RAJIV GANDHI PROUDYOGIKI VISHWA VIDYALAYA, BHOPAL (M.P.)

SCHEME OF EXAMINATION - BACHELOR OF ARCHITECTURE

THIRD YEAR - SIXTH SEMESTER

SEMESTER – VI

S. No.	Course Code	Subjects	Period Per Week		Total Teaching Hours	Distribution of Marks											Grand Total	Total Credits
						Theory Block					Theory Exam Duration (Hrs.)	Practical Block						
						End Sem exam	MST	Quiz Assignment	Total theory block	Credits		End Sem	Term work/ Sessional	Continuous Assessment	Total Practical block	Credits		
			L	STUDIO / T	Total Contact Hour	I						II					I+II	
1	AR321	**Design-VI**	3	7	10	100	30	20	150	03	06	50	50	50	150	07	300	10

AIM: This program gives special emphasis on role of technology in architecture. The design projects to be dealt in the studio should respond to the importance of structure and services including acoustical treatments.

Course Content:

- The range of design problems shall include projects of progressively increasing complexity.
- Exercises related to public buildings i.e. Commercial centre, hospital, auditorium, cinema, sports complex & educational buildings on sloping/ flat sites.
- Study and incorporation of building bye-laws should be complete in this Sem.
- Simultaneously, stress should be given on the interior treatment of small and large spaces.
- Freedom in design is to be given with preliminary introduction of importance and role of bye laws in building design.

Minimum one time problem of 18 hrs. duration is to be attempted in class, in addition to the major design problems.

Note: The sessionals will be in the form of drawings and models along with technical report for the design dealt with. The evaluation should be done in intermediate review consisting of internal / external experts. There should be regular site visits to the building types dealt in the studio problems of which audio-visual should be prepared. The various aspects of the design problem shall be dealt with lectures, group discussions and library research so as to provide the necessary philosophical and attitudinal background to a rational design approach.

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LIST OF TEXT AND REFERENCE BOOKS:

AR321-Design-VI

1. "Planning by E. & O.E". Lliffe book Ltd., London.
2. D.E. CHIRAIRA & CALLENDAR, "Times Saver Standard for Building Types".
3. RUDOLF HERGE, "Nuferts Architects Data", Cross By Lockwood & Sons Ltd.
4. EDWARD D. MILLS, "Planning the Architects Hand Book".
5. National Building Code.

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SEMESTER – VI

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2	AR322	**Building Construction- V**	3	4	07	50	20	10	80	*03*	03	50	50	20	120	*04*	200	*07*

Aim: The aim of the subject is to introduce the students about Execution of building component (R.C.C) with their constructional details and presentation of working drawing.

Course content:

1. R.C.C Beams: Simply supported, continuous, cantilever L& T beams, lintels & chajjas, details at odd junctions.
2. R.C.C Slabs: One way, and continuous, two way slab, flat slab, waffle slab, R.C.C covered pathways, reinforced brick slab.
3. R.C.C Foundation: RCC column footings and setting out plan.
4. R.C.C Staircases & Ramps: Types of staircases, detail of RCC dog leg staircase, RCC ramps.
5. R.C.C Timber & steel form work for various RCC building components.

Note: i) There should be regular site visits to buildings under construction or constructed to explain the above topics. Use of audio-visuals should be stressed.
ii) Minimum 8 sheets shall be prepared out of which two may be in sketch form (scaled).

Note: There should be regular site visits to buildings under construction or constructed to explain the above topics. Use of audio-visuals should be stressed. The Sessional shall be in the form of handmade drawings and the evaluation will be through review system presented before the Faculty and

Studio In charge.

LIST OF TEXT AND REFERENCE BOOKS:

AR322 - BUILDING CONSTRUCTION - V

1. W.B. MCKAY, "Building Construction Vol.1 to IV, Orient Longman.
2. R. CHUDLEY: Building Construction Handbook Vol. 1 to 4 "British Library Cataloguing in Publication Data 1990.
3. DR. B.C. PUNAMIA, "Building Construction", A. Sauraby & Co. Pvt. Ltd.
4. R. BERRY, "Construction of Buildings". The English Language Book Society London 1976.
5. MITCHEL, "Advance Building Construction", Allied Publishers Pvt. Ltd.
6. IS 456, DESIGN AID SP: 16

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SCHEME OF EXAMINATION - BACHELOR OF ARCHITECTURE

THIRD YEAR - SIXTH SEMESTER

SEMESTER – VI

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3	AR323	**Building Services-II (Electrical & Mechanical)**	3	2	05	50	20	10	80	*03*	03	-	30	20	*50*	*02*	130	*05*

Aim: The aim of the subject is to introduce the students about the aspects of electrical wiring and air conditioning in a building, learning about various equipment and fittings available in the market and preparing basic design lay out for various services and typical details.

