

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, MAHARASHTRA
DETAILED SYLLABUS – BACHELOR OF ARCHITECTURE (B. Arch) 2019-20

Important notes:

1. An attempt is made to let the detailed content to be 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 three topics offered. His / her choice of the topic from amongst the three topics listed should be made at the beginning of the semester and conveyed to the Controller of Examinations of the University.
6. However the student may choose to attend more than one topics if he / she desires in an effort to acquire more knowledge. Also Institutes may offer topics other than mentioned in the syllabus and students may attend these extra classes voluntarily.
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 (December 2018)												
SEMESTER I												
Course Code	Subject / Course	L/w	S/w	T/w	CT	Cr	T M	CA 1	MSE	CA2	ESE-P	ESE-SV/STW
BA18011S	Basic Design	0	10	10	SV	5	250	50	0	50	0	150
BA18012S	Building Construction Technology -I	1	4	5	SV	3	150	30	0	30	0	90
BA18013T	Building Materials -I	2	0	2	TH	2	100	10	20	10	60	0
BA18014T	Theory of Structure-I	2	0	2	TH	2	100	10	20	10	60	0
BA18015S	Architectural Drawing and Graphics-I	1	2	3	STW	2	100	20	0	20	0	60
BA18016S	Model Making	0	4	4	STW	2	100	20	0	20	0	60
BA18017T	Culture & Built Form-I	2	0	2	TH	2	100	10	20	10	60	0
BA18018S	Elective I (Any One from Below)											
	(A) Communication Skills	2	0	2	STW	2	100	20	0	20	0	60
	(B) Sketching											
	(C) Computer Basics											
	Total	10	20	30		20	1000					

SEMESTER II												
Course Code	Subject / Course	L/w	S/w	T/w	CT	Cr	T M	CA 1	MSE	CA2	ESE-P	ESE-SV/STW
BA18021S	Architectural Design I	0	10	10	SV	5	250	50	0	50	0	150
BA18021S	Building Construction Technology-II	0	6	6	SV	3	150	30	0	30	0	90
BA18022T	Building Materials -II	2	0	2	TH	2	100	10	20	10	60	0
BA18023T	Theory of Structure-II	2	0	2	TH	2	100	10	20	10	60	0
BA18024S	Architectural Drawing and Graphics-II	1	2	3	STW	2	100	20	0	20	0	60
BA18025T	Environmental Science	1	2	3	TH	2	100	10	20	10	60	0
BA18026T	Culture & Built Form-II	2	0	2	TH	2	100	10	20	10	60	0
BA18027S	Elective II (Any One from Below)											
	(A) Photography	2	0	2	STW	2	100	20	0	20	0	60
	(B) Advanced Computers											
	(C) Anthropometry											
	Total	10	20	30	0	20	1000					

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

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ESE- Marks allotted for End of Semester examinations Studio Sessional work or Studio Viva for the Subject / Course
SV/STW in the Semester

Detailed Content

First Year B. Arch. - Semester 1

BA18021S: Basic Design

Course Information:

Sem	Code	Course	L	St	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
1	BA18011S	Basic Design	0	10	10	SV	5	250	50	0	50	0	150

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 grammar 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

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BA18012S: Building Construction and Technology - I

Course Information:

Sem	Code	Course	L	St	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
1	BA18012S	Building Construction Technology -I	1	4	5	SV	3	150	30	0	30	0	90

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. Uncoursed 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

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BA18013T: Building Materials - I

Course Information:

Sem	Code	Course	L	St	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
1	BA18013T	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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BA18014T: Theory of Structure-I

Course Information:

Sem	Code	Course	L	St	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
1	BA18014T	Theory of Structure-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:

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 a abutting beam as a Point Load Support Reactions. For Simply Supported Beams and Cantilevered Beams only. Loading limited to Point Loads and U.D.L only 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.
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BA18015S: Architectural Drawing and Graphics-I

Course Information:

Sem	Code	Course	L	St	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
1	BA18015S	Architectural Drawing and Graphics-I	1	2	3	STW	2	100	20	0	20	0	60

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 PundalikVaze
7.	Water Colour by MilindMulik
8.	Colour Pencil by Rahul Deshpande & Gopal Nandurkar
9.	Engineering Drawing : N.D.Bhatt

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BA18016S: Model Making

Course Information:

