GURU JAMBHESHWAR UNIVERSITY
OF SCIENCE & TECHNOLOGY, HISAR

CURRICULUM STRUCTURE FOR B.ARCH
INTENT: To educate the new students about the profession and the role of an Architect at large. And introduce into the mindset of students from science stream an aesthetic line of approach and inculcate a sense of joy in the process of designing by teaching about the elements and the principles of basic design in 2-D and 3-D compositions.

CONTENTS

UNIT-I

Introduction to Architecture

- Definitions of Arch; Aspects /Dimensions/Approaches/factors affecting Arch. of a Region.
- Other disciplines associated with Arch.
- Arch. Practice its scope & opportunities in govt. & private field.
- Role of Architect, IIA and other allied Professional bodies.

UNIT – II

Basic design:

- Relationship between Basic design & Arch Design.
- Understanding Space, its Scale, Proportion, Space breaking through composition and models in different media.
- Study of 2D shapes and 3D Forms and their applications in buildings through exercise in Design of Murals, Screens, Voids in walls

INSTRUCTIONS FOR THE EXAMINER:
The question paper shall have eight questions (each of equal marks) in all organized into two sections (A & B). Section-A will contain four questions from unit-I & section-B will contain four question from unit – II. The candidate shall have to attempt five questions in all, selecting at least two questions from each section.

REFERENCE BOOKS

5. Design fundamentals by Scott
INTENT: To familiarize the students with basic knowledge of good drafting and lettering techniques and visualizing geometrical forms through plans sections & elevations.

CONTENTS

UNIT-I
- Line, lettering and Dimensioning
- Drafting techniques, principles of good drafting.
- Scales & its use in the Architectural drawing.
- Representation of material and Architectural Elements through Graphic Symbols

UNIT-II
- Projections of point, lines, planes & development of surfaces and Solids in various positions.
- Principles of projection, methods of orthographic projection study of Architectural Plans, Elevation and Section
- Sciography: Study of shade/shadow cast by simple forms on plain surfaces.

INSTRUCTIONS FOR THE EXAMINER:
The question paper shall have eight questions (each of equal marks) in all organized into two sections (A & B). Section-A will contain four questions from unit-I & section-B contain four questions from unit-II. The candidate shall have to attempt five questions in all, selecting at least two questions from each section.

2. One compulsory question from sciography is to be set by the examiner in the above question paper.

REFERENCE BOOKS
1. Rendering with pen & link by Robert W Gill : Thames & Hudson.
3. Architectural Rendering Philip Crowe
4. Architectural Rendering Albert & Habe
5. Engineering Drawing by N.D. Bhatt
6. Persepective & Sciography by Shankar Malik
INTENT: To brush up the subject keeping in mind the course to be followed in coming years.

CONTENTS

UNIT-I
Statics
- Forces in plane concurrent, non concurrent and parallel.
- Resultant forces
- Composition and resolution of forces.
- Triangle and polygon of forces
- Moments of forces couples
- Condition of equilibrium, free body diagrams
- Friction, catenary

UNIT-II
Statics
- Meaning & scope of statistics, statistical methods & their limitation
- Collection, tabulation & Presentation of Statistical data related to population traffic, housing & economic base of cities.
- Graphic presentation of data in the form of bar chart, diagrams graphs etc.
- Frequency distribution, Measuring of central tendency & dispersion sampling techniques, Time series and Index numbers

INSTRUCTIONS FOR THE EXAMINER:
The question paper shall have eight questions (each of equal marks) in all organized into two sections (A & B).
Section-A will contain four questions from unit-I & section-B will contain four question from unit – II. The candidate shall have to attempt five questions in all, selecting at least two questions from each section.

REFERENCES BOOKS:
3. Mathematics for Engineers by Prasad G
4. Statics by JL Merian
INTENT: To introduce to the students the basic Building material used for construction.

CONTENTS

Unit-I

Mud
Its stabilization and use in walling and terracing

Bricks
- Manufacturing classification, types and size and properties of brick
- Site visit to brick kiln.
  - Market Survey for such materials with respect to their availability.
    Trade, names, and market rates etc.
  - Site report should be evaluated and form a part of sessional work.
  - Manufacture & use of special type of bricks including coloured bricks, tiles, terracotta.

Stones
- Various types of stones and their availability in India.
- Stone quarrying, dressing of stones, deterioration of stone, preservation of stone

Timber
- Sources of Timber & its variety
- Test of good timber
- Defects diseases in timber
- Preservation and treatment of timber
- Industrial Timber products like Plywood, Board, Practical Board, Batten Board, Laminated Board

Lime & Cement
- Sources, classification, properties and methods of manufacture.
- Methods of testing, mixing and uses

Unit-II

Paints & Varnishes
- Ingredients of paints, Turpentine, linseed oil, coaltar

Surface Finishes
- Different type of surface finishes both internal & external
- Types of plastering: Plain, rough cast, textured stucco, fibrous, pebble dash
- Plaster of Paris and its application.
- Gluing & fixing of products for surface finishes

INSTRUCTIONS FOR THE EXAMINER:
The question paper shall have eight questions (each of equal marks) in all organized into two sections (A & B). Section-A will contain four questions from unit-I & section-B will contain four question from unit – II. The candidate shall have to attempt five questions in all, selecting at least two questions from each section.

REFERENCE BOOKS
2. Construction materials and Processes by Don A. Wafson: Mcgraw Hill Co.
INTENT: To provide the students with a guide to model making. To realize the importance of models in architecture as a better means of checking, comparing and illustrating so as to sell architectural design projects.

TOPICS
- Type of Models (Blocks/details/Const & Interior Models)
- Presentation of models, scale, degree of accuracy and refinement.
- Material and Tools and exercise for making models.
- Sequence of operation: base layout, cutting joining fixing and finishing of various components.
- Final finishing with Texture, Landscape & Human figure etc.

NOTE: Four to five exercise should be done with paper, wood, Plastics, Metal, wood joinery

INSTRUCTIONS FOR EXAMINER:
1. Two options to be given to make a model of required accuracy and finish in the given time. Only one option to be attempted.
2. Internal Viva Voce to be done.
A) Purpose: The purpose of this course of study is to develop essential communication skills of speaking, listening, reading and writing which will enable students to comprehend effectively various instructional activities during the course of study, become lifelong learners and prove effective in their professional career. The course will also emphasize on E-mail ethics and voice modulation.

B) Industrial Objectives

**Reading Skills**
1. Understand model of reading to learn
2. Understand different tactics and strategies for reading to learn
3. State specific purpose of reading indicating learning outcomes.
4. Show reading outcomes in “Structural of Meaning Form”
5. Understand ‘Reading to Learn’ process as a whole
6. Write summary of a given text
7. Review literature

**Writing Skills**
1. Understand considerations for good writing
2. Given the purpose and context, write an application/business letter memo.
3. Write a technical report on a given subject of interest (Related to Architecture)

**Listening Skills**
1. Understand active listening
2. Develop effective active listening skills
3. Understand behavior related to effective active listening
4. Develop effective feedback skills
5. Develop skills of note taking

**Speaking and Discussion Skills**
1. Plan and organize content for a presentation
2. Develop presentation skills
3. Develop skills of an effective participant and a leader for group discussion.
4. Make a presentation
5. Conduct a meeting

C) Content

**Reading Skills**
Model of reading to learn P.S.O.R: Reading Tactics and strategies: Reading purposes – Kinds of purposes and associated comprehension: reading for meaning;
Reading outcomes – Structure of meaning technique, paraphrase, summary writing.

Activities
1. Develop an awareness of ‘Reading to learn Procedure’
2. State reading purposes and comprehension
3. Check on reading outcomes including paraphrasing and writing of summary.

**Writing Skills**
1. Guidelines for effective writing: writing styles for application, personal resume, business letter, memo;
   Technical report – style, arrangement, illustration, main section and appendices, conclusion list references, table of contents, synopsis, revision.

Activities
1. Writing of an application, business letter, memo and personal resume.
2. Writing a technical report
Listening Skills
   Barriers to listening
   Effective listening skills
   Feedback skills, attending telephone calls;
   Note taking

Activities
1. Listening Exercises – Listening to News/TV;
   Conversation, lecture
2. Note taking of a speech/lecture

Speaking and Discussion skills
   Components of an effective talk/presentation: planning and organizing content for a talk/presentation, use
   of visual aids, effective speaking skills, discussion skills

Activities:
1. Making presentation on a given topic
2. Participating in a group discussion
3. Conducting a meeting

Student Evaluation
   Continuous evaluation for the subject will consist of assessing student’s performance on the various
   activities/practice exercises mentioned under the content of reading, writing, listening and speaking and
   discussion skills. The weightage to the continuous assessment will be 70% End of term examination will
   assess competencies mentioned for the writing skills only. The test will include comprehension test for
   writing skills.

