SCHEME OF TEACHING AND EXAMINATION OF III SEM B.ARCHITECTURE.

Sl. No.	Subject Code	Title of the Subject	Teaching Scheme in Periods per Week (50 Mts)				Examination Scheme				
			Lecture	Studio	Pract	Total	Duration (hrs)	Theory Marks	Prog. Marks	Viva Marks	Total
1.	09ARC 3.1	Architectural Design – III	-	09	-	09	-	-	50	200	250
2.	09ARC 3.2	Building Construction & Materials – III	01	05	-	06	-	-	50	100	150
3.	09ENG 3.3	Building Services – I	04	-	-	04	03	100	50	-	150
4.	09ARC 3.4	History of Architecture – II	04	-	-	04	03	100	50	-	150
5.	09ARC 3.5	Structures – III	03	-	-	03	03	100	50	-	150
6.	09ARC 3.6	Computer Applications in Architecture – I	-	-	06	06	-	-	50	-	50
7.	09ARC 3.7	Climatology	04	-	-	04	03	100	50	-	150
8.	09ARC 3.8	Vacation Assignment /Study tour-I	-	-	-	-	-	-	50	-	50
			16	14	06	36		400	400	300	1100

ARC= Architectural Subjects ENG = Engineering Subjects.

No. of Subjects/Heads = 08 No. of Theory Examinations = 04

Progressive Marks to be awarded by the subject teacher.

Minimum Marks for passing: Theory Marks 40%, Progressive Marks 50%, Viva marks 40%.

09ARC 3.1 – ARCHITECTURAL DESIGN – III

CONTACT PERIODS: 9 (STUDIO) PER WEEK

VIVA MARKS: 200

PROGRESSIVE MARKS : 50

Objectives:

1. To understand the meaning of cultural and physical context of built environment and techniques of reading such contexts
2. To isolate the various factors of the context, which influence the design of built environments
3. To understand the nature of place making as an architectural goal

Projects:

Studio projects shall be structured to deal with two (or more) distinctly different contexts with programme being identical. Studio could be divided into two groups with different sites and resulting solutions shall be discussed in the class to highlight the various differences, which can be attributed to the contextual reasons. In the second project, context with a number of constraints shall be chosen and the process of enhancing the context, in other words, "Place Making" shall be investigated. Studio shall attempt to define the nature of relation between built and un built spaces and the need of using un built spaces for programmatic needs shall be highlighted.

Eg: Hotel, Motel, Recreation Club, Museum, Polyclinic, Nursing home etc. One minor / time problem and one major Project shall be presented for viva exam.

09ARC 3.2 – BUILDING CONSTRUCTION & MATERIALS – III

CONTACT PERIODS: 6 (1 LECTURE + 5 STUDIO) PER WEEK

VIVA MARKS : 100

PROGRESSIVE MARKS : 50

Objective:

To acquaint the students with construction practices pertaining to RCC ,floors, roofs and flooring with different materials..

Outline:

Construction - Study of principles and methods of construction of RCC, one way, two way slabs-cantilever slabs, sloping RCC roof, vaults, domes including form-work techniques and reinforcement details. Construction with materials alternative to RCC.

Flooring – in mud, murrum, stones – marble, granite, tandur/kota stone, mosaic, terrazzo, ceramic tiles and wooden flooring

Paving – Cast in situ concrete, concrete tiles, interlocking blocks, clay tiles, brick and stone

Plaster – Method of plastering a) Internal (use of various finishes viz., lime, cement, plaster of paris, puffing etc., b) External – smooth, rough, textured, grit plaster

Materials – Paints, varnishes and distempers, emulsions, cement base paints. Constituents of oil paints, characteristics of good paints, types of paints and process of painting different surfaces. Types of varnish, methods of applying varnish and French polish and melamine finish.

Note – Minimum one plate on each construction topic. Site visits to be arranged by studio teachers. Study of material applications in the form of portfolio. The entire portfolio on Construction and Materials shall be presented for viva exam.

