



(Established under Galgotias University Uttar Pradesh Act No. 14 of 2011)

Bachelor of Architecture

(B. Arch.)

Five Year Full Time Degree Programme

SYLLABUS

School of Architecture

Oct 10, 2017

SYLLABUS of B. Arch. Five Year Programme

	ABBREVIATIONS / CODES / NOMENCLATURE
BARC/ARE	Architecture Course Code
ARE XYZ	X-Year Number, YZ-Course Number
M	Module
T	Tutorial
S	Studio
P	Practical
C	Course Credit
FFCS	Fully Flexible Credit System

SYLLABUS of B. Arch. Five Year Programme

Teaching & Examination Scheme

B. Arch. , Semester -I (Fall), FIRST YEAR														
Subject Code	Module Subject	Introduction to architecture	Kinetics	Language of architecture	Shelter	Presentation	internship	Internal	External	Total	Grade point	Credit	Credit points	
		M1	M2	M3	M4	M5	T1							
BARC1001	Architectural Design-I	10	15	25	50			100	100	200	10	5	50	
BARC1002	Building Construction-I	25	15	35	25			100	100	200	10	3	30	
BARC1003	Building Structures-I	15	40	45				100	100	200	10	2	20	
BARC1004	History of Architecture-I	15			85			100	100	200	10	2	20	
BARC1005	Computer Application in Architecture-I			10	25	65		100	100	200	10	3	30	
BARC1006	Architectural Graphics-I	10		65	25			100	100	200	10	2	20	
BARC1007	Communication	10		90				100	100	200	10	1	10	
	marks	85	70	270	210	65	0					18	180	
	Total Credits									1400				
													SGPA	10

B. Arch. , Semester -II (Winter), FIRST YEAR														
Subject Code	Module Subject	Universal design	Moments	Context	Arboretum	Sciography	Internship	Internal	External	Total	Grade point	Credit	Credit points	
		M6	M7	M8	M9	M10	T1							
BARC1009	Architectural Design-II	10	10	35	40	5		100	100	200	10	7	70	
BARC1010	Building Construction-II			35	65			100	100	200	10	2	20	
BARC1011	Building Structures-II		100					100	100	200	10	1	10	
BARC1012	History of Architecture-II			100				100	100	200	10	2	20	
BARC1013	Computer Application in Architecture-II				100			100	100	200	10	1	10	
BARC1014	Architectural Graphics-II			40		60		100	100	200	10	3	30	
BARC1015	Surveying and Levelling	100						100	100	200	10	1	10	
BARC1016	Climatology	100					0	100	100	200	10	1	10	
BARC1017	Building Services-I				100			100	100	200	10	1	10	
BARC1018	Summer Internship-I						100	100	100	200	10	3	30	
	marks	210	110	210	305	65	100					22	220	
	Total Credits									2000				
													SGPA	10

B. Arch. , Semester -III (Fall), SECOND YEAR													
Subject Code	Module Subject	Large span	Order in architecture	STEEL	Urbane	Street sculpture	Internship	Internal	External	Total	Grade point	Credit	Credit points
		M11	M12	M13	M14	M15	T1						
BARC2001	Architectural Design-III	10	10	25	40	15		100	100	200	10	7	70
BARC2002	Building Construction-III	5	10	50	35			100	100	200	10	3	30
BARC2003	Building Structures-III	45		55				100	100	200	10	2	20
BARC2004	History of Architecture-III		100					100	100	200	10	1	10
BARC2005	Computer Application in Architecture-III			65	35			100	100	200	10	3	30
BARC2006	Sociology and Psychology					100		100	100	200	10	1	10
BARC2007	Building Services-I(Lighting)				100			100	100	200	10	1	10
BARC2008	Winter Internship-I						100	100	100	200	10	2	20
	marks	60	120	195	210	115	100					20	200
	Total Credits									1600			
												SGPA	10

B. Arch. , Semester -IV (Winter), SECOND YEAR													
Subject Code	Module Subject	Expressionism	RCC	Decoding patterns	Experimental Architecture	Presentation	Internship	Internal	External	Total	Grade point	Credit	Credit points
		M16	M17	M18	M19	M20	T1						
BARC2009	Architectural Design-IV	10	5	50	35			100	100	200	10	8	80
BARC2010	Building Construction-IV		15	15	70			100	100	200	10	4	40
BARC2011	Building Structures-IV		100					100	100	200	10	1	10
BARC2012	History of Architecture-III	100						100	100	200	10	1	10
BARC2013	Computer Application in Architecture-III		20			80		100	100	200	10	1	10
BARC2014	Architectural Graphics-III			100				100	100	200	10	1	10
BARC2015	Building Services-I(Lighting)				100			100	100	200	10	2	20
BARC2016	Estimation and Costing-I					100		100	100	200	10	1	10
BARC2017	Summer Internship-II						100	100	100	200	10	3	30
	marks	110	135	115	170	180	100					22	220
	Total Credits									1600			
												SGPA	10

NOTE:	Internal Evaluation of Architectural Conceptual Design Project (Thesis) shall be done by a Jury comprising Thesis Guide and one Internal Examiner.
	Mid Term Evaluations (CAT) of Architectural Design (Thesis) shall be done by a Jury comprising Thesis Guide, one Internal & one External Examiner.
	End Term Evaluation (SEE) of Architectural Design (Thesis) shall be done by a Jury comprising Thesis Guide, one Internal & two External Examiners.

Module 1		M1: Introduction to Architecture	
Contacts Hours		72 (2 Weeks)	
Subject Code	Subject Name	Max Marks	Contact Hours
BARC1001	Architectural Design-I	10	22
BARC1002	Building Construction-I	25	18
BARC1003	Building Structures-I	15	10
BARC1004	History of Architecture-I	15	7
BARC1006	Architectural Graphics-I	10	10
BARC1007	Communication	10	5

COURSE OBJECTIVES

1. Unlearn
2. Graphical representation of experience

Project: Individual graffiti on the basis of module coordination.

COURSE CONTENT**BARC1007 Mentorship**

Orientation, how the program would run? Etc, students will be divided among mentors and assessment will be done by them, their interests fears, strength, weakness, etc and guided

BARC1001 Architectural Design-I

Introduction to Architecture Profession, Roles, Responsibilities and Liabilities of an Architect and other professionals in the building and construction field. Architects Act-CoA, I.I.A, NASA. A brief summary of Architecture; its various definitions, associated aspects/dimensions, approaches through different ages and factors affecting architecture of a region. Relationship between basic design and architectural design, understanding of space, form, order and design.

BARC1002 Building Construction-I

Introduction to commonly used building terminology, tools, materials and elements of a building from foundation to roof (Stepped footing & strip foundations, Plinth, DPC, Flooring, Walls, Door, Window, Sill, Lintel, Column, Beam, Slab, Parapet, TerracinG.

BARC1003 Building Structures-I

Introduction to structural systems and basic loads

BARC1004 History of Architecture-I

Role of history in Architecture, Neolithic, shelters, early river civilizations.

BARC1006 Architectural Graphics-I

Introduction to graphics, tools, its role and significance

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

Suggest Books:

1. Ching, Francis D. K. "Architecture : Form, Space and Order", John Wiley and Sons Inc.
2. Lidwell, William, Holden, Kestina, Butler, Jill, "Universal Principles of Design", Rockport – Publications, Massachussets.

SYLLABUS of History of Architecture by Sir Bannister Fletcher

4. Building Construction & Materials, S.C. Rangwala

Module 2		M2: Kinetics	
Contacts Hours		72 (2 Weeks)	
Subject Code	Subject Name	Max Marks	Contact Hours
BARC1001	Architectural Design-I	15	30
BARC1002	Building Construction-I	15	12
BARC1003	Building Structures-I	40	30

COURSE OBJECTIVES

1. Resolving structural forces in simple Geometry.
2. Introduction to technical drawing and print.

Project: Geometrical sculpture (2-D to 3-D composition and asymmetrical sculptures of geometric forms.

COURSE CONTENT

BARC1001 Architectural Design-I

Basic technical Drawing and Lettering

Introduction to technical drawing and calculate CD, drawing equipments, Drafting and quality of lines with pencil, Basic Geometry- Construction of planes, curves, circles tangent and regular polygons, Free hand and mechanical lettering- Free hand drawing and lettering for titles, line work with the use of Drawing Instruments.

Scale and Dimensioning

Types and uses of scales: Plain, diagonal, comparative, and scale of chords, Scales used in architecture, Reducing and enlarging scales, Representative Fraction, Dimensioning of lines and plane figures.Principles of Design- Balance, Proportion, Rhythm, Emphasis and Unity.

BARC1002 Building Construction-I

Model making workshop –Basic 3-D geometric forms.

BARC1003 Building Structures-I

Center of gravity: Definition, Calculation of CG of plane figures, like I,T,L,C,O, hallow & Box sections.

Moment of inertia (MOI): Definition, calculation of CG & MOI of plane figures about the principal axes e.g. rectangle, triangle & circle. Parallel axes theorem, perpendicular axes theorem.

Introduction to Statics: Forces, their definition, characteristics & types, composition & resolution of forces, moment & couple, Concepts of resultant and equilibrium of forces: Parallelogram and polygon, laws of forces, conditions of equilibrium, Lami's theorem

Stress & Strain, Hooke's law: Concept of direct forces (compression & tension), Elasticity, Plasticity etc. Hooke's law, modulus of Elasticity, Elastic limit stress/ strain curve for mild steel under constant tension. Problems on Hooke's law & introduction to temperature stresses.

Concept of Euler's load & Buckling of compression members: Idea of short & long columns. Effective length for various end conditions.Euler's formula and calculation of buckling loads.

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SYLLABUS: Arch. Five Year Programme**Suggest Books:**

1. I.H. Morris, Geometrical Drawing for Art Students - Orient Longman, Madras, 2004..
2. Francis Ching, Architectural Graphics, Van Nostrand Rein Hold Company, New York, 1964..
3. N.D.Bhatt, Elementary Engineering Drawing (Plane and Solid Geometry), Charotar Publishing House, India.
4. Punmia P. C., "Strength of Materials & Mechanics of Structures".
5. Khurmi R. S., "Strength of Materials.

Module 3		M3: Language of Architecture	
Contacts Hours		216 (6 Weeks)	
Subject Code	Subject Name	Max Marks	Contact Hours
BARC1001	Architectural Design-I	25	48
BARC1002	Building Construction-I	35	30
BARC1003	Building Structures-I	45	30
BARC1005	Computer Application in Architecture-I	10	10
BARC1006	Architectural Graphics-I	65	58
BARC1007	Communication	90	40

COURSE OBJECTIVES

1. Developing concepts
2. Understandings- sense of space.
3. Meaning of walls (Enclosure).
4. Establishing boundaries.
5. Introduction to natural materials.

Project: enclosure without roof, concept(writing), model and dwgs

COURSE CONTENT**BARC1001 Architectural Design-I****Elements of Design**

Introduction to elements of Design like point, line, shape, form, texture, colour; their definitions and expression quality. Application of elements in architectural design through the use of line, plane, solid and voids and application of texture, colour, etc. Exercises like logo, cover page, greeting card, mural design etc to be considered. sense of enclosure

Colour Fundamentals

Colour fundamentals; perception of colour and light, related definitions like hue, value, intensity, colour wheel, colour theory, colour schemes. Effect of colour in architecture, colour symbolism.

