

III - SEM

STUDY AND EVALUATION SCHEME ARCH ASSTT 2013

III SEMESTER

S n	Subjec t Code	Subject	Teaching Load			Evaluation Scheme						Total Marks
						Internal			External			
			L	T	P	Theory	Practical	Theory	Practical	Hrs.		
1	AA-330	Architectural Design II	2	-	8		100			100	12	200
2	AA-331	Building Construction II	2	-	6		50			100	3	150
3	AA-332	Building Materials II	3	-	--	50		100			3.	150
4	AA-333	History of Architecture I	3	-	1	50		100			3	150
5	AA-334	Climatology	2	-	--	50		100			3	150
6	AA-335	Surveying I	3	-	2	50	50		100	50	3	250
7	AA-336	FB Minor Project	--	-	2		50				6	100
8	AA-337	Computer Graphics I	--	-	4		50			50	6	300
9	AA-338	Portfolio & Viva III				Design 100, BC 100, FBP 50, MD 50						1500
10		Outdoor/ Library Exposure	15	-	25							

Portfolio & Viva will be jointly conducted by internal and external examiners and will consist of equal weightage of portfolio and viva in each subject

AA-330 ARCHITECTURAL DESIGN- II

	L	T	P
Hours/Week	2	-	8

1. Design of a two- bedroom house on at least two floors with study and garage/ small canteen / clinic.

1.1 Study report on existing house/ self - occupied house including its circulation analysis.

1.1 Study of basic site planning parameters

Off-Site Consideration

- Access
- Surroundings
- Transport routes
- Nearest settlement
- natural drainage Channel, H T wire
- Climate etc.

On- Site Consideration

- Entry / exit points
- Topography
- Positive and negative aspects
- Point of interest
- Existing structures
- Existing vegetation etc

1.2 Presentation drawings:

- Plans,
- Site plan,
- Elevations,
- Sections,
- View and
- Block mode

2. Study of furniture layout in small public building such as library, restaurants, dispensary, community centre, etc.

3. Two Time Problems on House design, small public building like canteen, clinic etc.

	Theory	Drawing work
1.	Wooden doors and windows	
1.1	Definition, functions, sizes, location and classification. Introduction to wooden doors (braced, battened and ledged doors)	Drawing of different types of doors and windows (panel, flush, glazed, sliding) showing joints and fixing details of hardware like tower bolt, aldop, locks, handles, door closers, grills. Single and double rebate frames. Fixing of door/ window frames in masonry wall. Drawing of different type of wooden windows(casement, toilet etc.) (4 sheets).
1.2	Joints	Drawing of details of doors and windows (1 sheet)
2.	Floorings	
2.1	Types of flooring and Floor finishes for ground and upper floors	Drawing showing details of marble slab and cast in situ flooring, terrazzo flooring, plain cement flooring, pre cast tile, paraquet flooring & any other floor finish (2 sheets).
2.3	External paving details	Drawing of external pedestrian and vehicular paving in different materials (2 sheets)
3.	Staircases and ramps	
3.1	Definition and types of staircases Relation between different components, their area requirements	Drawing of a RCC staircase with details of fixing of steel railing (1- 2 sheets). Different staircases (centrally supported, folded plate, toothed beams)
3.2	Staircases of different materials, brick, steel, RCC, timber, stone, composite staircases.	Staircase with different types of surface finishes (1 sheet)
3.3	Definitions, purpose, slopes, types of ramps and moving walks	
4.	Roof and roof coverings	
4.1	Pitch roof and terms related to roof, Different types of pitched and flat roofs and dome, etc	Drawing of Flat roofs in different materials- R.C.C, stone, prefabricated blocks, etc. (2 sheets), Tiling on pitched roof.
5.	External wall section	Drawing Through solid wall, through wall openings (showing chajja, window, sill, lintel details) and through veranda. Drawing of flat RCC roof, terracing and finishing, water proofing and joints with the parapet wall (1 – 2 sheets)

1. Floor and floor Finishes: Laying, sizes, availability, popular brand names:

- 1.1. Terrazzo Tiles and flooring
- 1.2. Glazed terracotta and ceramic tiles
- 1.3. Cement concrete tiles
- 1.4. Marble, Kota stone, slate, red stone - their tiles and slabs
- 1.5. Parquet (wooden) flooring
- 1.6. Linoleum floors
- 1.7. Rubber, PVC flooring
- 1.8. Cast iron grit and heavy duty flooring for industrial buildings
- 1.9. Advantages, suitability and uses of different finishes

