, Tradition, Culture w.r.t. site
2	Meaning of the word typology with a formal introduction to responses to multiple function accommodated within a Single unit
3	Ability to learn element involved in the evolution of ‘Typology’
4	Study of Climatic conditions. Studying Climate Responsive solutions as regards to design, materials etc. Freezing basic design strategy Basic Circulation pattern. Concept to design process. Need of use of innovative materials. Elementary Services like water supply & drainage
5	Finding case studies of ideal examples and reproduction of the same (master architect’s works)- drawings and models.
6	Design Process
Studio Exercises suggested: Design of Multi-function spaces as decided by the Institute. 1 no Minor Project (can be a Time problem) 1 no Major Project (Dwelling) based on above Modules with creative presentation of drawings & models.	

Recommended Reading:

1	Ching, Francis D.K.; Architecture Form, Space and Order.
2	Dofsky, Bernard; Architecture without Architects.
3	Rasmussen, Steen Eiler; Experiencing Architecture
4	Gideon, Siegfried; Space, time & Architecture.
5	Neuferts Architects Data
6	Chiara, Joseph De / Panero, Julius / Zelink Martin; Time Savers Standards for Interior design and Space Planning.
7	David Adler, Metric Handbook Planning & Design Data
8	Jonathan A. Hale -Building Ideas. An introduction to Architectural Theory.
9	William J.J. Syntectics: The Development of Creative Capacity
10	Climate Responsive Architecture
11	Architects monograms & monographs
12	Pattern Language
13	21 notes for 21st Century - Rafael Moneo

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BA21032S: Building Construction and Technology - III

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
III	BA21032S	Building Construction Technology -III	0	4	4	SV	4	200	40	0	40	0	120

Learning Objectives:

After successful completion of this course, student should be able to:
 Understand materials used in construction, principles of construction, building systems and simple elements of buildings and their behavior and Study of Standard Construction practices adopted.

Detailed Syllabus:

1.	Framing of openings, Doors, windows in using various materials like wood, steel, aluminum, etc. Steel Door-Sliding, Rolling, safety doors. Steel Window-Z section glazed open able window, glazed louvered window. Aluminum Window - Aluminum & Glazed sliding window with 2/3 runners.
2.	<ul style="list-style-type: none"> • Framed type construction in R.C.C. with reinforcement details- Footings- Isolated (Stepped, Sloped & Box type), Eccentric, Combined, Raft, Strap, Strip. • Vertical (Column) –Different shapes like-square, rectangular, circular, Tee, Cross & L- Shape. • Horizontal frame members (Beams) - Cantilever, Simply supported, Fixed, Continuous.
3	<ul style="list-style-type: none"> • R.C.C. Slabs-One way, two ways, Continuous, Cantilever etc. • R.C.C. members -Chajjas, Pardis, Walls, Loft, Porch, Pergola. • R.C.C. Staircases -Doglegged, Spine beam, Open well, Folded type etc.
4	<ul style="list-style-type: none"> • Temporary supports like formwork, strutting, scaffolding.

Recommended Reading:

1.	Elements of structure by Morgan
2.	Building construction by Punmia
3.	Building construction by Sushil Kumar
4.	Building construction by Bindra Arora
5.	Structure in Architecture by Salvadori
6.	Building construction by McKay W. B., Vol. 1 to 4
7.	Construction of Building by Barry, Vol. I to V
8.	Construction Technology by Chudley R. Vol. I to IV
9.	Building Construction Illustrated – Ching Francis D.K.
10.	Elementary Building Construction by Michell

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DETAILED SYLLABUS – BACHELOR OF ARCHITECTURE (B. Arch) 2021-22

BA21033T: Building Materials - III

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
III	BA21033T	Building Materials - III	2	0	2	TH	2	100	10	20	10	60	0

Learning Objectives:

After successful completion of this course, student should be able to:

Understand different materials used in construction, their properties, characteristics, behavior and their specific uses in the Building industry.

Detailed Syllabus:

1.	<ul style="list-style-type: none">Manufactured products like Tiles, processed wood products. Applied finishes like plasters. The properties, characteristics, Grades, proportioning of ingredients, advantages/disadvantages & use. Applied finishes like Plasters - POP, Gypsum, and wall care putty etc. The properties, characteristics, Grades, proportioning of ingredients, Advantages / disadvantages & use.
2.	<ul style="list-style-type: none">Decorative & protective finishes, Paints -Protective coating, Paints, water paints, distempers & cement based paints, Emulsion paints, Anti corrosive paints, Dam proofing finishes. Constituents of paints, properties, characteristics, Grades, Selection criteria, advantages/disadvantages & use. Varnishes (Oil & Spirit) - Ingredients, properties, characteristics, Selection criteria, advantages/disadvantages & use.Processed wood products-Plywood, Veneers, Laminates, Composite boards (Insulating boards, MDF boards, Fiber board, particle board):-The properties, characteristics, Types, Fixing methods, advantages/disadvantages & use.

Recommended Reading:

1.	Elements of structure by Morgan
2.	Structure in Architecture by Salvadori
3.	Building construction by Mckay W. B., Vol. 1 to 4
4.	Construction of Building by Barry, Vol. I to V
5.	Construction Technology by Chudley R. Vol. I to IV
6.	Building Construction Illustrated – Ching Francis D.K.
7.	Elementary Building Construction by Michell

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BA21034T: Culture & Built Form - III

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
III	BA21034T	Culture & Built Form - III	2	0	2	TH	2	100	10	20	10	60	0

Learning Objectives:

After successful completion of this course, student should be able to:
 Identify architectural and structural systems based on categorization of materials and technology developed, geographical, Contextual, social and cultural and political history of the place. Period from 400 CE to 1500 CE

Detailed Syllabus:

1.	<ul style="list-style-type: none"> • Post Maurayan empire - Rulers Shungas, Kanvas, Indo Greeks, Shakas, Kushanas, Satvahanas, trade- silk route. Evolution of Hindu Temple Architecture: Form of worship, Ritual, Symbolism, Philosophy and Social importance of temples. Brahminical resurgence. Initial Temple form: Bhitargaon and Deogarh temples. Development of Different school of Arts – Architectural contribution • Evolution of Temple Style: 400 – 700 CE, Elements of Hindu Temple Form • Introduction to Nagara Style and Dravida Style of Temple Architecture, Impact of Temple as an institution Political Social and Cultural, Study of Prominent Early Structural Temples: e.g. Lad Khan and Durga Temple, Study of Monoliths and development of Kudu Typology: Ratha’s of Mahabalipuram • European Instability and Rise of Early Christian Architecture: Introduction to society and culture of 400 -1150 CE in Europe. Splitting of the Roman Empire – Western and Eastern. Early Christian Architecture Development of Early Christian Church from Roman Basilica Salient building. Different Typologies of House of God: House Church, Church, Cathedral, Abbey. Architectural Elements of Typical Church. Introduction to Greek Cross, Latin Cross. Baptisteries. With Suitable e.g. of Early Christian Churches • Byzantine Empire: City Planning of Constantinople, Trade Routes through it, Fortifications, Evolution of Classical Roman Forms: Buttressing, Openings, Walls, Roofing. Basilican Cisterns, Typical Characteristics of Byzantine Architecture: Domical Roof, Squared Plans. Evolution of Churches – adapt dome e.g. St. Vitale, S.S. Sergius and Bacchus. Concepts of Pendentives and Squinch, through Domical Roof • Romanesque Period: 800 CE to 1000CE, Church as an Institution, what is a Cathedral, Elements of Romanesque Church, Building typologies of the Romanesque Period: Cathedrals, Abbey, Baptisteries, Forts and Castles. Construction techniques of Romanesque: Arches and Vault, regional Romanesque: Ottonian, Italian, British, French and Spanish. Detailed analysis of churches e.g. Speyer and Durham
2.	<ul style="list-style-type: none"> • Rise of Islamic Dynasties - Introduction to Islamic culture worldwide. Emergence of Islam as a religion and its philosophy: Evolution of building types in terms of form and function; mosque, tomb, palaces. Salient characters of Islamic Architecture. Rise of Caliphs and Caliphates, Umayyad’s, Abbasids Dynasty (750 - 1258CE), Elements of a typical Mosque, Study of Mosque’s: Samarra, Cordoba and Dome of Rock, Palatial Architecture: Alhambra. Spread of Islam. City Planning of Baghdad and Ishfan • Progression in Islamic Architecture: Islam in India and Delhi Sultanate: Mohammad bin Qasim(711-712)- Mohommad Ghazni(Ghaznavid 971-1030)- Mohammad Ghouri(1173-1202)- Qutubuddin Aibak(Mamluk 1206-1210) Typical examples of each dynasty. Development of Delhi and Forts around, Techniques of Fortification, Mosque complexes, Evolution of Domed structures, and Tomb typology • Architecture of Forts (Land, Hill, Sea): Feudal and Land-lord system, Scope of Forts, Typology of Forts, Land, Sea and Hill, Hierarchies of Scale and Use, Defence systems through ages and response of Forts, Introduction to different elements of Fort Architecture: Water Moat, Dry Moat, Fortifications (Type), Embrasures, Merlons, Bastion, Tanks, Barracks, Courtyards. Study of fort typology through suitable examples • Meso American: Mayan civilization – Temple of Inscriptions, Palenque, Tikal • Buddhism Outside India: Sri Lanka, Nepal, China, Japan, Afghanistan – Taxila and Gandharan Cosmopolis, Anuradhapura, Establishment of Chinese and Central Buddhism: Newar Buddhism, Bamiyan Buddhas, Ankor Wat (802 - 1431 CE)

Recommended Reading:

1.	Geoffrey and Susan Jellicoe, “Landscape of Man”
2.	Spiro Kostof “History of Architecture”
3.	Global History of Architecture – Franchis Ching
4.	Indian Architecture – Percy Brown
5.	History of Architecture – Bannister Fletcher
6.	Satish Grower, Islamic Architecture in India
7.	R.Nath, History of Mughal Architecture Vol-I,II,III. Abhinav pub. New Delhi

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8.	History of Architecture in India by Christopher Tadgell
9.	Early India by Romila Thapar
10.	The Wonder that was India by A.L. Basham

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BA21035T: Theory of Structure - III

Course Information:

Sem	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
III	BA21035T	Theory of Structure - III	2	0	2	TH	2	100	10	20	10	60	0

Learning Objectives:

After successful completion of this course, student should be able to:
Understand the structural systems and their behavior.

Detailed Syllabus:

1.	<ul style="list-style-type: none">• Introduction to Structural components of Building. RCC Design philosophies. Working stress, limit state method. Introduction to different grades of concrete, steel. Characteristic strength of materials. Balanced section, over reinforced sections and under reinforced sections. Introduction to IS Code 456 for RCC design. Singly Reinforced beams. Stress strain distribution for simply supported beam. Design of singly reinforced beam using limit state method. Problems on Singly Reinforced beam analysis - Finding ultimate moment of resistance, finding area of steel.• Doubly Reinforced beams. Situations when doubly Reinforced beams are used. Doubly Reinforced beams. Stress strain distribution for simply supported doubly reinforced beams. Design of doubly reinforced beam using limit state method. Problems on Doubly Reinforced beam analysis- Finding ultimate moment of resistance, finding area of steel for the section.• Introduction to columns. Buckling of column for Different end conditions. Axially loaded columns, eccentrically loaded columns. Axial and biaxial bending. Problems on - Design of axially loaded columns, Design of columns subjected to Bending about axis using limit state method.
2.	<ul style="list-style-type: none">• Introduction to slabs. Different types of slabs. Classification of slabs. Types of reinforcement in one way and two way slabs. Sketches for the laying of reinforcement in one way and two way slab. Problems on - Design of one and two way reinforced slabs (simply supported, restrained continuous) by limit state method only.• Introduction to staircase. Types of staircase. Sketches showing Different component parts of staircase with their terminologies. Reinforcement placing for major types like Doglegged, folded staircase etc.

Recommended Reading:

1.	Strength of Materials – by Khurmi R.S.
2.	Applied Mechanics and Strength of Material – by Khurmi. R. S.

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BA21036T: Building Services - I

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
III	BA21036T	Building Services - I	2	0	2	TH	2	100	10	20	10	60	0

Learning Objectives:

After successful completion of this course, student should be able to:
 Understand requirement of **Water Supply and Sanitation**.

Detailed Syllabus:

1.	<ul style="list-style-type: none"> Water Supply: Sources of water. Tapping of water mains on street by means of Ferrule. Distribution of water supply in the premises & within the building. Water for drinking & other uses. Characteristics purity of water, standards for purity of water, methods of purification of water. Storage of water. Sump/suction tank, Overhead water storage tank/pressure tank, community overhead water storage tanks. Lifting of water from the underground tank to the overhead tank with the use of pumps. Determination of demand and requirement standards. Hot water supply using conventional and non-conventional energy sources. Direct and Indirect system of hot water supply. Circulation systems i.e. ring system, up feed system, drop system, etc. Internal Plumbing installations. Pipes and piping network, Materials used for piping i.e. Galvanized Iron, P.V.C, Copper, etc. Classification of pipes, specials and joinery used in Plumbing. Installation of the network- open and concealed. Various control valves, flushing cisterns and flush valves. Taps, faucets and other fittings, mixing units for wash-hand basins, kitchen sinks, shower units, baths etc. Internal plumbing layouts, determination of pipe sizes for desired distribution.
2.	<ul style="list-style-type: none"> Drainage & Sanitation: Systems of disposal of Drainage & waste water within a building & within premises. Septic tanks its function and design. Bio gas plants, effluent treatment tanks, sewage treatment plants. Sanitary fittings – Water Closets, Bidets, Wash Hand Basins, Bath Tubs, Urinals, etc along with their working & installation. Different traps, their uses and functioning, classification and materials of pipes, specials, jointing and installations. Single and double stack systems. Location and use of appurtenances i.e. inspection chambers, manholes, disconnecting chambers, ventilation shaft. Storm water drainage system. Sanitation layouts for installation in building and in premises. Collection and disposal of organic and in-organic waste. Vermiculture and composting. Equipment's & systems for Refuse & garbage disposal i.e. Incinerators, compactors and refuse chute. Introduction to Rain water harvesting. Design of Disposal of Rain & surface water in a campus. Rainwater harvesting & other methods of conserving water resources

Recommended Reading:

1.	Plumbing Engineering by Dr. Subhash Patil
2.	International Plumbing Code by Indian Code Council
3.	Building Construction Illustrated by Dr. F.D.K Ching
4.	Building Construction by Sushil Kumar
5.	Building Construction by B.C Punmia
6.	Building Construction by Rangwala

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BA21037S: Architectural Drawing & Graphics - III

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
III	BA21037S	Architectural Drawing & Graphics III	1	3	4	STW	4	200	40	0	40	0	120

Learning Objectives:

After successful completion of this course, student should be able to:
Understand use of computers as tool for modeling. Understand architectural drawing and 3D modeling in relation to use of softwares. Understand rendering techniques using softwares. Focus on 3D Drawing

Detailed Syllabus:

1.	Building Information Modelling Introduction to Interface of software. Importance of BIM (Building Information Modeling) softwares like Revit (Architecture) in Industry. Application of BIM in design of previous semester's design project. Introduction to analysis of materials used in buildings.
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Recommended Reading:

1.	Fundamentals Of Three-Dimensional Computer Graphics by Watt
2.	Computer Aided Design guide For Architecture, Engineering And Construction by Aouad
3.	Architectural drawing: a visual compendium of types and methods; Rendow Yee; John Wiley and Sons, 2007
4.	Architectural Graphics; Francis D. Ching; John Wiley and Sons, 2009

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BA21038S: Climatology

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
III	BA21038S	Climatology	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to:
 Fundamental knowledge about Building physics. Climate analysis tools and its relevance in Architecture. Climate responsive strategies and their application in Architectural design

Detailed Syllabus:

1.	<ul style="list-style-type: none"> • Introduction to climate responsive Architecture- Term such as Environment , climate and weather • Factors affecting climate such as Geo location, Earth’s rotation, Sunpath, azimuth and altitude angle, Climatic zones and their characteristics, climate components, Human comfort parameters, response to each climatic condition. • Climate analysis - Temperature, humidity, wind speed and direction, Sunpath diagram, radiation square, wind wheel, sky conditions, bioclimatic chart, psychrometric chart, daylight availability, etc. Use of equipments such as Surface temperature gun, whirling psychrometer, anemometer, luxmeter,etc.
2.	<ul style="list-style-type: none"> • Introduction to building physics- Heat transfer mechanism- Conduction, convection, radiation, Building envelope, relation to human comfort. • Introduction to Vernacular Climate responsive practices • Design considering thermal and day lighting requirements - Form, orientation, window location and sizing, design of shading devices, use of materials, etc. • Climate responsive strategies and their application for Ventilation, Cooling, • Heating and Daylighting

Recommended Reading:

1.	Manual Of Tropical Housing And Building by O.H. Koenigsberger
2.	Sun, Wind and Light by G. Z. Brown
3.	Climatically Responsible Energy Efficient Architecture by Arvind krishnan
4.	An Introduction To Building Physics by Narashimhan
5.	Climatologically & Solar data for India – T. N. Seshadry.

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BA21039S: Electives – III (A) Barrier Free Architecture

ANY ONE OF THE ELECTIVES (A) or (B)

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
III	BA21039S (A)	Electives – III (A) Barrier Free Architecture	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to:
 Understand that differently abled persons have disabilities and these should be taken into consideration when designing any structure. Every structure to be designed should incorporate all needs and parameters for normal as well as differently abled persons.

