SHRI SIDDHESHWAR SHIKSHAN MANDAL'S

COLLEGE OF ARCHITECTURE, SOLAPUR

Bachelor of Architecture

First Year - Semester –I and Semester –II

Syllabus

(W.E.F. 2014-15)

(Credit system structure)

SSSM'S COLLEGE OF ARCHITECTURE, SOLAPUR

Faculty of Engineering & Technology

Credit System structure of First Year B.Arch W.E.F. 2014-2015

Semester I

	Course Name	Hrs./Week		Credits			Examination Scheme				
		L/S	P/S		ISE		ESE		ICA		Total
					Max.	Min.	Max.	Min.	Max.	Min	
Subject code	**Theory papers**										
AR1-06	Theory of Structure- I	3	_	3	30	14	70	32	--	--	100
AR1-07	History of Architecture - I	3	--	3	30	14	70	32	---	--	100
	Total	6	--	6	60	--	140	--	---	--	200
	Studio / practical / oral										
AR1-01	Architectural Design –I	-	10	5	---	--	100	45	150	68	250
AR1-02	Basic Design – I	-	4	2	---	--	----	--	100	45	100
AR1-03	Architectural Graphics- I	-	4	2	---	--	---	--	100	45	100
AR1-04	Workshop - I	-	3	1.5	---	--	---	--	50	23	50
AR1-05	Bldg. Construction & Material - I	-	6	3	---	--	50	23	100	45	150
AR1-08	Computer Technology in Architecture-I	_	2	1	_	--	--	--	50	23	50
	Total	-	29	14. 5	00	--	150	--	550	--	700
	Grand Total	**06**	**29**	**20.50**	**60**		**290**		**550**		**900**

Abbreviations: **L**- Lectures, **P** –Practicals,**S-** Studios, **ISE**- In Semester Exam., **ESE** - End Semester exam, **ICA**- Internal Continuous Assessment

Note : ISE -Internal Tests , **ESE** - University Theory/ Oral examination

SSSM'S COLLEGE OF ARCHITECTURE, SOLAPUR

Faculty of Engineering & Technology

Credit System structure of First Year B.Arch W.E.F. 2014-2015

Semester II

	Course Name	Hrs./Week		Credits			Examination Scheme				
		L/S	P/S		ISE		ESE		ICA		Total
					Max	Min	Max.	Min.	Max.	Min.	
Subject code	**Theory papers**										
AR2-03	Architectural Graphics- II	4	-	4	30	14	70	32	--	--	100
AR2-06	Theory of Structure- II	3	__	3	30	14	70	32	__	--	100
AR2-07	History of Architecture - II	3	--	3	30	14	70	32	---	--	100
	Total	10	--	10	90	--	210	--	--	--	300
	Studio / practical / oral										
AR2-01	Architectural Design –II	-	10	5	---	--	100	45	150	68	250
AR2-02	Basic Design - II	-	4	2	---	--	----	--	50	23	50
AR2-04	Workshop - II	-	3	1.5	---	--	-----	--	50	23	50
AR2-05	Bldg. Construction & Material - II	-	6	3	---	--	50	23	100	45	150
AR2-08	Computer Technology in Architecture-II	__	2	1	__	--	50	23	50	23	100
	Total	-	25	12. 5	00	--	200	--	400	--	600
	Grand Total	**10**	**25**	**22.5**	**90**		**410**		**400**		**900**

Abbreviations: **L**- Lectures, **P** –Practicals, **S-** Studios, **ISE**- In Semester Exam., **ESE** - End Semester exam, **ICA**- Internal Continuous Assessment

Note : ISE -Internal Tests , **ESE** - University Theory/ Oral examination

SSMS COLLEGE OF ARCHITECTURE , SOLAPUR

FACULTY OF ENGINEERING AND TECHNOLOGY

CREDIT SYSTEM STRUCTRURE OF B.ARCH. W.E.F.2014-2015

CONVERSION OF MARKS INTO GRADES				
Sr.No.	**Range of Marks**	**Grade**	**Grade Point**	**Description of Performance**
1	80 onwards	O	10	EXCELLENT /OUTSTANDING
2	70-79	A+	9	VERY GOOD
3	60-69	A	8	GOOD
4	55-59	B+	7	FAIR
5	50-54	B	6	ABOVE AVERAGE
6	45-49	C+	5	AVERAGE
7	<45	F	0	FAIL
8		XX	0	DETAINED
9		DR		DROPPED OUT