2. Wall Finishes

- 2.1. Different types of Wall boards and their trade names
- 2.2. Laminated fibres and their names
- 2.3. Polystyrene wall tiles
- 2.4. Plastic wall tiles and their trade names
- 2.5. Wall papers
- 2.6. Cork sheets and tiles
- 2.7. Thermocol as building material
- 2.8. Foam rubber tiles
- 2.9. Brick, ceramic and stone tiles
- 2.10. Wall Cladding
- 2.11. Advantages, suitability and uses of different finishes

3. Ceiling materials (Size, quality, availability, types of finishes with their trade names)

- 3.1. Hessian cloth
- 3.2. Gypsum plaster board
- 3.3. Plain AC sheets
- 3.4. Plywood
- 3.5. Hard board
- 3.6. Cellotex and other trade name as a material
- 3.7. Fibre boards
- 3.8. Glass
- 3.9. Asbestos tiles
- 3.10. Thermocol
- 3.11. Bison Board
- 3.12. Advantages, suitability and uses of different finishes

4. Building hardware (Sizes, application)

- 4.1. Tower bolts
- 4.2. Hinges
- 4.3. Door handles
- 4.4. Fan light catches
- 4.5. Door springs
- 4.6. Latches
- 4.7. Floor door stopper
- 4.8. Fan light pivots
- 4.9. Mortise lock
- 4.10. Door closer

- 4.11. Ventilator chains
- 4.12. Wires gauzes
- 4.13. Advantages , suitability and uses of different hardwares

5. Glass its uses and sizes

- 5.1. Sheet glass
- 5.2. Wired glass
- 5.3. Laminated safety glass
- 5.4. Plate glass
- 5.5. Insulating glass
- 5.6. Coloured glass
- 5.7. Tinted glass
- 5.8. Heat absorbing glass
- 5.9. Glass blocks .
- 5.10. Glazing putty
- 5.11. Painted glass
- 5.12. Advantages , suitability and uses of different glass finishes

6. Roofing materials, their standard sizes

- 6.1. Asbestos sheets
- 6.2. GI sheets
- 6.3. Fibre glass sheets
- 6.4. Advantages , suitability and uses of different materials

7. Additives and Admixtures, their availability and uses

- 7.1. Water repellents
- 7.2. Accelerators
- 7.3. Air trapping agents
- 7.4. Hardness
- 7.5. Workability increasing agents
- 7.6. Fly ash

8. Adhesives, their trade names and their uses

- 8.1 Natural adhesives
- 8.2 Synthetic resins – Thermoplastics and thermosettings

9. Paints, their covering capacity, trade names, uses and availability

- 9.1. Water based paints
- 9.2. Distempers
- 9.3. Oil based paints and emulsion
- 9.4. Cement paints
- 9.5. Acrylic emulsions
- 9.6. Melamine finishes
- 9.7. Varnishes
- 9.8. Spirit polish, wax polish
- 9.9. Lacquers
- 9.10. Stucco paint
- 9.11. Tar and bitumen paint
- 9.12. Advantages, suitability and uses of different finishes

AA-333 HISTORY OF ARCHITECTURE - I

	L	T	P
Hours/Week	3	-	1

1. **Evolution of civilization with special reference to the following**
 - 1.1. Man and his needs with reference to shelter
 - 1.2. Man and culture
 - 1.3. Social groups, societies and civilisation
 - 1.4. Causes of rise and fall of civilisations.
 - 1.5. Indus Valley Civilisation
2. **Buddhist Architecture in India**
 - 2.1. Historical, economical, social and geographical background
 - 2.2. Emphasis on siting, concept, plans, elevation and sections, materials and construction methods
 - 2.3. Buildings types- Chaitya hall, Stupa, Stambh, Toranas and Viharas
 - 2.4. Large scale drawings of details used in Buddhist Architecture
3. **Temple Architecture in India**
 - 3.1. Dravidian Style
 - Emphasis on evolution, concept plans, elevations, sections, materials and construction methods
 - Area of studies - Pallavas, Cholas, Pandyas, Vijaynagar, Madurai
 - 3.2. Indo-Aryan or North Indian style
 - Emphasis on evolution, siting layout, concepts and plans, elevation and section, materials and construction methods
 - Area of study, Khajuraho, Orissa
 - 3.3. Jain Temples
 - Emphasis on evolution, concept of sitting, layout plans, elevation and sections, materials and construction method
 - Area of study - Mount Abu, Girnar
4. **European Architecture with reference to Arch style, Constt innovation and aesthetic evolution through important building types:**
 - 4.1. Egyptian period,
 - 4.2. Greek period,
 - 4.3. Roman period and
 - 4.4. Early Christian and Byzantine period
5. **Measure drawing (to be presented in portfolio and viva exam only)**
 - 5.1 Detailed sketch drawings of local old monuments/ heritage buildings (measure drawing) showing elevations, sections and various related details
 - 5.2 Preparation of large scale drawings of the various important details, used in the temple of different periods such as details of columns, cornices, balusters, chajjas, etc.