INSTRUCTIONS FOR EXAMINER:
   1. Internal Viva Voce to be done.

REFERENCE BOOKS
2. McGrath, S.J. “Basic Managerial Skills for all” Prentice Hall of India, New Delhi, 1991
INTENT: To learn about the utility of pencil and poster colours as a convenient tool to be used by architects.

CONTENT

UNIT – I

- Pencil as an effective presentation tool
  - Free hand line work, different strokes in pencil of same grade and with different grades by varying the thickness & pressure on the pencil. (Tonal Value & Variation)
  - Indoor sketching of commonly seen objects.
  - Shading techniques: cross hatching and flat strokes.
  - Free hand sketching of Human fingers, Trees & vehicles on an appropriate scale.
  - Exercise on still life, composition, pictorial views and landscape

UNIT-II

- Painting
- Brush Control
- Use of different types of colours like water, oil, poster, crayons and mixed

The students be asked to make free hand sketches on daily basis, of object commonly seen around so as to have a control on the line drawn by them

INSTRUCTIONS FOR THE EXAMINER:
The question paper shall have eight questions (each of equal marks) in all organized into two sections (A & B). Section-A will contain four questions from unit-I & section-B will contain four question from unit – II. The candidate shall have to attempt five questions in all, selecting at least two questions from each section.

REFERENCE BOOKS
1. Rendering with pen & Ink by Robert W Gill: Thames & Hudson.
3. Architectural Rendering Philip Crowe
4. Architectural Rendering Albert & Habe
5. How to Paint & draw Jaxtheimer, thames & Hudson
INTENT: To appreciate the constraints in the Architectural design of a small building with reference to function, form and anthropometry.

CONTENTS: Human dimensions anthropometry in various postures (in applied form), their relation to everyday utilities like the table, chair, bed, sink etc. Understanding measured drawing of an existing small unit. Space programming, importance of physical factors such as site orientation, light & ventilation etc.

TOPICS:
1. Study of anthropometrics & their relationship with dimensioning of objects of daily use.
2. Measured Drawing of a small building (house, office, Hostel room)
3. How diagram of a small buildings (house school, hostel, office etc.) to understand functional relationship of spaces.
4. Three dimensional organization of forms to create built forms & importance of shades & shadows.
5. Design of small buildings involving functional and services aspect, e.g. Milk Booths, kiosks, bus stop, petrol pump, cycle stand, security check post ATM cabin etc.

INSTRUCTION TO EXAMINER:
One question is to be set from the entire syllabus

REFERENCE BOOKS
5. Time savers Standards by De Chiara Callender : Mcgraw Hill Co. New York
6. Visual Thinking by Am Heim Rudolf
7. Elements of Architecture by Meiss Pierre Von
INTENT: To enable the students to have a better understanding of the 3-D views and effect of light on the objects.
UNIT – I
Pictorial View
- Oblique, Isometric, Axonometric views of solid composition & buildings
- Definitions of perspective (picture plane, stationery point etc.)

UNIT – II
Perspective:- Normal Eye view & Birds eye view.
- One point and two point perspective of building forms. (Exterior only)
- Perspectives having more than 2 vanishing points.
Sciography
- Study of shadows & shade on building or part of building.

INSTRUCTIONS FOR THE EXAMINER
The question paper shall have eight questions (each of equal marks) in all organized into two sections (A & B). Section-A will contain four questions from unit-I & section-B will contain four question from unit – II. The candidate shall have to attempt five questions in all, selecting at least two questions from each section.

REFERENCE BOOKS
2. Architecture Drawing by E.J. Muller
3. Step by step perspective by C. Coulin
INTENT: To familiarize the students with const. details of various parts of a single storied building.

CONTENTS

UNIT – I

• Introduction to various parts of building (wall, Foundation, floor, roof, doors & windows) and their structural roles.
• Various types of bonds in Bricks Masonry & Stone Masonry
• Masonry walls (Bricks & Stone).
• Hollow blocks, light weight & cone & glass block construction.
• Construction of foundation simple, stepped, combined, cantilever footing, RCC footing & raft foundation.
• Construction of PCC & terrazzo floor.

UNIT-II

• Construction of Flat Roof (Title & Batten, RCC, RCB)
• Concepts of water proofing and thermal Insulation.
• Different types of dams of proof materials.
• Construction detail of wall floor foundation with respect damp proofing
• Types of doors & windows
• Construction detail of single & double leaf panel doors in timber.

NOTE:
Section through a single storied building covering foundation/DPC/Window sill/Intel/roof and wall junction/parapet wall/plinth protection all complete.

INSTRUCTIONS FOR THE EXAMINER:
The question paper shall have eight questions (each of equal marks) in all organized into two sections (A & B). Section-A will contain four questions from unit-I & section-B will contain four question from unit – II. The candidate shall have to attempt five questions in all, selecting at least two questions from each section.

REFERENCE BOOKS
1. Building Construction by WB Mckay Vol. 1,2,3: Longmans UK
INTENT: The concept is to establish a need for a theory of design being considered as a board, comprehensive activity, with a view to help the students to appreciate the difference between a responsible opinion and a well reasoned judgment by looking at design in a dean critical way.

UNIT-I
Organization of forms and space on the basis of
- Spatial relationship space with space, Interlocking space, Adjacent space, space linked by a common space
- Spatial organization, centralized, linear, radial, clustered, grid
- Adeviation of toans and space types: edges and comers, surface

UNIT-II
Principles of Composition
- Unity Harmony and qualities of design which may include Dononance ormandle effect accentuation and contrast with Examples of buildings.

Circulation
- Circulation element approach entrance configuration of the path, Path space of the circulation space, simple circulation diagrams for buildings.

INSTRUCTION FOR THE EXAMINER:
The question paper shall have eight questions (each of equal marks) in all organized into section (A&B). Section-A will contain four questions from unit-I & section-B will contain four questions from unit-II. The candidate shall have to attempt five questions in all, selecting at least two questions from each section.

RECOMMENDED BOOKS:
1. Form space and order- D.K Ching.
INTENT
To appreciate the role of colour in day today life and its use in architectural design.

UNIT-I
Physiology of colour-I
- Radiant energy, light, colour specium, schemes, tonal values, colour mixing by additive/subtractive methods.
- The Ostwald system and the munsel system.

UNIT-II
Psychology of Colour-II
- Concept of warm and cool colours, colour language and its effect on the Mind, colour symbolism and character.
- Colour and architecture.
- Colour and light
- Colour scheme
- Preparation of colour chart
- Rendering techniques for dwelling and public buildings.

INSTRUCTION FOR THE EXAMINER:
The question paper shall have eight questions (each of equal marks) in all organized into two section (A & B). Section -A will contain four questions from unit-I & section-B will contain four questions from unit-II. The candidate shall have to attempt five question in all, selecting at least two questions from each section.

RECOMMENDED BOOKS
1. Architectural Rending-Phillp Crowe
2. Architectural Rending-Albert & Habe
3. Hoe to paint & draw- ladheimar
4. Colour Fundamentals- Graves MAinlland
5. Colour for Architects: T Portar, B Mikethoes
INTENT: TO PRODUCE THE STUDENTS THE VARIOUS PERIODS OF ART AND CULTURE AND IT’S DEVELOPMENT

CONTENTS: Introduction and chronological outline of famous periods of Indian arts.

UNIT – I
- History of Art & Culture Relevance of Architecture
- Prehistoric art & culture Trends & Techniques
- Art of Indus valley civilization and its impact on modern times.
- The significance of Indian & western Sculpture
- Cave Paintings- Frescos * Murals of Ajanta, Bagh Badani, Ellora techniques & Characteristics
- Miniature Paintings of Raiput & Mughal Period
- Works of modern masters in Indus and abroad.
- Significance and role of Indian murals and sculptures in architecture.

UNIT – II
- Renaissance Art: Resurgence of Art from 15th to 16th Century in Europe
- Comparison between primitive and modern Art
- Abstract art and its Language
- Impressionism, Expressionism and cubism & Futurism, Abstract Art.
- Scientific and technological progress since World War (I and its effect of art.
- Famous works of Contemporary artists, Sculptors in India & abroad.

INSTRUCTIONS FOR THE EXAMINER:
The question paper shall have eight questions (each of equal marks) in all organized into two sections (A & B). Section-A will contain four questions from unit-I & section-B will contain four question from unit – II. The candidate shall have to attempt five questions in all, selecting at least two questions from each section.
INTENT: The objective of the course is to give the students an idea about the potential of Computers in Architecture. The course covers the application of existing software rather than developing new softwares.

