

SHRI SIDDHESHWAR SHIKSHAN MANDAL'S
COLLEGE OF ARCHITECTURE, SOLAPUR

Bachelor of Architecture

Third Year - Semester –V and Semester –VI

Syllabus

(W.E.F. 2018-19)

(Choice Based Credit System Structure)

SSSM'S COLLEGE OF ARCHITECTURE, SOLAPUR

Faculty of Engineering & Technology

Choice Based Credit System Structure of Third Year B.Arch W.E.F. 2018-2019

Semester V

Subject code	Course Name	Hrs./Week		Credits	Examination Scheme						
		L	P/S		ISE		ESE		ICA		Total
					Max.	Min.	Max.	Min.	Max.	Min.	
	<i>Theory papers</i>										
AR5-06	<i>Theory of Structure-V</i>	3	—	3	30	14	70	32	--	--	100
AR5-07	<i>History of Architecture -V</i>	3	--	3	30	14	70	32	---	--	100
AR5-02	<i>Building services – III</i>	3	-	3	30	14	70	32	---	---	100
AR5-04	<i>Acoustics</i>	3	-	3	30	14	70	32	--	---	100
AR5-09	<i>Self learning (HSS Course)</i>	2	-	2	--	--	50	23	--	--	50
	<i>A) Sustainable building materials</i>										
	<i>B) Architectural Appreciation</i>										
	<i>C) Theatre /Film Set Design</i>										
	<i>Total</i>	14	--	14	120	--	330	--	---	--	450
	<i>Studio / practical / oral</i>										
AR5-01	<i>Architectural Design –V</i>	-	8	4	---	--	100	45	150	68	250
AR5-03	<i>Interior Design</i>	-	5	2.5	---	--	50	23	100	45	150
AR5-05	<i>Bldg. Construction & Material - V</i>	-	6	3	---	--	50	23	100	45	150
AR5-08	<i>Landscape</i>	—	3	1.5	—	--	--	--	50	23	50
	<i>Total</i>	-	22	11	---	--	200	--	400	--	600
	<i>Grand Total</i>	14	22	25.00	120		530		400		1050

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

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

NOTE – Syllabus of self learning HSS Course is common for all undergraduate programs schemes under faculty of Engineering and Technology .

SSSM'S COLLEGE OF ARCHITECTURE, SOLAPUR

Faculty of Engineering & Technology

Choice Based Credit System structure of Third Year B.Arch W.E.F. 2018-2019

Semester VI

	Course Name	Hrs./Week		Credits	Examination Scheme						
		L	P/S		ISE		ESE		ICA		Total
					Max.	Min.	Max.	Min.	Max.	Min.	
<i>Subject code</i>	<i>Theory papers</i>										
AR6-06	Theory of Structure-VI	3	—	3	30	14	70	32	--	--	100
AR6-07	Estimating Specifications & Costing -I	3	--	3	30	14	70	32	---	--	100
AR6-02	Building services – IV	3	-	3	30	14	70	32	---	---	100
AR6-04	Urban planning	3	-	3	30	14	70	32	--	---	100
AR6-09	Self learning (Technical course) A. Sustainable Building Design Principles B. Low Cost Architecture C. Building bye laws	2	--	2	--	--	50	23	--	--	50
	Total	14	--	14	120	--	330	--	---	--	450
	<i>Studio / practical / oral</i>										
AR6-01	Architectural Design –VI	-	8	4	---	--	100	45	150	68	250
AR6-03	Working Drawing – I	-	5	2.5	---	--	50	23	100	45	150
AR6-05	Bldg. Construction & Material -VI	-	6	3	---	--	50	23	100	45	150
AR6-08	Seminar	—	3	1.5	—	--	--	--	50	23	50
	Total	-	22	11	---	--	200	--	400	--	600
	Grand Total	14	22	25.00	120		530		400		1050

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

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SSMS COLLEGE OF ARCHITECTURE , SOLAPUR
FACULTY OF ENGINEERING AND TECHNOLOGY

CREDIT SYSTEM STRUCTURE OF B.ARCH. W.E.F.2018-2019

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.

V SEMESTER

AR5-01: ARCHITECTURAL DESIGN– V

Teaching Scheme Per week		Credit	Examination Scheme					
Lecture - L	--		Theory Exam	Practical / Oral Exam		Total		
Practical/Studio	P/S	08	4	ISE	ESE	ICA	ESE	
Total		08	4	--	--	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 spaces. The student is expected to collect, analyze, learn the process of Design and approach to the Design.

COURSE OUTLINE:

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. Study of groups of objects forms, masses with basic geometric forms, their composition for two and three dimensional study.