CONVERSION OF AVERAGE GRADE POINTS INTO GRADES		
Sr.No.	**SGPA/CGPA**	**Grade**
1	9.5-10	O
2	8.5-9.49	A+
3	7.5-8.49	A
4	6.5-7.49	B+
5	5.5-6.49	B
6	4.5-5.49	C+
7	<4.49	F

NOTE

1. THE PASS PERCENTAGE SHALL NOT BE LESS THAN 45% IN EACH SUBJECT .

2.THE PASS PERCENTAGE SHALL NOT BE LESS THAN 50% IN THE AGGREGATE FOR THE ACADEMIC YEAR.

A CANDIDATE WHO FAILS TO SECURE MINIMUM 50% MARKS IN THE AGGREGATE FOR THE ACADEMIC YEAR SHALL APPEAR FOR THE IMPROVEMENT EXAM ,ONLY IN UNIVERSITY THEORY EXAM.

B.ARCH. FIRST YEAR - SEMESTER- I

AR1 – 01: ARCHITECTURAL DESIGN- I

Teaching Scheme Per week		Credit	Examination Scheme				
Lecture - L	--	--	Theory Exam -		Practical / Oral Exam		**Total**
Practical/Studio P/S	10	5	ISE	ESE	ICA	ESE	
Total	10	5	--	--	150	100	250

Objective:

Architectural Design as a core subject of Architectural Studies. The objective is to study the fundamentals of design process and application of the knowledge gained in other subjects, towards designing of most habitable spaces. The student is expected to collect, analyze, learn the process of Design and approach to the Design.

Course Outline :

Design :

1 Identification and Application of elements of design to achieve design principles in Architecture.

2 Approach to design as a continuous process through function, technology and aesthetics (basic components) of the building and their function.

3 To learn the basics of design e.g. Form, proportion, scale etc to develop design skills with respect to needs, limitations, constraints, usage pattern.
4 Principles of design with reference to function, activities and related spaces.
5 Study of basic human needs & collection of anthropometric data of human activities and allocation of spaces required.
6 Designing of various units involving different economic classes in groups of 10 students each/ psychological studies. Units – living spaces, Kitchen spaces, sleeping spaces, work spaces for Architects, Doctors, Fast food counters, computers etc. Areas for the submissions can be decided using the parameters above.

Sketching :

1. Freehand sketching with different medium. Preferably outdoor cityscapes, monuments, objects with varying surfaces, volumes using various time modes.(Same object in two minutes to two hours/ outdoor or indoor)
2. Sketch book size, papers, to be specified.(Preferable half of A4).
3. Anthropometric sketches along with live models in EPS thermocole of units in design along with Interior furniture.(Block Model)

Submission :

1. Sketch file
2. Case study reports and data collection in file form
3. Design port folio (as per choice)
4. Design Models

Reference Books :

1. Francis D.K. Ching – Architecture form space and
2. Francis D.K. Ching –Elements of Architectur
3. Francis D.K. Ching – Dictionary of Architecture
4. Neuferts Data
5. Rendering with pen and ink
6. Walter Gropius – Total Architecture
7. Pramar V.S. – Fundamentals in Architecture

Time bound :

Product Design - 6 hours

Example : Pen stand, furniture element, Paper Art, Signage, light fixtures etc.

AR1 -02 : BASIC DESIGN – I

Teaching Scheme Per week		Credit	Examination Scheme				
Lecture - L	----	---	Theory Exam -		Practical / Oral Exam		**Total**
Practical/Studio p/s	4	2	ISE	ESE	ICA	ESE	
Total	4	2	--	--	100	--	100

Objective :

To develop the basic creative ability of the students in fundamentals of 2d/3d design. The students will learn the basic elements & principles of compositions with various exercises.