UNIT – I
Introduction and use of presentation software like Power Point.
- Creating a simple presentation
- Viewing
- Editing
- Different types of images
- Use of clipart
- Modeling with sketch up software
- Use of design tools to create lines, surfaces and shapes
- Draw shapes on edges and use sketch up stickly geometry
- View and orbit models in 3D
- Create boxes using drawing tools and interfaces
- Design complex design shapes
- Create and manipulate 3D figures
- Use different modeling techniques to create 3D forms
- Use of offset tools to create arrays & concentric surfaces.

UNIT – II
2-D in AutoCAD
- Creating a new Drawing
- Commands and options for creating a new drawing
- Layers, Blocks and attributes
- Dimensioning
- Viewing an existing drg
- Methods of selection
- Commands for zoom, Pan and snap etc.
- Inquiry
- Editing a drawing
- System of variables
- Plotting of drawing
- Application in Architectural drawing
- Presentation drawings
- Introduction to working drawings.

INSTRUCTIONS FOR THE EXAMINER:
Only viva will be held

REFERENCE BOOKS
1. System Software 3rd Ed. By Addison Weslay & L.Beek
2. DM office 97 by Mosolay LE & Boodlay
3. Computer Architecture & Organization by W Stalling
INTENT: The course aims at understanding simple small scale buildings with to its immediate observable environment. Importance to be given to study the physical attributes of the environment and how they effect in evolving the design.

Syllabus

UNIT-I
Logical evolution of plan form in relation to physical, climate and surrounding consideration, selection of materials of construction, Architectural design as a need based response for a simple building with concepts of privacy, security, comforts and maintenance.

UNIT-II
Study forms and compositions in the context of their shades and shadows, surface tones and colors.

UNIT-III
Study of simple repetitive spaces like nursery schools, hostels, restaurants, small nursing Homes & dispensaries, exhibition pavilions, residences, canteens, shops and offices and their functional space relationship and circulation.

UNIT-IV
Design An Artist residence, a nursery school, Nursing home or dispensary.

Presentation
Rendering as an integral part of design presentation technique. Students should learn how to render Plan, elevations, section and views through exercises in studio.

NOTE: Two time problems (as class tests) are to be conducted in class other than regular design problems

INSTRUCTIONS FOR THE EXAMINER
Two questions are to be set from UNIT III-IV and references are to taken from rest of the units.

NOTE: The students will attempt only one question out of the two:

REFERENCE BOOKS:
4. Time savers Standards by De Chiara Callender: Mcgraw Hill Co. New York
5. Visual Thinking by Am Heim Rudolf.
8. Architectural Rendering Philip Crowe
9. Architectural Rendering Albert & Habe
INTENT: To familiarize the students with const. double storied building with Concrete with special emphasis on stair case. To introduce to the students the modern construction materials like Concrete and Glass.

CONTENTS:

UNIT-I
Concrete
- Constituents of Concrete
- Properties and various types of concrete, Different grades of concrete
- Method of preparation, laying and curing of concrete.

UNIT-II
Glass
- Classification of glass.
- Composition of glass, its properties and uses.
- Various types of glass e.g. plate glass, wired glass, foam glass, laminated glass, tinted glass, glass wool, glass block, fiberglass, crinkle glass, obscured glass etc.

UNIT-III
BUILDING CONSTRUCTION
- Section of a double storied building through toilet and stair case showing the details of foundation, floor, window, lintel, chajja, R.C.C. roof, terracing and parapet.
- Types of staircase design and detailing of RCC and timber staircase.

UNIT-IV
R.C.C. FORM WORK
- Column (square and round)
- Slab and beam
- Wall
- Staircase

INSTRUCTIONS FOR EXAMINER:
Eight questions of equal marks each are to be set from each unit and the students are to attempt any 5 questions with a minimum of one from each unit.

REFERENCE BOOKS
1. Building construction by WB McKay Vol 1,2,3: Longmans UK
4. Barry R. Constructions in Building
5. PC Verghees, Building Construction.
INTENT

To acquaint students with the concept of climate as a significant determinant of built form. Familiarization with climate-controlling devices.

CONTENTS

UNIT-I
- Introduction to climatology, role of climate with respect to shelter.
- Movement of earth around the sun, change of seasons global wind movements and climate zones.

UNIT-II
- Definition of weather, climate, element of climate, interrelationship of climatic elements and psychometric charts.
- Study of indigenous shelters in response to climatic zones in India.

UNIT-III
- Definition and explanation of thermal comfort, relationship of climatic elements with thermal comfort, thermal stress index, bio climate chart, effective temperature and corrected effective temperature histogram.
- Heat exchange between building and environment (qualitative aspect only), thermal properties of materials and building elements, solar gain factor, solar temperature.

UNIT-IV
- Solar chart and its importance, understanding the movement of sun across the sky, importance of understanding the optimum orientation and building form in different climatic zones, concept of shading devices.
- Calculation for the design of horizontal and vertical shading devices.
- Air movement inside the building.
- Role of landscape and other passive devices for climatic control.

INSTRUCTION TO THE EXAMINER

Two questions of equal marks are to be set from each unit, out of each unit only one question is to be attempted by the candidate.

REFERENCE BOOKS:
1. Givoni B, Man Climate & Architecture
2. Miller A.A Climatology
OBJECTIVE:

The course introduces simple types of structural elements followed by determination of forces and stresses in the elements.

UNIT-I

Centre of gravity, definition, centroid, centre of gravity of plane figures CG by methods of moments, numerical problems.

UNIT-II

Moments of Inertia; MI of plane area, MI by method of integration, MI of rectangular section, theorem of parallel and perpendicular areas, numerical problems.

UNIT-II

Bending moment/shear force, type of Supports, loads and beams, relation between SF and BM, BM and SF diagram for cantilever and simply supported beams with pointed load uniformly distributed load, design examples.

UNIT-III

Moment of resistance, theory of bending stresses, equation of theory of bending, sectional modulus of rectangular and circular sections, numerical problems.

UNIT-IV

Analysis of perfect frame classification of frames, stress, Stair, Asumption, method of section, methods of joints, design example.

INSTRUCTIONS TO THE EXAMINER

Two questions of equal marks are to be set from each unit, out of each unit only one question is to be attempted by the candidate.

Recommended books:

1. Benham PP and Warnock FV Mechanics of solids and structures
2. Jain AK Elementary Structural analysis
3. Jain OP and Jain BK Theory of Structures
4. Kumar A, Stability of Structures
OBJECTIVE: History of Architecture exposes the students to evolution of different architectural solutions through historical periods within restraints imposed by prevalent social and religious customs, geography and climate, building material and techniques, structural complexities and technology available at the time.

Syllabus:

UNIT-I
- Introduction and importance of History of Architecture.
- Introduction to primitive Architecture.

UNIT-II
- Egyptian civilization and its Architecture.
- Classical Architecture: Greek and Roman.

UNIT-III

UNIT-IV
- Renaissance Architecture: Early renaissance, High renaissance, Baroque and Neo Classical.

UNIT-V
- Industrial revolution and its Impact on Architecture.

INSTRUCTIONS TO THE EXAMINER
Two questions of equal marks are to be set from each unit, out of each unit only one question is to be attempted by the candidate.
Syllabus

AUTO CAD 2-D Commands

UNIT-I
Line, circle, grids, snap, On snap, Arc, Middle, End, Poly Line, Donut, polygon and its applications.

UNIT-II
Rectangle, Fillet, Chamfer, Zoom, Pan, Text, D text, Array, Solid, Fill, Elipse and its applications. Auto-Cad3-D Modelling in:

UNIT-III
Isometric Design, Revsurf, Tabsurf, Edge surf and rule surf commands, Rendering and its applications.

UNIT-IV
Photoshop and its applications.

REFERENCE BOOKS-
1. System Software 3rd ED. By Addison Weslay & L. Beek
2. DM office 97 by Moselay LE & Boodlay
OBJECTIVE:

To bring about an awareness of the role of surveying in architectural and planning projects and to make the students conversant with commonly used surveying techniques.

CONTANT

Unit I

LINEAR MEASUREMENTS
Different methods, Instruments for Chaining, Ranging out survey lines, chaining, chain triangulation. Field Book, Field work, Instrument for setting out right angles, Obstacles in chaining.

Unit II

COMPASS SURVEYING
Bearing & angles, Theory of magnetic compass, Prismatic compass magnetic delineation, Local attraction. Theodolite & its structure, Definition & terms, Measurements of horizontal Angles.