Scope of the project:

1. Design problem of built-up area about 1000 to 1500 sq.m.
2. Plot areas can vary from 3-4 times of the built up area .
3. Multistoried office apartments, Service apartment, commercial complex, Youth Hostel, Communication center, Public Building like Govt. offices, corporate offices, Bank with residence, Exhibition center, pavilions, food malls, Motel, Multipurpose halls, Child care center, Health center, recreation (auditorium, theaters), City Library, Memorials, Public Health Center, town center.
4. Introduction of climate, landscape ,services and interiors.
and one time bound problem of built up area about 500-750 sq.m.

Design process:

1. Case studies and methodology .
2. Circulation and site analysis programme and requirement analysis.
3. Data collection and analysis like circulation, bubble diagram, climatic response .
4. Conceptual plans and study models.
5. Actual plans and climatological details .
6. Floor plans, elevations, sections, views and models.

Sketching :

1. Freehand sketching with different medium of case studies,detailing of individual spaces and surfaces, volumetric analysis,conceptual plans.
2. Sketch book size, papers, to be specified.(Preferable half of A4).

Submission :

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

Marking:

- | | |
|---------------------------------------|----|
| 1. Site climate analysis and concept. | 25 |
| 2. Floor plans. | 25 |
| 3. Sections & elevation. | 30 |
| 4. Views /Models & Presentation. | 20 |

Reference Books:

1. Man climate architecture.
2. Francis D.K. Ching –Elements of Architecture.
3. Neuferts Data.
4. Walter Gropius – Total Architecture.
5. Prammar V.S. – Fundamentals in Architecture.

AR5-02 : BUILDING SERVICES – III

Teaching Scheme Per week		Credit	Examination Scheme				
Lecture - L	03		3	Theory Exam -		Practical / Oral Exam	
Practical/Studio P/S	---	---	ISE	ESE	ICA	ESE	
Total	03	3	30	70	---	---	100

Objective:

To develop the knowledge and skill required for understanding services in building and their integration with Architecture

COURSE OUTLINE :

A) Electricity (Introductory):

Electrical installation in building

1. Electrical wiring system.
2. Different material employed & specification.
3. Distribution board, layout of point.
4. Domestic electrical appliances.
5. Earthing for electrical appliance.

B) Illumination:

1. Principles of natural lighting glare, shade & shadows.
2. Natural and artificial lighting and principles of good illumination.
3. Illumination level required for diff. activities.
4. Different types of artificial lighting system .
5. Types of lamps and fitting & their functions.
6. Direct, diffused, indirect.

C) Natural and Mechanical ventilation:

1. Requirements of comfort conditions, temp control, humidity control, air filtration rate of ventilation.
2. Mechanical ventilation in bldg, plenum systems, plenum and exhaust system humidification & cooling, heating of building.
3. Air conditioning (Introductory)
Diff methods of A.C. ,Heat transmission through wall, roof and floor, solar gain through glass, shading internal heat gain, Air ducts.
4. Application to Residential & commercial places.
5. Planning requirement for A.C. plant.

D) Other Services (Introductory):

1. Lift and escalators.
2. Fire and inter communication service for residential & public building and equipment for the same , Rules & regulation for Fire Protection.

Submission – File and sketches.

References: 1. Building services and equipment by F. Hall.

2. Building services by S. M. Patil.

3. Refrigeration and Air Conditioning Engg. By S. C. Arora, S. Don Kundwar.

4. Electricity Pack by Raja Rao.

AR5 -03 : INTERIOR DESIGN

Teaching Scheme Per week		Credit	Examination Scheme					
Lecture - L	--		Theory Exam -	Practical / Oral Exam		Total		
Practical/Studio	P/S	05	2.5	ISE	ESE	ICA	ESE	
Total		05	2.5	--	--	100	50	150

Objective:

To introduce the students the importance and scope of interior design in relation to space planning , market surveys and its application in design

COURSE OUTLINE:

1. Market survey of various building materials ,market forms with application.
2. Interior Spaces: - Factors to be considered in interior design such as functions, grouping, circulation with furniture layout, space organization, Visual Impact (revelation of anthropometric study in design)
3. Interior Elements : Role, design and material of furniture, ceiling, walls, floors, lighting, color, upholstery, drapery, texture, indoor landscaping, surface treatment towards total effect of interior space.

Submission:

The class work shall include two assignments Market Survey and one major project to be handled with complete design, detailing specification of material. The project shall relate to interiors of residential, commercial, educational etc. (Preferably previous year design solution).

References:

1. Time saver standard Interior Design.

AR5- 04: ACOUSTICS

Teaching Scheme Per week		Credit	Examination Scheme					
Lecture – L			Theory Exam -	Practical / Oral Exam		Total		
Practical/Studio	P/S	--	---	ISE	ESE	ICA	ESE	
Total		03	3	30	70	---	---	100

Objective :

To study the importance of Acoustics in buildings .

