



APJ ABDUL KALAM
KERALA TECHNOLOGICAL UNIVERSITY

Syllabus for I & II Semester
B.Arch Degree 2016

as on 01.07.2016

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SEMESTER I

Course No.	Course Name	L-T-S-P/D	CREDITS	Year of Introduction
AS101	INTRODUCTION TO ARCHITECTURE	2-0-1-0	3	2016
Course Objectives To give an insight to the students about understanding and analyzing architecture as a curious craft and its timeless ways of existence. The course tries to lay a foundation for a general understanding of Architecture through analyzing the fundamental principles spanning the education, the profession, the art, the science, and the current spirit of Architecture, making the student encounter a broad survey of vocabularies and conceptual processes. This course should become a prelude to learning the History of Architecture and culture of civilizations.				
Syllabus Origin of Architecture - Etymology of the Word 'Architecture', understanding Architecture as Identification of Place - Culture and architecture - Architectural space and rules of architectural geometry - Principles of composition in Architecture - Vernacular architectural form.				
Expected Outcome By the end of the course the student is expected that the students acquire the skills required to interpret a work of architecture and to evaluate, identify, and analyze artistic and technological expression of Architectural forms. To instill visual and formal analysis of architecture in the minds of students. To enhance the sketching, written and communication skills of students.				
Reference Books <ul style="list-style-type: none"> • Bernard Rudofsky; Architecture without Architects; Doubleday & Company, Inc. Garden city, Newyork; 1964 • Hazel Conway and Rowan Roenisch; Understanding Architecture; Routledge Taylor and Francis Group, 2005. • James C. Snyder, Introduction to Architecture, McGraw-Hill, 1979 • Jonathan A Hale; Building Ideas – An introduction to Architectural Theory; John Wiley & Sons Ltd. England.;2000 • Leland M Roth; "Understanding Architecture: Its Elements, History and Meaning"; Craftsman House; 1994. • Patrick Nuttgens,"The Story of Architecture FROM ANTIQUITY TO • Simon Unwin, Analysing Architecture; Routledge Publicaions, Taylor and Francis. 2014. • THE PRESENT", H.F.Ullmann Pub: 1983 				

Course Plan			
Module	Contents	Hours	Sem Exam Marks
I	Origin of Architecture, Etymology of the Word 'Architecture'. Architecture as Identification of Place, Natural form, Man-made form, Architectural arte-fact, Fundamentals of Architecture, Architecture and culture.	6	15%
II	Architecture as idea, Elements that influence the architectural space, Rules of architectural geometry, Basic Elements of Architecture, Modifying Elements of Architecture, Geometry in Architecture, Principles of composition.	6	15%
FIRST INTERNAL TEST			
III	Analysis of artistic expression of architecture according to its medium, cultural and historical relevance through case studies.	6	15%
IV	Meaning in Architecture – Architecture as Engineering (The technological revolution), Architecture as Art (The aesthetic revolution), Brief over view of evolution of construction over ages, Influential concepts in architecture.	7	15%
SECOND INTERNAL TEST			
V	Primitive Place Types , Vernacular architectural form and analysis- Analysis of a case study (sketching and description)	10	20%
VI	Essence of Architecture, Architecture and society, Great architects and their philosophy reflected in architecture – F L Wright, Le Corbusier, Walter Gropius, Louis Sullivan, Mies van der Rohe, Laurie Baker, Charles Correa, Geoffrey Bawa, etc.	10	20%
END SEMESTER EXAM			

SEMESTER I

Course No.	Course Name	L-T-S-P/D	Credits	Year of introduction
ES 101	THEORY OF STRUCTURES I	2-1-0-0	3	2016
<p>Course Objectives</p> <ol style="list-style-type: none"> 1. To develop an overall understanding and interest in structural system 2. To apply the principles of mechanics to practical engineering problems. 3. To introduce basic understanding of engineering structures and to explain effect of forces on various structural elements. 4. To develop simple mathematical model for engineering problems and carry out static analysis. 				
<p>Syllabus</p> <p>Historical evolution of structures - Walls, Post and beams, Arches, Vaults, Domes, Suspended structures, Truss, Sky scraper; Loads on structure as a whole - Dead Load - Live Load - Seismic Load - Wind Load - Tributary Load & load path. □ Basic concepts of Strength - Stiffness - Stability - Force types - Bending & Buckling</p> <p>Force concepts - principle of transmissibility - resultant of co planar concurrent and non-concurrent forces - Varignon's theorem. Equilibrium conditions - free body diagrams □ Beams analysis - Support Reactions - Shear force and Bending moment diagrams of simple cases. Graphical method for analysis of truss.</p>				
<p>Expected Outcome</p> <p>At the end of the course, the student will be able to:</p> <ul style="list-style-type: none"> • Differentiate the various structural elements in a building and types of loads acting on it. • Apply the concepts of action of forces on a body and should be able to apply the equilibrium concepts. • Graphically analyze any type of determinate trusses with different end conditions. 				
<p>Reference Books</p> <ul style="list-style-type: none"> • Babu, J., Engineering Mechanics, Pearson Prentice Hall • Benjamin J., Engineering Mechanics, Pentex Book Publishers and Distributors • Bhavikkatti, S. S., Engineering Mechanics, New Age International Publishers • F.P. Beer & E.R. Johnston, "Vector Mechanics for Engineers", Tata McGraw Hill. • G. G. Schierle, "Structure and Design", Cognella Academic Publishing • J.L. Meriam & L.G. Kraige, "Engineering Mechanics", John Wiley and Sons • Kumar, K. L., Engineering Mechanics, Tata McGraw Hill Publishing Company Limited • R.C. Hibbler, "Engineering Mechanics", Pearson Education, Asia Pvt. Ltd. • Rajasekaran S. and Sankarasubramanian, G., Engineering Mechanics, Vikas Publishing House □ Private Limited • R.K Bansal., Engineering Mechanics, Lakshmi Publications Pvt Ltd • R.K Bansal., Strength of Materials, Lakshmi Publications Pvt Ltd • S. Ramamrutham., Strength of Materials, Dhanpat Rai Publishing Company Pvt Limited 				