Unit III

LEVELLING
Definitions, methods of levelling, dumpy level, levelling staff, Temporary adjustment of a level, Theory of direct levelling, Differential levelling, Booking & Reducing levels, Balancing B.S.& F.S., Cross sectioning.

Unit IV

PLANE TABLE SURVEYING

Unit V

CONTOURING
Contour interval, Characteristics of contours, Interpolation of contours, contours gradient, Use of contours maps, computation of volume of earth from contour plans, calculation of Areas, Use of plan meter.

GUIDELINES FOR THE TEACHERS

- Use of Chains, Ranging rods, Cross Staff, Clinometer Magnetic compass and the enlargement and reduction of maps shall be taught through practical.
- Students shall be made to plot at least one building in plan and also interpolate a building on contoured site.
- Marks awarded for the practical studies conducted shall form part of the internal assessment.

INSTRUCTIONS FOR THE EXAMINER/PAPER SETTER

Two questions of equal marks are to be set from each unit, out of each unit only one question is to be attempted by the candidate.

REFERENCE BOOKS

1. Surveying and leveling by TP Kanetkar
2. Surveying and leveling by Dr. N. Singh
3. Surveying by Dr. PB Sahiwney.
Brief:
The main aim is to study the traditional architectural characteristics of either Southern parts of India or Eastern parts of India. The major emphasis of the study tour is History of Architecture.

The study tour will visit places enlisted under any one of the options mentioned below. The choice of the option in each successive year will not be repeated.

**Option – I**
Bangalore, Mysore, Cochin, Trivandrum, Kanya Kumari, Madras, Hyderabad.

**Option – II**
Khajuraho, Agra, Fateh Puri Sikri, Varanasi, Gaya, Jamshedpur, Calcutta, Puri, Bhubneshwar.

**General Guidelines to the Teachers:**
- Study of Building Materials and details through sketches and photographs to be made as an individual activity and is to be submitted in a report form.
- Study of concepts / construction techniques and Architectural characters for different sites /buildings visited to be made in groups of 3 – 4 students.
- Viva – Voce on individual basis for both the submissions will be conducted as a part of Internal Assessment.
INTENT

In continuation of previous courses, it aims at sharpening students understanding of design of small buildings with respect to site, landscape, climate and role of these in designing of a building.

CONTENT

UNIT-I

- Introduction to the design assignments, their scope, with special emphasis on limitations, aims objectives etc.

UNIT-II

- Application of planning and design standards in the design problem.

UNIT-III

- Major design like a farmhouses, group housing, school, restaurant.

Seminar

Student is required to collect 2-3 good examples of small scale projects like a house, school may be live from neighborhood or magazine and make a presentation through drawings, notes, photographs and discuss them in the class.

INSTRUCTION FOR THE EXAMINER

Two questions are to be set from UNIT III and reference is to taken from rest of the units.

Note:

The student will attempt only one question out of the two.

REFERENCE BOOKS:

INTENT: The overall intent is to study various construction methods in coordination with the building materials and science related to them.

CONTENTS

Building Material

UNIT-I
- Roof Coverings- To study the constituents, properties, uses, process of laying of various roof covering materials e.g. G.I. sheets, Asbestos Cement Sheets (Plain & Corrugated) with accessories, Clay tiles- Country, Allahabad & Mangalore Tiles etc.
- Flooring: Various types of timber floor & their construction methods Floor finishes for timber floors.

UNIT-II
- Plastic: Introduction, Advantages, disadvantage, properties, types and uses as building material. Thermoplastic, Polythene, P.E. (Low density and high density) Polyvinyl chloride, P.V.C. poly-structure P.S. Application of plastics in buildings

Building Construction:

UNIT-III
- Roofs and Trusses in timber-
- Introduction to different types of roofs e.g. flat, couple close couple, collar, Lean to and double lean to roofs.
- Principles of constructions and details of Traditional trusses with gutters, eaves and ridge details and with / without soffit and roof covering.
- Built up trusses for 6m-9m span.

UNIT-IV
- Design and details of sliding doors, sliding and folding doors in timber.
- Timber partition, glass block partition, timber paneling

INSTRUCTION FOR EXAMINER:
Two questions of equal marks each are to be set from each Unit and the students are to attempt any 5 question with a minimum of one from each unit.

REFERENCE BOOKS:
1. Building Construction by WB Mckay Vol1,2,3: Longmans UK
OBJECTIVE: The course intents to familiarise the students with aspects and principles of architectural lighting and acoustics. The course shall focus on the application and design aspects of lighting and acoustics.

CONTENTS

Unit I
Architectural lighting, Aesthetics and functions, concept of daylight and interior light, calculation of illuminance and glare.

Unit II
Luminaire design, Luminance light source, calculation of daylight factor illustration required for various types of buildings such as residential, conventional industrial, educational recreational, health and cultural buidlings.

Unit III

Unit IV
Structure and air borne sound, sound absorption-coeff of absorption of different materials, classification and selection of various materials for accountical corection material of sound insulation for different nature of problem and circumstances.

Unit V
Reverbration time calculation and time delay for rooms such as class rooms lecture rooms. Multipurpose halls conference rooms auditorium etc.

GUIDELINES FOR TEACHERS
Application oriented practical exercises to be given in tutorial classes.

INSTRUCTIONS FOR THE EXAMINER/PAPER SETTER
Two question from each unit are to be set out of which any one is to be attempted by the candidate.
Intent
To evaluate elastic deformations in beams and frames and to find forces and deflection in redundant structures.

CONTENTS
Unit I
1. Slopes and deflections of beams and frames (simple cases only), moment-area method.
2. Conjugate beam method

Unit II
1. Virtual work (unit load) method, principles of virtual work and theorem of reciprocal deflections.
2. Moment distribution method (simple cases only)

Unit III
1. Redundant structures, introduction to force and displacement approaches, method of consistent deformation.

Unit IV
1. Slope deflection method.

INSTRUCTIONS FOR EXAMINER:
Two questions of equal marks each are to be set from each Unit and the students are to attempt any 5 questions with a minimum of one from each unit.

REFFERENCE BOOKS:
- Prakash Rao, D.S., “Structural Analysis”, University Press (India) Ltd.
INTENT: History of Architecture is to be taught with a view towards understanding how different architecture solutions were evolved (in successive historical periods) within the restraints imposed by prevalent social and religious costumes, available building materials, climate of particular region, Complex structural problems and the limited technology available at that time.

UNIT-I
- Brief Introduction to Indian Architecture – Hindu Period
- Architecture of Ancient Civilization: Indus Valley and Vedic Aryans

UNIT-II
- Buddhist Architecture
- Jain Architecture

UNIT-III
- Indo Aryan Architecture Chaulakyan Architecture
- Dravidian Architecture: Pallavas, Pandavas, Cholas and Nayaks

UNIT-IV
- Introduction to Indo Islamic architecture
- Mughal Architecture: Mughal, Humayun, Akbar, Shahjahan

UNIT-V
- Imperial Architecture Delhi
- Provincial/regional Architecture: Bangal, Gujarat, Deccan, Malwa and Bijapur

INSTRUCTIONS TO THE EXAMINER:
Two questions of equal marks each are to be set from each unit and the students are to attempt any 5 questions with a minimum of one from each unit.

REFERENCE BOOKS
1. Brown P, Indian Architecture- Buddhist and Hindu Period
2. Acharya PK, Hindu Architecture in India and Abroad
4. Grover S The architecture of India Buddhist and Hindu
5. Grover S The architecture of India Islamic
OBJECTIVE:
To acquaint the students with advanced graphic software.

CONTENT
Advanced Graphic Softwares

UNIT-I
3D Studio and its applications

UNIT-II
3d Home
Advanced Graphic Softwares

UNIT-III
Auto architect and its applications

UNIT-IV
Archi CAAD and its applications

REFERENCES
Manuals by the software companies
OBJECTIVE:

The objective is to expose the students to the various theoretical and practical aspects of Vernacular architecture and Vaastu Shastra in present day context.

CONTENT

UNIT-I

Vernacular Architecture:

Introduction of Vernacular architecture, its nature, purpose and scope, evolution of development of shelter form and identity, nature & manmade determinants of form, and elements of visual identity.

UNIT-II

Rural Urban shelter and settlement patterns, effect of place time folk and classical traditions and construction material and techniques.

UNIT-III

Historical review of architectural forms, present day interpretation and role of vernacular architecture. Process of design activity, influence of climate, material and technology.

UNIT-IV

Vastu Shastra

Introduction, its purpose nature and scope. Vaastu principles and its effect.

UNIT-V

Application of Vaastu Shastra, Role of various mandalas and Vaastu Purush Mandala. Site Selection & shapes of plots. Orientation aspects. Configuration of various areas, inner and outer spaces within and outside the building. Detained study with regard to placement of stairs, WCs, Kitchen etc.