COURSE OUTLINE:

1. Sound and its properties:

1. Origin and propagation of sound, properties of sound, behavior of sound in enclosed spaces.
2. Units of measurement of different properties of sound.
3. Reverberation, absorption, reflection and resonance Insulation and transmission of sound, sabins formula.
4. Acoustical criteria for various uses.
5. Properties and different materials for these purposes, choice of site and location of buildings, considering acoustics conditions.
6. Principle of acoustical design, effect of geometry and shape of rooms.
7. Choice and location of suitable acoustic materials, sound shadows,
8. Illustrative examples of auditoriums for different purposes, conference halls, lecture halls, multi-purpose halls.

2. Noise:

1. Characteristics of noise, noise criteria for different types of rooms, sources of noise.
2. Control of noise in buildings, and town planning, structure borne sound, acoustical problems in multistoried buildings.

3. Sound amplification:

1. Principles of sound amplification and distribution.
2. introductory specifications for sound reinforcement systems for different types of halls.

4. Design problems:

1. Design problems based on above principles, It should preferably be based on Architectural Design problem.
2. Design should be accompanied by study reports, showing acoustical calculations and applications of principles and detailed drawings.

Submission : files and sketches.

References : Acoustics in Building Design by Siraskar K.A.

AR 5-05 : BUILDING CONSTRUCTION & MATERIAL – V

Teaching Scheme Per week		Credit	Examination Scheme					
Lecture - L	--		Theory Exam	Practical / Oral Exam		Total		
Practical/Studio	P/S	06	3	ISE	ESE	ICA	ESE	
Total		06	3	--	--	100	50	150

Objective:

To study construction systems with focus on roofing and techniques of pile foundation, metal doors, windows and partitions.

COURSE OUTLINE:

CONSTRUCTION

1. Foundation:

1. Foundation in loose soil.
2. Pile foundation, types of piles, Pressure piles and end bearing pile, precast piles, cast-in-situ piles, method of driving piles, pile caps etc.
3. Construction aspects and details of Raft foundation & types .

2. Doors, Windows & partitions:

1. Pivoted, revolving, sliding, folding doors and windows,rolling shutter,collapsible gates, mosquitoes, fly protection.
2. Concrete frames, shutters of different types (synthetic boards, P.V.C, F.R.P. etc.).
3. Sliding & folding partition with different materials like aluminum, cement boards plywood, glass, synthetic material etc.

3. Roofing:

Steel trusses of various span (north light), covering material (AC/CGI/Aluminum sheet), patent glazing, Turbo vent and joinery details .

MATERIALS

Properties,uses,types , advantages and disadvantages and its applications in buildings:-

1. Ferrous metals (cast iron, wrought iron, steel).
2. Non ferrous metals (Lead, copper, brass, aluminum, zinc).
3. Glass.

Submission :

1. B.T. portfolio with sketch.
2. Files and notes of construction and materials.
3. Photos, data, PPT of material usage.

Reference books :

For Construction:

1. Building construction – Mc. Kay , Building construction – Chudley , Building construction – Barry
Building construction – Punmia B.C., Building construction – Rangwala , Building construction – Mitchell

For Materials :

1. Building Material - Sushilkumar
2. Building Material - Rangwala

AR5-06 : THEORY OF STRUCTURES – V

Teaching Scheme Per week		Credit	Examination Scheme					
Lecture - L	03		3	Theory Exam -		Practical / Oral Exam		Total
Practical/Studio	P/S	---	---	ISE	ESE	ICA	ESE	
Total	03	3	30	70	---	--	100	

Objectives :

To help students to understand and analyse the behavior of steel structural members.

COURSE OUTLINE :

1. STEEL STRUCTURES :

Bolted and welded joints – failure of Bolted joints – Strength and Efficiency of Bolted Joints – Types – Design of Bolted Joints for Axially Loaded Members (Excluding eccentric connections)
Types of welded joints – Advantages and disadvantages – Design of Fillet welds (Excluding eccentric connections).

2. TENSION MEMBERS :

Introduction – Net sectional area – permissible stresses. Design of Axially loaded Tension member – Lug angle – code provisions.

3. COMPRESSION MEMBERS :

Introduction – various sections – built up section – Design of columns (excluding Lacing, Battening and other connections.)

4. STEEL BEAMS :

Introduction – laterally supported and unsupported beams – Design of laterally supported beams.

5. STEEL ROOF TRUSSES:

Types of roof trusses – Selection of trusses according to the span – Estimation of gravity loads and wind loads. Analysis of Roof Trusses and Design of at least two members.

Submission: files and sheets.

Reference :

1. S.K. Duggal, “Limit State Design of Steel Structures”, McGraw Hill Education, Private Limited, 2010.
2. Dr. V. L. Shah, Prof. Veena Gore, “Structures Publications”, Pune, 2012.
3. S.S. Bhavikatti, “Design of Steel Structures” by Limit State Method as per IS800-2007, I.K. International Publishing House Pvt, Ltd, 2012.