Sem	Code	Course	L	St	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
1	BA18016S	Model Making	0	4	4	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.
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BA18017T: Culture & Built Form-I

Course Information:

Sem	Code	Course	L	St	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
1	BA18017T	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:
 Architecture is a cultural context & an expression of the under laying value systems of Culture. Society & Culture has its co-relation to built form. There are Levels of social organization & evolution of various social groups over time. Human habitat should be recognized through natural and man-made environment. 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"> • 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 –Introducing concepts of culture and civilization. Stone Ages, Neanderthal, Paleolithic, Neolithic, Mesolithic periods. Hunter gatherer shelter and settled farming. Settlement locations – River Banks, valleys, fertile soil. 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: Urbanization in the fertile crescent – Sumerian , Babylonian, Assyrian, and Persian culture. Salient features of Ziggurats and their development – White Temple, Ziggurat of Ur, Urnammu and Khorsabad. Generic Temple Layout - Temple Oval and Khafaje, Palace Complex/Citadel of Khorsabad, Nebuchadnezzar’s Babylon, Persepolis. Egyptian Civilization- 4000 BCE: Landscape and culture of ancient Egypt. Religion and Rituals, Beliefs and practices and its impact on Architecture. Salient features of important buildings. Temples & temple complexes - Cult Temple and Mortuary Temple : Temple of Ammon Ra, Karnak- Temple of Abu Simbel(rock-Cut), Mastaba – development and typical components, Pyramids – Complex of Zoser, Pyramid of Cheops and Cephren, Standard mortuary complex layout of pyramids
2.	<ul style="list-style-type: none"> • Early Civilizations (3500 B.C E)- Indus valley: 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: Janapadas, rise of Mahajanapadas, Magadha. Architectural treaties and writings : Vedas, Upanishads, Brahmanas, Aranyakas, Mahabharata, Ramayana. Village & Dwellings culture, Vedic-primitive dwelling, pillars, Stupas, gateways. Architectural features Prominent Sites: Inamgaon in Maharashtra, Vajji in Bihar, Study of vedic panels of gateway No.2 Sanchi. • Yellow valley civilization – 3500 BCE: China - Chinese culture and Social system – Banpo. • Meso American Civilisation: Olmec Culture – 1500 BCE to 400 BC

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.	Sanjeev Sanyal – Land of seven rivers.

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BA18018S: Electives – I (A) COMMUNICATION SKILLS

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

Course Information:

Sem	Code	Course	L	St	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
1	BA18018S	Electives – II (C) Communication Skills	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 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:

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BA18018S: Electives – I (B) SKETCHING
 ANY ONE OF THE ELECTIVES (A), (B), or (C)

Course Information:

Sem	Code	Course	L	St	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
1	BA18018S	Electives – I (B) Sketching	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 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:

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BA18018S: Electives – I (C) COMPUTER BASICS

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

Course Information:

Sem	Code	Course	L	St	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
1	BA18018S	Electives – I (C) Computer Basics	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to:
 Acquaint students with Computers. Use computers for word processing, spreadsheets and as a tool for drawing. To learn various software. Develop skills of computer aided drafting.

Detailed Syllabus:

1.	Basics of Computers, operating systems. Introduction to Simple word processing, spreadsheets software.
2.	Introduction and use of Computer aided drafting (CAD) software. 2D Drawing using CAD software. Model space , Paper space, Parametric Blocks, Attributes, Templates, Drafting and Printing, Printing to the scale.

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
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DETAILED SYLLABUS – BACHELOR OF ARCHITECTURE (B. Arch) 2019-20**

First Year B. Arch. - Semester 2

BA18021S: Architectural Design - I

Course Information:

Sem	Code	Course	L	St	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
1	BA18021S	Architectural Design - I	0	10	10	SV	5	250	50	0	50	0	150

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. 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.
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 (Say about 100.00 Sqm.)	