1. **General introduction**
 - 1.1. Definition of climatology, its relevance to architecture, differentiation between weather and climate.
 - 1.2. Climate and its impact on architectural form, design of openings, choice of building materials and construction techniques etc
 - 1.3. Elements of climate: (temperature variations, humidity, precipitation, wind data, local factors, sky conditions, air movement, special characteristics, urban climate & methodology to collect climate data)
 - 1.4. Different global climatic zones with reference to tropical climate, warm humid climate, hot dry desert climate, cold climate and monsoon climate and their characteristics
 - 1.5. Introduction to Sun path diagram and its relevance to building
2. **Macro & micro climate factors**
 - 2.1. Factor affecting site climate and climatic elements, built up environment, urban climate
 - 2.2. Criteria for site selection for a designer with special reference to factors like
 - Wind direction
 - Orientation of building
 - Ventilation (supply of fresh air, cross ventilation, position, size & control of openings, air flow inside and around building, external features, humidity control)
3. **Ventilation- air flow patterns inside and outside buildings**
4. **Effect of climate on shelter in different climate zones, (Introduction to bio climatic chart, Form, planning, internal spaces, roofs, walls, opening, external finishing, air flow inside and outside the building)**
5. **Effect of climate on mans comfort condition (structural and planning methods in different climatic zones, cooling by ventilations, evaporative cooling and humidity control)**
6. **Interpretation of architectural principles.**
 - 6.1 Shading (sun and wind protection) devices.
 - Provision of barriers (trees, boundary wall; fences)
 - Structural controls (canopies, chajjas, and parapet wall)
 - Mechanical controls (louvers, curtain walls, blinds etc)
7. **Solar passive architecture - Introduction, definition, relevance and importance**
8. **Vernacular architecture (To be presented in the form of a report)**
 - 8.1. Relevance to climatic comfort
 - 8.2. Materials used,
 - 8.3. Construction techniques,
 - 8.4. Social background,
 - 8.5. Living pattern,
 - 8.6. Planning and design study and its relevance to present day.
9. **Climate of Delhi and its application in architectural design**

Theory

1. **Surveying**
 - 1.1. Definition, objective and its types
 - 1.2. Principles of survey
2. **Chain Surveying**
 - 2.1 Definition, tools and equipment such as chain, pegs, ranging rods, offset rods, cross staff, measuring tape etc.
 - 2.2 Principle of chain surveying survey reconnaissance, base line, main station, tie station, tie lines and their selections.
 - 2.3 Well conditioned and ill conditioned triangles.
 - 2.4 Ranging a line – Direct and indirect methods.
 - 2.5 Advantages and disadvantages of chain surveying.
3. **Compass Surveying**
 - 3.1 Prismatic compass, surveyor's compass, bearing of lines, angle measurements, magnetic and true bearing, local attraction, its detection and elimination, plotting of a compass survey traverse: adjustments of closing errors by graphical methods.
 - 3.2 Finding true north by sun's shadow in compass survey, errors in compass survey and how to avoid it, advantages and disadvantages of compass survey.
4. **Plane tabling**
 - 4.1. Methods of plane tabling- traversing, intersection, radiation and resection and situation where each is used
 - 4.2. Advantages and disadvantages of plane tabling
5. **Levelling**
 - 5.1. Definition of levelling and terms used in levelling.
 - 5.2. Types of levelling
 - 5.3. Parts of dumpy level
 - 5.4. Temporary adjustment of a dumpy level and setting up a level
 - 5.5. Reducing levels by rise and fall method
 - 5.6. Reducing levels by height of collimation method
6. **Introduction to theodolite and its uses.**

Practical**1. Chain surveying.****Exercise - 1**

- Chaining of a line involving ranging
- Taking offsets and setting out right angles using simple methods – swinging of arch with tape, setting 3 - 4 - 5 triangles

2. Compass surveying.**Exercise - 2**

- To study a prismatic compass
- Setting the compass and taking observations
- Measuring angles between the lines meeting at a point

Exercise – 3

- Closed traverse,
- plotting and adjusting closing error graphically

3. Plane Tabling

Exercise - 4

- To study plane table survey equipment.
- To set a plane table on a station point.
- To mark the north directions.
- Plotting a few points by radiation method.

Exercise - 5

- To orient the plane - table by back - sighting.
- Plotting a few points by intersection method.

4. LEVELLING

Exercise -6

- i. Study of dumpy level and levelling staff.
- ii. Temporary adjustment of a dumpy level.
- iii. Taking staff readings on different stations from the single setting and finding difference of level between them.