Principles of Design

Introduction of Design principles like Balance, Harmony, Rhythm, Contrast, Symmetry, Scale, Proportions etc. leading to unity in design. Application of design principles in 2D and 3D compositions. Exercises of 3D compositions to be introduced.

BARC1002 Building Construction-I

Construction Process and Components- Load Bearing Structures using Modular units-Stabilized Earth, Brick, Stone etc Types of bonds, jalis, arches, RTB, One and a half inch Brick bond.

1. Introduction to various components of a load-bearing structure
2. Sub-structure: Introduction to various methods, materials, tools and equipments used in Excavation; Foundation and Plinth.
3. Superstructure: Walls; Floors; Roofs (flat, sloping and vaults); Openings in walls- lintels (flat, corbelled, arched); sills; staircase; sun-shading devices.

Materials of B. Arch. Five Year Programme

- A. Earth, fly ash, burnt brick.- Manufacture, Classification, preparation and usage.
- B. Stone: Different types of Stone; stone blocks; slabs; tiles; etc. - Quarrying, preparation and usage.
- C. Mortars: Lime; Cement; cement- lime- Manufacture, Classification, properties and usage.
- D. Other natural materials- Bamboo/ Rotten, sand, Ash.

BARC1003 Building Structures-I

BARC1006 Architectural Graphics-I

Measuring and drawing to scale the following: furniture items, rooms, doors and windows, etc.

Orthographic Projections

Introduction to orthographic projections - isometric and axonometric projections, Planes of Projections, First angle projections, Drawing of lines, basic geometrical shapes in different positions, Projection of regular rectilinear and circular solids (prisms, pyramids, cones, cylinders, spheres etc.) in different positions, construction of plan, elevation and section of 3D objects and projections in various positions.

Surface Development

Surface development of solids and sectional solids- Study of development of surfaces, drawing of unfolded surfaces of right solids like Cubes, Prisms, Cylinders; drawing the development of the lateral surface of a pyramid & Cone.

Teaching Methodology: Faculty shall impart teaching by lecture/demonstrations; students shall undertake exercises and prepare sheets in studio.

BARC1005 Computer Application in Architecture-I

MS Office.

BARC1007 Communication

English Grammar

Simple Grammar – using appropriate words, filling of blanks, completing of sentences, active and passive voice, correcting mistakes in texts. Use of proverbs, metaphors and punctuation.

Comprehension

Reading and listening comprehension, to develop the ability to read and listen with understanding and draw reasoned conclusions. Art of notes taking from spoken and written English. Comprehension of lectures and speeches to locate key points.

Business & Technical Communication

Interpretation of materials such as questionnaires, application forms, analysis of materials such as texts, reports, technical literature. To develop the ability to write concisely and correctly and present ideas in a logical manner. Professional letters to fellow architects, clients, public authorities, contractors, enquiries to industries, dealers.

Verbal Presentations

Understanding the differences among seminars, conferences, convention, congress, debates, extempore speeches and panel discussions etc., Golden rules of verbal presentations & group discussions.

NOTE:

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Suggest Books:

1. Ching, Francis D. K. "Architecture : Form, Space and Order", John Wiley and Sons Inc.
2. McKay, W.B., "Building Construction Volume I, II, III and IV", Longmans, 1955.
3. Ching, Francis D. K. and Adams, Cassandra, "Building Construction Illustrated", Wiley and Sons, 2000.
4. Chudley, Roy, "Construction Technology", Longman, 2005.
5. Building Construction Mitchell (Elementary and Advanced)
6. Rangwala, S. C., "Building Construction", Charotar Publishing House, 2007.
7. N.D.Bhatt, Elementary Engineering Drawing (Plane and Solid Geometry), Charotar Publishing House, India.
8. Raman Meenakshi and Sharma Sangeeta, "Technical Communications – Principles and Practices", Oxford University Press, New Delhi.

Module 4		M4: Shelter	
Contacts Hours		216 (6 Weeks)	
Subject Code	Subject Name	Max Marks	Contact Hours
BARC1001	Architectural Design-I	50	86
BARC1002	Building Construction-I	25	20
BARC1004	History of Architecture-I	85	60
BARC1005	Computer Application in Architecture-I	25	30
BARC1006	Architectural Graphics-I	25	20

COURSE OBJECTIVES

1. Scale, Properties w.r.t Human Dimensions(Users),Adult/Child(Gender)

Project: Shelter

COURSE CONTENT

BARC1001 Architectural Design-I

Unit-I: Architectural Design Aspects

Basic anthropometrics, human functions and their implications for space requirements. Minimum and optimum areas for mono functions. User’s data, Movement and circulation diagrams. Spatial interpretations – various activities and their relationship with spaces.

Unit-II: Floor Space Layout

Functional furniture layout, circulation, lighting and ventilation for spaces such as living/dining, kitchen, bedrooms, Architect’s office, Doctor’s clinic, Food parlor etc.,

Unit-III: Preliminary Architectural Design

Design of simple building elements such as Entrance Gate, Welcome Arch, Memorial edifice, Bus shelter and layout of park, Design of single user units like hostel room and integration of form and function.

BARC1002 Building Construction-I

Geological, Physical and Chemical classification of rocks/stones. Common building stones used in India and their various uses in building. Characteristic properties, identification of stones, dressing of stones. Introduction of Stonework; Rubble and Ashlars masonry. Applicable IS Codes for Stones., Thatch Roof.

BARC1004 History of Architecture-I

Unit-I: Jain & Buddhist

EVOLUTION OF Jain & Buddhist Architecture; Development by Ashoka, Hinayan & Mahayan styles of Buddhist architecture, Stupas, Monolithic Pillars, Rock cut architecture (Chaityas & Viharas), Monestries, Rock edicts, Gandhar style.

Unit-II: Evolution of Temple Architecture

Beginning of Hindu Temple Architecture under the Guptas and Chalukyas.

Architectural features of buildings/temples, construction technology, building materials of Chalukyan style; Early Chalukyan Architecture, Later Chalukyan Architecture. Evolution at Badami, Aihole and Pattadakal, examples such as Ladh Khan, Durga, Maleguti, Papanath Temple.

Unit-III: Developments in Temple Architecture

Architectural features of buildings/temples, construction technology, building materials of Indo Aryan Style; Orissa Style – Kalinga Style, Khajuraho Style, Gujrat & Rajasthan Style. Dravidian Style; Pallava Style, Chola Style, Pandya Style, Vijayanagar Style.

Late Pandya Style or Madura Style..

BARC1005 Computer Application in Architecture-I

Auto CADD 2D

BARC1006 Architectural Graphics-I

Unit-II: Aesthetics

Introduction to aesthetics and interpretation of its meaning, aesthetics (rasa) in artworks, definition of beauty, three basic parameters of judgment of art works (skill, originality & aesthetic quality), relation between art and life, application of aesthetic theories in visual arts.

NOTE:	Internal and external exams shall be carried out by a Jury of Internal & External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.
	Site Visit- Religious Place, Monumental Scale or Human Scale.

Suggest Books:

2. Ching, Francis D. K. "Architecture : Form, Space and Order", John Wiley and Sons Inc.
3. Lidwell, William, Holden, Kestina, Butler, Jill, "Universal Principles of Design", Rockport – Publications, Massachussets.
4. "Neufert Architect's Data", Blackwell Publishing.
5. Donald Watson and Michael J. Crosbie, "Time – Saver Standards for Architectural Design, Technical Data for Professional Practice", McGRAW - HILL.
6. Percy Brown, Indian Architecture (Buddhist and Hindu period), D.B.Taraporewala Sons & co Pvt. Ltd. 1965
7. Satish Grover, The Architecture of India- Volume 2, Vikas, 1980.
8. Christopher Tadgell, Indian & South Asia: The Buddhist & Hindu Tradition, Ellipses, 1998.

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Module 5		M5: Presentation	
Contacts Hours		72 (2 Weeks)	
Subject Code	Subject Name	Max Marks	Contact Hours
BARC1005	Computer Application in Architecture-I	65	72

COURSE OBJECTIVES

- 1.
- 2.

Project: Portfolio Compilation of Semester-I

COURSE CONTENT

BARC1005 Computer Application in Architecture-I

Adobe in Design, Presentation methods

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
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Module 6		M6: Universal Design	
Contacts Hours		72 (2 Weeks)	
Subject Code	Subject Name	Max Marks	Contact Hours
BARC1009	Architectural Design-II	10	26
BARC1015	Surveying & Leveling	100	26
BARC1016	Climatology-I	100	20

COURSE OBJECTIVES

- 1.Effect of Climate on Building.
- 2.To able for producing measure drawing.

Project: Climate responsive Façade Design.

COURSE CONTENT**BARC1009 Architectural Design-II**

Design of mono-cellular-unit/structure on a level plane, designing of simple activity spaces, Designing of multiple but simple activity spaces involving primarily horizontal circulation

BARC1015 Surveying&Leveling

Unit-I: Plane Surveying and Theodolite

Introduction to plane surveying, conventional tape measurement, electronic distance measurement – Meridians, Azimuths and bearings – Theodolites – Temporary and permanent adjustment – Horizontal and Vertical angle measurements – Electronic total station.

Unit-II: Leveling and Contouring

Differential leveling, Longitudinal & cross section leveling, Refraction & curvature correction, Reciprocal leveling -Tachometry – Stadia tachometry, tangential tachometry & substance tachometry- Contouring.

Unit-III: Calculation of Earthwork and GPS

Area, volume calculation of earth work – Introduction to Global positioning system – GPS surveying methods.

Unit-IV: Curve Surveying

Definitions, designation of curve, elements of simple curve - Settings of simple circular curve, Compound and reverse curve- Transition curve – Introduction to vertical curves.

Unit-V: Geodetic surveying

Introduction to geodetic surveying, Triangulation surveying – Base line measurement & correction, Satellite station. Surveying adjustments – Principle of least square and adjustment of triangulation network.

BARC1016 Climatology-I**Unit - 1**

Historical Background: Club of Rome, “Limits of Growth”, The Brundtland Report (UN), An Inconvenient Truth; these texts are to be read to understand the history of environmental degradation and the concepts that underlie a strategy towards sustainable habitat. The Changing Climate, Factors Responsible for Change, Global Warming, Ozone Depletion, etc.

Interrelation between natural and built environment: An Overview Mapping the ecology of settlements and buildings Water and Waste cycles; energy demand for production, transportation, construction and operation of buildings; material consumption and natural resources Water: conservation, harvesting, recycling. Waste: minimizing, recycling, eliminate toxicity and

SYLLABUS of Energy Conservation: Five Year Program, renewable sources: wind, solar, geo-thermal, bio-fuels. Materials: minimizing, recycling, reducing energy content, life-cycle cost.

Unit-2

Concept of Sustainable development, Case Studies of traditional / vernacular buildings and settlements demonstrating relationship between climate, local material resources and settlement/building forms. The “natural” or landscape environment as an aspect of deliberate design. Case study illustrating traditional concepts of “garden”, “park”, relationship with river, lakes, drawn from different cultures. Analysis of contemporary city (case-study) and its challenges of environmental sustainability- Energy, water, waste, air quality, transportation vis-à-vis the integration of open space, water bodies and other natural systems into city form.

