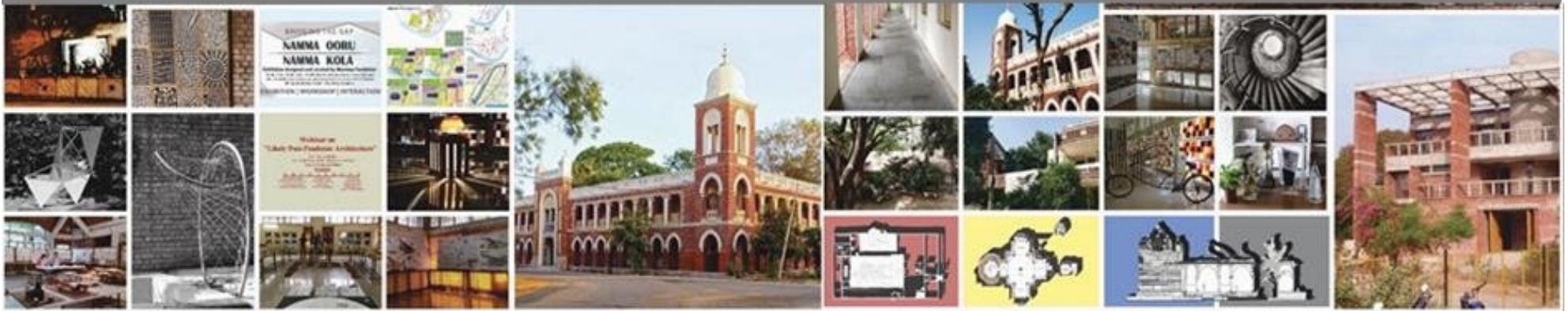




Syllabus of Bachelor of Architecture (B.Arch.)

10 Semesters



Syllabus - New Course (B.Arch. I-V NC-CRS)

Department of Architecture

The Maharaja Sayajirao University of Baroda, Vadodara, Gujarat
Academic year 2021-22 onwards

Detail Syllabus: F.S of B. Arch I(New Course - CRS)

Implemented from academic year 2021-22 (Non-CRS)

From academic year 2022-23 (CRS)

 सत्यं शिवं सुन्दरम्	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture				Academic Year			2021-2022			
Bachelor of Architecture (B.Arch.): Regular Programme											
Year	I	Core / Elective / Foundation Architectural Design I (ARC1109LCS)			Credits / Hours per week			09 Credits 09 Hrs per week (09 Studios)			
Semester	I	Year of Introduction: 1994 Year of Syllabus Revision: 2021			Maximum Marks / Grade			Total: 300 Term Work: 200 Review and Viva: 100			
Mode of Transaction: Studio					Minimum Passing			135 Marks			
Course Outcome (CO) CO1 Formulate a design process for architectural design for one or two users and demonstrate the same in the form of a design proposal. CO2 Sensitivity to space and its qualities. CO3 Understanding of the importance of human dimensions and their relation to architectural spaces. CO4 Understanding of activities, land and materials-technology, and their synthesis in generating architectural spaces and the built form.											
Unit No.	Topic / Unit			Contact Hours (Total 15 weeks teaching / semester)	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp) / Entrepreneurship (Ent)/ Skill Development(SD)	Relevance to Local (L)/ National (N)/ Regional(R)/G local (G) developmental needs	Relation to Gender (G), Environmentand Sustainability(ES), Human Values (HV)and Professional Ethics (PE)
1	Human Scale, Anthropometrics, Ergonomics Exercises on anthropometric studies for postures and single/multiple person activities, design of furniture items likechairs, tables for self/specific people. Anthropometrics: human body as a basis of measurement.Relating space and self. Human scale. Basic ergonomics; measurement and perception of movement,single activity/ function spaces.			25	20%	1,2	CO3	PSO1	EMP, SD	L, R	HV, ES,PE

2	Role of Geometry Students will make models, both scaled and full scale, to be used as tools of design. This will be supported with two-dimensional drawing and sketching. Understanding concepts of Hierarchy, Rhythm, Balance etc.	45	25%	1,2,6	CO2	PSO1	EMP, SD	L, R	HV, ES,PE
3	Elements of Space Making and their Combinations. Massing – solids and voids Nature of space – open, semi-open and closed Scale – human scale, relative scale. Exercises through models to understand the above.	35	30%	1,2,6	CO2, CO3	PSO1	EMP, SD	L, R	HV, ES,PE
4	Spatial Quality of Spaces Qualities of space – light, colour, material, texture Movement – pause and linkages Simple uni-functional design projects. Design (colours, space and form) for single/multi activity like hostel room, exhibition stall, drinking water fountain, information kiosk, food stall etc.	30	25%	1,2,6	CO1, CO4	PSO1	EMP, SD	L, R	HV, ES,PE
Reference Books									
1.	Francis D.K. Ching, Publishers: Wiley, 2007, Form, Space & Order (Third Edition).								
2.	Yatin Pandya, Vastu-Shilpa Foundation for Studies and Research in Environmental Design, Publishers: Mapin Publishing, 2007, Elements of Space Making.								

 सत्यं शिवं सुन्दरम्	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture		Academic Year		2021-2022					
Bachelor of Architecture (B.Arch.): Regular Programme										
Year	I	Core / Elective / Foundation Humanities I (ARC1110CS)	Credits / Hours per week			03 credits 03 Hrs per week (03 Lectures)				
Semester	I	Year of Introduction: 2021 Year of Syllabus Revision: -	Maximum Marks / Grade			Total: 100 Theory (Paper): 50 Review and Viva: 50				
Mode of Transaction: Lecture			Minimum Passing			45 Marks				
Course Outcome (CO) CO1Comprehend the idea of architecture as identification of place and various design principles. CO2Having introduced the vocabulary, elements and classifications of various cultural aspects and developing understanding of the relation betweenCulture and the Built Environment. CO3Having introduced the vocabulary, elements and classifications of various socio-political aspects and developing understanding of the relation between them and the built environment CO4Having introduced the vocabulary, elements and classifications of various economic aspects and developing understanding of the relation between them and the built-environment.										
Unit No.	Topic/Unit		Conta ct Hours (Total 15 weeks teaching /semeste r)	Weightag e (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneursh ip (Ent) / Skill Development (SD)	Relevance to Local (L)/ National(N) / Regional (R) / Global(G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV) and Professional Ethics (PE)
1	Cultural Factors This is a study of general social, economic and cultural factors which influences architecture. Cultural Factors: Theconcept of ‘Settlement’ as applicable to differing cultures. Rural/Urban attitudes, attitudes to public and private spaces. Civic institutions and their reflection in architecture.		17	40%	2, 4, 5	CO2	PSO1, PSO3			

2	Social Institutions Social Institutions: A study of social institutions and their reflection/influence on architecture • The Family: Joint family and nuclear family. • The Neighbourhood –it’s character and needs. • The work-place. • Education. • Religion. • Governance: Corporations, Panchayats, Civic centers. • Security. • Recreation: Parks, Stadium, etc.Culture: art galleries, museums etc.								
3	Economic Factors Economic Factors: Rural/Urban dichotomy. Social, political industrial and economic factors effecting the location, construction, financing and marketing of buildings with emphasis on costing. Slums, LIG, MIG, high-rise building.	8	15%	2, 4, 5	CO4	PSO1, PSO3			
4	Architecture as Identification of Place Place, path, pattern and Edge Space and Structure Transition, Hierarchy and center Architectural design - its tools (elements), objectives (experience and expression) and means (principles) - Principles of Design - proportion, scale, order, repetition, rhythm, harmony, balance, emphasis, hierarchy, symmetry, axis, datum etc.	12	30%	1, 2, 4	CO1	PSO1 PSO3			
Reference Books									
1.	Rapoport, A. (2005). <i>Culture, Architecture, and Design</i> . Locke Science Publishing Co., Inc.								
2.	Alexander, C. (24 February 2015), <i>A Pattern Language: Towns, Buildings, Construction</i> . Oxford; Illustrated edition.								
3	Glazer, N. and Lilla, M. (Eds.). (2016). <i>The Public Face of Architecture: Civic culture and public spaces</i> . Free Press, Reprint Edition								
4	Boric, Neda, English for Architecture and Urban Planning.								

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture		Academic Year				2021-2022			
Bachelor of Architecture (B.Arch.): Regular Programme										
Year	I	Core / Elective / Foundation Architectural Graphic and Representation (ARC1111CS)	Credits / Hours per week				04 credits 06 Hrs. per week (2 Lectures + 4 Studios)			
Semester	I	Year of Introduction: 1994 Year of Syllabus Revision: 2021	Maximum Marks / Grade				Total: 150 Theory (Paper): 50 Term Work: 100			
Mode of Transaction: Lectures and Studio			Minimum Passing				68 Marks			
Course Outcome (CO) CO1 Understanding for Forms, shapes and their Drawings and Model making CO2 Learning of technical representation of Drawings and Models CO3 Learning of representation of Architectural elements and buildings CO4 Understanding of Perspective drawings and Sciography as a part of Architectural Graphics & Representation										
Unit No.	Topic/Unit		Conta ct Hours (Total 15 weeks teaching /semester)	Weigh tage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurs hip (Ent)/ Skill Development (SD)	Relevanc e to Local (L)/ National (N)/ Regional(R)/ Global (G) development al needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)
1	Introduction to Drafting Techniques, Lettering, Annotations and Scales Introduction to drawing instruments and drawing materials. Basis for architectural drawing; line quality and weight, types of lines such as continuous thin, continuous thick, dotted, dash, etc. application of all line types in architectural drawing. Introduction to architectural lettering, its proportion to scale of drawing. Use of annotations on drawings titles and uses in presentations drawings		15	20%	1, 2,3	CO1, CO2	PSO1			

	and composition. Material indications symbolic representation of building materials with colour code as specified Indian Standard. Introduction to scales and their applications.						SD	L, N & G	PE
2	Orthographic Projections (Interpenetration and Views of Solids) Understanding various Geometrical Forms, Patterns, Positions and Arrangement of group of Forms. Introduction to various projection systems used in architectural drawing such as orthographic, isometric and axonometric projections etc. to represent 2Dimensional and 3Dimensional shape and forms in different orientations in space. Drawing Sectional Views. Projection drawings of various building elements. Surface development of various Geometrical forms, Shapes and Solids. Insertion of Planes, Solids and Forms.	30	35%	1, 2,3	CO1, CO2, CO3	PSO1 PSO2			
3	Perspective Drawings (Solids, Building Exterior & Interior Views) Introduction to basic terms, principles, types and techniques of perspective drawing. One-point, two-point, and three-point perspectives of simple objects. One-point and two-point perspective drawing of solids and complex composition of solids. Drawing one-point and two-point perspective views of the exterior of the building with understanding of the basic human proportion and scale. Introduction to three-point perspective. Construction of one and two-point perspective of different spaces and interiors.	25	25%	1, 2,3	CO1, CO4	PSO1 PSO2			
4	Sciography (Solids, Building Exterior & Interior Views) Introduction to Sciography, principles of shade & shadow, shadows of lines, planes & simple solids due to near & distant sources of light, shadows of architectural elements. Sciography of two-dimensional objects in plan and elevation.	20	20%	1, 2,3,4	CO3, CO4	PSO1 PSO2			

	Sciography of three-dimensional objects in plan and elevation and views (isometric, axonometric and perspective).								
Reference Books									
1.	Engineering Drawing by N. D. Bhatt, Publisher: Charotar Publishing House (2012)								
2.	Architecture: Form, Space, & Order by Frank Ching, Publisher: John Wiley & Sons (September 2010)								
3.	Ching Francis D.K., Architecture Graphics								
4.	Leslie Martin, Architectural graphics								
5.	B. James, Essential of Drafting								
6.	Pradeep Jain, AK Gautam, Engineering Graphics and Design								
7.	H. Joseph and Morris, Practical Plane and Solid Geometry								
8.	Gill Robert, Rendering with Pen and Ink								
9.	Dinsmore, Analytical Graphics.								
10.	Halse, Architectural Rendering; the Techniques of Contemporary Presentation.								
11.	Holmes, Applied Perspective.								
12.	Narayana, K. L. and Kannaiah, Engineering Graphics.								
13.	Norling, Perspective Drawing.								
14.	Robert, Perspective: From Basic to Creative								
15.	Edward D. Levinson, Architectural Rendering Fundamentals, Publisher: Glencoe/McGraw-Hill School								

 सत्यं शिवं सुन्दरम्	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture	Academic Year	2021-2022							
Bachelor of Architecture (B.Arch.): Regular Programme										
Year	I	Core /Elective/ Foundation Basic Design & Workshop I (ARC1112LCS)	Credits / Hours per week		03 Credits 05 Hrs per week (1 Lecture + 4 Studios)					
Semester	I	Year of Introduction: 1994 Year of Syllabus Revision: 2021	Maximum Marks / Grade		Total: 100 Term Work: 50 Review and Viva: 50					
Mode of Transaction: Lecture & Studio			Minimum Passing		45 Marks					
Course Outcome (CO) CO1 Have basic understanding of sketching, scale and how to draw proportionate sketches. CO2Exploration of various medium for sketches, learning various rendering techniques through exploring different mediums. CO3 Understanding of the importance of human dimensions and their relation to architectural spaces. CO4 Understanding of activities, land and materials-technology, and their synthesis in generating architectural spaces and the built form.										
Unit No.	Topic/Unit		Contact Hours (Total 15 weeks teaching /semester)	Weightage (%)	B T Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)

1	Preliminaries for Sketching Explanation of fundamentals of drawings and its practice. Object drawing, studies in light and shade of simple, natural and geometric forms. Study built environment, light and shade pattern, surface texture, scale and proportion.	15	20%	1,2,6	CO1, CO3	PSO1 PSO2	EMP, SD	L, R,G	HV, PE
2	Drawing and Painting Developing basic skills of drawing and sketching natural forms and man-made objects both on site and in the studio. Use different media such as pencil, ink, colour etc. The processes of seeing, Imagining and Representing - Observations on Line and Shape, Observation on Tone and Texture, Observations on Form and Structure, Observations on Space and Depth, Sketching Exercises related to the contents specified above.	25	30%	2,6	CO2	PSO1 PSO2			
3	Rendering Techniques Architectural rendering techniques for building exteriors and interiors using pen & ink, colour, values, tones, etc. Architectural representation of trees, foliage, human figures, cars, symbols, etc.	15	20%	2,6	CO2	PSO1 PSO2			
4	Material Exploration (Workshop) Brick, Paper, pulp, POP, Clay Brick masonry work (different bonds) and plastering techniques Making of Arches from brick Understanding Craft and Technology – Material exploration (Clay / Printing) - to be Explored as Workshop Modules - Print Making / Clay Sculpting / Casting / Sheet Metal etc.	20	30%	2,3,6	CO4	PSO2			
Reference Books									
1.	Alkin, Urbelleth and Lione, Pencil Techniques in Modern Design								
2.	Caldwell Peter, Pen and Ink Sketching								
3.	Criss. B. Mills, Designing with Models								
4.	Bernald S and Copplence Myers, History of Art								
5.	Krier Rob, Element of Architecture								
6.	Gill, Rendering with Pen and Ink								
7.	Wenninger, Spherical Models								
8.	John W. Mills, The Technique of Sculpture								

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture		Academic Year				2021-2022			
B. Arch (UG): Regular Programme										
Year	I	Core / Elective / Foundation Data Analytics in Architecture (ARC1113LCS)	Credits / Hours per week				02 Credits 03 Hrs per week (1 Lecture + 2 Studios)			
Semester	I	Year of Introduction: 2021 Year of Syllabus Revision: -	Maximum Marks / Grade				Total: 100 Term Work: 50 Review and Viva: 50			
Mode of Transaction: Lectures & Studio			Minimum Passing				45 Marks			
Course Outcome (CO) CO1: Understand data types and means of collecting data. CO2: Learn how o calculate and apply various location and measures of variability CO3: Learn various graphs, interpretation and its application in excel. CO4: Learn new statistical programming language.										
Unit No.	Topic/Unit		Contact Hours (Total 15 weeks teaching /semester)	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurs hip (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)
1	Introduction to Analytics • Commonly used Analytical terms, process and types of data. Introduction to collection of data for survey problems • Creating a survey. Discuss the areas for which students want to collect data.		9	10	1,2	CO1	PSO1,	Emp / Ent	L/N/G	PE

2	Understanding of various analytical terms • Sample versus Population. • Measures of Central Tendency – Mean, Median, Mode. Mean Vector. • Measures of Variation in Data - Variance Covariance and Correlation Matrices.	6	20	1,2	CO2	PSO1,			
3	Processes and Presentation techniques • Survey Challenges (Assignment and Presentation in the group) • Taking up case studies where it is learnt how to present data to clients, higher authorities and other associated stakeholders • It would move from simple graphs and presentation to dynamic dashboards using software like excel (pivot tables)	18	40	2, 3, 4,5	CO3	PSO1, PSO2			
4	Analyze Survey • How to Analyze and come up to inferences from graphs. Importance of each type of graph and its applicability • Analyzing one case study using data analytical software (ex: R studio, Python etc).	12	30	2, 3,4,5	CO3 CO4	PSO1, PSO2			
Reference Books									
1.	Statistics for business and economics, Andreson, Sweeney, Williams, 12 th Edition, Cengage learning								
2.	Excel 2016 Bible, John Walkenbach, ISBN: 978-1-119-06751-1								
3.	Online R Studio: https://rstudio.com/resources/books/								

 सत्यं शिवं सुन्दरम्		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Civil Engineering		Academic Year				2021-2022			
Bachelor of Architecture (B.Arch.): Regular Programme											
Year	I	Core / Elective / Foundation Building Material and Construction I CVL1105CS		Credits / Hours per week		05 Credits 05Hrs per week Lecture: 03Hrs (2CVL + 1 ARCHI) Studio: 2Hrs (ARCHI) + 1Hrs (CVL)					
Semester	I	Year of Introduction: Year of Syllabus Revision: 2021		Maximum Marks / Grade		Total: 150 Theory (Paper): 100 Review and Viva: 50					
Mode of Transaction: Lectures & Studio				Minimum Passing		68 Marks					
Course Outcome (CO) CO1 Development of ability to analyze a design decision, situation and come up with correct material choice and construction specification. CO2 To know properties and advantages, limitations of different types of building materials CO3 Analyze/ Identification of good quality of building materials CO4 To know application (uses) and preservation of different types of building materials											
Unit No.	Topic/Unit			Contact Hours (Total 15 weeks teaching /semester)	Weight age (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/ Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)

1	Fundamentals of Building Material and Construction (To be taught by Arch. Dept.) - Overview of basic building materials like brick, stone, wood etc. with respect to their classification, composition and general uses in the construction industry. - Introduction to building materials as described in Indian architectural contexts. Emphasis should be on developing understanding about making the choice of appropriate building materials in a given situation. - Tracing the evolution and development of elementary forms of structure and their classification. Basic components of built form. Introductory lectures on load bearing and framed structures; their potentials and constraints for design. - Elementary construction methods explaining basic principles of load bearing structures. - Overview of types of bricks, bats and closers etc. English and Flemish brick bonds, stopped ends, quoins, piers, junctions, jambs for various thicknesses. Jointing, pointing and copings. - Types of rubble masonry walls like Random Rubble, Coursed Rubble, Ashlar, etc., stone coping, jointing and pointing. - Building walls with natural materials (properties and construction techniques) – mud, thatch, cane, bamboo, timber.	24	26%	1,2,4	CO1 , CO4	PSO1	EMP, SD	L, R	ES
2	Building Material and Construction Techniques (To be taught by Civil Dept.) Lime: cementing action of lime, classification of lime, tests for lime. Cement: manufacturing, composition, types of cement, storage and adulteration, sampling and testing. Sand: Introduction, sources of sand impurities in sand, sand for concrete work, sand for mortars and plasters, sand for filling, tests Mortar: classification, characteristics of good mortar, ingredients of mortar and their functions, cement mortar, lime mortar, cement-lime mortar, surkhi mortar, mud mortar, special mortar use of block masonry in buildings, testing of blocks	17	22%	1,2,6	CO2 , CO4	PSO1 PSO4			
3	Building Materials (To be taught by Civil Dept.) Cast iron, Wrought iron and Steel: Classification, Physical properties, Defects in steel, various market forms of steel. Reinforced Cement Concrete: Main principle of preparing RCC, Ingredients of RCC, their functions and different proportions, Types of reinforcement, Placement of reinforcement. Concrete blocks: manufacturing of concrete blocks, dimensions and tolerances,	17	24%	1,2,6	CO2 , CO4	PSO1 PSO4			

	classification of concrete blocks,- Elementary construction methods explaining basic principles of load bearing structures.								
4	Building Materials (To be taught by Civil Dept.) • Clay and Clay Products : Building Tiles – Various types with fig., Flooring tiles, wall tiles, drain tiles, glazed earthenware tiles, Specifications of Tiles, Earthenware – Terracota& Porcelain, Stoneware • Artificial timbers – Various Market forms of Timber, Industrial timber – (veneer, plywoods, fiber boards, Impreg and Compreg timbers) • Plastics – Basic raw material used in plastics, Constituents, Properties, Shortcomings, Classification, Uses, Commercial forms, trade names typical applications of some important plastics, Fiber glass reinforced plastic. • Glass: Definition and Introduction, classification of Glass - Flat Glass : Sheet Glass, Plate Glass, (Silvering, Glazing), Safety Glass: Laminated Safety Glass, Toughened Safety Glass, Wired Safety Glass, Heat Insulation Glass: Foam Glass, Glass Fiber, Glass blocks. • Aluminum: Properties, Alloys of Aluminum, Benefits of using Aluminum as building material • Fly Ash : principle constituents, effect of flyash on cement concrete • Water Proofing Materials : properties, various types of water proofing materials	17	28%	1,2,6	CO2 CO3	PSO1 PSO4			
Reference Books									
1.	Engineering Materials by R.K.Rajput, S.Chand and company, New Delhi								
2.	Building Materials by S.K.Duggal, new Age International								
3.	Engineering Materials by S.C.Rangwala, Charotar Publication								
4.	W.B. Mc Kay, Building Construction Volume 1 to 4								
5.	Francis Ching D.K , Building construction illustrated								
6.	Sushil Kumar, Building Construction								
7.	S.K. Sharma , Civil Engineering construction Materials								
8.	R. Barry ,Building Construction Volume 1 to 5								
9.	S.K. Sharma ,Civil Engineering construction Materials								

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering				Academic Year		2024-25	
B.E. (ALL BRANCHES)and B.Arch. : Regular Programme									
Year	I	Core / Elective / Foundation FTE 1101CS: Universal Human Values – I				Hours per week (L-T-P) & Credit 02-00-00, No Credit			
Semester	I	Year of Introduction: 2024 Year of Syllabus Revision: --				Maximum Marks / Grade 00			
Mode of Transaction		Lectures (Online)							
Course Outcome (CO)									
CO1: Understand and analyse the essentials of human values and skills, self-exploration, happiness and prosperity. CO2: Evaluate coexistence of the “I” with the body. CO3: Identify and evaluate the role of harmony in family, society and universal order. CO4: Understand and associate the holistic perception of harmony at all levels of existence. CO5: Develop appropriate technologies and management patterns to create harmony in professional and personal lives.									
Unit No.	Topic/Unit	Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and

									Professional Ethics (PE)
1	Introduction to UHV, Aspirations and Concerns, Self-management, Health	6	40%		CO1, CO2	-----	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
2	Relationships	4	27%		CO2, CO3				
3	Society, Natural Environment, Self-evaluation	5	33%		CO4, CO5				
Reference Books:									
1.	A foundation course in Human Values and Professional Ethics by R R Gaur, R. Ashthana and G P Bagaria, 2 nd Edition (2019).								
2.	Universal Human Values and Professional Ethics by Dr. Saroj Kumar, Prof. Sheenu Nayyer, Thakur Publication Pvt Ltd, (2020)								
3.	Online Universal Human Values material of AICTE.								

Detail Syllabus: S.S of B. Arch I(New Course - CRS)

Implemented from academic year 2021-22 (Non-CRS)

From academic year 2022-23 (CRS)

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture	Academic Year	2021-2022						
Bachelor of Architecture (B.Arch.): Regular Programme									
Year	I	Core /Elective/ Foundation Architectural Design II (ARC1206LCS)	Credits / Hours per week 09 Credits 09 Hrs per week (9 Studios)						
Semester	II	Year of Introduction: 1994 Year of Syllabus Revision: 2021	Maximum Marks / Grade Total: 300 Term Work: 200 Review and Viva: 100						
Mode of Transaction: Studio		Minimum passing	135 Marks						
Course Outcome (CO) CO1 Formulate a design process for architectural design of single activity space for one or two users and demonstrate the same in the form of a design proposal. CO2 Develop conceptualizing skills and vocabulary to explain ideas and proposals. CO3 The students shall understand the basic functional aspect of designing a simple building type and its relevant spatial organization. CO4 The students shall learn to reciprocate and sensitize the design/concept to the environment and the design skill of the project.									
Unit No.	Topic/Unit	Contact Hours (Total 15 weeks teaching /semester)	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional (R)/ Global (G) development needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV) and Professional Ethics (PE)

1	Material & Context Simple and common materials (stone, bamboo, brick and concrete), their design /structural potential and constraints. Projects based on the above that generate several alternatives and which incorporate the understanding of materials and structure. Small multi-functional projects with a given context. Different contexts such as urban-rural, inner city – suburbs. Structure as a maker of space as well as an ordering mechanism.	27	20%	1,2	CO3	PSO1	EMP, SD	L, R	HV, ES,PE
2	Concept of Scale& Proportion Exercises on proportions and form development, proportion systems in Western and Indian architecture. Development process for form and space for multi-activity units like house, dispensary, guesthouse etc. for a given small social group. The student should apply the knowledge and skills gained in the first semester.	33	25%	1,2,6	CO1, CO2	PSO1			
3	Space Planning (Form& Spaces) Scale and Complexity: projects involving small span, single space, single use spaces with simple movement, predominantly horizontal, as well as simple function public buildings of small scale; passive energy. Aesthetic and psychological experience of form and space in terms of scale, colour, light, texture, etc.	42	30%	1,2,6	CO2, CO3	PSO1, PSO2			
4	Activities and Spatial Development Understanding human activities and interactions of a small group. Understanding the likes/dislikes, lifestyle of individuals and groups and its influence in shaping architecture. Learning to use design tools and techniques like design brief, time-line activity chart, proximity chart, requirements detailing etc. Function and need: user requirements.	33	25%	1,2,6	CO1, CO4	PSO1			

Note: Study tours shall be part of this course which would help students to get acquainted to the culture and context of a region taken up for study.

Reference Books

1.	Francis D. K. Ching ,Form, Space & Order
2.	Frank Orr , Scale in Architecture
3.	Bruno Zevi , Architecture as Space
4.	Will Jones; Architects Sketchbooks; Thames & Hudson; 2011.
5.	Sam F.Miller, Design Process: A Primer for Architectural and Interior Design, VNR; 1995.

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture				Academic Year		2021-2022				
Bachelor of Architecture (B.Arch.): Regular Programme											
Year	I	Core / Elective / Foundation Building Material and Construction II (ARC1207CS)			Credits / Hours per week		05 Credits 05 Hrs. per week (2 Lectures + 3 Studios)				
Semester	II	Year of Introduction: Year of Syllabus Revision: 2021			Maximum Marks / Grade		Total: 150 Theory (Paper): 50 Review and Viva: 100				
Mode of Transaction: Lecture & Studio					Minimum Passing		68 Marks				
Course Outcome (CO): CO1 Students will understand the building as a structural system CO2 Understanding of the various building elements, their functions and their working detail drawings. CO3 Construction techniques and use of different building material with their intrinsic relationship to structural systems and environmental performance											
Unit No.	Topic/Unit			Contact Hours (Total 15 weeks teaching /semester)	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/ Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)
1	Brick Construction Elementary construction methods explaining basic principles of load bearing structures. Types of bricks, bats and closers etc. English and Flemish brick bonds, stopped ends, quoins, piers, junctions, jambs for various thicknesses. Jointing, pointing and copings. Understanding Brick as a Material and its application			15	20 %	1,2	CO1	PSO 1			
2	Load bearing and Framed structures										

	Understanding of building as a structure. Different methods construction of load bearing and framed structure. Understanding different building elements of R.C.C frame structure such as column, beam, lintel etc.; Introduction of sub structure and super structure. Further understanding different building elements, their functionality and construction methods. Understanding Application of different materials in load bearing and frame structure.	24	30%	1,2	CO2, CO3	PSO 1, PSO 3	EMP, SD	L, R, N	ES, PE
3	Wall section, Plinth and external steps construction Wall section of load bearing and framed structure. Basic plinth and steps construction for load bearing and framed structure. Study of external steps in different materials for each building typologies. Its documentation through sketches and site visits. Construction of Plinth and Upper Floors. Proportions and qualities of different materials like sand, cement, sand, gravels etc.	18	25%	1,2,4	CO2, CO3	PSO 1, PSO 3			
4	Arches & Corbelling Concept of span and its application in creating openings in masonry walls with lintels and arches. Structural difference in the behavior of lintel and arches. Elementary principles of arch construction, terminology and types of lintels, corbelling and arches with their materials for construction.	18	25%	1,2,4	CO2, CO3	PSO 1, PSO 3			
Reference Books									
1.	Pearson Education India; Fifth edition (2013), Building Construction: Metric VOL. I & II by McKay								
2.	Charrotar Publishing House Pvt. Ltd ,Building Construction Book By Rangwala								
3.	S. Dass, 1957, A Text Book of Building Construction by N. K. R. Moorthy								
4.	Sushil Kumar, Building Construction								
5.	R. Barry, Building Construction Volume 1 to 5								

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture		Academic Year				2021-2022			
Bachelor of Architecture (B.Arch.): Regular Programme										
Year	I	Core /Elective/ Foundation Basic Design & Workshop II (ARC1208LCS)	Credits / Hours per week				05 Credits 05 Hrs. per week (1 Lecture + 4 Studios)			
Semester	II	Year of Introduction: 1994 Year of Syllabus Revision: 2021	Maximum Marks / Grade				Total: 100 Term Work: 50 Review and Viva: 50			
Mode of Transaction		Lecture & Studio	Minimum Passing				45 Marks			
Course Outcome (CO) CO1 The students gain mastery in sketching, visualizing and expression through manual drawing. CO2 Sensitized to culture, craft and context. CO3 Skill Development in Handling Materials and in Making Products.										
Unit No.	Topic/Unit		Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional (R)/Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV) and Professional Ethics (PE)
1	Graphic Design Explanation of fundamentals of drawings and its practice. Object drawing, studies in light and shade of simple, natural and geometric forms. Study built environment, light and shade pattern, surface texture, scale and proportion.		15	20%	1,2,6	CO1	PSO1 PSO2	EMP, SD	L, R,G	HV, PE
2	Abstraction from Observation Introduction to history of Graphic Design		20	25%	2,6	CO2	PSO1 PSO2			

	-Visual perception theory (Gestalts) -Principle of Compositions -Colour Theory -Type Design and Typography (Layouts / Format / Calligraphy) -Environmental Graphics (Signage / Logo / enhancing the built environment) -Exercises in environmental graphic design, colour and composition								
3	Diagramming Conceptual sketches - Plan, section, elevation, perspectives, isometric / oblique projections, axonometric /parallel projection, photography and montage as techniques in Architectural Delineation from study till presentation. This can be explored by way of assignments that require study, analysis, and documentation with weight age given to representational expression and techniques.	15	25%	2,6	CO1, CO2	PSO1 PSO2			
4	Material Exploration (Workshop) Stone and Wood carpentry workshop. Understanding Culture and Craft Material exploration (Wood/ Stone) - to be Explored as Workshop Modules - Wood Carving / Stone Sculpting	25	30%	2,3,6	CO3	PSO1, PSO2			
Reference Books									
1.	Alkin, Urbelleth and Lione, Pencil Techniques in Modern Design								
2.	Caldwell Peter, Pen and Ink Sketching								
3.	Criss. B. Mills, Designing with Models								
4.	Bernald S and Copplence Myers, History of Art								
5.	Krier Rob, Element of Architecture								
6.	Gill, Rendering with Pen and Ink								
7.	Wenninger, Spherical Models								
8.	John W. Mills, The Technique of Sculpture								
9.	David & Charles, U.K., 1994, Moivahuntly, "The artist drawing book"								
10.	Mills and Boon, London/Charles, T. Brand Ford Company, U.S.A., Arundell (Jan) Exploring sculpture								
11.	The Grumbacher Library Books, New York, 1996. The art of drawing trees, heads, colours, mixing, drawing, landscape and painting, water colour, oil colour, etc.								
12.	Caldwell peter, "Pen and Ink Sketching", B.T. Bats ford Ltd., London, 1995.								