Course Plan			
Module	Contents	Hours	Sem Exam Marks
I	Historical evolution- Walls, Post and beams, Arches, Vaults, Domes, Suspended structures, Truss, Skyscraper, Buttress	4	15%
II	Loads on structure as a whole - Introduction - Dead Load - Live Load - Seismic Load - Wind Load - Tributary Load & load path	5	15%
FIRST INTERNAL TEST			
III	Basic concepts of Strength - Stiffness - Stability - Force types - Force vs Stress - Bending & Buckling	4	15%
IV	Introduction: Force concepts - principle of transmissibility - system of coplanar forces - resultant of co planar concurrent and non-concurrent forces - Varignon's theorem. Equilibrium conditions - free body diagrams	10	15%
SECOND INTERNAL TEST			
V	Beams - support conditions - types Load types - Point load, uniformly distributed and varying loads Beam analysis - Shear force diagram - Bending moment diagram of simple cases such as: a) Cantilever beams with point loads, UDL & moment b) Simply supported beams with point loads, UDL & moment c) Simply supported overhanging beams (one side & both sides) with point load, UDL & moment	12	20%
VI	Simple plane trusses - different types of trusses Graphical method for analysis of truss.	10	20%
END SEMESTER EXAM			

SEMESTER I

Course No.	Course Name	L-T-S-P/D	Credits	Year of introduction
MA 103	MATHEMATICS	2-0-0-0	2	2016
Course Objectives				
<p>To understand and analyze Architecture, one needs the basic knowledge of the statistical methods available for calculating the Correlation coefficient and Probability distributions and their application along with various statistical methods of hypothesis testing. Mathematics and its application is required as a fundamental basis for equipping Architecture students with analytical, logical and practical skills required to be acquired by them to excel in design. Data and mathematical analysis works as essential tools to make the right decision in many practical situations.</p>				
Syllabus				
<p>Application of Measures of central tendency, Dispersion in statistics - Correlation coefficient- Probability distributions - important probability distributions and statistical tests for analysis of hypothesis.</p>				
Expected Outcome				
<p>By the end of the course the student is expected to built up the ability to</p> <p>(i) learn about important statistical measures of central tendency and dispersion essential for data analysis.</p> <p>(ii) learn about important probability distributions and important statistical tests of hypothesis based on it.</p>				
Reference Books				
<ul style="list-style-type: none"> • B S Grewal, Higher Engineering Mathematics, Khanna Publishers (42nd edition), 2012 • Richard A Johnson, Probability and Statistics for Engineers(Miller and Friends)- Prentice Hall of India, 8th Edition. • S C Gupta and V K Kapoor , Fundamentals of Mathematical Statistics , S Chand Publications 				

Course Plan			
Module	Contents	Hours	Sem Exam Marks
I	Statistics: Measures of central tendency- Mean-median-mode, Measures of Dispersion- Mean deviation-standard deviation-variance.	4	15%
II	Correlation coefficient- Regression lines- Method of least squares- Fitting of straight line and parabola.	4	15%
FIRST INTERNAL EXAM			
III	Probability distributions: Random variable- probability density function- probability distribution function- properties- Expectation of a random variable- Mean and variance.	5	15%
IV	Probability distributions: Binomial- Poisson- Normal.	5	15%
SECOND INTERNAL EXAM			
V	Testing of hypothesis: Sampling distribution- Standard error- Testing a hypothesis- Type I and Type II errors- Level of significance. Large sample tests: Test for a single proportion – Test of significance for difference of proportions- Test of significance for a single mean- Test of significance for difference of means.	6	20%
VI	Small sample tests: Student's t-distribution- Test of significance of a sample mean- Test of significance of difference between sample means- Chi-square distribution- Chi-square test for goodness of fit.	6	20%
END SEMESTER EXAM			

SEMESTER I

Course No.	Course Name	L-T-S-P/D	Credits	Year of introduction
AS103	ARCHITECTURAL DRAWING & GRAPHICS I	1-0-0-3	3	2016
Course Objectives				
To introduce students to the fundamental techniques of technical drawing.				
Syllabus				
Use and application of Scales. Orthographic projection of points, lines, planes, solids and combinations placed in different positions. Section of solids, Intersection of surfaces, Development of Surfaces, Isometric projections, Perspective projections – One point, two point and three point.				
Expected Outcome				
Upon completion of the course, the students would have developed the necessary skills to graphically represent objects in a plane.				
Reference Books				
<ul style="list-style-type: none"> • Cari LaraSvensan and William Ezara Street, 'Engineering Graphics' • Bhatt,N. D., Engineering Drawing, Charotar Publishing House Pvt. Ltd. • Rajaraman,S., Practical Solid Geometry. • Varghese, P. I., Engineering Graphics, V.I.P Publishers. • Venugopal, K., Engineering Drawing and Graphics, New Age International Publishers. 				