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

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BA18022S: Building Construction and Technology - II

Course Information:

Sem	Code	Course	L	St	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
1	BA18012S	Building Construction Technology -I	0	6	6	SV	3	150	30	0	30	0	90

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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BA18023T: Building Materials - II

Course Information:

Sem	Code	Course	L	St	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
1	BA18023T	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, Manglore 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 ConstructionMaterials – M. V. Naik
8.	Civil Engineer’s Hand Book – Khanna
9.	Building materials by Rangwala

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BA18024T: Theory of Structure-II

Course Information:

Sem	Code	Course	L	St	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
1	BA18024T	Theory of Structure-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.
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BA18025S: Architectural Drawing and Graphics-II

Course Information:

Sem	Code	Course	L	St	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
1	BA18025S	Architectural Drawing and Graphics-II	1	2	3	STW	2	100	20	0	20	0	60

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 PundalikVaze
7.	Water Colour by Milind Mulik
8.	Colour Pencil by Rahul Deshpande & Gopal Nandurkar

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BA18026S: Environmental Science

Course Information:

Sem	Code	Course	L	St	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
1	BA18026S	Environmental Science	1	2	3	TH	2	100	10	20	10	60	0

Learning Objectives:

<p>After successful completion of this course, student should be able to: Understand the relation and influence of climate and environment on Architecture. Be able to present Design solutions relevant to the Climate and Environment.</p>
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Detailed Syllabus:

1.	Meaning of the term Environment, Climate and Weather, Micro and macro climate. Climate as one of the major driving factor. Human comfort. Components of climate – Temperature, humidity, wind, Fresh air, Light. Factors affecting climate- Geo-location, Earth’s movement around Sun, Seasons, Sun-path, winds currents, topography. Bio-Climatic Approach, Thermal Comfort - definitions and concepts, Relation of climatic elements to comfort, The Bio-Climatic Chart & its applications. Natural Ventilation – climatic zones, passive methods of achieving Natural Ventilation. Orientation of buildings.
2.	Natural Light: Factors affecting Natural Light: Geo-location, Earth’s movement around Sun, Sun-path, Azimuth & Altitude of Sun. Sun angle, Passive methods of allowing/preventing Natural light into buildings. Orientation of buildings, shading devices. Understanding terms like: Daylight, daylight factor, sky luminance, daylight harvesting, etc.

Recommended Reading:

1.	An Introduction To Building Physics by Narashimhan
2.	Manual Of Tropical Housing And Building – Part I – Climatic Design by O.H. Koenigsberger
3.	Housing Climate & Comfort by M.Evans
4.	Man, Climate And Architecture, Applied Science, Banking Essex by B. Givoni
5.	Climatic Design by Donald Watson
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BA18027T: Culture & Built Form-II

Course Information:

Sem	Code	Course	L	St	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
1	BA18027T	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:

Architecture is a cultural context & an expression of the underlying value systems of Culture. Society & Culture has its co-relation to built form. There are Levels of social organization & evolution of various social groups over time. Human habitat should be recognized through natural and man-made environment. To have an understanding of factors that 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"> CLASSIC CIVILIZATION PERIOD - Greek Architecture (2700 BCE to 146 BCE): Aegean civilization's - Minoan and Mycenaean cultures. Palace of Knossos, Treasury of Atreus, Lion Gate. Greek – Culture and landscape of Greece. Greek democracy, city planning, Evolution of City states and their character. 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 HITTITE PERIOD (1600 to 500 BCE), ETRUSCAN PERIOD (750 BCE - 90 BCE), CLASSIC CIVILIZATION PERIOD : Roman Architecture (509 BCE to 393 CE): 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, eg, Pozzolana, Stone Masonry, Arch, Vault, Dome, Architectural characters and orders. Salient features of important buildings – Forum, Theatre, Thermae, Villas, Temples, Circus and Aqueducts. Jainism and Buddhism (Rock Cut – 300 BCE to 1200CE): Introduction to new religion and ideas. Architectural treaties and writings : Theravada, Hinayana, Mahayana. Evolution of Building typology – Chaitya, Viharas. Prominent Sites- Barabar Hills, Udaygiri & Khandgiri caves, Maharashtra, Nalanda and Taxila. Temple cities of Jain and their Forms & Arts E.g. Mount Abu, Girnar.
2.	<ul style="list-style-type: none"> Mauryan Empire (323 BCE to 185 BCE): Introduction to Mauryan empire, life and culture, important rulers: Chandragupta Maurya, Bindusara, Ashoka, Post Maurayan empire - Rulers Shungas, Kanvas, Indo Greeks, Shakas, Kushanas, Satvahanas, trade through silk route. Architectural Treaties and Writings : Arthashastra, Buddhacharita, Jatakas. Architectural features: stupas, rock edicts, pillar edicts. Prominent Sites : Sanchi stupa, Rock edicts: Maski, Kaushambi, Jaugada, Dhauli etc, Pillar edicts : Lauriya, Bummidei, Rampurva etc. Ancient towns: Girnar, Sarnath etc. Evolution of Hindu temple Architecture: Form of worship, Ritual, Symbolism, Philosophy and Social importance of temples. Brahminical resurgence. Gupta Empire (50 CE to 650 CE): Introduction to Gupta empire, life and culture, important rulers, life and culture Architectural Treaties and Writings : Meghduta. Architectural features: Ajanta caves, Iron pillar in Mehrauli, Bhitragaon temple and Deogarh temple, Hindu and Buddhist temples at Sarnath. Harshavardhana Era: Introduction to new religion and ideas. Architectural Treaties and Writings : Harshacharita. Architectural features: Gandhara and Mathura school of art, temples, cave temples and shelters. INDO ARYAN or NAGARA STYLE: Kalinga architecture. Dravidian Style: Brief – political, Social and Cultural impact. Early Chalukyan Period(459 CE - 750 CE),Pallavas (600 - 900 CE), Rashtrakutas (750 CE to 973 CE). Prominent Sites Ellora- Rock cut , Pallava: Ratha Temple Mahabalipuram Pattadakal, Badami-Rock cut, Ladkhan, Durg-Aihole, Temple complex, Kailashnatha at Ellora