AR5 – 07 : HISTORY OF ARCHITECTURE – V

Teaching Scheme Per week		Credit	Examination Scheme					
Lecture - L	03		3	Theory Exam -	Practical / Oral Exam		Total	
Practical/Studio	P/S	--	--	ISE	ESE	ICA	ESE	
Total		03	3	30	70	--	--	100

Objectives:

To provide an understanding and appreciation of contemporary trends in Indian and western Architecture in terms of ideas and directions through the works of outstanding architects.

Course Outline :

Architecture during 20th Century ,Architecture in Europe and other continent.
Study of philosophy of Architects and their works.

1. Modern Architecture :

Industrial revolution, its Effects of Industrial revolution its social, economical, political effects.
New building materials and construction technology. E.g. crystal palace , josep Paxton.

2. Modern Architectural Movements:

1. Chicago school Arts & crafts.
2. Art Nouveau.
3. Bauhaus movements.
4. International Style.
5. Post modern architecture.
6. Deconstruction.

3. Ideas and works of great Architects:

1. Louis Sullivan – e.g. Mayer and Schlesinger dept. stores, Wainwright building.
2. F. L. Wright- e.g. Falling Water, Guggenheim museum, New York.
3. Le Corbusier –e.g. Ronchamp Church, Villa Savoye, France.
4. Mies Vander Rohe – e.g. Dr. Franswarth house, Barcelona Pavilion.
5. Walter Grophius –e.g. Fagus factory , Bauhaus school.
6. Antoni Gaudi – e.g. Casa Mila apartment.
7. Oscar Niemeyer –e.g. National Congress Complex.

4. Contemporary Architecture :

1. Charles Chorra – e.g. Kanchanjanga apartment Mumbai.
2. Laurie Baker –e.g. Center for Development Studies, Thiruvananthapuram.
3. Frank Gehry – e.g. Guggenheim Museum at Bilbao, Ghery residence ,California.
4. Zaha Hadid – e.g. IBA Housing.

Submission: Files and sketches.

Reference: 20th century architecture, Banister Fletcher- History of Architecture.
Contemporary Architecture by Morgan, Ann. Lee & Taylor Cotin.
Modern Architecture in India by Bahga

AR 5- 08 : LANDSCAPE

Teaching Scheme Per week		Credit	Examination Scheme					
Lecture - L	--		--	Theory Exam -		Practical / Oral Exam		Total
Practical/Studio	P/S	03	1.5	ISE	ESE	ICA	ESE	
Total		03	1.5	--	--	50	---	50

Objective :

To introduce the composition of open to sky spaces exterior,interior with Landscape elements. The compositions based on the basic design principles of Landscape as complementary to Architecture

COURSE OUTLINE:

1. Definition of Landscape architecture, scope and magnitude.
2. Elements of Landscape, Land forms, water bodies, Vegetation .
3. Garden sculpture, furniture, hardscape- detailed study .
4. Selected plants, taxonomy plantation & maintenance.
5. Historical development French & English, Mughal, Japanese, Landscape.
6. Natural & Manmade Landscape.
7. Architectural design problem with Landscape scheme presented through models, sketches and drawings.
8. Visit to nurseries, gardens collection and information of selected plants (herbarium).

Submission : files and sketches, ppt and photographs

Reference: Time saver std. (Landscape)

1. Landscape Arch. by J.O. Simmonds.
2. Introduction to landscape Architectural by Michel Laurie.

SELF LEARNING (HSS COURSE)

Teaching Scheme Per week		Credit	Examination Scheme					
Lecture - L	02	02	Theory Exam -		Practical / Oral Exam		Total	
Practical/Studio P/S	--	---	ISE	ESE	ICA	ESE		
Total	02	02	--	50	--	---	50	

COURSE OBJECTIVE :

To open the kaleidoscope of specialized areas in architecture.

COURSE OUTLINE :

The student will opt for any one of the following Subject

- A) Sustainable Building Materials
- B) Architectural Appreciation
- C) Theatre /Film Set Design

The detail syllabus for the above subjects are given hereby

A. SUSTAINABLE BUILDING MATERIALS

Course Objectives:

Introduced to the Features of Sustainable Building Materials, Understand basic elements, principles and techniques of Selecting & use of materials.

Course Outline:

UNIT I

Features of Sustainable Building Materials: Life Cycle Analysis of Building Materials. Pollution prevention in Manufacturing, Waste Reduction Measures in Manufacturing, Recycled Content, Embodied Energy Reduction, Use of Natural Material, Reduction of Construction Waste, Local Materials, Energy Efficiency-Thermal properties, Chemical Properties, Physical Properties, Longer Life, Reusability, Recyclability, Biodegradability.

UNIT II

Key Building Materials and Sources: Limestone, Steel, Aluminium, Bricks and Tile, Petrochemicals, Wood, Alternatives to conventional building materials, etc

UNIT III

Selecting Sustainable Building Materials: Selecting Sustainable Building Materials- Criteria: Methodologies and selection criteria, Cradle to Cradle approach.