Course Plan			
Module	Contents	Hours	Sem Exam Marks
I.	Introduction to Engineering Graphics, Scaling of drawings - standard scales, type of lines, BIS conventions	2	25%
	Orthographic projection- First angle & third angle projections Orthographic projection of lines for any given condition, determination of true length, traces and inclinations to the planes of projection of any given line.	8	
II	Orthographic Projection of Solids: Simple solids in simple position - prisms, regular pyramids, tetrahedron, octahedron, cone and sphere. Auxiliary projections of simple solids. Section of solids: Section of simple solids by planes parallel or inclined to HP/VP. True shape of sections. (First angle projection only)	12	25%
FIRST INTERNAL TEST			
III	Intersection of surfaces : Line of intersection of two prisms and two cylinders with the axes intersecting each other. Development of surfaces: Development of surfaces of simple solids such as prisms, cylinders, pyramids, cones, and truncated solids.	10	25%
IV	Isometric Projection : Isometric scale, isometric view of simple solids, truncated solids and combination of two objects. Perspective projection: Perspective projection of simple solids and their combinations.	10	25%
SECOND INTERNAL TEST			
END SEMESTER EXAM			

SEMESTER I

Course No.	Course Name	L-T-S-P/D	Credits	Year of Introduction
AS105	BASIC DESIGN	0-0-8-0	8	2016
Course Objectives				
Introduction to architecture, primary elements and basic principles of design, and space articulation				
Syllabus				
An insight into concepts of architecture: space, form, enclosure, quality of space - Principles of design - harmony, symmetry etc. and their application- Elements of design, and Perception of space. Design Parameters - anthropometrics - human activity and the use of space. Interrelationship of architectural space to form, structure, and materials to help students develop a visual and tacit structural understanding through models and installations.				
Expected Outcome				
By the end of the course students will gain a fundamental knowledge of architecture and its principles				
Reference Books				
<ul style="list-style-type: none"> • Charles Wallschlaeger & Synthia Basic Snyder, Basic Visual Concepts & Principles for artists, architects & designers, McGraw hill, USA, 1992. • Edward D.Mills - Planning the Architects Hand Book - Bitterworth, London,1985. • Francis D.K.Ching - Architecture - Form Space and Order Van Nostrand Reinhold Co.,(Canada),1979 • Owen Cappleman & Michael Jack Kordan, Foundations in Architecture: An Annotated Anthology of beginning design projects, Van Nostrand Reinhold, New York. • Paul Laseau, Graphic Thinking For Architects and Designers, John Wiley & Sons, New York, 2001. • V.S.Pramar, Design fundamentals in Architecture, Somaiya Publications Pvt.Ltd., New Delhi,1973. • Wucius Wong, 'Principles of two Dimensional Design' 				

Course Plan			
Module	Contents	Hours	Sem Exam Marks
I	Introduction to architecture: definitions of architectural terms Introduction to fundamental Elements of Design : Point, Line, Shape, Plane, Volume, Forms etc. Introduction to the principles of design – unity, balance, symmetry, proportion, scale, hierarchy, rhythm, contrast, harmony, focus, figure and ground etc.	30	25%
II	Study of Forms : Solids and Voids, Planar, Fluid and Plastic Forms. Exploring Materials: Creating abstract sculptures out of Paper, Mount Board, Box Board, Metal Foils, clay, plaster and any other material and also analysing the adoptability of these sculptures to Architectural functions. Perception of colour and light. Exploring Colour Schemes based on principles of Harmony and Contrast and degree of Chromatism Application of colour on 3D models Minor projects: 2D compositions demonstrating principles of design Example: Compositions, Murals and Sculptures for Semi Recreational and Semi Functional Architectural Spaces.	30	25%
FIRST INTERNAL TEST			
III	Anthropometric studies – average measurements of human body in different postures, its proportion and graphic representation, application in design of simple household and street furniture. Basic human functions and their implications for space requirements. Minimum and optimum areas for various functions	30	25%
IV	Application of Basic Design in Architecture Major project : Design of a simple architectural form based on an understanding of anthropometrics Example: Architectural spaces like children playing area, Exhibition Spaces, Outdoor Dining Area, Atrium or Courtyards, Outdoor Spaces, etc	30	25%
SECOND INTERNAL TEST			
END SEMESTER EXAM			

SEMESTER I

Course No.	Course Name	L-T-S-P/D	Credits	Year of Introduction
BC 101	BUILDING MATERIALS AND CONSTRUCTION TECHNIQUES I	1-0-0-2	2	2016
Course Objectives To introduce the elementary building materials and their applications. To familiarize with contemporary as well as vernacular and traditional building materials. To understand prevailing BIS specifications				
Syllabus Classification, properties and uses of Building materials: Stone– Granite, Laterite, Slate, Marble. Mud as a building material. Clay: Clay as building material. Use of terracotta in construction as roofing and flooring tiles. Brick country bricks & factory made -properties-available sizes-use Mortar – lime mortar, mud mortar, cement mortar Structural systems using bricks				
Expected Outcome <ol style="list-style-type: none"> Understand the application of stone and clay products in building construction. Identify appropriate mortar mixes in various construction needs. 				
Reference Books <ul style="list-style-type: none"> Harry Parker, 'Materials and Methods of Architectural Construction', John Wiley & Sons Canada, 1958. H Leslie Simmons, 'Construction – Principles, Material & Methods', 7th edition, John Wiley & Sons Inc., New York, 2001. P.C. Varghese, 'Building Materials', Prentice hall of India Pvt Ltd, New Delhi, 2005 Relevant BIS codes. Rosen Harold J, Construction materials for Architecture, Krieger Pub Co, 1992. 				