Course outline :

Introduction:

1. Elements of design : point, line, 2D, 3D forms, light & Shade, colour & texture, solids & voids
2. Composition of 2 Dimensional forms
3. Study of forms of nature.
4. Material & Texture, colour, light & shade
5. Positive & Negative spaces
6. Compositions of three dimensional forms and spaces.
7. Study of Sculptural forms
8. Presentation of local Architect and his choice of theme relating to the topic above through photos, films, PPT etc.

Submission :

Sufficient number of projects to cover the topics mentioned above. Stress to be given on two, three-dimensional study, sketches & models etc.

1. Presentation in PPT form with sketches (hand drawn) and photographs or 3D visuals of any examples illustrating the above elements in detail eg : Classical Buildings, sculptures, paintings, films, theatres, etc.
2. Submission of the file (theory)

Reference Books :

1. Francis D.K. Ching - Architecture: Form Space & Order
2. Pramar V. S. - Fundamentals in Architecture
3. Walter Gropius - Total Architecture

AR1 –03: ARCHITECTURAL GRAPHICS – I

Teaching Scheme Per week		**Credit**	**Examination Scheme**				
Lecture L	--	--	Theory Exam -		Practical / Oral Exam		**Total**
Practical/Studio P/S	4	2	ISE	ESE	ICA	ESE	
Total	4	2	--	--	100	---	100

Objective:

To help students to understand graphical language as tool for drawing as communication in Architecture.

Course outline:

1. Introduction :

i. Introduction to different drawing instruments, paper, materials & their uses.

2. Drawing Techniques.

i. Drawing line of different types, characteristics of lines.
ii. Application of all types of lines in architectural drawings
iii. Making measured drawing of building & its parts.
iv. Presentation techniques.

3. Lettering

i. Introduction to architectural lettering, proportion of letter size as per scale.
ii. Different styles of lettering.

4. Scale

i. Introduction of various proportions and scales, necessary for drawing to a scale, Graphic scale.
ii. To understand Metric scale.

5. Building components, Materials & Annotations

i. Representation of various building components such as doors, windows, steps, stairs, chajjas, porch, canopy, balcony, roofs.
ii. Symbolic representation of building materials with colour code as specified in Indian standard code of practice.

Reference books :

1 Living areas and basic design - S.V Bapat

AR 1 – 04: WORKSHOP –I

Teaching Scheme Per week		Credit	Examination Scheme				
Lecture L	---	---	Theory Exam -		Practical / Oral Exam		**Total**
Practical/Studio P/S	3	1.5	ISE	ESE	ICA	ESE	
Total	3	1.5	--	--	50	--	50

Objective :

The main objective is to study various model making techniques using different or specific material expressing their design concepts and perception. Models of basic design and abstraction of perceived images.

Course Outline :

1. Introduction to modeling with various material paper, paper board, plastic, clay, wood, plaster of Parisetc.
2. Introduction to masonry tools.
3. Introduction to carpentry tools.
4. Introduction to clay modeling tools for carving, sculptural masses
5. Basic model making techniques, different types of material and their techniques.
6. Various solid geometrical – forms, cube, Rectangloid, pyramid, cylinder, cone, prism, polygon (Hexagon, pentagon, octagon) etc.

Submission :

1. Models of furniture units to scale of various elements like chair table rooms furniture units etc.

Need : Making models gives students and teachers the understanding of context, composition, material and structure. It also takes students closer to the actual process of understanding compositions and spaces especially scale.

AR1 – 05 : BUILDING CONSTRUCTION & MATERIALS – I

Teaching Scheme Per week		Credit	Examination Scheme				
Lecture L	--	--	Theory Exam -		Practical / Oral Exam		**Total**
Practical/Studio P/S	6	3	ISE	ESE	ICA	ESE	
Total	6	3	--	--	100	50	150

Objective :

To help students understand the basic building elements, their function with specific reference to Load bearing construction and simple non RCC frame structure.

Main outline of this study is to develop strong sense of understanding the basic principles of construction and materials ,to develop analytical and logical sequence in thinking.

The emphasis should be on teaching the fundamental principles and constructional details suitable for Indian conditions.