Course Content:

SECTION-A: ELECTRICAL

1. Fundamentals of electricity, Principles of wiring.
2. Fitting and accessories used in electrical installation of buildings including water proof and spark proof installation. Schematic diagrams of installation for different building types, lighting conductors, earthing, distribution & calculation of loads.
3. Brief study of electrical appliances, Sub-station, location and space requirement, relevant electricity board rules for various types of buildings.
4. Illumination: Laws of illumination. Direct, indirect and semi direct lighting, reflectors, decorative lighting. Flood lighting and use artificial lighting as an element in architectural schemes particularly in exhibition, cinemas, theaters, concert, concerts halls and stadiums.
5. Rules and layout for telephone wiring & connection with EPBX.

SECTION - B: MECHANICAL

1. The fundamentals of psychometric and heat transfer. Physiological effects of air conditioning.
2. Air conditioning methods, systems, types and equipment to maintain the atmosphere at required temperature, humidity and cleanliness.
3. A.C. duct designing, detailing and layout. (No calculations required)
4. Lifts, moving walkways and escalators, layout of lifts and or escalators in buildings.
5. Apparatus and system of alarms, firefighting equipments, fire fighting bye-laws governing various types of public buildings. Fire escape staircases.

Notes: Sessionals will be in the form of notes, home assignments, drawings/layout exercises showing the electrical and mechanical services details and case studies if required.

LIST OF TEXT AND REFERENCE BOOKS:

AR323 - BUILDING SERVICES-II (ELECTRICAL & MECHANICAL)

ELECTRICAL SERVICES

1. "Specification year Book"
2. B. L. THAREJA "Text book of Electrical Technology", S. Chand and Co.
3. UPPAL, "Text Book of Electrical Technology", Khanna Publishers.
4. "National Building Code".
5. FRANK R. DAGOSTINO, "Mechanical and Electrical systems in construction and Arch" Reston Pub. Virginia U.S.A.

MECHANICAL SERVICES

1. "Specification year Book".
2. S.C. ARORA AND A. DOMKUNDWAR, "Refrigeration and Air conditioning", Dhanpat Rai & Sons.
3. HERBERT. W. STANFORD, "Heating Ventilation and A.C. systems", Prentice Hall.
4. "National Building Code".

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THIRD YEAR - SIXTH SEMESTER

SEMESTER – VI

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4	AR324	**Specifications, Estimating & Costing**	3	2	05	50	20	10	80	*03*	03	-	30	10	40	*02*	120	*05*

AIM: Art of writing specifications of materials along with emphasis on the quality of materials & proper sequence of construction work should be brought out. The students shall be exposed to the various methods of calculating the quantities of various materials / items used in the buildings. This subject will give them an understanding and insight the role of material, construction and cost together for budgeting the project cost.

Course Contents:

A) SPECIFICATIONS OF MATERIALS:

1. Importance of specifications in the building activities, method of writing correct order and sequence of use of materials, use of Indian Standard Specifications and P.W.D. specifications.
2. Primary consideration for selection of materials for various applications. Specifications of basic materials required in residential buildings, such as bricks, stones, concrete, RCC, plastering and various finishes, roofing material timber work, flooring materials, glazing, metals such as steel, brass, aluminum etc.

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SPECIFICATIONS OF WORKS:

3. Specifications of works for a residential building of load bearing type and or RCC/framed type.
4. Specifications of works of construction of steel and RCC structures, ceiling and partitions, paneling, insulation and water proofing.
5. Specifications for services such as drainage, water supply, electrical installations.

B) ESTIMATING & COSTING :

1. Introduction to quantity surveying, methods of preparing estimates, data required for framing an estimate, types of estimates.
2. Mensuration, standard mode of measurements, schedule of rates commercial abbreviations. Methods and procedure of taking off abstractions, working up and billing. Examples and exercises in taking in all items from excavation to painting including R.C.C. and steel work.
3. Rate analysis, cost of materials and labour for various works, detailed rate analysis of important items of construction work. Measurement of work for interim and final certificates of payments to contractors.
4. General terms: Administrative approval technical sanction, competent authority, deposit works, issue rates, payment on accounts, suspense accounts, imprest, indent of stores, muster roll, measurement book, materials site account, stock account, establishment charge etc.
5. Method and contents of technical report for obtaining technical/financial sanction.

Note: Sessionals are to be prepared in the form of exercises and small reports on above mentioned topics.
The sessional work will include notes, tests, and home assignments particularly about proprietary materials along with manufacturer's specification.

LIST OF TEXT AND REFERENCE BOOKS:

AR324 – SPECIFICATIONS, ESTIMATING & COSTING

1. "Bombay P.W.D. Specification 1962.
2. Specification year book.
3. P.W.D. Hand book.
4. B. N. DUTTA, "Estimating and costing in civil Engineering", U.B.S. Pub.
5. M. Chakraborti, "Estimating and costing in Civil Engineering", "Bhaktivedanta Book Trust, Sreemayapor.
6. RANGWALA, "Estimating & Costing", Charotar Pub. house.
7. NAMAVATI, "Professional Practice", Lakhani Book Depot.
8. C.P.W.D. Hand book.