Course Plan			
Module	Contents	Hours	Sem Exam Marks
I	Stone: Classification stones suitable for construction-properties-available sizes-use. Characteristic features and uses of Granite, Laterite, Slate and Marble <i>Exercise: Sketches related to stone and laterite masonry walls, foundation, ornamental work.</i>	12	25%
II	Clay: Clay as building material. Brick - country bricks & factory made bricks-properties-available sizes-uses. Terracotta-available forms suitable for construction-sizes-properties-uses. Use of terracotta in construction as roofing and flooring tiles. Mud as building material- construction techniques of mud walls. Sand lime bricks – Manufacture and properties and use. <i>Exercise: Drawings -brick masonry, header and stretcher bond, one brick wall (English and Flemish bond), Sketches - ornamental brick bond</i>	11	25%
FIRST INTERNAL TEST			
III	Structural systems using bricks: Arches, vault, brick piers, brick footing, brick masonry - brick walls in English bond, and Flemish bond for one and a half walls, T junction and cross junction. <i>Exercise: Drawings- semicircular and segmental arch, brick vault, brick pier and footing, one and half brick wall in English bond, one and half brick wall in Flemish bond, cross junction, T-junction</i>	11	25%
IV	Ingredients of mortar- lime, cement and sand-proportions, - need for adding water, mortar types – mud mortar, Stabilized mud mortar, lime mortar, cement mortar - preparation techniques. Properties & applications. Comparison of lime mortar and cement mortar-advantages and disadvantages. <i>Exercise: Mortar - onsite experience – listing out observations.</i>	11	25%
SECOND INTERNAL TEST			
END SEMESTER EXAM			

SEMESTER I

Course No.	Course Name	L-T-S-P/D	Credits	Year of introduction
AS 107	VISUAL ARTS AND THEORY	0-0-3-0	3	2016
Course Objectives				
<p>The objective of the course in Visual Arts is to make the students familiar with the basic principles and techniques of (a) Drawing (b) Painting and (c) Sculpture. The Course also will provide students a chronological introduction to the developments in the art and architecture of India.</p>				
Syllabus				
<p>Types, Characteristics and Functions of Lines, its Visual Impacts. Study of objects having varied shapes (Cuboid, Prismatic, Spherical, Globular, etc.,) in different media-Charcoal, Pastel, Pencil. Elements of Painting: Theory of Colour: Chromatic Values, Colour Wheel, Colour Chart. Two Dimensional and Three Dimensional aspects of Painting. Gestalt Theory. Introduction to Indian Aesthetics/Canonical Principles of Indian Art. Mural Tradition in Kerala- Study of Style, form and Texture. Graphic representations: Exercises involving logo design , Collage and Calligraphy. Methods and Techniques of Sculpture—Sculpture in shallow relief, Sculpture in round. Free standing sculpture in relation to Architectural space.</p>				
Expected Outcome				
<p>Art is an amalgamation of space, form, colour, texture etc., By studying art, the above said elements which are also the essential features in Architecture; the students get to establish their ideas in their architectural designing process.</p>				
Reference Books				
<ul style="list-style-type: none"> • Francis D.K Ching, 'Drawing, Space, Form, Expression'. • J.H.Bustano, by 'Principles of Colour and Colour Mixing'. • Luis Slobodkin, 'Sculpture-Principle and Practice'. • Roy C. Craven, 'Indian Art'. • Suzanne Huntington, 'Art of Ancient India'. 				

Course Plan			
Module	Contents	Hours	Sem Exam Marks
I	Drawing: Types, Characteristics and Functions of Lines, its Visual Impacts (Vertical, Horizontal, Diagonal, Zig-Zag, Curvilinear, Spiral etc.,)	10	20%
	Study of Objects: Study of objects having varied shapes (Cuboids, Prismatic, Spherical, Globular, etc.,) in different media-Charcoal, Pastel, Pencil.		
II	Elements of Painting: Theory of Colour: Chromatic Values, Colour Wheel, Colour Chart.	12	30%
	Two Dimensional and Three Dimensional aspects of Painting. Gestalt Theory- Exercises based on above studies.		
FIRST INTERNAL TEST			
III	Introduction to Indian Aesthetics/Canonical Principles of Indian Art.	10	20%
	Mural Tradition in Kerala- Study of Style, Form and Texture.		
IV	Graphic representations: Exercises involving Logo Design , Collage and Calligraphy	13	30%
	Methods and Techniques of Sculpture—Sculpture in shallow relief, Sculpture in round. Free standing Sculpture in relation to Architectural space.		
SECOND INTERNAL TEST			
END SEMESTER EXAM			

SEMESTER I

Course No.	Course Name	L-T-S-P/D	Credits	Year of introduction
PS 101	COMMUNICATION SKILLS AND TECHNIQUES	0-0-0-2	1	2016
Course Objectives				
<p>Focuses on the students' overall capability apart from academic competence. Many students, particularly those from non-English medium schools, find that they are not preferred due to their inadequacy of communication skills and soft skills, despite possessing sound knowledge in their subject area along with technical capability. Keeping in view their pre-employment needs and career requirements, this course on Communication Skills will prepare students to adapt themselves with ease to the industry environment, thus rendering them as prospective assets to industries.</p>				
Syllabus				
<p>Listening Comprehension, Reading Comprehension, Speaking Skills, Resume / Report Preparation / Letter Writing, Preci writing, Presentation skills and Soft Skills</p>				
Expected Outcome				
<p>The course will equip the students with the necessary communication skills that would go a long way in helping them in their profession.</p>				
Reference Books				
<ul style="list-style-type: none"> • Anderson, P.V, Technical Communication, Thomson Wadsworth, Sixth Edition, New Delhi, 2007. • Evans, D, Decision maker, Cambridge University Press, 1997. • John Seely, The Oxford Guide to Writing and Speaking, Oxford University Press, New Delhi, 2004. • Prakash, P, Verbal and Non-Verbal Reasoning, Macmillan India Ltd., Second Edition, New Delhi, 2004. • Thorpe, E, and Thorpe, S, Objective English, Pearson Education, Second Edition, New Delhi, 2007. • Turton, N.D and Heaton, J.B, Dictionary of Common Errors, Addison Wesley Longman Ltd., Indian reprint 1998. 				