UNIT IV

Strategy of use of materials Strategy of use of materials in Pre-Building Phase: Manufacture; Building Phase: Use; Post-Building Phase: Disposal; considering issues mentioned above. Alternatives to conventional building materials.

Submission :

Files And Sketches Reference

books:

1. Handbook of Sustainable Building by David Anink, Chiel Boonstra, John Mak .
2. 1 Adobe: Building & Living with Earth, by Orlando Romero & David Larkin.

B. ARCHITECTURAL APPRECIATION

OBJECTIVE:

To introduce students to fundamental principles of architecture and architectural design, basic ideas of theoretical and historical approaches to architecture for analysis and design; to develop an understanding of Ideas, Concept, Form, Function and Meaning with respect to architecture; to introduce the students to the aspects of Production, Representation and Categorisation of architectural objects and processes.

DETAILED SYLLABUS:

UNIT I

Architectural Appreciation

Central problem of Design Theory

- How is the Idea Generate? What Influences its shape? From what it is derived?

Theories of Form: Form follows Functions/Creative imagination/Spirit of the age/Social and Economic Conditions/Timeless principles

Notes on Element/ Thing/ Relation/ Representation/ Concept/Notion/ Idea/ Principle/ Doctrine

Interpretations of Vitruvian Triad: Firmness/Commodity/Delight

Primary and Secondary Categories in Architecture

- Form ,Function ,Meaning ,Context ,Construction ,Will

UNIT II

Architectural Appreciation with examples

Form and Formalism

- Elements: Line, Plane, Volume
- Structure: Axes/Grid, regularity/Repetition, proportion
- Aesthetics: Beauty, Formal Order (Unity/Variety/Harmony), and Esthetic

Theories. Minimalism, Mannerism

Function and Functionalism

- Systems: Planning, Services Value and Economics
- Functions: Towns and Cities, Building Types Human Activities
- Human Values (In terms of form Function Meaning)

Text Books:

1. Architectural Theory, Vol 2, Principles of Twentieth Century Architectural Theory arranged by Category, David Smith Capon, John Wiley & Sons, Chichester, England 2000, (pp.i-xii, 1-140)
2. Architecture - Form, Space and Order , Francis D K Ching, Van Notstrand Reinhold, New York. 1996 (For Graphics)
3. Paul Alan Johnson, Theory of Architecture pp. 272-276, 288-292, 399-417
4. Roger Scruton, Aesthetics of Architecture (On Style Taste Fashion essence etc)
5. Alan Colquhoun, Modernity & Classical Tradition pp. 1-21

C.THEATRE AND FILM SET DESIGN

OBJECTIVE :

History of set and backdrop design for performance, Theme Based sign Strategies and Technology Applications. Explore how to create a make believe environment and to establish intimacy between the performers and the audience in relation to the theatre and cinema halls.

COURSE OUTLINE : For Dance/Drama/Lecture/Theatre

UNIT 1

Historical Evolution of the stage, degree of encirclement in various types of stage designs such as open air, arena, thrust – in and proscenium stages Terminology and Theory of Stage Design

UNIT II

Technical aspects like Sound, Lighting and Colour scheme

Visualization of and creation of sets e.g. with backdrops and scenery

UNIT III

For Film Set Design Film set designs with response to camera positioning and movement

Indoor and outdoor shooting

Film sets as a creation of virtual environment appropriate for the scenery and shots. • Support structure for film set erection for indoor and outdoor shooting.

UNIT IV

Architects role in cinematography

Reference Books:

Stage Design: A Practical Guide by Gary Thorne

Theatre Design: Behind the Scenes with the Top Set, Lighting, and Costume Designers by Babak A. Ebrahimian

VI SEMESTER

AR6-01 : ARCHITECTURAL DESIGN – VI

Teaching Scheme Per week		Credit	Examination Scheme					
Lecture - L	--	--	Theory Exam -		Practical / Oral Exam		Total	
Practical/Studio	P/S	08	4	ISE	ESE	ICA	ESE	
Total		08	4	--	--	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 spaces. The student is expected to collect, analyze, learn the process of Design and approach to the Design.

COURSE OUTLINE:

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. Study of groups of objects forms, masses with basic geometric forms, their composition for two and three dimensional study.

Scope of the project:

1. Design problem of built-up area about 1200 to 2500 sq.m.
2. Plot areas can vary from 3-4 times of the built up area
3. The students are expected to design complex buildings such as Science center, Housing, Industrial, Educational campus, Hospital, Multiplex, Concert hall, Museum, Art Galleries, Crematorium, Rehabilitation center, Transport Building, Urban center etc.
4. Introduction of climate, landscape ,services ,interiors and zoning.
5. One time bound problem of built up area about 750-1200 sq.m.