Detailed Syllabus:

1.	Understanding the concept of “Design for All” or “Universal Design”. Understanding principles of Universal design – Equitable use, Flexibility in use, simple intuitive, perceptible information, tolerance for error, low physical effort, size and shape for approach and use, etc. Understand goals for universal design – Body fit, comfort, awareness, understanding, wellness, social integration, personalization, cultural awareness, etc.
2.	Identify various applications of these principles and goals in designing spaces. Various examples of spaces/objects designed considering these principles. Introduction to various Design Standards, legislations, by international bodies and Indian context like National Building Code, etc.

Recommended Reading:

1.	ISO 21542: 2011 - Construction - Accessibility and Usability of the Built Environment
2.	ISO 20282-1:2006 [6] – Ease of operation of everyday products — Part 1: Context of use and user characteristics
3.	ISO/TS 20282-2:2013 [7] - Usability of consumer products and products for public use—Part 2: Summative test method
4.	India - Persons with Disabilities (Equal Opportunities, Protection of Rights & Full Participation) Act, 1995
5.	The Principles of Universal Design Version 2.0". Design.ncsu.edu. 1997-04-01. Retrieved 2014-12-14.
6.	"The Goals of Universal Design". Center for Inclusive Design and Environmental Access. April 10, 2012. Retrieved August 31, 2017.
7.	Ease of operation of everyday products -- Part 1: Design requirements for context of use and user characteristics Archived May 26, 2005, at the Wayback Machine

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BA21039S: Electives – III (B) Art in Architecture

ANY ONE OF THE ELECTIVES (A) or (B)

Course Information:

Sem.	Code	Course	L	S	T	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
III	BA21039S (B)	Electives – III (B) Art in Architecture	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to:
Develop an appreciation and understanding of Indian Folk art.

Detailed Syllabus:

1.	<ul style="list-style-type: none">• Role of Art in History of world Architecture.• Study of various art forms like sculptures, paintings, etc. integrated in architecture. With elaboration of Indian and global examples.
2.	<ul style="list-style-type: none">• Use of Murals, Sculptures, Paintings, Statues etc.• Works of different artists and architects that reflect the inter relationship..• Study of various landmark structures with reference to Art work
Studio Exercise: Each student may study one particular example and make a presentation / submission – suggested exercise OR as decided by the Institution.	

Recommended Reading:

1.	Literature available on above modules
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DETAILED SYLLABUS – BACHELOR OF ARCHITECTURE (B. Arch) 2021-22
SECOND YEAR B. ARCH. - SEMESTER 4

BA21041S: Architectural Design - III

Course Information:

Sem	Code	Course	L	St	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
IV	BA21041S	Architectural Design -III	0	10	10	SV	10	500	100	0	100	0	300

Course Pre-requisite:

A Student will be able to attempt this course only if he / she has completed (attended the course; submitted the work) of “**BA21031S Architectural Design - II**” course / subject of semester III - Second year Architecture, AND has secured passing grade in “**BA21021S Architectural Design - I**” course / subject of semester II - First year Architecture

Learning Objectives:

After successful completion of this course, student should be able to:
 To understand single function public buildings or intervention by understanding surrounding.
 Design Agenda: **Singular function/ low rise public building.**

Detailed Syllabus:

1	Site analysis with respect to surrounding environment, tradition, culture, Climatic considerations, interdependency, edge, fenestration and building elements.
2	Considering structural solutions & materials for complex Architectural spaces. Site, building, space, structure, form, character, correlations, light, view.
3	Design Development understanding traditional response of space in architecture.
4	Case studies to understand social, cultural, economic, socio-cultural, socio-economic, technological aspects of Design
Studio Exercises suggested: Design of Single function public building space as decided by the Institute. 1 no Minor Project (can be a Time problem) 1 no Major Project based on above Modules with creative presentation of drawings & models.	

Recommended Reading:

1	C.M. Deasy -Design for Human Affairs.
2	Pierre Von Meiss -Elements of Architecture from form to place.
3	Yatin Pandya- Elements of Space Making.
4	Paul Lassau – Graphic Thinking for Architects and Planners.
5	Peter Pearce, Structure in Nature – Strategy for Design
6	Peter Streens, Patterns in Nature.
7	Anthony Antoniadis - Poetics in Architecture: Theory of design
8	Am heim Rudolf, Visual Thinking.
9	Jonathan A. Hale -Building Ideas. An introduction to Architectural Theory.
10	William J.J. Synectics: The Development of Creative Capacity
11	Elvadine R. Seligmanann : Reaching Students through Synectics: A Creative solution
12	Jyoce, Bruce and Weil Marsha - Synectics Involving creative thought
13	Complexity & Contradiction - Robert Venturi
14	Architecture of the city – Aldo Rossi
15	Site planning – Kevin Lynch

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BA21042S: Building Construction and Technology - IV

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
IV	BA21042S	Building Construction and Technology - IV	0	4	4	SV	4	200	40	0	40	0	120

Learning Objectives:

After successful completion of this course, student should be able to:
Understand materials used in construction, principles of construction, building systems and simple elements of buildings and their behavior.

Detailed Syllabus:

1	Interior construction- details of construction of False ceilings & partitions in wood, steel, aluminum, glass, wood base boards, other manufactured boards, paneling, dry wall construction.
2.	Construction systems used for Industrial and large span buildings, in steel and concrete, pneumatic and tensile structures. Composite structures.
3.	Study of traditional & vernacular systems and materials used in construction.
4.	Appropriate technology & Modern non- conventional techniques developed by various research institutes in response to the local/regional conditions

Recommended Reading:

1.	Elements of structure by Morgan
2.	Concrete Technology by M.S.Shetty
3.	Building construction by Punmia
4.	Building construction by Sushil Kumar
5.	Building construction by Bindra Arora
6.	Structure in Architecture by Salvadori
7.	Building construction by Mckay W. B., Vol. 1 to 4
8.	Construction of Building by Barry, Vol. I to V
9.	Construction Technology by Chudley R. Vol. I to IV
10.	Building Construction Illustrated – Ching Francis D.K.
11.	Elementary Building Construction by Michell

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BA21043T: Building Materials - IV

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
IV	BA21043T	Building Materials - IV	2	0	2	TH	2	100	10	20	10	60	0

Learning Objectives:

After successful completion of this course, student should be able to:
 Understand different materials used in construction, their properties, characteristics, behavior and their specific uses in the Building industry.

Detailed Syllabus:

1.	<ul style="list-style-type: none"> • Plastics- The properties, characteristics, composition, classification - Polymer types, thermosetting and thermoplastics, resins, common types of moldings, fabrication of plastics, polymerization and condensation, plastic coatings. Advantages/disadvantages & use in building industry. • Composite materials; classification, properties and uses- linoleum, plastic coated paper, polyurethane sheets, flexicon sheet , reinforced plastic and PVC.
2.	<ul style="list-style-type: none"> • Glass and glass products - Composition and fabrication of glass, Types of glass, wired glass, Fiber glass, Rock wool, Glass Crete blocks, Toughen Glass , Sun control Glass, Structural glass, their properties and uses in buildings. • Construction chemicals, Sealants for Constructional joints: different types, properties, application accessories admixtures, adhesives, the properties, characteristics, Grades, proportioning of ingredients, advantages/disadvantages & use.

Recommended Reading:

1.	Elements of structure by Morgan
2.	Building Materials by Rangwala.
3.	Building materials in India (50 years)
4.	Structure in Architecture by Salvadori
5.	Building construction by McKay W. B., Vol. 1 to 4
6.	Construction of Building by Barry, Vol. I to V
7.	Construction Technology by Chudley R. Vol. I to IV
8.	Building Construction Illustrated – Ching Francis D.K.
9.	Elementary Building Construction by Michell

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BA21044T: Culture & Built Form - IV

Course Information:

Sem.	Code	Course	L	S	T	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
IV	BA21044T	Culture & Built Form - IV	2	0	2	TH	2	100	10	20	10	60	0

Learning Objectives:

After successful completion of this course, student should be able to:
 Identify architectural and structural systems based on categorization of materials and technology developed, geographical, Contextual, social and cultural and political history of the place

Detailed Syllabus:

1.	<ul style="list-style-type: none"> • Gothic Architecture: Introduction to society and culture of 1150 – 1350 CE in Europe - Italy, Spain, England, Romania, Austria, Belgium. Journey from Early – mature Gothic Style, Development of Gothic church and its new elements. Pointed Arch window, flamboyant window, rose window, glazed window, stone and metal trellis. Different arch types – lancet, equilateral, depressed, Trefoil arch. Cluster column and intersecting vault roof, Clerestory window and triforium, Flying buttress. entrance Portal of church. Salient features of important buildings Cathedrals of St. Dennis, Cathedrals of Chartres, Cathedrals of Notre Dame (Paris) Cathedrals of Reims • Temple Architecture: (900 – 1300 CE): Regional Temple Style and Dynastic Influence: Solanki Style, Chandella Style, Ganga, Kalinga Style: Differentiation of Shikhara's: Phamsana and Latina, Rock Cut Temples of Rashtrakuta • Concepts of Temple Towns: Dravidian Dynasties: Chalukyan, Chola, Pandya, Vijaynagara: and their individual temple style, Vessara Style of temple Building • Meso American - Aztecs, Incas: America – Aztecs (1200 - 1521 CE) – City of Tenochtitlan, Incas (1438 - 1535 CE) Machu Picchu • Progression in Islamic Architecture: Islam in India and Delhi Sultanate: Jalaluddin Khilji (1290-1320)- Giyasuddin Tughlak(1320-1413)- Kazir Khan(1414-1451)- Bahalol Lodi(1451-1526) Evolution of Architectural Monuments under the Slave, Khilji, Tughlaq, Sayyed and Lodhi dynasties. Study of Settlements at Delhi
2.	<ul style="list-style-type: none"> • Introduction to Renaissance (Early Renaissance): Introduction to society and culture, Transitions from Bubonic Plague – Rebirth of Classical order. Introduction to Humanists, Rise of Florence, Contributions of Medici, Mannerists. Study of Florence Cathedral, San Lorenzo Church, Innovations in realm of Art e.g. Perspective and Contrapposto: Influence over architecture, Evolution of Dome, Evolution of St. Peter's Church • Mature Renaissance: The masters of Renaissance, Works of Brunelleschi, Leon Alberti, Palladio, Bramante, Bernini and Michelangelo, Contribution in structural system, e.g., ribbed dome, lantern dome, Baroque art & architecture and Rococo – Reformation in style, Revival of classical orders and principles - Detailing of a Façade • Deccan Islamic Style: Spilt of the Bahamani Sultanate: (Bidar, Berar, Bijapur, Ahmednagar, Golconda) various backgrounds of: Afghan, Turk and Mongol: Deccan Sultanates, Architectural Features: Bulbous Dome, Cupola, Cloisters, Sqinches, Muquarna's, Haft Gumbaz- Complete Gumbaz. Architectural Typology: Madrassa, Tomb, Mosques, and Mahal. Intervention and innovation of Different Material: bricks, stone, Indian Stucco • Provincial Islamic Style: (Jaunpur, Bengal, Malwa, Sasaram): Important writings from each region Architectural Treaties and Writings: Al-Bīrūnī (d. 1048) - Kitab fi Tahqiq ma li'l-Hind (Researches on India), Fazl, Abu'l (1877). Akbarnamah (Persian), Vol. 1. Asiatic Society, Calcutta. (Online book), Fazl, Abu'l (1879) Architectural characters: Battered Walls, Pointed Arches with Spear head, Culmination of Arch, lintel and bracket, Boat keel domes, High plinth, and steps characters. Building typology: Baoli, Mahal, and Masjid • Timurid Dynasty (Mongol Occupies Persia): Post Fall Of Baghdad, Post-Mongol States emergence – Taimur, Palatial developments in Uzbekistan, Patterns of Façade, Architectural typology: Moaque, Madrassa, and Landscape Patterns, Load-transfer systems: Overlapping Arches

Recommended Reading:

1.	The Wonder that was India by A.L. Basham
2.	Spiro Kostof "History of Architecture"

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3.	Global History of Architecture – Franchis d.k Ching
4.	Indian Architecture – Percy Brown
5.	History of Architecture – Bannister Fletcher
6.	R.Nath, History of Mughal Architecture Vol-I,II,III. Abhinav pub. New Delhi
7.	Architecture in medieval India – Monica Juneja
8.	Satish Grover, Islamic Architecture in India
9.	Spiro Kostof – History of Architecture – Settings and Rituals – Oxford Press
10.	The Wonder that was India – A.L.Basham

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BA21045T: Theory of Structure - IV

Course Information:

Sem.	Code	Course	L	S	T	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
IV	BA21045T	Theory of Structure - IV	2	0	2	TH	2	100	10	20	10	60	0

Learning Objectives:

After successful completion of this course, student should be able to:
Understand behavior of advanced elements in structure. The study of steel as structural material and the role of properties of material and behavior of elements in evolution of structural system

Detailed Syllabus:

1.	<ul style="list-style-type: none">Determinate and indeterminate structures, finding indeterminacy of structures. Advantages and disadvantages of indeterminate structures. Analysis of indeterminate structures. Introduction to stiffness and distribution factors, introduction to moment distribution factors, introduction to moment distribution method. Indeterminacy of a frame, comparison of post and lintel system and portal frames. Importance of portal frames in resisting horizontal forces.Arch as a curved element. Arch in history, efficiency of an arch. Three hinged arch.Simple problems to illustrate the importance of the shape of an arch, rise end conditions and loading.
2.	<ul style="list-style-type: none">Steel as a structural material, structural system in steel with case studies. Analysis and design of steel girders & columns using IS-specified & handbook of steel sectionsDesigning & detailing the bolted connections, design of simple welded connections.

Recommended Reading:

1.	Strength of Materials – by Khurmi R.S.
2.	Applied Mechanics and Strength of Material – by Khurmi. R. S.

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BA21046T: Building Services - II

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
IV	BA21046T	Building Services - II	2	0	2	TH	2	100	10	20	10	60	0

Learning Objectives:

After successful completion of this course, student should be able to:
Understand Environmental control systems – **Lighting, Illumination & Electrical Services.**

Detailed Syllabus:

1.	<ul style="list-style-type: none">Natural Light & Illumination - solar orientation, shading devices, radiation, outdoor indoor illumination, solar energy and its technical applications. Studies through built environment, case analysis, theory and its application, models and testing.Artificial Lighting & Illumination. Physics of light, Human – visual comfort, Sources of Artificial Illumination, their characteristics, Illumination level standards, Lighting design: Studies through built environment, case analysis, theory and its application, models and testing, their layouts and requirements within building systems, co-ordination to building systems
2.	<ul style="list-style-type: none">Electrical and communication services. Electrical Distribution – Mains supply, Height-Lt consumer, distribution within premises and within a building: electrical load estimation & distribution. Equipment like switches, luminaries, safety devices, fans, etc. Electrical layouts for premises & within a building. Other distribution systems for networking, Internet etc.

Recommended Reading:

1.	National Building Code 2016
2.	Mechanical and Electrical Equipment for Buildings by Walter T. Grondzik, Alison G. Kwok, Benjamin Stein

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BA21047S: Surveying & Leveling

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
IV	BA21047S	Surveying & Leveling	0	2	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to:
Understand Methods of recording and representing spatial information. To know different types of land surveys done for measuring the land. Importance of Site visit and recording analysis data. Use maps, ownership records from Government records. Understand the physical features at site. To explore site conditions to benefit the Architectural design.

Detailed Syllabus:

1.	Reconnaissance and need for surveying. Types of information recording: surveys, photography etc. Information about older surveying methods like Chain survey, Compass survey, Plane table, Theodolite and contour surveys. Various equipment used in Surveying. Introduction to modern methods of Digital surveys like "Total Station", etc. Understanding the output of the digital surveys and interpreting and using the digital maps and levels (topography) of site information.
2.	Understanding and using the maps issued by various Government Records. Understanding and using the information about area and other information issued by various Government Records. Types of maps, drawings and digitized data. Reading information from visual records, analysis, co-relations etc. Tools & Techniques employed at various scales and complexity of information. Degrees of accuracy and errors. Inquiry of Infrastructure available on site.

Recommended Reading:

1.	Site planning by Kelvin Linch
2.	Surveying and levelling by B.C. Punmia
3.	Surveying and levelling by N.N.Basak
4.	Surveying and Levelling by Kulkarni and Kanitkar

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BA21048S: Environmental Lab and its Application in Architecture

Course Information:

Sem.	Code	Course	L	S	T/w	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
IV	BA21048S	Environmental Lab and its Application in Architecture	2	2	4	STW	4	200	40	0	40	0	120

Learning Objectives:

- To provide advance knowledge about natural environment.
- To introduce the students to advance concepts to understand environmental processes

Detailed Syllabus:

1.	ENVIRONMENTAL LAB - Lab based course which will involve measurements; documentation and recording; analysis and design using hand held and digital tools and through simulation using appropriate software focusing on areas such as thermal performance of built environment, natural and artificial lighting and ventilation and wind movement; evaluate performance of Renewable Energy Systems, Fenestration, Opaque Construction, etc. as per test standards specified in National Building Code (NBC) and Energy Conservation Building Code (ECBC).
2.	Study of Natural systems; Complex relationships between the built and natural environments; Impact of pollution on natural and man-made environments; Strategies to transform the built environment to meet the risks of climate change; Biomimicry - the study of natural structures and processes- in helping to solve man-made problems and enabling design; Concepts of urban ecology and landscape urbanism; case studies; integration of Renewable Energy Systems in built environment.