Students shall be encouraged to study both in class room and also out side at work-sites in order to get the practical exposure.(Construction yard). A specific studio dedicated to integrate design, structure, and technology with the concerned staff to illustrate the relation between wall thickness, forms, volume and technology.

Course outline:

Construction

Introduction to Load bearing structure. Brief introduction of Mud technology ,adobe, cob, CSEB, wattle and daub rammed earth. (Film on Auroville Earth Institute.) is desirable.

1. Foundations :

i. Simple foundations for masonry load bearing- a) walls, b) piers, c) pillars .
ii. Foundations in black cotton soil.
iii. Masonry retaining walls.

2. Stone masonry :

i. Various types of stone dressing.
ii. Various types of stone joints such as plain, beveled, rebated dovel, clamp joint.
iii. Monolithic construction of columns, quoins, header bond of through stones.
iv. Types of stone masonry such as ashlar and rubble.
v. Composite wall in brick and stone, compound walls.

3. Brick Masonry :

i. Brick bonding , its principles ,types.
ii. Types of bricks and their uses
iii. Stopped end ,Corner junction, T junction upto two brick thick wall.

4. Tools for working, needed for constructions.

i. Brickwork
ii. Stonework
iii. Excavation
iv. Shuttering / centering for slab works only.

MATERIAL –

1. **Soil** :

Different types of soil and their origin, physical properties and effect of weather, water , temperature etc. on different types of soil, bearing capacity of soils, and their role in building foundations angle of repose (introductory only) Uses of soil in construction with reference to soil as material for floors, mortar, building blocks, plaster. Site visit to soil testing lab.

2. Bricks :

Compositions of earth, standard market and I.S.I. sizes, properties as per I.S.I., brick manufacturing process, Sun dried bricks, Special type of bricks, Different uses of brick in construction.

3. Stones :

Building stones of rocks, method of quarrying, origin and composition of stones, properties of good stones, natural bed, various types of stone dressing , defects in stone, stone used in construction, aggregates.

Submission :

i. B.T. portfolio with sketch.
ii. Files and notes of construction and materials.
iii. Actual samples of materials, grades of lime and stone
iv. Photos, data, PPT of material usage

Reference books :

1. Building construction – Mc. Kay
2. Building construction – Chudley
3. Building construction – Barry
4. Building construction – Punmia B.C.
5. Building construction – Rangwala
6. Building construction – Mitchell
7. Building Material - Sushilkumar
8. Building Material - Rangwala

AR1 – 06 : THEORY OF STRUCTURE – I

Teaching Scheme Per week		**Credit**	**Examination Scheme**				
Lecture L	3	3	Theory Exam -		Practical / Oral Exam		**Total**
Practical/Studio P/S	--	--	ISE	ESE	ICA	ESE	
Total	3	3	30	70	--	--	100

Objective :

To understand the Concept of simple load bearing and frame structure.

Course Outline :

1. **Introduction:**
   Terminology of common structural components from foundation to roof and their concept.

2. **Geometry and structure** :
   Inter relation between geometry, structure, Material used, limitation, Possibilities. Concept of weight, density of materials center of gravity of various geometrical blocks in 2D and 3D. Video presentations with emphasis on structures, concepts.

3. **Loads:**
   Dead, live, wind, impact and earthquake, conceptual ideas and their effect on buildings as a whole, relevant I.S. Codes.

4. **Force:**
   i) Concept and definition, cause, effect, units, force as a vector, graphical representation, and resolution of forces by graphical and analytical methods.

   ii) Basic concept of supports and reactions.

5. **Graphics**:
   Forces in simple frames and trusses under action of dead and wind load by graphical method, method of section and method of resolution.

6. Moments :

Moment of force, moment of couple, effect of couple, beam reactions – graphically and analytically, static equilibrium. (H =0, V=O,M= 0)

Submission :

Center of gravity of different shapes/ blocks and calculation of the above mentioned topics with respect to a building in files & Notes form

Reference books :

1. Strength of Materials – Khurmi
2. Strength of Materials – A. P. Dongre

AR1- 07 : HISTORY OF ARCHITECTURE- I

Teaching Scheme Per week		**Credit**	**Examination Scheme**				
Lecture L	3	3	Theory Exam -		Practical / Oral Exam		**Total**
Practical/Studio P/S	--	--	ISE	ESE	ICA	ESE	
Total	3	3	30	70	---	---	100

Objective :

History of Architecture is reflection of human civilization like land and climate, social and economical, philosophy and religion, arts & crafts, science & Technology in Architecture of particular region at particular period.