Course Plan			
Module	Contents	Hours	Sem Exam Marks
I	Listening Comprehension: Listening and typing – Listening and sequencing of sentences – Filling in the blanks - Listening and answering questions. Reading Comprehension: Filling in the blanks - Close exercises – Vocabulary building - Reading and answering questions.	6	25%
II	Speaking: Phonetics: Intonation – Ear training - Correct Pronunciation – Sound recognition exercises – Common Errors in English. Conversations: Face to Face Conversation – Telephone conversation – Role play activities (Students take on roles and engage in conversation)	6	25%
FIRST INTERNAL TEST			
III	Resume / Report Preparation / Letter Writing /Preci writing Structuring the resume / report - Letter writing /Email Communication - Samples.	8	25%
IV	Presentation skills: Elements of effective presentation – Structure of presentation - Presentation tools– Voice Modulation – Audience analysis - Body language Soft Skills: Time management – Articulateness – Assertiveness – Psychometrics – Innovation and Creativity - Stress Management & Poise	10	25%
SECOND INTERNAL TEST			
END SEMESTER EXAM			

SEMESTER II

Course No.	Course Name	L-T-S-P/D	Credits	Year of Introduction
AS 102	ARCHITECTURAL APPRECIATION	3-0-0-0	3	2016
Course Objectives <ul style="list-style-type: none"> To help students identify and appreciate Architecture as an outcome of social and cultural processes of a geographical locality. To promote the visual literacy level and prepare to appreciate the aesthetic components of art and architecture. To analyse architectural grammar, styles and practices in various cultural settings 				
Syllabus Introducing the vocabulary of art and architecture constituted by elements and principles. Appreciating art and architecture through the study of modern movements in art and architecture. Understanding the social and cultural movements that shaped architecture of the past monuments and moments; memory and identity. Understanding architecture as a socio-cultural product with linkages to natural environment. Introduction to the meaning, context, and significance of the elements and outcomes of designs in graphics, textiles, ceramics, sculpture, painting and printing as related to architecture. Improving the ability to understand, interpret and evaluate visual messages.				
Expected Outcome <ol style="list-style-type: none"> Students will be able to explain visual meanings, and understand the relationship of art and architecture. Students will be able to critically analyse different art and architectural works. Students will be able to understand the purpose and function of criticism. 				
Reference Books <ul style="list-style-type: none"> Amos Rapaport , House form and culture Don Norman, The Design of Everyday Things Emily Cole, The Grammar of Architecture Francis D.K. Ching, A Visual Dictionary of Architecture John Berger, Ways of Seeing Juhani Pallasmaa, The Eyes of the Skin: Architecture and the Senses, John Wiley & Sons, 2012 James C. Snyder, Introduction to Architecture, McGraw-Hill, 1979 Stephen Grabow, Kent Spreckelmeyer, The Architecture of Use: Aesthetics and Function in Architectural Design, Routledge, 2014 V S Parmar , Social history of Indian architecture William Lidwell, Kritina Holden and Jill Butle, Universal Principles of Design 				

Course Plan			
Module	Contents	Hours	Sem Exam Marks
I	Appreciating the Architectural vocabulary of buildings by identifying and understanding the elements (Point, line, shapes, form) of Architecture and Principles of Design(unity, variety, harmony, rhythm, balance, proportion, emphasis, contrast, movement)	5	15%
II	Architecture, society and culture. Case studies of buildings in local context to understand the impact of society and culture on built form.	5	15%
FIRST INTERNAL TEST			
III	Architecture and Human Behaviour Need for studying influence of architecture and human behaviour. Appreciation of architecture from user's perspective. Using the elements of architecture and principles of design to induce behaviour and emotion. Areas of application: Designing for social interaction, safety, privacy, etc. Designing for children – school, home, play. Designing for persons with physical challenges – visual, orthopaedic, etc.	8	15%
IV	Impact of Industrial Revolution on Architecture- The social, economic and political changes, affected, requirements of the society, new materials and technological development.	8	15%
SECOND INTERNAL TEST			
V	Appraisal of the early Movements in art and architecture: Early Modernism to Neo futurism. Chicago school, Bauhaus, De Stijl movement, Art Deco , Arts & Crafts and Art Nouveau.	6	20%
VI	Visual Literacy: Introduction to the meaning, context, and significance of the elements and outcomes of designs in graphics, textiles, ceramics, sculpture, painting and printing as related to Architecture. Understanding the relevance of symbols and images in architecture.	8	20%
	Appreciating a selected topic/building/product by writing a report	5	
END SEMESTER EXAM			