Recommended Reading:

1.	Textbook for environmental studies by Erach Bharucha
2.	Report of the World Commission on Environment and Development: Our Common Future
3.	Housing Climate & Comfort by M.Evans
4.	Manual Of Tropical Housing And Building by O.H. Koenigsberger

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BA21049S: Electives – IV (A) Architectural Design with Glass

ANY ONE OF THE ELECTIVES (A) or (B)

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
IV	BA21049S (A)	Electives – IV (A) Architectural Design with Glass	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to:
 Understand Glass as a building material, its various applications and benefits. Development of skills to select appropriate glass as per building design

Detailed Syllabus:

1.	Glass as a building material & its Applications, Float glass manufacturing technology, Key Functional Requirements - Building Physics: Theory of electromagnetic radiation, Factors defining performance & Selection of Glass: (VLT, SF, UV, SHGC) - Value Addition: Optical Properties- Coating Technology.
2.	Need for Green Buildings: Energy efficient buildings, Energy codes, Introduction to Green ratings & its Approaches: ECBC, IGBC, GRIHA - Human safety Compliances - Fire Resistant Glazing: Types & Applications - Understanding Acoustic Glazing: Principle & Applications.
3.	Framing - What is structural framing, how structural framing is done: Steel, Aluminum and Glass. Innovative designs (skylights, balustrades & canopies) - Design of Glazing and Fixtures - Design of Glass Supporting systems - Design of interfacing with Buildings (fixing and anchorages) - Component, framing sizing & Optimizing the frame.
4.	Applications - Interior Glazing: Types & Applications - Glass for segments- Hospitals, Green Homes, Airports, Offices, Educational institutions - Types of Glass - Glass Processing: Tempering, Heat Strengthening, Insulation, Lamination & Ceramic Frit.

Recommended Reading:

1.	Structural Glass: Hugh Dutton, Peter Rice
2.	Structural Glass Facades and Enclosures, Mic Patterson
3.	Joseph S. Amstock's Glass in Construction (McGraw-Hill, 1997)
4.	Envelope Design for Buildings by William Allen
5.	Thomas Herzog, "Facade Construction Manual." Birkhauser, 2004

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BA18049S: Electives – IV (B) Theory of Design

Course Information:

Sem.	Code	Course	L	S	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
IV	BA18049S (B)	Electives – IV (B) Theory of Design	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to:
 Increase the ability to analyse design and to enhance ability to create work. Expand the knowledge about the creative process. Deepen understanding for cultural and social conditions affecting design. Implement different design theories.

Detailed Syllabus:

1.	<ul style="list-style-type: none"> Introduction: Primary elements of design. Exploration of the basic principles of composition such as proportion, scale, etc. Ordering Principles such as Axis, Symmetry, Hierarchy, Datum, Rhythm & Repetition.
2.	<ul style="list-style-type: none"> Form and its visual properties: Properties of form, transformation of forms - dimensional transformation, subtractive, additive forms, organization of additive forms. Articulation of forms. Basic principles of visual perception. Gestalts Theory of Visual Composition.
3.	<ul style="list-style-type: none"> Concepts of Space: Spatial Relationships, Spatial Organization- influencing factors and their types. Positive & negative spaces. Indoor spaces & outdoor spaces. Spaces in buildings, relation between man & spaces. Space defining elements- horizontal, vertical, openings in space defining elements.
4.	<ul style="list-style-type: none"> Circulation: Function of building circulation, components of building circulation – The building approach, The building entrance, configuration of the path, path space relationship, form of circulation space with examples. Simple circulation diagram for buildings.
5.	<ul style="list-style-type: none"> Art and Architecture: Influence of tradition, culture and socio- economic developments on art and architecture. Architecture compared with visual & temporal arts. Art, architecture, science & technology. Basics of Calligraphy and typography. Golden proportion. Modular coordination with examples from history of architecture. Application of human scale & generic scale in architecture.

Recommended Reading:

1.	Francis D. K. Ching, 'Architecture - Form, Space and Order', Van Nostrand Reinhold Company
2.	V.S.Pramar, 'Design Fundamentals in Architecture', Somaiya Publications, New Delhi
3.	Leland M.Roth, 'Understanding Architecture', Routledge; 3 edition.
4.	Foundations in Architecture: An Annotated Anthology of Beginning Design Project, Van Nostrand Reinhold NY
5.	Basic Visual Concepts and Principles for Artists, Architects and Designers by Charles Wallschlaggerm & Cynthia Busic-Snyder, McGraw Hill, New York

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FINAL Teaching - Evaluation Scheme for B. Arch (October 2021)

THIRD YEAR B.ARCH

SEMESTER V

Course Code	Subject / Course	L/w	S/w	T/w	CT	Cr	TM	CA1	MSE	CA2	ESE-P	ESE-SV/STW
BA21051S	Architectural Design IV	0	10	10	SV	10	500	100	0	100	0	300
BA21052S	Building Construction Technology-V	0	4	4	SV	4	200	40	0	40	0	120
BA21053S	Working Drawing I	1	2	3	STW	3	150	30	0	30	0	90
BA21054T	Culture & Built Form-V	2	0	2	TH	2	100	10	20	10	60	0
BA21055T	Theory of Structure-V	2	0	2	TH	2	100	10	20	10	60	0
BA21056T	Building Services - III	2	0	2	TH	2	100	10	20	10	60	0
BA21057S	Landscape Design I	1	2	3	STW	3	150	30	0	30	0	90
BA21058T	Sociology	2	0	2	TH	2	100	10	20	10	60	0
BA21059S	Elective V (any one) A. Appropriate Building Technologies B. Architectural Journalism	2	0	2	STW	2	100	20	0	20	0	60
Total		12	18	30		30	1500					

SEMESTER VI

Course Code	Subject / Course	L/w	S/w	T/w	CT	Cr	TM	CA1	MSE	CA2	ESE-P	ESE-SV/STW
BA21061S	Architectural Design V	0	10	10	SV	10	500	100	0	100	0	300
BA21062S	Building Construction Technology-VI	0	4	4	SV	4	200	40	0	40	0	120
BA21063S	Working Drawing II	1	2	3	STW	3	150	30	0	30	0	90
BA21064T	Culture & Built Form-VI (Contemporary Architecture)	2	0	2	TH	2	100	10	20	10	60	0
BA21065S	Human Settlement Planning	2	0	2	STW	2	100	20	0	20	0	60
BA21066T	Building Services - IV	2	0	2	TH	2	100	10	20	10	60	0
BA21067S	Landscape Design II	1	2	3	STW	3	150	30	0	30	0	90
BA21068S	Elective VI (any one) A. Architectural Design in Steel B. Contemporary processes in Architecture	2	0	2	STW	2	100	20	0	20	0	60
BA21069S	Elective VII (any one) A. Graphic and Product Design B. Vernacular Architecture	2	0	2	STW	2	100	20	0	20	0	60
Total		12	18	30		30	1500					

Abbreviations:

L/w	Number of Clock Hours of Lectures per week for the Subject / Course
S/w	Number of Clock Hours of Studios per week for the Subject / Course
T/w	Total Number of Clock Hours per week for the Subject / Course
CT	Subject / Course Type: Theory (TH) or Studio Term Work (STW) or Studio Viva (SV)
Cr	Total Number of Credits allotted for the Subject / Course in the Semester
TM	Total Number of Marks allotted for the Subject / Course in the Semester
CA 1	Marks allotted for Continuous Assessment during the Semester before Mid Semester examinations the Subject / Course in the Semester
MSE	Marks allotted for Mid Semester examinations for the Subject / Course in the Semester
CA2	Marks allotted for Continuous Assessment during the Semester after Mid Semester examinations the Subject / Course in the Semester
ESE-P	Marks allotted for End of Semester examinations Paper for the Subject / Course in the Semester
ESE-SV/STW	Marks allotted for End of Semester examinations Studio Sessional work or Studio Viva for the Subject / Course in the Semester

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Detailed content

THIRD YEAR B. ARCH. - SEMESTER 5

BA21051S: Architectural Design - IV

Course Information:

Sem.	Code	Course	L	S	T	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
V	BA21051S	Architectural Design - IV	0	10	10	SV	10	500	100	0	100	0	300

Course Pre-requisite:

A Student will be able to attempt this course only if he / she has completed (attended the course; submitted the work) of “BA21041S Architectural Design - III” course / subject of semester IV - Second year Architecture, AND has secured passing grade in “BA21031S Architectural Design - II” course / subject of semester III - Second year Architecture

Learning Objectives:

After successful completion of this course, student should be able to:
 To explore complex concepts. To understand building basic bye-laws in strict application and interdependency of various functions in a public building.
 Design Agenda: **Multifunctional public building.**

Detailed Syllabus:

1	This semester design program focuses on interrelation of various functions (typology) and architectural response towards it.
2	Site analysis with respect to surrounding environment, tradition, culture. Climatic considerations, topographic understanding and water shed awareness.
3	Related Case Studies & studying building bye-laws. Formatting design brief. Research regarding selected philosophy. Understanding characters of selected style.
4	Conceptual explorations of character and selected style. Occupation and meanings of various spaces within a typology placed in a context
5	Considering structural solutions & materials for plural Architectural spaces. Cluster combinational principles. typology, society and community
6	Design Development. Considering building guidelines. Consideration of building related services. Finalization of Design Proposal. Highlighting the character of building as regards to style, Ism or philosophy.
Studio Exercises suggested: Design of Multifunctional public building preferably Large Public Buildings as decided by the Institute. Project based on above Modules with creative presentation of drawings & models.	

Recommended Reading:

1	Ching, Francis D.K.; Architecture Form, Space and Order.
2	Pandya Yatin, concept of space in traditional Indian architecture,
3	Jain Kulbhushan, Thematic Space in Indian architecture
4	Koolhaas Rem, SMLXL
5	Anant Raje Architects 1971-2009
6	Scriver Peter, After the masters
7	Peter Streens, Patterns in Nature.
8	Anthony Antoniadis - Poetics in Architecture: Theory of design
9	Am heim Rudolf, Visual Thinking.
10	Jonathan A. Hale -Building Ideas. An introduction to Architectural Theory.
11	William J.J. Synectics: The Development of Creative Capacity
12	Elvadine R. Seligmanann : Reaching Students through Synectics: A Creative solution
13	Jyoce, Bruce and Weil Marsha Synectics Involving creative thought

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BA21052S: Building Construction and Technology - V

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
V	BA21052S	Building Construction Technology - V	0	4	4	SV	4	200	40	0	40	0	120

Learning Objectives:

After successful completion of this course, student should be able to:
 Understand complex construction systems for large structures. Introduction to special techniques used for modern High - rises, Prefabrication, as well as influence of Vernacular Architecture in development and adaptation of new systems.

Detailed Syllabus:

1.	High rise buildings in Concrete & steel, Pre-stressed structures. Technical nomenclature of different steel sections, construction methods, methods of connections, different types of welds, riveting & bolting,
2.	Modular co-ordination, Modular construction, Pre-fabricated elements for structures, specialized plant & machinery used for on-site installation, sequence of operations in construction
3.	Systems developed in response to- Earthquake zone, adverse site conditions like expansive soils – deep foundations, piles & caisson foundations.
4.	Waterproofing of Basements, Swimming pools and other water retaining structures. Construction of swimming pools with details of retaining walls, raft slab, underwater lighting system, scum gutter, inlet & outlet details, spring board diving details, filtration plant, notes on washing of swimming pools.

Recommended Reading:

1.	Elements of structure by Morgan
2.	Steel Structure by Krishna Raju
3.	Building Construction by Punmia
4.	Building Construction by Bindra Arora
5.	Building Construction by Sushil Kumar
6.	Structure in Architecture by Salvadori
7.	Building construction by McKay W. B., Vol. 1 to 4
8.	Construction of Building by Barry, Vol. I to V
9.	Construction Technology by Chudley R. Vol. I to IV
10.	Building Construction Illustrated – Ching Francis D.K.
11.	Elementary Building Construction by Michell

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BA21053S: Working Drawing - I

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
V	BA21053S	Working Drawing - I	1	2	3	STW	3	150	30	0	30	0	90

Learning Objectives:

After successful completion of this course, student should be able to:
Understand importance of making detailed working drawings/shop drawings for carrying out work of construction.
Importance of Precision, comprehensive information and detailed drawings required to furnished for cost estimating as well as execution of work.

Detailed Syllabus:

1.	Understanding purpose of making Working drawing and details. Importance of 2D – orthographic projection drawings. Understanding Construction details, Sequence of construction. Drawing Conventions, precision / accuracy, scales for overall drawings and details. To be simple and easily read / understood by contractors, workmen and possibly illiterate labor also. Importance of incorporating complete information like Measurements, Dimensions, Material, other annotation of information etc. Dimension styles and conventions. Getting acquainted with terminology like centerline, section planes, centerline plan, setting out, different schedules etc. Printing to scale and size of sheets of paper.
2.	Making a complete set of Working drawing and details of a simple load bearing walls type structure (A design project of previous semester). All sequential / stage wise plans, sections, elevations, large scale details. Details of Internal & external Water supply & Sanitation layouts including sewage disposal, etc. Electrical layouts showing all details.

Recommended Reading:

1.	Elements of structure by Morgan
2.	Structure in Architecture by Salvadori
3.	Building construction by McKay W. B., Vol. 1 to 4
4.	Construction of Building by Barry, Vol. I to V
5.	Construction Technology by Chudley R. Vol. I to IV
6.	Building Construction Illustrated – Ching Francis D.K.
7.	Elementary Building Construction by Michell

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BA21054T: Culture & Built Form-V

Course Information:

Sem.	Code	Course	L	S	T	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
V	BA21054T	Culture & Built Form-V	2	0	2	TH	2	100	10	20	10	60	0

Learning Objectives:

After successful completion of this course, student should be able to:
 Identify architectural and structural systems based on categorization of materials and technology developed, geographical, Contextual, social and cultural and political history of the place

Detailed Syllabus:

1.	<ul style="list-style-type: none"> • Baroque & Rococo: Introduction to society and culture, Explorations in Form, Light and shadow and dramatic intensity. Original style in Italy: Versions all around, Curved facades and Ornate decorations, Plan typology. Early, High, Late baroque and Culmination in Rococo. Works of Bernini, Francesco Borromini, and Pietro da Cortana, Mannerist Ideologies. Classical Baroque – France, Works of Louis Le Vau, Jules Hardouin, Charles Lebrun and Andre Le Notre • Ottoman Rule: Political factors of Central Asia, Armenia and Persia, Architectural Outputs: Kulleye, Hamman, Hana, Turbe, Masjid, Imaret. Comparisons of Urban and Rural kulliye, Understanding typical Ottoman Mosque, Domes and Cupola, Shehezade and Suleymaniye Mosque: Contributions of Mimar Sinan • Mughal Rule & its Political Impact: Humayun to Akbar: synthesis of Hindu Muslim culture Evolution of Architecture during Mughal time in form of palaces and gardens. Rule of Babur and Humayun and their contribution to architecture, prominent example. Planning of Agra – and Delhi, Study of: Mughal Forts, Tomb Profile, Architectural Elements, and Landscape • Imperial Mughal Dynasty: Akbar to Aurangzeb: Reign of Akbar, Jahangir, Shahajahan and their contribution- Study of Forts, Palaces, Mosques and Moghul Gardens, Refinement in Art and Craft, Important buildings to understand Mughal Style
2.	<ul style="list-style-type: none"> • Maratha Empire: Social & Political scenario: Overview of Maratha Dynasty from Shivaji- Peshwa Rule. Typology of Marathi architecture: Civil, Religious and Military. Hill Fort mechanism, and function, Sea Fort, Concept of Garhi, Settlement Planning strategies, road networking, Wada typology, Maratha Column order, Step Wells, Samadhi's, Ghats and Temple Style: Idealistic and Revivalist • Transition from Baroque Rococo: Neoclassicism: Effects of Industrial revolution – Movements: Classification of Baroque: Florid, Classical and restrained, Shift from Catholicist society to Protestant, Study of repetition, Form Sculptural Dignity and ornamentation, The 4 revolutions: Industrial, Artistic, Social and Political. Effects of it on construction technology and architectural Design-Early movements such as Industrial romanticism, eclecticism, Arts and Crafts, Development of 'New Art & Architecture' Art Nouveau, Rise of the Avant- grade • Colonial Architecture: Indo Sarcenic, Indo Gothic, Indo French: cantonments, bungalows etc.: Transformation of Indian architecture during colonial period – influences and effects, Colonialism and its impact on India, Presidencies of Bombay, Madras, Calcutta, Delhi, Portuguese Colonies of Goa, Franco-Tamil Houses, Works of British architects in pre- independence. Planning of New Delhi • INDO-Sarcenic (Neo-classical+Gothic Revival): Onion (Bulbous domes), Overhanging Eaves, Types of Arches, Vaulted roof, Arcades, Domed Kiosks, Miniature Domes, Towers, Open Pavilions. Master Architects and their works: Robert Fellowes, Charles Mant, Henry Irwin, Frederick Stevens, William Emerson. Climatic and Cultural Influences, Study of Heritage Precinct's and eminent Buildings of Precedencies

Recommended Reading:

1.	Spiro Kostof "History of Architecture"
2.	Global History of Architecture – Franchis d.k Ching
3.	The Puzzle of Architecture by Robui Boyd.
4.	Modern Architecture by Kenneth Frampton
5.	Architecture & independence by John T. Lans, Madhavi Desai Miki Desai
6.	The story of Architecture by Patrick Nuttgens.

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BA21055T: Theory of Structure - V

Course Information:

Sem.	Code	Course	L	S	T	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
V	BA21055T	Theory of Structure - V	2	0	2	TH	2	100	10	20	10	60	0

Learning Objectives:

After successful completion of this course, student should be able to:
Understand Course emphasis on understanding of section design in R.C.C. and its implication on design of structures

Detailed Syllabus:

1.	<ul style="list-style-type: none">• PRESTRESSING: Definitions, Principles of Pre stressing ,Pre stressing and post tensioning, Materials of Pre stressing, systems of pre stressing , applications and uses - stresses of pre stressed concrete members , Approximate design of pre stressed concrete members.• SHELLS STRUCTURES: Definition and various forms and classification of shells Advantages and disadvantages, Study of Preformed shells, cylindrical shells, Hyperbolic and paraboloids, free forms of shells.
2.	<ul style="list-style-type: none">• PREFABRICATION: Definitions, Principles of Prefabrications, Applications – Prefabrication system for buildings.• CABLE STRUCTURES: Cable stayed – cable suspended structures, simply curved suspended roofs, combination of roofs and struts. The students are encouraged to do case study of advance structural forms and make a presentation.