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.	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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BA18028S: Electives – II (A) PHOTOGRAPHY

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

Course Information:

Sem	Code	Course	L	St	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
1	BA18028S	Electives – I (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 encyclopaedia of Photography, Focal press
3.	Basic Photography, M.J.Langford, Focal press
4.	Advanced Photography (Vol-1 and Vol -2), M.J.Langford, Focal press
5.	Creative Colour Photography Techniques- Marshall Cavendish
6.	Digital Photography in Available Light- Essential Skills, Mark Galer, Focal Press
7.	The Art of Digital Photography, John Hedgecoe, DK Ltd, UK
8.	Mastering Digital SLR Photography, David D.Bush, Thomson
9.	Understanding Exposure, Bryan Peterson, Amphoto Books
10.	Learning to see creatively, Bryan Peterson, Amphoto Books
11.	The Art of Photography : An approach to Personal Expression, Rocky Nook
12.	The Photographer's Eye, Michael Freeman, Focal Press
13.	Architectural Photography, Adrian Schulz, Rocky Nook
14.	The Beginners Photography Guide, DK

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BA18028S: Electives – II (B) ADVANCED COMPUTERS
ANY ONE OF THE ELECTIVES (A), (B), or (C)

Course Information:

Sem	Code	Course	L	St	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
1	BA18028S	Electives – II (B) Advanced Computers	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to:
Use computers to create 2D and 3D images. Create 3D objects in CAD software. Use other Solid modeling software.
Complex 3D views.

Detailed Syllabus:

1.	<ul style="list-style-type: none"> • Introduction to Solid modeling in AutoCad or similar software. Creating 3D objects- commands, parameters, render, etc. • Other software like Sketch-up, etc. used for solid modelling. Generating complex shapes and 3D forms, rendering.
2.	<ul style="list-style-type: none"> • Introduction to Vector Graphics Software like Corel draw, Inkscape etc. Generating images, using these software. • Introduction to Image manipulation and processing software like Photoshop, GIMP, Illustrator. Making use of these software for enhancing presentations.

Recommended Reading:

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BA18028S: Electives – II (C) ANTHROPOMETRY

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

Course Information:

Sem	Code	Course	L	St	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
1	BA18028S	Electives – II (C) Anthropometry	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to:
Understanding human physical variation with racial and psychological traits. Study systematic measurement of the physical properties of the human body, primarily dimensional descriptors of body size and shape and thus appropriating the requirement of physical space for an activity in Architectural intervention.

Detailed Syllabus:

1.	Study of measurement of the human body. Study of human physical variation with racial and psychological traits. Study of variation in the measurements of body measurements like: Height, weight, organs, parts of the body, etc.
2.	Recording variations in the actual physical measurement of a men and women. Identify the average measure for use in deciding measurements of furniture, clothes, etc. Making study models to understand the requirement of physical space for an activity.

Recommended Reading:

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