SEMESTER II

Course No.	Course name	L-T-S-P/D	Credits	Year of Introduction
EH 102	HISTORY OF ARCHITECTURE - I	2-1-0-0	3	2016
<p>Course Objectives</p> <p>History of Architecture is an online course that tries to create an appreciation of architectural developments in historical context in the minds of the students and guides them to explore the cultural and contextual determinants that produced a specific architectural vocabulary. It tries to understand architecture as a process, evolving within specific cultural contexts considering the aspects of politics, religion, society, climate, geography and also throws an insight into the development of architectural form with reference to technology, influences and character of built forms.</p>				
<p>Syllabus</p> <p>The relevance of learning history of Architecture. The inseparable component of history in Architectural development through ages. Development of Architecture and its relation to culture through the early periods, cultures - Prehistoric age, Ancient River Valley period, Pre Classical period, Aryan & Mauryan, Classical period: Greece and Rome , Buddhist period</p>				
<p>Expected Outcome</p> <p>By the end of the course the student is expected to build up the concepts of culture and civilization and their impact on architectural products.</p> <p>To develop an understanding of the physical experience of buildings in order to appreciate the complexity of the physical and metaphysical influences bearing on architecture.</p> <p>To develop an understanding of architecture as an outcome of various social, political and economic influences and as a response to the cultural and climate conditions.</p> <p>To instill visual and formal analysis of architecture in the minds of students</p> <p>To enhance the sketching, written and communication skills of students.</p>				
<p>Reference Books</p> <ul style="list-style-type: none"> • “ A Global History of Architecture”, Francis D K ching, Mark M. Jarzombek, Vikramaditya Prakash, Wiley Pub: 2010 • Leland M Roth; “Understanding Architecture: Its Elements, History and Meaning”; Craftsman House; 1994 • Lloyd S. and Muller H.W., “History of World Architecture – Series”, Faber and Faber • Patrick Nuttgens, “The Story of Architecture FROM ANTIQUITY TO THE PRESENT”, H.F.Ullmann Pub: 1983 • Pier Luigi Nervi, General Editor, “History of World Architecture – Series”, Harry N. Abrams, Inc. Pub., New York, 1972. • Sir Banister Fletcher, “A History of Architecture”, CBS Publications (Indian Edition), 1999. • Spiro Kostof, “A History of Architecture: Setting and Rituals, Oxford University Press, London, 1985. • Vincent Scully, “Architecture – The Natural and the Manmade”, Harper Collins Pub: 1991. 				

Course Plan			
Module	Contents	Hours	Sem Exam Marks
I	A brief overview of Paleolithic and Neolithic Culture – art forms and evolution of shelter – megaliths – agricultural revolution and its impact on culture and civilization. Pre-Historic Civilization: Primitive man - shelters, settlements, religious and burial systems E.g.: Oval hut, Nice, Dolmen tomb, gallery grave, passage grave, Gobekli Tepe Temple, Catal Huyuk, Jericho, Jomon culture Stone Henge.	7	15%
II	Introduction to River valley cultures: generic forces shaping settlements and habitats: River valley culture: Indus Valley Civilization: Forces shaping settlements and habitats: Layout and Built forms of Mehrgarh, Early & Late Harappan & Mohenjodaro.	7	15%
FIRST INTERNAL EXAM			
III	River valley cultures: Mesopotamian civilization - Ziggurats at Warka, Ur and Chogha Zanbil, Palace of Sargon. Nile Valley Civilization (Egyptian): Old kingdom, middle kingdom - Mastaba Tombs, Pyramid of Cheops, Temple of Khons, Karnak, Temple at Abu Simbel	7	15%
IV	Greece - Pre-Classical Civilization Greek Language of Architecture – Palaces & Temples and their essential features. Geometry and Greek Architecture, Greek Capitals and Orders, Parthenon. Rome –Important Roman Cities Typical Roman house, Form Development of Roman vocabulary of Architecture, Structural and Engineering Feats Typology of buildings - Colosseum, Forums, Palaces Pantheon, Basilica. A Comparative study of Greek & Roman Culture & Architecture.	7	15%
SECOND INTERNAL EXAM			
V	Pre-classical Aryan & Mauryan : Vedic and Epic Age Salient features Vedic Village, Mauryan Empire – Architectural remains from Pataliputra, Asokan pillar at Vaishal, Lomas Rsi Cave Buddhism – Religion influencing Architecture – Buddhist Chaityas, Viharas, Stupa at Sanchi, Rock cut caves at Junnar, Chaitya hall at Bhajja	10	20%
VI	Introduction to Kerala Architecture: Evolution of architectural style, Factors that influenced the development of Kerala architecture: Materials, Climate & Socio-economic factors. Religious Architecture: Early Cave temples of Kerala, Early Hindu Temples, Churches and Mosques. Evolution of religious architectural forms.	7	20%
END SEMESTER EXAM			

SEMESTER II

Course No.	Course Name	L-T-S-P/D	Credits	Year of Introduction
ES 102	THEORY OF STRUCTURES I	2-1-0-0	3	2016
Course Objectives <ol style="list-style-type: none"> 1. To develop an overall understanding and interest in structural system 2. To calculate the sectional properties (centroid, moment of inertia, section modulus and radius of gyration) for various sections by working out problems. 3. To study the stress – strain behaviors of steel and concrete due to axial loads and to determine the stresses and strains developed in solids due to external action. To study the internal stresses (bending and shear stresses) in beams and strength of sections. 				
Syllabus <p>Truss analysis - Method of section and Method of joints; Centre of gravity - concept and definition - determination of Centroid of composite areas; Moment of inertia - definition - perpendicular axis theorem, parallel axis theorem - moment of inertia of composite areas; Simple stresses and strains - principle of super position - stresses in composite bars - elastic constants</p> <p>Theory of simple bending, bending stresses in symmetrical beams, bending of composite beams; Concept of shear stresses in beams, distribution of shear stresses in symmetric cross sections</p>				
Expected Outcome <p>At the end of the course, the student will be able to:</p> <ul style="list-style-type: none"> • Differentiate the various structural elements in a building and types of loads acting on it. • Be familiar with the sectional properties of various sections <p>Numerically analyze any type of determinate trusses with different end conditions</p>				
Reference Books <ul style="list-style-type: none"> • A.P.Dongre – Structural Engineering for Architecture, Scitech Publications Ltd. • Benjamin J., Engineering Mechanics, Pentex Book Publishers and Distributors • Junarkar S. B. and Shah S. J., Mechanics of Structures (Vol. I), 30/e, Charotar Publishing House Pvt. Ltd., New Delhi, 2012 • Philip Garrison, “Basic Structures for Engineers and Architects”, Blackwell publishing • Punmia B. C., A. K. Jain and A. K. Jain, Strength of Materials & Theory of Structures (Vol.I), Laxmi Publications, New Delhi, 2013. • R.K.Bansal – A textbook on Strength of Materials Lakshmi Publications. Delhi 1998. • Structure and Design by G. G. Schierle • R.K Bansal., Engineering Mechanics, Lakshmi Publications Pvt Ltd • S. Ramamrutham., Strength of Materials, Dhanpat Rai Publishing Company Pvt Limited • Vaidyanathan R. and P.Perumal, Structural Analysis (Vol.I), Laxmi Publications, 2004 				