Recommended Reading:

1.	Elements of Structures – Morgan.
2.	Structure in Architecture – Salvadon and Heller.
3.	Engineering mechanics by A. K. Tayal
4.	Mechanics of structure Vol. I By Junnarkar.
5.	Design of steel structures-Vazirani – Rathwani.
6.	Design of steel structures- L.S. Negi.
7.	R.C.C. Design – Khurmi, Punmia, Sushilkumar.
8.	Strength of Materials by Amol Dongre.
9.	Engineering Mechanics - F.L. Singer, Harper Collins publications.

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BA21056T: Building Services - III

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
V	BA21056T	Building Services - III	2	0	2	TH	2	100	10	20	10	60	0

Learning Objectives:

After successful completion of this course, student should be able to:
 Understand Environmental control systems – **Artificial Ventilation.**

Detailed Syllabus:

1.	<ul style="list-style-type: none"> Basic theory – Terminology – Heat, Temperature, Humidity, Relative humidity, heat exchange, heat flow - Conduction, Convection, Radiation, sensible (Specific heat) and insensible (Latent heat) Heat, Conductivity of materials, “K” value, “U” value, transmittance. Human - Physical comfort-Freshness of Air & Air change, Temperature, Humidity, outdoors and indoors, heat flow within buildings, steady state conditions and periodic flow, thermal performance of building elements, sun protection of buildings. Natural Ventilation, Wind and stack effects, evaporative cooling. Concept of Heat Exchange- Heating / cooling loads. Artificial Ventilation. Forced ventilation system, Types of fans and blowers, mounting, sizes and calculation of fans Unit. Air-conditioning system, Principles of air-conditioning system, Components of air-conditioning system, Air-conditioning system, Types of conventional systems of air-conditioning, Non-conventional systems of air-conditioning. Air conditioning Ventilation Equipment & systems presently used, their working, installation requirements and demands in building layout, supply air, return air ducting systems, their layouts and requirements within building systems, co-ordination to building systems.
2.	<ul style="list-style-type: none"> Air-conditioning systems their layouts of ductwork and requirements within building systems, co-ordination to building systems. Mechanical Services in a building. Vertical & horizontal transportation systems like Lifts, escalators, dumb waiters, conveyor paths. Determining the demand, carrying capacity, travel time, co-ordination, space requirements & installation of such equipment. Layouts of lift banks, Escalators etc. in a building.

Recommended Reading:

1.	National Building Code 2016
2.	Mechanical and Electrical Equipment for Buildings by Walter T. Grondzik, Alison G. Kwok, Benjamin Stein
3.	Building Construction by Rangwala.
4.	Basic Refrigeration and Air Conditioning by A. Ananthanarayana

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BA21057S: Landscape Design-I

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
V	BA21057S	Landscape Design-I	1	2	3	STW	3	150	30	0	30	0	90

Learning Objectives:

After successful completion of this course, student should be able to:
 Make students aware of architecture beyond buildings, in the outdoor environment and spaces, and the role and importance of landscaping and site planning in enhancing and improving the quality of building environs, functionally and aesthetically.

Detailed Syllabus:

1.	<ul style="list-style-type: none"> • Introduction to Landscape Architecture, definitions, importance, need and scope. Levels of landscape planning and design. Landscape architecture and ecology. Relationship between landscaping and environmental planning, regional planning, urban planning, urban design, architecture and interior design. • Historical development of landscape architecture. Origins of gardens. Design Principles, salient features and elements of various gardens in history – like Egyptian, Persian, Spanish, Italian, French, English, American, Japanese, Moghul Indian etc. Changed scenario for modern garden designs. • Different factors and components of a landscape. Social and economic factors. Psychological considerations of spaces and enclosures. Brief idea about manmade components like walls, fences, entrances, gates, barriers, screens, planters, roads & pathways, street furniture, signage, services-electrical, water supply and drainage. Basic natural components - land, trees, water and climate.
2.	<ul style="list-style-type: none"> • Different aspects of land as a landscape element - soils, geology, topography, earth forms, levels, foundations, grading, drainage, paved and unpaved surfaces. The importance and use of the aspects as a landscape design element. • Various forms 'of water elements in a landscape - fountains, waterfalls, pools, cascades, channels irrigation etc. Importance and use of water as a landscape design element. Construction of various water elements. • Different aspects of trees, shrubs, climbers, hedges, lawns as landscape elements. Basic horticultural idea about plants, plant selection, planting design and care of plants. Importance and use of the aspects as a landscape design element.

Recommended Reading:

1.	Appleton. (1996). The Experience of Landscape. Wiley.
2.	Geoffrey, and Jellico, S. (1987). The Landscape of Man. Thames and Hudson.
3.	Holl, G. P. (2006). Questions of Perception Phenomenon logy of Architecture. Richmond
4.	Laurie. (1986). An Introduction to Landscape Architecture. Elsevier.
5.	Lynch, K. (1962). Site Planning. Cambridge: The MIT Press.
6.	Reid, G. (2002). Landscape Graphics. New York: Watson-Guption.
7.	Simonds, J. O. (2006). Landscape Architecture: A Manual of Land Planning and Design.

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BA21058T: Sociology

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
V	BA21058T	Sociology	2	0	2	TH	2	100	10	20	10	60	0

Learning Objectives:

After successful completion of this course, student should be able to:
 Understand relationship between sociology, social systems and built environment.

Detailed Syllabus:

1.	<ul style="list-style-type: none"> Introduction to Sociology, an overview of Urban Sociology. Social institutions - Introduction to the concept of family, community, association, religion, etc. Study of culture, Culture and Society – interrelationships. Social interactions, groups, communication, leadership. Social process - Co -operation, Conflict, Competition, Accommodation, Assimilation, progress and evolution. Socialization, Social change, Population, demographic transition - planned and unplanned Urbanization Process, World urbanization, Indian and different states
2.	<ul style="list-style-type: none"> Urbanization pattern and social change due to urbanization, Growth of slums and squatter settlements, migration pattern, population structure in slums, Concept of personal Integration, Consolidation index to compare slums at varying age, effect of industrialization and technological advancement on Society. Urban living - Crime and city size. Urban revitalization. Social policy and social planning community planning, urban crime, Effect of living in high rise building on children - Meaning of urban space. Effect on social planning on spatial planning.

Recommended Reading:

1.	The Sociology of Architecture: Constructing Identities by Paul Jones
2.	Cities and urbanization (Viewpoints in sociology) by T Richard Geruson
3.	Urban Renewal in India: Theory, Initiatives and Spatial Planning Strategies by S K Kulshrestha

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BA21059S: Electives – V (A) Appropriate Building Technologies

ANY ONE OF THE ELECTIVES (A) or (B)

Course Information:

Sem.	Code	Course	L	S	T	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
V	BA21059S (A)	Electives – V (A) Appropriate Building Technologies	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to:
 Understand the Appropriate building techniques other than conventional ones with relation to economic and environmental outcomes.

Detailed Syllabus:

1.	Introduction Types of Appropriate building techniques like, Earth, Flyash, Bamboo, Thatch, Ferro-cement, etc. Advantages of Appropriate building techniques over conventional methods. Alternative methods of construction related to different materials and their comparison. Upgradation, modification and revision of various methods of construction.
2.	Appropriate technologies as evolved from contexts through the practice of Indian and International Architects. Systems and techniques developed in Research labs. Cost Reduction Techniques – Planning aspects. Prefabricated building components.
2.	Earth: Components of earth: gravel, sand, silt and clay. Characteristics, advantages and disadvantages, needs and usage of various methods of construction like walling, flooring and roofing techniques. Composite materials made from earth like rammed earth, compressed stabilized earth blocks, stacked earth, sun dried clay bricks, and steam cured blocks, Wattle and Daub. Filler slab, Jack arch roof.
3.	Bamboo: Characteristics, advantages and disadvantages, needs and usage of various methods of construction like walling, flooring and roofing techniques. Preservation of bamboo, bamboo tiles, shingles, bamboo joints.
4.	Recycled Waste Materials: Types of waste used in construction. Benefits of using recycled waste materials. Materials made out from waste paper, wood, plastic bottles, plastic bags, earthen materials, steel, aluminum, copper, bricks, gypsum, straw, and wool etc, Techniques of using these materials in building construction.

Recommended Reading:

1.	Lewis Davidson Gotlieb, Environment and design in housing, The Mc.Millan Corp, New York
2.	Housing and building in hot-humid and hot dry climate
3.	Low-cost housing in developing countries/ Mathur,
4.	A.G MadhavaRao and D.S Ramachandra Murthy : Appropriate Technologies for Low cost housing.

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BA21059S: Electives – V (B) Architectural Journalism

ANY ONE OF THE ELECTIVES (A) or (B)

Course Information:

Sem.	Code	Course	L	S	T	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
V	BA21059S (B)	Electives – V (B) Architectural Journalism	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to:
Get an overview of journalism and reporting in the field of Design and Interior Design in particular.

Detailed Syllabus:

1.	Writing descriptive and analytical reports of visits to sites, identifying the design theme, Case studies and class exercises. Interviewing techniques, Photo journalism, Editing write ups, Editorial policies. Case studies and class exercises.
2.	An overview of Structure of Design journals and overall content and distribution of the content in journals. Page compositions, The printing process. Case studies and class exercises. Electronic media and e-journals, various techniques used in e-presentations, Case studies and class exercises.

Recommended Reading:

1.	Exploration of Architectural Journalism in India by Pappal Suneja
2.	Challenges to the Epistemology of Journalism: The Architecture of the Contemporary Mediascape
3.	Architectural Voices of India: A Blend of Contemporary and Traditional Ethos Book by Apurva Bose Dutta

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THIRD YEAR B. ARCH. - SEMESTER 6

BA21061S: Architectural Design - V

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
VI	BA21061S	Architectural Design - V	0	10	10	SV	10	500	100	0	100	0	300

Course Pre-requisite:

A Student will be able to attempt this course only if he / she has completed (attended the course; submitted the work) of “BA21051S Architectural Design - IV” course / subject of semester V - Third year Architecture, AND has secured passing grade in “BA21041S Architectural Design - III” course / subject of semester IV - Second year Architecture

Learning Objectives:

After successful completion of this course, student should be able to:

To explore Idea of mass housing which strictly prevailing a model of apartment typology. It should explore new design styles and design issues discussed globally.

Mass Housing – Climate, interdependency, Density –

footprints, built and unbuilt relation, and understanding. Theory of mass housing and issues of policies related.

Detailed Syllabus:

1	Issues of Identity, Scale, Public spaces, Context, Grouping of buildings, Infrastructure for community formation etc. Site analysis with respect to surrounding environment, tradition, culture. Climatic considerations. Study of Contours.
2	Related Case Studies & defining guidelines in various contexts. Formatting design brief.
3	Conceptual explorations of character and selected style.
4	Urban neighborhoods, traditional and present day composition, structure, density, building use, built and unbuilt, building controls, urban infrastructure and services. . Considering structural solutions & materials for complex Architectural spaces. Considering use of mechanical vertical transport.
5	Finalization of Design Proposal. Highlighting the character of building as regards to style.

Studio Exercises suggested: Design of Complex function spaces preferably related to Housing complexes as decided by the Institute. Major Project based on above Modules with creative presentation of drawings & models

Recommended Reading:

1.	Ching, Francis D.K.; Architecture Form, Space and Order.
2.	C.M. Deasy -Design for Human Affairs.
3.	Rudofsky, Bernard; Architecture without Architects.
4.	Rasmussen, Steen Eiler; Experiencing Architecture
5.	Paul Lassau – Graphic Thinking for Architects and Planners.
6.	Peter Pearce, Structure in Nature – Strategy for Design.
7.	Peter Streens, Patterns in Nature.
8.	Anthony Antoniadis - Poetics in Architecture: Theory of design
9.	Am heim Rudolf, Visual Thinking.
10.	Jonathan A. Hale - Building Ideas. An introduction to Architectural Theory.
11.	William J.J. Synectics: The Development of Creative Capacity
12.	Elvadine R. Seligmanann : Reaching Students through Synectics: A Creative solution
13.	Jyoce, Bruce and Weil Marsha .Synectics Involving creative thought

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BA21062S: Building Construction and Technology - VI

Course Information:

Sem.	Code	Course	L	S	T	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
VI	BA21062S	Building Construction Technology -VI	0	4	4	SV	4	200	40	0	40	0	120

Learning Objectives:

After successful completion of this course, student should be able to:
Understand materials used in construction, principles of construction, building systems. Issues related to Remodeling, Repairs, and Temporary structures. Issues related to coordination between the detailing and execution on site.

Detailed Syllabus:

1.	Building repairs & remodeling: Temporary supports like formwork, strutting, scaffolding, and shoring. Procedure of carrying out repairs, construction details for building services. Additions and alterations to existing Residential, Commercial, Industrial buildings.
2.	Issues of clear coordination in construction to relate between the design and construction, causes for failures in performance. Case studies to illustrate coordination and cases of failure.
3.	Construction details of a balcony slab in an auditorium/ cinema theatre, raker beam details & RCC slab details (showing general reinforcement), longitudinal section of an auditorium.
4.	Advanced construction techniques: Retaining structures and various practices in their construction. Advanced construction techniques: Construction of manufactured systems for curtain walls, skylights. Advanced Machinery in construction.

Recommended Reading:

1.	Elements of structure by Morgan
2.	Building Construction by Punmia
3.	Building Construction by Bindra, Arora
4.	Building Construction by Sushil Kumar
5.	Structure in Architecture by Salvadori
6.	Building construction by McKay W. B., Vol. 1 to 4
7.	Construction of Building by Barry, Vol. I to V
8.	Construction Technology by Chudley R. Vol. I to IV
9.	Building Construction Illustrated – Ching Francis D.K.
10.	Elementary Building Construction by Michell

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BA21063S: Working Drawing - II

Course Information:

Sem.	Code	Course	L	St	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
VI	BA21063S	Working Drawing - II	1	2	3	STW	3	150	30	0	30	0	90

Learning Objectives:

After successful completion of this course, student should be able to:
Understand importance of making detailed working drawings/shop drawings for carrying out work of construction.
Importance of Precision, comprehensive information and detailed drawings required to furnished for cost estimating as well as execution of work.

Detailed Syllabus:

1.	Understanding purpose of making Working drawing and details. Importance of 2D – orthographic projection drawings. Understanding Construction details, Sequence of construction. Drawing Conventions, precision / accuracy, scales for overall drawings and details. To be simple and easily read / understood by contractors, workmen and possibly illiterate labor also. Importance of incorporating complete information like Measurements, Dimensions, Material, other annotation of information etc. Dimension styles and conventions. Getting acquainted with terminology like centerline, section planes, centerline plan, setting out, different schedules etc. Printing to scale and size of sheets of paper.
2.	Making a complete set of Working drawing and details of an R.C.C. frame type structure (A design project of previous semester). All sequential / stage wise plans, sections, elevations, large scale details. Details of Internal & external Water supply & sanitation layouts including sewage disposal, etc. Electrical layouts, Air conditioning ductwork layout showing all details.
3.	Making a Building Permission drawing (Municipal drawing) for submission to Authorities, of Architectural Design project of previous semester.