Civilization influences style of Architecture. Therefore the subject is to study in all aspects mentioned above in general & Architecture in particular. Architectural aspects are to be studied with reference to building types, building materials & construction with specified examples. The following regions & periods shall be studied.

Course Outline:

1. Prehistoric Period –

i. Old stone age (Paleothic age)
ii. Middle stone age (Mesolithic age)
iii.New stone age (Neolithic age)
iv.Metal age a) Copper age
b) Bronze age

c) Iron age

Example – Stone henge, oval hut.

2. India

i. Indus valley civilization (2000B.C. – 1500 B.C.)
Housing & Town Planning.

ii.Vedic civilization(1500 B.C. – 1000 B.C.)
Vedic hut & Vedic village

iii. Mauryan Period (321 B.C. – 185 B.C.)
Ex. city of patliputra

3.Egypt

(circa 3000 B.C. – 100 A.D.)
e.g. Pyramid of cheops

Temple of khons at karnak.

4. West Asia

summerian Period (3000 -2000 BC)- e.g. Ziggurat at ur

Babylonian Period (2016 -539 BC)-e.g. City of Babylon

Assyrian Period (1859 -626 BC)- e.g. Palace of sargon at khorsabad

Persian Period (750 -330 BC)- e.g. Palace of Percepolis

5. Europe –

(Pre greek & pre Roman)

Pre greek (1600-1050 BC)- Miorian & Mycenean architecture –

e.g. Palace of king Minos in Knossos , palace of Tiryns

Pre Roman (750-100 BC)– Etruscan architecture –

e.g., Temple of Juno sospita.

6. Model Making -

Any two examples of ancient architecture/ settlement

e.g.. Pyramid, ziggurat, Indus valley settlement, Oval hut, Stonehenge etc. to scale in group work.

Submission

File, sketches, models.

Reference Books

1. History of Arch. In India – Tadgell christopher
2. Indian Architecture – Buddhist & Hindu period – satish grover
3. Architecture of India – Buddhist & Hindu - Percy Brown
4. History of Arch – Bannister fletcher
5. History of world civilization – J.E. swai
6 . World Architecture – G.K. Hiraskar
7. A History of fine Arts in India & West – Tomory Edith.

AR1 -08: COMPUTER TECHNOLOGY IN ARCHITECTURE – I

Teaching Scheme Per week		**Credit**	**Examination Scheme**				
Lecture L	--	--	Theory Exam -		Practical / Oral Exam		**Total**
Practical/Studio P/S	2	1	ISE	ESE	ICA	ESE	
Total	2	1	--	--	50	--	50

Objective :

Application of computer is widely spread in every field. Computer application particularly in architecture is gaining importance. Thus necessary for every student to understand computers, their application and use in the profession.

Course outline:

1. Use and applications of computer and windows in architecture
a) Use of MS office, MS Outlook, MS Excel, MS Power point,
MS word in architecture and design presentation

b) Use of animation and MS office .

2. Introduction to Autocad as a drafting tool, presentation tool 3D, sketching and designing tool **.**

Submission :

Presentation of the above topics through PPT for 5 to 10 minutes on topics of their choice in files & Notes form

Reference books:

1. A first course in Computer – Sanjay Saxena

2. Autocad 2012 – Kogent Learning Solutions

3. Thousand Autocad Tips and Tricks – George O. Head

B.ARCH. FIRST YEAR - SEMESTER-II

AR2 – 01 : ARHITECTURAL DESIGN- II

Teaching Scheme Per week		**Credit**	**Examination Scheme**				
Lecture/Studio - L/S	--	--	Theory Exam -		Practical / Oral Exam		**Total**
Practical/Studio P/S	10	5	ISE	ESE	ICA	ESE	
Total	10	5	--	--	150	100	250

Objective:

Architectural Design as a core subject of Architectural Studies. The objective is to study the fundamentals of design process and application of the knowledge gained in other subjects.