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Civil Engineering		Academic Year				2021-22			
B. Arch: Regular Programme										
Year	I	Core / Elective / Foundation Surveying & Levelling CVL1207CS	Credits / Hours per week				03 Credits 03 Hrs per week (3 Lectures)			
Semester	II	Year of Introduction: 1994 Year of Syllabus Revision: 2021	Maximum Marks / Grade				Total: 100 Theory (Paper): 100			
Mode of Transaction		Lectures	Minimum passing				45 Marks			
Course Outcome (CO)										
CO1 Understand the principles of Surveying										
CO2 Learn operating various surveying instruments.										
CO3 Learn various analysis methods of surveying										
CO4 Understand and Learn to prepare drawings, plans using field data										
Unit No.	Topic		Contact Hours (Total 15 weeks teaching /semester)	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional (R)/ Global (G)	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)
1	Introduction of Surveying: • Introduction to surveying, its practicality in the profession. Classification of various survey instruments, techniques & equipment. • Reading of survey maps, understanding of features and undulations of ground. Scaling of survey measurements and errors in surveying.		04	09	2	CO1	PSO1 PSO2	Emp	N,G	HV, PE

2	Measurements : Principles, Methods of Direct measurements, Instruments for linear measurement, Introduction to total station, Ranging, Methods of Ranging, Offset, Types of offset, Examples based on theory	06	13	2,3,5	CO2,C O4	PSO1 PSO2	Emp, SD	L,N,G	PE
3	Basic Surveying Techniques : Plane table surveying (equipment, methods, advantage & disadvantage, errors etc.), Compass Surveying, Types of meridian & Bearing, Types of compass, Magnetic declination, Local attraction, Theodolite Surveying (temporary & permanent adjustment, measuring of magnetic bearings, Measurement of horizontal & vertical angles and Theodolite traverse & balancing closing error). Tacheometric surveying (general instruments, different systems of tacheometric measurements, stadia method).	21	47	2,3,4,5	CO2,C O3	PSO1 PSO2	Emp, SD	L,N,G	PE
4	Levelling Contours and Slope Analysis : - Terminologies, Instruments for levelling, Methods of levelling, Types of bench marks, Principles and Classification of levelling, Methods for calculations of RL, Curvature and refraction. - Contouring methods & equipment, contour intervals, direct & indirect methods of contouring, block contour surveys, profile leveling, longitudinal & transverse cross sections, and gradients. - Measurements along sloping landforms, principles, definitions, methods, instruments required for simple & differential leveling.	14	31	2,3	CO2,C O4	PSO1 PSO2	Emp, SD	L,N,G	PE
Reference Books									
1	Surveying and Levelling: T. P. Kanetkar & S. V. Kulkarni, Pune Vidhyarthi Grih Prakashan								
2	Surveying and Levelling: N. N. Basak, Mc Graw Hill Education Pvt. Ltd.								
3	Surveying: B. C. Punamia, Ashok Jain & Arun Jain, Laxmi Pub.								
4	Surveying & Levelling – S. C. Rangwala, Charotar Pub. House, Anand								
5	Surveying : Vol- I, Dr. K. R. Arora, Standard Book House, Delhi-6								
6	Surveying: Vol-I, S. K. Duggal, Mc Graw Hill Education Pvt. Ltd								

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Civil Engineering			Academic Year	2021-22	
B. Arch: Regular Programme							
Year	I	Core / Elective / Foundation Surveying and Levelling (L) CVL1207LCS		Credits / Hours per week		01 Credit 02 Hrs. per week (2 Practicals)	
Semester	II	Year of Introduction: Year of Syllabus Revision: 2021		Maximum Marks / Grade		Total: 50 Practical & Viva: 50	
Mode of Transaction: Practical				Minimum Passing		22 Marks	
No.	Termwork			Contact Hours	BT Level	CO	PSO
1	Compass Surveying: Temporary adjustment of compass, Determinations of included angles, Traversing exercise			06	1,2,3,4	1,2	PSO1, PSO2
2	Plane Table Surveying: Orientation, Methods			04	1,2,3	1,2	PSO1, PSO2
3	Levelling: Temporary adjustment of level, Levelling exercise			06	1,2,3,4,5	1,2,3	PSO1, PSO2
4	Sheets: Conventional Signs and Symbol, Scales			04	1,2	4	PSO1, PSO2
5	Total Station Project			04	1,2,3	1,2,3,4	PSO1, PSO2
6	Theodolite (height of pole)			06	1,2,3	1,2,3	PSO1, PSO2

	The Maharaja Sayajirao University of Baroda Faculty of Technology and Engineering			Academic Year			2021-22					
Bachelor of Architecture (B.Arch.): Regular Programme												
Year	I	Core / Elective / Foundation Communication Skills (ENG1221CS)			Credits/Hours per week			Total:2.5 Credits 03 Hrs per week (2 Lectures + 01 Studio)				
Semester	II	Year of Introduction: 1994 Year of Syllabus Revision:2021			Maximum Marks/Grade			Total: 100 Theory (Paper): 50 Practical & Viva: 50				
Mode of Transaction: Lectures and Practical					Minimum passing			45 Marks				
Course Outcome (CO) CO1To know the process of communication and its components. CO2To improve the language skills i.e. Listening Skills, Speaking Skills, Reading Skills and Writing Skills (LSRW). CO3To effectively conduct meetings and conferences CO4To enhance phonetic competence, comprehension skills, presentation skills, group discussion skills etc. CO5To build confidence for communicating in English and create interest for the life-long learning of English language.												
Unit No.	Topic				Contact Hours (Total 15 weeks teaching / semester	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship(Ent)/Skill Development (SD)	Relevance to Local (L) /National (N) / Regional (R) / Global (G)	Relation to Gender(G), Environment and Sustainability (ES), Human Values (HV) and Professional Ethics (PE)
1	Communication skills: Process of communication, Flows of Communication in organization, Barriers to communication (Formal Flow–Upward, Downward, lateral and diagonal, Strategies to improve Organizational Communication, Effectiveness in Managerial Communication, and importance of technical communication, Non verbal communication.				07	15%	1,2,	CO 1	PSO 1	SD	G	ES

2	Listening Ability, Hearing and Listening, Types of Listening, Barriers to Effective Listening, Traits of a Good Listener.	07	15%	1,2,3	CO 2	PSO 1	SD	G	ES
3.	Presentation Skills and Writing skills: Effective Presentation strategies: Purpose, analyzing the audience and locale, organizing the content, Oral presentation, Graphic presentation, Presentation aids, Personality Development. Newsletters, technical article and business letters. Technical Reports, characteristics,Importance,objectives,categoriesofreport,formatstructureofreport s,typesofreports,importanceof Plagiarism check.	17	40%	1,2,3	CO3 CO4	PSO 1	SD	G	ES
4	Group Discussion and workplace communication: Qualities needed for effective group discussion. Email etiquettes, Telephone Etiquettes, Role and responsibility of architect, Work culture in jobs. Workplace, rights and responsibilities	07	15%	1,2,4	CO4	PSO 1	SD	G	ES
5	Interviews and meetings: Types of interview, General preparation for interview, Gathering information about the company, knowing about the role/job position, Types of interviewing questions, Non-verbal communication to win the interview. Meeting and Conferences: Planning a meeting (Agenda and notice), Conducting a meeting, Postmeeting actions(Minutes),Planning& Conducting a Conference (anchoring and Report writing),and Video/web conferences	07	15%	1,2,3	CO3 CO4	PSO 1	SD	G	ES
T.W/ Pr.	Termwork /Practicals shall be based on above syllabus.								
REFERENCES									
1.	G.S.B.K Babu Rao,“Business Communication and Soft Skill”,Himalaya Publishing house (1stEdition)								
2.	RamanSharma,“TechnicalCommunications”,OxfordPublication,London,2004								
3.	R.Sharma,K.Mohan,“Business Correspondence and Report Writing”,TMH NewDelhi2002.								
4.	S.Kumar,P.Lata,“Communication Skills”,New Delhi,OxfordUniversityPress,2011								

Applied Mechanics APM1203 - Implemented from academic year 2021-22 (Non-CRS)
Applied Mechanics APM1203CS - From academic year 2022-23 (CRS) till academic year 2024-25 (CRS)

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Applied Mechanics and Structural Engineering			Academic Year				2021-2022			
B. Arch (UG): Regular Programme											
Year	I	Core / Elective / Foundation Applied Mechanics (APM1203CS)		Credits / Hours per week			03 Credit / 03 Hrs. per week (3 Lectures)				
Semester	II	Year of Introduction: 2007 Year of Syllabus Revision: 2021		Maximum Marks / Grade			Total: 100 Theory (Paper): 100				
Mode of Transaction: Lectures				Minimum Passing			45 Marks				
Course Outcome (CO)											
CO1 To learn comprehensive, theory based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the engineering discipline. CO2 To get understanding of specialist bodies of knowledge within the engineering discipline. CO3 To apply the concept of equilibrium to systems which can be modeled as particles in 2D, and to rigid bodies in 2D. CO4 To calculate different types of stresses like normal stress, shear stress etc. and corresponding stresses for various loading conditions both for static and dynamic parts of structures or machines.											
Unit No.	Topic/Unit			Contact Hours (Total 15 weeks teaching /semester)	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional/Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)

1	Forces and force system Statics-Basic principles of statics, Forces, Units, Types of force systems, Conditions of equilibrium of force system.Resultant of concurrent forces & Parallel forces, Analytical & Graphical methods, moment of force & Principles of moments, Parallel forces and couples.	12	30%	1,2	CO1 CO3	PSO1 PSO3	SD	N	ES
2	Beams and trusses Beams: Reaction in the beam. Trusses: Introduction and assumptions, Solution of trusses by method of joints, and method of sections.	12	25%	3,4	CO1 CO3	PSO1 PSO3			
3	Elasticity of materials Elasticity of materials: Stress & Strain, Hooke’s law, Stress-strain diagram. Elasticity constants, Working stress and factor of safety, Lateral strain and Poisson’s ratio, Relation between elastic constants. Temperature stresses (simple and composite case)	12	30%	1,2,3	CO1 CO2 CO4	PSO1 PSO3			
4	Introduction to structural systems Basic ideas about structure in design of architecture, various structural system concepts for buildings.	09	15%	1,2	CO1 CO2 CO3	PSO1 PSO3			
Reference Books									
1.	Applied Mechanics By S. B. Junnarkarand H. J. Shah.								
2.	Mechanics of Structures Vol. I by S. B. Junnarkarand H. J. Shah.								
3.	Elements of Strength of Materials by S. Timoshenko and D. H. Young								
4	Strength of Materials by R.S.Khurmi.								
5	Strength of Materials by R.C.Patel, T.D.Bhagia&B.M.Patel.								
6	Strength of Materials by Ramamrutham.								

Applied Mechanics APM1213CS - Implemented from academic year 2024-25 (CRS)

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Applied Mechanics and Structural Engineering			Academic Year				2021-2022			
B. Arch (UG): Regular Programme												
Year	I	Core / Elective / Foundation Applied Mechanics (APM1213CS)			Credits / Hours per week			03 Credit / 03 Hrs. per week (3 Lectures)				
Semester	II	Year of Introduction: 1994 Year of Syllabus Revision: 2024			Maximum Marks / Grade			Total: 100 Theory (Paper): 100				
Mode of Transaction: Lectures					Minimum Passing			45 Marks				
Course Outcome (CO) CO1 To learn comprehensive, theory-based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the Engineering and Architecture discipline. CO2 To understand various effect of forces and force systems on 2D rigid and connected bodies. CO3 To apply the concept of equilibrium to analyze beams and trusses. CO4 To learn basic ideas about various structural systems. CO5 To evaluate elastic properties and stresses in the materials CO6 To evaluate center of gravity and moment of inertia of various laminas,												
Unit No.	Topic/Unit				Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional/Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)

1	Forces and force system Statics-Basic principles of statics, Forces, Units, Types of force systems, Conditions of equilibrium of force system.Resultant of concurrent forces & Parallel forces, Analytical & Graphical methods, moment of force & Principles of moments, Parallel forces and couples.	15	30%	1,2	CO1 CO2	PSO1	SD	G	ES
2	Beams, trusses and Introduction to structural systems Beams: Reaction in the beams. Trusses: Introduction and assumptions, Analysis of trusses by method of joints, and method of sections. Basic ideas about structures in design of architecture, various structural systems and concepts for buildings.	15	30%	3,4	CO3 CO4	PSO1			
3	Elasticity of materials Elasticity of materials: Stress & Strain, Hooke's law, Stress-strain diagram. Elasticity constants, Working stress and factor of safety, Lateral strain and Poisson's ratio, Relation between elastic constants. Temperature stresses (simple and composite case)	07	20%	1,2,3	CO5	PSO1			
4	Center of Gravity and Moment of Inertia Centre of gravity, centroids of composite areas, built-up sections and Moment of inertia.	08	20%	1,2	CO6	PSO1			

Reference Books

1.	Applied Mechanics By S. B. Junnarkar and H. J. Shah.
2.	Mechanics of Structures Vol. I by S. B. Junnarkar and H. J. Shah.
3.	Elements of Strength of Materials by S. Timoshenko and D. H. Young
4.	Strength of Materials by R.S.Khurmi.
5.	Strength of Materials by R.C.Patel, T.D.Bhagia&B.M.Patel.
6.	Strength of Materials by Ramamrutham.



Applied Mechanics(L) APM1203L - Implemented from academic year 2021-22 (Non-CRS)
Applied Mechanics APM1203LCS - From academic year 2022-23 (CRS) till academic year 2024-25 (CRS)

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Applied Mechanics and Structural Engineering			Academic Year		2021-2022		
B. Arch (UG): Regular Programme									
Year		I	Core / Elective / Foundation Applied Mechanics (L) APM1203LCS			Credits / Hours per week		01 Credit / 02 Hrs. per week (02 Practicals)	
Semester		II	Year of Introduction: 2007 Year of Syllabus Revision: 2021			Maximum Marks / Grade		Total: 50 Practical & Viva: 50	
Mode of Transaction : Practical						Minimum passing		22 Marks	
No.	Experiment				Contact Hrs. (Total 15 weeks teaching /semester)	Weightage	BT Level	CO	PSO
1	Law Of Parallelogram Of Forces				4	13	2,3,5	CO2	PSO2
2	Law Of Polygon				4	13	2,3,5	CO2	PSO2
3	Simple Beam				4	13	2,3,5	CO2	PSO2
4	Jib Crane				2	7	2,3,5	CO2	PSO2
5	Complete Tensile Test On Mild Steel (Ms)				2	7	2,3,5	CO2	PSO2
6	Modulus Of Elasticity For Ms				2	7	2,3,5	CO2	PSO2
7	Direct Shear Test OnMs				2	7	2,3,5	CO2	PSO2
8	Copmression Test OnMs And Cast Iron (Ci)				2	7	2,3,5	CO2	PSO2
GRAPHICS – STATICS									
1	Coplanar Concurrent Force System-1				2	6	2,3,5	CO2	PSO2
2	Coplanar Concurrent Force System-2				2	6	2,3,5	CO2	PSO2
3	Coplanar Non-Concurrent Force System-1				2	7	2,3,5	CO2	PSO2
4	Coplanar Non-Concurrent Force System-2				2	7	2,3,5	CO2	PSO2

Applied Mechanics APM1213LCS - Implemented from academic year 2024-25 (CRS)

 सत्यं शिवं सुन्दरम्	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Applied Mechanics and Structural Engineering				Academic Year		2021-2022	
B. Arch (UG): Regular Programme								
Year	I	Core / Elective / Foundation Applied Mechanics (L) APM1213LCS		Credits / Hours per week			01 Credit / 02 Hrs. per week (02 Practicals)	
Semester	II	Year of Introduction: 2007 Year of Syllabus Revision: 2021		Maximum Marks / Grade			Total: 50 Practical & Viva: 50	
Mode of Transaction : Laboratory Experiments, discussion and viva				Minimum passing			22 Marks	
No.	Experiment			Contact Hrs.	Weightage	BT Level	CO	PSO
1	Law Of Parallelogram Of Forces			4	13	2,3,5	CO2	PSO1
2	Law Of Polygon			4	13	2,3,5	CO2	PSO1
3	Simple Beam			4	13	2,3,5	CO3	PSO1
4	Jib Crane			2	7	2,3,5	CO2	PSO1
5	Complete Tensile Test On Mild Steel (Ms)			2	7	2,3,5	CO5	PSO1
6	Modulus Of Elasticity For Ms			2	7	2,3,5	CO5	PSO1
7	Direct Shear Test OnMs			2	7	2,3,5	CO5	PSO1
8	Coprmpression Test OnMs And Cast Iron (Ci)			2	7	2,3,5	CO5	PSO1
GRAPHICS – STATICS								
1	Coplanar Concurrent Force System-1			2	6	2,3,5	CO2	PSO1
2	Coplanar Concurrent Force System-2			2	6	2,3,5	CO2	PSO1
3	Coplanar Non-Concurrent Force System-1			2	7	2,3,5	CO2	PSO1
4	Coplanar Non-Concurrent Force System-2			2	7	2,3,5	CO2	PSO1

Detail Syllabus: F.S of B. Arch II (New Course - CRS)

Implemented from academic year 2022-23 (Non-CRS)

From academic year 2023-24 (CRS)

Syllabus of Courses											
		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Applied Mechanics and Structural Engineering.			Academic Year			2022-2023			
B. Arch (UG): Regular Program											
Year	II	Core / Elective / Foundation Theory of Structure APM1307CS			Credits / Hours per week			03 Credits / 03 Hrs. per week (3 Lectures)			
Semester	III	Year of Introduction: 1994 Year of Syllabus Revision: 2012			Maximum Marks / Grade			Total: 100 Theory (Paper): 100 (30 IA + 70 UA)			
Mode of Transaction: Lectures and Tutorials					Minimum passing			45 Marks			
Course Outcome (CO)											
CO1To learn the basic knowledge of shear force and bending moment in a simply supported, cantilever, over-hanging, fixed and continuous beams and drawing the diagrams for the same.											
CO2 To learn the calculation of shear stress, bending stress, direct and bending stress											
CO3 To learn the calculation deflection in beam by using Macauly’s method and to calculate load carrying capacity of axially loaded column											
CO4 To learn the Moment distribution method											
Unit No.	Topic/Unit			Contact Hours (Total 15 weeks teaching /semester)	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N) / Regional/Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)

1	Shear Force And Bending Moment Bending moment and shear force diagrams for simply supported, cantilever and overhang beams, Relation between bending moment and shear force, Theory of simple bending, Neutral axis, Section modulus and moment of resistance.	14	30%	3,4	CO1	PSO1 PSO2	SD	N	ES
2	Direct and bending stresses and Shear Stresses Principal planes and Principal stresses, Distribution of shear stress in various cross section, Direct and bending stresses.	14	30%	3,4	CO2	PSO1 PSO2			
3	Deflections of Beams and Buckling of Columns Deflection of cantilever and simply supported beams, Buckling of columns and slenderness ratio, Struts and columns by Euler, Rankine and other formulae (without derivations)	09	20%	3, 4,5	CO3	PSO1 PSO2			
4	Moment Distribution Method Fixed and continuous beams, Moment distribution method, Simple cases.	08	20%	3,4,5	CO4	PSO1 PSO2			
Reference Books									
1.	Mechanics of Structures Vol.Iby Junnarkar and H. J. Shah.								
2.	Basic Structural Analysis by Reddi, McGraw Hill Pub.								
3.	Elementary Structural Analysis by Nooris& Wilbur, McGraw Hill Pub.								
4.	Strength of Materials by Ryder (English language society pub.)								

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Applied Mechanics and Structural Engineering.			Academic Year		2022-2023		
B. Arch (UG): Regular Program									
Year	II	Core / Elective / Foundation Theory of Structure (L) APM1307LCS			Credits / Hours per week		01 Credit / 02 Hrs. per week (2 Practicals)		
Semester	III	Year of Introduction: 1994 Year of Syllabus Revision: 2016			Maximum Marks / Grade		Total: 50 Practical & Viva: 50		
Mode of Transaction: Practical					Minimum Passing		23 Marks		
No.	EXPERIMENT				Contact Hours (Total 15 weeks teaching /semester)	Weightage (%)	BT Level	CO	PSO
1	Compression Test on Timber				4	10	2,3,5	CO2	PSO2
2	Izod Impact Test on Ci, Ms And Brass				2	10	2,3,5	CO2	PSO2
3	Hardness Test on Ms, Ci And Brass				2	10	2,3,5	CO2	PSO2
4	Modulus of Rupture of Timber				4	10	2,3,5	CO2	PSO2
5	Modulus of Elsticity Of Timber				4	10	2,3,5	CO2	PSO2
GRAPHICS – STATICS									
6	Sf and Bm Diagram for Simply Supported Beam				2	10	2,3,5	CO2	PSO2
7	Sf and Bm and Af Diagram for Simply Supported Beam				2	10	2,3,5	CO2	PSO2
8	Sf and Bm Diagrams for Simple Beams with Overhang				2	10	2,3,5	CO2	PSO2
9	Mohr’s Stress Circle Method-1				4	10	2,3,5	CO2	PSO2
10	Mohr’s Stress Circle Method-2				4	10	2,3,5	CO2	PSO2

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture		Academic Year		2022-2023					
Bachelor of Architecture (B.Arch.): Regular Programme										
Year	II	Core / Elective / Foundation Architectural Design III (ARC1305LCS)	Credits / Hours per week		9 Credits / 9 Hours per Week (9 Studios)					
Semester	III	Year of Introduction: 1994 Year of Syllabus Revision: 2022	Maximum Marks / Grade		Total: 350 Term Work: 200 Review and Viva : 150					
Mode of Transaction		Studio	Minimum Passing		158 Marks					
Course Outcome (CO) CO1 Comprehend when and how the analysis of a design brief would result in organization of built and open spaces. CO2 Formulate a design process for architectural design for a specific use by a group. CO3 Demonstrate the same in the form of a design proposal.										
Description: - - Students should during this year learn to work on design with gradually increasing complexity in terms of context, site, specific use , material and structure. - Study will have emphasis on understanding mass and void co-relation within a cluster and understand length: width: height ratios of built mass and open spaces and their relationship. - The scale and complexity of projects will commensurate from small to medium size projects comprising of buildings or small campuses with simple circulation, passive energy techniques, multiples of single unit space or single use buildings or multi-unit cluster like Pre-primary school, health center, SOS village, Bank, Restaurant, Library, Art gallery, Hobby centre, Creche etc.										
Unit No.	Topic/Unit		Contact Hours (Total 15 weeks teaching /semester)	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV) and Professional Ethics (PE)
1	Introduction of design elements Understanding design elements such as site planning, climate, orientation, circulation, use of elementary building materials, construction and spatial organization.		15	10%	1, 2 & 3	CO1	PSO1	EMP, SD	L, R	ES, HV, PE

2	Introduction of Site Analysis and Program Derivation Site analysis in larger context (Inventory + Interpretation) SWOT Analysis, Slope Analysis, response to the context, derivation of building program and its rationale. Students are required to study the site and its context thoroughly. This involves not only the study of drawings and documents but also visiting the site and studying the project on a first-hand basis.	25	20%	1, 2, 3 & 6	CO1	PSO1 PSO2			
3	Architectural Spaces for Multiple Activities in a Specific Use Built Space The project should begin with design having a few functions such as Kindergarten, small structures for neighborhood, etc. This should be accomplished by theoretical analysis of the aesthetic components of architectural design (organization of spaces, their inter-relation, scale, ambience, technology and material for construction). Students are expected to create design by rethinking the way we interact with different architectural spaces. Students will also develop a model of their proposal with the effective communication of design ideas and design decisions based on the understanding of architectural spaces for multiple activities.	40	30%	1, 2, 3 & 6	CO2	PSO1 PSO3			
4	Design Exercise with Increasing Complexity in Terms of different Specific Use, Site Context, Material, Structure etc. More complex design problems such as an art gallery or a bank etc can be taken as second design exercise with following stages incorporated: • Conceptual design stage: Big idea, response to climate and context, orientation, study models, etc. • Design development stage: In this stage concept level concerns to be developed in detail, site plan, all floor plans, enlarged special areas/spaces with furniture, parking layout, elevations, sections, models, etc. • Final Stage: All plans with multiple layers explaining concept level concerns with final floor plans, enlarged area with sections, elevations site sections, building sections, sketches, process models, context model with building form, detailed model, etc.	55	40%	1, 2, 3 & 6	CO3	PSO1 PSO2 PSO4			

Reference Books

1.	Graphical Thinking for Architecture: Paul Lassen
2.	Form, Order and Space: Francis Ching
3.	Pattern Language: Christopher Alexander
4.	Design with nature: Ian McHarg
5.	Dudek M, 'Schools and Kindergartens', Birkhauser 2007.

6.	Julius Panero, Martin Zelnik, 'Human Dimension and Interior Space', Whitney Library of Design, 1975.
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 सत्यं शिवं सुन्दरम्		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture				Academic Year		2022-23				
Bachelor of Architecture (B.Arch.): Regular Programme												
Year	II	Core / Elective / Foundation Building Materials and Construction III (ARC1306CS)			Credits / Hours per week			5 Credits / 05 Hours per Week (2 Lectures + 3 Studios)				
Semester	III	Year of Introduction: 1994 Year of Syllabus Revision: 2022			Maximum Marks / Grade			Total: 150 Theory (Paper) : 50 (15 IA + 35 UA) Term Work : 100				
Mode of Transaction		Lecture & Studio			Minimum Passing			68 Marks				
Course Outcome (CO) CO1 Generate knowledge about the different building elements and their construction materials. CO2 Understand the different R.C.C. Building elements and their usage in substructure and superstructure. CO3 Generate knowledge of the construction process and methods of execution for R.C.C. Building elements.												
Unit No.	Topic/Unit				Co nta ct Ho urs (Total 15 weeks teachin g /semest er)	Weighta ge (%)	BT Level	CO	PSO	Element s of Employa bi lity (Emp)/ Entrepre ne urship (Ent)/ Skill Develop m ent (SD)	Relevan ce to Local (L)/ National (N)/ Regional(R)/ Global (G) developm ent al needs	Relation to Gender (G), Environment and Sustainabilit y (ES), Human Values (HV)and Professional Ethics (PE)

1	Introduction to Foundation as an element • Soil formation and resulting soil deposits, nomenclature of different soil types, basic physical properties and their inter- relationships, Indian Standard System used for foundation. • The study of various Shallow Foundations such as Isolated Footing, Continuous Footing, Combined Footing, Cantilever Footing, Mat Foundation, Strap Foundation & Raft Foundation. • Site visit to understand the construction methods. • Understanding their functional needs according to the building typology and their Architectural representation through drawings.	30	27%	1, 2,3	CO1, CO3	PSO 1, PSO 2	EMP, ENT, SD	L, R, N, G	ES, HV
2	Floor Construction • Construction of Plinth and Upper Floors (Suspended Floors) in different materials i.e. Jack Arch, Stone Floors, Wooden Floors, Composite Floors, Vaults etc. • Drafting and Architectural representation through drawings and Details	15	27%	1, 2	CO1, CO3	PSO1			
3	Roof as a building element • Introduction to roofs as covering elements for spans ranging from small to large in different materials such as wood, steel, R.C.C. and use of different roofing material. • Basic roof construction in wood-single, double and triple truss and joinery used. • Roof Trusses: Detailed study and preparation of drawings of couple close roofs and basic joints in their constructions. Queen post truss, King post truss, Composite truss, Bowstring truss, Scissors Truss and their placement and uses. Elementary roofing materials such as Thatching, country tiles, Mangalore tiles, G.I. and A.C. sheets.	20	20%	1,2,3	CO1, CO3	PSO1			
4	Temporary Structures • Study of temporary timbering methods i.e. Scaffolding, Centering, Shoring, Underpinning & Bracing etc., their need and execution methods.; • Construction site visits to understand it practically and documenting and sketching assignments regarding the same.	10	26%	1,2,3	CO1, CO2, CO3	PSO1			
Reference Books									
1.	McKay, W. (2013). <i>Building Construction: Metric VOL. I,II,III& IV</i> . Pearson Education India; Fifth edition.								
2.	Rangwala, S. (2016). <i>Building Construction Book</i> . Charotar Publishing House Pvt. Ltd								
3.	Moorthy, N. (1957) <i>Text Book of Building Construction</i> . S. Dass.								
4.	Barry, R. (1962). <i>The Construction of Buildings Vol. I,II,III</i> . Wiley-Blackwell.								
5.	Kumar, S. (2010). <i>Building Construction</i> . Standard Publisher Dist.								
6.	Punmia, B. et. al. (2016). <i>Building Construction</i> . Laxmi Publications; Eleventh edition								
7.	Francis D. K Ching (1991). <i>Building Construction Illustrated</i> . Van Nostrand Reinhold; Second Edition								

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture		Academic Year				2022-23			
Bachelor of Architecture (B.Arch.): Regular Programme										
Year	II	Core /Elective/ Foundation History of Architecture I ARC1307CS	Credits / Hours per week				4 Credits / 04 Hrs per Week (4 Lectures)			
Semester	III	Year of Introduction: 1994 Year of Syllabus Revision: 2022	Maximum Marks / Grade				Total: 150 Theory (Paper) : 100 (30 IA + 70 UA) Term Work : 50			
Mode of Transaction		Lectures, Presentations, in-class exercises, and reviews	Pass marks (min)				68 Marks			
Course Outcome (CO) CO1 Understanding of the diversity of historic architecture in India and sensitivity towards its syncretic aspects. CO2 Ability to appreciate particular cultural, symbolic, spatial and material qualities in architecture and cities as givers of meaning and continuity. CO3 Ability to appreciate universal qualities of architecture and its impacts.										
Unit No.	Topic/Unit		Contact Hours (Total 15 weeks teaching /semester)	Weight age (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV) and Professional Ethics (PE)

1	Early India and its Cultural Productions - Overview of early history of the Indian subcontinent bringing out different conjectures. Sindhu Sarasvati Civilization and its society, culture and urbanism with cities like Lothal, Dholavira, submerged Dwarka, - Vedic culture, settlements and architecture through textual and inscriptional sources. - Political, religious and cultural history of India in the first millennium outlining various empires. With special mention on ancient universities like Takshashila, Nalanda etc. - Architecture of early Mauryan empire. Buddhist architecture and art. Stupas, chaitya halls and viharas. - Hindu temple form – principles, morphology, meaning, symbolism, iconography and rituals, classification. - Early Hindu temple architecture and rock cut architecture of Guptas, Chalukyas and Pallavas. Influence of Buddhist architecture on them. - Study of important monuments for all the above.	10	16%	1, 2 & 4	CO1, CO2	PSO1	SD	L, N, R & G	ES & HV
2	Hindu Architecture of Southern and Western India - Outline history of South India with particular emphasis on Bhakti movement and evolution of temple town urbanism and architecture. - Art and architecture under the Pallavas, Cholas, Pandyas, Nayaks and Vijayanagara kingdom and its extension beyond borders to southeastern countries. - Influence of social and political history on them. Hoysala architecture. - Architectural monuments like Forts and Wadas of Marathas. - Understanding built forms like Temples (Jain and Hindu Temples), Step wells, Forts and Havelis, Traditional Houses (Bhonga houses, Pol houses) etc. of Gujarat and Rajasthan - Study of important monuments for all the above.	12	20%	1, 2 & 4	CO2	PSO1, PSO3			
3	Architecture of North, East and Central India Understanding Architecture ranging from hilly regions of Leh Ladakh, Himachal, Uttarakhand and to plains of Uttar Pradesh (brief over view on ghats and other built forms around water edge) Overview on Architectural styles adopted in Orissa, West Bengal Assam and Madhya Pradesh. (eg, Mandu, Temples of Khajuraho)	10	16%	1, 2 & 4	CO2	PSO1, PSO3			

4	Emergence of Modern Temples like Lotus temple, Swaminarayan temples (Akshardham), ISCON temples, etc.	04	06%	1,2 & 4	CO2, CO3	PSO1 PSO3			
5	Introduction to Islamic Architecture - Brief history of Islam. Islamic architecture of the world as rising from Islam as a socio-cultural and political phenomenon. Evolution of building types in terms of forms and functions. Principles and characteristics of Islamic architecture - to include aspects of religion, geometry, structure, materials, decoration, light. - Early political history of Islam in India. Evolution of Islamic architecture under the Delhi Sultanate - Slave, Khilji, Tughlaq, Sayyid and Lodi dynasties. Study of selected monuments of early Islamic architecture in Indian subcontinent.	18	30%	1,2 & 4	CO2, CO3	PSO1 PSO3			
6	Regional Islamic Architecture, and after: - Spread of Islam into other regions of India and their architectural expressions - Gujarat, Bengal, Malwa and the Deccan. Study of important monuments. - Political History of the Mughals. Mughal architecture and urbanism under Humayun, Akbar, Shahjahan and Aurangzeb. Study of important monuments. - Outline of Post Mughal Islamic architecture.	06	12%	1, 2 & 4	CO2, CO3	PSO1 PSO3			
Reference Books									
1.	Percy Brown, Read Books; 2nd ed. edition (9 November 2010), Indian Architecture (Buddhist And Hindu Period).								
2.	Percy Brown, Publisher: Cbs; 1st edition (2005), Indian Architecture: Islamic Period.								
3.	Satish Grover, South Asia Books (1 October 1996), Islamic Architecture in India.								
4.	Satish Grover, Lustre; 1st Edition. Edition (31 December 2008), Masterpieces of Traditional Indian Architecture.								
5.	James Ferguson, Munshiram Manoharlal Publishers (1 June 2001), History of Indian and Eastern Architecture.								