Recommended Reading:

1.	Elements of structure by Morgan
2.	Structure in Architecture by Salvadori
3.	Building construction by McKay W. B., Vol. 1 to 4
4.	Construction of Building by Barry, Vol. I to V
5.	Construction Technology by Chudley R. Vol. I to IV
6.	Building Construction Illustrated – Ching Francis D.K.
7.	Elementary Building Construction by Michell

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BA21064T: Culture & Built Form-VI (Contemporary Architecture)

Course Information:

Sem.	Code	Course	L	S	T	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
VI	BA21064T	Culture & Built Form-VI (Contemporary Architecture)	2	0	2	TH	2	100	10	20	10	60	0

Learning Objectives:

After successful completion of this course, student should be able to:
 Identify architectural and structural systems based on categorization of materials and technology developed, geographical, Contextual, social and cultural and political history of the place

Detailed Syllabus:

1.	<ul style="list-style-type: none"> • Art Nouveau, Art and Crafts, Industrial Romanticism, eclecticism, Works of Architects: Gustav Eiffel: Birth of Art Nouveau – New Style, Maison de l’Art, early version of Modern Architecture, Public-Consumer relationship, impetus to Art and Crafts, scope in all art forms, Features: Asymmetry, curve, free flowing, organic forms, stained glass, motifs, advent of Steel and Henry Labrouste -Great Exhibitions of 1851 and 1889 and their contributions. Pioneers of these movements - Joseph Paxton, Gustav Eiffel, Anguste Perret, Tony Garnier, Antonio Gaudi, Victor Horta, Hector Guimard and their Creations • Modernism: Introduction to modernism, Social Cultural and Political scenario, WWI, Parallel Movements: Suprematism, Constructivism, De-Stilj, Cubism, Functionalism and Organic Architecture Theory. Their impact on Architecture. Design Principles by Masters: Adolf Meyer, Frank Lloyd Wright, Walter Gropius, Ludwig Mies Van der Rohe. Schools of Art and Architecture. Corbusier’s – Purism, Bauhaus • Art Deco and International Style: Post world- war Political and Social Scenario, Works of Henry Russel and Philip Johnson, Architectural characteristics: rectilinear forms, Planer surfaces, Minimalistic exterior, no-ornamentation, Philosophy of Less is More: Spread and Development of International style under Le Corbusier, Louis-I- Kahn, I M Pei, Lucio Costa • Post Modernism: The age of enlightenment, New age of Reasoning and, ideologies of progress. Opposition to Modernist Ideologies: Form Follows Function, less is More, Inside –Outside, and Ambiguity in Architecture. Characteristics of Post-Modernism: Disjunctive Form, Amplified design process, Rhizome Surfaces and classicism in Post-Modernism. Modern Architecture: Early, high and Late. Syntax and semantics in Architecture, Masters works: Robert venture, Michael Graves, Charles Moore, Philip Johnson, James Sterling, Peter Eisenman, John Hejduk, and terry Farrell
2.	<ul style="list-style-type: none"> • Architecture 1970 Onwards - Structuralism, Metabolism, Brutalism Works of Norman Foster etc: Brutalism, Structuralism, Metabolism, Formation of CIAM, Typology of Buildings-Low and High Rise, Spatial configurations in Architecture, Surrealism & Constructivism- Glass Steel (Russian), Works of Vladimir Tatlin. Metabolism: Pioneering Architects: Kiyonori Kikutake, Kenzo Tange, Noriaki “Kisho” Kurokawa, Masato Otaka, Fumihiko Maki. Kenzo Tange: Tokyo Plan. Brutalism: Inspiration from Le Corbusier, extensive work: Alison and Peter Smithson • Philosophies of India Architects - Social history post-Independence: Indian Architecture since Independence. Works of some master architects from the post-independence period like Dr. B.V. Doshi, A.P. Kanvinde, Charles Correa, Raj Rewal, Anant Raje, J.A. Stein, A. Kanvinde. Impact of Chandigarh planning on Indian Architecture. Contributions of Laurie Baker & Louis Kahn in India • Regionalism & Critical Regionalism: Regionalism in India and Outside India, Works and Ideologies of Kenneth Framptom, Charles Correa, Hassan Fathy, Alvaro Siza, Geoffery Bawa, Alvar Alto, Tadao Ando, William Curtis, Rapheal Moneo, Raesm Badran • De-Constructivism – Works of Architects: Characterized by ideas of fragmentation, an interest in manipulating ideas of a structure surface or skin, non-rectilinear shapes which serve to distort and dislocate some of the elements of architecture such as structure and envelope. Works of Frank O – Gehry, Daniel Libelskind, Rem Koolas, Zaha Hadid • Late 20th –Century Supertall Towers: Mechanism of Super Tall Structures, Planning, Floorplate schematics, Intervention of development control and regulations, Climatological factors and Loading, Trend in façade designing of High rise, detailed study of contemporary High rises

Recommended Reading:

1. Architecture for the Poor – Hassan Fathy

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2.	Architecture in India- Electa Moniteur
3.	A concise History of modern architecture in India – Jon Lang
4.	Delhi and its neighbourhood
5.	Indian canvas - Rerendered
6.	Details of modern Architecture – Edward. R Ford
7.	Building 300 years of design, engineering & Construction – Adam Addas
8.	Ballard B and Rank V.P "Material for Architectural Design " Lawrence King 2006
9.	Frampton K " Modern Architecture - A Critical History" 3rd edition Thames & Hudson 2002
10.	Gossel P and Lenthauser G. "Architecture in the 20th century" vol 1 & 2 Taschen

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BA21065S: Human Settlement Planning

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
VI	BA21065S	Human Settlement Planning	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to:

To initiate thinking towards interface between architecture, landscape architecture and urban planning. To sensitize the students about the concept of public realm, understanding of the city as a three dimensional entity and perception of spaces at multiple scales. Familiarize students with the implementation processes through various statutory and non-statutory guidelines.

Detailed Syllabus:

1.	<ul style="list-style-type: none"> Brief introduction to human settlements as expression of civilizations. Introduction and Scope Relationship between Architecture. Brief review of the evolution of the urban design as a discipline. Basic principles and theories. Broad understanding of urban forms and spaces at various spatial scales through examples from historic cities.
2.	<ul style="list-style-type: none"> Urban Design and Sustainability - Sustainability concept, Relationship of urban design with economic, environmental and social sustainability. Urban renewal and urban sprawl. Concepts of Transit Oriented Development, Compact City, Healthy City and Walkable City. Urban Design Implementation Urban design and its control Types of planning instruments, structure plans, master plans and local area plans and zoning guidelines Design communication and role of public participation.

Recommended Reading:

1.	Larice, M. and Macdonald, E. Ed. (2013). The Urban Design Reader. 2nd Ed. The Routledge Urban Reader Series, Abingdon, Oxon: Routledge.
2.	Carmona, M., Heath, T., Oc, T. and Tiesdell, S. (2010). Public Places Urban Spaces. Oxford: Architectural Press.
3.	Marshall, S. (2009). Cities design and evolution. New York: Routledge.
4.	Lang, J. T. (2005). Urban Design: A Typology of Procedures and Products. Oxford: Elsevier/Architectural Press.
5.	Moughtin, C., Cuesta, R., Sarris, C. and Signoretta, P. (2003). Urban Design - Methods and Techniques. Oxford: Architectural Press.
6.	Watson, D., Plattus, A. and Shibley, R. (2003). Time-Saver standards for urban design. New York: McGraw Hill.

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BA21066T: Building Services - IV

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
VI	BA21066T	Building Services - IV	2	0	2	TH	2	100	10	20	10	60	0

Learning Objectives:

After successful completion of this course, student should be able to:

Understand Environmental control systems - **Building Acoustics, Noise control, Fire safety & Hazard management**

Detailed Syllabus:

1.	<ul style="list-style-type: none">• Building Acoustics. Sound- Basic theory, Physics of sound, human perception, various units of measurement of sound.• Behavior of sound in enclosed & open field- Travel, reflection, refraction, reverberation, attenuation of sound. Design for good hearing conditions- Calculations for actual reverberation time, coefficients of absorption, Sabine's theory, correction & acoustical Treatment for desired conditions. Construction details
2.	<ul style="list-style-type: none">• Noise control - behavior of sound for noise control, measure & designing for correction. Construction details, codes of practice like NRC, etc.• Fire safety & hazard management: Causes of occurrence spread of fire. Concept & understanding of Fire rating system for various materials & spaces. Warning systems, Fire extinguishers. Study of fire regulations, space planning for fire prevention & control. Fire escapes, Fire doors, fire staircase – lifts etc. Means of escape.

Recommended Reading:

1.	Leslie, Doelle. Environmental Acoustics. McGraw Hill.1972
2.	Kundsen, V.O. & Harris, C.M. Acoustical designing in Architecture
3.	Egan, M. David. Architectural Acoustics. McGraw-Hill
4.	Mehta, Madan, Johnson, J., Rocafort, J. Architectural Principles and Design
5.	National Building Code of India

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BA21067S: Landscape Design-II

Course Information:

Sem.	Code	Course	L	S	T	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
VI	BA21067S	Landscape Design-II	1	2	3	STW	3	150	30	0	30	0	90

Learning Objectives:

After successful completion of this course, student should be able to:
 To introduce the students to the discipline of Landscape architecture & its relevance to Architecture. To gain an insight into the changing relationship of human with nature, to develop the understanding of site and site planning. To develop the skill of integrated design of open and built spaces.

Detailed Syllabus:

1.	<ul style="list-style-type: none"> • Meaning and experience of a landscape, Aesthetics and Imagery of a landscape. Relationship of humans and nature. How landscapes relate to land, nature, environment and place. How the scales & conception of landscapes evolve over time, Sense of place in the landscape. • Site survey and appraisal, Site Inventory checklist – Topography, vegetation, soil, hydrology, climate etc. Principles of site planning, Design issues in site planning and siting of buildings. Integrating the built and open spaces. • Macro and micro-climatic considerations in landscape architecture. Effect of climate on landscape and various components of landscape on the micro climate. Relationship between climate and landscape and architecture.
2.	<ul style="list-style-type: none"> • Study and detailing of hard and soft landscape Hardscape - Materials used in civil component. Softscape - Trees, Shrubs, Ground cover, Indoor plants, Creepers. Importance and use of these elements in designed Landscape. • Functional requirement of landscape design as per Residential, Commercial, Industrial occupancy and relationship with user group. • Introduction to services related to Landscape like: Plumbing, electrical, Sewage, management, Irrigation • Introduction to Landscaping of City level Parks, plazas, squares, Stadiums / Playgrounds, Roof Garden, Vertical Garden, Avenue / Roadside Plantation, Indoor Landscape, Landscape on wastelands

Recommended Reading:

1.	Appleton. (1996). The Experience of Landscape. Wiley.
2.	Geoffrey, and Jellico, S. (1987). The Landscape of Man. Thames and Hudson.
3.	Holl, G. P. (2006). Questions of Perception Phenomenon logy of Architecture. Richmond :
4.	Laurie. (1986). An Introduction to Landscape Architecture. Elsevier.
5.	Lynch, K. (1962). Site Planning. Cambridge: The MIT Press.
6.	Reid, G. (2002). Landscape Graphics. New York: Watson-Guptill.
7.	Simonds, J. O. (2006). Landscape Architecture: A Manual of Land Planning and Design.

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BA21068S: Electives – VI (A) Architectural Design in Steel

ANY ONE OF THE ELECTIVES (A) or (B)

Course Information:

Sem.	Code	Course	L	S	T	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
VI	BA21068S (A)	Electives – VI (A) Architectural Design in Steel	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to:
 Understand building design using steel, design issues relevant to key stages of the design process, particularly at the concept design stage. Understand structural benefits of steel.

Detailed Syllabus:

1.	Introduction, History, Examples of Projects, Advantages - ability to create architecturally interesting or long-span solutions combined with savings in the construction programme and its light weight leading to reduced loading on foundations.
2.	Definition of the physical features of the building using steel as main material; its viability, Functional requirements of the space, shape, height, Architectural or other key visual features, planning grid, External appearance in relation to the cladding options.
3.	Factors that influence design decisions with reference to typology and function, Commercial viability, efficient use of space and Architectural importance of the project in relation to the use of expressive structural solutions.
4.	Introduction to stages from design consideration to completion, with reference to Modelling, analysis, fabrication and procurement.

Recommended Reading:

1.	Steel Structures, Hasan Al Nageim
2.	Design of Steel Structures, Dr. P. Dayaratnam
3.	Steel Design by William Segeui
4.	Structure as Architecture, Andrew Charleson
5.	Design of Steel Structures, S. Duggal
6.	Architecturally Exposed Structural Steel, Terri Meyer Boake.

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BA21068S: Electives – VI (B) Contemporary Processes in Architecture

ANY ONE OF THE ELECTIVES (A) or (B)

Course Information:

Sem.	Code	Course	L	S	T	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
VI	BA21068S (B)	Electives – VI (B) Contemporary Processes in Architecture	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to:
Understand impact of science and technology on modern day architecture. Understanding integration of computer aided design, fabrication and construction. Eliminating geometric constraints imposed by traditional drawing process.
Understanding various aspects of Digital architecture and facilitation of abstract ideas.

Detailed Syllabus:

1.	<ul style="list-style-type: none">• Works of contemporary architects who have illustrated the influence of the digital media in evolving architecture.• Theories of media and its influence on the perception of space – Virtual Reality – Augmented Reality.
2.	<ul style="list-style-type: none">• Introduction to Digital architecture involving computationally based processes of form origination and transformation.• Introduction to computational concepts like Topological architecture, Isomorphic architecture, Animate architecture, Metamorphic architecture, Parametric architecture and Evolutionary architecture

Recommended Reading:

1.	Contemporary Architecture and the Digital Design Process By Peter Szalapaj
2.	Architecture, technology and process by Chris Abel
3.	Architecture and Computers: Action and Reaction in the Digital Design Revolution By James Steele

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BA21069S: Electives – VII (A) Graphic & Product Design

ANY ONE OF THE ELECTIVES (A) or (B)

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
VI	BA21069S (A)	Electives – VI (B) Graphic & Product Design	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to:
 Read, understand and demonstrate in the language of graphic design. Basic understanding about Product and Industrial design process.

Detailed Syllabus:

1.	<ul style="list-style-type: none"> • Introduction, History & Future of Graphic Design • Development of aesthetic sensibility towards design. Elements and principles of design. • Use of Technology, softwares for Graphic design.
2.	<ul style="list-style-type: none"> • Introduction to product design, design by evolution & design by innovation, essential factors, morphology of design, primary design phases and flow charting • Standardization, industrial design organisation, role of aesthetics in product design, functional design practice; strength, stiffeners and rigidity considerations in product design • Primary, machining & non-traditional machining processes, manufacturing requirements in design of machine components, design for forging, pressed components, casting & machining, designing with plastics, rubber, ceramics & wood • Use of Computers for Form generation; Creativity techniques; product detailing and manufacture; exploratory mockup models for concept development

Recommended Reading:

1.	Stuart Trolley, Min: The New Simplicity in Graphic Design, 1960
2.	John Krull, Graphis Design Annual, 2017
3.	Timothy Samara, Making and Breaking the Grid, Second Edition, Updated and Expanded: A Graphic Design Layout Workshop
4.	Chitale & Gupta, Product Design & Manufacturing, PHI, 3rd edition
5.	Ulrich & Epinge, Product Design And Development
6.	M. Baxter, Product Design - Practical Methods for the Systematic Development of New Products, Chapman & Hall, 1995
7.	N. F. M. Roozenburg, J. Eekels, Product Design, Fundamentals and Methods, Willey Publications

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BA21069S: Electives – VII (B) Vernacular Architecture

ANY ONE OF THE ELECTIVES (A) or (B)

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
VI	BA21069S (B)	Electives – VI (B) Vernacular Architecture	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to:
 Develop an understanding of architecture, including settlements, landscapes and buildings as a cultural product shaped by various factors.
 Highlight the role of Vernacular Architecture & lessons useful in contemporary context - Connect the aspect of climate responsiveness and environment suitability of vernacular architecture to the ongoing design studio.

Detailed Syllabus:

1.	<ul style="list-style-type: none"> • Introduction to Vernacular- Definitions; Relevance; Role & scope of Vernacular Architecture; • Brief overview of the varied learnings from vernacular including Sense of Place, Spontaneity & variation, Control, Open Ended form Relationship, Symbols & Meanings. • Case studies: Study of vernacular architecture outside India specifically in varied climatic zones.
2.	<ul style="list-style-type: none"> • Study of vernacular and traditional architecture of India. • Study of examples like Courtyard wadas of Maharashtra, Nalukettu houses, Toda huts , Bhunga houses, Havelis of Rajasthan, Kath Khuni houses of Himalayan region, Pols of Ahmedabad etc.

Recommended Reading:

1.	Architecture without architects- Bernard Rudofsky
2.	Encyclopedia of vernacular architecture of the world- Paul Oliver
3.	The living house: an anthropology of architecture in South east Asia- Rexana Waterson
4.	Mud architecture of Indian Desert- Kulbhushan Jain
5.	Pattern books create an American Architecture- Janet Foster
6.	Himalayan Traditional Architecture- Omacanda Handa
7.	Himalayan Cities: Settlement Patterns, Public Places and Architecture – Pratyush Shankar
8.	Havelis: A Living Tradition of Rajasthan - Shikha Jain
9.	Tribal Architecture in India- Dr.O.P.J oshi
10.	Wooden Architecture of Kerala- Miki Desai
11.	Tribal Architecture in Northeast India- Rene Kolkman, Stuart Blackburn
12.	Maratheshahi Vastushilpa – Madhukar. S . Mate
13.	Temples, Wadas, and Institutions of Pune: A Legacy and Symbolism in Architecture. - G.K. Kanhere
14.	Courtyard Wada of Maharashtra- Rupa RajeGupta
15.	Maratha Architecture- Madhukar. S . Mate
16.	Haveli: Wooden Houses and Mansions of Gujarat- V.S.Pramar
17.	Traditional buildings of India- Ilay Cooper
18.	Invitation to Vernacular Architecture: A Guide to the Study of Ordinary Buildings and Landscapes- Thomas Carter & Elizabeth Cromley.
19.	House, Form & Culture- Amos Rappoport
20.	VISTARA – The architecture of India- Carmen Kagal.
21.	Built to meet needs. Cultural issues in vernacular architecture- Oliver Paul.