The student is expected to collect, analyze, learn the process of Design and approach to the design.

Course outline:

Design:

1. The student should be introduced with a design problem with three to four functions of total area up to 150 sqm -200sqm..

2. It is expected from the students to collect data. Analyse the programme, areas using their own personal parameters.

3. It is assumed that the students have to find alternatives, block models, finally reaching to the conclusive design.

4. Introduction of climate and environment in design i.e orientation, geography, slope (if any) material usage with materials learnt.

Design problems :

Residences, Banks, Library, Cafeteria, Post office, Public health centre, adventure club, Gymnasium, as an extension to the existing building.

Submission :

1. Sketch file
2. Case study reports and data collection in file form
3. Design port folio (as per choice)
4. Design Models

Reference Books :

1. Francis D.K. Ching – Architecture form space and
2. Francis D.K. Ching –Elements of Architecture
3. Francis D.K. Ching – Dictionary of Architecture
4. Neuferts Data
5. Rendering with pen and ink
6. Walter Gropius – Total Architecture
7. Pramar V.S. – Fundamentals in Architecture

Time bound :

Design - 6 hours

Example : Kinder Garden, Courtyard spaces, Internal or External space, Houses for different economic groups, shops, stalls etc. bus stops, ticket counters, entrance plazas, florist stops etc.

AR2- 02 : BASIC DESIGN – II

Teaching Scheme Per week		Credit	Examination Scheme				
Lecture/Studio - L/S	--	---	Theory Exam -		Practical / Oral Exam		**Total**
Practical/Studio P/S	4	2	ISE	ESE	ICA	ESE	
Total	4	2	--	--	50	--	50

Objective :

To develop the basic creative ability of the students in fundamentals of design. The students will learn the basic elements & principles of compositions.

Course outline :

The following topics should be taught with reference to atleast one architectural example.

1. Understanding Architectural Aesthetics.
2. Elements of Visual Aesthetics.
3. Attributes of form & space
4. Derivatives forms & transformation.
5. Scale, Proportion, Contrast.
6. Alignment, Repetition, Pattern, Rhythm.
7. Principles of Organization of Form & space
8. Study of Building by application of principles for Aesthetic Appraisal.

Submission :

Sufficient number of projects to cover the topics mentioned above. Stress to be given on two, three-dimensional study, sketches & models etc.

1. Presentation in PPT form with sketches (hand drawn) and photographs or 3D visuals of any examples illustrating the above elements in detail eg : Classical Buildings, sculptures, paintings, films, theatres, etc.
2. Submission of the file (theory)

Reference Books :

1. Francis D.K. Ching - Architecture: Form Space & Order
2. Pramar V. S. - Fundamentals in Architecture
3. Walter Gropius - Total Architecture

AR2- 03 : ARCHITECTURAL GRAPHICS –II

Teaching Scheme Per week		**Credit**	**Examination Scheme**				
Lecture/Studio L/S	4	4	Theory Exam -		Practical / Oral Exam		**Total**
Practical/Studio P/S	-	-	ISE	ESE	ICA	ESE	
Total	4	4	30	70	---	--	100

Objective :

To help students to understand graphical language as tool for drawing as communication in Architecture.

Course Outline :

1. Solid Geometry:

i. Projection methods of representing the solids on drawings such as orthographic projection.
ii. Isometric views of plans, elevations, & sections of solids.
iii. Study of complex, compound objects, their penetration, true shape of sections etc.
iv. Surface development of objects.
v. Application of such forms in architecture & their inter relationship.
vi. 3D development of building block.(isometric & axanometric)

Reference books :

1 Living areas and basic design - S.V Bapat

AR2 – 04 : WORKSHOP - II

Teaching Scheme Per week		**Credit**	**Examination Scheme**				
Lecture/Studio L/S	---	---	Theory Exam -		Practical / Oral Exam		**Total**
Practical/Studio P/S	3	1.5	ISE	ESE	ICA	ESE	
Total--	3	1.5	--	--	50	--	50

Objective :

The main objective is to study various model making techniques using different or specific material expressing their design concepts and perception.