Unit-3

- a) Introduction to Climatology, Relation to Architecture, Macro and Micro Climate, Climatic Zones. Climatic data- parameters- relevance to design of built environment. Describing climate-climate summary chart, solar geometry- sun path diagram, heating and cooling periods. Psychrometric charts.
- b) Thermal Comfort: Factors and Balance, Body's Mechanism of Heat Production and Loss, Methods of Heat Transfer, Comfort Scale, Effective Temperature, operative temperature, CET, Adaptive comfort.
- c) Heat transfer in Buildings: Sol Air Temperature, Solar Gain Factor, Thermal Quantities: Temperature, Heat, Heat Flow Rate Specific Heat, Conductance, Resistance, Surface Conductance, U value, Periodic Heat Flow, Time Lag & decrement factor, Effect of Different Materials, Effect of Multilayered Bodies - Insulation/Cavity (Ecotect software may be used). Ventilation: Principles of Ventilation in Buildings.

Unit-4

Architectural Design as a Response to Climate: Tool for Design in All climatic Conditions of India- Microclimatic Factors: Landform, topography, vegetation type and pattern, water bodies, street widths and orientation, ground character. Plan form and elements, building orientation, roof form, fenestration pattern, orientation and configuration, controls like shading devices, design of shading devices using available software's. Walls, choice of materials, roof materials, external colours and textures, layouts and internal finishes. (Ecotect and sketch up software may be used). Solar Passive Heating and Cooling Systems, roof pond, trombe wall, green house, air flow, stack effect, wind tower, earth air tunnel. Examples of Vernacular architecture of different climatic zones may be used to illustrate the above design processes.

Site visits

- Duration of site visits shall be extended
- 3-4 days study tour to a different climate zones

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	Site Visit- Three to Four days educational trip to a different climatic zone.

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Module 7		M7: Moments	
Contacts Hours		72 (2 Weeks)	
Subject Code	Subject Name	Max Marks	Contact Hours
BARC1009	Architectural Design-II	10	26
BARC1011	Building Structures-II	100	46

COURSE OBJECTIVES

1. Natural Form, Kinetic Sculpture
- 2.

Project: turning torso, hands in motion

COURSE CONTENT**BARC1009 Architectural Design-II**

Unit-I: Architectural Design Aspects

Basic anthropometrics, human functions and their implications for space requirements. Minimum and optimum areas for mono functions. User's data, Movement and circulation diagrams. Spatial interpretations – various activities and their relationship with spaces.

Unit-II: Floor Space Layout

Functional furniture layout, circulation, lighting and ventilation for spaces such as living/dining, kitchen, bedrooms, Architect's office, Doctor's clinic, Food parlor etc.,

Unit-III: Preliminary Architectural Design

Design of simple building elements such as Entrance Gate, Welcome Arch, Memorial edifice, Bus shelter and layout of park, Design of single user units like hostel room and integration of form and function.

BARC1011 Building Structures-II

Unit I: Introduction to Mechanics & Equilibrium of Forces

Fundamental Principles - Vectorial Representation of Forces and Moments - Coplanar forces - Resolution and Composition of forces and equilibrium of particles – introduction of Forces on a particle in space - Equivalent system of forces - Principle of transmissibility - Single equivalent force - Free body diagram - Equilibrium of rigid bodies in two dimensions and three dimensions and Introduction to Friction - Laws of Coulomb Friction - Equilibrium of Bodies involving Dry friction. Application

Unit II: Properties of Surfaces and Solids

Centroid - First moment of area - Theorems of Pappus and Guldinus - Second moment of area - moment and Product of inertia of plane areas - Transfer Theorems - Polar moment of inertia - Principle axes - Mass moment of inertia

Unit III: Engineering Dynamics

Kinematics of particles - Newton's second law - D'Alembert principle - analysis of lift motion - linear and angular momentum - Work and Energy - work done by a force and spring - kinetic energy and work-energy principle - application of the work and energy principle - Impulse and Moment - Introduction to momentum principle - conservation of total momentum of particle - Application of principle of impulse and momentum.

Physical activities

Human pyramids/ towers etc in groups

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SYLLABUS of B. Arch. Five Year Programme

Module 8		M8: Context	
Contacts Hours		216 (6 Weeks)	
Subject Code	Subject Name	Max Marks	Contact Hours
BARC1009	Architectural Design-II	50	15
BARC1009	Study Tour	48	15
BARC1009	Landscape Design	16	5
BARC1010	Building Construction-II	18	35
BARC1012	History of Architecture-II	38	100
BARC1014	Architectural Graphics-II	46	40

COURSE OBJECTIVES

1. Understanding context w.r.t historic site.
2. Graphical representation of landscape and built form/space

Project: Documentation of historical site with design intervention (INTACH/ IUDI)**BARC1009 Architectural Design-II**

Focus will be on the site and context and their relationship to the built environment.

Activities, services and construction methods, phenomena of social utilizations, growth and change shall also be studied and analyzed. Introduction to element of site-planning and landscaping.

Design of a group of buildings set in the context of the study with a focus on site and context.

The design of the environment outside the building.

BARC1009 Study tour

Nearby historic monuments

BARC1009 Landscape

trees as landscaping element: Classification of Plants - Trees, shrubs, groundcovers, flowering plants.

Selection criteria of plants on the basis of visual, functional, micro climate and ecological aspects.

BARC1010 Building Construction-II(18 Contact Hours)

Introduction to secondary elements door, windows, railing and sunshades etc.

timber sawing and seasoning, timber products, roof tiles, and sheets, studio exercise on door and window details, timber trusses and miscellaneous joinery, workshop, in carpentry and joinery, fixing of frames in masonry, simple wall and floor finishes.

BARC1014 Architectural Graphics-II(46 Contact Hours)

Freehand drawing – Use of various drawing and sketching tools like pencils, ink pens, charcoal pencils etc. for freehand sketching. Exercises in free hand drawing of domestic furniture, street furniture, human beings, cars, trees, nature and still life etc incorporating various rendering skills and techniques to represent texture, material and finishing

BARC1012 History of Architecture-II(38 Contact Hours)**Unit-I: Introduction to Islamic Architecture**

Introduction and understanding of “Islam’s” philosophy and its interpretation in building types – Mosque, Tomb, Fort and their elements like dome, arches, minarets etc. Typical Layout of Mosque, its features and related nomenclature.

Unit-II: The Imperial Style

With reference to the Slave, Khalji, Tughlaq, Sayyid& Lodi Dynasties. Explanation with examples of the buildings, construction technology, building materials used, evolution of form and development with significant changes over the time period.

Unit-III: The Provincial Style

Architecture at Punjab & Bengal, Gujrat, Bijapur, Jaunpur, Malwa, Deccan and Avadh. Explain with examples of the buildings, construction technology, building materials used, evolution of

SYLLABUS of B.Arch Five Year Programme
Form and Development with significant changes over the time period.

Unit-IV: Mughal Architecture

Concepts of city planning of various Islamic towns like Shahajahanabad and FhatehpurSikri. The Architecture developed under the rein of Babur, Humanyu, Akbar, Shahajan Period and later Mughal period and its implication on Indian traditional architecture.

Explain with examples of the buildings, construction technology, building materials used, evolution of form and development with significant changes over the time period.

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
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SYLLABUS of B. Arch. Five Year Programme		M9: Arboretum	
Contacts Hours		216 (6 Weeks)	
Subject Code	Subject Name	Max Marks	Contact Hours
BARC1009	Architectural Design-II	40	125
BARC1010	Building Construction-II	65	31
BARC1017	Building Services-I	100	35
BARC1013	Computer Application in Architecture-II	100	25

COURSE OBJECTIVES

1. Timber as material and joinery details
2. Basics of plan and elevation

Project: Timber kiosk and tree house

BARC1009 Architectural Design-II Construction

BARC1010 Building Construction-II

Unit-I: Timber and Wooden Products

Timber: Definition, obtaining timber from nature (Selection, Felling and Transportation), Conversion of timber, Seasoning, Storage, Defects in timber and its preservation. Use of different types of wood in various parts of building. Industrial timber: veneers, plywood, fibreboard, etc. Bamboo: Basic concepts to use it as a building material. Applicable IS Codes for Timber.

Carpentry in workshop

Timber Joinery; types of joints, lengthening and widening joints, common joints for various building and furniture works.

Types, Classification, Usage & the application of various tools & machinery used in the process.

Unit-III: Wooden Doors & Windows

DOORS: Details of doors which will include Basic Doors (Battened /ledged/Braced door), Flush Doors (both solid & hollow core flush doors) & Panelled Door (both single & double shutter panel doors – in timber, wire mesh & glazed panel door.)

WINDOWS: Types of window which will include Casement window, fully glazed window, Ventilator Simple & pivoted, Fixed Glass window, louvered window, corner and Bay window.

Hardware related to wooden doors & windows. Design & Details of Casement window. Introduction to Carpentry tools & basic techniques of carpentry; sawing, cutting, planning, chiseling and finishing. Understanding of timber joinery in construction and basic wooden joints for doors, windows and furniture.

BARC1017 Building Services-I (35 contact Periods)

Plumbing & Electrical

Unit-I: Water Supply Requirements

Introduction to Water Supply; Water Requirement for different building types; storage, Storage and Distribution of Water - Different methods of water distribution boosting water, gravity and pressure distribution by public reservoirs / OHT to individual buildings. Potable Water Standards, Domestic water demand, capacity of overhead tanks and calculation of water consumption.

Unit-II: Water Distribution Systems (6 contact Periods)

Water distribution networks; Cold and hot water distribution within the building. Specifications and sketches of various plumbing fittings for buildings. Uses of valves, taps, and their different types. Layout of water supply lines in a domestic building.

Unit-III: Drainage Systems

Basic Principles of Disposal of Waste water
 Basic Principles of Disposal of Waste water from buildings. Systems of drainage – separate, combined and partially separate system, advantages and disadvantages of each system. Concept, design and detailing of rainwater harvesting systems. Study of sanitary fittings, washbasins, WC’s, bathtubs, sink, urinals, bidets, flushing cistern, traps etc. Proper location and ventilation of traps, intercepting chambers and inspection chambers.

Unit-IV: Sanitation- Sewerage

Introduction, importance and purpose of sanitation, terminology and definitions; bacteria, invert, sewer, sewerage, refuse, collection and disposal of refuse. Man holes – drop manholes, manhole with intercepting trap, inspection chambers, self cleansing velocity, drains on sloping sites, sub soil drainage, storm water disposal – catch basins, inlets, storm water regulators. Septic Tanks; Capacity calculations and Details of a Septic Tank, soak pit, soak well, design aspects, disposal of effluent. Systems of plumbing – single stack, one pipe, one pipe partially ventilated, two pipe disposal of waste water from buildings.

Unit V: Electrical Services

Importance of electrical services in buildings, introduction to commonly used terminology. Supply and distribution of electricity to buildings – substations (including – high tension panels, Transformers, low tension panels, generators) and overhead versus underground distribution systems, electrical panel boards (types, sizes, layout standards) etc., Internal supply and distribution – brief description of various cabling types, conduit, PVC casing and Capping wiring systems; Earthing and brief description of protective devices – fuses, MCB’s, ELCB, etc., Electrical load estimation, Introduction to power and lighting circuits. Indian Electricity Rules-Relevant codes of Practice.