Design process:

1. Case studies and methodology .
2. Circulation and site analysis programme and requirement analysis.
3. Data collection and analysis like circulation, bubble diagram, climatic response.
4. Conceptual plans and study models.
5. Actual plans and climatological details .
6. Floor plans, elevations, sections, views and models.

Sketching :

1. Freehand sketching with different medium. Of case studies ,detailing of individual spaces and surfaces, volumetric analysis ,conceptual plans.
2. Sketch book size, papers, to be specified.(Preferable half of A4).

Submission :

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

Marking:

- | | |
|---------------------------------------|----|
| 1. Site climate analysis and concept. | 25 |
| 2. Floor plans. | 25 |
| 3. Sections & elevation. | 30 |
| 4. Views /Models & Presentation. | 20 |

Reference Books:

1. Man climate architecture.
2. Francis D.K. Ching–Elements of Architecture .
3. Neuferts Data.
4. Walter Gropius – Total Architecture.
5. Prammar V.S. – Fundamentals in Architecture.

AR6-02: BUILDING SERVICES- IV

Teaching Scheme Per week		Credit	Examination Scheme				
Lecture - L	03		3	Theory Exam -		Practical / Oral Exam	
Practical/Studio P/S	--	--	ISE	ESE	ICA	ESE	
Total	03	3	30	70	--	--	100

Objective:

To understand the various types of waste ,their treatment and disposal .

COURSE OUTLINE:

A)Sewage treatment plant (introductory only):

1. Basic Principles of Sewage treatment plant its objective and layout of the Sewage treatment plant.

B) Sewage disposal:

1. Sewage disposal of large area (Introductory only).
2. Sewage disposal system for housing colony small and medium size project for smaller and bigger towns & in rural area.
3. Connection of large complexes to municipal sewer and ventilation of sewer,public sewerage system.
4. Methods of Sewage disposal – Natural and Artificial Method.

C) Disposal of Sewage in Unsewered areas:

1. Different types of Privys.
2. Septic Tank, Imhoff tank.
3. Public Toilet – Sulabha Shauchalaya (pit latrines).

D) Waste water treatment plant (Introductory):

E) Refuse disposal:

1. Refuse disposal system for small house, colony and town Refuse types & disposal problems.
2. Refuse incinerator methods.
3. Methods of dry disposal, wet disposal of refuse.
4. Industrial refuse disposal, problems and system.
5. Utilization of farm refuse.
6. Refuse disposal in multi-storied building.

Submission : Files and sketches.

References: 1. Building services and equipment by Birdie.

2. Building services by S. M. Patil.

3. Water supply and sanitation by Rangawala.

AR6-03: WORKING DRAWING-I

Teaching Scheme Per week		Credit	Examination Scheme					
Lecture - L	--		--	Theory Exam		Practical / Oral Exam		Total
Practical/Studio	P/S	05	2.5	ISE	ESE	ICA	ESE	
Total		05	2.5	--	--	100	50	150

LOAD BEARING STRUCTURE:

OBJECTIVE :

This subject introduces the students line methodology of preparation of working drawing based on the principle of interpretation and reading of drawings.

COURSE OUTLINE:

These drawing should enable the site staff to transform the drawing into actual construction with help of sufficient data.

Working drawing for load bearing structure (80-100 sqm) area of previous design problem.

1. Building permission drawing (Municipal)
2. Centerline plan.
3. Excavation plan.
4. Foundation plan.
5. All floor plan.
6. Elevation, section.
7. Architectural drawing details .
8. Electrical layout.
9. Plumbing layout
10. Sanitary layout.

REFERANCES :

SUBMISSION: Portfolio and sketches.

AR6 – 04 : URBAN PLANNING

Teaching Scheme Per week		Credit	Examination Scheme					
Lecture - L	03		3	Theory Exam -		Practical / Oral Exam		Total
Practical/Studio	P/S	--	--	ISE	ESE	ICA	ESE	
Total		03	3	30	70	--	--	100

OBJECTIVE:

This course is proposed to impart preliminary training for environmental and city planning. The process of town planning factors affecting city planning and procedures involved, to understand how foresighted city planning will meet present as well as future social, cultural and economical requirements.

COURSE OUTLINE:

1. A general understanding of Town Planning principles which have evolved through ages on global scale.
2. Evolution of Town Planning thought with special reference to post independence (19 century) India. e.g. New Delhi, Chandigarh, Gandhi Nagar, Bhuvaneshwar.
3. Objects of planning, human settlements, Town Planning as an interdisciplinary process, contemporary planning concepts of Geddes, Howard, Doxiadis, Perry, Le Corbusier etc.
4. Development plans ,Urban and Rural Housing Programmes ,Zoning and other regulations.
5. Land-use maps, topography, influences of climate on town planning.
6. Infrastructure in city planning, traffic census, classification of roads road layouts, Widths, junctions, flyover bridges, and various road patterns for vehicles and pedestrian traffic.

Submission : Files and sketches.