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture		Academic Year		2022-2023					
Bachelor of Architecture (B.Arch.): Regular Programme											
Year	II	Core / Elective / Foundation Basic Design & Workshop III (ARC1308LCS)		Credits / Hours per week		03 Credits / 05 Hrs per week (01 Lecture + 04 Studio)					
Semester	III	Year of Introduction: 1994 Year of Syllabus Revision: 2022		Maximum Marks / Grade		Total: 100 Term Work: 50 Review and Viva : 50					
Mode of Transaction		Lecture and Studio		Pass marks (min)		45 Marks					
Course Outcome (CO) CO1 The students gain mastery in sketching, visualizing and expression through manual drawing. CO2 Sensitized to culture, craft and context. CO3 Skill Development in Handling Materials and in Making Products.											
Unit No.	Topic/Unit			Contact Hours	Weightage (%) (Total 15 weeks teaching /semester)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L) / National (N) / Regional(R) / Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)
1	Space (scale & proportions) Understanding size, scale and dimension. Different systems of proportion and their application as an ordering tool/composition.			10	15%	1,2,6	CO1	PSO1	EMP, SD	L, R,G	HV, PE
2	Form and Structure Study of primary forms, their geometry and surface development. Design as meaningful transformation of primary forms. Structure and organization of forms in nature.			15	25%	2,3,6	CO2	PSO1			

3	Design Process, Model making techniques and Presentation techniques Generative patterns, fractal geometry, or parametric design with material explorations. Understanding processes like carpentry, casting, moulding, welding, laser cutting etc. This can be explored with exercises that involve research through a process for example nature to structure and the evolution of a structural system that can be fabricated to scale. Understanding and learning presentation techniques through software's like Photoshop, CorelDraw, etc.	25	30%	2,6	CO2	PSO1, PSO2			
4	Material Exploration (Workshop) Understanding Material through Craft Material exploration (Concrete blocks / RCC/ Metal) - to be Explored as Workshop Modules - Casting / Sheet Metal etc.	25	30%	2,3,6	CO3	PSO4			
Reference Books									
1.	Alkin, Urbelleth and Lione, Pencil Techniques in Modern Design								
2.	Caldwell Peter, Pen and Ink Sketching								
3.	Criss. B. Mills, Designing with Models								
4.	Bernald S and Copplence Myers, History of Art								
5.	Krier Rob, Element of Architecture								
6.	Gill, Rendering with Pen and Ink								
7.	Wenninger, Spherical Models								
8.	John W. Mills, The Technique of Sculpture								
9.	David & Charles, U.K., 1994, Moivahuntly, "The artist drawing book"								

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture			Academic Year				2022-23		
Bachelor of Architecture (B.Arch.): Regular Programme										
Year	II	Core / Elective / Foundation Computer Application in Architecture- I (ARC1309LCS)	Credits / Hours per week				02 Credits / 03 Hours per Week (01 Lecture + 02 Studios)			
Semester	III	Year of Introduction: 1994 Year of Syllabus Revision: 2022	Maximum Marks / Grade				Total: 100 Term Work: 50 Review and Viva : 50			
Mode of Transaction		Lecture and Studio	Minimum Passing				45 Marks			
Course Outcome (CO) CO1 Learn 2D drafting. CO2 To transform sketches and manually drafted drawings into 3D drawings/models. CO3 Visualize building / transform sketches and 2-dimensional hand drafted drawings to 3-dimensional building models. CO4 Prepare naturalistic rendered images with the help of computer software.										
Unit No.	Topic/Unit		Contact Hours (Total 15 weeks teaching /semester)	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV) and Professional Ethics (PE)

1	Introduction to 2-Dimensional Drafting Introduction to computer aided 2D drafting software like AutoCAD or Revit. To develop and understand basic setup and menu bars for computer aided drafting. Learning utility commands like Screen Layout- status bar, toolbar, graphics area, drawing editor, file handling commands, etc. Setting units and scale. Drafting simple and complex geometric shapes such as squares, circles, triangles, lines, curves, poly lines and their combinations etc.	09	10%	1,2	CO1	PSO1, PSO2	EMP, SD	L, R, N, G	PE
2	Creating 3-Dimensional Geometry Introduction to computer aided 3D drafting. Understand tools, command and basic setup for 3D. Introduction to 3D-modelling technique and construction planes, drawing objects, 3D surfaces setting up elevation thickness and use of dynamic projections. Application of various toolbars for 3-dimensional modelling.	09	20%	1,2,6	CO2	PSO1			
3	3-dimensionalModel of Building Understanding and converting plan, elevation and section of drawing to 3-dimensional building model using three dimensional tools. Creating building models using building elements and then converting the model to orthographic projections.	12	30%	1,2,6	CO2, CO3	PSO1			
4	Photorealistic Rendering and Practical Work Making models photorealistic using materials, lighting, texture, background, etc. Creating new materials and environment attributes. Converting2D into 3D architectural plan, elevation and sections for any one of the architectural design assignments studied in previous semesters with submission in the form of printouts in scale.	15	40%	1,2,6	CO4	PSO1			
Reference Books									
1.	V.K. Jain, Multimedia and Animation								
2.	Rhino NURBS 3D Modelling, Margaret Becker and Pascal Galoy								
3.	Inside Rhinoceros 5, Ron Cheng								

Detail Syllabus: S.S of B. Arch II(New Course - CRS)

Implemented from academic year 2022-23 (Non-CRS)

From academic year 2023-24 (CRS)

Syllabus of Courses				
	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Applied Mechanics & Structural Engg.		Academic Year	2023-2024
B. Arch (UG): Regular Programme				
Year	II	Core / Elective / Foundation Structural Design I APM1402CS	Credits / Hours per week	03 Credit 03 Hrs. per week (3 Lectures)
Semester	IV	Year of Introduction: Year of Syllabus Revision: 2012	Maximum Marks / Grade	Total: 100 Theory (Paper): 100 (30 IA + 70 UA)
Mode of Transaction: Lectures			Minimum Passing	45 Marks
Course Outcome (CO)				
CO1 Students should learn design criteria, predicated on safety (i.e. structures must not collapse without due warning) or serviceability and performance (i.e. building sway must not cause discomfort to the occupants).				
CO2 Students will understand that Structural Designing theory is based upon applied physical laws and empirical knowledge of the structural performance of different materials and geometries.				
CO3 The student should be capable to utilize a number of simple structural elements to build complex structural systems as they will be responsible for making creative and efficient use of funds, structural elements and materials to achieve these goals in future.				

Unit No.	Topic/Unit	Contact Hours (Total 15 weeks teaching /semester)	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional/Globa l (G) develop mental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)
1	Introduction to IS codes: Introduction to IS Code – IS 875 loading standard. Reduction in live loads. Increase in permissible stresses.	09	20%	1,2	CO1	PSO1 PSO2	SD	N	ES
2	Wood Timber as a structural material, permissible stress in compression, tension and bending, Modification factor for permissible stresses.	14	30%	1,2	CO1	PSO1 PSO2			
3	R.C.C. Design Introduction to Concrete Technology, Basic Assumptions for theory of R.C.C. Derivations of expression for neutral axis, Lever arm and moment of resistance for singly reinforced section. Under reinforced, over reinforced and balanced section, Design of singly reinforced section for flexure	09	20%	2, 3, 4,5	CO1, CO2, CO3	PSO1 PSO2			

4	Steel Design Steel Structures: Standard and classified rolled sections, Design of tension members and compression members, Moment of Inertia of compound (built up) section, Design of compression and tension members of a truss, Design of column and flexural members.	13	30%	2, 3, 4,5	CO1, CO2, CO3	PSO1 PSO2			
Reference Books									
1.	Civil Engineering Handbook by Khanna.								
2.	I.S. 875 Loading Standard, I.S. 456 Code of Practice for Plain and Reinforced Concrete.								
3.	Elementary Reinforced Concrete by H. J. Shah, Charotar Publishing House.								
4.	Structural Design in Steel, Masonary and Timber by A. S. Arya, Nemchand Pub.								
5.	I.S. 1905 Code of practice for Structural Safety of Building Masonary.								

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Applied Mechanics and Structural Engineering	Academic Year	2023-2024				
B. Arch (UG): Regular Programme							
Year	II	Core / Elective / Foundation Structural Design I (L) APM1402LCS	Credits / Hours per week 01 Credit 02 Hrs. per week (02 Practical)				
Semester	IV	Year of Introduction: 2007 Year of Syllabus Revision: 2016	Maximum Marks / Grade Total: 50 Practical & Viva: 50				
Mode of Transaction: Practical		Minimum Passing	23 Marks				
No.	Experiment	Contact Hours (Total 15 weeks teaching / semester)	<table border="1"> <tr> <th data-bbox="1312 646 1451 735">Weightage (%)</th> <th data-bbox="1451 646 1575 735">BT Level</th> <th data-bbox="1575 646 1696 735">CO</th> <th data-bbox="1696 646 1862 735">PSO</th> </tr> </table>	Weightage (%)	BT Level	CO	PSO
Weightage (%)	BT Level	CO	PSO				
1	Fineness Test of Cement	2	7, 2,3,5, CO2, PSO2				
2	Standard Consistency Test	2	7, 2,3,5, CO2, PSO2				
3	Initial and Final setting time	2	7, 2,3,5, CO2, PSO2				
4	Compressive strength of cement	3	10, 2,3,5, CO2, PSO2				
5	Bulk density of aggregates	2	7, 2,3,5, CO2, PSO2				
6	Sieve analysis	2	7, 2,3,5, CO2, PSO2				
7	Bulking of sand	2	5, 2,3,5, CO2, PSO2				
8	Slump test	3	10, 2,3,5, CO2, PSO2				
9	Compaction factor test	3	10, 2,3,5, CO2, PSO2				
10	Compressive strength of concrete	3	10, 2,3,5, CO2, PSO2				
11	Flexure strength of concrete	3	10, 2,3,5, CO2, PSO2				
12	Tensile strength of concrete	3	10, 2,3,5, CO2, PSO2				

 सत्यं शिवं सुन्दरम्	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture		Academic Year		2022-23						
Bachelor of Architecture (B.Arch.): Regular Programme											
Year	II	Core / Elective / Foundation Architectural Design IV (ARC1406LCS)		Credits / Hours per week		09 Credits / 9 Hours per Week (09 Studio)					
Semester	IV	Year of Introduction: 1994 Year of Syllabus Revision: 2022		Maximum Marks / Grade		Total: 350 Term Work: 200 Review and Viva : 150					
Mode of Transaction		Studio		Minimum Passing		158 Marks					
Course Outcome (CO) CO1 Understanding the relationship between form, function, and structure in different contexts for varied functions. CO2 Perceive the relationship between built space, open space, and users. CO3 Understand the principle of grouping of units/building blocks to design/plan a campus layout.											
Description: • Project – Design a building/campus for public activity such as library, post office, primary school, health center, community training center or small forest resort etc. • The focus will be on design response to climate and context (site and socio-economic etc.), topography, apart from other factors like organization of spaces, scale, material exploration and structure.											
Unit No.	Topic/Unit			Contact Hours (Total 15 weeks teaching /semester)	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/Global (G) development tal needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)

1	Background study and Conceptual framework The study of medium scale campus/Institution. Data collection regarding its architectural requirements. Case study to understand different aspects of design such as grouping, segregation, circulation, convenience, privacy etc. Study of mass and space within a cluster; length: width: height ratios.	15	20%	2,3	CO1, CO2	PSO1 PSO2	EMP, SD	L, R	PE, ES
2	Site Study and Analysis The study of existing natural as well as man-made features on site. Mapping of vegetation, contours, landmarks and proximities in and around the site. Study of the climatic, geographical, historical and infrastructural context of a specific site. Preparing the Site Model as per given scale and specification	25	20%	2,3,4	CO1, CO2	PSO1, PSO 2, PSO 3, PSO 4			
3	Design Development Understanding Layout making process in design. Understanding the function of the taken project and inter- relationship of building blocks. Visualization of the design and used architectural elements to form one integrated design language for the whole campus planning. Preliminary conceptual model making exercise to understand mass and void.	45	25%	2,3,4	CO1, CO2, CO3	PSO1, PSO 2, PSO 3, PSO 4			
4	Design Finalization Final Design including 4 or 5 building blocks with resolved internal spatial planning (with furniture details). Design representation through different types of drawings using different mediums. (Sketches, plans, sections, elevations, 3D views etc.) Relevant models in different scales as per the requirements.	50	35%	2,3,4, 6	CO1, CO2, CO3	PSO1, PSO 2, PSO 3, PSO 4			

Reference Books

1.	Alexander, C. et. al. (2015). <i>A Pattern Language: Towns, Buildings, Construction</i> . Oxford
2.	Panero, J. &Zelnik, M. (1979). <i>Human Dimension and Interior Space</i> . Watson-Guptill
3.	Laseau, P. (2000) <i>Graphic Thinking for Architects and Designers</i> . John Wiley & Sons
4.	Gill, R. (1984). <i>Rendering with Pen and Ink</i> . Thames & Hudson
5.	Pramar, V. S. (1997). <i>Design Fundamentals in Architecture</i> . Somaiya Publications Pvt. Ltd.

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Applied Mechanics and Structural Engineering				Academic Year		2022-2023				
B. Arch (UG): Regular Programme												
Year	II	Core / Elective / Foundation Building Material and Construction IV (ARC1407CS)				Credits / Hours per week		05 Credits 05 Hrs per Week (02 Lecture + 03 Studio)				
Semester	IV	Year of Introduction: 1994 Year of Syllabus Revision: 2022				Maximum Marks / Grade		Total: 150 Theory (Paper) : 50 (15 IA + 35 UA) Term Work : 100				
Mode of Transaction		Lectures and Studio				Minimum Passing		68 Marks				
Course Outcome (CO)												
CO1: Understand the building elements such as openings, doors, windows and staircase as a crucial part of building circulation.												
CO2: Gain knowledge about these building elements and their construction details, material usage, study their functions and needs in the building and to learn its technical drawings and actual execution methods												
CO3: To know and understand the different type of Building Materials, their properties and advantages, limitations of different types of building materials												
Unit No.	Topic/Unit				Contact Hours (Total 15 weeks teaching /semester)	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)
1	Timber Joinery Carpentry and joinery: Terms’definition, mitering, ploughing, grooving, rebating, veneering, various forms of joints in wood work, such as lengthening joints, bearing joints, halving, dovetailing, housing, notching, tusk and tenon, etc. Jamb-casing. Timber joints as described in Indian architectural treatises.				10	15%	1,2,3	CO1, CO2	PSO1, PSO3			

2	Window as a building element - Theory of window as a building element including related terminologies and its different types and materials. - Market survey and case study to be done for documentation and practical knowledge. - Designing of selected typology and its representation through drawings/models/sketches.	20	25%	1,2,3	CO1, CO2	PSO1, PSO3	Emp / SD	L ,N ,G	PE, ES
3	Door as a building element - Theory of Door including related terminologies and its different types and materials used in it. - Market survey and case study to be done for documentation and practical knowledge. - Designing of selected typology and its representation through drawings/models/sketches.	15	25%	1,2,3	CO1, CO2	PSO1, PSO3			
4	Staircase as a building element - Theory of staircase including related terminologies and its different types and construction materials. - Case study to be done for documentation and practical knowledge. - Designing of selected typology and its representation through drawings/models/sketches.	30	35%	1,2,3,5	CO3	PSO1, PSO3			

Reference Books

1.	McKay, W. (2013). <i>Building Construction: Metric VOL. I,II,III & IV</i> . Pearson Education India; Fifth edition.
2.	Rangwala, S. (2016). <i>Building Construction Book</i> . Charotar Publishing House Pvt. Ltd
3.	Moorthy, N. (1957) <i>Text Book of Building Construction</i> . S. Dass.
4.	Barry, R. (1962). <i>The Construction of Buildings Vol. I,II,III</i> . Wiley-Blackwell.
5.	Kumar, S. (2010). <i>Building Construction</i> . Standard Publisher Dist.
6.	Punmia, B. et. al. (2016). <i>Building Construction</i> . Laxmi Publications; Eleventh edition.
7.	Engineering Materials - S.C.Rangwala, Charotar Books Stall, Anand.
8.	Engineering Materials – R.K.Rajput, S.Chand and Co. Ltd., New Delhi
9.	Building Material - Surendra Singh, Vikas Publication, New Delhi
10.	Introduction of Engg. Material - Agrawal, Tata McGraw Hill Pub. Co. Ltd., New Delhi
11.	Building Materials – S.K.Duggal, New Age International Publishers
12.	Concrete Technology – M.S.Shetty, New Age International Publishers
13.	Material of Construction - D.N.Ghose, Tata McGraw Hill Pub. Co. Ltd., New Delhi

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture			Academic Year		2022-23				
Year	II	Core / Elective / Foundation History of Architecture II (ARC1408CS)			Credits / Hours per week		04 Credits 04 Hrs per week (04 Lectures)				
Semester	IV	Year of Introduction: 1994 Year of Syllabus Revision: 2022			Maximum Marks / Grade		Total: 150 Theory (Paper) : 100 (30 IA + 70 UA) Term Work : 50				
Mode of Transaction		Lecture			Minimum Passing		68 Marks				
Course Outcome (CO) CO1 To understand how different architectural styles evolved within the restraints imposed by prevalent social and cultural environment, availability of materials, climate and geography. CO2 How various architectural solutions were arrived at within the above-mentioned restraints? CO3 The development of construction technology in that period. CO3 Architectural ornamentation of that period.											
Unit No.	Topic/Unit			Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV) and Professional Ethics (PE)

1	Introduction to ancient River Valley Civilization and Classical (Greek and Roman) Architecture: • Introduction to architecture and planning of civilization of ancient Egypt, Mesopotamia and China. • Study of Pyramid, Ziggurats, Palace, Hypostyle Hall, Temples, Tomb architecture and Underground burial chambers etc. • Introduction to architecture and planning of Greek and Roman civilization: Study of principles of design, proportion, optical corrections, classical orders and important building typologies such as Temples, Amphitheatre, Aqueducts etc.	12	20%	1 & 2	CO1	PSO1 PSO3	SD	L, N, R & G	ES, HV & PE
2	Introduction to Early Christian and Byzantine Architecture • Rise of Christianity and the place of worship: The Basilica • Introduction to Romanesque architecture • Background and Influences • Architecture of Faith: the evolution of the Cathedral	10	18%	1,2 & 4	CO2	PSO1 PSO2 PSO3			
3	Introduction to Gothic Architecture: • Background and influences • Evolution of Gothic Architecture • Examples in Gothic Architecture Renaissance to Contemporary Architecture and Baroque period • Background and influences of Renaissance, Baroque and Rococo period. • Evolution of Architecture from Renaissance to Contemporary period • Works (Piazas, architecture at St. Peters and Vatican etc.) of Brunelleschi, Alberti, Bramante, Palladio, Michelangelo, Vinci, Borromini and Cortona etc.	16	26%	1 & 2	CO3	PSO3			
4	Introduction to Colonial (French, Dutch, Portuguese and English) Architecture in India • Background and influences • Various Building typologies during Colonial period • Colonial Architecture influence in various cities and towns of Indian subcontinent.	10	16%	1,2 & 4	CO4	PSO1 PSO2 PSO3			

5	Introduction to Oriental Architecture Buddhist Architecture: Emergence and Spread of Buddhism in India and far East. Traces of Buddhist Temples and other built form (like Monasteries, Viharas etc.) in countries like Nepal, Bhutan, Cambodia, Indonesia, China etc. Traditional Chinese Architecture: Modular basis for individual structures, complexes, and cities; lateral and longitudinal building frames; the unity of sculpture and building to create viewing angles; the influence of Chinese construction on Japanese architecture. Traditional Japanese Architecture Overview of Japanese architecture in its historical and cultural context. The early prehistoric dwellings, its construction and functional & symbolic inheritance.	12	20%	2 & 4	CO7	PSO1 PSO3 PSO4			
Reference Books									
1.	European Architecture by SIR BANISTER FLETCHER								
2.	The complete temples of ancient Egypt by Richard H. Wilkinson								
3.	A history of Architecture by Spiro Kostof, 1985								
4.	Xinian Fu (Author), Nancy Steinhardt (Editor), Alexandra Harrer (Translator), Princeton University Press (30 May 2017), Traditional Chinese Architecture: Twelve Essays								
5.	Nancy Shatzman Steinhardt, China Institute in America, China House Gallery (January 1, 1984), Chinese Traditional Architecture								
6.	Mira Locher (Author), Kengo Kuma (Foreword), Ben Simmons (Photographer), Tuttle Publishing; 2nd ed. edition (April 17, 2012), Traditional Japanese Architecture: An Exploration of Elements and Forms								
7.	David Young (Author), Michiko Young (Author), Tan Hong Yew (Illustrator), Tuttle Publishing; Illustrated edition (12 March 2019), The Art of Japanese Architecture: History / Culture / Design								
8.	Internet archives								
9.	Peter Scriver , Vikramaditya Prakash(eds)(Routledge, March 2007) ,Colonial Modernities: Building, Dwelling and Architecture in British India and Ceylon.								
10.	Ching, Francis D.K; Jarzombek, Mark M.; Prakash, Vikramaditya (2017).. John Wiley & Sons, A Global History of Architecture. ISBN 9781118981603.								

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture				Academic Year			2022-2023				
Bachelor of Architecture (B.Arch.): Regular Programme												
Year	II	Core / Elective / Foundation Climate and Architecture (ARC1409CS)			Credits / Hours per week			Total: 03 credits / 04 Hrs per week Lectures: 02 credits / 02 Hrs per week Studio: 01 credit / 02 Hrs per week				
Semester	IV	Year of Introduction: 1994 Year of Syllabus Revision: 2022			Maximum Marks / Grade			Total: 100 Theory (Paper): 50 (15 IA + 35 UA) Term Work: 50				
Mode of Transaction		Lecture and Studio			Minimum Passing			45 Marks				
Course Outcome (CO): Students will be able to ... CO1 Explore the interrelationship of Climate and Architecture. CO2 Understand the various Global Climatic Factors. CO3 Resolve the issues related to Architecture, Planning and Spatial Layout through Climate Responsive Design approach.												
Unit No.	Topic/Unit				Contact Hours (Total 15 weeks teaching /semester)	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/ Global (G) development al needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)

1	Global Climatic Factors and Elements of Climate Studying and understanding various Climatic Zones in India. Study of climatic zones and their effect on building design. Effect of climate on habitat, shelter and environment. Classification of tropical climates and climate balanced architecture. Analyzing and understanding the Traditional / Vernacular Architecture and their efficiency. Environmental conditions and Design Considerations.	16	10%	1, 2	CO1, CO2	PSO3, PSO4	Ent, SD	L, N, R & G	ES, HV
2	Understanding Properties of Thermal Comfort Concepts of thermal comfort, human heat balance, human comfort and physiological comfort. Thermal Comfort indices. Relationship of climatic elements like solar radiation, humidity, air- movement with thermal comfort. Understanding Heat Exchange in Buildings. Climatic Data Collection Preparation of Mahoney Table Preparation of Psychometric Chart	12	25%	1, 2, 4	CO1, CO2	PSO1, PSO2, PSO4			
3	Day Lighting, Ventilation & Air Movement Photometric Quantities Understand Sun path Diagram and its applications Application of Shading Devices like vertical fins, balcony, overhangs, canopies, shutter, etc. for various building typologies. Thermal properties of building materials and elements. Concepts of day-lighting and its calculations based on Indian standards. Wind movement in general, air flow pattern within and around buildings. Importance of understanding the optimum orientation of building, its form with respect to wind, guidelines for designing airy buildings.	12	25%	1, 2, 4	CO1, CO2	PSO 4			
4	Design Applications (Climate Responsive Design) Understanding the Spatial Layout, Form and Material applications Building elements for Climate Responsive Design i.e., Walls, Fenestrations etc. Advanced and Innovative Passive Heating and Cooling Measures. Consideration of Macro, Meso and Micro factors affecting the Design.	20	40%	2, 3, 4 & 6	CO3	PSO1, PSO2, PSO4			
Reference Books									
1.	Koenigsberger, H. et.al., 1974. <i>Manual Of Tropical Housing</i> . London, Longman.								
2.	Krishan, A. et.al. (2017). <i>Climate Responsive Architecture: A Design handbook for Energy Efficient Buildings</i> . McGraw Hill Education								
3.	Nayak, J. et.al. (1999). <i>Manual on Solar Passive Architecture</i> . India, Solar Energy Centre, MNES, Government of India.								
4.	Evans, M. (1980). <i>Housing, climate, and comfort</i> . Architectural Press, New York								
5.	Kukreja, C. (1978). <i>Tropical Architecture</i> . McGraw Hill Education								
6.	Givoni, B. (1976). <i>Man, Climate and Architecture</i> . Elsevier Science Ltd								
7.	Lippsmeier, G. (1980). <i>Building in the Tropics</i> . Callwey								

 सत्यं शिवं सुन्दरम्		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Electrical Engineering Department			Academic Year			2022-23				
B.Arch.: Regular Programme												
Year	II	Core / Elective / Foundation 1. Electrical Services and Illumination 2. Electrical Services and Illumination (L) (ELE1423 & ELE1423L)			Credits/Hours per week		Lectures: 02 Credits / 02 Hrs per week Practical: 01 Credits / 02 Hrs per week					
Semester	IV	Year of Introduction: 1994 Year of Syllabus Revision: 2021			Maximum Marks/Grade		Theory (Total): 50 Marks Theory (Paper) : 50 (15 IA + 35 UA) Practical (Total): 50 Marks Practical & Viva: 50 Marks					
Mode of Transaction: Lecture and Practical					Minimum Passing		23 Marks in each (ELE1423 & ELE1423L)					
Course Outcome (CO) CO1 Explain fundamental concepts for Electrical Power Procurement and illumination. CO2 Determine the parameters of simple AC and DC Circuits CO3 Interpret elements of electrical installation and illumination system. CO4 Evaluate the parameters of different lighting scheme and electrical installation. CO5 Develop layout plans for illumination and wiring system. CO6 Criticize environmental and energy saving aspects of electrical system.												
Unit No.	Topic/Unit				Contact Hours (Total 15 weeks teaching / semester)	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional (R)/ Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV) and Professional Ethics (PE)

1	General Concept of an Electrical Installation: General principles of electricity, Generation, transmission, supply & consumption of electricity, Different types of supply, Voltage & current laws, Architectural aspect of electrical installation & illumination.	6	20	5	CO1 CO2	PSO1	SD, Emp,Ent	L,N,R and G	ES,HV andPE
2	Elements of Electrical Installation: Review of Ohm's law, Kirchoff's laws, Wires, Wiring systems, Lighting accessories, Earthing & earthing methods, Single & three phase wiring with focus on architectural layout & installation, Lighting circuits, Wiring installations in residences & buildings, Electricity regulations, Indian Electricity Act 2003.	6	20	5	CO2 CO3 CO5	PSO1 PSO2	SD, Emp,Ent	L,N,R and G	ES,HV andPE
3	Electrical Services for Various Applications: Typical example of Electrical installation in Landscape design, Multi-storied building, Residences, Schools, Exhibition grounds, Resorts, Museums, Auditoriums, Commercial buildings, Supply & Distribution system, Internal wiring, Load estimation, Flood Lighting, Road Lighting, Specific considerations for layout & distribution of Telephone, Intercom, Cable Television, Internet wiring, Pumps, Motors, Cooling, Heating, domestic equipment's etc. Arrangement of different appliances/devices, their ratings & types. Code of Practice for Electrical Wiring: IS (Indian Standard) 732.	6	20	5	CO3 CO4 CO5	PSO1 ,PSO 2	SD, Emp,Ent	L,N,R and G	ES,HV andPE
4	Electrical Illumination: General principles of Illumination, Spectrum of visible light, Natural & artificial Lighting, Production of artificial Light, Various terms related to Illumination—Plane angle, Solid angle, Luminous Flux, Luminous Intensity, Illumination, Luminance, Glare & perking, Laws of Illumination- Inverse square law & Lambert's cosine law with related numerical, Lighting lamps & luminaries, Direct, Indirect & Semi direct Illumination, Polar curves, Typical case study of No. of lamps & placement layout for different illumination schemes like class room, drawing hall, shop floor with related numerical, Lighting scheme design, Code of Practice for Interior Illumination: IS 3646.	6	20	3	CO1 CO3 CO4 CO5		SD, Emp,Ent	L,N,R and G	ES,HV andPE
5	Environmental & Energy saving aspects of Lighting & Illumination Conventional & non-conventional energy options, Methods & practices for Energy saving, Energy Conservation Act 2001, Energy saving devices,	6	20	5	CO6	PSO1 PSO3 PSO4	SD, Emp,Ent	L,N,R and G	ES,HV andPE
2. Electrical Services and Illumination TW & Viva : About 10 to 12 experiments based on above syllabus with two hours of laboratory (36hrs of theory + 24 hrs of laboratory)									

Reference Books	
1.	Electrical Wiring Estimating& Costing Dr.S.L.Uppal/Architectural.
2.	Electrical Tech .by B.L.Theraj&J.M.Larola
3.	IndianElectricityAct1910
4.	Indian Elect. Rules –56
5.	Time severs standards for architecture. DesignbyJohn.