Course Outline :

i. 3D composition using various forms, geometries in various materials.
ii. Interior detail models of Units - Living /Bedroom/ Kitchen / Dinning
iii. Models for basic design and basic architectural design elements.
iv. Model of Architectural design studio work – exterior model – using various materials.
v. Models of BT Studio work and History of Architecture.

Submission:

1. Brick bonds model , any historical building in group work.
2. Presentation of Models into sketches, photos plans and vice versa

Need : Making models gives students and teachers the understanding of context, composition, material and structure. It also takes students closer to the actual process of understanding compositions and spaces especially scale.

AR2 – 05 : BUILDING CONSTRUCTION & MATERIALS -II

Teaching Scheme Per week		**Credit**	**Examination Scheme**				
Lecture/Studio L/S	--	--	Theory Exam -		Practical / Oral Exam		**Total**
Practical/Studio P/S	6	3	ISE	ESE	ICA	ESE	
Total	6	3	--	--	100	50	150

CONSTRUCTION

Objective :

To help students understand the basic building elements, their function with specific reference to Load bearing construction and simple non RCC frame structure.

Main outline of this study is to develop strong sense of understanding the basic principles of construction and materials ,to develop analytical and logical sequence in thinking.

The emphasis should be on teaching the fundamental principles and constructional details suitable for Indian conditions.

Students shall be encouraged to study both in class room and also outside at work- sites in order to get the practical exposure.(Construction yard). A specific studio dedicated to integrate design, structure, and technology with the concerned staff to illustrate the relation between wall thickness, forms, volume and technology.

Course outline:

1. Brick Masonry:

i. Attached and detached piers, buttresses, pilasters, brick on edge, sundried brick**,** construction in mud mortar, soil-cement blocks,
ii. Expansion joints in masonry, compound wall.
iii. Arches and lintels in bricks.
iv. Cornices, Chajjas, Canopies and porch.

2. Doors and windows

i. Simple timber doors such as ledged, Braced, battened.
ii. Panelled door and window. Joints in carpentry,

3. Roof:

i. Roof layout, ridge, hip, valley, gable eaves etc.
ii. Types of simple pitched roof such as lean-to, couple, close couple and collar.
iii. Roof covering such as thatch, Mangalore tiles, other patent tiles, country tiles and shingles.

4. Staircase :

i. Concept, types and materials used.

Material

1. Sand:

i. Pit : River sand, sea sand, gravel,
ii. I.S.I. standard use in mortar and concrete,
iii. Bulkage of sand, impurities in sand and their removal,
iv. Different grades of sand with respective sizes and their applications,
v. I.S.I. standard uses in construction.

2. Lime:

i. Lime ore stone, quarrying and collection,
ii. Composition and physical properties, method of burning of lime ore, quick lime, Fat lime, hydraulic lime,
iii. Lime- mortar -mix, methods of preparation, neeru plaster,
iv. Efflorescence, peeling, flaking , blistering , use of surkhi,
v. I.S.I. standards, lime- wash, uses in constructions.

Submission :

i. B.T. portfolio with sketch.
ii. Files and notes of construction and materials.
iii. Actual samples of materials, grades of lime and stone
iv. Photos, data, PPT of material usage

Reference Books:

1. Building construction – Mc. Kay
2. Building construction – Chudley
3. Building construction – Barry
4. Building construction – Punmia B.C.
5. Building construction – Rangwala
6. Building construction – Mitchell
7. Building Material - Sushilkumar
8. Building Material – Rangwala

AR2-06 : THEORY OF STRUCTURES-II

Teaching Scheme Per week		Credit	Examination Scheme				
Lecture/Studio L/S	3	3	Theory Exam -		Practical / Oral Exam		**Total**
Practical/Studio P/S	--	--	ISE	ESE	ICA	ESE	
Total	3	3	30	70	--	--	100

Objective :

To understand the Concept of simple load bearing and frame structure.