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FINAL Teaching - Evaluation Scheme for B. Arch (October 2021)

FOURTH YEAR B.ARCH

SEMESTER VII

Course Code	Subject / Course	L/w	S/w	T/w	C T	Cr	T M	CA1	MSE	CA2	ESE-P	ESE-SV/STW
BA21071S	Architectural Design VI	0	12	12	SV	12	600	120	0	120	0	360
BA21072S	Interior Design	0	4	4	SV	4	200	40	0	40	0	120
BA21073T	Professional Practice I	2	0	2	TH	2	100	10	20	10	60	0
BA21074S	Quantity surveying and Estimation	2	0	2	STW	2	100	20	0	20	0	60
BA21075T	Specification Writing	2	0	2	TH	2	100	10	20	10	60	0
BA21076S	Urban Design	2	0	2	STW	2	100	20	0	20	0	60
BA21077S	BIM	2	0	2	STW	2	100	20	0	20	0	60
BA21078S	Elective VIII(anyone) A. Digital Graphics & Art B. Advanced Computers	2	0	2	STW	2	100	20	0	20	0	60
BA21079S	Elective IX (anyone) A. Architectural Conservation B. Road safety and civic sense	2	0	2	STW	2	100	20	0	20	0	60
Total		14	16	30		30	1500					

SEMESTER VIII

Course Code	Subject / Course	L/w	S/w	T/w	C T	Cr	T M	CA1	MSE	CA2	ESE-P	ESE-SV/STW
BA21081S	Professional Training	6 Months / 1 Semester			SV	30	1500	0	0	0	0	1500
Total						30	1500					

Abbreviations:

L/w	Number of Clock Hours of Lectures per week for the Subject / Course
S/w	Number of Clock Hours of Studios per week for the Subject / Course
T/w	Total Number of Clock Hours per week for the Subject / Course
C T	Subject / Course Type: Theory (TH) or Studio Term Work (STW) or Studio Viva (SV)
Cr	Total Number of Credits allotted for the Subject / Course in the Semester
T M	Total Number of Marks allotted for the Subject / Course in the Semester
CA 1	Marks allotted for Continuous Assessment during the Semester before Mid Semester examinations the Subject / Course in the Semester
MSE	Marks allotted for Mid Semester examinations for the Subject / Course in the Semester
CA2	Marks allotted for Continuous Assessment during the Semester after Mid Semester examinations the Subject / Course in the Semester
ESE-P	Marks allotted for End of Semester examinations Paper for the Subject / Course in the Semester
ESE-SV/STW	Marks allotted for End of Semester examinations Studio Sessional work or Studio Viva for the Subject / Course in the Semester

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Detailed Content

FOURTH YEAR B. ARCH. - SEMESTER 7

BA21071S: Architectural Design - VI

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
VII	BA21071S	Architectural Design - VI	0	12	12	SV	12	600	120	0	120	0	360

Course Pre-requisite:

A Student will be able to attempt this course only if he / she has completed (attended the course; submitted the work) of “**BA21061S Architectural Design - V**” course / subject of semester VI - Third year Architecture, AND has secured passing grade in “**BA21051S Architectural Design - IV**” course / subject of semester V - Third year Architecture

Learning Objectives:

After successful completion of this course, student should be able to:
 Understand definition of campus formation and various parameters of organizing multiple typologies together.
 Design Agenda – **Campus Design**

Detailed Syllabus:

1	Campus Design – Principles of Campus Design – interaction both different built form functional zoning with site specification.
2	Formal introduction to the word called Site planning where it will introduce to the concept of zoning with respect to density, mapping, function etc.
3	Reflection, philosophy of ideology of particular situation in Architectural language.
4	Infrastructural assessment like electrical lighting, transport, communication at Campus scale for example Apple Parkway, Assembly building Bangladesh, IIT Kanpur, IIM Bangalore, Salk Institute etc.
5	Formulation of building guideline in the campus to set control over Built form.

Recommended Reading:

1	Kanvinde & Miller – Campus Design in India
2	Paul Spreirengen - Urban Design, the Architecture of Town & Cities.
3	Charles Jencks – Modern Movements in Architecture
4	Charles Jencks – Language of Post Modern Architecture
5	Robert Venturi – Complexities and Contradictions in Architecture.
6	Aldo Rossi – Architecture of the city.
7	Raseem Badran – Narrative of people & Places.
8	Edmond Beckon – Design of Cities
9	Petrick Geddes
10	Various monographs & periodicals

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BA21072S: Interior Design

Course Information:

Sem.	Code	Course	L	S	T	CT	Cr	T M	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
VII	BA21072S	Interior Design	0	4	4	SV	4	200	40	0	40	0	120

Learning Objectives:

After successful completion of this course, student should be able to:
 Visualization of space. Principles of Space planning. To learn Modulations of space through studio exercises.

Detailed Syllabus:

1	Definitions, concepts, themes and types of interior spaces. Behavioral psychology, perception and the related role of interior spaces. Designing the size and form of interior spaces using- activity analysis & ergonomics. The effect of enclosure fenestration, colour & lighting on perception of space. Application of scale, proportion to enhance the quality of space.
2	Designing of interior spaces using- activity analysis & ergonomics. Functional working of the space. Study of different layouts in the given space to analyze it's impact. Volume analysis.
3	Volume modulations and redefining the given space. Defining the space through lighting design. Application of colour & texture to modulate the space.
4	Study & application of various treatment methods & finishes.
Studio Exercise: Interior design of Residential / Commercial premises.	

Recommended Reading:

1	Francis D.K.Ching, Interior Design Illustrated
2	Rao M.Pratap-Interior Design Principles & Practice
3	Time Sever Standards for interior design and space planning
4	Syanne Slesin and Stafford Ceiff, Indian Style
5	Kurtich,Jhon and Eakin Garret-Interior Architecture
6	Gary Gordon, Interior Lighting For Designers
7	Steprt Devan Kness, Logan and Szebely, Introduction to Interior Design
8	Ahmed Kasu, Interior design

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BA21073T: Professional Practice - I

Course Information:

Sem.	Code	Course	L	S	T	CT	Cr	T M	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
VII	BA21073T	Professional Practice - I	2	0	2	TH	2	100	10	20	10	60	0

Learning Objectives:

After successful completion of this course, student should be able to:
Understand nature of Professional practice and code of conduct.

Detailed Syllabus:

1.	Architectural profession as a vocation. Comparison of architectural & trade union activities. History of architectural profession, its future, degeneration and up gradation. Social obligations of an Architect as professional, Clientele, Aspects and roles of architect and client and their relationship within the profession.
2.	Comparative study of different professions and also different roles and avenues within the profession of architecture. Future of professional directions. Code of conduct & ethics. Professional role: responsibilities and liabilities of architects and their indemnity (security against damages).

Recommended Reading:

1.	Handbook of Professional Documents - Council of Architecture publication
2.	Professional Practice - By Roshan H. Namavati
3.	Professional Practice in India - By Madhav G. Deobhakta
4.	Private Architectural practice – by Manrice E. Tayler
5.	Architectural Practice and Procedure – by Hamilton H. Turner.
6.	Professional Practice of Architecture by Prof. S.C.Garg & amp; Dr. Yogesh K. Garg

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BA21074S: Quantity surveying & Estimation

Course Information:

Sem.	Code	Course	L	S	T	CT	Cr	T M	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
VII	BA21074S	Quantity surveying & Estimation.	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to:
Understand quantity Survey and cost analysis so as to make estimates in the design process.

Detailed Syllabus:

1.	Estimation: Methods of Quantity surveying, Methods of recording measurements, computing quantities of different Items in a building from working drawings. Schedule of Quantities
2.	Rate and Cost Analysis: Methods of Analysis of rates of different materials. Estimation of Materials, Labour, Transportation, Profit etc. components with respect to the specifications, site conditions, etc. in analysis of rates. Rate Abstracts.

Recommended Reading:

1.	Estimating and Costing by Rangwala
2.	Professional Practice by R. H. Namavati
3.	Estimating and Costing by B. N. Dutta
4.	Civil Engineering Contracts and Estimates by B. S. Patil
5.	Estimating, costing, specification and valuation in civil engineering by M. Chakraborti
6.	Estimating and Costing by A.K. Upadhyay
7.	B.I.S 1200 - Part-I 1992. n.d.

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BA21075T: Specification Writing

Course Information:

Sem.	Code	Course	L	S	T	CT	Cr	T M	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
VII	BA21075T	Specification Writing	2	0	2	TH	2	100	10	20	10	60	0

Learning Objectives:

After successful completion of this course, student should be able to:
 Understand the nature of building specifications and contracts and its relevance to architectural practice.

Detailed Syllabus:

1.	Nature of specifications types of specifications -process oriented and performance specification. Constituents of specification -material qualities and proportions, labour - quality of inputs, tests and acceptance criteria. Mode of measurements; methods of structuring and writing specification, role of specifications in a total set of contract. Economic and quality implications of specifications. Tradeoff between ideal and realistic specifications. Nature of building contracts Tenders -calling, scrutiny and recommendations open and selective tender systems; two stage tender scrutiny process, Pretender qualifications and registrations of contractors
2.	Contracts (and sub contracts) between architect & client, between client and contractor (drafted by architect), Tenders, Conditions of contracts; obligations and responsibilities of clients, contractors and architects, Deposits, labor laws and obligations; disputes and settlement of disputes. Management of the contracts. Roles of Client, Consultant (coordinator of) Contractor/sub-contractor and their coordination by architect. Site supervision Role and responsibilities of Architect Contractor

Recommended Reading:

1.	Specification Writing for Architects & Engineers, By Donald A. Watson
2.	Specification Writing for Architects & Surveyors, By Arthur J. Wills
3.	Estimating, Costing, Specification & Valuation, By M. Chakraborty
4.	C.P.W.D. Specifications and schedule of rates

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BA21076S: Urban Design

Course Information:

Sem.	Code	Course	L	S	T	CT	Cr	T M	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
VII	BA21076S	Urban Design	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

To introduce urban design as a profession that sits at the crossroads of architecture, landscape architecture, and urban planning; To familiarize students with the concept of the public realm, the city as a three-dimensional entity, and the perception of spaces at various scales. Through various statutory and non-statutory guidelines, introduce them with the implementation processes.

Detailed Syllabus:

1.	<ul style="list-style-type: none"> Introduction and Scope Relationship between Architecture & Urban Design. Brief review of the evolution of the urban design as a discipline. Broad understanding of urban forms and spaces at various spatial scales. Elements of Urban Design -Organization of spaces and their articulation in the form of squares, streets, vistas and focal points, Image of the city and its components such as edges, paths, landmarks, street features. Special focus on streets; Expressive quality of built forms, spaces in public domain Typologies and Procedures -Concepts of public and private realm, Different types and procedures of urban design interventions their scale relationships, constraints and challenges of urban design in democratic versus authoritarian settings.
2.	<ul style="list-style-type: none"> Urban Design and Sustainability - Sustainability concept, Relationship of urban design with economic, environmental, and social sustainability. Urban renewal and urban sprawl. Concepts of Transit Oriented Development, Compact City, Healthy City and Walkable City.
<p>URBAN DESIGN EXERCISE - Conducting an urban design survey, Analysis of data, formulating urban design guidelines and drawings for an area - practical problem solving.</p>	

Recommended Reading:

1.	Larice, M. and Macdonald, E. Ed. (2013). The Urban Design Reader. 2nd Ed. The Routledge Urban Reader Series, Abingdon, Oxon: Routledge.
2.	Carmona, M., Heath, T., Oc, T. and Tiesdell, S. (2010). Public Places Urban Spaces. Oxford: Architectural Press.
3.	Lang, J. T. (2005). Urban Design: A Typology of Procedures and Products. Oxford: Elsevier/Architectural Press.
4.	Moughtin, C., Cuesta, R., Sarris, C. and Signoretta, P. (2003). Urban Design - Methods and Techniques. Oxford; Architectural Press.
5.	Watson, D., Plattus, A. and Shibley, R. (2003). Time-Saver standards for urban design. New York: McGraw Hill.
6.	Lynch, K. (1960). The image of the city. MIT Press.

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BA21077S: BIM

Course Information:

Sem.	Code	Course	L	S	T	CT	Cr	T M	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
VII	BA21077S	BIM	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to:
 Understand that BIM is used to collaboration - between engineers, owners, architects and contractors in a three dimensional environment (common data environment), and it shares information across these disciplines. BIM is the management of information through the whole life cycle of a built asset, from initial design all the way through to construction, maintaining and finally de-commissioning.

Detailed Syllabus:

1.	<ul style="list-style-type: none"> Introduction to Building Information Modeling. The advantages of using the software. Introduce various software's like Revit, Archicad, etc. Special Features of Revit Architecture Understanding Revit Elements Working in one model with many views Using Ribbon & Quick Access Toolbar (QAT) Using Project Browser. Working with project: Configure Project UNITS Settings Adding Levels Referring Layout with temporary dimensions Adding Columns. Modelling walls, doors and windows: Adding Walls Wall Properties and Types Using Modifying Tools Adding Doors and Windows all Joints Linking in revit: Linking AutoCAD Drawing Files Import Tips Create a Group.
2.	<ul style="list-style-type: none"> Modelling roof, ceiling & floor: Working with Roofs Working with Ceilings Working with Floors Working with stairs: Working with Stairs Adding Railings to Stairs Views, visibility & graphic controls: Hiding and Isolating objects in a model Displaying Objects Above-Below in Plan Views Documentation: Adding Schedule Views Modifying Schedule Views Exporting to AutoCAD Adding Text

Recommended Reading:

1.	BIM Handbook: A Guide to Building Information Modeling for Owners, Managers, Designers, Engineers and Contractors by Rafael Sacks, Chuck Eastman, Ghang Lee, Paul Teicholz
2.	Building Information Modeling for Dummies Book by David Philp, Paul Swaddle, and Stefan Mordue

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BA21078S: Electives – VIII (A) Digital Graphics & Art

ANY ONE OF THE ELECTIVES (A) or (B)

Course Information:

Sem.	Code	Course	L	S	T	CT	Cr	T M	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
VII	BA21078S (A)	Electives – VIII (A) Digital Graphics & Art	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to:
Gain knowledge in areas of Graphic Design, Web Development, Illustration, Photography, Digital Games and Animation involving video, image and vector editing using editing software; scripting; synchronization of sound with patterns generated; Presentation using voice over.

Detailed Syllabus:

1.	Introduction to Digital Graphics and Art through Principles of Design, Visual Composition and Computer applications.
2.	Introduction to imaging tool & techniques, Narrative Skills, Animation, Brand Communication.
3.	Digital sound design, Elements of video production, Visual effects & motion graphics, image and vector editing using editing software; scripting; synchronization of sound with patterns generated.

Recommended Reading:

1.	How to be an illustrator, by Darrel Rees
2.	Thinking Visually For Illustrators, by Mark Wigan
3.	Digital Art, by David Cousens
4.	Digital Design Now, by Awwwards
5.	Graphic Design Fundamentals, by Michael Beirut

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BA21078S: Electives – VIII (B) Advanced Computers

ANY ONE OF THE ELECTIVES (A) or (B)

Course Information:

Sem.	Code	Course	L	S	T	CT	Cr	T M	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
VII	BA21078S (B)	Electives – VIII (B) Advanced Computers	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

To study Advance computer techniques (Rendering). To understand use of computers as tool for modeling. To understand rendering techniques using softwares. Focus on 3D Drawing. Demonstrate the concepts of 3D Rendering methods and techniques through various architectural projects. Use computer as a tool to generate rendered 3D models

Detailed Syllabus:

1.	<ul style="list-style-type: none">• Architectural Rendering software• Introduction to Interface of software for Rendering and Printing.• Application of Materials, textures, Surroundings, lighting, Shadow etc. to generate realistic model.
2.	<ul style="list-style-type: none">• Computer generated imagery Rendering software• Introduction to Interface of software for Rendering and Printing.• Application of Materials, textures, Surroundings, lighting, Shadow etc. to generate realistic model.

Recommended Reading:

1.	Fundamentals Of Three-Dimensional Computer Graphics by Watt.
2.	Computer Aided Design guide For Architecture, Engineering And Construction by Aouad
3.	Architectural drawing: a visual compendium of types and methods; Rendow Yee; John Wiley and Sons, 2007
4.	Architectural Graphics; Francis D. Ching; John Wiley and Sons, 2009

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BA21079S: Electives – IX (A) Architectural Conservation

ANY ONE OF THE ELECTIVES (A) or (B)

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	T M	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
VII	BA21079S (A)	Electives IX (A) Architectural Conservation	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to:
 To develop the expertise in the field of Architectural conservation specifically catering to the regional context. To make architects aware of the holistic nature of the conservation practice. To equip architects with technical know-how required for Architectural Conservation.

Detailed Syllabus:

1.	<ul style="list-style-type: none"> History of Conservation movement. Principles of conservation, Degrees of interventions. Terms associated with conservation practice like rehabilitation, redevelopment, revitalization, regeneration, redevelopment, Role of UNESCO, other bodies. Study of Charters from Venice to Mexico. Introduction to historic structures and structural systems of India. Elements of historic structure as foundation, walls, floors, roof and structural behavior of the same. Identification of problems pertaining to each element. Study of traditional materials used in India. Process of their formation and extraction and properties.
2.	<ul style="list-style-type: none"> Fundamental theories and principles of documentation. Inventory formats and comparative study, Methods of documenting historic structures, areas, cities and region. Measured drawings of historic structures Methodology of identification and listing. Photography and photogrammetry. Systematic Study and analysis of historic Areas Identification of potential – cultural significance, Architectural vocabulary Traditional technology and materials. Identification of issues Study of existing legal framework. Preparation of conservation plan including short term and long term goals. Formation of conservation policy with holistic approach. Student will select one building of historic value and study the same for structural conservation along with appropriate reuse.

Recommended Reading:

1.	Technical Manual by Bernard Fieldon
2.	Charters by UNESCO
3.	Elements of structure – Morgan Reference Books
4.	Structural Systems – Cowan Henry J and Wilson Forrest
5.	Wood Technology in the design of structures – Hoyle Robert
6.	Stone – Nunn E
7.	Planning for conservation by Roger Kain
8.	Management Plans of world heritage sites
9.	A History of Architectural Theory – From Vitruvius to present day by Hanno-Walter
10.	A History of Architectural Conservation by Jukka Jokilehto
11.	Guidance on Heritage Impact Assessments for Cultural World Heritage Properties by ICOMOS
12.	Tender documents of heritage works
13.	Architecture of the city – Aldo Rossi
14.	PWD specifications

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BA21079S: Electives – IX (B) Road Safety & Civic Sense

ONE OF THE ELECTIVES (A) or (B)

Course Information:

Sem.	Code	Course	L	S	T	CT	Cr	T M	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
VII	BA21079S (B)	Electives – IX (B) Road Safety & Civic Sense	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

To introduce the concepts, Principles, tools and Aids of road safety and civic sense to the students. To acquaint them with the design and safety standards for roads. Also inculcate the practice of safe road behavior and civic sense among them.