Case studies appraisal remedies for houses and commercial buildings as per Vaastu Shastra

Note: 2-3 exercises in the application of Vaastu shastra and Vernacular Principles in architectural forms like house or commercial building.

INSTRUCTIONS TO EXAMINER

Two questions of equal marks each are to be set from each Unit and the students are to attempt any 5 questions with a minimum of one from each unit.

REFERENCES

1. Puri, B.B. Applied Vaastu Shastra in Modern architecture.
3. Cooper G and Dawson B. Traditional Buildings of India.
CONTENTS:

Unit – I
Man and Environment. Traditional patterns and trends of change in Indian society. Concept of social structure, culture and social institutions.

Unit – II
Relation between social structure and spatial structure. Social aspects of housing. Social problems of slums.

Unit – III

Unit – IV
Basic economic analysis, economic principles and land use, land use pattern and land values.

Unit – V
An area level study of a settlement with reference to socio-economic aspects

GENERAL GUIDELINES FOR TEACHERS:
The emphasis and orientation of the course should be relevant to the field of Architecture.

INSTRUCTIONS FOR EXAMINER / PAPER SETTER:
Two questions of equal marks are to be set from each unit, out of each unit only one question is to be attempted by the candidate.
INTENT
To expose the students to the designing of multifunctional community buildings on an intermediate scale with emphasis on building byelaws, impact of culture, traditions and building construction on the built form.

1. Introduction to designing of multifunctional community building types on an intermediate scale.
2. Importance of space programming, case studies and site analysis in architectural design.
3. Importance of culture/traditions and building byelaws in shaping built forms.
4. Design problems based on technical criteria of given programme and site, design of a library, a community centre, auditorium

GUIDELINES FOR THE TEACHERS
Live case studies and library study should be conducted for every project.

INSTRUCTIONS FOR THE EXAMINER
- Portfolio submission should be submitted within 2 weeks after termination of theory examination.
- Portfolio will be evaluated by one internal examiner and one external examiner (external examiner may be related to academic or professional background)

REFERENCE BOOKS:
INTENT
To enable the students to learn detailing of metal doors, fire proof structures, steel trusses and prefabrication.

1. Steel doors (sliding, revolving, collapsible and rolling shutters), aluminum doors, windows and glazing.
2. M.S. frame structure components and connections.
3. Tubular steel trusses, north light glazing and its covering and drainage details.
4. Fire proof structures, classification of buildings and codal provisions, fire protection of building elements and fire protection devices.
5. Advantages and disadvantages of on-site and off-site prefabrication in Indian conditions, simple details in prefabrication Tubular steel trusses, north light glazing and its covering and drainage details.

INSTRUCTIONS FOR EXAMINER:
Eight questions of equal marks are to be set from entire unit and the students are to attempt any 5 questions.

REFERENCE BOOKS
CONTENTS:

Unit – I

**Drainage and Sanitation:**
- Conservancy and Water – carriage system.
- Sanitary fittings for WC bathroom and kitchens.
- Types of pipes and drains in CI stoneware and asbestos cement.
- Inspection and Interception Chambers.
- Refuse Chutes.

Unit – II

**Methods of Refuse Disposal:**
- Rain water disposal.
- Storm Water disposal.
- Sewerage systems for sewerage disposal.
- Design of cess pools, soak pit, septic tank and seepage well.

Unit – III

**Water Supply:**
- Water Supply fittings.
- Plumbing Systems.

Unit – IV

**Sources of water.**
- Purification, filtration, sterilization, water softening and current equipments available in the market for above mentioned.
- Storage wells, tanks and reservoirs (Ground and overhead).

Unit – V

**Hot Water Supply:**

GUIDELINES FOR THE TEACHER:

INSTRUCTIONS FOR EXAMINER / PAPER SETTER:
- Ten questions are to be set (two from each unit).
- Candidate have to attempt one question from each unit.
CONTENTS:

Unit I
- Design of single reinforced beams, doubly reinforced beams, cantilever beams; depth thickness of section area of reinforcement stell shear check, shear reinforcement design examples.
- Introduction to T beams and L beams

Unit II
- Design of one way slab; by/ex ratio depth/thickness of section , area of reinforcement, shear check design examples.
- Design of two way slab; by/ex ratio IS 456 code provisions, their of check, design examples.

Unit III
- Design of dog legged stair; calculation of thread and riser, different bondings, thickness of waist slab/bending slab, area of reinforcement design examples

Unit IV
- Design of columns; long short columns, basic equation of design IS 456 code provisions, section of column, longitudinal and lateral reinforcement.

Unit V
- Design of isolated square and rectangular footing is depth frame consideration of bending moment one way shear and true way shear area of reinforcement, design examples.

GUIDELINES FOR THE TEACHER
All structural design work shall be supplemented by structural drawings.

INSTRUCTIONS FOR THE EXAMINER/PAPER SETTER
- Ten questions are to be set (two from each unit).
- Candidate have to attempt one question from each unit.
CONTENTS:

UNIT I
- Estimates, types of estimate approximate and detailed methods of approximate estimating, plinth area methods, carpet floor area method, cubic content methods, approximate content method and number system.
- Use of Microsoft Excel for estimating.

UNIT II
Detailed estimate, procedure of estimating, taking out quantities, bill of quantities, schedule of rates.

UNIT III
Exercise in estimation (with different methods) of small buildings, estimating exercises for interior schemes, plumbing work and electrical installation etc.

UNIT IV
Rate Analysis: Principles and analysis of different rate of labour and material, exercises in rate analysis of different building works i.e. Earth work for foundation, flooring, timber work etc.

UNIT V
Introduction to P.W.D. accounts procedure as per Common Schedule of Rates, measurement book, daily labour and muster roll stores, stock issue of material and stock indent form, imprest account, cash book, mode of payment.

INSTRUCTIONS FOR THE EXAMINER/PAPER SETTER
- Ten questions are to be set (two from each unit).
- Candidate have to attempt one question from each unit.

REFERENCES BOOKS
- Punmia, B.C. and Khandelwal, K. K., “Project Planning and Control with PERT and CPM”, Laxmi Publications Pvt. Ltd.
Objective: Understanding the works and philosophy of Contemporary Architects.

Contents:

Exercises: Analytical and Illustrative exercises of above topics in the form of papers and seminars.

CONTENTS:

UNIT I
- **Master Architects**: Louis Sullivan, Frank Lloyd Wright, Walter Gropius, Mies van der rohe, Le-Corbusier.
- **Modern Architecture after the great masters**: Alvar Aalto, Eero Saarinen, Jorn Utzon and Louis I Kahn.

UNIT II

UNIT III
- **High Tech Architecture**: James Sterling, Renzo Piano, Richard Rogers and Norman Foster.

UNIT IV
- **Deconstruction Architecture**: Peter Eisenman, Frank Gehry, Bernard Sthumi and Zaha Hadid.

UNIT V

INSTRUCTIONS FOR THE EXAMINER/PAPER SETTER
- Ten questions are to be set (two from each unit).
- Candidate have to attempt one question from each unit.
COTENTS

Unit I

Bulk Active Structure System:
- Framed structure
- Slabs (one way and two way)
- Flat slab
- Waffle slab

Unit II

Vector Active Structure System:
- Trusses
- Space frames
- Geodesic Dome

Unit III

Form Active Structure System:
- Funicular structures (Cables and Arches)
- Tents
- Pneumatic structures

Unit IV

Surface Active Structure System:
- Singly curved shells
- Doubly curved shells
- Hyperbolic paraboloids
- Folded plates
- Y-beams

Unit V

Foundations:
Choice of foundation relevant to bearing capacity, loading, material and site condition
- Combined footing
- Raft foundation
- Strip foundation
- Pile foundation (Friction, end bearing)

GUIDELINES FOR THE TEACHER

- The students should be made to Co-Ordinate the fabrication of at least four models to demonstrate the various structural systems.
- Students should be taken to Pragati Maidan & other Building centres in New Delhi for better exposure.

INSTRUCTIONS FOR THE EXAMINER/PAPER SETTER

- Ten questions are to be set (two from each unit).
- Candidate have to attempt one question from each unit.
To make the students understand the various pre & post disaster design and management measures.

**CONTENTS:**

**UNIT-I**
- Types of disaster, meanings and related definitions.
- Causes and effects of natural hazards
- Disaster preparedness and response and rehabilitation.

**UNIT-II**
- Earthquake: Problems & design issues
- General Principles of designing
- Special construction techniques.

**UNIT-III**
- General requirements, principles and measures for building design for Fire, floods, cyclones, avalanche, etc.
- Special construction technique.