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering				Academic Year		2025-26	
B.E. (ALL BRANCHES) and B. Architecture : Regular Programme									
Year	II	Core / Elective / Foundation FTE XXXX: Universal Human Values – II				Hours per week (L-T-P) & Credit 02-01-00, 03 Credits			
Semester	II	Year of Introduction: 2025 Year of Syllabus Revision: --				Maximum Marks / Grade 100			
Mode of Transaction		Lectures, Tutorials							
Course Outcome (CO) CO1: Understand and analyze the self, and surroundings i.e. family, society and nature CO2: Understand the responsibility in life and to handle problems with sustainable solutions while keeping human relationships and human nature in mind. CO3: Improvement in critical ability CO4: Improvement in commitment towards human values, human relationship and human society									
Unit No.	Topic/Unit	Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV) and Professional Ethics (PE)

1	Introduction to Value Education	9	20%		CO1, CO2	----	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
2	Harmony in the Human Being	9	20%		CO2, CO3				
3	Harmony in the Family and Society	9	20%		CO2, CO3				
4	Harmony in the Nature/Existence	9	20%		CO3, CO4				
5	Implications of the Holistic Understanding	9	20%		CO3, CO4				

Reference Books:

1.	A foundation course in Human Values and Professional Ethics by R R Gaur, R. Ashthana and G P Bagaria, 2 nd and 3 rd Edition (2019 and 2023).
2.	Universal Human Values and Professional Ethics by Dr. Saroj Kumar, Prof. Sheenu Nayyer, Thakur Publication Pvt Ltd, (2020)
3	Rediscovering India - by Dharampal
4	Human Values, A.N. Tripathi, New Age Intl. Publishers, New Delhi, 2004.
5	The Story of My Experiments with Truth - by Mohandas Karamchand Gandhi
6	Slow is Beautiful - Cecile Andrews
7	Economy of Permanence - J C Kumarappa
8	Bharat Mein Angreji Raj – Pandit Sunderlal
9	Jeevan Vidya: Ek Parichaya, A Nagaraj, Jeevan Vidya Prakashan, Amarkantak, 1999
10	Hind Swaraj or Indian Home Rule - by Mohandas K. Gandhi
11	India Wins Freedom - Maulana Abdul Kalam Azad
12	Vivekananda - Romain Rolland
13	Gandhi - Romain Rolland
14	Online Universal Human Values material of AICTE.

Detail Syllabus: F.S of B. Arch III (New Course - CRS)

Implemented from academic year 2023-24 (Non-CRS)

From academic year 2024-25 (CRS)

 सत्यं शिवं सुन्दरम्	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture				Academic Year			2023-2024				
Bachelor of Architecture (B.Arch.): Regular Programme												
Year	III	Core / Elective / Foundation Architectural Design V (ARC 1507LCS)			Credits / Hours per week			Total: 10 credits / 10 Hrs per week Studio: 06 credits / 10 Hrs per week (Term Work) Studio: 04 credits / 00 Hrs per week (Review and Viva)				
Semester	V	Year of Introduction: 1994 Year of Syllabus Revision: 2023			Maximum Marks / Grade			Total: 350 Term Work: 200 Review and Viva: 150				
Mode of Transaction		Studio			Minimum Passing			158 Marks				
Course Outcome (CO) CO1 Understanding the concept of community living and concept of housing through various socio-economic issues and current requirements of housing. CO2 An understanding of housing standards, site planning principles, housing concepts and perception of stakeholders. CO3 Understand the relationship between built, semi built, open spaces, document and analyze the selected site in-terms of design potentials and constraints and use it for Conceptual Development. CO4 Integration of social, environmental and economic concerns in design proposal and design the usable Housing Scheme in comprehensive and holistic manner.												
Unit No.	Topic/Unit				Co nt ac t H rs	Weigh age (%)	BT Level	CO	PSO	Elemen ts of Employab ility (Emp) / Entrepren eurship (Ent) / Skill Developme nt (SD)	Relevance to Local (L)/ National (N) / Regional(R) / Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)
1	Unit I- Introduction to Community Living and Concept of Housing and case studies Different Aspects of Housing Design – Social, Economical & Cultural Understanding the various typologies of Housing from				30	20%	1& 2	CO 1	PSO1	EMP, SD	L, R	ES, HV, PE

	traditional vernacular to Contemporary Designs. Housing in present Context i.e. Row Houses, Cluster Planning, Multistoried Mass Housing, Low Rise, Cost effective, Incremental Housing etc. with respect to F.S.I., Ground Coverage and its Common Amenities. Housing and housing issues in India- Housing and its importance in architecture, its relationship at neighborhood and city level, Socio Economic Aspects - Social economic factors influencing housing affordability, Housing standards - UDPFI guidelines, standard and regulations. DCR. Performance standards for housing. Case studies of the various types. Selection of live as well as book/internet case study to understand the housing scenario in the global context. The classical examples of housing design to be taken to understand the various aspects like clustering patterns, design language, space hierarchy etc.							
2	Unit II- Conceptual design idea and analysis Analysis of the collected data to formulate the site selection and design criteria. Study of the site in terms of context (surrounding development, scale), climate / orientation, access, special features. Analysis of the site in terms of design potentials and constraints. Preparation of site model with context and site plans. Overall site zoning, primary road networks inside the site and conceptual planning. Area/volume studies to determine mix/segregation of types, number of blocks/towers and floors. Overall layout with clear indication of pedestrian/vehicular movement, parking, community / interaction spaces of varying scales, response to the context. Concept/basic design idea that will be the basis of the student's design attitude in next level of design.	30	20%	1, 2, 3, 4,5	CO2	PSO1 PSO2		
3	Unit III- Site selection and Preliminary design stage Site Planning for housing scheme. Selection of site for housing, considering physical characteristics of site, climatic parameters, topography, landscaping. Housing design relating to Indian situations – traditional housing, row housing, cluster housing, apartments, high-rise housing. Study of the site in terms of context (surrounding development, scale), climate / orientation, access, special features. Analysis of the site in terms of design potentials and constraints. Preparation of site model with context and site plans. Overall site zoning, primary road networks inside the site and conceptual planning. Area/volume studies to determine mix/segregation of types, number of blocks/towers and floors. Overall layout with clear indication of pedestrian/vehicular movement, parking, community / interaction spaces of varying scales, response to the context.	45	30%	1, 2, 3,4, 5 & 6	CO3	PSO1 PSO3		

4	Unit- IV: Design development and Final Design proposal. Detailed design of overall Site Layout resolved in terms of By-laws, Spatial Planning and Climate Considerations. Design of units and blocks, with materials and their expression. Integration of services and structural clarity and parking. Overall layout with clear indication of pedestrian/vehicular movement, parking, community / interaction spaces of varying scales, response to the context.	45	30%	1, 2, 3 & 6	CO4	PSO1 PSO2 PSO4		
Reference Books								
1.	David Egan, (2007). 'Architectural Acoustics', J. Ross Publishing.							
2.	David Lee Smith,(2011) 'Environmental Issues for Architecture', Wiley.							
3.	National Building Code - Bureau of Indian Standards.							
4.	MetropolitanHousingMarket:AStudyofAhmedabadbyMeeraMehta,DineshMehta,Publisher:SAGEPublicationsPvt.Ltd							
5.	Housing for Low–Income Urban Families by Grimes, Publisher: John Hopkins University Press(1May1976)							
6.	Urban housing strategies: Education and realization by Patrick I Wakely, Publisher: Pitman(1976)							
7.	Laurie Baker: Life, Work and Writings by Gautam Bhatia, Publisher: Penguin Books, Edition1 (March1,2003)							
8.	Supports: An Alternative to Mass Housing (2 nd) by N.J.Habraken, Publisher: Urban Press (December28,1998)							

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture				Academic Year				2023-24			
Bachelor of Architecture (B.Arch.): Regular Programme												
Year	III	Core / Elective / Foundation Building Materials and Construction V (ARC1511CS)			Credits / Hours per week			Total: 05 credits / 05 Hrs per week Lectures: 02 credits / 02 Hrs per week Studio: 03 credit / 03 Hrs per week				
Semester	V	Year of Introduction: 1994 Year of Syllabus Revision: 2023			Maximum Marks / Grade			Total: 150 Theory (Paper) : 50 (15 IA + 35 UA) Term Work : 100				
Mode of Transaction		Lecture / Studio			Minimum Passing			68 Marks				
Course Outcome (CO) CO1 Understanding the deep foundation in details with different materials and their application. CO2 Understanding various building components, their place and composition within the systems, and application of different materials. CO3 Understanding and designing of different materials and components of interior elements. CO4 Understanding application(structure and material) of different interior finishes.												
Unit No.	Topic/Unit				Contact Hours (Total 15 weeks teaching /semester)	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L) / National (N) / Regional(R) /Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)
1	Unit I Foundations - Deep foundation with different materials in detail. RCC column foundation - Retaining walls, Raft, Pile foundation, eccentric and cantilever footing, combined footing, caisson, cofferdams etc. - Protection of Structures, Constructional/Expansion joints.				15	20%	1, 2,3	CO1	PSO1 , PSO2			

2	Unit II Superstructures - Materials - R.C.C. Elements - P.C.C. Elements - Precast Elements and its construction techniques. - Building Construction and precognitions/safety measures (fire safety and norms). - Different types of R.C.C slabs and vaults. - Damp proofing and water proofing - Thermal Insulations - Anti- termite treatments - Protection of Structures, Constructional/Expansion joints.	15	20%	1, 2	CO2	PSO1			
3	Unit III Construction of Interior design elements and detailing - Interior Construction, Partitions / Paneling, False Ceilings, Elevators, Escalators, Cabinets and Furniture, Kitchen platform, Internal/External finishes, glazing etc with different materials, joinery details and construction technique with help of case studies and site visits. - Application of interior design structures.	30	40%	1,2,3	CO3	PSO1 PSO2			
4	Unit IV Interior finishes - Paints and finishes in buildings. Their different types, composition, characteristics and uses. Types include enamels, distemper, plastic emulsion, and polyurethane, special paints such as fire retardant, luminous and bituminous paints. - Preparation of surface and application for different paints/ finishes. Gypsum and POP finishes. Current innovations. Understanding of product literature. Site visits with documentation in the form of sketches/ photos.	15	20%	1,2,3	CO4	PSO1 PSO2	EMP, EN T, SD	L, R, N, G	ES, HV

Reference Books

1.	Moorthy, Building Construction.
2.	Ramanathan, Building Construction.
3.	B.C. Punamia, Building Construction.
4.	S.K. Duggal,(2016) 'Building Materials', New Age International Publishers.
5.	M.S.Shetty,(2005) 'Concrete Technology', S.Chand.
6.	Dunham, Structure
7.	R. Barry, The Construction of Building by R. Barry Vol. III & IV.

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture		Academic Year					2023-24		
Bachelor of Architecture (B.Arch.): Regular Programme										
Year	III	Core /Elective/ Foundation Landscape Design (ARC1510CS)	Credits / Hours per week					Total: 03 credits / 04 Hrs per week Lectures: 02 credits / 02 Hrs per week Studio: 01 credit / 02 Hrs per week		
Semester	V	Year of Introduction: 1994 Year of Syllabus Revision: 2023	Maximum Marks / Grade					Total: 100 Theory (Paper) : 50 (15 IA + 35 UA) Term Work : 50		
Mode of Transaction		Lectures and Studio	Minimum Passing					45 Marks		
Course Outcome (CO) CO1 Understanding natural phenomena of various environmental processes and generating awareness of the role of the landscape design with respect to macro scale of sustainability and ecology as well as at the micro scale of shaping of outdoor environments efficiently and sustainably. CO2 Knowledge about the elements of landscape design and their scope. CO3 Understanding the relationship between natural and built environment through evolution of different landscape design approaches across time and context. CO4 Awareness and sensitivity to environment and ecology and an understanding of landscape design with respect to site planning and different functional typologies of spaces										
Unit No.	Topic/Unit		Contact Hours (Total 15 weeks teaching /semester)	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N) / Regional(R) / Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV) and Professional Ethics (PE)
1	Unit I - Introduction to landscape architecture & ecological systems - Introduction to landscape - Basic concepts of ecology and the impact of human activities on them. - Various Ecosystems and carrying capacity of an ecosystem. - Biotic and abiotic components, Habitat and habitat types, ecological niche, Bio-Geo-chemical cycles, food chain, energy loss, trophic levels, Ecological indicators and food web, keystone species and its importance, Population and community, competition, Ecological dominance, succession and stratification. Ecotone and edge effect.		15	25%	1&2	CO1	PSO1	SD	L, N, R & G	ES & HV

2	Unit II – Elements in landscape design - Formation of Landscape - Introduction to Landforms and its classification, characteristics and use, contours and its application in landscape design - Water: behavior and role in natural systems - Introduction to hardscape and softscape elements. Different types of hard landscape elements, Plant materials, water, etc	15	25%	1&22	CO2	PSO1, PSO3			
3	Unit III – Site planning concepts and historic approaches of landscape design in different parts of the world - Introduction for site selection and discussion on criteria and process to be considered for the same. - Organization of spaces in the outdoor environment through mapping and inventory components - Landscape design through understanding of Natural System and Cultural System (NS+CS) and Experiential quality (EQ). (eg : Role of user groups, circulation and type of built form in shaping the environment, Role of landscape design in design of neighborhood parks, children's play area and campus development, etc). - Environmental impact assessment. Reclamation and restoration of derelict lands. - Spatial development in landscape design that is studying the attitude towards landscape through ages. Japanese, Italian Renaissance, Mughal and/or English gardens. Outline of landscape and garden design in Indian history. Gardens depicted in Sanskrit literature, Nandhavanam and residential gardens of South India. Public parks and residential gardens of the colonial period.	15	25%	1,2 & 4	CO3	PSO1 PSO3			
4	Unit IV – Landscaping of functional areas and landscape design project Urban open spaces and principles of urban landscape. Street landscaping, landscape design for waterfront areas and functional areas in urban centers. Green infrastructure including bio-engineering methods in use of construction, green roofs and walls. Landscape Design Project- Site visit and mapping of activities. The objective of this shall be to understand a site in terms of opportunities and constraints resulting from analysis of natural and manmade components and evolving a design strategy so as to achieve a healthy compromise between man and nature. Design development, refinement and detailing and design review.	15	25%	1,2,3 & 4	CO4	PSO1 PSO3			

Reference Books	
1.	Motloch, J.L. (2001), 'An Introduction to Landscape Design', US: John Wiley and Sons.
2.	Michael Laurie,(1986), 'Introduction to Landscape Architecture', Elsevier.
3.	Sauter D,(2000) 'Landscape Construction', Delmar Publishers.
4.	Geoffrey And Susan Jellico,(1987. 58), 'The Landscape of Man', Thames And Hudson.
5.	Eugene P. Odum, (1959)' Fundamentals of ecology', W.B. Saunders Company.
6.	Marsh, William M. (1983). <i>Landscape Planning - Environmental applications</i> .
7.	Forman, Richard T.T. (1995). <i>Land Mosaics, The ecology of landscapes and regions</i> , Cambridge University Press, ISBN 0 521 47980 0.
8.	Ndubisi, Forster. (2002). <i>Ecological Planning - A Historical and Comparative Synthesis</i> , The Johns Hopkins University Press.
9.	Richard T.T Formanet. al.(2005). <i>Landscape Ecological Principles in Landscape Architecture and Land-use Planning</i> , Island Press, Washington, D.C.
10.	Ian L. McHarg. (1969). <i>Design with Nature</i> , Natural History Press, Garden City, N.Y. (1969), ISBN 10: 0385021429
11.	Fredrick. R. Steiner. (1990). <i>The Living Landscape - An Ecological Approach to Landscape Planning</i> .
12.	Kevin Lynch, Site planning.
13.	Edward. T. Q, Site Analysis.

 सत्यं शिवं सुन्दरम्		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture		Academic Year		2023-2024					
Bachelor of Architecture (B.Arch.): Regular Programme											
Year	III	Core / Elective / Foundation Humanities II (ARC1509CS)		Credits / Hours per week		Total: 03 credits / 03 Hrs per week Lectures: 02 credits / 03 Hrs per week (Theory) Studio: 01 credit / 00 Hrs per week (Term Work)					
Semester	V	Year of Introduction: 1994 Year of Syllabus Revision: 2022		Maximum Marks / Grade		Total: 100 Theory (Paper) : 50 (15 IA + 35 UA) Term Work: 50					
Mode of Transaction		Lecture		Minimum Passing		45 Marks					
Course Outcome (CO)											
CO1 Understanding the factors influencing evolution of human settlements from a historical perspective till present and various socio cultural and environment factors/layers playing a role in shaping them over these years											
CO2 Understanding the factors influencing evolution of human settlements from a historical perspective till present and various socioeconomic and legal factors/layplaying a role in shaping them over these years											
CO3 Developing a worldwide view of various cultures, ideas and their appropriateness by understanding the relationship between various architectural responses as an Outcome of its socio cultural context.											
CO4 Understanding ‘human’ factor in expression of various Architectural forms in and experience of various spatial configurations/responses.											
Unit No.	Topic/Unit			Contact Hours	Weightage (%) (Total 15 weeks teaching /semester)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N) / Regional(R) / Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)

1	Nature and Culture - Architecture as an interface In this first part, the origins of human settlements in their most primary forms are to be investigated. i.e., the behavioral responses to the environment and the gradual change from the unsettled excellence of hunters, nomads and pastoral people to that of settled agriculturist (agriculturalist). The development of the agricultural community in complexity, the emergence of institutional organization and its reflection in the physical layout these are then to be studied. In this context, the effect of climate is also to be taken into account.	20	30%	1&2	CO 1	PSO1	SD	L, R,G	G,HV, PE
2	Legislation, Economy and Architecture With growth of a political organization there appears the urban settlement with its functional differentiations and need for security. The above stage of development, along with urban institutions is to be studied as also the varieties of urban settlement such as administrative towns, garrison towns, commercial or port towns, religious centers etc. It is important to emphasize the relationship between corporate institutions and civic growth.	12	20%	2,3,6	CO 2	PSO1			
3	Vernacular and Traditional Architecture Vernacularism and concept of 'home' in various civilizations. Examples of vernacular Architecture. Traditional theories of Architecture (Vitruvius, Indian classical texts), concept of "house" in various civilization.	16	25%	2,6	CO 3	PSO1 , PSO2			
4	Expression and Experience in Architecture Architecture as an expressive medium, semiotics involved in various elements, aspects, and principles of architecture; Examples of spatial narratives - Experiencing architecture - Aspects influencing the experience and expression - place, people, society, culture, history, tradition, time etc. Case studies through works of architects.	12	25%	2,3,6	CO 4	PSO4			

Reference Books

1.	Hackett, Brian (1950). Man, Society and Environment, Marshall
2.	Kostof, Spiro (1999). The City Shaped: Urban Patterns and Meanings Through History, Thames and Hudson
3.	Vance, Jr., James E. (1990). The Continuing City: Urban Morphology in Western Civilization, Johns Hopkins University
4.	Meiss, P. (26 November 2013), <i>Elements of Architecture - from form to space+tectonics</i> , Routledge; 2 nd edition

5.	Unwin, S.(JIIJ), <i>Analysing Architecture</i> , Routledge; London and New York
6.	Bloomer, K.,Moore, C. (1 April 1978), <i>Body, Memory and architecture</i> , Yale University Press.
7.	Rudofsky, B. (1 January 1987), <i>Architecture without architects</i> , University of New Mexico Press; Reprint edition

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Applied Mechanics and Structural Engineering				Syllabus of Courses Academic Year				2023-2024		
B. Arch (UG): Regular Programme											
Year	III	Core / Elective / Foundation Structural Design II (APM1508CS)			Credits / Hours per week			Total: 03 credits / 03 Hrs per week Lectures: 03 credits / 03 Hrs per week			
Semester	V	Year of Introduction: 1994 Year of Syllabus Revision: -			Maximum Marks / Grade			Total: 100 Theory (Paper): 100 (30 IA + 70 UA)			
Mode of Transaction: Lecture					Minimum Passing			45 Marks			
Course Outcome (CO) CO1 Students will be able to learn design criteria, predicated on safety (i.e. structures must not collapse without due warning) or serviceability and performance (i.e. building sway must not cause discomfort to the occupants). CO2 Students will be able to learn about the Structural Designing theory which is based upon applied physical laws and empirical knowledge of the structural performance of different materials and geometries. CO3 Students will be able to utilize a number of simple structural elements to build complex structural systems as they will be responsible for making creative and efficient use of funds, structural elements and materials to achieve these goals in future.											
Unit No.	Topic/Unit			Contact Hours	Weight age (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/ Global (G) developmenta l needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)
1	Design of RCC Beams Theories for design of R.C.C. members working stress method, Limit state method, Singly and Doubly Reinforced beam, Tee beam and L - beam.			13	25%	1,2	CO1 CO2, CO3	PSO1, PSO3			

2	Design of R.C.C. slabs and columns One way and two-way reinforced slab, R.C.C. Column short column and long column.	12	25%	1,2	CO1, CO2, CO3	PSO1, PSO3	SD	N	PE
3	Design of steel connections Permissible stress, Design of Axially loaded riveted and welded connections.	10	25%	2, 3, 4,5	CO1, CO2, CO3	PSO1, PSO3			
4	Design of steel roof truss Design of simple roof truss, Design of Purlins, Design of simple beams and built up beams.	10	25%	2, 3,4,5	CO1, CO2, CO3	PSO1, PSO3			
Reference Books									
1.	Reinforced Concrete by H. J. Shah, Charotar Pub.								
2.	Reinforced Concrete by A. K. Jain, Nemchand Bros.								
3.	Design of Steel Structures by L. S. Negi.								
4.	Design of Steel Structures by Arya and Ajmani, Nemchand Bros.								

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Applied Mechanics and Structural Engineering		Syllabus of Courses Academic Year		2023-2024		
B. Arch (UG): Regular Programme								
Year	III	Core / Elective / Foundation Structural Design-II (L) (APM 1508LCS)		Credits / Hours per week		Total: 01 credits / 02 Hrs per week Laboratory: 01 credit / 02 Hrs per week		
Semester	V	Year of Introduction: 1994 Year of Syllabus Revision: -		Maximum Marks / Grade		Total: 50 Term Work, Practical & Viva: 50		
Mode of Transaction: Laboratory				Minimum Passing		23 Marks		
No.	Experiment			Contact Hours	Weightage (%)	BT Level	CO	PSO
1	Sheet 1: Structural detailing of one way and cantilever slabs			6	20%	3,4	CO1,CO2, CO3	PSO1, PSO2, PSO3
2	Sheet 2:Structural detailing of two way slabs			6	20%	3,4	CO1,CO2, CO3	PSO1, PSO2, PSO3
3	Sheet 3: Graphical analysis of industrial roof truss			6	20%	3,4	CO1,CO2, CO3	PSO1, PSO2, PSO3
4	Sheet 4: Structural detailing of industrial roof truss			6	20%	3,4	CO1,CO2, CO3	PSO1, PSO2, PSO3
5	Sheet 5: Drawing of various types of industrial roof trusses			6	20%	3,4	CO1,CO2,CO 3	PSO1, PSO2, PSO3

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Civil Engineering	Academic Year	2023-2024
<u>B.Arch (UG): Regular Programme</u>			
Year	III	Core / Elective / Foundation Water Supply and Waste Management (CVL1515CS)	Credits / Hours per week Total: 03 credits / 03 Hrs per week Lectures: 03 credits / 03 Hrs per week
Semester	V	Year of Introduction: 1994 Year of Syllabus Revision: 2021	Maximum Marks / Grade Total: 100 Theory (Paper): 100 (30 IA + 70 UA)
Mode of Transaction: Lecture		Minimum passing	45 Marks
Course Outcome (CO) CO1: Interact technically with water supply and sanitation experts. CO2: Design efficient water supply layouts with detail calculations. CO3: Design sanitation layouts. CO4: Design rainwater disposal and rain water disposal drawings.			

Unit No.	Topic	Contact Hours	Weightage (%)	BT LVL	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional (R)/ Global (G)	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HVM) and Professional Ethics (PE)
1.	Introduction: - The need and importance of building services. Historical overview of water supply, plumbing and sewerage systems in India. Sources of water, standards of purity, impurities in waste water. - Transportation, distribution and pumping of water. Estimation of quantity of water and sewage.	10	22	1,2	CO1 CO2	PSO2	EMP	R, N, L, G	ES,PE
2.	Water Supply: - Overview on water distribution system at city and neighbourhood from treatment plant to individual unit. Water supply in low-rise and high-rise buildings. (Vertical and Horizontal layouts) - Water storage tanks, their capacity and location. - Terminology such as flow, pressure, head, etc. and principles of water supply in buildings (low-rise, multi-storied). Calculation of water consumption and designing of water supply for buildings based on Indian standards.	13	29	1,2	CO1 CO2	PSO1, PSO2			

3.	Sanitation: - Sanitation systems like dry, wet carriage systems, etc, at various urban scales. Types of sewers and location of manholes etc. Terminologies like self-cleaning velocity, gradient, invert level, section area etc. - Design calculations of septic tank, soak-pits, cesspools, aqua-privy, leaching pits etc. Study of details of types of traps and chambers (inspection chamber, disconnecting chamber, intercepting trap, S-trap, P-trap, gully trap, grease trap etc; and sanitary fixtures (washbasins, WCs, bathtubs, urinals, flushing cistern, etc. Types of pipes and joints. Design principles of sanitary layout (location and ventilation of chambers, traps, fixtures). - Building sanitation systems (separate, combined, single stack, one pipe and two pipe, etc.).	13	29	3,4	CO3	PSO1, PSO2			
4.	Rain Water And Solid Waste Disposal System: - Surface area division for rain water disposal. Details of collection point/<i>Khurra</i>. Overview on conveyance network for rain water. Concepts of rain water harvesting. - Biodegradation of yard waste - Garbage Disposal: segregation, disposal.	9	20	1,2,3,4, 6	CO4	PSO1 PSO2 PSO4			
Reference Books									
1.	Waste water engineering by B.C Punmia, and Jain								
2.	Sewage Disposal and Air pollution by S K garg								
3.	Water Renovation and Reuse, Hillel I. Shuval, Academic Press.								
4.	Integrated Solid Waste Management by George Tchobanoglous								

Syllabus of Courses								
		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Civil Engineering			Academic Year		2023-2024	
<u>B.Arch (UG): Regular Programme</u>								
Year		III	Core / Elective / Foundation Water Supply and Waste Management (L) (CVL1515LCS)		Credits / Hours per week		Total: 01 credits / 02 Hrs per week Laboratory: 01 credits / 02 Hrs per week	
Semester		V	Year of Introduction: 1994 Year of Syllabus Revision: 2021		Maximum Marks / Grade		Total: 50 Term Work, Practical & Viva: 50	
Mode of Transaction: Laboratory					Minimum Passing		23 Marks	
No.	Experiment				Cont Hrs	BT	CO	PSO
						Level	CO	PSO
1	Design of individual Lavish bungalow with minimum 4 bedrooms with attached toilets.				6	2,3,4,6		PSO1, PSO2
2	Sanitary fixtures design for all toilets (nine options)				6	3,4,5,6		PSO2
3	Tiles arrangement for all toilets				6	3,4,5,6		PSO2
4	House Drainage layout for bungalow				6	4,5,6		PSO2
5	Longitudinal cross section design for house drainage				6	3,4,5,6		PSO2

Detail Syllabus: S.S of B. Arch III (New Course - CRS)

Implemented from academic year 2023-24 (Non-CRS)

From academic year 2024-25 (CRS)

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture		Academic Year			2023-2024				
Bachelor of Architecture (B.Arch.): Regular Programme											
Year	III	Core / Elective / Foundation Architectural Design VI (ARC 1608LCS)		Credits / Hours per week			Total: 10 credits / 10 Hrs per week Studio: 06 credits / 10 Hrs per week (Term Work) Studio: 04 credit / 00 Hrs per week (Review and Viva)				
Semester	VI	Year of Introduction: 1994 Year of Syllabus Revision: 2023		Maximum Marks / Grade			Total: 450 Term Work: 300 Review and Viva : 150				
Mode of Transaction		Studio		Minimum Passing			203 Marks				
Course Outcome (CO) CO1 Preparation of appropriate drawings for the actual implementation of design intentions. CO2 Understanding the correlation of function, structure, material, construction techniques and procedure. CO3 Understanding the services and infrastructural systems. CO4 Understanding of making a choice of materials and details considering availability, constructional feasibility, cost and aesthetic value.											
Unit No.	Topic/Unit			Contact Hours (Total 15 weeks teaching /semester)	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp) / Entrepreneurship (Ent) / Skill Development (SD)	Relevance to Local (L)/ National (N) / Regional(R) / Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV) and Professional Ethics (PE)
1	Unit I- Preparation of working drawings for appropriate actual implementation of the project. Modification in design of an Architectural Project considering the optimum circulation, usage of inside and outside spaces, adequate light and ventilation, proper size of rooms, furniture layout, resolution of structure, efficient services etc. Preparation of basic set of technical drawings considering their execution on site.			22	15%	1,2,3	CO1	PSO1, PSO2	EMP, ENT,	L, N,R,G	G, ES, HV,PE

2	Unit II- Preparation of stage –II drawings - Preparing workings drawings related with the Site elements and details, use of materials, its execution techniques with the understanding of their functional aspects. - Preparing lineout drawing, center line drawing and foundation drawings - Elements like Compound wall, Main gate & security cabin, Landscaping Details.	53	35%	1,2,3	CO2	PSO1, PSO2, PSO4	SD		
3	Unit III- Preparation of stage-III drawings - Preparing workings drawings related with various building services and the building elements -details, use of materials, its execution techniques with the understanding of their functional aspects. - Doors and windows details, Staircase, Toilet block, Kitchen, flooring etc. - Electrical layout, Plumbing layout, Rain water harvesting system, Solar panel, Landscaping layout, Parking layout etc.	53	35%	1,2,3	CO3	PSO1, PSO2, PSO4			
4	Unit IV- Preparation of stage-IV drawings Preparing a final set of working drawings. Refinement of all drawings through discussions and conducting final evaluation.	22	15%	1,2,3,6	CO4	PSO1, PSO2, PSO4			
Reference Books									
1.	Salvadori, M. (26 May 2016), <i>Salvadori's Structure in Architecture: The Building of Buildings Robert Heller</i> , Pearson; 4th edition.								
2.	Dunham, C. (6 August 2018), <i>Foundations of Structures</i> , Forgotten Books.								
3.	Moorthy, N. (1957), <i>A Text Book of Building Construction</i> , S. Das.								
4.	McKay. (2013), <i>Building Construction: Metric VOL. I & II</i> , Pearson Education India; Fifth edition.								

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture					Academic Year		2023-2024				
Bachelor of Architecture (B.Arch.): Regular Programme													
Year	III	Core / Elective / Foundation Building Materials and Construction VI (ARC-1613CS)					Credits / Hours per week		Total: 05 credits / 05 Hrs per week Lectures: 02 credits / 02 Hrs per week Studio: 03 credit / 03 Hrs per week				
Semester	VI	Year of Introduction: 1994 Year of Syllabus Revision: - 2023					Maximum Marks / Grade		Total: 150 Theory (Paper) : 50 (15 IA + 35 UA) Term Work : 100				
Mode of Transaction		Lecture and Studio					Minimum Passing		68 Marks				
Course Outcome (CO) each student will have developed CO1 An understanding of possibilities of steel as an important building construction material. CO2 Ability to design and detail structural and non -structural components of simple buildings using Aluminum. CO3 Ability to design and detail hardware’s, glazing, etc. of simple buildings using metals. CO4 Ability to use metal innovatively in building projects.													
Unit No.	Topic/Unit					Contact Hours (Total 15 weeks teaching /semester)	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N) / Regional(R) /Global (G) development needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)

1	Unit I - Superstructure (Structure Building Components in Steel) Trusses. - Construction principles and procedures for structural building components using steel. Components include roofs (different types of trusses, space frames, etc), total structures such as geodesic dome. Connections between the different components and fixing. Materials for glazing, cladding, roof covering, etc., as required for particular components, and their fixing. Prefabrication in steel. - Drawings/ models of the principles. Understanding of product literature/ drawings. Site visits with documentation in the form of sketches/ drawings/ photos.	15	20%	1, 2, 3	CO1	PSO 1 PSO 2	EMP, ENT, SD	L,N,R,G	G, ES,HV, PE
2.	Unit II - Detailing (Non -Structural Building Components). - Construction principles and procedures for non- structural building components using aluminum. Components include door, window, ventilator of different types - openable, sliding, pivoted, fixed, louvered, etc., as applicable. Aluminum for interior components such as paneling, partitions and false ceiling. - Sketching/ drawing/ models of the principles. Understanding of product literature/ shop drawings. Site visits with documentation in the form of sketches/drawings/photos.	15	24%	1, 2,6	CO2	PSO 1 PSO 2			
3.	Unit III - Detailing (Non -Structural Building Components). Glazing, hardware and fixing for components. Introduction to Aluminium curtain wall glazing. Sketching/ drawing/ models of the principles. Understanding of product literature/ shop drawings. Site visits with documentation in the form of sketches/drawings/photos.	10	10%	1, 2,6	CO3	PSO1 PSO2			
4.	Unit IV - Design and Detailing. A design and detailing exercise involving metals, predominantly steel, as primary construction material in an appropriate typology involving a simple scale project. The project will integrate knowledge from all the previous units. Design and construction details in the form of sketches, drawings, models.	35	46%	1,2,3,6	CO4	PSO1 PSO2 PSO4			

Reference Books:

1. P.C Varghese, (2015) 'Building Materials', Prentice Hall of India.
2. S.K. Duggal, (2016) 'Building Materials', New Age International Publishers.
3. B.C. Punmia, (2016) 'Building Construction', Laxmi Publications.
4. Roy Chudley, Roger Greeno, (2010) 'Building Construction Handbook', Routledge.