References:

1) "Construction Technology" by Chudley

2) "Building Materials" by Duggal SK

09ARC 3.3 – BUILDING SERVICES – I (WATER SUPPLY AND SANITATION)

CONTACT PERIODS: 4 (LECTURE) PER WEEK

DURATION OF EXAM : 3 HRS

THEORY MARKS: 100

PROGRESSIVE MARKS : 50

Objective:

To impart the knowledge and skills required for understanding the building services of water supply and sanitation and their integration with architectural design.

Outline:

Water Supply – Introduction, sources of water supply, qualitative and quantitative aspects, impurities, purification – sedimentation, coagulants, filtration, disinfection, water softening and miscellaneous treatment of water. Sources of water pollution and preventive measures. Public water distribution system, methods of layout of distribution pipes.

Pipe sizes, fittings, valves, types of taps, wash basins, sink, bath tubs, flushing cistern. Domestic water supply systems – mains, ferrules, service pipe, water meter, sump, pumps, overhead tank, distribution pipes, cold water and hot water supply for single and multistoried buildings,. Provision for fire fighting – fire hydrants. Study of solar heating systems, gas and electric geysers.

Sanitation – Introduction, importance and purpose of sanitation, definitions – bacteria, invert, sewer, sewerage, types of refuse, collection and disposal of refuse, systems of drainage – separate, combined and partially separate system, advantages and disadvantages of each system. Sanitary requirements for various types of buildings, types of pipes.

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.

Importance of pumps and sewage pumping stations, septic tanks – soak pit, soak well, design aspects, disposal of effluent.

House drainage – principles, traps-floor trap, multi-trap, gully trap, grease and oil trap, urinals, Indian, European, Anglo Indian type of water closet, squatting urinal, bidet

Definitions – Siphonage, anti-siphonage pipe, cowl, fresh air inlet, soil and waste pipes, vent pipe

Systems of plumbing – single stack, one pipe, one pipe partially ventilated, two pipe disposal of waste water from buildings – typical plan of residence with garage – showing all the traps, inspection chambers, pipes connected to public sewer line – alternatively connecting the same layout of pipes to septic tank.

Testing of drains and drain pipes

Brief study - Natural methods of sewage disposal – by dilution and land treatment, self purification of natural waters, oxidation, sewage treatment, oxidation ponds, aqua privy, garage drainage and layout of simple drainage systems, sewers, materials, laying and testing of sewers, ventilation of sewers, surface drains, sewer, cleaning of sewers, re-cycling of sewage water. Rain water harvesting.

Rural sanitation, biogas, different methods of collection and disposal of dry refuse and night soil

Site visits – Water treatment plant, sewage treatment plant, multistoried apartments for studying water supply and sanitary arrangements.

References:

1) "Sanitary Engineering – (Vol I and II)" by RS Deshpande

2) "Water supply and Sanitary Engineering" by S Birdii

3) "Relevant IS Codes of India"

09ARC 3.4 – HISTORY OF ARCHITECTURE – II

CONTACT PERIODS: 4 (LECTURE) PER WEEK

DURATION OF EXAM : 3 HRS

THEORY MARKS: 100

PROGRESSIVE MARKS : 50

Objective: To provide an understanding of the evolution of Hindu Architecture in India in its various stylistic modes, characterized by technology, ornamentation and planning practices

Outline:

Evolution of Hindu temple – both Indo Aryan and Dravidian – Early temples at Udaigiri, Tigawa and Sanchi –Experiments at Aihole (Durga temple and LadKhan temple), Deogarh, Bhitargaon and Badami.

Beginnings of Dravidian architecture – Pallavas, rathas at Mamallapuram, Shore temple, Kailsanatha and Vaikuntaperumal temples at Kancheepuram.

The Cholas – Brihadeshwara temple at Thanjavur and Gangaikonda Cholapuram.

The Pandyan contribution – gopurams

The Hoysala temples at Belur, Halebid and Somnathpur.

Eg: Channakesava temple, Belur, Hoysalesvara temple, Halebid, Kesava temple, Somnathpur

Indo Aryan Mode – the beginnings in Orissa – the Lingaraja at Bhubaneshwar.

Hindu architecture at Rajputana (Temple of Surya, Osia, Marwar) and Gujarat (Temple of Surya, Modhera). The Khajuraho group – Khandariya Mahadev, Jain temples – Chaumukh temple at Ranpur

Later Dravidian period – the Vijayanagar and Madurai Dynasties – Noted temples at Hampi (Vitthala temple and Hazara Rama temple), Madurai (Meenakshi temple) and Srirangam.