BARC1013 Computer Application in Architecture-II(25 contact Periods)

Google Sketch Up+ V-ray

Basics of Google Sketchup, Drawing & Measurement Tools, creation of geometrical shapes & forms, union and intersection of forms. Application of colour & materials. Introduction to editing tools, modifying existing shapes and forms, 3D drawings with site and surroundings, sciography & rendering in 3D drawings. Concept of camera and walkthrough.

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SYLLABUS of B. Arch. Five Year Programme

Module 10		M10: Sciography	
Contacts Hours		72 (2 Weeks)	
Subject Code	Subject Name	Max Marks	Contact Hours
BARC1014	Architectural Graphics-II	60	64
BARC1009	Architectural Design-II	05	08

COURSE OBJECTIVES

- 1.to study and learn live sketching (building perspectives) **to produce illusions, 3D perspectives**
- 2.understanding light, shades, shadows and depth 3D forms to **produce depth in depth in drawings.**

Project: Charcoal Studies

BARC1009 Architectural Design-II

Reading:to produce short articles

Introduction Importance of architectural research and writing.
 Technical Writing Language, Impersonal and formal language, Elements of style, Techniques.
 Book Reviews Basics of reviewing a book.

BARC1014 Architectural Graphics-II

Unit-I: Metric Drawing

Types, uses and advantages, Isometric, Axonometric and Oblique views, Metric Drawing and projection and their Dimensioning, Metric of plane figures composed of straight lines, Metric drawing of simple and complex block.

Unit-II: One Point Perspective

Purpose and use of perspectives, Anatomy of a perspective-cone of vision, station points, picture plane, eye level horizon line, ground line, vanishing point, etc, One point perspective of simple objects, combination of geometrical forms, One point perspective of Interiors, Perspective of simple household furniture items. Building exterior and interior perspectives.

Unit-III: Two Point Perspective

Introduction to two point perspective, perspective of simple blocks. Preparation of Perspective by innovative methods like approximate method, Diagonal Method, Grid Method etc.Other innovative methods of perspective presentation.Introduction to shortcut methods in perspective drawing.Freehand perspective drawing.

Unit-IV: Sciography

Principles of drawing shade and shadow with point source of light and light from Sun. Drawing exercises of sciography of simple objects on ground, simple building element (projections like sunshade) on walls.Sciography of complex and curvilinear elements on ground and on walls.

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SYLLABUS of B. Arch. Five Year Programme

Module 11		M11: Large Span	
Contacts Hours		72 (2 Weeks)	
Subject Code	Subject Name	Max Marks	Contact Hours
BARC2001	Architectural Design-III	10	36
BARC2002	Building Construction-III	05	08
BARC2003	Building Structures-III	45	28

COURSE OBJECTIVES

1. To understand aspects of large spans w.r.t Trusses
2. Anatomy of trusses

Project: Vector Bridge (Truss)**BARC2001 Architectural Design-III**

Model making, truss design and analysis.

BARC2002 Building Construction-III

Types of wooden and steel trusses, related terminology and their applicability for various uses. Detailing of timber/ steel trussed roofs, Truss lighting (North lighting), Tubular steel trusses, north light glazing, roof covering/sheets and drainage details of trussed roofs. Steel as construction material. Riveted, bolted and welded joints, steel foundation.

BARC2003 Building Structures-III**Trusses**

Roof Trusses - Calculation of dead load, live load, wind load and earthquake load - Design of joints – supports - members for pitched roof truss and purlins.

IS codes for steel

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SYLLABUS B. Arch. Five Year Programme		M12: Order in Architecture	
Contacts Hours		72 (2 Weeks)	
Subject Code	Subject Name	Max Marks	Contact Hours
BARC2001	Architectural Design-III	10	36
BARC2002	Building Construction-III	10	12
BARC2004	History of Architecture-III	100	24

COURSE OBJECTIVES

1. Depicting expression, context, spatial via built form and materials
2. Relation between history and technology

Project: landmark through design

BARC2001 Architectural Design-III

Order in architecture, An insight into concepts of architecture: space, form, enclosure and quality of space, principles of design like harmony, symmetry etc. and their application. Interrelationship of architectural space to form, structure, and materials to help students develop a visual and tacit structural understanding through models and installations.

BARC2002 Building Construction-III

LIME: Classification of lime, fat and hydraulic lime; properties and use.

CEMENT: Composition and manufacturing of cement. Function of cement ingredients; setting, hydration and hardening of cement. Properties of cement – Fineness, Soundness, Setting time, etc. Grades of cement and different types of cement used in construction. Storage of cement on site.

Applicable IS Codes for Lime & Cement.

Teaching Methodology: Faculty shall impart teaching by lecture/presentations; students shall prepare sheets (on topics made italics) with applicable construction details in studio. Market survey of building materials shall be carried out as a group exercise.

BARC2004 History of Architecture-III

Unit-I: History of Western Architecture

Mesopotamian Civilization, Babylonian, Assyrian, Architectural characteristics, Art Form – explain with examples of the buildings, construction technology, building materials used, evolution of architectural form and developments with significant changes over the time period.

Unit-II: Greek Architecture

Classical orders and constituent elements of architecture - Column orders and the articulation of temples. Classification of temples, Geometry and symmetry of individual buildings and their relationship with others based on different organizing principles and conditions of site. Study of importance- Acropolis, Agora, Temples, Theatres, Tombs and House forms.

Unit-III: Roman Architecture

Introduction to building types to correspond the complex social functions and structure. Concrete and construction of vaults and domes. Uses of classical orders in surface articulation. Study of important forums, Temples, Basilicas, Theaters, Amphitheaters, Circuses, Tombs, Triumphal arches, palaces, houses and villas.

Unit-VI: Early Christian Architecture & Byzantine Architecture

Development of early church and Roman basilica. Interiors of churches and the articulation of interiors to create spiritualized space. Study of Italian basilicas and churches.

Centrality and interiors of both cross domed and cross in square plan churches. Study of Interior and Exterior of churches. Construction of domes over polygonal compartments through the use of pendentives.

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
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SYLLABUS	of SB. And for Five Years Programme Internal and External Exams shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.
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Module 13		M13: RCC	
Contacts Hours		216 (6 Weeks)	
Subject Code	Subject Name	Max Marks	Contact Hours
BARC2001	Architectural Design-III	25	84
BARC2002	Building Construction-III	50	60
BARC2003	Building Structures-III	55	36
BARC2005	Computer Application in Architecture-III	65	36

Project: G+1 Residence, Farm House etc.

BARC2001 Architectural Design-III

BARC2002 Building Construction-III

Column, beams, slabs, RCC foundations, retaining walls, basic reinforcement details, DPC, staircase, expansion joints in RCC, introduction to folded plate and form active structures

BARC2003 Building Structure-III

Unit I: Simple and Built-up Beams

Introduction to need and types of connection in building structures - Design of Connections: Riveted, Welded and Bolted - Design of beams - simple and built-up beams - laterally supported and unsupported beams - concept of shear.

Unit II: Design of Compression Member

Design of column – Built up column – Lacing - Batten

Unit III: Plate Girders

Introduction to Plate Girders and related terminology - design of plate girders - curtailment of flange plates - design of stiffeners and splices – concept of gantry girder.

BARC2005 Computer Application in Architecture-III

Acad 3D

Introduction to 3D modeling; Basic commands and usage of 3D drawing. Drafting basic geometrical forms and combinations of the same in three dimensions, editing of simple geometrical forms, addition and subtraction of 3D forms, Understanding Coordinate Systems and use of UCS. Introduction of solid modeling. Learning solid modeling commands, editing solid modeling. Working on different planes. 3D surfaces setting up elevation thickness and use of dynamic projections in ACAD. Exercise on wire mesh modeling.

Climatology

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
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SYLLABUS of B. Arch. Five Year Programme

Module 14		M14: Urbane	
Contacts Hours		216 (6 Weeks)	
Subject Code	Subject Name	Max Marks	Contact Hours
BARC2001	Architectural Design-III	40	108
BARC2002	Building Construction-III	35	40
BARC2007	Building Services-II	100	48
BARC2005	Computer Application in Architecture-III	35	20

COURSE OBJECTIVES

1. Developing design brief based on applicable existing legislation on given site.
- 2.

Project: institutional, public building, commercial at neighborhood level

BARC2001 Architectural Design-III

Introduction to building types and Density typology.

Bye Laws (24 Contact Periods)

Introduction to Building Bye Laws Introduction to building bye laws and regulation, Need and relevance, General definitions such as building height, building line, FAR, Ground Coverage, Set Back Line. Role of various statutory bodies governing building works like development authorities, municipal corporations etc. Introduction to Master Plan and understanding various land uses and related terminology.

Development Authority Familiarizing with Building Bye-laws through NBC & Local Development Authority, State Housing board, etc. Interpretation of the Bye Laws applicable to residence in plotted developments, Group Housings, Commercial Buildings, Educational Buildings and other Public Institutions.

Other Authorities Various other statutory controlling authorities e.g. Water, Electricity, Fire, Airport, Archaeology

BIS Codes Introduction to various BIS codes in building industry

BARC2001 Landscape, Circulation (30 Contact Periods)

Soft and hard pavement, ROW, road width, types of open spaces, street and road typology

BARC2002 Building Construction-III

(nbc)

BARC2007 Lighting

Quality and quantity of light; Definitions of related terminology. Requirements of lighting as per NBC 2005 for various tasks. Methods of lighting: ambient, task and accent lighting Systems of luminaries: direct, indirect etc. Various types of electrical lamps – incandescent, fluorescent/CFL, HID's, neon, CFL & LED lamps and their lighting characteristics. Design considerations for different types of occupancies and tasks, Preparation of a lighting and electrical scheme. Lighting Design; Total Lumen Method & Falling Flux Method.

BARC2005 Computer Application in Architecture-III**Photoshop**

Advanced 3D creation and rendering, Material application, Lighting, Camera setting, Background, Scenic development for still 3D images and their final editing in Photoshop.

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
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SYLLABUS	Internal Marks Programme awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.
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Module 15		M15: Street Sculpture	
Contacts Hours		72 (2 Weeks)	
Subject Code	Subject Name	Max Marks	Contact Hours
BARC2001	Architectural Design-III	15	44
BARC2006	Sociology & Psychology	100	28

COURSE OBJECTIVES

1. Using social and Psychological survey to understand user needs.
2. Understanding relation between need and form, expression of user/ people.

Project: Street Installation/ Furniture.

BARC2001 Architectural Design-III

User oriented design, understanding client behavior levels.

Art studio

Develop a hands on approach, skills of working with different materials and the ability to choose an appropriate material as and when required for presentation or design purposes. Working with model making materials like thermocol, paper, wire etc. Basic workshop techniques for carpentry and joinery, sheet metal work, fabrication and foundry as an extension to Building Construction course.

BARC2006 Sociology & Psychology

Nature, scope and utility of Sociology, relation between Sociology and society. Human Development Index, Essential elements of society, bio-social and socio-cultural systems. Rural and urban communities and their characteristics. Origin, growth and influence of cities. Definition of urbanization – patterns of life and influence of urbanization on rural life, urbanization process in India.