 सत्यं शिवं सुन्दरम्		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture		Academic Year			2023-2024					
Bachelor of Architecture (B.Arch.): Regular Programme												
Year	III	Core / Elective / Foundation Humanities III (ARC1614CS)			Credits / Hours per week			Total: 03 credits / 03 Hrs per week Lectures: 02 credits / 03 Hrs per week (Theory) Studio: 01 credit / 00 Hrs per week (Term Work)				
Semester	VI	Year of Introduction: 1994 Year of Syllabus Revision: 2023			Maximum Marks / Grade			Total: 100 Theory (Paper) : 50 (15 IA + 35 UA) Term Work : 50				
Mode of Transaction		Lecture			Minimum Passing			45 Marks				
Course Outcome (CO) CO1 Understanding of various underlying, overt, covert concepts, which are responsible in creating our built world. CO2 Understand the theories of the design fields which have influences and knowledge of other disciplines, namely, theory of aesthetics, theory of semiotics, theories of human behavior (from human behavioral science) CO3 To understand <i>Industrialization and its impact</i> on the society and built environment worldwide CO4 To understand the Impact of <i>Modernism And Post-Modernism</i> on the society and built environment worldwide												
Unit No.	Topic/Unit				Contact Hours (Total 15 weeks teaching /semester)	Weight age (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N) / Regional (R) / Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)
1	Unit I-Fundamental concepts and theories in creating a built environment Concept of space vs. place Introduction to the core concepts of theory in architecture Difference between scientific theory and theory of design. The idea of architecture, building vs. architecture. Vernacularism and concept of ‘home’ in various civilizations. Examples of vernacular Architecture. Traditional theories of architecture (Vitruvius, Indian classical texts), concept of “house” in various civilizations.				18	30%	1,2,3	CO 1	PSO1, PSO2	EMP, ENT, SD	L, N,R,G	G, ES, HV,PE

2	Unit II- Theory of aesthetics, theory of semiotics and theories of human behavior Understanding the theories of the design fields which have influences and knowledge of other human disciplines like theory of aesthetics, theory of semiotics, theories from human behavioral science, etc.	14	23%	1,2,3	CO2	PSO1, PSO2, PSO4			
3	Unit III- Industrialization and its impact on society and built environment worldwide Industrial revolution, emergency of new technology which produces new processes and new forms. Modern architecture, cultural transformations, rise of metal frame architecture, the formative stands of modern architecture. The Chicago School, birth of the modern architecture, form follows function.	14	23%	1,2,3	CO3	PSO1, PSO2, PSO4			
4	Unit IV-The impact of modernism and post-modernism on society and built environment worldwide Search for new forms and problems of ornamentation, responses to mechanization. Futurism, Cubism, De Still, Constructivism- Architecture and Revolution, international style. The Bauhaus and modern architectural education. Works of pioneer modern architects. The idea of post-modernism, the changing political-economic scenario, role of media and information technology. Proliferation of new ideas and self-expression, diverse school of thoughts or trends.	14	24%	1,2,3	CO4	PSO1, PSO2, PSO3, PSO4			
Reference Books									
1.	Meiss, P. (26 November 2013), <i>Elements of Architecture - from form to space+tectonics</i> , Routledge; 2 nd edition.								
2.	Bloomer, K., Moore, C. (1 April 1978), <i>Body, Memory and architecture</i> , Yale University Press.								
3.	Alexander, C. (10 April 1980), <i>The timeless way of building</i> , OUP USA; Illustrated edition								
4.	Rudofsky, B. (1 January 1987), <i>Architecture without architects</i> , University of New Mexico Press; Reprint edition								
5.	Mallgrave, H. and Goodman, D. (April 18, 2011), <i>An Introduction to Architectural Theory: 1968 to the Present</i> , Willy-Blackwell 1 edition								
6.	Venturi, R. (1977), <i>Complexity and contradiction in Architecture</i> , The Museum of Modern Art, New York								
7.	Harvey, D. (1989), <i>The condition of Postmodernity: An Enquiry into the origins of Cultural Change</i> , Willy-Blackwell								
8.	Mehta J. (2011), <i>Rethinking Modernity: Towards Post Rational Architecture</i> , Niyogi Books								
9.	Mehta J. (2017), <i>Critiquing the Modern in Architecture</i> , Routledge.								

Syllabus of Courses												
		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Applied Mechanics & Structural Engineering				Academic Year			2023-2024			
B. Arch (UG): Regular Programme												
Year	III	Core / Elective / Foundation STRUCTURAL DESIGN – III (APM 1609CS)				Credits / Hours per week		Total: 03 credits / 03 Hrs per week Lectures: 03 credits / 03 Hrs per week				
Semester	VI	Year of Introduction: 1994 Year of Syllabus Revision: -				Maximum Marks / Grade		Total: 100 Theory (Paper): 100 (30 IA + 70 UA)				
Mode of Transaction: Lecture						Minimum passing		45 Marks				
Course Outcome (CO) CO1. The students shall learn application of basic knowledge of beam and slab design for real design problems. CO2. The students shall extend their knowledge for design of continuous beams and slabs and stair cases. CO3. The students shall learn design of axially loaded and eccentric columns, walls and shear walls and to show use of design aids for these designs. CO4. The students shall learn structural design of various types of RCC footings. CO5. The students shall study design of steel plate girder and its components. CO6. The students shall study design of built up columns with lacing and battening and beam to column and beam to beam connections. CO7. The students shall gain knowledge for design of eccentric column using IS code provisions. CO8. The students shall study design of steel column bases subjected to axial compression and uni and bi-axial bending												
Unit No.	Topic/Unit				Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)

	Reinforced Concrete Structures, Design of Beams, Slabs, Columns. Shear, Development length. Design of Shear reinforcement. Continuous span one way & two-way slabs and beams. R.C.C. column subjected of axial load and bending moment.	18	40%	6	CO1 CO2 CO3	PSO1 PSO3	Emp, SD	L, N, R, G	-
2	Design of Foundations and staircases Foundations - different types of foundations, Isolated Individual footing design for column. Staircases various types and layout of stairs, Design of cantilever and Doglegged stair cases.	13	30%	6	CO2 CO4	PSO1 PSO3			
3	Steel Structures Design of Plate Girders and columns Built-up beams, Plate Girder, Castellated girders. Eccentrically loaded columns.	9	20%	6	CO5 CO6 CO7	PSO1 PSO3			
4	Design of Eccentrically Loaded Stanchions Bases and steel joints Design of foundation for steel column. Eccentrically loaded riveted and welded joints.	5	10%	6	CO8	PSO1 PSO3			
Reference Books									
1.	I.S.456-1978 Code of practice for plane and reinforced concrete.								
2.	I.S.800-1984 Code of practice for use of structural steel in general building construction.								
3.	Reinforced Concrete by H. J. Shah, Charotar Pub.								
4.	Reinforced Concrete by Sinha & Roy.								
5.	Design of steel structures by Kazimi and Jindal, Prentice Hall Pub.								
6.	Design of Steel Structures by Krishna Raju & Sinha, Tata Mc Graw Hill Pub.								
7.	Design of Steel Structures by Arya & Ajmani, Nemchand Pub.								

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Applied Mechanics & Structural Engineering			Academic Year		2023-2024		
B. Arch (UG): Regular Programme									
Year	III	CORE Structural Design III (L) (APM 1609LCS)			Credits / Hours per week		Total: 01 credits / 02 Hrs per week Laboratory: 01 credit / 02 Hrs per week		
Semester	VI	Year of Introduction: 1994 Year of Syllabus Revision: -			Maximum Marks / Grade		Total: 50 Term Work, Practical & Viva: 50		
Mode of Transaction: Laboratory					Minimum Passing		23 Marks		
No.	TUTORIAL				Contact Hours	Weightage (%)	BT Level	CO	PSO
1	Architectural plan for a residential building				6	20%	1,2,3	CO1	PSO2 PSO3
2	Details of wall and column foundation				6	20%	1,2,3,4,5	CO3, CO4	PSO2 PSO3
3	Details of ground and plinth beams				6	20%	1,2,3,4,5	CO1, CO2	PSO2 PSO3
4	Details of lintel beams, loft, weather-shed and staircase				6	20%	1,2,3,4,5	CO1, CO2	PSO2 PSO3
5	Details of ground floor beams and slab				6	20%	1,2,3,4,5	CO1, CO2	PSO2 PSO3

 सत्यं शिवं सुन्दरम्	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Civil Engineering		Academic Year				2023-2024			
B. ARCHITECTURE: Regular Programme										
Year	III	Core/Elective/Foundation Estimation & Specification (CVL1613CS)	Credits/Hours per week				Total: 03 credits / 03 Hrs per week Lectures: 03 credits / 03 Hrs per week			
Semester	VI	Year of Introduction: 1994 Year of Syllabus Revision: 2021	Maximum Marks/Grade				Total: 100 Theory (Paper): 100 (30 IA + 70 UA)			
Mode of Transaction: Lectures			Minimum Passing				45 Marks			
Course Outcome(CO)										
CO1 Learn methods for Approximate and Detailed Estimate of Civil Engineering Works. CO2 Analysis of Rates for various items of Civil engineering construction work. CO3 Understanding method of preparing Tender document and inviting tender notice. CO4 Learn various methods for allocation of Civil construction work on Contract basis and Administrative procedure followed for contract. CO5 Understanding the principle of specification writing, and drafting technical specification for items of Civil construction work.										
Unit No.	Topic		Contents	Weight ag (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local(L)/ National(N)/ Regional(R)/ Global(G)	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV) and Professional Ethics (PE)

	Estimation: - Different methods of taking out quantities of residential and public building and other structures: Centre line method and out to out method. - Preparing estimates for residential and public buildings like schools, Hospitals, Hostels etc. and preparing estimates for some special things like retaining walls, roof trusses, water tanks, septic tanks, etc. - Various methods of preparing approximate estimates such as cubical content method unit area method.	12	27%	1,2	CO 1, CO 2	PSO1 PSO2	Emp & SD	N,R	PE
2.	Measurements: - Modes of measurements, schedule of rates. - Units of measurement and analysis of rates for common items of construction.	10	22%	1,2	CO2	PSO1 PSO2	Emp & SD	N,R	PE
3	Methods of Executing Work: - Different methods of executing the work. Various types of contracts have their merits and demerits. - How to prepare Bill of Quantities and brief specifications for BOQ - General ideas about tender forms. Examples of Best Practices and evaluation of tender. - Process of evaluation of tenders/awarding (including Simulations of meetings with contractor and client).	8	17%	2,4	CO3, CO4	PSO1 PSO2	Emp & SD	N,R	PE
4	Specifications: - SPECIFICATIONS: Definitions and uses of writing specification writing. The need for specification. Types of specification. Specifications for various items of construction clause by clause. - Classification of specification, Brief specification and detailed specification excavation, plain cement concrete, RCC, brickwork, DPC, Flooring, doors, windows frames and shutters, plastering, etc.	15	34%	1,2,5	CO5	PSO1	Emp & SD	N,R	PE

Reference Books

1	Elements of Estimating and Costing (Professional practice)- S.C.Rangwala Pub., Charotar Bookstall.
2	Estimating and costing –B.N.Dutta, Pub.: S.DuttaandCo.Lucknow.
3	Estimating and costing–S.P.ChandolaandVazirani, Pub. KhannaPub.
4	Text book of Estimates and costing(Civil Engg.) PG.S. Birdi, Pub.,Dhanpatrai and sons.
5	Estimating, costing, specification and valuation in Civil Engg. Principles and applications and M. ChakrabortiPub.,M.Chakraborty10thedition.

6	Civil Engineering contracts and estimates –Patil (Pub.Orient Longman).
7	Fundamentals of Public works procedure and Account –K.N.Pandya – pub.P.R.Mehta.
8	Quantity Survey (Estimation & CE Work– PLB HasinPub.S.C.Chand&Co.
9	Mode of Measurements of Civil Engineering Works –I.S.1200.

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Civil Engineering			Academic Year	2023-2024	
B. Arch: Regular Program						
Year	III	Core / Elective / Foundation Estimation & Specification (L) (CVL1613LCS)		Credits/ Hours per week	Total: 01 credits / 02 Hrs per week Laboratory: 01 credits / 02 Hrs per week	
Semester	VI	Year of Introduction: Year of Syllabus Revision: 2021		Maximum Marks/ Grade	Total: 50 Term Work, Practical & Viva: 50	
Mode of Transaction: Laboratory				Minimum Passing	23 Marks	
Course Outcome (CO) CO1 work out estimate of various items of civil engineering construction CO2 work out estimate for RCC work CO3 Analyse Rate for various items of civil engineering construction CO4 Understand the procedure for preparation of contract, tender and valuation report CO5 Prepare the draft for technical specification of various civil engineering work						
Mode of Transaction		Analysis, Evaluation, technical discussion and viva		PSO1 is common for all experiments		
No.	Term-work based on syllabus of subject		Contact Hours	Course Code	BT Level	CO PSO
1	Estimate of Residential Building		8hours		3,4,5,6	CO1 PSO1
2	Estimate of RCC beam, slab, column		4hours		3,4,5	CO2 PSO1
3	Estimate of RCC retaining wall, water-tank		4hours		3,4,5	CO2 PSO1
4	Estimate of Septic-tank		2hours		3,4,5	CO1 PSO1
5	Approximate Estimate		3hours		1,2,3,5	CO1 PSO1
6	Preparation of contract		2hours		1,2,3,4	CO4 PSO1
7	Drafting of Technical specification of various items of civil construction work		2hours		3,4,5, 6	CO5 PSO1,PSO2
8	Preparation of Tender document		3hours		1,2,3,4	CO4 PSO1,PSO2
9	Preparation of Rate analysis of civil construction work		2hours		3,4,5,6	CO3 PSO1 PSO2

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture			Academic Year			2023-2024				
Bachelor of Architecture (B.Arch.): Regular Programme											
Year	III	Core /Elective/ Foundation (Elective I) Product Design (ARC1609LCS)		Credits / Hours per week			Total: 02 credits / 03 Hrs per week Lectures: 01 credits / 01 Hrs per week Studio: 01 credit / 02 Hrs per week				
Semester	V	Year of Introduction: 2023-24 Year of Syllabus Revision:----		Maximum Marks / Grade			Total: 100 Term Work: 50 Term Work: 50				
Mode of Transaction		Lecture and Studio		Minimum Passing			45 Marks				
Course Outcome (CO) CO1 Understanding product design and its history. Ability to comprehend human activities, human dimensions and design of different products. CO2 Understanding the product development cycle with respect to case studies. CO3 Understanding the interactions and relationship between human and product. CO4 To execute the design idea and design workable products.											
Description: - To develop an understanding the methods and techniques involved in product design with focus on integration of the marketing, design, and manufacturing process and awareness of tools and method for product design and ability to coordinate multiple, interdisciplinary tasks in order to achieve a common objective.											
Unit No.	Topic/Unit			Contact Hours (Total 15 weeks teaching /semester)	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L) / National (N) / Regional(R) / Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)
1	Unit I-Introduction and Fundamentals A brief introduction to product design and its various elements. History of product design, role of product designers. Introduction to applied anthropometry, human activities, their nature, application of human data and cultural studies.			09	20%	1& 2	CO 1	PSO1			

2	Unit II-Field relevance and case studies Understanding the product development cycle and phases based on case studies. To understand the visual display: discrimination, quantitative and qualitative visual display. To understand form, colour, symbols, users specific criteria, material, technology and engineering, product market for development of new or modified product, waste management, sustainability, recyclability, and packaging of products.	18	40%	1, 2, 3,	CO 2	PSO1 PSO2	EMP, SD	L, R	ES, HV, PE
3	Unit III-Human interaction and product design Understanding behavior and structure of interactive systems. Interactive design: establishing relationship between user and product. Analysis and conclusion for developing useful new products or improving the design of existing products.	09	20%	1, 2, 3 & 6	CO 3	PSO1 PSO3			
4	Unit IV-Analysis and design of final product Design analysis and development of new product design ideas or modification in existing products and its execution.	09	20%	2, 3 & 6	CO 4	PSO1 PSO2 PSO3			

Reference Books

1.	The Pocket Universal Principles of Design: 150 Essential Tools for Architects, Artists, Designers, Developers, Engineers, Inventors, and Makers Book by William Lidwell
2.	Deconstructing Product Design: Exploring the Form, Function, Usability, Sustainability, and Commercial Success of 100 Amazing Products Book by Gerry Manacsa and William Lidwell
3.	An Illustrated Field Guide to the Elements and Principles of Art + Design ,Textbook by JOSHUA. FIELD
4.	Principles of Structural Design: Wood, Steel, and Concrete, Third Edition, Book by Ram Gupta
5.	Line color form The language of art and Design by jesse Day
6.	Guide to Methodology in Ergonomics :Designing for Human (REF.BOOK) by Naville A. stanton

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture			Academic Year		2023-2024					
Bachelor of Architecture (B.Arch.): Regular Programme												
Year	III	Core /Elective/ Foundation (Elective I) Traditional Art and Architecture (ARC1610LCS)			Credits / Hours per week		Total: 02 credits / 03 Hrs per week Lectures: 01 credits / 01 Hrs per week Studio: 01 credit / 02 Hrs per week					
Semester	VI	Year of Introduction: 2023-24 Year of Syllabus Revision:			Maximum Marks / Grade		Total: 100 Term Work: 50 Term Work: 50					
Mode of Transaction		Studio and lecture			Minimum Passing		45 Marks					
Course Outcome (CO) CO1 Background study on different types of traditional art forms and architecture. CO2 Understand the concept, aesthetics, elements, social and cultural factors of traditional art and architecture. CO3 Understand the relevance of traditional art and architecture in contemporary time. CO4 The students will be able to conduct the studies and research in this area and explore ways to rejuvenate and use traditional art forms and architecture in present time.												
Unit No.	Topic/Unit				Contact Hours (Total 15 weeks teaching /semester)	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp) / Entrepreneurship (Ent) / Skill Development (SD)	Relevance to Local (L) / National (N)/ Regional(R)/ Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)
1	Unit I-An overview of different types of traditional art forms and architecture An overview of traditional art forms and architecture in the world in general and specific to various states of India. Typology and elements of art forms and architecture. Study of various architectural styles/works and art work and its relevance.				9	25%	1,2	CO1	PSO1, PSO2	EMP, ENT, SD	L, N,R,G	G, ES, HV,PE
2	Unit II- Aesthetics, elements, social and cultural factors of traditional art forms and architecture Every art or architectural form has its own reasons for social, cultural and functional origins. A study will be under taken to understand above factors. The art forms and architectural work has its own sub elements. Its application and interpretations can be region specific, (i.e. tribal). A region specific understanding of art form and architecture will be developed in this unit.				9	25%	1,2,3	CO2	PSO1, PSO2, PSO4			

3	Unit III- Opportunities and challenges in contemporary time Traditional art and architecture have its roots in history, but it is crucial to establish a connection of it with the present (i.e. efforts done to revive it, conserve it, talk with artisans to understand the current scenario etc.).The study of traditional art form, architecture and artisans will be conducted to understand the present scenario.	13	20%	2,3	CO3	PSO1, PSO2, PSO4			
4	Unit IV- Analysis, conclusion and proposal Students will prepare a report/prototype of the selected art form or architectural style. The report will include the conclusion in the form of the opportunities and challenges, rejuvenation, application or promotion techniques for specific art form or architectural style. The final submission in form of a model/product/report/portfolio will be prepared.	14	30%	2,3.6	CO4	PSO1, PSO2, PSO4			
Reference Books									
1. Ranjan, A., & Ranjan, M. P. (Eds.). (2009). Handmade in India: A geographic encyclopedia of Indian handicrafts. Abbeville Press. 2. Pandya, Y. (2005). Concepts of space in traditional Indian architecture. Mapin Publishing Pvt. 3. Saraf, D. N. (1982). Indian crafts: development & potential. New Delhi: Vikas.									

 सत्यं विद्मं सुन्दरम्		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture				Academic Year		2023-2024					
Bachelor of Architecture (B.Arch.): Regular Programme													
Year	III	Core/Elective/ Foundation (Elective I) Photography and Videography (ARC1611LCS)				Credits / Hours per week		Total: 02 credits / 03 Hrs per week Lectures: 01 credits / 01 Hrs per week Studio: 01 credit / 02 Hrs per week					
Semester	VI	Year of Introduction: 2023-24 Year of Syllabus Revision:				Maximum Marks / Grade		Total: 100 Term Work: 50 Term Work: 50					
Mode of Transaction		Lecture and Studio				Minimum Passing		45 Marks					
Course Outcome (CO) CO1 To understand basics and fundamentals of camera, photography and videography CO2 An ability to critically think and analyze about issues related to build environment on society as well as the tools to enable documenting/recording of the same. CO3 Emerging specializations in the field of product photography and videography. CO4 To bring out importance/ contributions of photography/ videography in the architectural profession and to help develop proficiency in modern photography/ videography techniques.													
Unit No.	Topic/Unit					Cont act Hou rs	Weightag e (%)	BT Leve	CO	PSO	Elem e n ts of	Releva nce to	Relation to
						(Total 15 weeks teaching /semester)		1			Employabilit y (Emp) / Entrepreneur s hip (Ent)/ Skill Developmen t (SD)	Local (L) / National (N) / Regional (R)/ Global (G) develop mental needs	Gender (G), Environment and Sustainabilit y (ES), Human Values (HV) and Professional Ethics (PE)
1	Introduction and Fundamentals Brief history of photography and videography - Definition, nature, scope and function of visual media. Techniques of photography Types of Cameras Lens Use of specialized software Standards of picture presentation retouching, packing, copying and other techniques. News pictures and types sources of photographs Photo agency pictures Stock picture library Photo desks, Photo editing Legal and ethical aspects of photography The picture story Photo features Writing captions and outlines Illustrations					06	15	01 02	CO1	PSO 3	Ent / SD	L / N / G	ES / PE

2	Videography Understanding equipment, elements of lighting and sound, and their significance in production Types of lighting (Indoor /outdoor) Recording and editing with software Adobe Premiere. Significance and principles of editing Different transitions used in editing. Content Treatment for videography - Understanding the nature and treatment of various kinds of formats (Fiction like Infotainment programmes, sitcoms; Non- Fiction like documentaries, talks and dialogues, interviews etc.) Research and scripting Storyboard preparation. The aim is not only to improve the visual strength of architectural photography, but also the stories that they can tell—going beyond the individual images in order to communicate buildings’ relationships with their contexts, space and time.	18	35	02 03 04 05	CO2	PSO 2 PS03 PS05			
3	Product photography Products play critical role in every built-space. Products over large spectrum within different built spaces – ranging from interior products like lamp, furniture, ceramics in interiors to different products places within urban fabric like street furniture in public spaces. This unit deals with documenting product of any scale associated directly or indirectly with built form. Nature of the medium and material, Elements of visual treatment, Principles of capturing a product (usage of camera, shot sizes, camera movements, angles)	09	20	02 03	CO3	PSO 3			
4	Photography and Videography: Built environment and natural environment Architectural photography ‘lifts the building out of time, out of breath,’ and in this provides solace for architects who can dream for a moment that architecture is a stable power existing over and above the tides of time.” Learn and apply architectural photography/videography skills in both built environment and natural environment. Understanding equipments and its function - cameras and lenses. Techniques- exposure measurement, grey scale, photofinishing and editing digital images. Understanding role of types of perspectives in photography and videography- single point, two- point, three- point and methods of correcting distortions. Lighting - external and interior	12	30	02 03 04 05	CO4	PS03 PSO 4			
Reference Books									
1.	David Fuller & Patricia Waugh, eds., 'The Arts and Sciences of Criticism', Oxford: Oxford University Press, 1999								
2.	M. Harris, 'Professional Architectural Photography', Focal Press, 2001.								
3.	M. Harris, 'Professional Interior Photography', Focal Press, 2002								
4.	M. Heinrich, 'Basics Architectural Photography', BirkhauserVerlag AG, 2008.								
5.	Gerry Kopelow, 'Architectural Photography: The Professional Way', Princeton Architectural Press, 2007.								
6.	Hampe, B. (2007). Making Documentary Films and Videos: A practical guide to planning, Filming and Editing Documentaries. Henry Holt and Company								
7	Videomaker (2013). The Videomaker Guide to Video Production. Elsevier/Focal Press								
8	Kelby, S. (2013). The Digital Photography Book (Volume 1, 2 and 3). Peachpit Press								
9	. Busch, D.D. (2011). Canon EOS Rebel T2i/550D Guide to Digital SLR Photography. USA:CENGAGE Learning								
10	Orwig, C. (2012). People Pictures: 30 exercises for creating Authentic Photographs. Peachpit Press								
11	Peterson, B. (2003). Learning to See Creatively: Design, Color& Composition in Photography. Amphoto Books.								
12	Hunter, F. & Fuqua, P. (1997). Light Science and Magic: An Introduction to Photographic Lighting. Focal Press.								
13	Barnbau, B. (2010). The Art of Photography: An Approach to Personal Expression. Rocky Nook Inc.								

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture		Academic Year					2023-2024				
Bachelor of Architecture (B.Arch.): Regular Programme												
Year	III	Core /Elective/ -Foundation (Elective I) Water and Built Environment (ARC1612LCS)	Credits / Hours per week		Total: 02 credits / 03 Hrs per week Lectures: 01 credits / 01 Hrs per week Studio: 01 credit / 02 Hrs per week							
Semester	VI	Year of Introduction: 2023 Year of Syllabus Revision: ---	Maximum Marks / Grade		Total: 100 Term Work: 50 Term Work: 50							
Mode of Transaction		Lectures and Studio	Passing Marks			45 Marks						
Course Outcome (CO) With the successful completion of the course student should demonstrate and have capability to: CO1. To understand the basic fundamentals of hydrologic cycle and analyze the effects of urbanization on water CO2. To get familiar with the concept of watershed, its delineation and characteristics. To emphasis on runoff & its characteristics & to develop rainfall runoff relationship. To study soil erosion. CO3.To understand development, potential and legislate of ground water. To be able to understand various type of aquifers and its properties. To be familiarized with infiltration process & able to estimate infiltration rate CO4. To study various surface and subsurface techniques of ground water investigation and artificial recharge. To understand the concept of rainwater harvesting and its design criteria. To study the effects of sea water intrusion and prevention strategies.												
Unit No.	Topic/Unit				Cont act Hour s	Weig htage (%)	B T Le vel	CO	PSO	Eleme nts of Employab ility (Emp) / Entreprene urshi p (Ent) / Skill Developm ent (SD)	Relevan ce to Local (L) / National (N) / Regional(R) / Global (G) developme ntal needs	Relation to Gender (G), Environment and Sustainabilit y (ES), Human Values (HV) and Professional Ethics (PE)
1	Introduction: Purpose and scope • Climatic and Cultural Aspects Related to Water • Environmental Impacts, Rural and Urban management • Impacts of urbanization on hydrology, Changes in surface & groundwater flows, Current activities, Recommendation for international action • Hydrologic cycle. Hydrology as applied in built environment. Catchment characteristics. Drainage patterns. Classification of Catchments. Weather & Climate and its relation with hydrology in built environment.				18	20%	1, 2	CO1,	PSO1	EMP, ENT,SD	L, N, R, G	PE,ES

2	Watershed, Runoff and Soil Erosion - Watershed concept, Delineation of watershed, Watershed characteristics and Management, Integrated multidisciplinary approach, Master plan. - Phenomena of runoff. Catchment characteristics and their effects on runoff. Climatic factors. Rainfall-runoff correlation. Methods of estimation. Volume and durations of runoff. - Soil erosion: Geologic erosion, Accelerated erosion, Types of soil erosion, Wind erosion, Water erosion.	24	27%	1,2,3,4	CO ₂ ,	PSO1 PSO2			
3	Ground Water, Aquifers and Infiltration process - Introduction, Ground water development in India, Areas of ground water potential in India, Conjunctive use, Ground water legislation and pollution. - Aquifers, Various types of aquifer, Ground water terminology, Aquifer properties - Infiltration process. Infiltration capacity of soil. Factors influencing infiltration capacity. Methods of determining infiltration capacity. Infiltration indices. Infiltration measurement.	24	26%	1,2,3,4	CO ₃ ,	PSO1, PSO2, PSO3			
4	Introduction to Sustainable Water Management Practices - Introduction to rain water harvesting, Need for RWH, Advantages of RWH, RWH potential, Methods of RWH, Methods of recharging subsurface aquifers, Design criteria for RWH and Case studies. - Traditional water resource management systems: Conservation and application - Saline water intrusion, Prevention and control of saline water intrusion, artificial recharge. - Computer aided applications for decision making related to water resource management.	24	27%	1,2,3,4,5,6	CO ₄	PSO1, PSO2, PSO3, PSO4			

Reference Books

1.	Raghunath H.M “Hydrology”, Wiley Eastern Publication
2	Reddy Jayarami, “Engineering Hydrology”, Laxmi Publication
3	Subramanya K, “Engineering Hydrology”, - Tata McGraw Hill Publication
4	Engineering Hydrology – Wilson
5	Urban Hydrology, Hydraulics & Storm Water Quality – Willey Publication – A. Osman, Akan & Robert J. Houghtalen
6	Hall M. J. (1984), Urban Hydrology”, Elsevier Applied Science Publishers
7	“Hydrological Effects of Urbanization”, A report of the sub-group on the effects of urbanization on the hydrological environment, The UNESCO Press, Paris 1974, ISBN No.: 92-3-101223-1
8	Ghanshyam Das. “Hydrology and Soil Conservation Engineering” Prentice Hall of India Pvt. Ltd., New Delhi
9	Suresh, R. “Watershed Hydrology”, Standard Publishers Distributors, New Delhi.
10	Rajora, R. “Integrated Watershed Management”, Field Manual for Equitable, Productive and Sustainable Development, Rawat Publications, New Delhi.
11	Murthy, J. V. S., “Watershed Management in India”, Willey Eastern Limited, New Delhi.
12	Ministry of Water Resources Central Ground Water Board, “Rain water Harvesting Techniques to Augment Ground Water”, Faridabad.
13	WMS 8.0 Tutorials, Copyright © 2006 Brigham Young University - Environmental Modeling Research Laboratory
14	Karanth,K.R.“Groundwaterassessmentdevelopmentandmanagement”.TataMcGraw-Hill Publishing co.
15	Michael,A.M.andKhepar,S.D.“WaterWellandPumpEngineering”.TataMcGrawHill Publishing Co.
16	Raghunath, H. M. “Ground water”. Willey Eastern limited
17	Todd, D. K. “Ground water hydrology”. John Wiley and sons

Detail Syllabus: F.S of B. Arch IV (New Course - CRS)

Implemented from academic year 2024-25 (Non-CRS)

From academic year 2025-26 (CRS)