References :

1. "The Urban Pattern : City Planning and Design" by Gallion and Eisner.
2. Fundamentals of Town planning by G.K. Hiraskar.
3. Text Book of town planning by Amit Bandopadaya.
4. town planning by Rangwala.

AR6-05: BUILDING CONSTRUCTION AND MATERIAL-VI

Teaching Scheme Per week			Credit	Examination Scheme				
Lecture - L	--	--		Theory Exam -	Practical / Oral Exam		Total	
Practical/Studio	P/S	06	3	ISE	ESE	ICA	ESE	
Total	06	3	--	--	100	50	150	

CONSTRUCTION

Objective:

To study construction systems with focus on specialized techniques.

COURSE OUTLINE:

Foundation:

1. Details of basement Construction with water proofing in (a) Masonry (b) R.C.C.
2. Dewatering of basements, sheet piles.
3. Methods of water proofing for basements, swimming pools.
4. Bank Vaults.

Super Structure:

1. Framing girders in steel, steel stanchion & erection of steel structure.
2. Glass curtain wall with Steel, Aluminum, Plastic Framing .
3. Cladding in stone slabs and other materials.

Precast:

1. Precast cellular concrete block, slab panels (siporex), various construction components.

Ferrocement:

1. Specification methods of construction (vaults, wall, water tanks).
2. Thermal insulation for Ferrocement structures.

MATERIAL

Properties, uses, types, advantages and disadvantages of -
Plastics, Ceramics , Asbestos , Paints And Varnishes

Submission :

1. B.T. portfolio with sketch.
2. Files and notes of construction and materials.
3. Actual samples of materials.
4. Photos, data, PPT of material usage.

Reference books :

For Construction :

1. Building construction – Mc. Kay, Building construction – Chudley, Building construction – Barry
2. Building construction – Punmia B.C., Building construction – Rangwala, Building construction – Mitchell.

For Materials –

1. Building Material – Sushilkumar, Building Material – Rangwala.

AR6 -06: THEORY OF STRUCTURE – VI

Teaching Scheme Per week		Credit	Examination Scheme				
Lecture - L	03		3	Theory Exam -		Practical / Oral Exam	
Practical/Studio P/S	--	---	ISE	ESE	ICA	ESE	
Total	03	3	30	70	--	--	100

Objectives :

To help students to understand and analyse the behavior of R.C.C. structural members.

COURSE OUTLINE :

1. LIMIT STATE DESIGN OF SLABS :

Introduction to Working and Limit state methods. Behavior of one way and two way slabs – Analysis and Design of one way and two way slabs for various edge conditions.

2. LIMIT STATE DESIGN OF BEAMS :

Analysis and design of singly and doubly reinforced rectangular for Bending – Design of Continuous beams using IS code co-efficient. IS a code provisions for slabs.

3. LIMIT STATE DESIGN OF COLUMNS:

Analysis and design of Square and Rectangular column for Axial and Un-axial bending. IS a code provisions for the columns.

4. LIMIT STATE DESIGN OF FOOTINGS:

Introduction to different types of foundations. Analysis and design of Square and Rectangular footings for Axial and Un-axial bending. IS a code provisions for the Footings.

5. STAIRCASE :

Introduction to different types of Staircases – Reinforcement details of staircase. IS code provisions for staircase.

Reference:

1. P.Dayaratnam, “Design of Reinforced Concrete Structures”, Oxford and IBH Publishing Co., 1983.
2. C. Sinha and S.K. Roy, “Fundamentals of Reinforced Concrete”, S.Chand & Co., New Delhi, 1983.
3. Dr. B.C. Punmia, “Reinforced Concrete Structures”, Vol, 1 & 2 Laxmi publication, Delhi, 2004.
4. IS 456 “Indian Standard, Plain and Reinforced Concrete, Code of Practice, Bureau of Indian Standards, 2000.
5. S.Unnikrishnan Pillai and Devados Menon, “ Reinforced Concrete Design” – Tata McGraw Hill Publishing Co. Ltd., New Delhi, 1999

AR6-07 -ESTIMATING SPECIFICATIONS AND COSTING -I

Teaching Scheme Per week		Credit	Examination Scheme				
Lecture - L	03		3	Theory Exam -		Practical / Oral Exam	
Practical/Studio	P/S	--	ISE	ESE	ICA	ESE	
Total	03	3	30	70	---	---	100

OBJECTIVE:

The subject enable the student to prepare outline specification and approximate and detailed estimates for simple building and gets an idea about financial aspect of construction of buildings “ The estimation of civil items of load bearing structures with RCC slab and Manglore tiles pitched roof and RCC items required – should be done.