Migration and its impact on urbanization, social problems of urbanization – problems relating to public health, public transport and public housing, sociological understanding of slums. Social surveys and Social research – principles of social research, scope of research, units of study, choice of research topics, sources of information, literature review – official and unofficial documents, library references, publication etc., Field survey – adoption of suitable techniques in field research viz., Questionnaires, interview, case study etc., analysis and classification of data.

Psychology(15 Contact Periods) Social Psychology.

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SYLLABUS of B. Arch. Five Year Programme

Module 16		M16: Expressionism	
Contacts Hours		72 (2 Weeks)	
Subject Code	Subject Name	Max Marks	Contact Hours
BARC2009	Architectural Design-IV	10	36
BARC2004	History of Architecture-III	100	36

COURSE OBJECTIVES

1. Understanding and development of Art in ages.
2. Projecting Future /developing imagination.

Project: Painting

BARC2009 Architectural Design-IV

Utopia / Futuristic design ex. School classroom

BARC2004 History of Architecture-IV

History of Art. Art through the ages, architecture as art, milestones in art from the prehistoric, Paleolithic, Neolithic, classical, medieval, renaissance and modern periods. Indian art heritage, Indus valley to the present day.

Art- Use of different Art mediums and techniques water color, etching.
Sectional Views.

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
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SYLLABUS B. Arch. Five Year Programme		M17: RCC	
Module 17		72 (2 Weeks)	
Contacts Hours			
Subject Code	Subject Name	Max Marks	Contact Hours
BARC2009	Architectural Design-IV	05	16
BARC2010	Building Construction-IV	15	20
BARC2011	Building Structures-IV	100	26
BARC2013	Computer Application in Architecture-IV	20	10

COURSE OBJECTIVES

1.

Project: Design of a Hall, Library, Multi-purpose hall and Auditorium approx. 200 Sq.mt.

Examples-IIC, VikasBhawan, ITO, HUDCO Palace.

Sheets / Drawing in one of the methods below.

Deliverables- Design based and Report on Pre- fabrication/ Pre- casting theories.

BARC2009 Architectural Design-IV

BARC2010 Building Construction-IV

Unit 1 Prefabrication Systems – open prefab system, large panel prefab system, joints, pre-casting methods, materials, on-site and off-site prefabrication, components, etc.

Unit 2 Pre-stressed Concrete Introduction, methods of pre-stressing and their application to large-space structures.

Unit 3 Speedy Construction Methods, Types of floor construction - Beam & Slab, Waffle Grid Slab, Drop Beam & Slab, Flush Slab, Lift Slab Construction; Cast-in-situ service & stair cores; Cross wall & Box frame construction.

Unit 4 Industrial Construction Structural Steel Works: Portal Frame Construction, north-light truss and lattice girder roof with various roof coverings.

BARC2011 Building Structures-IV

Unit-I Introduction to Shear and Development Length in Beams.

Understanding of Shear stress, Diagonal tension, Shear reinforcement, Spacing of shear reinforcement, Problems of shear reinforcement, Development length, Anchorage bond, Flexural bond.

Unit-II Analysis & Design of R.C.C. Beam (Simply Supported & Cantilevered).

(Limit State Method) Analysis & Design of R.C.C. singly reinforced & doubly reinforced rectangular and flanged (L & T) beam sections.

Analysis & Design of R.C.C. Beam (Continuous).

(Limit State Method) Analysis & Design of R.C.C. continuous Beam.

Analysis & Design of R.C.C. Flat Slab.

(Limit State Method) Analysis & Design of R.C.C. flat slab.

Analysis & Design of R.C.C. Cantilever

Retaining Wall (Limit State Method) Introduction, Type of retaining walls, Analysis & Design of Cantilever retaining walls and detailing of its reinforcement.

Unit-III Analysis & Design of R.C.C. Stairs (Limit State Method)

Introduction, Types of stairs, Effective span of stairs, Loading on stairs,

Analysis & design of stairs (dog legged with waist slab) and detailing of its

Reinforcement.

BARC2013 Computer Application in Architecture-IV

MS Office- Project

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
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SYLLABUS	S / P Internal Marks Programme S / P Internal Marks Programme awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.
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Module 18		M18: Decoding Patterns	
Contacts Hours		216 (6 Weeks)	
Subject Code	Subject Name	Max Marks	Contact Hours
BARC2009	Architectural Design-IV	150	50
BARC2010	Building Construction-IV	20	15
BARC2014	Architectural Graphics-III	46	100

COURSE OBJECTIVES

1. understanding patterns from city core to a room
2. relation of space and form in different scales

Project: Issue/context based design intervention (deep dive studios)

BARC2009 Architectural Design-IV

(hierarchy based) figure ground, site analysis, site inventory.
Study of the built environment and to develop a basic understanding of space and form. Looking at the immediate built environment and understanding its fundamental components and their impact on the surroundings.
Drawing techniques and methods.

Deep dive studios

Systems approach/ scientific approach

Concept

To introduce significance of theoretical and philosophical dimensions in architecture. The course would be run as a series of demonstrations of most of the topics below with chosen case examples across time and space, along with selected lectures on fundamental aspects.
Syllabus:

- Objective knowledge vs. Subjective Ideas,
- Distinction of & relationship between Science and Philosophy.
- Rational process and Empirical process
- Rules, Formulas, Principles and Theories.
- Accuracy vs. Indeterminacy in Design
- Analytic approach vs. Mimetic approach
- Old Architectural treatises in Europe and India

BARC2009 Study tour

City Core

BARC2010 Building Construction-IV

Documentation of outdoor spaces / mapping / photography / overlays

BARC2014 Architectural Graphics-IV

Basic Design and Communication Graphics. Studies in composition, scale and proportion, rhythm, harmony and character, diagrams, ideograms, business graphics, skills and presentation techniques.

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SYLLABUS of B. Arch. Five Year Programme

Module 19		M19: Experimental Architecture	
Contacts Hours		216 (6 Weeks)	
Subject Code	Subject Name	Max Marks	Contact Hours
BARC2009	Architectural Design-IV	35	98
BARC2010	Building Construction-IV	70	83
BARC2015	Building Services-III	100	35

COURSE OBJECTIVES

1. To produce a set of working drawing and GFCs of previously done project(residence /farm house)
2. Introductions of isms in architecture

Project: working drawing and GFCs of Farm House

BARC2009 Architectural Design-IV

fluidism, morphoism, biomimicryetc

BARC2010 Building Construction-IV

(workingdwgs, roofing systems)

Unit-I: Introduction to Working Drawings

Introduction to Type of Drawings and Schedules to be prepared for building construction purposes. Introduction to various components, list of drawings, details and their purpose/function in a set of working drawings of a medium and large project. Established practices of providing Allied information/ Notes to be provided on various types of drawings. Check list as guide for preparation and checkingof working drawing and details.

Unit-II: Drafting Conventions

Aspects of Architectural Drafting for GFC including Line work, Grids, Lettering, Dimensioning, Annotation, Title block(s), Office standards, Representation of different materials, Schedules / Tablesand Notes on GFC Drawings. Drafting Conventions and Symbols, type of tags and graphic symbolsused in GFC drawings. Method of representing various contents and specific information in workingdrawing / details.

Unit-III: Roofing Systems & Materials

Types and Forms of Roof; simple flat, jack arch, lean to roof and coupled roofs; Method of construction of RCC roofs including terracing details; Coffered Slab, Flat Slab & Hollow roof construction; Construction of domes (methodology), vaults and shell roofs. Roofing Materials & Terracing Details.

BARC2015 Building Services-III**Unit-I:** HVAC Services

Need for mechanical ventilation in buildings. Rate of ventilation for different occupancies. Methods and equipment employed for mechanical ventilation in buildings.

Brief introduction to psychometric process, air cycle and refrigeration cycle. Summer and winter airconditioning,calculation of air conditioning loads, Zoning: purpose and advantages. Air-distributionsystems: Ducts and duct systems. Air-outletsAir-conditioning methods and equipment: window units, split units and central Air conditioningsystems. Location of air-conditioning equipment in buildings. Architectural requirement of variousequipment

Unit-II: Lifts & Escalators

Brief history-types of Elevators like traction, Hydraulic etc., Double-decker, sky lobby, lift lobby, liftinteriors etc., Definition and components of Elevator in a building: environmental considerations i.e.,location in building, serving floors, grouping, size, shape of passenger car, door arrangement etc.,Service requirements: Quality of service, quantity of service, time, passenger handling capacity, spaceand physical requirements, machine room spaces and their typical layout.

SYLLABUS of Design Five Application, Capacity, Location and Arrangement in buildings.
Escalators, Elevators, Spacerequirement, Conveyor belts-movement of passengers and goods

Unit-III: Fire and life safety

Introduction to fire & life safety regulations as per NBC (Part-4)

Module 20		M20: estimation and specification	
Contacts Hours		72 (2 Weeks)	
Subject Code	Subject Name	Max Marks	Contact Hours
BARC2013	Computer Application in Architecture-III	10	42
BARC2016	Estimation and Costing	100	30

COURSE OBJECTIVES

1.

Project: Portfolio/Brochure/Coffee Table book of Work

BARC2013 Computer Application in Architecture-IV

Revit and BIM

Unit-I: Introduction to BIM

Introduction to BIM, Concepts & Principles, User-Interface, Viewing the Model, Resources. Understanding terms, elements and properties. Creating a project in BIM environment, creating levels and grids, creating conceptual design.

Unit-II: Basic Modeling

Modeling of walls, windows, doors, setting view range, components, columns, roof, ceiling, floors, openings, surfaces, stairs, ramps, railings, curtain elements.

Understanding families and working with families, family editor, creating a component, in-place components, reference planes, voids, join/cut geometry. Rooms and areas.

Unit-III: Annotation and Visualization

Annotations; grids, dimensions, text, tags, rooms, schedules, sheets, symbols, creating views. Setting of colour schemes, legends, openings.

Visualization; rendering, materials, lights, paint tool, decals.

Project phasing, detailing and preparing construction documents.

Unit-IV: Site and Solar Studies

Site, topo-surface, building pads, divided surface, creating topo-surface from CAD contours, massing studies.

Setting up and creating solar studies. Applying and removing constraints.

BARC2016 Estimation and costing

Unit-I: Procedure of Estimation

Introduction to Building Estimate and its need, importance of estimation, types of estimates, mode of measurement of various items.

Procedure of estimating and preparation of Bill of Quantity (BoQ) – Method of building estimates; estimation of earth work, PCC, brick work, DPC, RCC works, plastering, stone and tile works, wood work, water supply and sanitary work. Estimating of quantities of materials like cement, sand, aggregate, brick, reinforcement, tiles, structural steel for trusses, paints used in building, ACP, paneling and cladding, joinery etc.

Unit-II: Specifications

Syllabus of B.Tech. Fifth Year Program
SYLLABUS of B.Tech. Fifth Year Program (conforming to IS codes) for all items of works in the construction of a compound wall, septic tank, load bearing residential building, RCC framed office building, factory building with truss, etc; Specification of special items like false ceiling, decorative elements, flooring, wall cladding etc.

Unit-III: Analysis of Rates

Definition; method of preparation; quantity and manpower estimate for unit work.