Detailed Syllabus:

1.	Introduction to road safety: Road as an active space, Types of Users, User Behavior, Sensory Factors like Vision and Hearing in User Behavior. Types of Vehicles, Vehicle Characteristics, Type of Hazards.
2.	Typology of Roads: Components and Design: Road Classification, Design of Roads, Spatial Standards for the Cross-Section Design. Relationship between Road Design and Road Safety.
3	Intersections: Types of Road Intersections
4	Pedestrian Circulation and Barrier Free Design Requirement of Pedestrian Infrastructure, Barrier Free Design, Safety Provisions
5	Traffic Signs and Road Markings Type for Traffic Signs, Standards for Traffic Signs, Types of Road Markings.
6	Traffic Signals, Traffic Control Aids, Street Lighting
7	Nature and Types of Road Accidents Traffic Management Measures and their influence in Accident Prevention
8	Road Safety and Civic Sense Need for Road Safety, Category of Road Users and Road Safety Suggestions. Introduction to Concept of Civic Sense and its relationship to Road Safety
9	Traffic Regulations, Laws & Legislations Indian Motor Vehicles Act (Chapter VIII: Control of Traffic to be discussed in detail), Regulations Concerning Traffic: Cycles, Motor Cycles and Scooters, Rules for Pedestrian Traffic, Keep to the Left Rule, Overtaking Rules, Turning Rules, Priority Rules, Hand Signals, etc., Speed and Hazard Management. Penal Provisions, National Road Safety Policy, Central Motor Vehicle Rules, State Motor Vehicle Rules Introduction to Good Practices.

Recommended Reading:

1.	Introduction to Traffic Engineering, R Srinivasa Kumar
2.	Traffic Engineering and Transport Planning, LR Kadiyali
3.	Book on Road Safety Signage and Signs, Ministry of Road Transport and Highways, Government of India
4.	MORT&H Pocketbook for Highway Engineers, 2019 (Third Revision)
5.	Publications by UTTIPEC namely, Street Design Guidelines, UTTIPEC Guideline for Road Markings, UTTIPEC Guideline and Specification for Crash Barriers, Pedestrian Railing and dividers, UTTIPEC Standard Typical Crossing Design
6.	Street Design Standards as provided in TimesSavers, Neuferts etc.
7.	Publications by Indian Road Congress.

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FOURTH YEAR B. ARCH. - SEMESTER 8

BA21081S: Professional Training

Course Information:

Sem.	Code	Course	L	S	T	CT	Cr	T M	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
VIII	BA21081S	Professional Training	6 Months / 1 Semester			SV	30	1500	0	0	0	0	1500

Learning Objectives:

The student shall work at an Architect's office (Internship) as per the guidelines of CoA, and approved by the Institute, for duration of one semester. After successful completion of this course, student should be able to understand on-going construction work on sites, supervisory controls of an Architect in a Project.

Detailed Syllabus:

1.	Making presentation drawings for client presentations, and municipal approval drawings of projects undertaken in the office- of at least one project each, duly attested by the supervising architect.
2.	Visiting sites of ongoing projects undertaken by the office, photo documenting progress with appropriate descriptions, as per the directions of the supervising architect. Identifying various stages of work.
3.	Discussions, getting inputs from the Consultants on the ongoing projects undertaken by the office, documenting as per the directions of the supervising architect. Understanding the inputs to be given to the consultants and feedback from them.
4.	Visiting sites of ongoing projects undertaken by the office, photo documenting the progress of work. Understanding the impact of local conditions in the Design and method of execution of job / jobs.
5.	Understanding the basic working system of an architect's office, regularity in attendance, maintaining a daily log book of activities involved in the office, personnel & management and hierarchy of office staff.
6.	Prepare Working drawings & details of an Architectural project, under the guidance of supervising architect.

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FINAL Teaching - Evaluation Scheme for B. Arch (October 2021)

FIFTH YEAR B.ARCH

SEMESTER IX

Course Code	Subject / Course	L/w	S/w	T/w	CT	Cr	T M	CA1	MSE	CA2	ESE-P	ESE-SV/STW
BA21091S	Architectural Design VII	0	12	12	SV	12	600	120	0	120	0	360
BA21092S	Spatial Structures	1	5	6	SV	6	300	60	0	60	0	180
BA21093T	Professional Practice II	2	0	2	TH	2	100	10	20	10	60	0
BA21094S	Research Methodology Thesis Topic	2	2	4	STW	4	200	40	0	40	0	120
BA21095S	Entrepreneurship Skills for Architects	2	0	2	STW	2	100	20	0	20	0	60
BA21096S	Elective X (any one) A. Building Automation B. Transportation Planning	2	0	2	STW	2	100	20	0	20	0	60
BA21097S	Elective XI (any one) A. GIS B. Disaster Mitigation & Management	2	0	2	STW	2	100	20	0	20	0	60
	Total	11	19	30		30	1500					

SEMESTER X

Course Code	Subject / Course	L/w	S/w	T/w	CT	Cr	T M	CA1	MSE	CA2	ESE-P	ESE-SV/STW
BA21101S	Architectural Thesis	4	14	18	SV	18	900	180	0	180	0	540
BA21102T	Legal aspects in Architecture	2	0	2	TH	2	100	10	20	10	60	0
BA21103S	Project management	2	0	2	STW	2	100	20	0	20	0	60
BA21104S	Green Buildings & Rating System	4	0	4	STW	4	200	40	0	40	0	120
BA21105S	Elective XII (any one) A. New Media Design B. Artificial Intelligence in Architecture	2	0	2	STW	2	100	20	0	20	0	60
BA21106S	Elective XIII (any one) A. Sustainable Cities & Communities B. Building Performance & Compliance	2	0	2	STW	2	100	20	0	20	0	60
	Total	16	14	30		30	1500					

Abbreviations:

L/w	Number of Clock Hours of Lectures per week for the Subject / Course
S/w	Number of Clock Hours of Studios per week for the Subject / Course
T/w	Total Number of Clock Hours per week for the Subject / Course
CT	Subject / Course Type: Theory (TH) or Studio Term Work (STW) or Studio Viva (SV)
Cr	Total Number of Credits allotted for the Subject / Course in the Semester
T M	Total Number of Marks allotted for the Subject / Course in the Semester
CA 1	Marks allotted for Continuous Assessment during the Semester before Mid Semester examinations the Subject / Course in the Semester
MSE	Marks allotted for Mid Semester examinations for the Subject / Course in the Semester
CA2	Marks allotted for Continuous Assessment during the Semester after Mid Semester examinations the Subject / Course in the Semester
ESE-P	Marks allotted for End of Semester examinations Paper for the Subject / Course in the Semester
ESE-SV/STW	Marks allotted for End of Semester examinations Studio Sessional work or Studio Viva for the Subject / Course in the Semester

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Detailed Content

FIFTH YEAR B. ARCH. - SEMESTER 9

BA21091S: Architectural Design - VII

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
IX	BA21091S	Architectural Design - VII	0	12	12	SV	12	600	120	0	120	0	360

Course Pre-requisite:

A Student will be able to attempt this course only if he / she has secured passing grade in “BA21061S Architectural Design - V” course / subject of semester VI - Third year Architecture; AND “BA21071S Architectural Design - VI” course / subject of semester VII - Fourth year Architecture

Learning Objectives:

After successful completion of this course, student should be able to:
 To explore complex concepts. To understand building basic bye-laws in strict application. To understand services in building design. Design Agenda: **Design in an Urban context.**

Detailed Syllabus:

1.	Issues of Identity, Scale, Public spaces, Context, Grouping of buildings, Infrastructure for community formation etc. Site analysis with respect to surrounding environment, tradition, culture. Zoning, Climatic considerations. Study of Contours.
2.	Related Case Studies & studying building bye-laws. Formatting design brief. Research regarding selected style, Ism or philosophy. Understanding characters of selected style.
3.	Conceptual explorations of character and selected style. Detailing of all required Services. Suitable landscape design for the project.
4.	Urban neighborhoods, traditional and present day composition, structure, density, land use coverage, building controls, urban infrastructure and services. Considering structural solutions & materials for complex Architectural spaces. Considering use of mechanical vertical transport.
5.	Design Development. Consideration of bye-laws. Consideration of building related services. Finalization of Design Proposal. Highlighting the character of building as regards to style, Ism or philosophy. Complex Architectural spaces.
6.	Focuses on Detailed understanding of place and its character presented with various mappings of building age, Evolution of town, Nolli’s Plan, built & unbuilt, building use, building heights, street pattern, vegetation, land per cal. Ownership, services, community mapping, hierarchy of open spaces, connectivity.
7.	Sketch documentation of a particular issue.
8.	Various urban design theories related to particular issue of a place.
9.	Urban design program like ‘Urban insertion, extension, transformation etc. are possible program.
10.	This design program should discuss about city’s presence in the global context (or world view)
11.	By virtue of this design, discussion to be generated about critical identity of a place.
Studio Exercises suggested: Design of Complex function spaces as decided by the Institute. Major Project based on above Modules with creative presentation of drawings & models.	

Recommended Reading:

1.	Robert Sommer - Design Awareness.
2.	C.M. Deasy - Design for Human Affairs.
3.	Pierre Von Meiss - Elements of Architecture from form to place.
4.	Yatin Pandya - Elements of Space Making.
5.	Paul Lassau – Graphic Thinking for Architects and Planners.
6.	Peter Pearce, Structure in Nature – Strategy for Design.
7.	Peter Streens, Patterns in Nature.

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BA21092S: Spatial Structures

Course Information:

Sem.	Code	Course	L	S	T	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
IX	BA21092S	Spatial Structures	1	5	6	SV	6	300	60	0	60	0	180

Learning Objectives:

After successful completion of this course, student should be able to:
Understand Special structural forms resulting from special technologies.

Detailed Syllabus:

1.	Geometry of forms. Shell structures and their structural behavior. Space frames and Geodesic domes – derivation of form and construction.
2.	Folded plate structures. Design of simple V type of folded plates.
3.	Membrane structures. Form finding methods. Planar grid and curved grid structures. Development of simple forms and scale models.

Recommended Reading:

1.	Elements of structure by Morgan
2.	Structure in Architecture by Salvadori
3.	Building construction by McKay W. B., Vol. 1 to 4
4.	Construction of Building by Barry, Vol. I to V
5.	Construction Technology by Chudley R. Vol. I to IV
6.	Building Construction Illustrated – Ching Francis D.K.
7.	Elementary Building Construction by Michell

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BA21093T: Professional Practice - II

Course Information:

Sem.	Code	Course	L	S	T	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
IX	BA21093T	Professional Practice - II	2	0	2	TH	2	100	10	20	10	60	0

Learning Objectives:

After successful completion of this course, student should be able to:
Study Codes, laws, ethics and practice.

Detailed Syllabus:

1.	Office Organization & Management, Types of offices and their structure Nature of emerging practices. Roles of various personnel at different levels Principals/partners, Design staff, Supporting staff, Managerial staff, Employer-employee relationship, Training responsibility. Expense structure, Salaries, Overheads, Perks to employees & principals. Tax Planning for Architects.
2.	Development Controls: Building regulations, their purpose, formation with base, generalization, violation (interpretations) Professional Associations Types, Purpose, Role, Responsibilities - IIA & COA, Formation, Controls, Activities, Advantages & Lacunas. Professional ethics, Fee Structure, Architectural Competitions Architectural Education

Recommended Reading:

1.	Handbook of Professional Documents - Council of Architecture publication
2.	Professional Practice - By Roshan H. Namavati
3.	Professional Practice in India - By Madhav G. Deobhakta
4.	Private Architectural practice – by Manrice E. Tayler
5.	Architectural Practice and Procedure – by Hamilton H. Turner.
6.	Professional Practice of Architecture by Prof. S.C.Garg & Dr. Yogesh K.Garg

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BA21094S: Research Methodology Thesis Topic

Course Information:

Sem.	Code	Course	L	S	T	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
IX	BA21094S	Research Methodology Thesis Topic	2	2	4	STW	4	200	40	0	40	0	120

Learning Objectives:

After successful completion of this course, student should be able to:

To research a specific Issue (Architectural, Social, Environmental, Religious, Recreational, etc.) through readings, analysis & synthesis of readings, plan a study & write a paper based on literature review. Identify a research area that will enable student to undertake a thesis project. Gather, assess, record & apply relevant information, interpret information gathered & conclude with justification.

Identify area of research for thesis. Identify research papers based on literature available. Identify research methods.

Apply research methods in relevant case studies. Present paper in seminar. Present Synopsis for the Thesis Project to be undertaken in the next semester.

Detailed Syllabus:

1.	Research Methods. Understanding the applicability of various techniques of Architectural Research. Finalization of Research parameters. Discussion on required data collection. Case Studies Research Outcome. Draft Report. Finalization of Research parameters.
2.	Identifying scope of Architectural thesis. Discussion on required data collection. Identifying a specific issue & to address and resolve the same through Architecture. Presentation of synopsis for the proposed Thesis project.
The students shall produce a synopsis for Thesis topic, which will include details of related literature, Justification of the topic, summary of how they arrived at the selected topic for Thesis, and preferably identification of building typology to demonstrate the findings of the research.	

Recommended Reading:

1.	Babbie E.; The Practice of Social Research.
2.	Groat, L& Wang, D.; Architectural Research Methods
3.	Kothari C.R.; Research Methodology
4.	SanoffH.;Methods of Architectural Programming
5.	SanoffH.;Visual Research Methods in Design
6.	Handbook of Research Methodology by Dr.Shanti Bhushan Mishra and Dr.Shashi Alok

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BA21095S: Entrepreneurship Skills for Architects

Course Information:

Sem.	Code	Course	L	S	T	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
IX	BA21095S	Entrepreneurship Skills for Architects	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to:
Understand components associated with Architectural Entrepreneurship Ecosystem. Understand components involved in starting an architectural entrepreneurship and Types of Companies.

Detailed Syllabus:

1.	An introduction to entrepreneurship versus paid employment. The directions ahead for young professionals. Basic concepts of partnerships, proprietorships, private and public limited companies.
2.	Legal aspects of becoming an architectural entrepreneur in the Indian context. Statutory requirements and formalities, Insurance, taxation, documentation and records. Special statutes pertaining to the architectural profession
3.	Concept and setup of workspace – individual / shared workspace. Use of social media and marketing platforms to outreach for business.
4.	Setting up an establishment-capital and revenue studies, planning for business, review of strategy, tapping of lateral opportunities.
5.	Role of each component / service provider / agency in Entrepreneurship.
6.	Planning for the futuristic goals.

Recommended Reading:

1.	H.Nandan, Fundamentals of Entrepreneurship, PHI, 3rd Edition 2013
2.	Rajeev Roy, Entrepreneurship, Oxford, 2nd edition 2011

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BA21096S: Electives – X (A) Building Automation

ANY ONE OF THE ELECTIVES (A) or (B)

Course Information:

Sem.	Code	Course	L	S	T	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
IX	BA21096S (A)	Electives – X (A) Building Automation	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to:
Understand Concept and application of Building Automation and Management system. Design issues related to building automation and its effect on functional efficiency.

Detailed Syllabus:

1.	Introduction of Building Automation. Components of building automation system; HVAC, electrical, lighting, modern security system, alarm-system, fire-protection, inter-communication, monitoring devices, mechanical means of vertical and horizontal transportation etc.
2.	Integrated approach in design, maintenance and management system. Current trend and innovation in building automation systems.
3.	Impact of information Technology; Concept of artificial intelligence; Knowledge base and decision support systems.
4.	Application of expert system in building automation. Stages in development of expert system. Expert system application in architecture. Computerising building management information.
5.	System for hi-tech buildings.

Recommended Reading:

1.	Understanding Building Automation, Reinhold A. Carlson, Robert A. Di Giandomenico
2.	Building Automation systems A to Z, Phil Zito
3.	Web Based Enterprise Energy and Building Automation Systems, Barney L. Capehart
4.	Intelligent Building Control systems, Sandipan Mishra

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BA21096S: Electives – X (B) Transportation Planning

ANY ONE OF THE ELECTIVES (A) or (B)

Course Information:

Sem.	Code	Course	L	S	T	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
IX	BA21096S (B)	Electives – IX (B) Transportation Planning	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to:
Become aware of evaluation of Urban Structure, Transportation systems infrastructure and management.

Detailed Syllabus:

1.	Evaluation of Urban Structure Transportation systems: infrastructure and management, transportation systems and their types, design and operating characteristics, urban road hierarchy planning, engineering and management; Criteria for road and junction improvements, arterial improvement techniques.
2.	Transportation survey and studies: Study area definitions, surveys and their types, sampling methods, survey techniques; designing O-D and other Traffic and transportation surveys, programming and scheduling, processing of travel data, analysis and interpretation of traffic studies

Recommended Reading:

1.	Human Transit by Jarrett Walker
2.	Transport and Urban Development by David Banister
3.	Walkable City by Jeff Speck
4.	Transportation by Jonathan Lewis Gifford
5.	Bicycle Urbanism: Reimagining Bicycle Friendly Cities
6.	Movement in Cities: Spatial Perspectives On Urban Transport And Travel
7.	Image of the city : kelvin lynch
8.	Transportation Planning: Principles, Practices and Policies Book by G. J. Joshi, PRADIP KUMAR SARKAR, and Vinay Maitri
9.	TRANSPORTATION PLANNING Book by G. J. Joshi, PRABIR KUMAR SARKAR, and Vinay Maitri
10.	Sustainable Transportation Planning: Tools for Creating Vibrant, Healthy, and Resilient Communities
11.	Traffic and Transportation Planning by L.R. kadiali

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BA21097S: Electives – XI (A) GIS

ANY ONE OF THE ELECTIVES (A) or (B)

Course Information:

Sem.	Code	Course	L	S	T	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
IX	BA21097S (A)	Electives – XI (A) GIS	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to:
 Understand use of computers and software for geographic location and mapping of environment.