**UNIT-IV**
- Post disaster problems, issues & management.
- Roles and responsibilities of different agencies.

**UNIT-V**
- Disaster profile of India.

**GENERAL GUIDELINES FOR TEACHERS:**
- The emphasis and orientation of the course should be relevant to the field of Architecture.

**INSTRUCTIONS FOR EXAMINER / PAPER SETTER:**
- Ten questions are to be set (two from each unit).
- Candidate have to attempt one question from each unit.
BRIEF:
The concept is to provide an insight into works of contemporary Indian Architects and also historical architecture as available in western and northern parts of India. The study tour shall visit places enlisted under any one of the options mentioned below, the choice of the option in each successive years shall not be repeated.

OPTION – I
Jaipur, Ajmer, Jodhpur, Jaisalmer, Mount Abu, Chittaurgarh, Udaipur, Ujjain, Indore / Mandu, Bhopal / Sanchi.

OPTION – II
Vadodra, Ahmedabad, Ajanta – Ellora, Bombay, Pune, Goa, Delhi.

OPTION – III
Bangalore, Mysore, Cochin, Trivandrum, Kanya Kumari, Madras, Hyderabad.

OPTION – IV
Khajuraho, Agra, Fateh Puri Sikri, Varanasi, Gaya, Jamshedpur, Calcutta, Puri, Bhubneshwar.

GUIDELINE FOR THE TEACHER:
Before the study tour proceeds the students shall collect literature regarding complexes / buildings etc. to be visited in the tour and shall present the same for a review. After incorporating whatever modification or improvements recommended by the concerned teacher / teachers the same shall be provided to the students as hand outs (either in condensed form or in toto).

Study of Building Materials and details through sketches and photographs to be made as an individual activity and is to be submitted in a report form.

Study of complexes visited to be made in groups of 3 – 4 students.
Viva – Voce on individual basis for both the submissions will be conducted as a part of Internal Assessment.
Objective: To develop an understanding of building services like air conditioning, water supply, sanitation, electrical layout, garbage disposal etc. integrated with architectural design.

Course Contents
- Major problems shall consist of commercial office, administrative building, factories etc.
- Time problem like nursing home, small institute etc.
- The architectural design shall be followed by working drawings.

GUIDELINES FOR THE TEACHERS
Live case studies and library study should be conducted for every project.

INSTRUCTIONS FOR THE EXAMINER
- Portfolio submission should be submitted within 2 weeks after termination of theory examination.
- Portfolio will be evaluated by one internal examiner and one external examiner (external examiner may be related to academic or professional background)

REFERENCE BOOKS
Objectives: To familiarise the students with construction details of furniture. Also the details of services like kitchen, toilet, fire place and service ducts.

Course Contents
- Office and residential furniture in wood and steel:
  - Sofa chairs
  - Tables
  - Beds
  - Study chairs
  - Computer tables
- Detailing of residential kitchens and appraisal of some selected kitchens in hotels, restaurants and hostels.
- Detailing of residential and public toilets.
- Fire place
- Service ducts (Horizontal and Vertical)

GUIDELINES FOR THE TEACHER
- To cultivate personal observation and self learning in the students, site visits should be conducted so as to cover the given syllabus.
- Students will observe, measure, sketch and annotate what they see at site and submit a site visit report to the teachers concerned for evaluation. This award shall form part and parcel of the sessional work for internal assessment.

INSTRUCTIONS FOR EXAMINER:
Four questions of equal marks are to be set and students are to attempt any three questions.

REFERENCE BOOKS
CONTENTS:

BUILDING ENERGY

Unit I
Energy crisis, renewable and non-renewable sources of energy, laws of thermodynamics. Concept of energy efficiency.

Unit II

Unit III
Active and passive method of cooling and heating. Storage of energy, integrated energy system of human habitation. Energy generation from solid waste disposals.

AIR-CONDITIONING

Unit IV
Introduction, Basic principles of air conditioning, difference between air cooling and air conditioning, requirements of comfort condition, control of temperature and humidity

Unit V
Means of mechanical ventilation, various system of air conditioning and equipment required for air conditioning like blowers and exhaust fans, fan coil units and air handling units etc.

GENERAL GUIDELINES FOR THE TEACHERS
The objective of the course is to provide wide exposure to environmental supports systems as they apply to human habitat

INSTRUCTIONS FOR EXAMINER/PAPER-SETTER
- Ten questions are to be set (two from each unit).
- Candidate have to attempt one question from each unit.
COTENTS

Unit I
Design of compression members subjects to axial leading effective length, ratio of generation, slenderness ratio, permissive stress, design examples.

Unit II
Design of steel beams, section on the basis of bending stress, shear check deflection, udl and concentrate load.

Unit III
Design of steel truss members for given loading; compression factor tensile force acid reversal of forces (mode & end connection design is not required)

Unit IV
Design of grillage foundation for isolated steel column; section for bending strusses, shear check wide crippling check, design example.

Unit V
Riveted connections; different types of rivets, types of riveted joints failure of reverted joint, calculation of efficiency of riveted joint Welded connections different types of milds, advantages and disadvantages of including, design of wild objector to axial form

GUIDELINES FOR THE TEACHER
All structural design work shall be supplemented by structural drawings.

INSTRUCTIONS FOR THE EXAMINER/PAPER SETTER
• Ten questions are to be set (two from each unit).
• Candidate have to attempt one question from each unit.
CONTENTS

Unit I
Definition, importance and scope of the subject, Correct form of writing specifications, avoiding ambiguity and confusing statements, form and sequences of clauses, study and uses of standard specifications viz. drafted by P.W.D. etc.

Unit II
Writing detailed specification for various building materials like bricks, lime, sand, timber, glass, paints etc.

Unit III
Writing detailed specification for various construction works like earthwork for foundations, trenches for foundation, superstructure in cement mortar, R.B. work, R.C.C. work, plastering and pointing, various types of flooring, white washing, distempering and painting, roof terracing, stone masonry.

Unit IV
Types of Parking and their space standards Parking requirements for various categories of buildings Sanitary requirements for educational institutes, office buildings, hospitals and recreational complexes.

Unit V
Standards and sizes for corridors, elevators, staircases, etc. for the various categories of buildings Passive fire prevention, concept of escape routes, compartment and venting. Fire safety standards for multistorey buildings

GUIDELINES FOR THE TEACHERS
To familiarize the students with various building specifications and standards

INSTRUCTIONS FOR THE EXAMINER/ PAPER SETTER
- Ten questions are to be set (two from each unit).
- Candidate have to attempt one question from each unit.
CONTENTS

Unit I
Introduction: Definition and objective of Landscape Architecture, related environmental issues. Explanation of terms - landscape, landscape design and landscape architecture. Landscape practice and profession of landscape Architecture; Landscape design elements, their types relevance and uses.

Unit II
Evaluation of Parks and gardens from history: Garden styles – formal and informal; comparative history of garden designs viz. Italian, French, English, Persian and Mughal.

Unit III
Landscape & Environment: Definition of ecology; importance of its study for landscape architects; Process of ecology & ecosystems; landscape as an environmental asset; Nature and city as an ecosystem.

Unit IV
Site Planning: Site Planning - meaning and purpose; site selection; site surveys and analysis of physical aesthetic functional and technical factors, slope analysis, visual analysis; Principles and goals of landscape design; types of landscape styles - hard and soft landscape, wet and dry landscape.

Unit V
Plant Material: Functional, aesthetic and environmental aspects of plant material; composition and structure of plants; criteria for plant selection; characteristics (height, foliage, flowering etc.) of various plants, their common and botanical names. Preparation of a small landscape scheme.

GENERAL GUIDELINES FOR THE TEACHERS
The objectives of the course is to provide wide exposure to landscaping aspects as they apply to architectural design.

INSTRUCTIONS FOR EXAMINER/ PAPER-SETTER
- Ten questions are to be set (two from each unit).
- Candidate has to attempt one question from each unit.
Contents

Unit I
Introduction to the concept of standardization in building design, Modular co-ordination, its objectives, basic planning and structure modules. Application to advantages and disadvantages of pre-fabrication, various types of prefabrication, their advantages and disadvantages, simple details of prefabrication.

Unit II
Introduction to construction management, its significance, objectives and functions, construction planning and scheduling using bar charts and network techniques, development and analysis of CPM networks.

Unit III
Cost time analysis in network planning, basic terms, concept of optimized cost, procedure of cost time optimization in network planning, exercising shall networks to determine the optimum duration & cost.

Unit IV
Inspection and quality control its need on work sites, principles of inspection, stages of inspection and quality control for - Masonry R.C.C and earth work, various method of testing of structures, importance of safety on construction sites.