Analysis of rates for items in building works like earth work, concrete works, first class brick work, reinforced brick and concrete work, cement plastering, DPC with cement mortar/ concrete, finishing (cement paint, distemper, acrylic emulsion, enamel paint) to walls & ceiling.

Local Schedule of Rates, market rates, measurement book, Running Account (RA) bill, interim and final certificate.

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

SYLLABUS of B. Arch. Five Year Programme		M21: Reflection	
Module 21		72 (2 Weeks)	
Contacts Hours		72 (2 Weeks)	
Subject Code	Subject Name	Max Marks	Contact Hours
BARC3001	Architectural Design-V	10	36
BARC3004	Theory of Design	100	36

COURSE OBJECTIVES

- 1.to study various architects and their styles
- 2.to understand the highway facilities

Project: Motel + Restaurant + Petrol pump + service centers

BARC3001 Architectural Design-V

only concepts

BARC3004 Theory of Design

Unit I

Pre-modern Ornament and Crime by Adolf Loos
 Seven Lamps of Architecture by John Ruskin

Unit II

Modern Towards a New Architecture by Le Corbusier
 In the cause of Architecture by Frank Lloyd Wright

Unit III

Post Modern Complexity and Contradiction in Architecture by Robert Venturi
 The Architecture of a City by Aldo Rossi thinking Architecture by Peter Zumthor
 Design Evaluation and Criticism: Value judgments in design, Appreciation of designer’s skills, theories of perception and variability of perception. Theoretical issues in contemporary architectural thought, Seminars on the works of selected Indian and International architects and related topics.

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

SYLLABUS of B. Arch. Five Year Programme

Module 22		M22: Pedology	
Contacts Hours		72 (2 Weeks)	
Subject Code	Subject Name	Max Marks	Contact Hours
BARC3001	Architectural Design-V	05	20
BARC3002	Building Construction-V	20	16
BARC3003	Building Structures-V	100	36

COURSE OBJECTIVES

- 1.
- 2.

Project: Bunker(Building Habitat)**BARC3001 Architectural Design-V****BARC3002 Building Construction-V**

(types of soil)

Foundations - Isolated, Combined, Cantilever, Eccentric footing, Grillage and Raft foundation, Pile foundations – details of pile, varieties of piles, pile caps. DPC Water proofing.

BARC3003 Building Structures-V**(soil)**

Concept of Structural in determinacy and its application in structural system development. Soil mechanics, soil bearing capacity. Design of continuous structures in steel and RCC. Foundation Engineering. Design of foundations in RCC, piles and rafts, retaining walls.

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

Module 23		M23: Dionysia	
Contacts Hours		216 (6 Weeks)	
Subject Code	Subject Name	Max Marks	Contact Hours
BARC3001	Architectural Design-V	35	150
BARC3002	Building Construction-V	40	30
BARC3005	Computer Application in Architecture-V	20	16
BARC3006	Building Services-IV	100	20

COURSE OBJECTIVES

- 1.
- 2.

Project: auditorium/theater**BARC3001 Architectural Design-V**

Introduction to designing of multifunctional community building types on an intermediate scale. Importance of space programming, case studies and site analysis in architectural design.

Importance of culture/traditions and building byelaws in shaping built forms.

Design problems based on technical criteria of given programme and site should be introduced.

Angle of vision, types of Auditorium, Cinema Hall, Performance space.

Dramatics

BARC3002 Building Construction-V

Cladding/ thermal performance standards.

Insulating assemblies.

BARC3005 Computer Application in Architecture-V

Rhino

BARC3006 Building Services-IV

Acoustic

Basics of Acoustics

Introduction to the study of acoustics – nature of sound, basic terminology – frequency, pitch, tone, sound pressure, sound intensity, decibel scale, loudness, threshold of audibility and pain, masking, sound and distance – inverse square law. Behavior of sound in enclosed spaces.

Absorption of sound, sound absorption coefficient, reverberation, reverberation time calculation, use of Sabine's and Eyring's formulae, sound absorbents, porous materials, panel or membrane absorbers and cavity or Holmboltz resonators, role of functional absorbers. Absorption coefficients of indigenous acoustical materials, use of IS code 2526-1963.

Material- Internal finishings and details.

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

Module 24		M24: Decor	
Contacts Hours		216 (6 Weeks)	
Subject Code	Subject Name	Max Marks	Contact Hours
BARC3001	Architectural Design-V	40	150
BARC3002	Building Construction-V	40	32
BARC3005	Estimation and Costing-II	10	34

COURSE OBJECTIVES

- 1.
- 2.

Project: Restaurant interiors / office interiors/ Hotel room/ Lobby

BARC3001 Architectural Design-V

Introduction to Interior Design

Definitions related to interior design.

Review of enclosing elements like walls, floors, ceilings, openings, staircases, furniture & design elements such as color, light textures in interior spaces.

Principles of interior design.

BARC3002 Building Construction-V

Introduction to Aluminum as building material, advantage and disadvantages, study of various sections available for doors and windows together with accessories.

Aluminum framed doors, windows & partitions types, design and construction details. Preparation of variety of surfaces, Application of various coats.

Finishes – Lime / Colour wash, Dry distemper, Oil bound distemper,

Cement paints, Acrylic emulsions, Synthetic enamels, Wall textures etc.

Polishes and Varnishes

BARC3005 Estimation and Costing-II

Interior estimation only

Unit-I: Procedure of Estimation

Introduction to Building Estimate and its need, importance of estimation, types of estimates, mode of measurement of various items. Procedure of estimating and preparation of Bill of Quantity (BoQ) – Method of building estimates;

estimation of earth work, PCC, brick work, DPC, RCC works, plastering, stone and tile works, wood work, water supply and sanitary work. Estimating of quantities of materials like cement, sand, aggregate, brick, reinforcement, tiles, structural steel for trusses, paints used in building, ACP, paneling and cladding, joinery etc.

Unit-II: Specifications

Brief and detailed specification (conforming to IS codes) for all items of works in the construction of a compound wall, septic tank, load bearing residential building, RCC framed office building, factory building with truss, etc; Specification of special items like false ceiling, decorative elements, flooring, wall cladding etc.

Unit-III: Analysis of Rates

Definition; method of preparation; quantity and manpower estimate for unit work. Analysis of rates for items in building works like earth work, concrete works, first class brick work, reinforced brick and concrete work, cement plastering, DPC with cement mortar/ concrete, finishing (cement

SYLLABUS of B.Arch. Five Year Programme
 paint, distemper, Acrylic Emulsion, enamel (oil based) to walls & ceiling. Local Schedule of Rates, market rates, measurement book, Running Account (RA) bill, interim and final certificate.

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
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Module 25		M25: Render	
Contacts Hours		72 (2 Weeks)	
Subject Code	Subject Name	Max Marks	Contact Hours
BARC3005	Computer Application in Architecture-V	80	72

COURSE OBJECTIVES

- 1.
- 2.

Project: interiors rendering

BARC3005 Computer Application in Architecture-V(72 Contact Periods)

Maya/ Rhino/ Grasshopper

3D Max

Lumion or any other rendering software.

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

Module 26		M26: pre fab	
Contacts Hours		72 (2 Weeks)	
Subject Code	Subject Name	Max Marks	Contact Hours
BARC3008	Architectural Design-VI	25	40
BARC3009	Building Construction-VI	25	32

COURSE OBJECTIVES

1. To develop and include universal design principles.
2. Designing in light weight construction.

Project: Kinder Garten/ Primary School.

BARC3008 Architectural Design-VI

Universal Design- People needs.

Principles of Universal Design, Universal Design Definition, seven principles:-Equitable Use
Flexibility in Use, Simple and Intuitive, Perceptible Information, Tolerance for Error, Low
Physical Effort, Size and Space.

BARC3009 Building Construction-VI

Light weight constructions, hollow bricks , slabs , party wall and shell roofs.

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

SYLLABUS 27 B. Arch. Five Year Programme		M27: Socio-Economics	
Contacts Hours		72 (2 Weeks)	
Subject Code	Subject Name	Max Marks	Contact Hours
BARC3008	Architectural Design-VI	05	18
BARC3009	Building Construction-VI	15	18
BARC3011	Human Values	100	36

COURSE OBJECTIVES

- 1.to design for special needs
- 2.low cost design for EWS/outskirts

Project: socio-economic survey PHC

BARC3008 Architectural Design-VI(18 Contact Periods)

BARC3009 Building Construction-VI (low cost) (18 Contact Periods)

Study of vernacular architecture, emerging out of the traditional way of life of the people in a given climatic context and region . Understanding how the social and physical environment, climate of the place, materials and methods of construction impact vernacular architecture.

Works of laurie baker etc.

BARC3011 Human values (36 Contact Periods)

Unit-I: Human Values

Understanding the need, content and process for Value Education. Self Exploration–what is it? - its content and process; ‘Natural Acceptance’ and Experiential Validation- as the mechanism for self exploration.

Continuous Happiness and Prosperity- A look at basic Human Aspirations.

Basic requirements for fulfillment of aspirations of every human being with their correct priority

Understanding Happiness and Prosperity correctly Method to fulfill the above human aspirations.

Unit-II: Harmony in the Human Being

Understanding the harmony in the Nature, Understanding Existence as Co-existence of mutually interacting units in all-pervasive space. Holistic perception of harmony at all levels of existence.

Understanding human being as a co-existence of the sentient ‘I’ and the material ‘Body’.

Appraisal of physical needs, meaning of prosperity in detail. Understanding and living in harmony at various levels.

Unit-III: Human Relationship

Understanding harmony in the Family- the basic unit of human interaction. Understanding values in human relationship; meaning of Justice and program for its fulfillment. Trust and Respect as the foundational values of relationship; Difference between intention and competence. Understanding the harmony in the society (society being an extension of family), Comprehensive Human Goals.

Unit-IV: Professional Ethics

Natural acceptance of human values, Definitiveness of Ethical Human Conduct.

Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order

Competence in Professional Ethics.

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
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SYLLABUS B. Arch. Five Year Programme		M28: Agora	
Module 28		216 (6 Weeks)	
Contacts Hours		216 (6 Weeks)	
Subject Code	Subject Name	Max Marks	Contact Hours
BARC3008	Architectural Design-VI	100	216

COURSE OBJECTIVES

- 1.study and analysis of a live site for site services and site planning.
- 2.planning and designing of a campus.

Project: Institutional building complex

BARC3008 Architectural Design-VI(130 Contact Periods)

problem of a complex building involving a high level of services and advanced structural systems eg. Sports complex, institutional campus.Exercises in simulation and conceptual modeling shall be conducted.The studio will also focus on sustainable design principles, including waste recycling, rain waterHarvesting, site planning principles and landscaping.

Study tour(86 Contact Periods)

Bhopal, Chandigarh, Capital Cities in India

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

SYLLABUS 20B. Arch. Five Year Programme		M29: Neighborhood	
Contacts Hours		216 (6 Weeks)	
Subject Code	Subject Name	Max Marks	Contact Hours
BARC3008	Architectural Design-VI	25	106
BARC3009	Building Construction-VI	40	50
BARC3015	Building Economics	100	30

COURSE OBJECTIVES

1. Including building services and structural system
2. Area calculation, building byelaws, FAR/FSI, Height restrictions, covered area.