COURSE OUTLINE:

1. Introduction to the definition, aim and scope of “Quantity Computation”
 - a. Study of different types of estimates.
Approximate estimate, Plinth area estimate, Cube rate estimate, Revised estimate, Supplementary estimate, Supplementary and revised estimate, Annual repair and maintenance estimate.
 - b. Contingencies.
 - c. Work charge establishment.
 - d. Tools and plants.
 - e. Schedule of Rates.
 - f. Administrative approval of sanction.
 - g. Expenditure sanction.
 - h. Technical Sanction.
 - i. Bill of Quantities.
 - j. Day work.
 - k. Prime cost.
 - l. Provisional quantities.
 - m. Capital cost.
 - n. Complete estimate of project.
2. Study of mode of measurements as stipulated in I. S. 1200.
3. Methods of computing quantities for load bearing types of structure by PWD method and center line method and preparing abstract and bills of quantities including units of measurements.
4. Computing quantities of various building items load bearing structure and Preparing of quantities for estimation.
5. Study of composition of rates of various building items, percentage distribution in the rates of materials, labour, tools and plant, contractor’s profits and overheads etc.
6. Analysis of rates of main items of building work with reference to prevalent market rates of materials and labour wages.

Reference:-

- D) Estimating and Costing by SK Dutta.
- E) Estimation by SC Rangawala.

AR6-08 - SEMINAR

Teaching Scheme Per week			Credit	Examination Scheme				
Lecture - L		--		Theory Exam -		Practical / Oral Exam		Total
Practical/Studio	P/S	03	1.5	ISE	ESE	ICA	ESE	
Total		03	1.5	--	--	50	---	50

OBJECTIVE:

In this subject, the student learns to study in depth any architectural topic and its underlying principles. He offers his own views of solutions and presents them before an audience and holds discussions.

COURSE OUTLINE:

The subjects shall cover any topic within the scope of syllabus, works and philosophy of eminent architects, review of any book, appreciation of an existing building in the area, etc.

All students study on topic in detail and each of them prepares a paper on the subject with sketches, photographs etc.

The student presents and submit a spiral bound hard copy of the same . It should be seen that every student presents seminar on maximum three topics in the academic semester.

Submission : Spiral bound book.

AR6-09 : SELF LEARNING (TECHNICAL COURSE)

Teaching Scheme Per week		Credit	Examination Scheme					
Lecture - L	02		02	Theory Exam -		Practical / Oral Exam		Total
Practical/Studio	P/S	--	---	ISE	ESE	ICA	ESE	
Total		02	02	--	50	--	---	50

Course Objective :

To open the kaleidoscope of specialized areas in architecture.

Course Outline :

The student will opt for any one of the following course

- A.Sustainable Building Design Principles.
- B.Low Cost Architecture.
- C.Buiding Bye-Laws

The detail syllabus for the above subjects are given hereby

A: SUSTAINABLE BUILDING DESIGN PRINCIPLES

Objectives:

To develop Pre Design approach to Building Design, understand Parameters, Rating systems & Integration of Building systems.

Course Outline :

UNIT I

Pre Design approach: Building programme, Develop strategies, Conduct research, and Select site. Site approach: Climatic data collection, Climate analysis, Site data collection, Site analysis.\

UNIT II

Building Design: Parameters of Architectural Design, Orientation, Massing, Configuration, Envelope design, Daylight strategies, Integrating Passive design techniques, Design of Built & Un-built spaces.

UNIT III

Introduction to various “Rating systems” and standards developed by various organizations, standards, codes, Governments like ‘LEED, BREEM, IGBC, GRIHA’ etc. Understanding the concepts and parameters used in these systems by regulators.

UNIT IV

Integrating Active & Passive systems in Design in view of the above rating systems.

Submission :

files and sketches

Reference Books:

1. Man climate and architecture: Simos Yannas.
2. Sun wind light: G Z Brown.

B. LOW COST ARCHITECTURE

Course Outline :

UNIT I

Introduction to Low Cost Building Design & Sustainability and components of buildings influencing the cost.

UNIT II

Evaluation of building forms based on functions, materials and construction techniques.

UNIT III

Prefabrication, Modular Coordination, Fly ash, Rationalization, Cost and Usability.

UNIT IV

Low cost building materials, methods and techniques by CBRI, HUDCO, Development Alternatives,
Laurie Baker, Anil Laul, Revati Kamath etc .

Submission :
files and sketches

Referance Books:

1. Hand book of Low Cost housing by A.k.Laul.
2. Laurie baker – Life, Works and Writing by Gautam Bhatia.

C. BUILDING BYE –LAWS

Objective :

To study in depth of the prevalent byelaws for proper designing

Course Outline :

Survey of Solapur Municipal Corporation Act, with reference to Building Projects. Study of Town Planning Act as per environment development of Solapur .

Implications of Development Control rules for Solapur .

Comprehensive study of Building Bye-laws relating to the strength and stability of structures, bye-laws relating to light and ventilation, sanitation and Buildings.

Study of special provisions in bye-laws in respect of factory and amusement buildings. Tenures of land in Maharashtra State.

Submission :

Sessional work based upon above topics.