Unit V
Equipements used in building industry like earthmoving equipments, compaction equipments, excavating equipments hauling equipment. Mixing equipment, Hoisting equipment

GUIDELINES FOR THE TEACHER
The students should be familiarize with various concept of construction management.

INSTRUCTIONS FOR THE EXAMINER/PAPER SETTER
- Ten questions are to be set (two from each unit).
- Candidate has to attempt one question from each unit.
Contents

Unit I
Definition and aspects of the architectural profession, Role of the Architect: Relationship with the clients and contractor, duties, legal responsibilities. Indian Institutes of Architects: Aims, objectives, conditions for engagement and scale of professional charges, code of professional conduct. Council of Architecture: Its role of regulating the profession and education in Architecture. Role of other National and international agencies such as Institutes of valuers, RIBA, AIA etc.

Unit II
Contract and Tender: Relevant Clauses of Indian Contract Act 1972, various types of building contracts with their merits and demerits, types of tender preparation of tender documents and method of preparing tender notices, inviting and opening tenders, a comparative statement and recommendation for award of work.

Unit III
Building Bye-Laws: Role in the healthy development of Architecture. Applicability of bye laws Points of difference between zoning bye laws and building bye laws.

Unit IV
Study of local building bye-laws (including architectural controls zoning plan with special emphasis on social infrastructure and physical infrastructure, housing etc.

Unit V
Points of general interest in bye laws of other cities like Chandigarh and Delhi New concept of bye laws like sun easement air rights

GUIDELINES FOR THE TEACHER
The course should be oriented towards more practical approach to prepare the students to handle the profession completely.

INSTRUCTIONS FOR THE EXAMINER/PAPER SETTER
- Ten questions are to be set (two from each unit).
- Candidate has to attempt one question from each unit.
Objectives: To develop an understanding of important areas/ buildings/ complexes/ urban settlements etc. through study and analysis. This course also aims at application of different building technologies.

CONTENTS
- Documentation, study and analysis of important areas/ buildings/ complexes/ urban settlements etc.
- Redesign/ conservation of the Historical/ Cultural documented complex/ areas as above incorporating application of different building technologies.
- Bus terminal or airport

GUIDELINES FOR THE TEACHERS
Stress to be laid on structural and constructional details like, pre-fabrication, low-cost, use of indigenous materials etc.

INSTRUCTIONS FOR THE EXAMINER
- Portfolio submission should be submitted within 2 weeks after termination of theory examination.
- Portfolio will be evaluated by one internal examiner and one external examiner (external examiner may be related to academic or professional background)
OBJECTIVES: To familiar the students with the construction details of high rise buildings and large span structures

CONTENTS
- Details of lift slab and slip form method of construction
- Detailing of curtain walls and wall claddings.
- Construction details of prefabricated and precast building components
- Construction techniques of structures like
  - Folded plates
  - Coffer ed/ Waffle slab
  - Doubly curved surfaces
  - Space frames
  - Vierendeer girders

GUIDELINES FOR THE TEACHER
- To cultivate personal observation and self learning in the students, site visits should be conducted so as to cover the given syllabus.
- Students will observe, measure, sketch and annotate what they see at site and submit a site visit report to the teachers concerned for evaluation. This award shall form part and parcel of the sessional work for internal assessment.

INSTRUCTIONS FOR THE EXAMINER/PAPER SETTER
Total three or four questions to be attempted by the candidates depending upon the length of the paper.
CONTENTS

ELECTRICITY

Unit I
Basic principles of electrical circuits; Ohm's Kirchof's law, calculation of power load distribution. Bulk supply system and location of campus transformers.

Unit II
Introduction to electrical fittings and electrical appliances commonly used, systems of electrical wiring. Wires specification and current carrying capacity.

FIRE FIGHTING

Unit III
Classification of fire, classification of building according to fire load, causes of fire, combustibility of material and fire resistance provision in buildings from fire safety angle.

Unit IV
Fire fighting equipment and fire extinguishers of different types, fire detection and alarm systems, heat and smoke detectors, comparison of detectors.

MECHANICAL AND COMMUNICATION SYSTEMS

Unit V
Mechanical conveyors, lifts, principle of functioning, control and operation of lifts. Machine room and its equipments, lift well and pit. Ideal location, ventilation, number and size of lift cars. Escalator functioning- Installation and suitability of escalators. Inter-communication and monitoring devices - System and equipment.

GENERAL GUIDELINES FOR THE TEACHERS
The objectives of the course is to provide wide exposure to environmental supports systems as they apply to human habits.

INSTRUCTIONS FOR EXAMINER/ PAPER-SETTER
- Ten questions are to be set (two from each unit).
- Candidate has to attempt one question from each unit.
Contents

UNIT I
Introduction to Urban Design theory, raw material of urban design i.e. districts, nodes, land marks, edges and paths. Determinants of Urban Form - Scale, texture, grain and activity patterns.

UNIT II
Building typology and its impact on Urban forms, the merging boundaries of Architecture and urban design, the shape and structure of cities - pattern, styles and trends in history.

UNIT III
Urban Design tools - policy design and legislative tools, bye laws, concepts and practices, Understanding urban design models.

UNIT IV
The role of conservation and relevance of historic buildings/ areas in present context, issues related with physical deterioration of built heritage and its preservation.

UNIT V
Concepts and policies of conservation of built environment, the role of various international and national agencies (Archaeological Survey of India, Indian National Trust of Art & Cultural Heritage, International Council of Monuments & sites, World Heritage Committee, UNESCO) engaged in conservation practice and policy making.

GUIDELINES FOR TEACHER INCHARGE
An exercise in urban design and conservation study of a building/ area should be taken up on order to familiarize the students with various issues pertaining to the subject.

INSTRUCTIONS FOR THE PAPER SETTER/ EXAMINER
- Ten questions are to be set (two from each unit).
- Candidate has to attempt one question from each unit.
CONTENTS

Unit I

Unit II
- Maintenance of walls :Dampness, causes, effects and remedies.
- Efflorescence : causes, effect and remedies
- Cracks in structure, surface investigation. Remedial and preventive measures. Prevention while repairing load bearing walls. Repair to plaster, Bond between old and new brick wall.

Unit III

Unit IV

Unit V

GUIDELINES FOR THE TEACHERS
To familiarize the students with aspects of maintenance of buildings.

INSTRUCTIONS FOR THE PAPER SETTER/EXAMINER
- Ten questions are to be set (two from each unit).
- Candidate has to attempt one question from each unit.
Contents

UNIT I
General principles of Indian Arbitration Act 1940, Merites of arbitration, Arbitration -appointment, qualification power and duties. Umpire in arbitration

UNIT II
Elements of valuation Classification of value and ownership, purpose of valuation.

UNIT III

UNIT IV
Architectural competitions registration procedure, conditions for conducting architectural competitions. Board of Assessores, Advisors. Prize money and Honoria.

UNIT V
Characteristics of Easements, continuous and discontinuous easements, modes of acquiring easements.

GENERAL GUIDELINES FOR TEACHERS
The course should be oriented toward more practical approach to prepare the students to handle the profession completely.

INSTRUCTIONS FOR THE EXAMINER/PAPER SETTER
- Ten questions are to be set (two from each unit).
- Candidate has to attempt one question from each unit.
Contents:

UNIT I

UNIT II
Concreting operations - practices and equipments, batching, mixing, transporting, placing and compacting, curing, accelerated curing, finishing and jointing.

UNIT III
Properties and techniques of construction for concrete Admixture and special concretes - Admixtures, polymers, epoxyresins, Pozolanic materials and flyash, fibre reinforced concrete, ferrocement and hardonate/ ironate concretes, light weight concrete, heavy weight concrete, foam concrete.

UNIT IV
Special concrete operations, shotcrete, grouting, chemical grouting, guniting, concreting and hot and cold weather, underwater concreting.

UNIT V
Pre-stressed concrete structures, principles, methods, materials, tools and equipments for the construction of a prestressed structures, inspection and quality controls - stages, principles and checklist.

GENERAL GUIDELINES FOR TEACHERS
The course should be oriented to prepare the students to know the properties of concrete and its behaviour under various conditions.

INSTRUCTIONS FOR THE EXAMINER/PAPER SETTER
- Ten questions are to be set (two from each unit).
- Candidate has to attempt one question from each unit.
SUBJECT CODE: AR-415  
DURATION OF EXAMINATION: NA  
INTERNAL ASSESSMENT: 30  
UNIVERSITY EXAMINATIONS: 70

BRIEF:
The concept is to provide an insight into works of contemporary Indian Architects and also historical architecture as available in western and northern parts on India. The study tour shall visit places enlisted under any one of the options mentioned below, the choice of the option in each successive years shall not be repeated.