Project: mid rise/low rise housing

BARC3008 Architectural Design-VI

Design of a medium to high-rise building in a dense urban setting. The problem should attempt to bring out a comprehension of the framework that outlines a building interior, the structural system and the services core, and the relation of this interior with the exterior environment through the building skin. The project should be of high services complexity with mechanical systems for space conditioning, parking and other services, and include the integration of active energy systems

BARC3009 Building Construction-VI

(joints)

Unit-I: Expansion Joints

Introduction to expansion joints, need and their types, design criteria as per IS codes, construction details at foundation, walls, floor and roof level. Study of materials used in their construction, filling and finishing.

Unit-II: Glass & Glazing

Introduction to Glass as building material, history of glass, manufacturing and properties of various types of glass like plate, tinted, decorative, reinforced, laminated glass block, fiber glass, glass murals, partially coloured glass, etching of glass and its applications in building industry for both exteriors and interiors. Glass fabrication techniques. Application of glass in buildings, types of glazing, fixing methods, related hardware and construction details of glass curtain wall and structural glazing.

BARC3015 Building Economics

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

SYLLABUS of B. Arch. Five Year Programme

Module 30		M30: Modular Structure	
Contacts Hours		72 (2 Weeks)	
Subject Code	Subject Name	Max Marks	Contact Hours
BARC3009	Building Construction-VI	20	22
BARC3010	Building Structures-VI	100	30
BARC3012	Research/Dissertation-I	100	20

COURSE OBJECTIVES

- 1.
- 2.

Project: Reports/Research/dissertation**BARC3012 Dissertation-I**

Unit I Introduction Aspects of Analysis of an Architectural project

Unit II

Technical Writing Critical Appreciation of a Project: Analyzing on the basis of site, Built Form and Space, Spatial Organization, Materials and Techniques, Elements and Special Characteristics, Activity Pattern.

Unit III

Book Reviews Review of Book with presentation of the précis.

BARC3010 Building Structure-VI**Unit I: Analysis and design of Pre stressed concrete**

Introduction, Element of pre stressed concrete, Advantages and disadvantages of prestressed concrete, Reinforced concrete versus prestressed concrete, General Principles of prestressing concrete member and Systems of prestressing, Loss of prestress. Analysis and design of prestress concrete beam.

Unit II: Multistoried buildings

Introduction, Structural systems, Stiffening elements, Need for redundancy, Regularity, Member stiffness, Loads (Dead loads, Live loads, Wind loads), Approximate analysis for vertical loads and lateral loads, Effect of sequence of construction, Partition walls or infill walls, Coupling effect in buildings, Effect of joint width, Beam to column joint. Introduction to various loads resisting system.

Unit III: Analysis & Design of Portal frame (R.C.C.)

Analysis and design of portal frame (Single bay, Single storey) with fixed and hinged base, in R.C.C.

Unit IV: Analysis & Design of Shell structures (R.C.C.)

Introduction to various types of shell structures. Analysis and design of shell structure (Hemispherical Dome) in R.C.C.

Unit V: Analysis & Design of Roof Trusses (Steel)

Introduction and terminology of Roof Trusses, Types of Trusses, Analysis and design of Roof Truss (Fan Type) in Steel.

BARC3009 Building Construction-VII

Modular Coordination

Aims, basis, planning, dimensioning.

Assembly of components, tolerances, Units, reference system, grids, positioning of functional elements – slabs, walls, staircases; Standardization in buildings' design and their components.

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
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SYLLABUS	of SB. Architecture / Five Years Programme S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.
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Module 31		M31: Resurgence	
Contacts Hours		72 (2 Weeks)	
Subject Code	Subject Name	Max Marks	Contact Hours
BARC4003	Environmental Studies	100	72

Project: project assessment

BARC4003 Environmental Studies

Unit-I: Ecology & Ecosystem

Concept of Ecology & Ecosystem, Resource analysis for various ecosystems and development imperatives (land, geology, soil, climate, water, vegetation) characteristics, exploitation, causative factors for degradation, analytical techniques.

Unit-II: Environmental Pollution

Definition, causes, effects, standard parameters and control measures of Air, Water, Soil, Noise, Marine, Thermal, Nuclear and Light pollution.

Causes, effects and control measures of urban and industrial waste.

Physical, Chemical and Biological transformation of pollutants.

Unit-III: Introduction to EIA & EMP

Role of EIA in the Planning and decision making process, definition and need, evolution and objectives, tasks and scope, methods of EIA; advantages and limitations.

EMP, Best practices in Environmental Protection and Conservation.

Unit-IV: Environmental Laws and Regulations

Introduction to Environmental Protection Act, Air (Prevention and Control of Pollution) Act, Water (Prevention and control of Pollution) Act, Wildlife Protection Act, Factories Act, Forest Conservation Act, Issues involved in enforcement of environmental legislation, MoEF Guidelines.

Sustainability

Unit I

Introduction to sustainability & Intelligent buildings Social, economic, environmental factors, ecological footprint, local and worldwide sustainable benchmarks, building ecosystem, building lifecycle Concept. Concept of intelligent buildings, energy efficiency, vertical transportation systems, communication systems, security systems, building automation and lighting systems.

Unit II

Sustainable design Principles and strategies, site design, energy management, renewable energy, sustainable material selection, water management, indoor air quality, alternative energy, environmental systems, environmental assessment methods.

Unit III

Building Management Systems (BMS) Methods to control, monitor and optimize building services, eg., lighting, heating, security, CCTV and alarm systems, access control, audio-visual and entertainment systems, ventilation, filtration and climate control, etc., even time & attendance control and reporting (notably staff movement and availability).

Unit IV

Energy management in services

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

Module 32		M32: Elective-I	
Contacts Hours		72 (2 Weeks)	
Subject Code	Subject Name	Max Marks	Contact Hours
BARC4004	Elective-I	65	64
BARC9998	Research/Dissertation-II	10	08

COURSE OBJECTIVES

1.

Project: Reports**BARC4004 Elective-I (Conservation)****Unit-1 Introduction to Architectural Conservation**

Definition of heritage, what is an historic building? Introduction to architectural conservation of buildings of importance – definition, nature, purpose and scope. Values in conservation; Ethics of conservation building conservation legislation etc.

Unit-2 Defects in Heritage

Causes of defects and decay of a heritage structure. Natural agents of deterioration and loss.

Unit -3 Preparatory Procedures for Conservation.

Preparatory procedures for conservation. Initial inspection, Continuing Documentation, Analysis of the documentation. Role or need of documentation for the conservation & restoration of the any Heritage built form, Heritage precincts or any sort of tangible and Intangible heritage.

Listing of the Region or Precincts for generating a data base of the heritage properties.

Development of regional level maps for various types of heritages. (Heritage site maps, Heritage land-use maps).

Buildings and Precincts typology study according to its usage, Architectural style, religion (study of demography and its comparison past and present) study.

Building material, Construction techniques of Heritage structures in various typologies of buildings with respect to time.

Unit -4 Introduction to International Charters

Introduction to various charters their significance and their role in guiding our conservation policies and guidelines or regional level and structural level (special reference to Barra and Venice charter).

Unit -5 Literature Study and Site Visit

Literature case study of Red Fort (available on ASI web site) and site visit of ASI protected heritage buildings (in local city/town) and along with condition assessment techniques and methods.

BARC4004 Elective-I (Urban Regional Planning)**BARC9998 Dissertation-I****Unit-1 Introduction Anatomy of a technical paper**

Parts of a technical paper; its chronology.

Unit-2 Technical Writing Intent of the paper.

Structuring the paper; formulating a synopsis. Identifying sources- categorization into direct and indirect; sequencing them in order of significance. Referencing.

Unit-3 Writing a Technical Paper

Writing a paper of 2000 words in following stages:

Synopsis with clear heads of Intent, Background, Aims and Objectives, Scope,

Methodology. Structuring the body of the paper in detail. Ascertaining Primary and Secondary Sources.

Utilizing the sources to reach to the desired objectives. Editing the paper.

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
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SYLLABUS of SB Architecture Five Years Programme	to be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.
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Module 33		M33: Management and Advance Construction	
Contacts Hours		216 (6 Weeks)	
Subject Code	Subject Name	Max Marks	Contact Hours
BARC4001	Architectural Design-VII	30	74
BARC4002	Building Construction-VII	50	40
BARC4005	Project Management	100	26
BARC4006	Advance Services	100	40
BARC9998	Research/Dissertation	40	36

Project: Hotel, Haat,

BARC4001 Architectural Design-VII

Concept

BARC4002 Building Construction-VII

Machinery ,Advanced Building Technology

Introduction of pre-stressing, prefabrication & systems building. Jointing, tolerances and modular co-ordination. Mass production, transportation, storage and handling of materials. Characteristics, performance and application of mechanized construction equipment. Advanced vernacular construction techniques.

BARC4005 Project Management

Introduction to Project Management. Project Planning, feasibility studies, project report, project financing, Project organisation, process and structure and personnel selection, responsibilities of the project manager. Project implementation, Site investigations, layout, site organisation, networking techniques, PERT/CPM, LOD, time-cost analysis, value engineering, Project monitoring, cost control, manpower management, safety and labour laws.

BARC4006 Advance Services

Ventilation, Communications and Security Systems.

Principles of air-cooling and air-conditioning, their implications on architectural form and details, systems and equipment. Lifts, escalators and conveyors, inter-communication, monitoring devices, fire protection and alarm system.

Integrated Energy Management.

The energy crisis, renewable & non-renewable energy sources. Waste recycling, energy recovery techniques, integrated systems for non-potable water supply and sewage treatment, scavenging. Social forestry, fodder and the nitrogen chain, strategies and technological for a developmental needs, incremental extension of urban services and their management.

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

SYLLABUS 2018 B. Arch. Five Year Programme		M34: Health Care	
Module 34		216 (6 Weeks)	
Contacts Hours		216 (6 Weeks)	
Subject Code	Subject Name	Max Marks	Contact Hours
BARC4001	Architectural Design-VII	70	176
BARC4002	Building Construction-VII	50	40

Project:Hospital

BARC4001 Architectural Design-VII

(Working Drawings, GFC Drawings)

Preparation of architectural GFC drawings and details of a medium / large project. Preparation of electrical drawings, water supply and sanitary drawings, structural drawings of a small project. Specifications of building materials and simple construction as separate document or annotated on the working drawings.

BARC4002 Building Construction-VII

Defects and Remedies

The study of various defects in buildings and their remedies, Defects caused by dampness, applied forces and changes in size.

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

SYLLABUS B. Arch. Five Year Programme		M35: Elective-II	
Contacts Hours		72 (2 Weeks)	
Subject Code	Subject Name	Max Marks	Contact Hours
BARC4004	Elective-I	50	40
BARC9998	Research/Dissertation-I	35	32

Project: Report**BARC4004 Elective-I (Disaster Management)****Unit-1 Introduction to Hazards & Disasters**

Introduction to disaster management, Indian scenario, Understanding of disaster, Hazard and its classification, Vulnerability, Capacity, Risk. Various types of disasters. To understand in detail for the causes, adverse effects, distribution patterns, mitigation measures of Earthquake, Tsunami, Cyclone, Flood and Landslide. Disaster management cycle.