Course Outline :

1. **Stress and strain** :
   i. Concept and definition, cause, effects, units, concepts of different types of stresses and strains, stress and strain curve, elastic limit, yield point, breaking and safe stress, factor of safety, different types of safe stress as per I.S.I. code for different materials like timber, steel, and other basic materials, masonry and concrete walls.
   ii. Stress and strain, Hook's law, elastic constants, young's modules, linear and lateral strain position's ratio, concept of shear modules bulk modules and their relation.
2. **Properties of sections**:
   i. Centre of gravity by graphical and analytical methods, moment of inertia, modules of section.
   ii. Radius of gyration, etc. of simple symmetrical and asymmetrical sections reference to ISI tables of various steel sections and their properties, concept of application of these properties in structural design.
3. **Bending moment and shear force**:
   i. Shear force and bending moment diagrams in case of simply supported beams and cantilevers with distributed, point loads and moments.
   ii. Point of contra flexure in simply supported beams with overhang, moments, applied to cantilevers and beams.

Seminar :

Examples of structural concept and actual buildings of choice in ppt form by staff/guests.

Reference books :

1. Strength of Materials – Khurmi
2. Strength of Materials – A. P. Dongre

Submission : Files / Notes / Sketch.

AR2- 07 : HISTORY OF ARCHITECTURE - II

Teaching Scheme Per week		**Credit**	**Examination Scheme**				
Lecture/Studio L/S	3	3	Theory Exam -		Practical / Oral Exam		**Total**
Practical/Studio P/S	--	--	ISE	ESE	ICA	ESE	
Total	3	3	30	70	---	---	100

Objective:

The various aspects of human civilization land & climate, social & economical philosophy & religion, Arts & crafts, science & technology are to be studied in general & their influence on Architecture & the style of Architecture to be studied with reference to building types, building materials & construction & with reference to specified example in particular.

Course Outline :

1. India –

i. Buddhism

e.g. Ashokan pillars, Stupa at sanchi, Chaitya hall at karli, Viharas – Vihara No 1 Ajantha

ii. Hinduism & Architecture

Gupta period (320 AD – 650 AD), Evolution of Hindu temple

e.g. Early shrines at sanchi – Deogarh, Durga temple, Ladkhan temple at Aihole, Rathas at Mahabalipuram.

2. Europe –

i. Greece – e.g. Parthenon at Athens, Theatre epidauras, Agora at Athens.

ii. Rome - e.g. Pantheon Rome, Basilica of Tranjan Rome, Tharmae at Caracalla, Colosseum Rome.

3. Early Christian –

i. (AD313 – 800 AD) e.g. Bailica of st. peter Rome (old).

4.Byzantine Arch. –

ii. (330 – 1453 AD)e.g. Hagia Sophia

Reference Books :

1. History of Arch. In India – by Tadgell Christopher
2. Indian Arch. – Buddhist & Hindu Period – Percy Brown
3. Architecture of India – Buddhist & Hindu – satish Grover ,
4. History of Arch. – Bannister fletcher.
5. History of world civilization – J.E. swain,
6. World Architecture – G.K. Hiraskar,
7. History of fine Arts in India & west – Tomory Edith.

AR2 -08: COMPUTER TECHNOLOGY IN ARCHITECTURE – II

Teaching Scheme Per week		**Credit**	**Examination Scheme**				
Lecture/Studio L/S	--	--	Theory Exam -		Practical / Oral Exam		**Total**
Practical/Studio P/S	2	1	ISE	ESE	ICA	ESE	
Total	2	1	--	--	50	50	100

Objective :

Application of computer is extremely necessary. Computer application particularly in architecture is of utmost importance. Thus necessary for every student to understand computers, their application and use in the profession. To use the computer as a drawing tool / presentation tool / designing tool.

Course outline:

Graphic software :

i. Autocad commands, Drafting, Layer, Design Presentation, 2D single unit drafting, nomenclature
ii. Introduction to Photoshop.
iii. Introduction to Corel draw.
iv. Presentation of plants in CorelDraw and photoshop.

Submission :

Files, Notes and Presentation.

Reference :

1. Autocad 2012 – Kogent Learning Solutions

2. Thousand Autocad Tips and Tricks – George O. Head