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SEMESTER – VI

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5	AR325	Site Planning & Landscape	3	3	06	50	20	10	80	*03*	03	30	20	10	60	*03*	140	*06*

AIM: The objective of this subject is to introduce students about site planning and landscape architecture i.e. about the natural and manmade environment, thereby enhancing the outdoor environmental quality in architectural design. This course intends to develop an understanding of Site Planning and landscape architecture to compliment architectural design

SITE PLANNING

1. Site planning, its interpretations, scope its importance Natural & Man made environment. Ecosystem, Ecological balance, interaction between built environment & ecosystem Ecological approach to design.
2. Natural Resources, Land, Water & Plants their environmental & ecological considerations.
   Macro & Micro climate, Microclimatic analysis, climatic Elements & their modification.
3. Site selection criteria, site survey, inventory & analysis, site planning process. Site development, guidelines for excavation & grading, circulation, site drainage, water supply, vegetation cover & Landscape furnishings.
4. Circulation systems: Types, hierarchy & layout patterns, planning & design criteria for pedestrian movement, vehicular movement & parking areas.
5. Buildings & outdoor spaces, their relationship & composition, Elements of visual design- point, line, form, colour & texture. Site Volumes, enclosures, site structure expression.

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SCHEME OF EXAMINATION - BACHELOR OF ARCHITECTURE

LANDSCAPE DESIGN

1. Definition of landscape, its scope and importance in architecture and planning Levels of landscape planning.
2. Brief outline of development of gardens in history. The principles and design philosophy of Mughal & Japanese gardens with examples.
3. Landscape design process, information needed for landscape survey. Land, water & plants as landscape elements, their functional & aesthetical considerations in landscape design. Man made elements in landscape design-lamp posts, sign boards, garbage bins, fences etc.
4. Grading its importance, grading process & methods of estimating earth volumes. Slopes for various outdoor functional activities. Surface runoff calculations & design of surface drainage system. Treatment of ground surfaces, kinds of paving materials.
5. Planting Design-Understanding plant material as a design tool. Design characteristics of plants. Selection of plant materials for road side plantation, court yards, parking areas, near water bodies indoor areas etc. Details of establishing & grass lawn. Fertilizers their types & uses.

Note: Sessional shall be prepared in the form of notes and calculations, drawings etc. as per above topics.

LIST OF TEXT AND REFERENCE BOOKS:

A325 - SITE PLANNING & LANDSCAPE

1. J.O.SIMMONDS, “Architecture, A manual of site planning and design”, McGraw Hill.
2. “Time Saver Standard for Site Planning”
3. R. JENE BROOKS, “Site Planning”, Princeton Hall.
4. J.O. SIMMONDS, “Introduction to Landscape Design”.
5. J.O. SIMMONDS, “Earth Scape”
6. “Water Scape”
7. BOSE & CHOUDHARY, “Tropical Garden plants in color”, Horticulture & Allied Pub.

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6	AR326	**Project Management & Building Economics**	2	1	03	50	20	10	80	*02*	03	-	20	10	30	01	110	03

Course Contents:

SECTION-A: PROJECT MANAGEMENT:

1. Introduction: Introduction to project management concepts, objectives, goals and different aspects of management, traditional management systems, Gantt's approach, bar charts, project programming, time estimate etc.
2. Project programming, resource balancing, phasing of activities, programme scheduling, project control, reviewing, updating and monitoring, modern management concepts.
3. Project assessment and project cost, job size, divisions of responsibilities, liaison with owners and their representatives, feasibility study, project report, construction financing facilities etc.
4. Construction Management: Conditions of contract, their applications, quality and quantity controls, time and cash contract recording, checking and certifying with coordination of all building activities.
5. Project Monitoring: C.P.M. , P.E.R.T. & other uni-dimensional techniques for project planning, scheduling and control.

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SECTION-A: BUILDING ECONOMICS

1. Introduction: Broad features of Indian economy, economic significance, features in development plans, Macroeconomic concepts & their application, Money & Banking functions, factors of production such as land, labour, building industries and money and management etc.
2. Land Economics: Land as a limited resource, demand for land development and need for its conversation, public policies for land utilization and land development, theories of land values, land acts & problems in land acquisition & land development programme etc.
3. Building Economics: Building efficiency and cost reduction through planning, design of building components, use of new materials and Innovative construction etc. rent & other building acts, economics of high rise buildings etc.

Optimization of cost or affordable cost through various measures has become an important issue since prices escalate fast. The course aims to make aware about the issues/methods involved.

LIST OF TEXT AND REFERENCE BOOKS:

AR326 - PROJECT MANAGEMENT & BUILDING ECONOMICS

1. VASANT DESAI, "Project Management", Himalaya Pub. House.
2. S. CHOUDHARY, "Project Management", Tata McGraw Hill.
3. P.K. JOY, "Handbook of Construction Management", Macmillan.
4. PRASANNA CHANDRA, "Projects, Planning, Analysis, Selection, Implementation & Review", McGraw Hill.
5. DENNIS LOCK, "Project Management", Coles Pub. Co.

BUILDING ECONOMICS

1. P. A. STONE, "Building Economy", Pergamon 1976.
2. I. H. SEELEY, "Building Economics", Mcmillan 1977.
3. P.T. GHAN, "Engineering Economics", Pune Vidyarthi Griha Prakashan.
4. MISHRA, "Indian Economy", Himalaya Pub. House.