	FINAL Teaching - Evaluation Scheme for B. Arch (October 2021)											
	SECOND YEAR B.ARCH											
				S	EMESTER	III						
Course	Subject / Course	L/w	S/w	T/w	СТ	Cr	тм	CA1	MSE	CA2	ESE-	ESE-
Code		_			a <i>i</i>						Р	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	2	0	2	STW	2	100	20	0	20	0	60
	Architecture											
	B. Art in Architecture											
	Total	13	17	30		30	1500					
							•					•
	1			SI	MESTER	IV						
Course	Subject / Course	L/w	S/w	T/w	СТ	Cr	тм	CA1	MSE	CA2	ESE-	ESE- sv/stw
BA210415	Architectural Design III	0	10	10	SV	10	500	100	0	100	0	300
BA210415	Ruilding Construction	0	10	10	50	10	500	100	U	100	U	500
BA210423	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	2	0	2	STW	2	100	20	0	20	0	60
	Design with Glass											
	B. Theory of Design											
	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
СТ	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
ТМ	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
CAI	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
CAZ	Subject / Course in the Semester
ESE-P	Marks allotted for End of Semester examinations Paper for the Subject / Course in the Semester
ESE-	Marks allotted for End of Semester examinations Studio Sessional work or Studio Viva for the Subject
SV/STW	/ Course in the Semester

SECOND YEAR B. ARCH. - SEMESTER 3

BA21031S: Architectural Design - II

Course Information:

Sem.	Code	Course	L	S	T/w	СТ	Cr	ΤM	CA 1	MSE	CA2	ESE-Paper	ESE- SV/STW
Ш	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
Stu 1 r	udio Exercises suggested: Design of Multi-function spaces as decided by the Institute. no Minor Project (can be a Time problem)

1 no Major Project (Dwelling) based on above Modules with creative presentation of drawings & models.

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. Synectics: The Development of Creative Capacity
10	Climate Responsive Architecture
11	Architects monograms & monographs
12	Pattern Language
13	21 notes for 21st Century - Rafael Moneo

BA21032S: Building Construction and Technology - III

Course Information:

Sem.	Code	Course	L	S	T/w	СТ	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
Ш	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 Silding window with 2/3 runners.						
2.	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. 						
2	• R.C.C. Slabs-One way, two ways, Continuous, Cantilever etc.						
5	 R.C.C. members -Chajjas, Pardis, Walls, Loft, Porch, Pergola. 						
	 R.C.C. Staircases -Doglegged, Spine beam, Open well, Folded type etc. 						
4	• Temporary supports like formwork, strutting, scaffolding.						

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

BA21033T: Building Materials - III

Course Information:

Sem.	Code	Course	L	S	T/w	СТ	Cr	ΤM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
Ш	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.	• 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.	 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.

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

BA21034T: Culture & Built Form - III

Course Information:

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

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

BA21035T: Theory of Structure - III

Course Information:

Sem	Code	Course	L	S	T/w	СТ	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
Ш	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.	•	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.	•	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.

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

BA21036T: Building Services - I

Course Information:

Sem.	Code	Course	L	S	T/w	СТ	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
Ш	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.	•	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 systemof 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 unitsfor wash-hand basins, kitchen sinks, shower units, baths etc. Internal plumbing layouts, determination of pipe sizes for desired distribution.
2.	•	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 Refuge & 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

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

BA21037S: Architectural Drawing & Graphics - III

Course Information:

Sem.	Code	Course	L	S	T/w	СТ	Cr	ΤM	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.

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

BA21038S: Climatology

Course Information:

Sem.	Code	Course	L	S	T/w	СТ	Cr	ТМ	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
Ш	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.	 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.	 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

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.

BA21039S: Electives – III (A) Barrier Free Architecture

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

Course Information:

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

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 concent of "Design for All" or "Universal Design". Understanding principles of Universal design –							
1.	onderstanding the concept of Design of Air of Oniversal Design . Onderstanding principles of Oniversal 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.							

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

BA21039S: Electives – III (B) Art in Architecture

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

Course Information:

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

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.	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.	 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
S e	tudio 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

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, MAHARASHTRA 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	Туре	Cr	ТМ	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
Stu	dio Exercises suggested: Design of Single function public building space as decided by the Institute.
1 n	o Minor Project (can be a Time problem)
1 n	o Major Project based on above Modules with creative presentation of drawings & models.

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 - Synetics Involving creative thought
13	Complexity & Contradiction - Robert Venturi
14	Architecture of the city – Aldo Rossi
15	Site planning – Kevin Lynch

BA21042S: Building Construction and Technology - IV

Course Information:

Sem.	Code	Course	L	S	T/w	СТ	Cr	ΤM	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

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

BA21043T: Building Materials - IV

Course Information:

Sem.	Code	Course	L	S	T/w	СТ	Cr	ΤM	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.	 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.	 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.

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

BA21044T: Culture & Built Form - IV

Course Information:

Sem.	Code	Course	L	S	Т	СТ	Cr	ТМ	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.	The Wonder that was India by A.L. Basham
2.	Spiro Kostof "History of Architecture"

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

BA21045T: Theory of Structure - IV

Course Information:

Sem.	Code	Course	L	S	Т	СТ	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.	•	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 factors, introduction to moment distribution factors, 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.	•	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 sections Designing & detailing the bolted connections, design of simple welded connections.

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

BA21046T: Building Services - II

Course Information:

Sem.	Code	Course	L	S	T/w	СТ	Cr	ΤM	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:

	Afte Unc	er s ders	uccessful completion of this course, student should be able to: stand Environmental control systems – Lighting, Illumination & Electrical Services .
D	eta	ile	d Syllabus:
	1.	٠	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

	•	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.	•	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.

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

BA21047S: Surveying & Leveling

Course Information:

Sem.	Code	Course	L	S	T/w	СТ	Cr	ТМ	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)
2.	Of site information. 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
	scales and complexity of information. Degrees of accuracy and errors. Inquiry of Infrastructure available on site.

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

BA21048S: Environmental Lab and its Application in Architecture

Course Information:

Sem.	Code	Course	L	S	T/w	Туре	Cr	ТМ	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:

- 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).
- 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.

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

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	СТ	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
IV	BA21049S	Electives – IV (A) Architectural	2	0	2	STW	2	100	20	0	20	0	60
	(A)	Design with Glass											

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.

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

BA18049S: Electives – IV (B) Theory of Design

Course Information:

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

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.	•	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.	•	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.	•	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.	•	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.	•	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.

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 Wallschlacgerm & Cynthia Busic- Snyder, McGraw Hill, New York