Unit -2 Case Studies

Studies to understand above mentioned disasters (National as well as International) occurred in past and their inferences.

Unit -3 Disaster Preparedness

Disaster Management Act, Guidelines, NDMA. Vulnerability Assessment & Warning systems for above said disaster types.

Unit -4 Disaster Response

Programmes and strategies for disaster reduction. Communications.

Unit -5 Disaster Mitigation

Pre disaster, emergency, transition, and recovery. Disaster management plan, Natural crisis management committee, State crisis management group.

Unit -6 Disaster Resistant Construction Techniques

Risk reduction measures through land use control, site planning and land management, design and construction of structures for above mentioned disasters.

BARC4004 Elective-I (Visual communication)**Unit-I: English Grammar**

Simple grammar – using appropriate words, filling of blanks, completing of sentences, active and passive voice, correcting mistakes in texts. Use of proverbs, metaphors and punctuation.

Unit-II: Comprehension

Reading and listening comprehension, to develop the ability to read and listen with understanding and draw reasoned conclusions. Art of notes taking from spoken and written English.

Comprehension of lectures and speeches to locate key points.

Unit-III: Business & Technical Communication

Interpretation of materials such as questionnaires, application forms, analysis of materials such as texts, reports, technical literature. To develop the ability to write concisely and correctly and present ideas in a logical manner. Professional letters to fellow architects, clients, public authorities, contractors, enquiries to industries, dealers.

Unit-IV: Verbal Presentations

Understanding the differences among seminars, conferences, convention, congress, debates, extempore speeches and panel discussions etc., Golden rules of verbal presentations & group discussions.

BARC9998 Research/Dissertation-I

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

SYLLABUS of B. Arch. Five Year Programme

Module 36		M36: Professional Training	
Contacts Hours		16 Weeks)	
Subject Code	Subject Name	Max Marks	Contact Hours
BARC4008	Professional Training	100	-

Project: Training portfolio**BARC4008 Professional Training**

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

SYLLABUS 37B. Arch. Five Year Programme		M37: Elective-III	
Contacts Hours		72 (2 Weeks)	
Subject Code	Subject Name	Max Marks	Contact Hours
BARC5003	Elective-II	35	64
BARC5002	Professional Practice-I	20	08

COURSE OBJECTIVES

1.

Project: Reports**BARC5002 Professional Practice****Unit-1 Role of Professional Bodies**

The Indian Institute of Architects, its working constitution and byelaws, categories of membership, election procedures. The Uttar Pradesh Architects Association.

Unit -2 Architects' Act 1972

Detail study of the Act, Council of Architecture; Procedures of membership.

Unit -3 Scale of charges

Conditions of engagement of an architect – Duties; Responsibilities and liabilities of a professional architect; Scale of charges, mode of payment etc.

Unit -4 Code of Professional conduct & Architectural Competition

Clauses governing conduct of professional architect. Types of competitions; need and procedure for conducting competitions.

Unit -5 Tender and Contract

Type of building contracts, their demands. Preparation of tender documents, method of inviting tenders, opening of tenders, preparation of comparative statement recommendation and award of projects, preparation of contract documents, general conditions of contract, interim certificates, defect liability period, retention amount and virtual completion.

Unit -6 Easements

Introduction to various easement process and precautions to protect easement rights.

BARC5003 Elective-II (Landscape)**Unit 1 Introduction to Landscape Architecture**

Role and scope of Landscape Architecture, Understanding its relationship with earth, water, fire, air, ether/space. Factors affecting landscape design like Climatic/Natural conditions - (soil, water, landforms, vegetation, temperature, humidity, rainfall), Scale, Material, Cost, Time. Elements of Landscape Design - Natural elements (Landform, water, plantscape, microclimate), Design elements (man-made water bodies, landscape furniture, lighting, hardscape and softscape) Principles of Landscape Design - Unity, Symmetry, Balance, Hierarchy, Repetition, Sequence with suitable examples.

Unit 2 Landscape Graphics

Techniques on making handmade landscape drawings - trees of varied textures, landforms, buildings, paving, foliage patterns, tone contrast, & balance, rock & water and other landscape features. Conventional symbols in landscape presentations.

Unit 3 Concise Theory And Evolution Of Landscape Architecture

Evolution of landscape from pre- history to present day (history of landscape through civilizations). Major Garden styles - Hindu, Buddhist, Mughal, Japanese, Italian, Renaissance, their Design and Philosophy in brief.

Unit 4 Planting Design Classification of Plants

Trees, shrubs, groundcovers, flowering plants. Selection criteria of plants on the basis of visual, functional, micro climate and ecological aspects.

Unit-5 Landscape Design Inventory, Site analysis and Site planning. Conceptual design, Design development and proposals. Landscape constructional details paving, curbs, retaining wall, fountain, decks, terrace gardens etc.

BARC5003 Elective-II (Marketing skills)

Unit-1 Basic Concepts of Management

Definition, Need and Scope, Introduction to Management Science, Theory & Practice, Environment of Management, Managers & Entrepreneurs, Managerial Roles & Skills, Manager's Social & Ethical Responsibilities.

Unit -2 Functions of Management Planning

Concept, Nature, Importance, Steps, Limitations, Management by objectives Organizing - Concept, Nature, Importance, Principles, Centralization, Decentralization, Organization Structures, Line and Staff Authority, Functional, Leadership & Management, Product, Matrix, Geographical, Customer, New Forms of Organization – Virtual, Organizations as Networks -Types of Network. Organizations/Clusters – Self Organizing Systems. Organizational Designs Staffing - Concept, Nature, Importance, Steps. Concept of knowledge worker. Directing – Concept, Nature, Importance. Controlling - Concept, Nature, Importance, Process of controlling, Control Techniques.

Unit -3 Financial Management

Cost of project, Means of finance, Estimates of sales and production, Cost of production, Working capital requirement and its funding, Profitability projections, Break Even Point (BEP), Projected cash flow statement, Projected balance sheet, Project profitability at market prices, Techniques of financial appraisal, Financial risk and over-all financial viability of the project through Internal Rate of Return (IRR)

Unit -4 Marketing Management and Skills

Introduction to Marketing concept - Evolution of marketing & customer orientation, Marketing Environment and Evaluation of Market opportunities, Market research & Marketing Information Systems, Demand forecasting, Market potential analysis, Product Life cycle, New Product development process.

Unit -5 Marketing Environment and Planning Promotion decisions, Integrated Marketing communications concept, Communication tools, Contents of Marketing Plan, Developing Marketing Plan for variety of goods and services, Promotion decisions, integrated Marketing communications concept, Communication tools, Personal selling & Sales management

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SYLLABUS of B. Arch. Five Year Programme

Module 38		M38: Smart Cities	
Contacts Hours		72 (2 Weeks)	
Subject Code	Subject Name	Max Marks	Contact Hours
BARC5003	Elective-II	35	64
BARC5002	Professional Practice-I	20	08

Project: Reports**BARC5003 Elective-II (Theories on Smart Design)****BARC5002 Professional practice (10 Contact Periods)****Unit-1 Valuation**

Valuation of immovable properties, elements of valuation and factors affecting valuation; Techniques of valuation of landed and building property; Value classification and types of valuation.

Unit -2 Arbitration

Arbitration, Arbitrator, Umpire, Nature of arbitration. Appointment, Conduct, Powers, and duties of arbitrators and umpires; Procedure of arbitration and preparation of awards.

Unit -3 Law related to Land

The land acquisition Act, UP Urban Development Act 1973

Unit -4 Law of Control

The Partnership Act, 1932

Unit -5 Law related to Conservation

The elements of the Ancient monument, (site remains) Act 1956

Unit -6 Office Organization & Management

Professional organization, setting of practice, salaried appointments, public-sector, private sector jobs, procedure of operation in government organization.

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
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SYLLABUS 2018-19 B. Arch. Five Year Programme		M39: Urban Design	
Contacts Hours		216 (6 Weeks)	
Subject Code	Subject Name	Max Marks	Contact Hours
BARC5001	Architectural Design IX	45	206
BARC5002	Professional Practice-I	30	10

Project: Intervention In Old City Core

BARC5001 Architectural Design-IX

Urban Design

Unit-1 Introduction Emergence of urban design as a discipline

Definitions and its ambiguities.

Unit -2 Urban Space Study

Historical and contemporary example of urban space. Piazza del campo, St. Peters, Campidoglio, St. Marco. Yerba Buena garden, san Francisco, pike place market, Seattle Washington

Unit -3 Urban design Parameters

Space and place, morphology, urban form and structure, fabric, texture, grain, enclosure, human scale, complexity, etc.

Unit -4 Basic Principles and Theories of Urban Design

Theories related to visual or perception aspect (Gorden Cullen)

Theories related to physical aspect (Kevin lynch)

Theories related to social aspect (Jane Jacob)

(after understanding above aspect student will explain above theory on Indian space and context)

Unit -5 Urban Design Details

Urban outdoor lighting, urban green infrastructure, acoustic consideration for urban fabric, air quality at street level.

BARC5002 Professional Practice

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

SYLLABUS of B. Arch. Five Year Programme

Module 40		M40: Mixed Use Development	
Contacts Hours		216 (6 Weeks)	
Subject Code	Subject Name	Max Marks	Contact Hours
BARC5001	Architectural Design IX	45	206
BARC5002	Professional Practice-I	30	10

Project: Mixed use development

BARC5001 Architectural Design-IX

BARC5002 Professional practice-I

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

SYLLABUS of B. Arch. Five Year Programme

Module 41		M41: Elective-II	
Contacts Hours		72 (2 Weeks)	
Subject Code	Subject Name	Max Marks	Contact Hours
BARC5001	Architectural Design IX	45	60
BARC5003	Elective-II	30	12

Project: Reports and thesis synopsis

BARC5001 Architectural Design-IX

Thesis Tutorial

Dissertation

Preparation of an Architectural Dissertation including reference to an extensive study of architectural examples and precedents in the selected field of study. This can be a related study for the final thesis next semester.

BARC5003 Elective-II (Art and Architecture)

Unit-1 Introduction & Terminology

Grammar of the language of art - Natural, Realistic, Symbolic, Abstract, Modern and Contemporary.

Unit -2 Ideologies of Aesthetics in Art

Complete understanding of Ideologies of aesthetics in art while discussing the art of Western and Oriental. Plato, Aristotle, Baumgarten, Friedrich Nietzsche, I.A. Richards, Leo Tolstoy, Sigmund Freud. Shadanga: Six limbs of Indian painting. Rasa theory of 'Bharat Muni'. Iconography.

Unit -3 Development of Art

Development of art over the period of time. Tracking the progress in art in aspects of the functional diversity of styles, Art as form of social consciousness, Impact of Cultural and Religion on art, Understanding the role of art in contemporary society.

BARC5003 Elective-II (IPR, Laws)

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

SYLLABUS B. Arch. Five Year Programme		M42: Thesis	
Module 42		216 (6 Weeks)	
Contacts Hours		216 (6 Weeks)	
Subject Code	Subject Name	Max Marks	Contact Hours
BARC9999	Architectural Design X	100	400
BARC5005	Professional Practice-II	100	40

Project: Thesis

BARC9999 Thesis (400 Contact Periods)

BARC5005 Professional Practice-II

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.