Exercise -7

- i. Find the difference of level between two distant points by check levelling.

AA-336 FIELD BASED MINOR PROJECT

L T P

Hours/Week - - 2

Objective: To expose the students to the real world of building construction and design. Students get valuable practical exposure to the dynamics of construction of building projects, which can complement and supplement their theoretical knowledge. It also helps in development of the observation, analytical and evaluative skills of students. This kind of exposure will be of immense value in enhancing the market value of the students.

Methodology

- The student shall buy a scrap book (10" x 8") of about 100 pages.
- The student shall identify a simple and small residential building(s) under construction near his/her house for the purpose of the study.
- The student shall be in constant touch with the faculty/guide, owner of the residence and the contractors working on the site and make regular recordings about the following and get them countersigned weekly
- The students should observe all the stages of construction.
- The students should get information all about the building materials and their rates
- Sketches shall be free hand but to the scale
- Discussion with the contractors, owners and the *mistries* is desirable to understand the construction process.
- The question as specified below should be addressed by the students. The teachers can add to the list given below as per requirement:
- Students should also study the code of practice of Bureau of Indian Standards for various topics that they study in the project work to get an understanding of the correct field practice that should be followed on site.
- The submission of the project shall be in the form of a report enhanced with sketches/ photographs etc. Marks shall be rewarded for periodic reviews.

Content

The site observation shall cover the questions which are listed under the various topics

1. Statement of the functional / conceptual aspect of the house

2. Foundation

- Site preparation for foundation
- Laying out of building on site
- Marking levels on site
- Taking foundation measurements on site
- Procedures for laying right angles on the site
- Precautions to be followed during excavation
- Different tools being used for foundation laying
- Materials being used in foundation/ their cost per unit

3. Masonry work with mortar mixes

- Type of brick and brick bond being used for masonry
- Precautions to be followed while laying masonry wall
- How is the straightness of courses (horizontal and vertical) maintained?
- Mix of mortar being used in the construction & way of measuring it on site
- Tools being used for masonry laying
- Different materials being used in masonry/ their cost per unit

4. External finishes

- Type of external finish being done on the site
- When is the external finish done in sequence of work followed on site?
- Surface preparation of the walls prior to external finish
- Precautions to be followed while finishing a wall
- Materials being used for finishing/ their cost per unit
- Tools and equipment used for painting

5. Paints and Varnishes .

- Type of paint / varnish being used on the site for different kinds of materials like plaster, metal, woodwork etc
- When is the painting of walls done in the sequence of work being followed on site and reasons thereof?
- Surface preparation of the walls/timber/metal/ masonry prior to painting
- Precautions to be followed while painting different surfaces
- Materials being used /cost per unit of the materials
- Tools and equipment used for painting

AA – 337 COMPUTER GRAPHICS I

L T P

Hours / Weeks - - 4

OBJECTIVE: To enable the students to prepare architectural / municipal drawings through the use of Autocad (latest version).

1. Getting Started with AutoCAD

- 1.1. Starting AutoCAD
- 1.2. AutoCAD's User Interface
- 1.3. Working with Commands
- 1.4. AutoCAD's Cartesian Workspace
- 1.5. Opening an Existing Drawing File. Viewing and Saving Work

2. Basic Drawing & Editing Commands

- 2.1. Drawing Lines
- 2.2. Erasing Objects
- 2.3. Drawing Lines with Polar Tracking
- 2.4. Drawing Rectangles
- 2.5. Drawing Circles
- 2.6. Undo and Redo Actions

3. Drawing Precision in AutoCAD

- 3.1. Using Running Object Snaps
- 3.2. Using Object Snap Overrides
- 3.3. Polar Tracking at Angles
- 3.4. Object Snap Tracking
- 3.5. Drawing with Snap and Grid

4. Making Changes in Drawing

- 4.1. Selecting Objects for Editing
- 4.2. Moving Objects
- 4.3. Copying Objects
- 4.4. Rotating Objects
- 4.5. Scaling Objects
- 4.6. Mirroring Objects
- 4.7. Editing with Grips

5. Advanced Editing Commands

- 5.1. Trimming and Extending Objects
- 5.2. Stretching Objects
- 5.3. Creating Fillets and Chamfers
- 5.4. Offsetting Objects

6. **Organizing Drawing with Layers**
- 6.1. Creating New Drawings With Templates
 - 6.2. What are Layers?
 - 6.3. Layer States
 - 6.4. Changing an Object's Layer
 - 6.5. Creating Arrays of Objects

7. **Exercise**

- 7.1. Preparation of drawings of simple layout of single or two bed room unit
 - Site plan
 - All Floor plans
 - Terrace plan
 - Sections
 - Elevations
- 7.2. Printing of the exercise on available printer.