References:

1) “Indian Architecture, Buddhist and Hindu Period” by Brown, Percy

2) “Architecture of India – Buddhist and Hindu” by Grover Satish

09ENG 3.5 – STRUCTURES – III

CONTACT PERIODS: 3 (LECTURE) PER WEEK

DURATION OF EXAM : 3 HRS

THEORY MARKS : 100

PROGRESSIVE MARKS : 50

Objective:

To give an insight into the structural behavior of columns and beams

Outline:

Introduction to Torsion theory with simple problems.

Columns and Struts – Effective length, critical load, slenderness ratio, Euler's equation for different end conditions. Rankine's formula

Slope and deflections of Cantilever, simply supported and overhang beam using double integration and Macaualay's method of different load conditions. Moment area method for simple case of loading

Note: The teacher is also expected to expound the structural concepts introduced in non-mathematical terms with examples and application in architectural design.

References:

1) "Strength of Materials" by SS Bhavikatti
2) "Strength of Materials" by Basavarajaiah BS and Mahadevappa

09ARC 3.6 – COMPUTER APPLICATIONS IN ARCHITECTURE-I

CONTACT PERIODS: 6 (PRACTICAL) PER WEEK

PROGRESSIVE MARKS : 50

Objective:

To develop awareness and familiarity with Computer applications in architecture and to equip students with skills required in using Computers as a digital media for design.

Outline:

Introduction to 3-D modeling and integrating architectural design with 3-D model building and generating 2-D drawings, using application software like Auto CAD, REVIT, Archi CAD etc.

Use of Computers for scanning, image editing & presenting with softwares like Adobe packages.

Assignment:

Implementation of the above for a design project of second semester.

09ARC 3.7 – CLIMATOLOGY

CONTACT PERIODS: 4 (LECTURE) PER WEEK

DURATION OF EXAM : 3 HRS

THEORY MARKS: 100

PROGRESSIVE MARKS : 50

Objective:

To develop the knowledge required for understanding the influence of climate on architecture.

Outline:

Introduction – Elements of climate, measurement and representations of climatic data. Classifications of tropical climates, Major climatic zones of India.

Thermal comfort: Effect of climatic elements on thermal comfort environment. Body's heat exchange with surrounding environment. Thermal comfort indices viz., Effective temperature, bio-climatic chart etc., Kata-thermometer and globe thermometer.

Thermal performance of building elements: effect of thermo-physical properties of building materials and elements on indoor thermal environment. Thermal properties. Conductivity, resistivity, diffusivity, thermal capacity and time lag and 'U' value. Construction techniques for improving thermal performance of walls and roofs. Natural ventilation: Functions of natural ventilation, Design considerations, effects of openings and external features on internal air flow.

Site Climate: Effect of landscape elements on site/micro climate.

Day Lighting: Advantages and limitations, Day light factor, components of Day light factor, design considerations.

Shading devices – Sun-path diagram, use of solar charts in climatic design. Types of shading devices. Procedure of designing shading devices.

Design considerations for buildings in tropical climates with special reference to hot-dry, warm-humid and composite climates

References:

1) "Manual of Tropical Housing & Buildings (Part-II)" by Koenigsberger
2) "Housing, Climate and Comfort" by Martin Evans
3) "Buildings in the tropics" by Maxwell Fry

4) Climate Responsive Architecture "by Arvind Kishan, Baker & Szokolay".

09ARC 3.8– VACATION ASSIGNMENT/STUDY TOUR – I

PROGRESSIVE MARKS : 50

Objective:

To expose students to Historical, Vernacular and Contemporary architecture.

Outline:

Vacation Assignment/ Study tour is to be undertaken after the end of II semester exam and before the commencement of III semester classes. This assignment could be a measured drawing and documentation of a noted building or a study tour for visiting places of architectural interest. The choice of the building to be documented and the places to be visited is left to the concerned department. The assignment may be given as group work (4 to 6 students per group). The students have to submit a report on the measured drawing or the study tour within 15 days from the beginning of the III Semester. The reports are to be assessed by the departments for progressive marks.