Course Plan			
Module	Contents	Hours	Sem Exam Marks
I	Truss analysis - Method of section and Method of joints (cantilever and simply support trusses.)	8	15
II	Centre of gravity - concept and definition - centre of mass - centroid - determination of Centroid of composite areas	8	15
FIRST INTERNAL TEST			
III	Moment of inertia - introduction - definition and unit - perpendicular axis theorem, parallel axis theorem - moment of inertia of composite areas	8	15
IV	Simple stresses and strains - types of direct stresses and strains - principle of super position - stresses in composite bars - elastic constants	7	15
SECOND INTERNAL TEST			
V	Theory of simple bending (derivation not required), section modulus, bending stresses in symmetrical beams, bending of composite beams – simple problems	7	20
VI	Concept of shear stresses in beams, distribution of shear stresses in symmetric cross sections (derivations not required)	7	20
END SEMESTER EXAM			

SEMESTER II

Course No.	Course Name	L-T-S-P/D	Credits	Year of Introduction
AS104	ARCHITECTURAL DRAWINGS & GRAPHICS II	1-0-2-0	3	2016
Course Objectives				
To introduce the Architectural Design Language – technical drafting and presentation.				
Syllabus				
Graphical Annotations and Symbols – Introduction of Architectural Drawings - Orthographic projections, Lettering - Dimensioning and Sciography - Architectural representation of different materials. Measured Drawing - Building Drawing- Architectural Presentation.				
Expected Outcome				
Upon completion of the course, the student shall have achieved a comprehensive understanding of technical drawing techniques and architectural presentation.				
Reference Books				
<ul style="list-style-type: none"> • Alexander W. White, 'The Elements of Graphic Design, Allworth Press; 1 edition (Nov 1, 2002) • Cooper Douglas, 'Drawing and Perceiving', Van Nostrand Reinhold, 1992 • H.W. Janson – 'History of Arts, Prentice Hall' (Higher Education Division), Pearson Education, 2002 • Mark A, Thomas, Poppy Evans, 'Exploring Elements of Design' 2 edition (August 15, 2007) • Philip Meggs, 'A History of Graphic Design' John Wiley & Sons; 3 edition (September 9, 1998) • Victor Perard, 'Anatomy and Drawing' 				

Course Plan			
Module	Contents	Hours	Sem Exam Marks
I	<p>GRAPHICAL ANNOTATIONS AND SYMBOLS</p> <p>Introduction to Architectural drawings using different mediums such as pencil, ink, types of papers, reproduction methods.</p> <p>Concept of orthographic projections, drawing conventions such as plan, elevation and section, symbols, lettering, dimensioning, values in drawn lines, tone, texture, color and light, sciography.</p> <p>Architectural representation of materials on drawings, terminology and abbreviations used in architectural drawings. Different types of lettering for titles and annotation of drawings.</p>	15	25%
II	<p>MEASURED DRAWING</p> <p>Use of scale in drawings, scaling and measuring of 3D forms and representing them in plan, elevations and sections using different scales. Reduction and enlarging of given drawings, tracing in pencil and ink medium.</p> <p>Measured drawing to scale of furniture pieces, rooms, doors, windows etc.</p>	10	25%
FIRST INTERNAL TEST			
III	<p>BUILDING DRAWING</p> <p>Drawing Plan, elevation, sections and details of buildings. Representation of wall thickness and openings in walls in plan and section.</p> <p>Measured drawing / documentation of small buildings / structures</p>	10	25%
IV	<p>ARCHITECTURAL PRESENTATIONS</p> <p>Rendering and presentation techniques with pencil and inks. Sciography, Perspective Views and Model Making</p>	10	25%
SECOND INTERNAL TEST			
END SEMESTER EXAM			

SEMESTER II

Course No.	Course Name	L-T-S-P/D	Credits	Year of Introduction
AS106	ARCHITECTURAL DESIGN I	0-0-8-0	8	2016
Course Objectives				
To develop a basic understanding of space, form, structure and the built environment				
Syllabus				
Looking at the immediate built environment and understanding its fundamental components and their impact on the surroundings - Exploring personal experiences to behavioral needs and translating them into documented information that can be used as a basis for design - Presentation skills in the 2-D format - Systematic introduction to issues related to design, its components and space standards				
Expected Outcome				
By the end of the course students should have skills of drawing and representation; construction and structures to apply to basic design				
Reference Books				
<ul style="list-style-type: none"> ● Arthur L. Guphill and Susan E. Meyer, 'Rendering in Pen and Ink', Watson-Guphill, 1997 ● Francis D. K. Ching, 'Architectural Graphics', Wiley, 2009. ● Francis D. K. Ching, 'Architecture: Form, Space and Order', John Wiley & Sons, 2007. ● Geoffrey Broadbent 'Design in Architecture' John Wiley and Sons, 1973. ● Neuferts' Architect's Data ● Simon Unwin, 'Analizing Architecture', Routledge, 2003 ● Simon Unwin, 'An Architecture Notebook Wall' Routledge, 2000 ● Simon Unwin, 'Doorway', Routledge, 2007 				