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture		Academic Year	2024-2025
Bachelor of Architecture (B.Arch.): Regular Programme					
Year	IV	Core / Elective / Foundation Architectural Design VII (ARC1703LCS)		Credits / Hours per week	Total: 11 credits / 11 Hrs per week Studio: 07 credits / 11 Hrs per week (Term Work) Studio: 04 credit / 00 Hrs per week (Review and Viva)
Semester	VII	Year of Introduction: 1994 Year of Syllabus Revision: 2024		Maximum Marks / Grade	Total: 450 Term Work: 300 Review and Viva : 150
Mode of Transaction: Studio				Minimum Passing:	203 Marks
Course Outcome (CO) Students will be able to.					
CO1 Analyzing the functional complexity of vertical and horizontal relationships of various areas for the given project and study the advancement in building services and available on future technology for the same and its expression in Architecture					
CO2 Carrying out the Analytical Study based on the selected Case Studies and formulating site selection & Design criteria					
CO3 Documenting and analyzing the selected site in terms of design potentials and constraints and using it for Conceptual Development					
CO4 Integrating the fundamental design aspects (discussed above), along with the services such as HVAC, electrical connections, water supply, drainage, fire safety etc.					
CO5 Learn software with reference integration of various services in their architectural design					

Unit No.	Topic/Unit	Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/Global (G)developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)
1	Introduction Understand the complexity in design with the primary focus on Building Services as an integrated system along with the fundamental design process that involves consideration of aspects like site planning, climate, orientation along with exploration of building materials, construction techniques, and spatial organization.	22	13%	1,2	CO1	PSO1	Emp, SD	L, N,R	ES, PE,H V
2	Site Study and Analysis: SWOT and PESTEL Analysis to understand various opportunities and limitations to the site. Study of buildings in which vertical arrangements are desired. Exposure to building by-laws and Universal Design or Accessible Design concept. Study of the site in terms of context (surrounding development, scale), climate / orientation, access, special features. Analysis of the site in terms of design potentials and constraints. Preparation of site model with context and site plans. Overall site zoning, primary road networks inside the site and conceptual planning.	22	14%	1,2,4	CO2	PSO1 PSO3			
3.	Design Development with Integration of Various Services								

	Students will study various aspects of design through selected case studies. Analyze how various Design and Services components come together as a whole system and work as a single body. Analyze the collected data to formulate the Site selection and Design requirements. Area/volume studies to determine number of blocks/towers and floors. Overall layout with clear indication of pedestrian/vehicular movement, parking, response to the context. Design and layering of different activity areas with different spatial scales. Coordination of various building services such as water supply, lifts, drainage, garbage disposal, lighting, air conditioning etc. Exposure to natural disaster management or disaster management through design mitigation.	58	35%	1,2,4	CO3	PSO2 PSO3			
4.	Design Finalization Develop a detailed design that is resolved in terms of By-laws, Spatial Planning, Climate Considerations and with primary focus on Building Services working in cohesion with the structure. Design representation through different types of drawings using different mediums. (Sketches, plans, sections, elevations, 3D views etc.) Relevant models in different scales as per the requirements.	33	20%	1,2,3	CO4	PSO3 PSO4			
5.	Building Information Modeling Develop an understanding of how to model the architectural drawings along with different layers of services in BIM Software. This would help them understand clash detection and remove errors within drawings to produce good for construction drawings (GFC).	30	18%	1,2,3,4,5	CO5	PSO3			
Reference Books									
1.	Alexander, C. et. al. (2015). <i>A Pattern Language: Towns, Buildings, Construction</i> . Oxford								
2.	Panero, J. & Zelnik, M. (1979). <i>Human Dimension and Interior Space</i> . Watson-Guptill								
3.	Laseau, P. (2000) <i>Graphic Thinking for Architects and Designers</i> . John Wiley & Sons								
4.	Gill, R. (1984). <i>Rendering with Pen and Ink</i> . Thames & Hudson								
5.	Pramar, V. S. (1997). <i>Design Fundamentals in Architecture</i> . Somaiya Publications Pvt. Ltd.								
6.	Architect's Data, Ernst Neufert, Publication: Wiley- Blackwell								
7.	Time-saver Standards series – all relevant volumes								

8	Books on building typology like design and services oriented books on General hospital, Hotel, Civic center etc.
9	GDCR (General Development Control Regulations)
10	NBC (National Building Code of India)
11	Building Services Handbook, Fred Hall & Roger Greeno, Butterworth-Heinemann (first published April 4th 2001)
12	Building Services Design for Energy Efficient Buildings, Paul Tymkow, SavvasTassou, Maria Kolokotroni, HussamJouhara, Routledg April 2, 2013
13	Building Information Modeling_AndreBorrmann, Markus Konig, Christian Koch, „JakobBeetz, Springer, September 2018

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture				Academic Year			2024-2025				
Bachelor of Architecture (B.Arch.): Regular Programme												
Year	IV	Core / Elective / Foundation Building Construction and Specification (ARC1704CS)			Credits / Hours per week		Total: 05 credits / 05 Hrs per week Lectures: 02 credits / 02 Hrs per week (1 Hr ARCHI + 1 Hr CVL) Studio: 03 credit / 03 Hrs per week					
Semester	VII	Year of Introduction: 1994 Year of Syllabus Revision: 2024			Maximum Marks / Grade		Total: 150 Theory (Paper) : 50 (15 IA + 35 UA) Term Work : 100					
Mode of Transaction: Lecture and Studio					Minimum Passing:		68 Marks					
Course Outcome (CO) Students will be able to...												
CO1 Understand the advance nature of structure and relationship of structure and design.												
CO2 Gain the knowledge about structural and detailing complexities for structures with special program needs (High rise and long span structures).												
CO3 Understand the level of workmanship required in the use of advanced building materials and construction.												
CO4 To understand the level of workmanship required in the use of advanced materials.												
CO5 To develop the ability to review and analyze the material specification and construction systems followed on site.												
Unit No.	Topic/Unit				Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/Global (G)developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)
1	Precast and Pre-stressed Concrete Design and detailing of concrete used in advanced construction such as precast concrete, pre-stressed concrete, folded plates, shell structures, vaults, domes, decorative concrete, insulated concrete forms (ICF), concrete for seismic design.				15	20%	1,2	CO1	PSO1			

2	Modular Systems Designing in modular space grid and modular dimensioning. Preferred sizes for horizontal and vertical coordinating and controlling dimensions. Controlling dimensions for widths of building components. Controlling dimensions for heights of building components. Floor heights & room heights. Analysis of building elements / components for introduction of prefabrication in the context of India. Classification of prefabricated components.	22	30%	1,2,4	CO1, CO2	PSO1, PSO3	Emp, SD	L, N,R	ES, PE
3.	Long Span Structures General understanding on long span structures, their structural system and spatial design aspects. Taking examples from contemporary structures like stadium, convention halls and exhibition spaces, industrial sheds etc.	15	20%	1,2,4	CO1	PSO1, PSO3			
4.	Materials and Specifications (to be taught by Civil Dept.) Specifications of advanced materials, methods of framed structures and workmanship pertaining to framed structures and modern materials like chromium, plastics, aluminum etc. acoustical and insulation materials. As per the availability of the material in the market and new invention of type of material, study may be carried out. Overview on tests related to the material (strength, fire-proof, fire resistivity, water absorption, heat insulation & sound insulation, durability, termite resistance, etc.)	23	30%	1,2,3	CO2, CO3	PSO1, PSO2, PSO4			

Reference Books

1.	Salvadori's Structure in Architecture: The Building of Buildings by Mario G. Salvadori, Robert Heller, Deborah Oakley, Publisher: Pearson; 4 edition
2.	High-rise Building Structures by Wolfgang Schueller, Publisher: John Wiley & Sons Inc
3.	Foundations of Structures by Clarence W Dunham, Publisher: Forgotten Books
4.	Tensile Structures: Design, Structure, and Calculation of Buildings of Cables, Nets, and Membranes by Frei Otto, Publisher: The MIT Press; 1st edition (March 1973)
5.	Tensile Structures. Volume One, Pneumatic Structures by Frei Otto, Publisher: The MIT Press
6.	Philosophy of Structures by E. Torroja, Publisher: University of California Press (1962)
7.	Shells by FELIX CANDELLA
8.	Examples of works by Mervi, Fuller, Tange, Mahendra Raj, Sarinen, Barinche, etc, Prominent Architects & Engineers.
9.	I.S.I. Specification Codes.
10.	Specifications by EDWARDS
11.	I.S.S. Code of practices for various materials, construction and Work Manuals
12.	Manuals and catalogues of various manufactures

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture					Academic Year			2024-2025		
Bachelor of Architecture (B.Arch.): Regular Programme											
Year	IV	Core / Elective / Foundation- Heritage & Conservation ARC-1706CS			Credits / Hours per week			Total: 03 credits / 04 Hrs per week Lectures: 02 credits / 02 Hrs per week Studio: 01 credit / 02 Hrs per week			
Semester	VII	Year of Introduction: 2024 Year of Syllabus Revision: -			Maximum Marks / Grade			Total: 100 Theory (Paper) : 50 (15 IA + 35 UA) Term Work : 50			
Mode of Transaction: Lectures and Studio					Minimum Passing:			45 Marks			
Course Outcome (CO) Students will be able to...											
CO1 To develop an understanding of the existence and relevance of Natural and Built Heritage and need for its Conservation.											
CO2 To study Policies, Programs and Legislation regarding Natural and Built Heritage.											
CO3 To understand Conservation Principles, Processes and Practices across India and world.											
CO4 To implement the theoretical knowledge in practical way by taking up a small project of Heritage building documentation and Conservation.											
Unit No.	Topic/Unit			Contact Hours (Total 15 weeks teaching /semester 15x4=60 hr.)	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional@/Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)

1	Introduction to Heritage What is regarded as heritage; Concept of heritage – tangible and intangible; Need and importance of heritage recognition; Classification – built and natural heritage (ecological and environmental context, urban and regional context, relevance of sustainability, micro/macro climate, recreational potential, conservation potential, etc.). Understanding the historical context for a heritage – Role of memory, identity and sense of belonging. Architectural Heritage – Identification, listing, documentation, accessing architecture character promotion, inventory preparation, investigation techniques and tools, community involvement, etc.). Concept of historical urban landscapes (HUL), determinants of built form, relevance of culture.	12	20%	1,2	CO1	PSO1	Emp, SD	L, N,R	ES, PE
2	Introduction to Heritage Conservation Conservation – Concept and strategies for conservation; Degrees of intervention/ approaches/techniques (Urban regeneration, renewal, rehabilitation, revitalization, reconstruction, redevelopment, restoration, preservation, consolidation, reproduction); methods and tools; Acts and laws recognizing conservation; Preparation of conservation and heritage management plans; Maintenance and management of conserved areas. History of Architectural Conservation (movements, agencies,–ICCROM, ICOMOS, UNESCO, IUCN etc.) various charters and the derived principles and ethics of conservation. Conservation in India (Acts, Central and state government policies, legislation and initiatives, museum conservation monument conservation and the role of ASI, SDA, INTACH, Implications of 74 th Constitution Amendment Act, and selected projects- such as Hampi precinct, Golconda, Humayun precinct, etc.).	12	20%	1,2,4	CO2	PSO1, PSO3			
3.	Heritage and Conservation – Potential, Prospects and strategies.	18	30%	1,2,4	CO3	PSO1, PSO3			

	Issues of development, land use and conservation; strategies for conservation. Advantages of identification of heritage, its process and outputs of conservation – Cost of conservation and social justice – its implications and issues; Aspects of conservation – legal, emotional, cultural, political, environmental and financial – like generation of identity, tourism development, creation of job opportunities etc. , Understanding through case studies and small projects of heritage conservation from India and abroad.								
4.	Documentation of Heritage and Conservation Project Students will do a live site visit to the selected heritage building/s, campus (four to five different projects in a group)for its documentation in terms of architectural drawings. Further the group of students will conduct a study to understand the challenges of its conservation and develop strategies for the same by implementation of the theoretical knowledge in a practical way.	18	30%	3,4	CO4	PSO4			

Reference Books

1.	RaoKhadpekar, Nirmala, 2008, <i>Urban Revitalization :Perspectives and Initiatives</i> ,ICFAI University Press
2.	Kain, Roger(Ed.), 1981, <i>Planning for Conservation: An International Perspective</i> , Mansell, London.
3.	Naoum, Cohen, 2001, <i>Urban Planning Conservation and Preservation</i> , McGraw hill,
4.	Longtreth, Richard (Ed.), 2008, <i>Cultural Landscapes: Balancing Nature and Heritage in Preservation Practice</i> , University of Minnesota Press.
5.	Girard F.L. and Nijkamp, 2009, <i>Cultural Tourism and Sustainable Local Development</i> , Ashgate, Burlington.
6.	<i>Charter for the Conservation of Unprotected Architectural Heritage and Sites in India</i> , INTACH.
7.	<i>The Burra Charter- The Australian ICOMOS Charter for places of Cultural Significance</i> .
8.	<i>Hoi An Protocols for Best Conservation Practice in Asia</i> .
9.	Manual for Conservation, Bernard Feilden
10.	Conservation of Historic Building, Bernard Fielden

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture		Academic Year		2024-2025					
Bachelor of Architecture (B.Arch.): Regular Programme											
Year	IV	Core / Elective / Foundation Acoustics (ARC1705CS)		Credits / Hours per week		Total: 03 credits / 04 Hrs per week Lectures: 02 credits / 02 Hrs per week (1 Hr App. Physics + 1 Hr ARCHI) Studio: 01 credit / 02 Hrs per week (1 teacher from App. Physics + 1Teacher from ARCHI)					
Semester	VII	Year of Introduction: 1994 Year of Syllabus revision: 2021- 2022/2024		Maximum Marks		Total: 100 Theory (Paper) : 50 (15 IA + 35 UA) Term Work: 50 50 Marks Paper (25 Marks Archi. + 25 Marks Applied Physics) 50 Marks Term Work (25 Marks Archi + 25 Marks Applied Physics)					
Mode of Transaction: Lectures and Studio				Minimum Marks		45 Marks					
Course Outcome (CO) Students will be able to... CO1 Understand properties, propagation and behavior of sound. CO2 Understand the indoor / outdoor acoustics. Application of materials and ideal acoustical conditions. CO3 Understand noise control in buildings and at urban level. CO4 Understanding of sound amplification, technological and electro acoustical aspects.											
Unit No.	Topic/Unit			Contact Hour	Weight age (%)	BT Level	CO	PSO	Element s of Employabil ity (Emp)/ Entrepreneu rship (Ent)/ Skill Develop ment (SD)	Relevan c e to Local (L)/Nationa l (N)/Region al(R)/ Global (G)develop mental needs	Relation to Gender (G), Environ ment and Sustainabil ity (ES), Human Values (HV)and Professional Ethics (PE)

1	Fundamentals Of Acoustics: (To be taught by Applied Physics Department) - Properties of Sound: Origin and propagation of sound, speed of sound, frequency, pitch, timbre, and wavelength. - displacement amplitude, characteristics of sound waves, Sound pressure, Intensity and loudness, Units of Intensity and loudness, Objective nature of intensity and Subjective nature of loudness, Weber Fechner formula. - Principles of Room Acoustics: Room resonance, normal modes, sound pressure distribution, diffusion of sound, growth of sound in a room, average decay rate, Noise Reduction Coefficient (NRC), Sound Transmission Class (STC), and Impact Insulation Class (IIC), Factors affecting good acoustics of building.	20	34%	1,2,3,5	CO1	PSO 1	SD	L, N, R	ES
2	Fundamental of Architectural acoustics: (To be taught by Architecture Department) Brief history of acoustical ideas. Properties and characteristics of sound, Audio frequency range, tones, octave band, and decibel scale. Human ear mechanism, equal loudness contours. Sound and distance – inverse square law. - Room acoustics: reflection, absorption, diffusion, diffraction, Sound absorption coefficient. Reverberation, Sabin's formula. Sound absorbing materials: porous materials, panel or membrane absorbers, Cavity resonators, space absorbers and variable absorbers. Understanding acoustical properties and application techniques of products through literature / site visits / market survey. Ideal acoustical conditions and their application to buildings. - Study of Acoustical design for various types of halls, for speech and music through live case studies.	18	30%	1,2,3	CO2	PSO 1, PSO 3			

3	Environmental Acoustics (To be taught by Architecture Department) - Noise: Definition and identification of various sources of noise, effects of Noise on human beings. - Methods of environmental Noise control in cities and urban areas such as problems of Industrial and traffic noise, Air craft's noise, zoning regulations, selection and planning of sites etc. - Noise control in buildings, special problems concerning the insulation against structure borne noise and air borne noise, insulation of noise from air conditioning ducts and various types of machines etc. - Practical measurement of Noise for various urban zones and data analysis.	12	20%	1,2,3	CO3	PSO1, PSO 3 PSO 4			
4	Sound, Amplification system: (To be taught by Applied Physics Department) - Single channel sound amplification systems, stereophonic sound systems. High quality speech reinforcement systems, Microphones, Loud speakers placing, Heat effect, use of columns of loud speakers. - Use of Electro Acoustical aids for various types of Halls designed for speech music debating etc.	10	16%		CO4				
Reference Book									
1.	Doelle, L.L. (1972). Environmental acoustics. New York: McGraw-Hill								
2.	Egan, M. D. (1983). Concepts in architectural acoustics. New York, N.Y.:McGraw Hill								
3.	Parkin, P. H., & Humphreys, H. R. (n.d.). Acoustics, Noise, and Buildings. Revised Edition 1969								
4.	Kinsler, L. E., & Frey, A. R. (1962). Fundamentals of acoustics Lawrence E. Kinsler Austin R. Frey. New York: Wiley.								
5.	Knudsen, V. O., & Harris, C. M. (1978). Acoustical designing in architecture. New York: American Institute of Physics.								
6.	<i>Room Acoustics. Vol II.</i> Kramer and Kramer								

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Applied Mechanics & Structural Engineering	Academic Year	2024-2025							
B. Arch (UG): Regular Programme										
Year	IV	Core / Elective / Foundation Structural Analysis and Design (APM1705CS)	Credits / Hours per week				Total: 03 credits / 03 Hrs per week Lectures: 03 credits / 03 Hrs per week			
Semester	VII	Year of Introduction: 1994 Year of Syllabus Revision: -2024	Maximum Marks / Grade				Total: 100 Theory (Paper): 100 (30 IA + 70 UA)			
Mode of Transaction		Lecture	Minimum Passing:				45 Marks			
Course Outcome (CO) CO1 The students shall learn the acceptable probability of structures performing satisfactorily during their intended life CO2 The students shall understand that structures should sustain all loads and deform within for limit for constructions and use CO3 The students shall understand that structure should be durable; structures should adequately resist to the effects of misuse and fire.										
Unit No.	Topic/Unit		Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/Global (G)developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)
1	Reinforced concrete structures Structural layout of various types of building. Various types of foundations. Design of Combined Footing. Water tanks. Types of water tank, Design of cylindrical water tank. Retaining walls : Cantilever and counterfort types retaining walls		11	25%	3,4	CO1	PSO1 PSO3			
2	Reinforced concrete structures High rise buildings, Industrial bents, Flat slabs and Grid slabs. Shells and folded plate construction .Precast, prefabricated members.		11	25%	3,4	CO1	PSO1 PSO3			

3	Prestressed concrete Pre-stressing, Pre-tensioning, post tension compression of Pre-stressed concrete with respect to R.C.C.	08	20%	3, 4	CO1, CO2, CO3	PSO1 PSO3	SD	N	ES
4	Prestressed concrete Examples of Prestressed Concrete beams.	15	30%	3,4,5	CO1, CO2, CO3	PSO1 PSO3			

Reference Books

1.	Elementary Reinforced Concrete by H. J. Shah, Charotar Pub. House.
2.	I. S. 1343 Code of Practice for Prestressed Concrete.
3.	Design of Prestressed Concrete Structures by T.Y.Lin, John Wiley & Sons.
4.	Fundamentals of Prestressed Concrete by NagrajanB.I.Publication.
5.	Design and Construction of Concrete shell Roofs by Ramaswamy, McGraw-Hill Pub.

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Applied Mechanics & Structural Engg.	Academic Year	2019-2020							
B.ARCH : UG										
Year	IV	CORE Structural Analysis and Design (L) (APM 1705LCS)	Credits / Hours per week					Total: 01 credits / 02 Hrs per week Laboratory: 01 credit / 02 Hrs per week		
Semester	VII	Year of Introduction: 2007 Year of Syllabus Revision: 2012	Maximum Marks / Grade					Total: 100 Term Work, Practical & Viva: 100		
Mode of Transaction		Laboratory	Minimum Passing:					45 Marks		
Course Outcome (CO) APM1806 CO1. The students shall learn application of basic knowledge of beam and slab design for real design problems. CO2. The students shall extend their knowledge for design of continuous beams and slabs and stair cases. CO3. The students shall learn design of axially loaded and eccentric columns, walls and shear walls and to show use of design aids for these designs. CO4. The students shall learn structural design of various types of RCC footings. CO5. The students shall study design of steel plate girder and its components. CO6. The students shall study design of built up columns with lacing and battening and beam to column and beam to beam connections. CO7. The students shall gain knowledge for design of eccentric column using IS code provisions. CO8. The students shall study design of steel column bases subjected to axial compression and uni and bi-axial bending										
Unit No.	Topic/Unit		Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV) and Professional Ethics (PE)
1	Reinforced Concrete Structures, Design of Beams, Slabs, Columns.									

	Shear, Development length. Design of Shear reinforcement. Continuous span one way & two-way slabs and beams. R.C.C. column subjected of axial load and bending moment.	18	40%	6	CO1 CO2 CO3	PSO1 PSO3	E n p , S D	L, N, R, G	--
2	Design of Foundations and staircases Foundations - different types of foundations, Isolated Individual footing design for column. Staircases various types and layout of stairs, Design of cantilever and Doglegged stair cases.	13	30%	6	CO2 CO4	PSO1 PSO3			
3	Steel Structures Design of Plate Girders and columns Built-up beams, Plate Girder, Castellated girders. Eccentrically loaded columns.	9	20%	6	CO5 CO6 CO7	PSO1 PSO3			
4	Design of Eccentrically Loaded Stanchions Bases and steel joints Design of foundation for steel column. Eccentrically loaded riveted and welded joints.	5	10%	6	CO8	PSO1 PSO3			
Reference Books									
1.	I.S.456-1978 Code of practice for plane and reinforced concrete.								
2.	I.S.800-1984 Code of practice for use of structural steel in general building construction.								
3.	Reinforced Concrete by H. J. Shah, Charotar Pub.								
4.	Reinforced Concrete by Sinha & Roy.								
5.	Design of steel structures by Kazimi and Jindal, Prentice Hall Pub.								
6.	Design of Steel Structures by Krishna Raju & Sinha, Tata Mc Graw Hill Pub.								
7.	Design of Steel Structures by Arya & Ajmani, Nemchand Pub.								

	The Maharaja Sayajirao University of Baroda Faculty of Architecture		Academic Year		2024-2025					
B. Arch.: Regular Programme										
Year	IV	Core / Elective / Foundation Air Conditioning and Building Energy (MEC1714CS)	Credits / Hours per week		Total: 02 credits / 02 Hrs per week Lectures: 02 credits / 02 Hrs per week					
Semester	VII	Year of Introduction: Year of Syllabus Revision: 2021	Maximum Marks / Grade		Total: 50 Theory (Paper) : 50 (15 IA + 35 UA)					
Mode of Transaction: Lecture			Minimum passing:		23 Marks					
Course Outcome (CO) CO1 Understand theory of thermal comfort and how to apply it CO2 Understand theory of air supply through ducts and its analysis and evaluation CO3 Understand and analyze cooling load on air conditioning systems CO4 Fundamentals on Energy generation associated with building and sustainable modes of energy CO5 Evaluation of Air conditioning systems and choice making for given site along with its components										
Unit No.	Topic		Cont act Hou rs	Weigh t age (%)	BT Lev el	CO	PSO	Elements of Employability (Emp)/ Entrepreneursh ip (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/ Global (G)	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)

1	Passive Environmental Control Mechanisms in Built Environment • Introduction to basic thermal units, theory of heat flow, heat transmission, • Human heat balance, Physiological comfort, indoor and outdoor design conditions, application of comfort diagrams • Thermal performance of building elements: Thermal properties of materials, Heat flow and heat storage in buildings • Sun protection of buildings, heat control, solar geometry, radiation, solar orientation, shading devices • Natural and mechanical ventilation, ventilation standards • Heat loads on air-conditioned buildings may be added	20	30%	1, 2, 3, 4, 5	CO1	PSO1	SD, Emp, Ent	L, N, R and G	ES, HV and PE
2	Air conditioning systems: • Introduction, Meaning of air conditioning, psychrometric chart, processes and applications • Introduction to air conditioning systems, components and layout, installation requirements and demands in building layout • Supply air, return air ducting, duct layouts and requirements within building systems. • HVAC systems and its selection	20	30%	1, 2, 3	CO2, CO3 CO5	PSO1 PSO2			
3	Energy and Buildings: • Thermal and mechanical energy generation basics. • Renewable & non-renewable energy sources. • Solar heating and cooling, solar photovoltaic, integration of above in building • Novel and low energy cooling techniques.	10	20%	1, 2, 3, 4	CO4	PSO1, PSO4			
4	Energy Conservation Techniques • Net zero energy building (NZEB) • Green Buildings	10	20%	1, 2, 3, 4	CO4	PSO1 PSO4			
Reference Books									
1.	ASHRAE Handbook, Fundamentals								
2.	Stoecker & Jones, ‘Refrigeration and Air Conditioning’, McGraw Hill								

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Civil Engineering			Academic Year	
B. Arch : Regular Programme						
Year	IV	Core / Elective / Foundation Air Conditioning and Building Energy (L) (MEC1714LCS)	Credits / Hours per week		Total: 1 credits / 02 Hrs per week Studio: 0.5 credits / 01 Hrs per week Practical: 0.5 credits / 01 Hrs per week	
Semester	VII	Year of Introduction: Year of Syllabus Revision: 2021	Maximum Marks / Grade		Total: 50 Practical: 25 Practical & Viva: 25	
Mode of Transaction		Studio and Practical	Minimum Passing		23 Marks	
No.	Experiments (Term-work Topics)		Contact Hours	Course Code	BT Level	CO PSO
1	Novel concepts for building cooling		01		1, 2, 3	CO1
2	Adaptive Thermal Comfort		01		1, 2, 3, 4	CO1 PSO2, PSO3
3	Green building		02		1, 2	CO2 PSO3, PSO4
4	Net Zero Energy Buildings		02		1, 2, 3, 4,	CO4 PSO2, PSO4
5	Integration of Various Engineering Services in Building		01		1, 2, 3, 4,	CO4 PSO2
6	Building automation and control		01		1, 2, 3	CO1 PSO2, PSO4
7	Indoor Air / Environmental Quality		02		1, 2, 3	CO4 PSO2, PSO4
8	Energy Conservation in HVAC Systems		02		1, 2, 3, 4	CO4 PSO2, PSO4
9	Thermal performance of building components,		02		1, 2, 3	CO1 PSO2, PSO4
10	Building performance indices		01		1, 2, 3	CO4 PSO2, PSO4

Detail Syllabus: S.S of B. Arch IV (New Course - CRS)

Implemented from academic year 2024-25 (Non-CRS)

From academic year 2025-26 (CRS)

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture	Academic Year	2024-2025
Bachelor of Architecture (B.Arch.): Regular Programme			
Year	IV	Core / Elective / Foundation Practical Training (ARC1807CS)	Credits / Hours per week
			Total: 25 credits / 100 working days in 16 calendar weeks Lecture: 20 credits / 00 Hrs per week (Term Work) Studio: 05 credits / 00 Hrs per week (Review and Viva)
Semester	VIII	Year of Introduction: 1994 Year of Syllabus Revision: 2024	Maximum Marks / Grade
			Total: 450 Term Work: 350 Review and Viva : 100
Mode of Transaction: Lecture & Studio		Minimum Passing	203 Marks
Course Outcome (CO) CO1 Developing an overall idea of the nuances of architectural practice. CO2 An understanding of the total process that goes into the designing and execution of a building. CO3 Maturity in using the experience gained from the internship in the thesis project. CO4 Understanding the role of different stakeholders.			

Unit No.	Topic/Unit	Contact Hours	Weight age (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/ Global (G)developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)
1	Forms to be completed by the firm, or by the firm and student together: 1) Organization Profile Form 2) Internship Description Form 3) Contract - Master Internship Agreement (needs signatures) 1. Organization Profile: This form provides information about the employer's firm - type of work, location, areas of practice, and supervising/mentoring personnel. 2. Internship Description: due immediately after an offer for employment. This form needs to be filled out and sent to the department office immediately after an offer for employment. The Internship Coordinator will review the Internship Description along with the Organizational Profile to ensure that the firm/employer can provide a sufficiently informative and meaningful internship experience for the intern.	-	100%	2,3,6	CO1, CO2, CO3, CO4	PSO1, PSO2, PSO3, PSO4	Emp/SD	L,G,N	PE, ES

The six Intern Development Education Program (IDEP) competency areas are: • Programming • Schematic Design • Design Development • Contract Documents • Contract Administration • Professional Practice Contract – Internship Agreement & Internship Objectives: due within 5 days of starting the internship experience. This form creates the basis for your evaluation by the employer at the mid-point and conclusion of the internship. Learning objectives should be developed with input from both employer and intern to develop clear, shared expectations and measurable as well as immeasurable goals for the intern's experience. Throughout the internship, the intern will focus on collecting evidence of their work that fulfills each objective.									
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2	Practical Training will be done in offices/ firms empaneled by the institution, in which the principal architect is registered with the Council of Architecture. The students will attempt to learn as many aspects outlined in the objectives, either first hand or indirectly. For about 15 weeks (100 working days), students receive hands-on training in the offices of practicing architects or on construction sites. The progress of practical training will be assessed periodically internally through submission of log books along with work done by the students in terms of drawings, reports, etc., along with the regular progress report from the employers. The students will be evaluated based on the criteria related to their contribution in the office some of which are given below. • Understanding and involvement in the process of architectural practice as mentioned in the objectives within the scope of the specific office in which training is undertaken. • Adherence to time schedule, overall responsibility, and professional conduct. • Ability to carry out the instructions on preparation of schematic drawings, presentation drawings. • Working drawings and skill in this regard. • Ability to work as part of a team in an office and contribute to related activities. • Ability to participate in client meetings and discussions. • Involvement in supervision at project site. • Involvement/ initiative/ participation in any other aspects during the training. • Mid-point Intern Evaluation (e-mail/letter from firm) Mid-point Intern Evaluation letter: due at roughly the mid-point of your internship experience (dates will vary by individual). Please have the employer characterize your tasks and performance to date in a letter electronically submitted to the administrative department in the college or Internship Coordinator.								
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3	Records pertaining to the following subjects: Site Supervision Field Observation Critical Appraisal Documentation of Innovative details								
4	A portfolio of the work completed during the internship, a completion certificate from the office with the principal architect's signature, and the firm's stamp on each page of the portfolio should be submitted for evaluation through a viva voce examination at the conclusion of the Practical Training. Final Intern Evaluation Form (e-mail/letter from firm) Final Intern Evaluation: due at the conclusion of the experience and a minimum of 5 days prior to the end of the semester. At the conclusion of the internship experience, download and give the form to the employer to complete. Failure to receive the final evaluation on time will cause a delay in course assessment. Weekly log-book maintained by the student (uploading weekly record online)								
Reference Books:									
1.	Time-saver Standards series – all relevant volumes								
2.	GDCR (General Development Control Regulations) and DP (Development Plan) of the place of internship								
3.	NBC (National Building Code of India)								
4.	Manual of Architectural Practice 2022 (five volumes)								
5.	Handbook of Professional Documents 2020								

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture	Academic Year					2021-2022			
Bachelor of Architecture (B.Arch.): Regular Programme										
Year		Core /Elective/ Foundation Related Study Program I (ARC1808CS)	Credits / Hours per week					Total: 02 credits / 05-10 working days Lectures: 01 credit / 00 Hrs per week (Term Work) Studio: 01 credit / 00 Hrs per week (Review and Viva)		
Semester		Year of Introduction: 2021-2022 Year of Syllabus Revision: -	Maximum Marks / Grade					Total: 100 Term Work: 70 Review and Viva: 30		
Mode of Transaction		Lecture & Studio	Minimum Passing					45 Marks		
Course Outcome (CO) : At the end of the course, students will be able to CO1 Get exposure to various built environments at different places of architectural relevance across the state, region, country, and the world. CO2 Apprise the relevance of the built environment by observing, measuring, sketching and photo documentation of selected places/places visited.										
Focus: To enhance observation and visual perception; develop freehand drawing skills using different techniques, tools, and media. Content: Visit/s to site/s (preferably historical); sketching various natural and manmade objects and settings, visual representation through tools like pencils, chalk, charcoal, ink, oil paints, watercolors, etc.										
Unit No.	Topic/Unit		Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L) / National (N) / Regional(R) / Global (G) development al needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)

1	Multi-disciplinary study of parts of buildings and various built environments- • Students and faculty members should stay at the selected city/ place for 5to 10 (working) days. • Students will get comprehensive awareness of the place visited. • Students will explore the built environment in terms of Social, educational, political institutes, settlement patterns, etc.		60%		CO1	PSO1			
	• Students will understand the typology, design style, material-construction system, etc. • Students will also document the social, cultural, environmental aspects of the place / region /city visited.								
2	Compilation and Documentation After coming back from the visit students will make the final documentation and submit it to the institute.		40%	1, 2	CO2	PSO1	EMP, SD	L, N,R	ES, HV, PE
Note: As a part of Academic course curriculum of B. Arch, the students have to complete minimum 2 RSP upto Semester VII.									