Detailed Syllabus:

1.	Geographic Information sciences: History, Domains for GIS, Definitions of GIS, Components of a GIS, Comparisons of various software, Hardware requirements, Digital cartography and conventional CAD. Data models and Data structure, Conceptual models of real world, entities or fields, Vector data models, Tessellation of continuous fields, raster data models, Use of models - Cadastre, Utility networks, land cover, soil naps, Introduction to data structure, Vector data structure and Raster data structures. Hierarchical database Structure, Network data structure, Relational data structure, object oriented database structure.
2.	Introduction to data input, data capture methods, digitization, rasterisation, attribute or feature code inputting, verification and editing methods. Creation of continuous surfaces and simple analysis of Environmental problems. Mountainous environment land-use studies. Introduction to Remote sensing and Environmental mapping. Growth and change in land - use. Comparison of land uses of different periods. Exercises in database query, distance and context operators, Cost distance and least cost pathways, Boolean operations on maps, remote sensed data explorations, supervised and unsupervised classification and principal component analysis.

Recommended Reading:

1.	George B. Korte, "The GIS Book ", Onword Press (Thomson learning), 5th Edition.
2.	M Anji Reddi, "Remote sensing & Geographical Information Systems ",BS Publication, Second Edition.
3.	Peter A. Burrough and McDonell, "Principles of Geographical Information Systems ", Oxford University Press, 1998.
4.	GIS tutorial by Wilpen L. Gorr
5.	Geographic Information Systems and Science by Paul A. Longley, Mike Goodchild, David J. Maguire, David W. Rhind
6.	GIS fundamentals by Paul Bolstad
7.	GIS for the urban environment by Juliana Maantay and John Ziegler
8.	A to Z GIS: An Illustrated Dictionary of Geographic Information System by Shelly Sommer

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BA18097S: Electives – XI (B) Disaster Mitigation & Management

ANY ONE OF THE ELECTIVES (A) or(B)

Course Information:

Sem.	Code	Course	L	S	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
IX	BA21097S (B)	Electives –XI (A) Disaster Mitigation & Management	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to:
Understand that prevention, preparedness and recovery can be overcome through proper management as well as Architectural intervention.

Detailed Syllabus:

1.	Disaster Management definition: The organization and management of resources and responsibilities for dealing with all humanitarian aspects of emergencies, in particular preparedness, response and recovery in order to lessen the impact of disasters. Types of Disasters: Natural disasters: including floods, hurricanes, earthquakes and volcano eruptions that have immediate impacts on human health and secondary impacts causing further death and suffering from (for example) floods, landslides, fires, tsunamis. Environmental emergencies: including technological or industrial accidents, usually involving the production, use or transportation of hazardous material, and occur where these materials are produced, used or transported, and forest fires caused by humans. Complex emergencies: involving a break-down of authority, looting and attacks on strategic installations, including conflict situations and war. Pandemic emergencies: involving a sudden onset of contagious disease that affects health, disrupts services and businesses, brings economic and social costs
2.	Remedies for disaster: Disaster prevention, Disaster preparedness, Disaster recovery. The Disaster Management Act. Architectural intervention to prevent and for remedial measures in case of any disaster like: Observance of Fire rules, Exits and requirement, etc.

Recommended Reading:

1.	Disaster Management in India -Challenges & Strategies by R.K.Dave
2.	Disaster Management by O.S. Dagur
3.	Disaster Management E-Book by Harsh K. Gupta
4.	Natural Hazards and Disaster by NCERT

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FIFTH YEAR B. ARCH. - SEMESTER 10

BA21101S: Architectural Thesis

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
X	BA21101S	Architectural Thesis	4	14	18	SV	18	900	180	0	180	0	540

Course Pre-requisite:

A Student will be able to attempt this course only if he / she has successfully completed (passed) and received passing grades in “**BA21091S Architectural Design VII**” course / subject of semester IX - Fifth year Architecture, “**BA21081S Professional Training**” course / subject of semester VIII - Fourth year Architecture and “**BA21094S Research Methodology Thesis Topic**” course / subject of semester IX - Fifth year Architecture.

Learning Objectives:

After successful completion of this course, student should be able to:
 Pursue an idea of research with depth of inquiry, criticality and logic and carry out an in-depth investigation of an area of architecture that he/she is interested in.

Detailed Syllabus:

1 To 14	<p>Thesis project is the culmination of the Undergraduate program in architecture. In thesis a student is expected to undertake an in-depth investigation of an area of architecture that he/she is interested in. These will be done with the help of a faculty guide. Two options offered in Semester 9 under the course Research Methodology Thesis Topic will be considered and one will be taken up as final design thesis project. The chosen project should demonstrate a student’s ability to work independently, decide what is important to him/her and schedule oneself to adhere to a time frame.</p> <p>Projects will be chosen within the following parameters: Project should have the potential for a valid relationship between Architecture and the city/environment; have the potential to probe issues of cultural continuity and the language of the present in the Indian context, reinterpreting tradition anew into contemporary statement. Be of approx. 3,000 to 5,000 sq. Mts. of built up area (not too large in scale because the project must be developed to design details and not too small to lack potential of requisite design complexities). If the project is larger, it should be possible to develop a part of it to required detail in consultation with faculty. Be real, but not necessarily a live project, and must have the potential to demonstrate ones strengths in terms of scope – capacity of the project.</p>
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Recommended Reading:

1.	Robert Sommer. -Design Awareness.
2.	C.M. Deasy -Design for Human Affairs.
3.	Pierre Von Meiss -Elements of Architecture from form to place.
4.	Yatin Pandya- Elements of Space Making.
5.	Paul Lassau – Graphic Thinking for Architects and Planners.
6.	Peter Pearce, Structure in Nature – Strategy for Design.
7.	Peter Streens, Patterns in Nature.
8.	Anthony Antoniadis - Poetics in Architecture: Theory of design
9.	Am heim Rudolf, Visual Thinking.
10.	Jonathan A. Hale -Building Ideas. An introduction to Architectural Theory.
11.	William J.J. Synectics: The Development of Creative Capacity
12.	Elvadine R. Seligmanann : Reaching Students through Synectics: A Creative solution
13.	Jyoce, Bruce and Weil Marsha .Synectics Involving creative thought

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BA21102T: Legal Aspects of Architecture

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
X	BA21102T	Legal Aspects of Architecture	2	0	2	TH	2	100	10	20	10	60	0

Learning Objectives:

In performing professional duties as an Architect we have to take cognizance of various Acts. We must ensure that all the rules and regulations are strictly followed in the solutions – designs and services we offer. Many times we also need to advice the client on various issues. In order to be correct in our actions, we have to be generally aware of these Acts and study certain provisions of these acts that are connected with actions and advice we offer. On completion of this course, the students will be able to understand the importance of studying the relevant provisions and sections of these Acts.

Detailed Syllabus:

1.	Maharashtra Land Revenue Code - sections on conversion Agriculture to Non Agriculture Use of land, etc. Transfer of Property, Easements Act. Relevant sections of Maharashtra Factories Act & Rules, Maharashtra Prevention & Control of Pollution Act & Rules, Maharashtra Fire Act & Rules.
2.	Environment Protection Act – Coastal Zone Regulations of Central Government & Maharashtra Government. Arbitration & conciliation Act – sections relevant to settlement of disputes. Real Estate Regulatory authority Act (RERA) & MahaRERA Act – sections relevant to Architects role & responsibilities. Consumer Protection act.

Recommended Reading:

1.	Law Relating to Intellectual Property Rights by Virendra Kumar Ahuja
2.	The Maharashtra Land Revenue Code , 1966 by Sunil Dighe
3.	The Factories Act, 1948 (with the Maharashtra Factories Rules, 1963) by S.D. Puri
4.	Law & Practice of Alternative Dispute Resolution in India by Anirban Chakraborty
5.	Environment (Protection) Act, 1986 by Lawmann's
6.	A hand book of Environmental protection act: Environmental protection act by Dr. Hemant Pathak
7.	The Real Estate (Regulation And Development) Act, 2016
8.	Architects act 1972 by Council of Architecture

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BA21103S: Project Management

Course Information:

Sem.	Code	Course	L	S	T	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
X	BA21103S	Project Management	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to:
 Get an introduction to the competencies and skills for planning and controlling projects and understanding interpersonal issues that drive successful project outcomes. This course guides students through the fundamental project management tools and behavioral skills necessary.

Detailed Syllabus:

1.	Basics of Project Management: Introduction, Need for Project Management, Project Management Knowledge Areas and Processes, The Project Life Cycle, The Project Manager (PM), Phases of Project Management Life Cycle, Project Management Processes, Impact of Delays in Project Completions, Essentials of Project Management Philosophy, Project Management Principles.
2.	Project Identification and Selection: Introduction, Project Identification Process, Project Initiation, Pre-Feasibility Study, Feasibility Studies, Project Break-even point. Project Planning: Introduction, Project Planning, Need of Project Planning, Project Life Cycle, Roles, Responsibility and Team Work, Project Planning Process, Work Breakdown Structure (WBS). PERT and CPM: Introduction, Development of Project Network, Time Estimation, Determination of the Critical Path, PERT Model, Measures of variability, CPM Model, Network Cost System.

Recommended Reading:

1.	Elements of structure by Morgan
2.	Structure in Architecture by Salvadori
3.	Building construction by McKay W. B., Vol. 1 to 4
4.	Construction of Building by Barry, Vol. I to V
5.	Construction Technology by Chudley R. Vol. I to IV
6.	Building Construction Illustrated – Ching Francis D.K.
7.	Elementary Building Construction by Michell
8.	Construction Project Management - K.K. Chitkara
9.	Construction Management - P.K Joy.
10.	Techniques in Planning and controlling construction projects. - Hira N. Ahuja
11.	Projects Planning by Prasanna Chandra
12.	Construction Engineering & Management by Girija K. IIT Delhi

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BA21104S: Green Buildings & Rating System

Course Information:

Sem.	Code	Course	L	S	T/w	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
X	BA21104S	Green Buildings & Rating System	4	0	4	STW	4	200	40	0	40	0	120

Learning Objectives:

After successful completion of this course, student should be able to:
 Understand concept of Green design or Sustainable design is the 'creation of buildings which are energy-efficient healthy, comfortable, flexible in use and designed for long life'. Green design should have a minimal impact on the environment, both in terms of products and materials used in the construction but in the functionality of the building.

Detailed Syllabus:

1.	Understanding concept of Green design or Sustainable design. Energy-efficiency. Minimal impact on the environment, both in terms of products and materials used in the construction but in the functionality of the building.
2.	Conceptual problems Diminishing returns, Unsustainable investment, Waste prevention, Negative Effects of Waste, Waste prevention strategies, Loss of Biodiversity.
3.	Understanding principles of Green Design like: Low-impact materials, Energy efficiency, emotionally durable design, Design for reuse and recycling, Targeted durability, not immortality, should be a design goal, Material diversity in multicomponent products.
4.	Design impact measures for total carbon footprint and life-cycle assessment for any resource, Sustainable design standards and project design guides, Bio mimicry - "redesigning industrial systems on biological lines, Service substitution - shifting the mode of consumption from personal ownership of products to provision of services, Renewable resource, Robust eco-design.
5.	A brief introduction to various rating systems prevalent like GRIHA, LEED (India), BCA Green Mark Scheme (Singapore), Beam (Hong Kong), BREEAM (Eu, UK), CASBEE (Japan), Green Star (South Africa), Pearl Rating Systems for Estidama (UAE), etc.

Recommended Reading:

1.	GRIHA; Griha Manual, Vol 1 to 5, TERI Publication
2.	IGBC Manuals, CII Publication
3.	LEED Manuals
4.	ECBC Manual
5.	ECBC User Manual
6.	Whole building life cycle assessment by Frances Yang
7.	Textbook of Environmental Studies by Erach Bharucha

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BA21105S: Electives – XII (A) New Media Design

ANY ONE OF THE ELECTIVES (A) or (B)

Course Information:

Sem.	Code	Course	L	S	T	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
X	BA21105S (A)	Electives – XII (A)New Media Design	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, students will learn the fundamental principles, techniques and technologies of visual communication and become familiarized with the tools and processes necessary to execute graphic design projects from concept to production.

Detailed Syllabus:

1.	<ul style="list-style-type: none"> Principles of Digital Communications :- Make strategic use of technology tools for academic purposes Find and evaluate information online, connect and collaborate with others Develop critical thinking about media consumption and creation, and ethical use of technology Recognize different media formats, resolution and outputs Demonstrate fundamental concepts of photography and videography Demonstrate fundamental concepts of composition as they relate to visual communications
2.	<ul style="list-style-type: none"> Design Basics :- Demonstrate knowledge of the basic principles and elements of graphic design Become familiar with graphic design terminology Understand and implement the design process in problem solving Successfully combine text and symbols to express meaning and convey information Produce graphic design solutions targeted to a specific message, audience and format Develop fundamental drawing skills to create thumbnails, roughs, and comps Recognize and evaluate graphic design work through group analysis discussions and critiques
3.	<ul style="list-style-type: none"> Digital Imaging :- Acquire and demonstrate knowledge of Illustrator, Photoshop and InDesign Develop a personal sense of aesthetics through visual thinking Create, edit and post-process digital images Demonstrate advanced knowledge of design elements and apply them to solve design problems Develop critical introspection of visual work through group discussion and critiques Plan and develop a project in which they explore new and emerging technologies in the industry Define a personal brand and professional identity and produce a portfolio website

Recommended Reading:

1.	Design Fundamentals for New Media by James Gordon Bennett
2.	Principles of digital communication by Robert G. Gallager
3.	Graphic Design for Architects: A Manual for Visual Communication by Karen Lewis
4.	Screen: Essays on Graphic Design, New Media, and Visual Culture by Jessica Helfland, John Maeda
5.	New Media Design by Tricia Austin, Richard Doust

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BA21105S: Electives – XII (B) Artificial Intelligence in Architecture

ANY ONE OF THE ELECTIVES (A) or (B)

Course Information:

Sem.	Code	Course	L	S	T	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
X	BA21105S (B)	Electives – XII (B) Artificial Intelligence in Architecture	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course:

Students understand the basic introductory applications of Artificial Intelligence in Architectural Design and fabrication of various components.

Detailed Syllabus:

1.	Introduction to Artificial intelligence in architecture. Digital Buildings.
2.	Introduction to Hybrid creativity in architecture, Collaborative robotic platform, Machine learning system of streamlining external aesthetic and cultural influences in architecture, Generative architectural form finding and fabrication, Interactive intelligence. Smart building technologies with data analytic.

Recommended Reading:

1.	Architecture in Age of AI by Ar. Neil Leach
2.	Architectural Intelligence by Ar. Neil Leach
3.	The Routledge Companion to AI by Imdat

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BA21106S: Electives – XIII (A) Sustainable Cities & Communities

ANY ONE OF THE ELECTIVES (A) or (B)

Course Information:

Sem.	Code	Course	L	S	T	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
X	BA21106S (A)	Electives – XIII (B) Sustainable Cities & Communities	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, students will understand various issues like climate change, resource depletion etc., concept of sustainability and sustainable development, low impact construction practices, life cycle costs and alternative energy resources.

Detailed Syllabus:

1.	Current scenario of development and its impacts, concepts- such as ecology, climate change, resource depletion. Introduction to term sustainable development, history of sustainable development, sustainable development goals, etc.
2.	Various aspects of sustainability- Social, Environmental and Economical. Sustainable site planning, low impact design, climate responsive architecture, bio mimicry, water and energy efficiency, social and economic equity
3.	Sustainable communities and cities- Sustainable urban planning and design, wellbeing of people- physical, ecological, economic, social, health and equity factors. Introduction to Terminology- Sustainable urbanism and its history. Elements of sustainable urbanism- Compactness, sustainable corridors, pollution prevention, high performance buildings and infrastructure, clean energy mechanism.
4.	Introduction to various rating systems available for sustainable cities and communities- LEED ND, IGBC green townships, villages and cities.

Recommended Reading:

1.	LEED ND- LEED for neighbourhood development published by USGBC.
2.	IGBC green townships manual.
3.	IGBC green cities manual
4.	IGBC green villages manual
5.	Related Acts, of Centre or State Govt. of India.
6.	Our common future: Report of the World Commission on Environment and Development, 1987 oxford university press.

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BA21106S: Electives – XIII (B) Building Performance & Compliance

ANY ONE OF THE ELECTIVES (A) or (B)

Course Information:

Sem.	Code	Course	L	S	T	CT	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
X	BA21106S (B)	Electives – XIII (B) Building Performance & Compliance	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course:
Students will gain basic knowledge of Building systems and Energy efficient design options that impact indoor environment qualities.

Detailed Syllabus:

1.	Introduction. Basics of thermal comfort, indoor air quality, daylight & windows and how these relate to optimal building system design. Energy consumption in buildings.
2.	Impact of changes in building envelope on indoor environmental qualities. Energy simulation tools, analysis and Building performance assessment.
3.	National Building Code (NBC) and Energy Conservation Building Code (ECBC) of India to provide minimum requirements for energy efficient design and construction of buildings; various compliance approaches.
4.	Building Envelope; Comfort Systems; Lighting systems; Electrical and renewable energy systems.

Recommended Reading:

1.	Energy Principles in Architectural Design by Edward Dean.
2.	Building Performance Simulation for Design and Operation, Hensen, JLM
3.	ASHRAE Fundamentals handbook, 2013
4.	National Building Code (NBC)
5.	Energy Conservation Building Code (ECBC) of India
6.	Climate and Architecture, Torben Dahl.