Course Plan			
Module	Contents	Hours	Sem Exam Marks
I	Abstraction: Studying/analyzing manmade and natural forms/objects and copying or abstracting patterns and using the same to generate design for a product like chair, lampshade, pen stand etc	30	25%
II	Detailed study of spaces such as living, dining, bedroom, kitchen, toilet etc. including furniture layout, circulation, fixtures, openings, lighting, ventilation, orientation etc. Visual analysis of built forms, sculptural and spatial qualities, analysis of solid and void relationship Space/Building Appraisal: Analytical study of the interior spaces/ building forms and its critical appraisal of visual character Minor Project: Exercises on observation and visual perception	30	25%
FIRSR INTERNAL TEST			
III	Study of simple structural systems and behavior under load. Working model of structures (Like post and lintel, cantilever, trusses, arches, space frame, suspension etc), Development of basic skill in design expression, Visual analysis of built forms, sculptural and spatial qualities, analysis of solid and void relationship, Three dimensional projects developed through models and sketches	30	25%
IV	Integration of form and function in the design Major Project: Design of a basic shelter: an architectural form with a specific function, stressing on concept generation and development of rich design process. Example: phone kiosk, snack corner, ATM Center, security cabin, flower kiosk etc.	30	25%
SECOND INTERNAL TEST			
END SEMESTER EXAM : Jury			

SEMESTER II

Course No.	Course Name	L-T-S-P/D	Credits	Year of Introduction
BC 102	BUILDING MATERIALS AND CONSTRUCTION TECHNIQUES-II	1-0-0-3	3	2016
Course Objectives: To introduce the elementary building materials and their applications. To familiarize with contemporary as well as vernacular and traditional building materials. To understand prevailing BIS specifications.				
Syllabus Timber – as Building material. Its classification, suitability for construction, seasoning. Working with wood – Introduction to Carpentry, General Principles, Details of joints. Bamboo as building material – characteristics, methods of joining and various applications. Concrete – Ingredients, Grades, workability, Curing etc.				
Expected Outcome: <ol style="list-style-type: none"> 1. Suggest applications of wood in construction industry. 2. Identify appropriate concrete mixes for various construction needs. 				
References: <ul style="list-style-type: none"> • Gernot Minkev, Building with Bamboo, Birkhauser, 2012. • Harry Parker, 'Materials and Methods of Architectural Construction', John Wiley & Sons Canada, 1958. • H Leslie Simmons, 'Construction – Principles, Material & Methods', 7th edition, John Wiley & Sons Inc., New York, 2001. • Jules J.A. Janssen, Building with Bamboo: A Handbook , 1995. • P.C. Varghese, 'Building Materials', Prentice hall of India Pvt Ltd, New Delhi, 2005. • Relevant BIS codes. • Rosen Harold J, Construction materials for Architecture, Krieger Pub Co, 1992. 				

Course Plan			
Module	Contents	Hours	Sem. Exam. Marks
I	<p>Timber: Use of wood in construction in various periods in history. Classification of Timber according to position of hard core – properties – available types of timber-suitability for construction – defects in timber – seasoning of wood – need for seasoning. Treated wood</p> <p><i>Exercise: Sketches related to details of timber constructions.</i></p>	15	25%
II	<p>Working with wood: Introduction to carpentry- General principles, Details of joints in wood –Doors – Windows – Furniture . Use of wooden members for various applications like structural systems</p> <p><i>Exercise: Drawings - Timber joints, Panelled doors, sliding doors, glazed windows ,French windows, Bay Windows</i></p>	15	25%
FIRST INTERNAL EXAMINATION			
III	<p>Bamboo: Bamboo as a building material-types-properties-application. Comparison of bamboo with wood. Working with bamboo: Various steps involved-required sizes of members-methods of joining bamboo for various applications.</p> <p><i>Exercise: Drawings- Joining details of bamboo for various applications</i></p>	15	25%
IV	<p>Concrete: Ingredients of plain cement concrete-grades-properties-applications and uses. Reinforced cement concrete water- cement ratio, workability, curing Various types of concrete in construction as Light weight concrete, Rapid setting concrete etc.</p> <p><i>Exercise: concrete - onsite experience – listing out observations.</i></p>	15	25%
SECOND INTERNAL EXAMINATION			
END SEMESTER EXAMINATION			

SEMESTER II

Course No.	Course Name	L-T-S P/D	Credits	Year of Introduction
PS102	MODEL MAKING WORKSHOP	0-0-0-3	1	2016
Course Objectives				
Improving the students' overall capability in model making that help them to translate their architectural ideas.				
Syllabus				
Material properties, Introduction to modeling with paper, paper board, plastics, plaster of Paris, wood and clay. Basic model making technique, different types of material and their techniques.				
Expected Outcome				
The course will equip the students with the necessary Model making skills that would help them in their architectural explorations.				
References				
<ul style="list-style-type: none"> • Roark T. Congdon, 'Architectural Model Building: Tools, Techniques & Materials' Bloomsbury Academic, 02-Apr-2010 • Wolfgang Knoll, Martin Heching , 'Architectural Models: Construction Techniques' 				

Course Plan			
Module	Contents	Hours	Sem Exam Marks
I	Material explorations, Material Properties-Demonstrative Exercises	11	15%
II	Introduction to basic model making Tools-Technological tools {CNC,3d printing, Threading etc.}	11	15%
FIRST INTERNAL TEST			
III	Geometric form exploration displaying various material Properties-Demonstrative Exercises	11	15%
IV	Free form exploration displaying various material Properties-Demonstrative Exercises	12	15%
SECOND INTERNAL TEST			
END SEMESTER EXAM			