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture	Academic Year	2022-2023							
Bachelor of Architecture (B.Arch.): Regular Programme										
Year		Core /Elective/ Foundation Related Study Program II (ARC1809CS)	Credits / Hours per week			Total: 02 credits / 05-10 working days Lectures: 01 credit / 00 Hrs per week (Term Work) Studio: 01 credit / 00 Hrs per week (Review and Viva)				
Semester		Year of Introduction: 2022-2023 Year of Syllabus Revision: -	Maximum Marks / Grade			Total: 100 Term Work: 70 Review and Viva: 30				
Mode of Transaction		Lecture & Studio	Minimum Passing			45 Marks				
Course Outcome (CO) : At the end of the course, students will be able to CO1 Get exposure to various built environment at different places of architectural relevance across the state, region, country and the world. CO2 Apprise the relevance of built environment by observing, measuring, and sketching and photo documentation of selected place / place visited.										
Focus: Document an area/locality through measured drawings, reading of history, morphological development etc. OR understand detailing of high rise/ typical structures.										
Content: Select a small area or locality for documentation through measured drawings, observations, dialogues etc. fir the purpose of designing in the physical context. OR Visit/s to site/s to contemporary building typological sites, for sketching, understanding constructional details, site planning features, natural landforms and landscape etc.										
Unit No.	Topic/Unit	Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L) / National (N) / Regional(R) / Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)	

1	Multi-disciplinary study of parts of buildings and various built environments- • Students and faculty members should stay at the selected city/ place for 5 to 10 (working) days. • Students will get comprehensive awareness of the place visited. • Students will explore the built environment in terms of Social, educational, political institutes, settlement patterns, etc. • Students will understand the typology, design style, material-construction system, etc. • Students will also document the social, cultural, environmental aspects of the place / region /city visited.		60%		CO1	PSO1			
2	Compilation and Documentation After coming back from the visit students will make the final documentation and submit it to the institute.		40%	1, 2	CO2	PSO1	EMP, SD	L, N,R	ES, HV, PE
Note: As a part of Academic course curriculum of B. Arch, the students have to complete minimum 2 RSP upto Semester VII.									

Detail Syllabus: F.S of B. Arch V (New Course - CRS)

Implemented from academic year 2025-26 (Non-CRS)

From academic year 2026-27 (CRS)

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture		Academic Year		2025-26						
Bachelor of Architecture (B.Arch.): Regular Programme												
Year		V	Core Architectural Design IX (ARC1910L/ ARC19XXLCS)		Credits / Hours per week		Total: 13 credits / 13 Hrs per week Studio: 13 Hrs per week (Term Work) Studio: 00 Hrs per week (Review and Viva)					
Semester		IX	Year of Introduction: Year of Syllabus Revision: 2025-26		Maximum Marks / Grade		Total: 500 Term Work: 300 Review and Viva: 200					
Mode of Transaction			Studios		Minimum Passing		225 Marks					
Course Outcomes (CO)												
CO1 Developing the ability to identify an urban scale project for a specific urban district, for multiple groups of users diverse in age, sex, religion, work participation, etc. and learning to analyze the existing conditions through a detailed inventory and documentation of the needs and aspirations of the residents of the given urban setting to make the design socially relevant.												
CO2 Developing the ability to coordinate all information gained through the inventory of the given urban setting, plan and accommodate all needs and aspirations of people in older/newer areas to be planned or redeveloped through innovative visions/concepts and schemes, and create site plans.												
CO3 Developing the ability to relate urban design and planning principles/theories/concepts and make use of the same by connecting/relating it to the urban setting of the studio project to convert the challenges into opportunities.												
CO4 By attempting all the above, developing the ability to produce an acceptable design solution considering potential stakeholders and their needs and future requirements and newer advancement taking place.												
Unit No.	Topic/Unit				Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional (R)/Global (G) development needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV) and Professional Ethics (PE)

1	Background Study - The study of an urban scale project and its related aspects like circulation, space design, infrastructural requirements, proposals, etc. - The study of an urban scale project through data collection through a detailed analysis of the existing political, economic, social, cultural and legal setting /background of the project. - Data representation through use of various existing and new tools and techniques	39	20%	1, 2&4	CO1	PSO1, PSO2	Emp &SD	L, N, R & G	ES, HV & PE
2	Site Study, Data Collection and Analysis - Study of existing natural as well cultural systems on site and its experiential quality, etc. - Mapping of town/city/site profile (District profile, history, area and location, climate and rainfall, soil conditions, topography, connectivity, geology, architectural monuments and style, art, land value, fairs and festivals, etc.), social and physical infrastructure, economic infrastructure, demographic and economic profile, administrative profile, growth analysis, etc. - Analysis of the above stated complex urban processes and their relations allied variables and process of development. - Development of a conceptual representation of your understanding derived through inventory/ analysis of data procured to form a basis for development of your design for the given urban setting/area.	39	20%	2, 3 & 4	CO2	PSO1, PSO2, PSO3			
3	Conceptual Framework and Design Development Representation of Conceptual design through sketches/ models/ 3D/etc. Understanding and developing site layout and design in respect to analyzed geographical, social, cultural, economic and legal data procured. Visualization of the design of architectural elements/ infrastructural and service requirements for proposed built-form and other elements forming an integrated design approach for the whole urban site.	58	30%	2, 4, 5 & 6	CO3	PSO1, PSO2, PSO3, PSO4			
4	Design Finalization Final Design including site plan, site elevations, detailed layouts/plans/elevations/sections, resolved spatial planning (circulation, transport, etc.), urban design features, etc. Design representation through different types of drawings using different mediums. (Sketches, plans, sections, elevations, 3D views, models in different scales according to requirement, etc.)	59	30%	2, 4, 5 & 6	CO4	PSO1, PSO2, PSO3, PSO4			
Reference Books									
1.	Gujarat Town Planning and Urban Development Act (GTPUD)1976, Govt. of Gujarat Publication								
2.	Urban & Regional Planning, H.D. Kopardekar								
3.	Indian Cities in Arid west, K.B.Jain and Minakshi Jain								
4.	Ancient & Medieval Town Planning in India, Prabhakar V. Begde								
5.	Residential Open Spaces, Vastu-Shilp Foundation								

6.	The New Landscape, Charles Correa
7.	Image of the City, Kevin Lynch
8.	Urban Design as Public Policy, Jonathan Barnett
9.	Finding Lost Space, Roger Trancik
10.	Urban Space, Rob Krier
11.	The Urban Design Process, Hamid Shirvani
12.	Cities of Tomorrow, Le Corbusier
13.	The New Theory of Urban Design, Christopher Alexander

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture		Academic Year		2025-2026					
Bachelor of Architecture (B.Arch.): Regular Programme										
Year	V	Core Building Economics and Project Management (ARC1911 / ARC19XXCS)	Credits / Hours per week		Total: 06 credits / 06 Hrs per week Lectures: 03 Hrs per week Studio: 03 Hrs per week					
Semester	IX	Year of Introduction: Year of Syllabus Revision: -	Maximum Marks / Grade		Total: 200 Theory (Paper) : 100 (30 IA + 70 UA) Term Work : 100					
Mode of Transaction		Studio and lectures	Minimum Passing		90 Marks					
Course Outcome (CO) CO1 Understanding of basic principles of building economics at macro and micro levels CO2 Developing Project management skills CO3 Understanding and writing specifications for specialized works CO4 Understanding and applying various standards										
Unit No.	Topic/Unit		Cont act Hour s	Weighta ge (%)	BT Level	CO	PSO	Element s of Employab ility (Emp)/ Entrepren eurship (Ent)/ Skill Developm ent (SD)	Relevan ce to Local (L) / National (N) / Regional(R) / Global (G) developm ental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)
1	Introduction to Building Economics Brief introduction of general economics through an introductory survey of concepts in micro and macroeconomics as applicable to the building industry. Micro Economics: The market, budget constraint, choice, demand and supply, uncertainties, equilibrium, technological constraints, profit maximization and cost minimization, monopoly and oligopoly, production welfare and the public good Macroeconomics: GNP, NNP, demand and supply, inflation, interest rate,		12	20%	1,2,6	CO1	PSO1, PSO2, PSO3, PSO4	EMP, SD	L, R,G	HV, PE

	employment, saving and investment, monetary and fiscal systems and policies, General discussions on various economic issues such as public versus private participation, Equity, labor-intensive versus capital intensive projects								
2	Construction Project Management Study of various construction and structural systems on an analytical basis and comparative basis. Construction Project Management: Planning & Presentation: Role of an architect in project management, the role of a project manager, Introduction of CPM, bar chart & pert method Comparison of pert & CPM. Example of bar chart & network diagram for CPM, development of bar chart Representation of event, tail event, head event, dual role event. Examples and interrelation between events, successor events, predecessor events, activity Representation and identification, parallel activity, serial activity, predecessor activity, successor activity Examples of networks. forward, backward pass method with scheduling of activity considering EFT and LFT, total floats, free floats and interfering floats Planning, scheduling, and controlling techniques. Pert - in short definition and uses, CPM in detail, advantages of CPM, uses of CPM.	24	40%	2,5,6	CO2	PSO1, PSO2			
3	Project Management and Specifications 1 Writing specifications for specialized works and materials. Construction Project Management: Application & Site Coordination: Application of CPM in project management, CPM in determining extension of time Controlling the project, tree structure of big cons. Site. Coordination of site with office formats of petty cash, material indent, daily report, store return etc. With check points to have adhered. Different types of records, maintenance, reporting methods and formats. Different types of bills like escalation bills, advance bills, petty cash, final bills, cash flow charts, etc.	12	20%	2,5,6	CO3, CO4	PSO1, PSO2			
4	Project Management and Specifications II Statutory requirement on site in project management tools and techniques of project management, bar chart, milestone chart, network diagram Knowledge areas of project management like scope management, time management, cost management, quality management, human resources management, communication management, risk management, procurement management, and integration management.	12	20%	2,5,6	CO3, CO4	PSO1, PSO2, PSO3, PSO4			

	Project phases and life cycle, stakeholder, leadership skills, general management skills, communication skills. definitions and understanding of cash flow. Construction safety and various injuries on site.								
Reference Books									
1.	Economics Accountancy and Statistics for Valuers (volume 2) – Theory and MCQ by K.S .Nagarajaiah								
2.	Const Of Structure and Management of Works by Rangwala								
3.	Project Planning and Control with PERT AND CPM By Dr B. C Punamia And K.K Khandalwal								
4.	Building Construction Project Management (planning scheduling and controlling)by K.K.Chitkara								
5.	Project Management Case Studies by Harold Kerzner								

 सत्यं शिवं सुन्दरम्	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture		Academic Year			2025-2026				
Bachelor of Architecture (B.Arch.): Regular Programme										
Year	V	Core Urban Planning and Urban Design (ARC1912 / ARC19XXCS)	Credits / Hours per week			Total: 04 credits / 04 Hrs per week Lecture: 04 Hrs per week				
Semester	IX	Year of Introduction: - Year of Syllabus Revision: -	Maximum Marks / Grade			Total: 100 Theory (Paper) : 50 (15 IA + 35 UA) Term Work : 50				
Mode of Transaction		Lecture and Studio	Minimum Passing			45 Marks				
Course Outcome (CO)										
CO1 Understanding urban planning and urban design and its dynamics with architecture, various aspects involved in planning and design for development of sites, cities and regions.										
CO2 Understand and recognize the relationship between people and the built environment (especially with reference to the Indian sub-continent) with reference to their needs, values, behavioral patterns, norms, and social patterns.										
CO3 Work collaboratively toward synthetic design resolution through architecture, which integrates an understanding of the requirements, contextual and environmental connections, technological, social, cultural, political and legal systems and historical settings to synthesize a responsible approach.										
CO4 Understand the various guidelines/ regulations/ acts/ policies and approaches that govern urban design and urban planning for a region.										
Unit No.	Topic/Unit		Contact Hours	Weight age (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional (R)/ Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV) and Professional Ethics (PE)

1	UNIT 1: Introduction to Urban Planning & Urban Design Evolution of Settlements, definition of evolution/settlement/planning; Study of history of Human Settlements (Pre-historic Period and Civilizations in India); Ancient and Medieval town planning.; Understanding land as a resource and hence its Planning; Role of an Architect in Planning; Planning complexities/ forces (Political, Economic, Social, Cultural, Environmental factors); Planning: Objectives, Functions, Needs, Linkages (tangible and intangible).	8	15%	1,2,3	CO1	PSO1, PSO3, PSO4	EMP, SD	L,R,N, G	G, ES, HV, PE
2	Concepts & Process of Urban Planning Architectural aspects of Planning, Re-development aspects of Planning, etc. ; Planning Process : Analysis of multiple aspects of emergent design pattern of settlement through Inventory (Needs and Aspirations, land use, ground coverage, density, building line, housing typology , transport and circulation systems, form & character of built- environment and open spaces, relationship between socio-economic & cultural aspects and physical fabric of the settlement, influence of climate and geo-physical attributes of the location, etc.), and enumerate Strength and Opportunities through SWOT; Incorporate citizen participation and its impacts with examples leading to inferences, conceptual and final design resolution for a given site; Planning tools - Land use and Zoning (introduction to surveys, analyses and methods, techniques of conducting surveys for land use and coding), Land utilization; Understanding need of Comprehensive Planning.; Concepts in planning - Garden city movement, Green belts, Neighborhood Concept, Generic and Parasitic city, etc. and contribution of Individuals - Lewis Mumford, Patrick Geddes, Peter Hall, Kevin lynch, Edward Bacon, Camillo Sitte, Le Corbusier, Frank Lloyd Wright, Jane Jacobs; Introduction to terms like threshold, city and city region relationship, dominance, rural-urban fringes, push and pull factors, migration trends, performance standards, etc.	20	30%	1,2,3, 4,5	CO2	PSO1, PSO2, PSO3, PSO4			

3	Concepts & Process of Urban Design “Elements of urban design” introduces critical concepts, strategies, and technical skills associated with current thinking about urban design, and conjectures on the designer’s spectrum of roles in analyzing and shaping urban environments. The aim is to develop the necessary literacy for students to critically engage in bridging the gap in the practice of urban design- to understand and interrogate questions related to urban environments.; Students will be educated on how urban design can significantly influence the economic, environmental, social and cultural outcomes of a place. Elements of urban form from macro to micro will be taught. Urban elements include Urban Structure, Urban Grain, Height + massing, Streetscape + Landscape, Public Realm, Social + Economic Fabric, Scale, Topography, Landscape and Environment and Urban Form; To understand the scope and nature of urban design in the field of architecture; to introduce the components of a city and their interdependent roles and interpret the city in different ways and layers. Study Components of urban space such as blocks, density, neighborhoods, streets, pedestrian trails and open spaces, buildings, and landscape patterns etc. and their interdependencies; Outline of issues/ aspects of urban space and articulation of need for urban design; Provide settings for public life.	20	30%	1,2,3,4,5	CO3	PSO3, PSO4			
4	UNIT 4: Urban Institutions, Schemes & Regulations The various urban institutional bodies have their role and functions (Urban Development Authorities, Municipal authorities). The various acts, schemes and regulations in urban development and renewal (eg. Land Acquisition Act, 74th Amendment, Coastal Regulation Zone Act, SEZ, JNNURM, Sustainable regional planning principles, forest zones, etc.); Understanding regulations governing city planning - Evolution of Town planning Legislation in India (Impacts of industrial revolution on town and regional planning), Motives; Town and Country Planning Act - 1947, Model Regional and Town Planning and Development Law - 1985, 74th Constitution Amendment Act and its Implication, URDPFI Guidelines; 5 Year Plans and their role in Development of Country; Niti Aayog and its Development and Responsibilities; Various Types of Plans : National, State, Regional, Metropolitan, Area/ City planning, TP Schemes, etc.	12	25%	1,2	CO4	PSO1			

Sr. No.	Reference
1	Urban & Regional Planning, Principles, Practicing & Theory Dr.H.D.Kopardikar&G.R.Diwan
2	Gujarat Town Planning and Urban Development Act (GTPUD)1976, Govt. of Gujarat Publication
3	Urban & Regional Planning, H.D.Kopardekar
4	History of Urban Form, AEJ Morris
5	Indian Cities in Arid west, K.B.Jain & Minakshi Jain
6	Ancient & Medieval Town Planning in India, Prabhakar V. Begde
7	House Form and Culture, Amos Rapoport
8	Urbanization Primer, Horatio Caminos
9	Residential Open Spaces, Vastu-Shilp Foundation
10	Urban Pattern, Gallion
11	The New Landscape, Charles Correa
12	Concepts of Urban Design, David Gosling
13	Design of Cities, Edmond Bacon
14	Image of the City, Kevin Lynch
15	Introduction to Urban Design, Paul Spriereggen
16	Concise Townscape, Gordon Cullen
17	Urban Design as Public Policy, Jonathan Barnett
18	Finding Lost Space, Roger Trancik
19	Urban Space, Rob Krier
20	The Urban Design Process, Hamid Shirvani
21	Cities of Tomorrow, Le Corbusier
22	The New Theory of Urban Design, Christopher Alexander

 सत्यं शिवं सुन्दरम्	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture		Academic Year		2025-2026					
Bachelor of Architecture (B.Arch.): Regular Programme										
Year	V	Core Computer Applications in Architecture II (ARC1913 / ARC19XXCS)	Credits / Hours per week		Total: 3 credits / 4 Hrs per week Lectures: 02 Hrs per week Studio: 02 Hrs per week					
Semester	IX	Year of Introduction: Year of Syllabus Revision: -	Maximum Marks / Grade		Total: 100 Term Work: 50 Review and Viva : 50					
Mode of Transaction		Studio and lecture	Minimum Passing		45 Marks					
Course Outcome (CO) CO1 Prepare presentation drawings with the help of computer software. CO2 Visualize building / transform sketches and 2 dimensional drawings to 3 dimensional building models. CO3 Skills to render building models. CO4 Prepare naturalistic rendered images and walk-through/animations with the help of software.										
Unit No.	Topic/Unit		Cont act Hours	Weighta ge (%)	BT Level	CO	PSO	Element s of Employab ility (Emp)/ Entrepren eurship (Ent)/ Skill Developm ent (SD)	Relevan ce to Local (L) / National (N) / Regional(R) / Global (G) developm ental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)

1	Introduction to Fundamentals Introduction to computer aided 3D drafting. Understand tools, command and basic setup for 3D. Introduction to 3D-modelling technique and construction planes, drawing objects, 3D surfaces setting up elevation thickness and use of dynamic projections. Application of various toolbars for three dimensional modelling. Creating and editing simple and complex geometric meshes, surfaces and solids with their combinations etc. Reading and manipulating the software Interface - navigating within views-selection methods - the importance of levels and grids- create walls, doors, windows, and components - working with essential modification commands. Creating floors, ceilings, and stairs - working with type and instance parameters – importing drawings - understanding the project browser.	08	20%	1,2,6	CO1	PSO1, PSO2	EMP, SD	L, R,G	HV, PE
2	Advanced Modelling Modelling - Creating curtain walls, schedules, details- creating rooms and an area plan – tag components - customize existing wall styles. Create and edit a topo-surface, add site and parking components - draw label contours - work with phasing. Understanding and converting plan, elevation and section of drawing to three dimensional building model using three dimensional tools. Creating building models using building elements and then converting the model to orthographic projections.	20	25%	2,5,6	CO2	PSO2			
3	Rendering and Material Application Choosing material for buildings- Creating custom walls, floors, and roofs - keynoting – working with mass elements - enhancing rendering with lighting - producing customized materials –Using sun and shadow settings.	16	30%	2,5,6	CO3	PSO2			
4	Photorealistic Rendering and Practical work Making models photorealistic using materials, lighting, texture, background, etc. Creating new materials and environment attributes. Creating walk-through for any previous semester work. Making Three- dimensional photorealistic rendered architectural models for any one of the architectural design assignments completed in previous semesters.	16	25%	1,2,6	CO4	PSO2			
Reference Books									
1.	AP Gautam, Pradeep Jain , Engineering AutoCAD								
2.	V.K. Jain, Multimedia and Animation								
3.	Rhino NURBS 3D Modelling, Margaret Becker and Pascal Galoy								
4.	Inside Rhinoceros 5. Ron Cheng								

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture		Academic Year		2022-23					
Bachelor of Architecture (B.Arch.): Regular Programme											
Year	V	Core Research and Thesis Preparation (ARC1914/ ARC19XXCS)		Credits / Hours per week		Total: 02 credits / 03 Hrs per week Lecture: 01 Hrs per week Studio: 02 Hrs per week					
Semester	IX	Year of Introduction: 1994 Year of Syllabus Revision: 2022		Maximum Marks / Grade		Total: 100 Term Work: 50 Review and Viva : 50					
Mode of Transaction		Lecture and Studio		Minimum Passing		45 Marks					
Course Outcome (CO) CO1 Ability to research deeply into a subject and develop a coherent line of thought based on point of view, observation, analysis and study. CO2 Systematically abstract, analyze, synthesize and interpret existing literature CO3 Ability to look at architecture from an informed, analyzed and well thought out critical perspective which would help strengthen the thesis process. CO4 Builds his his/her capacity to work independently and methodically in a variety of intellectually demanding contexts.											
Unit No.	Topic/Unit			Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurs hip (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)
1	Introduction and basics to Research - Research in architecture – its nature, purpose and scope. - Basic and applied research to architectural design decision making. - Technical and behavioral – oriented research.			12	25%	1,2	CO1	PSO1, PSO2			
2	Science and scientific method – various steps in scientific method: hypothesis, research design, data collection & analysis, conclusion and implications with special reference to architectural design and planning.			12	25%	1,3,4	CO2, CO3	PSO1			

3	Methods and Techniques • Methods of conducting research. • Selection of topics and its relevance. • Identification and formulation of problem. • Compiling and analyzing existing research database. • Research design, research instruments and analysis. • Presentation of results. • Evaluation of findings, conclusions and recommendations. Techniques of research – report writing.	12	25%	3,4	CO2, CO3	PSO1	EMP, SD	L, R, N, G	PE
4	Report Writing: The report shall contain introduction, Literature Study, Case Study and findings, Analysis, Inferences, Conclusion and its implication in architectural design and planning.	9	25%	4,5	CO4	PSO1			
Reference Books									
1.	Chris Mounsey: Essays and Dissertation (Oxford University Press) February 2005.								
2.	Iain Borden and Kaaterina Ruedi; 'The Dissertation: An Architecture Student’s Handbook', Architectural Press, 2000.								
3.	Linda Grant and David Wang, 'Architectural Research Methods', John Wiley Sons, 2001.								
4.	Wayne C Booth, Joseph M Williams, Gregory G. Colomb, 'The Craft of Research', 2nd Edition, University of Chicago Press, 2008.								
5.	Ranjith Kumar, 'Research Methodology- A Step by Step Guide for Beginners', Sage Publications, 2005.								
6.	John W Creswell, 'Research Design: Qualitative, Quantitative and Mixed Methods Approaches', Sage Publications, 2002.								

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture			Academic Year						
Bachelor of Architecture (B.Arch.): Regular Programme											
Year	V	Core / Elective / Foundation (Elective 3) Furniture Design (ARC1915 / ARC19XXCS)			Credits / Hours per week		Total: 03 credits / 03 Hrs per week Lectures: 01 Hrs per week Studio: 02 Hrs per week				
Semester	IX	Year of Introduction: 2024 Year of Syllabus Revision:			Maximum Marks / Grade		Total: 100 Term Work: 50 Review and Viva : 50				
Mode of Transaction		Lectures and Studio			Minimum Passing		45 Marks				
Course Outcomes (CO): With the successful completion of the course student should demonstrate and have capability to Explore their aptitudes and developing skills in the related field of Furniture Design. CO1: To understand fundamental aspects and cultural considerations of Furniture Design from Ancient to modern times. CO2: To understand different style in furniture design. CO3: To develop understanding of current trends in furniture design. CO4: Study of various materials, finishes and technology in furniture design.											
Unit No.	Topic/Unit			Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/ Global (G) development al needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)
1	Introduction- Furniture Design – History, evolution, and styles- antique, traditional, modern, contemporary, classical etc.			03	05%	BT 1,2	CO1	PSO1	Emp/ Ent/ SD	L/ N/ R /G	ES, HV, PE
2	Study of Furniture Design Style- Exemplify the method to understand the art form and appreciate them in the context of culture, Understand ergonomics and human anthropometrics.			06	05%	BT 2	CO1,2	PSO1,			
3	Current trends – Types of furniture like built-in (cabinetry			09	10%	BT 3	CO2,3	PSO1,			

	etc.), modular, manufactured, custom-made for seating, storage, sleeping, street furniture and office furniture.					PSO3, PSO4			
4	Study of materials in furniture – Timber, plywood, bent wood, bamboo/cane, metal, plastics, polyurethane, and glass. Upholstery materials – leather, natural and synthetic fabrics.	09	20%	BT 4	CO3,4	PSO2, PSO3, PSO4			
5	Study type of finishes – Laminate, veneer, lacquer, varnish, stains, polish, and adhesives. Understanding selection of furniture, cost, and longevity.	09	25%	BT 5,6	CO4	PSO2, PSO3, PSO4			
6	Study of technology- Wood joinery, sections, framework, detailing. Design furniture using found object. Design project like furniture layout, relationship to context and design of furniture.	09	25%	BT 5,6	CO4	PSO2, PSO3, PSO4			
Reference Books									
1.	Lawson, Stuart. <i>Furniture Design</i> . Laurence King Publishing, 2013.								
2.	Postell, Jim. <i>Furniture Design: An Introduction to Development, Materials, and Manufacturing</i> . Wiley, 2007.								
3.	Hennessey, Louise. <i>The Complete Guide to Furniture Styles</i> . Barron's Educational Series, 1997								

 सत्यं शिवं सुन्दरम्	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture			Academic Year		2025-2026						
Bachelor of Architecture (B.Arch.): Regular Programme												
Year	V	Core / Elective / Foundation (Elective 3) Green Building & Rating Systems (ARC1916 / ARC19XXCS)			Credits / Hours per week		Total: 03 credits / 03 Hrs per week Lectures: 01 Hrs per week Studio: 02 Hrs per week					
Semester	IX	Year of Introduction: 2025 Year of Syllabus Revision: -			Maximum Marks / Grade		Total: 100 Term Work: 50 Review and Viva : 50					
Mode of Transaction		Lecture and Studio			Minimum Passing		45 marks					
Course Outcome (CO) CO1 To develop a holistic understanding of the site planning, development plan and application of sustainable building materials for green built environment. CO2 To understand and apply strategies for improving occupants' comfort and health. CO3 To ensure optimize water demand in the built environment and promote groundwater aquifers' recharge. CO4 To ensure and evaluate the energy efficiency and renewable energy sources of the project CO5 To understand different green building rating systems and their rating points.												
Unit No.	Topic/Unit				Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L) / National (N) / Regional(R) / Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)
1	Sustainable Architecture and Site Planning Soil Erosion Control, Site Imperviousness Factor, Design to mitigate UHIE, Avoided post-construction landfill, Natural Topography or Vegetation, Universal Design, Proximity to Public Transport, Low-emitting Vehicles, Light Pollution Strategies				06	14%	1,2	CO1	PSO1 PSO3	EMP, SD	L, R,G	HV, PE
2	Building Materials and Resources Life-cycle assessment, regional material, Use of Certified Green Building Materials, Reduction in embodied energy of building structure, Segregation of Waste, Post-occupancy, Handling of Waste Materials, During Construction, Low-emitting Materials				08	19%	2,3	CO2	PSO1 PSO4 PSO5			

3	Indoor Environmental Quality Minimum Fresh Air Ventilation, Tobacco Smoke Control, CO2 Monitoring, Outdoor Views, Achieving indoor visual, thermal, and acoustic comfort, Indoor Air Quality Testing,	08	19%	2,3,4	CO3	PSO1 PSO4 PSO5			
4	Water Efficiency and Conservation Rainwater Harvesting, Roof & Non-roof, Water Efficient Plumbing Fixtures, Waste Water Treatment and Reuse, Management of Irrigation Systems, Water Metering, Reducing landscape water demand, Water Quality, EPA Act of 1992	08	19%	1,2,3	CO4	PSO1 PSO4 PSO5			
5	Energy Efficiency Enhanced Energy Efficiency, Smart metering and monitoring, Renewable energy utilization, Producing Renewable Energy, Refrigerant Management, Reducing Energy Demand Strategies, Performance Assessment for Final Rating, Operation, Maintenance Protocols	08	19%	1,2,4	CO5	PSO1 PSO2 PSO4 PSO5			
6	Rating systems Overview of different rating systems, their processes, and points	10	10%	2,5	CO6	PSO1			

Reference Books

1	Kibert, C. J. (2016). <i>Sustainable construction: Green building design and delivery</i> (4th ed.). Wiley.
2	Ching, F. D. K., & Shapiro, I. M. (2014). <i>Green building illustrated</i> . Wiley.
3	7group, & Reed, B. (2009). <i>The integrative design guide to green building: Redefining the practice of sustainability</i> . Wiley.
4	U.S. Green Building Council. (2013). <i>LEED reference guide for building design and construction</i> . U.S. Green Building Council.
5	BRE Group. (2016). <i>BREEAM in brief</i> . BRE Press.
6	International WELL Building Institute. (2020). <i>The WELL building standard</i> . International WELL Building Institute.
7	McDonough, W., & Braungart, M. (2002). <i>Cradle to cradle: Remaking the way we make things</i> . North Point Press.
8	James, M. (2008). <i>The passive house resource book: A guide to designing and building with energy efficiency in mind</i> . Green Building Press.
9	Allwood, J. M., & Cullen, J. M. (2012). <i>Sustainable materials with both eyes open</i> . UIT Cambridge.
10	Jayamaha, L. (2006). <i>Energy efficient building systems: Green strategies for operation and maintenance</i> . McGraw-Hill.
11	IGBC, GRIHA, & CASBEE Manuals. (n.d.). <i>Green building rating system manuals</i> . Respective Organizations.

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture		Academic Year				2022-2023				
Bachelor of Architecture (B.Arch.): Regular Programme											
Year	V	Core /Elective/ Foundation (Elective 3) Disaster Management (ARC1917/ ARC19XXCS)		Credits / Hours per week				Total: 03 credits / 03 Hrs per week Lectures: 01 Hrs per week Studio: 02 Hrs per week			
Semester	IX	Year of Introduction: 2022 Year of Syllabus Revision:		Maximum Marks / Grade				Total: 100 Term Work: 50 Review and Viva : 50			
Mode of Transaction		Lecture and Studio		Minimum Passing				45 Marks			
Course Outcome (CO) CO1 Understand the interface between Environment and Development with a focus on Disaster Management. CO2 Understand the reasons of natural disasters, their occurrence and impact on built environment. CO3 Understand the basic knowledge of disaster management, mitigation CO4 Learn the techniques for post disaster monitoring and built environment design.											
Unit No.	Topic/Unit			Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)

1	Environment, Development and Disaster – Interface Concept of Development and Environment, Environment and Development Nexus. Impact of human activities on environment, and poverty links. Disaster classification, concepts, hazards, vulnerability, risks, human response to disaster, impacts	6	13%	1 & 2	CO1	PSO1, PSO2, PSO3, PSO4	Emp, SD	L, R, N, G	G, ES, HV, PE
2	Disaster and Built Environment Impacts of disasters on architectural and urban systems. Vulnerability and risk assessment in buildings and cities. Case studies: Earthquakes, floods, cyclones, fires, and landslides. Earthquake -Seismology, seismic waves, magnitude intensity, and epicenter and energy release, characteristics of strong earthquake ground motions, Earthquake occurrences in the world, plate tectonics, faults, earthquake hazard maps in India. Building Codes and practices – building shapes, architectural features, and design of building in seismic zones. Cyclone – India cyclone profile, causes, characteristics, past occurrences, regulations and code and bye-laws. Flood – India flood profile, types, characteristics, strategies, development regulation and bye laws for flood prone areas. Fire – Causes and precautions for fire safety in different type of building. BIS code for fire safety.	12	27%	1 & 2	CO1, CO2	PSO1, PSO2, PSO3, PSO4			
3	Design and Planning for Resilience Principles of resilient architectural design. Use of traditional and modern materials for disaster resistance. Retrofitting techniques for existing buildings. Urban planning strategies for disaster mitigation (e.g., zoning, green infrastructure).	6	13%	3,4 &5	CO3	PSO2, PSO3, PSO4			
4	Environmental Management – Concepts, Measures, and assessment Environmental Impact Assessment, thresholds, indicators, audits, environmental certification, lifecycle analysis, Introduction to environmental accounting. Environmental policy, Acts and regulations; Environmental education, participatory approaches, emerging concepts	9	20%	3, 4, 5 & 6	CO1, CO3, CO4	PSO3, PSO4			
5	Role of Architects and Planners in Disaster Mitigation and Management Relevance of disaster management in development and environment, disaster preparedness, prevention, displacement, and development. Post-disaster recovery: Temporary shelters and rebuilding strategies. Inclusive design for disaster-affected communities.	6	13%	3, 4,& 5	CO3	PSO1, PSO3, PSO4			

	Collaboration with engineers, planners, and policymakers Roles and responsibilities of government and non-government organizations, Disaster Education – awareness of individuals, communities, and participation at various levels; Integrating disaster mitigation in the spatial planning process, provision of infrastructure for disaster mitigation.								
6	Policies and Legislation Pertaining to Environment and Disaster Management Policies and Legislation at various levels: Yokohama Strategy, Hyogo Framework of Action	6	13%	3, 4, 5 & 6	CO3, CO4	PSO1			

Reference Books

1.	Pelling, Mark, and Ben Wisner. <i>Disaster risk reduction: Cases from urban Africa</i> . Routledge, 2012.
2.	Agrawal, Pankaj, and Manish Shrikhande. <i>Earthquake resistant design of structures</i> . PHI Learning Pvt. Ltd., 2006.
3.	Rajib Shaw Community, Environment and Disaster Risk Management, Emerald Group Publishing Limited, 2010.
4.	Rajib Shaw Hari Srinivas, Anshu Sharma Urban Risk Reduction An Asian Perspective, Emerald Group Publishing Limited, 2009.
5.	P C Sinha Introduction to Disaster Management, Anmol Publications, New Delhi, 2007.
6.	Pardeep Sahni, Okahandja, Uma Medury Disaster Mitigation: Experiences and Reflections, PHI Learning Pvt. Limited, New Delhi, 2008.
7.	Jegadish Gandhi P Disaster Mitigation & Management Post Tsunami Perspectives, Deep & Deep Publications Pvt Ltd, New Delhi, 2007.
8.	NDMA Disaster Management Guidelines 2007-11 NDMA, Ministry of Home Affairs.
9.	Model Amendment in Town and Country Planning Legislations, Regulation for Land Use Zoning and Building Byelaws for Structural Safety, 2004 MHA.
10.	Ministry of Home Affairs National Policy on Disaster Management(NPDM) 2006, MHA.
11.	Publications of National Disaster Management Authority (NDMA) on Various Templates and Guidelines for Disaster Management.
12.	National Disaster Management Policy, 2009, GoI

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture		Academic Year			2022-2023				
Bachelor of Architecture (B.Arch.): Regular Programme											
Year	V	Core /Elective/ Foundation (Elective 3) Architectural Journalism (ARC1909 / ARC19XXCS)		Credits / Hours per week			Total: 03 credits / 03 Hrs per week Lectures: 01 Hrs per week Studio: 02 Hrs per week				
Semester	IX	Year of Introduction: 2022 Year of Syllabus Revision:		Maximum Marks / Grade			Total: 100 Term Work: 50 Review and Viva : 50				
Mode of Transaction		Lecture and Studio		Minimum Passing			45 Marks				
Course Outcome (CO) CO1 Understand the principles of journalism and its specialized application in architecture. CO 2 Develop skills in critical writing, reporting, and editing tailored to architecture and urbanism. CO 3 Cultivate an analytical approach toward design communication and criticism. CO 4 Explore the integration of multimedia platforms for architectural storytelling											
Unit No.	Topic/Unit			Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)
1	Introduction to Architectural Journalism Definition, scope, and evolution of architectural journalism, Roles and responsibilities of architectural journalists and Overview of traditional and digital media in architecture.			6	13%	1 & 2	CO1	PSO1 PSO2 PSO4	Emp, SD	L, R, N, G	G, ES, HV, PE
2	Introduction to Research in Architectural Journalism The nature and function of research, scientific research, meaning of research in the field of architecture and architecture journalism; Research methodologies in journalism. Writing skills: clarity, precision, and style. Exposure to different terms, resources, and standards like – MLA, APA, CHICAGO STYLE etc Basics of photography and videography in architecture			8							

3	Writing and Critique Formal writing - Technical data about formal writing the use of visuals, the qualities of research, the use of primary and secondary references, bibliography, notation, cross reference etc. Writing opinion pieces, blogs, and feature stories Critical appreciation and review writing -for example - of buildings, urban spaces, and design practices. Case studies on architectural critiques from leading publications. Recent historical and contemporary examples of written and journalistic criticism of architecture, works of Indian and International writers and critics.	8							
4	Basics of Journalism Fundamentals of journalistic writing: objectivity, clarity, and structure. Research methods: interviews, fieldwork, and secondary sources. Ethics in journalism: plagiarism, copyright, and integrity.	8							
5	Multimedia Storytelling in Architecture Role of technology: data visualization, infographics, and virtual presentations. Basics of architectural photography: composition, angles, lighting, and post-processing. Videography for architecture: walkthroughs, interviews, and documentaries. Leveraging digital tools like blogs, social media, and AR/VR for architectural narratives.	8							
6	Advanced Topics and Emerging Trends Analysis of major critical themes, thematic categories in architectural writing. Architectural journalism in global versus local contexts Journalism in the context of urban issues: sustainability, heritage conservation, and climate change.	10							
References									
1	Asad, M.A., and Musa M. <i>Architectural Criticism and Journalism: Global Perspectives</i> . Umberto Allemandi, 2007.								
2	De Jong, T. M., and D. J. M. Van Der Voordt. <i>Ways to Study and Research Urban, Architectural and Technical Design</i> . Delft, Netherlands: DUP Science, 2002.								
3	Gray, Carole, and Julian Malins. <i>Visualizing Research: A Guide to the Research Process in Art and Design</i> . Aldershot, Hants, England: Ashgate Publishing Limited, 2004								
4	Lange, Alexandra. <i>Writing About Architecture: Mastering the Language of Buildings and Cities</i> . Princeton Architectural Press, 2012.								
5	Harrigan, John E. <i>Human Factors Research: Methods and Applications for Architects and Interior Designers</i> . Amsterdam: Elsevier, 1987.								
6	Kliment, Stephen A. <i>Writing for Design Professionals</i> . W.W. Norton & Co., 1998.								
7	Borden, Iain, and Katerina Ruedi. <i>The Dissertation: An Architecture Student's Handbook</i> . Oxford, Boston: Architectural Press, 2000.								
8	Groat, Linda, and David Wang. <i>Architectural Research Methods</i> . John Wiley & Sons, 2002.								

Detail Syllabus: S.S of B. Arch V (New Course - CRS)

Implemented from academic year 2025-26 (Non-CRS)

From academic year 2026-27 (CRS)

 सत्यं शिवं सुन्दरम्		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture		Academic Year							
Bachelor of Architecture (B.Arch.): Regular Programme											
Year	V	Core ARCHITECTURAL DESIGN THESIS (ARC1008L / ARC10XXLCS)		Credit/ Hours per week				Total: 18 credits / 18 Hrs per week Studio: 18 Hrs per week (Term Work) Studio: 18 Hrs per week (Review and Viva)			
Semester	X	Year of Introduction: 1994 Year of Syllabus Revision:		Maximum Marks/ Grades				Total: 700 Term Work: 450 Review and Viva : 250			
Mode of Transaction		Studio		Minimum Passing				315 Marks			
Course Outcome (CO) CO1 Committing to a design thesis topic that reflects the student’s personal values, resonances, dissonances vis-à-vis the society and environment CO2 Conducting topic related literature review, case studies, site studies, and, in turn, developing sound architectural and open space programs for the chosen topic. CO3 Immersing in the process of exploring conceptual design and developing the designs further based on comprehensive interim reviews and feedback. CO4 Zero down on a final design and developing it fully including structure, services, open space layout, etc. CO5 Communicating the design solutions and thesis of the design effectively by presenting overall and detailed plans, elevations, sections, models, etc. in a design jury setting as well as in a thesis document.											
Unit No.	Topic/Unit			Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)
1	Program Formulation and related Case Studies Each student should take up an individual topic of Design for which there should be some preliminary theoretical analysis and case studies of the topic concerned. The objective of the Thesis is to orient the design towards a solution which is based upon a theoretical premise. Presentation of the solution should therefore include these theoretical aspects. However, any student may take a purely theoretical problem which does not involve “Design “ in the conventional sense. A topic taken in any year should not be repeated for subsequent			22	10%	1,2,3,4,5	CO1, CO2	PSO1	Emp, Ent, SD	L, N, R, G	G,ES, HV, PE

	two years unless the theoretical parameters are significantly altered.								
2	Conceptual Design Process Review 1: The Design Project, Field Investigation, implications for Design, Conceptual Design	88	25%	1,2,3,4,5,6	CO3	PSO1, PSO2, PSO3, PSO4			
3	Design Development Review 2: Design Development and discussions	110	30%	1,2,3,4,5,6	CO4	PSO1, PSO2, PSO3, PSO4			
4	Final Designing Stage Review 3: Pre final Design and Final jury stage – finalization of design and preparation of final presentation drawings, relevant models	110	35%	1,2,3,4,5,6	CO5	PSO1, PSO2, PSO3, PSO4			
Reference Books: Relevant to Thesis Topic and suggested by the Thesis Guide/Faculty									

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture			Academic Year							
Bachelor of Architecture (B.Arch.): Regular Programme											
Year	V	Core / Elective / Foundation Professional Practice and Valuation (ARC1011 / ARC 10XXCS)			Credits / Hours per week		Total: 05 credits / 06 Hrs per week Lecture: 04 Hrs per week Studio: 02 Hrs per week				
Semester	X	Year of Introduction: 2021 Year of Syllabus Revision:			Maximum Marks / Grade		Total: 200 Theory (Paper) : 100 (30 IA + 70 UA) Term Work : 100				
Mode of Transaction		Lecture and Studio			Minimum Passing		90 Marks				
Course Outcomes (CO): With the successful completion of the course student should demonstrate and have capability to: CO1: Basic Information, Statutory Requirement, and legal aspects of starting of an architecture office. CO2: Knowledge about tenders and contract Details CO3: Understand fundamentals of valuation of buildings and land CO4: Architectural Professional fee Quotation including scope of work, Payment terms and COA Guidelines											
Unit No.	Topic/Unit			Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/ Global (G) development al needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)
1	Introduction to the Profession and its Ethics - What is architectural practice? - Historical perspective and development of the Architectural profession in India. - Distinction between business and profession - How the work is obtaining projects - Waiting period, setting your office,properties firm, partnership firm, private firms, limited company - Registration of partnership deed, registration of firm - Office organization, system of keeping office record, register, numbering drawing & office administration and office correspondence.			15	20%	1, 2	CO1	PSO1 PSO3	Emp &SD	L, N, R & G	ES, HV & PE

	- responsibility and liability of an architect, Importance of specification and quantity of items - GST, income tax, ESIC, Provident fund, labor license, Assets liability, balance sheet, TDS ,information about banking(solveny certificate, ,power of attorney, letter of authority) opening of tender, scrutiny of tenders, rate analysis, scrutiny report, letter of intent, work order & pre-qualification document.								
2	Contracts and Valuation - Different types of contracts and tender - item rate, lump sum, cost + percentage, tender for Demolition, etc., study of contract documentt. - Supervision of work, Primary condition, basic rate of material and escalation of price list & note on inspection of work in progress. - Valuation of law related to land & building economics. - Understanding basic accounting methods, economics, insolvency and bankruptcy code, international valuation standards, value's bill, Principals of merger & acquisition. - Technological evaluation of building using BIM building information modeling	25	30%	1,2,3,4,5	CO3	PSO1			
3	Tender & Contract - Definition with types and conditions of Tender. Process of tendering; Tender notice, documents, submission, scrutiny, analysis, recommendations, work order, etc. Contracts; definition, agreement, contents. Responsibility and changing role of architects in project execution in the context of new trends like BOT, BOO, DBOT, BOLT, etc. - Tender for construction - tender, components of tender, types of clients, different method of calling tender (open tender, limited tender, online tender, reverse auction) list of approved contractors, study of papers included in tender, procedure of calling tenders, receiving of tender, Procedure of submission of tender (no deviation, technical bid, commercial bid) and different situation arising after opening of tenders and action to be taken by architect. - Contracts - appendix in general condition of contract, contract document, owners consulting engineer & different terminology used in contracts	35	30%	1,2,3,4,5	CO2	PSO1 PSO3			

4	Legal Aspects - Arbitration (definition, advantages of arbitration, role of architect), sole and joint arbitrators, umpires, clauses in contract agreement (exceptions). Copyrights and patenting, Consumer Protection Act (responsibilities of an architect). - Important Legislations and Current Trends, - Regulations of a Master Plan. National Building Code (suitable case). Corporation rules (suitable case). Regulated and protected zones - Arbitration & Case study on projects getting delayed and overrun in cost, arbitration case if any, defense made by each party and final arbitration award. - Quotation client by an architect which includes scope of work, payment terms & condition, - inclusion and exclusion all legal writing - Rules regarding code of professional conduct, duties and liabilities, rules regarding architectural competitions. - Architectural services and scale of professional charges as per COA Guidelines.	15	20%	1,2,3	CO4	PSO1 PSO3			
Reference Books									
1.	Professional Practice with elements of Estimating, Valuation, Contracts & Arbitration, Dr. Roshan .H. Namavati								
2.	Architectural Practice & Procedure, Ar.Vasant .S. Apte								
3.	Title: Handbook On Professional Practice by The Indian Institute of Architects								

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture			Academic Year						
Bachelor of Architecture (B.Arch.): Regular Programme										
Year	V	Core / Elective / Foundation (Elective IV) Vastushastra: Principles and Practice (ARC1013 / ARC 10XXCS)	Credits / Hours per week		Total: 03 credits / 03 Hrs per week Lectures: 01 Hrs per week Studio: 02 Hrs per week					
Semester	X	Year of Introduction: 2024 Year of Syllabus Revision:	Maximum Marks / Grade		Total: 100 Term Work: 50 Review and Viva : 50					
Mode of Transaction		Lecture and Studio	Minimum Passing		45 Marks					
Course Outcomes (CO): With the successful completion of the course student should demonstrate and have capability to Explore their aptitudes and developing skills in the related field of Vastu Shastra CO1: To create awareness of the traditional knowledge systems and their relevance in modern architectural practice. CO2: To understand the theory and processes given in Vastushastra. CO3. To Analyze the impact of Vastushastra on spatial planning and orientation CO4: To develop ability to understand the contemporary practice of Vastushastra.										
Unit No.	Topic/Unit		Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/ Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics

									(PE)
1	Introduction to Vastushastra: A brief overview of traditional knowledge systems in the subcontinent and their relevance in modern practice of architecture.	03	05%	1	CO1	PSO1, PSO2	Emp/ Ent/ SD	L/ N/ R /G	ES, HV, PE
2	Principles and science of Vastushastra: Understanding of Vastu principles, role of various mandalas and Vastu-Purush-Mandala. How Vastu principles can be applied in modern building typologies.	06	05%	1,2	CO2	PSO1, PSO2			
3	System of Measurements in Vastushastra: System of measurements as per Vaastu and Vedas, its correlation to Geometry; Ancient system of determining directions.	09	15%	2,3	CO2, CO3	PSO1, PSO2, PSO4			
4	Vastu principles and guidelines for Site Selection and Building Design: Vastu principles and guidelines for site selection, shape of plots, orientation aspects, recommendation on sites, plots, location layouts, configuration of various areas, inner and outer spaces within and outside the building, spatial planning vis-à-vis their functions, etc.	09	15%	3,4	CO3, CO4	PSO2, PSO4			
5	Vastushastra and Spatial Planning: Layout and planning of roads; cluster planning; design of wells, ponds and other public spaces	09	20%	3,4	CO3, CO4	PSO2, PSO3, PSO4			
6	Application of Vastushastra principles: Case studies for houses and commercial building as per Vastu. Design exercises and case examples of building projects as per Vastu.	09	20%	4,5,6	CO3, CO4	PSO2, PSO3, PSO4			
Reference Books									
1.	Vastu Science for 21st Century" by B. B. Puri.								
2.	The Penguin Guide to Vaastu" by Sashikala Ananth.								
3.	“Manasara on Architecture and Sculpture” – Traditional Vastushastra text.								

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture			Academic Year						
Bachelor of Architecture (B.Arch.): Regular Programme											
Year	V	Core / Elective / Foundation (Elective IV) Deployable Structures in Architecture - Set Designing (ARC1014 / ARC 10XXCS)			Credits / Hours per week		Total: 03 credits / 03 Hrs per week Lectures: 01 Hrs per week Studio: 02 Hrs per week				
Semester	X	Year of Introduction: 2024 Year of Syllabus Revision:			Maximum Marks / Grade		Total: 100 Term Work: 50 Review and Viva : 50				
Mode of Transaction		Lecture and Studio			Minimum Passing		45 Marks				
Course Outcomes (CO): With the successful completion of the course student should demonstrate and have capability to Explore their aptitudes and developing skills in the related field of Deployable Structures in Architecture - Set Designing. CO1: CO1: Demonstrate an understanding of deployable structures and their applications in architecture and set design. CO2: Apply material and mechanism knowledge to create functional designs. CO3: Develop innovative deployable designs tailored to specific set requirements. CO4: Produce models and presentations showcasing deployable structure designs. CO5: Work collaboratively to create deployable solutions for real-world challenges in set design.											
Unit No.	Topic/Unit			Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/ Global (G) development al needs	Relation to Gender (G), Environm ent and Sustainabi lity (ES), Human Values (HV)and Profession al Ethics (PE)

1	Introduction to Deployable Structures Definition, importance, and types of deployable structures. Applications in architecture, theater, and events. Overview of structural mechanics: folding, scissor mechanisms, and telescopic systems.	09	05%	1,2	CO1	PSO1	Emp/ Ent/ SD	L/ N/ R /G	ES, HV, PE
2	Materials and Mechanisms Characteristics and selection of materials (e.g., fabrics, lightweight metals, composites). Exploration of connection systems and joints for deployability. Case studies on materials and construction methods.	09	05%	1,2	CO2	PSO1, PSO2			
3	Concept Development and Modeling Ideation and brainstorming techniques for deployable designs. Digital modeling using tools like Rhino/Grasshopper and physical prototyping. Integration of theatrical elements such as lighting and sound into deployable designs.	10	10%	1,2,3	CO3	PSO1, PSO2			
4	Deployable Design 1: Sustainability and Practice Environmental considerations: recyclability, reusability, and resource optimization. Techniques for minimizing waste and maximizing efficiency. Practical constraints: transportability, assembly time, and user adaptability.	05	20%	3,4	CO4	PSO3, PSO4			
5	Deployable Design 2: Design Project Group or individual projects to create a deployable set design for a specific application. Emphasis on creativity, functionality, and aesthetic appeal.	06	25%	5,6	CO5	PSO2, PSO3, PSO4			
6	Deployable Design 3: Design Project Presentation Preparation of detailed drawings, models, and presentations for jury evaluation.	06	25%	5,6	CO5	PSO2			
Reference Books									
1.	"Deployable Structures" by Sergio Pellegrino.								
2.	"Temporary Structures in Construction" by Robert T. Ratay.								
3.	"Scenographic Imagination" by Darwin Reid Payne.								

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture		Academic Year		2022-2023					
Bachelor of Architecture (B.Arch.): Regular Programme										
Year	V	Core /Elective/ Foundation (Elective IV) Road Safety and Civic Sense (ARC1006 / ARC10XXCS)	Credits / Hours per week		Total: 03 credits / 03 Hrs per week Lectures: 01 Hrs per week Studio: 02 Hrs per week					
Semester	X	Year of Introduction: 2022 Year of Syllabus Revision:	Maximum Marks / Grade		Total: 100 Term Work: 50 Review and Viva : 50					
Mode of Transaction		Lecture and Studio	Minimum Passing		45 Marks					
Course Outcome (CO) by taking this course students will be able to: CO1 Appraise concepts, principles, tools and aids of Road Safety and Civic Sense CO2 Understand design parameters related to vehicular and pedestrian circulation CO3 Develop fundamentals, significance and need for traffic signals and street lighting CO4 Infer traffic regulations and will be acquainted with design and safety standards.										
Unit No.	Topic/Unit		Contact Hours (Total 15 weeks teaching /semester)	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp) / Entrepreneurship (Ent) / Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)
1	SAFETY - Introduction to Road Safety Road as an active space, Types of Users, User Behaviour, Sensory Factors like Vision and Hearing in User Behaviour. Types of Vehicles: Heavy Vehicles, Light Motor Vehicle, Two Wheelers, Auto-Rickshaw, Bicycles and Cycle Rickshaw, Non-Motorised Vehicles. Vehicle Characteristics: Dimensions, Weight, Turning Radii, Braking Distance, Lighting System, Tyres, etc. Type of Hazards: Conflicts and Accidents.		6	11%	1, 2	CO1	PSO1	EMP, SD	L, N,R	ES, HV, PE

2	SAFETY - Road Safety & Civic sense Need for Road Safety, Category of Road Users and Road Safety Suggestions. Precautions for Driving in Difficult Conditions (Night, Rain, Fog, Skidding Conditions, Non-Functional Traffic Lights, etc.). Types of Breakdowns and Mechanical Failures. Accident Sign (Warning Light, Warning Triangle, etc.). Introduction to Concept of Civic Sense and its relationship to Road Safety: Importance of Civic Sense, Road Etiquettes and Road User Behaviour, Rules of Road, Right of the Way. Providing Assistance to Accident Victim. Sensitisation against Road Rage. SAFETY -Road Accidents Nature and Types of Road Accidents (Grievously Injured, Slightly Injured, Minor Injury, Non-Injury, etc.) The situation of Road Accidents in India (Yearly), Fatality Rates, etc. factors (and Violations) that cause accidents, Prevention and First Aid to Victims Collision Diagrams and Condition Diagrams exercises. Traffic Management Measures and their influence in Accident Prevention.	9	22%	1, 2	CO1	PSO1			
3	ROADS - Typology of Roads: Components & Design Road Classification: National Highways, State Highways, District Roads (MDR and ODR), Village Roads Urban Road Classification: Expressways, Arterial, Sub-Arterial, Collector, Local, Service Roads, One-Way, Two-Way etc. Mountainous Roads. Speed Limits of the Road types. Design of Roads: Cross-Sectional Elements- Right of Way, Carriageway, Median, Shoulders, Sidewalk, Lanes, Cycling Track, Green Strip, Curbs, Camber, etc. Spatial Standards for the Cross-Section Design. Relationship between Road Design and Road Safety.	3	11%	2, 3, 4	CO2	PSO1			
4	ROADS - Intersections Types of Road Intersections: Basic Forms of at-grade Junctions (T, Y, Staggered, Skewed, Cross, Scissors, Rotary, etc. Grade Separated Junctions (with or without interchange): Three-Leg, Four-Leg, Multi-Leg, etc. Design of Intersections: Design and Spatial Standards for Traffic Islands. Turns, Turning Radii, Directional Lanes, Pedestrian Crossings, Median Openings, Traffic Calming Components like Speed Breakers and Table-Top Crossings etc. Design Considerations for Diverging, Merging, and Weaving Traffic. Location and Design for Traffic Signals. ROADS - Pedestrian Circulation & barrier free Design Requirement of Pedestrian Infrastructure: Sidewalks and Footpaths, Recommended Sidewalk Widths, Pedestrian Crossings, Pedestrian Bridges, Subways, Cycle Tracks, etc. Barrier Free Design: Location and Design Standards for Ramps for Wheel Chair Access, Other Provisions like Tactile for Visually Challenged etc. Safety Provisions: Pedestrian Railings, Anti-skid Flooring, Pedestrian Signal, Walk Button, etc.	9	22%	2, 3, 4	CO2	PSO1			
5	TRAFFIC SIGNALS & STREET LIGHTING Traffic Signs & Road markings Type for Traffic Signs: Principles and Types of Traffic Signs, Danger Signs, Prohibitory Signs, Mandatory Signs, Informatory Signs, Indication Signs, Direction Signs, Place Identification Signs, Route Marker Signs, etc. Reflective Signs, LED Signs. Static and Dynamic Signs. Standards for Traffic Signs: Location, Height and Maintenance of Traffic Signs. Types of Road Markings: Centre Lines, Traffic Lane Lines, Pavement Edge Lines,	10	22%	1, 2, 3	CO3	PSO1, PSO3			

	No Overtaking Zone Markings, Speed Markings, Hazard Markings, Stop Lines, Pedestrian Crossings, Cyclist Crossings, Route Direction Arrows, Word Messages, Marking at Intersections, etc. Material, Colour and Typography of the Markings. Traffic Signals, Traffic Control Aids Traffic Signals: Introduction, Advantages, and Disadvantages Signal Indications: Vehicular, Pedestrian and Location of the Signals. Signal Face, Illustration of the Signals. Red, Amber, Green Signals Traffic Control Aids: Roadway Delineators (Curved and Straight Sections), Hazard Markers, Object Markers, Speed Breakers, Table Top Crossings, Rumble Strips, Guard Rails, Crash Barriers etc Street Lighting: Need for Street Lighting, Type of Lighting, Illumination Standard, Location and Intermediate Distance.								
6	TRAFFIC REGULATIONS, LAWS & LEGISLATIONS Indian Motor Vehicles Act (Chapter VIII- Control of Traffic to be discussed in detail) Regulations Concerning Traffic: Cycles, Motor Cycles and Scooters, Rules for Pedestrian Traffic, keep to the Left Rule, Overtaking Rules, Turning Rules, Priority Rules, Hand Signals, etc. Speed and Hazard Management. Penal Provisions. National Road Safety Policy, Central Motor Vehicle Rules, State Motor Vehicle Rules Introduction to Good Practices.	5	12%	1, 2, 4	CO4	PSO1, PSO4			
Reference Books									
1.	Introduction to Traffic Engineering, R Srinivasa Kumar								
2.	Traffic Engineering and Transport Planning, LR Kadiyali								
3.	Book on Road Safety Signage and Signs, Ministry of Road Transport and Highways, Government of India								
4.	MORT&H Pocketbook for Highway Engineers, 2019 (Third Revision)								
5.	Publications by UTTIPEC namely, Street Design Guidelines, UTTIPEC Guideline for Road Markings, UTTIPEC Guideline and Specification for Crash Barriers, Pedestrian Railing and dividers, UTTIPEC Standard Typical Crossing Design								
6.	Street Design Standards as provided in Times Savers, Neuferts etc.								
7.	Publications by Indian Road Congress.								

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Architecture		Academic Year		2022-2023					
Bachelor of Architecture (B.Arch.): Regular Programme										
Year	V	Core /Elective/ Foundation (Elective IV) Software/ Application Designing/ IoT (Internet of Things) Animation Design – AR/VR (ARC1012 / ARC10XXCS)	Credits / Hours per week				Total: 03 credits / 03 Hrs per week Lectures: 01 Hrs per week Studio: 02 Hrs per week			
Semester	X	Year of Introduction: 2022 Year of Syllabus Revision:	Maximum Marks / Grade				Total: 100 Term Work: 50 Review and Viva : 50			
Mode of Transaction		Lecture and Studio		Minimum Passing				45 Marks		
Course Outcome (CO) CO1 Introduce students to advanced software and tools for architectural design and applications. CO 2 Explore the role of IoT in creating smart and sustainable architectural solutions. CO 3 Develop skills in AR/VR-based visualization and immersive experience design. CO 4 Foster critical thinking about the integration of technology in architectural practice.										
Unit No.	Topic/Unit		Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)
1	Software and Application Design Introduction to Digital Tools: Overview of software used in architectural application design. Parametric and Computational Design: Fundamentals of Rhino, Grasshopper, and Dynamo. UI/UX for Architectural Applications: Prototyping tools: Adobe XD, Figma. Basics of user interface and experience design for architecture.		10	25	2,3,4,5	CO1	PSO1 PSO2 PSO4	Emp, Ent, SD	L, R, N, G	G, ES, HV, PE
2	Internet of Things (IoT) in Architecture: Concepts Introduction to IoT Concepts: IoT and its applications in architecture. Components of IoT systems: Sensors, actuators, and controllers. Smart Buildings and Urban Spaces: IoT-enabled solutions for energy efficiency, resource management, and automation.		5	30	2,3,4,5	CO2	PSO1 PSO2 PSO4	Emp, Ent, SD	L, R, N, G	G, ES, HV, PE

3	Internet of Things (IoT) in Architecture: Application IoT Prototyping Tools and Applications: Hands-on introduction to Arduino, Raspberry Pi, and Node-RED. Designing a basic IoT system for architectural use. Sustainable Architecture: Using IoT to enhance environmental performance and occupant comfort.	9							
4	Animation and Visualization using AR/VR: Technology, Tools and Software Introduction to AR/VR Technologies: Understanding immersive technologies in architecture. AR/VR Tools and Software: Unreal Engine, Twinmotion, Enscape, and Unity.	5	20	2,3,4,5	CO3	PSO1 PSO2 PSO4	Emp, Ent, SD	L, R, N, G	G, ES, HV, PE
5	Animation and Visualization using AR/VR: Application Creating Immersive Experiences: Basics of 3D environment creation, animation, and real-time rendering. Applications of AR/VR in Architecture: Design visualization. Client presentations. Architectural walkthroughs and validation.	7							
6	Integration and Future Trends Integration of Tools in Architectural Workflows: Collaborative platforms like BIM 360, Miro, and Trello. Emerging Technologies: AI, machine learning, digital twins, and their applications in architecture. Ethics and Challenges: Discussing the implications of digital technologies in the built environment.	9	25	2,3,4,5	CO4	PSO1 PSO2 PSO4	Emp, Ent, SD	L, R, N, G	G, ES, HV, PE

References

1	<i>The Architecture of Smart Cities</i> by Zaheer Allam.
2	<i>Augmented and Virtual Reality in Industry 4.0 and Smart Cities</i> by M. B. Jayasinghe.
3	<i>Computational Design Thinking</i> by Achim Menges and Sean Ahlquist
4	<i>Interactive Architecture</i> by Michael Fox and Miles Kemp
5	H. Suo, J. Wan, C. Zou. <i>Internet of Things (IoT) for Smart Cities and Urban Planning</i> . IEEE Internet of Things Journal, 2018
6	Katrin Wolf, André Zenker. <i>Application Design for Architectural Visualizations</i> . Conference on Human-Computer Interaction, 2018
7	<i>Virtual Reality and the Built Environment</i> by Jennifer Whyte