OPTION – I
Jaipur, Ajmer, Jodhpur, Jaisalmer, Mount Abu, Chittaurgarh, Udaipur, Ujjain, Indore / Mandu, Bhopal / Sanchi.

OPTION – II
Vadodra, Ahmedabad, Ajanta – Ellora, Bombay, Pune, Goa, Delhi.

OPTION – III
Bangalore, Mysore, Cochin, Trivandrum, Kanya Kumari, Madras, Hyderabad.

OPTION – IV
Khajuraho, Agra, Fateh Puri Sikri, Varanasi, Gaya, Jamshedpur, Calcutta, Puri, Bhubneshwar.

GUIDELINE FOR THE TEACHER:
Before the study tour proceeds the students shall collect literature regarding complexes / buildings etc. to be visited in the tour and shall present the same for a review. After incorporating whatever modification or improvements recommended by the concerned teacher / teachers the same shall be provided to the students as hand outs (either in condensed form or in toto).

Study of Building Materials and details through sketches and photographs to be made as an individual activity and is to be submitted in a report form.

Study of complexes visited to be made in groups of 3 – 4 students.
Viva – Voce on individual basis for both the submissions will be conducted as a part of Internal Assessment.
Contents

Unit I
History of Town Planning
Historical perspective urban growth and form in ancient societies (special emphasis on India) Urban pattern of medieval town, the renaissance and neo classic city, The industrial and factory towns, model town, the graden city and satellite towns, towns in Greek and Roman periods.

Unit II
Introduction to town planning, concept of planning, planning terminology and space standards. Meaning importance and scope of planning process.
Theories of urban structure

Unit III
Preparation of Plans:
Perspective plan, development plan, and master plan Planning at city level Zoning, circulation, Housing, Parks and play fields, Public utility services, urban aesthetics Site Planning : Basic principles of site planning

Unit IV
Planning squares, planning data, its presentation & analysis. Planning of new towns

Unit V
Implementation & administration
Acts related to city planning: Punjab regional and Town Planning act, 1974 amendment act 1992, Municipal act, model law etc. Role of planning and related development authorities such as municipal corporation, Improvement trust, Haryana Urban development authority, CPWD, TCPO, HUDCO

GUIDELINES FOR THE TEACHER
The architect, an actor at the micro-level of the development process, must possess a broad knowledge of the macro-level.
The course contents are designed to familiarize the students with the basis of the Urban Planning Process.

INSTRUCTIONS FOR THE EXAMINER/PAPER SETTER
- Ten questions are to be set (two from each unit).
- Candidate has to attempt one question from each unit.
CONTENTS

UNIT I
Definition of house and housing, housing typology - detached, semi-detached, row housing, walk up apartments, multi-storied housing, plotted and flatted development; housing density-gross and net density, role of density indices and measures in housing layout.

UNIT II
Housing as a major component of a settlement, neighbour hood concept definition, Radburn layout, Clarence Perry's principles of layout, physical elements, community facilities, design criteria, selection of housing types, circulation etc.

UNIT III
Housing standards-meaning, purpose and criteria, standards prescribed by HUDCO, NBC etc.

UNIT IV
Problems of slums and housing for the poor - definition of slums, factors responsible for creation, features, Govt. schemes for improvement; low cost housing-meaning and role for housing the poor, low cost materials and techniques, use of local materials, Approach of Laurie Baker, HUDCO (Building Centres), CBRI and others.

UNIT V
Techniques of appraisal of housing enclaves, physical, social, economic and environmental components; surveys - definitions, importance, types, advantages, disadvantages, sample, sampling, preparation of questionnaire types, sequence and format of questions

GUIDELINES FOR THE TEACHERS
The course should be oriented towards a practical approach and the students should visit the housing sites and appraise them.

INSTRUCTIONS FOR THE EXAMINER/PAPER SETTER
- Ten questions are to be set (two from each unit).
- Candidate has to attempt one question from each unit.
Contents

**Unit I**
Concept of planning, categories of planning (economic, social and physical) and their integration, planning at different levels, aims and objectives of physical planning.

**Unit II**
Planning approaches comprehensive planning, structure planning and advocacy planning. The city in its regional setting, elements of urban structure, factors affecting the land use distribution.

**Unit III**
Site planning site selection criteria, general guidelines and basic principles of site planning site planning process-planning of residential commercial and industrial sites.

**Unit IV**
Siting of new towns, procedure and stages of planning for new towns special surveys and studies required. Administrative, financial and legal set up of new towns, Basics to evolve development controls.

**Unit V**
Role of non-governement organisations in urban development, role of private organisations in urban development and their relations with local/state governement. Citizen/public participation in urban development.

**GUIDELINES FOR THE TEACHER**
The architect, an actor at the micro-level of the development process, must possess a broad knowledge of the macro-level.
The course contents are designed to familiarize the students with the basis of the Urban Planning Process.

**INSTRUCTIONS FOR THE EXAMINER/PAPER SETTER**
- Ten questions are to be set (two from each unit).
- Candidate has to attempt one question from each unit.
Objective: To develop an understanding of buildings/ complexes of specialised nature.

Course Contents
Hospital, District Centre, Industrial Complex, Five Star Hotel.

GUIDELINES FOR THE TEACHERS
Live case studies and library study should be conducted for every project.

INSTRUCTIONS FOR THE EXAMINER/PAPER SETTER
- Portfolio submission should be submitted within 2 weeks after termination of theory examination.
- Portfolio will be evaluated by one internal examiner and one external examiner (external examiner may be related to academic or professional background)
Course Contents
  Production of set of detailed working drawings along with project report including
  - Estimates
  - Water supply and sanitation drawings
  - Specifications
  - Schedules using network techniques

GUIDELINES FOR THE TEACHER
• To cultivate personal observation and self learning in the students, site visits should be conducted so as to cover the given syllabus.
• Students will observe measure, sketch and annotate what they see at site and submit a site visit report to the teachers concerned for evaluation.

INSTRUCTIONS FOR EXAMINER/PAPER SETTER
Total three or four questions to be attempted by the candidates depending upon the length of the paper.
CONTENTS

UNIT I
Urbanization and transport problem
transport problem and issues.
Traffic surveys studies:
Objectives methods analysis and presentation of survey data

UNIT II
Land use transportation interaction
Urban form transports inter relationship.

UNIT III
Road Network Planning: functional hierarchy.
Geometric design of roads and inter sections.
Transport system characteristics planning for public transport.
Urban transport planning process and policies: characteristics, Transport planning in small and medium cities.

UNIT IV
Transport economics: Cost benefit analysis of transport projects.
Planning norms and space
Parking characteristics space requirements, design standards.
Traffic management and regulations scope, measures potential and limitations.

UNIT III
Traffic and environment: effects, abatement measures and strategies.

INSTRUCTIONS FOR THE EXAMINER/PAPER SETTER
- Ten questions are to be set (two from each unit).
- Candidate has to attempt one question from each unit.
Objective: To impart knowledge based on critical aspects of interior design viz-a-viz concepts, styles and construction methods.

Contents

Unit I
Introduction to Interior Design Role of Interior Design in Architectural Profession

Unit II
The principles of Aesthetic composition:
- Form, shape and configuration
- Size, scale and proportion
- Equilibrium: Symmetry in balance
- Axis and alignment
- Repetition and rhythm
- Contrast and opposition
- Vista and view
- Texture pattern and colour
- Light: Natural and artificial

Unit III
- A brief historical perspective of Interior design in various periods
  - The ancient/medieval concept
  - Renaissance concept
  - The modern concept

Unit IV
Components and materials for interiors
- Walls, Floors, Doors, Windows and closets.
- Fixed furniture components: seating, tables, counters, cupboards and cabinets
- Accessories: Utilitarian and decorative
- Furnishing: Rugs, Window coverings, shutters, shades, blinds, curtains.

Unit V
Design development
- Residential spaces
- Commercial spaces

GUIDELINES FOR THE TEACHERS
The course should be oriented towards more practical approach and students should be encouraged to acquaint themselves with the latest materials and techniques in the market

INSTRUCTIONS FOR THE EXAMINER/PAPER SETTER
- Ten questions are to be set (two from each unit).
- Candidate has to attempt one question from each unit.
Contents

Unit I
A study of reasons for and methods of high-rise developments in our urban centers.

Unit II
Need for multi storeyed development.
Sitting of multi storeyed buildings.

Unit III
Problems caused by multi storeyed buildings.

Unit IV
Construction methods.
Services in multi storeyed buildings.

Unit V
Form of multi storeyed buildings and their effect of urban scape psychological implications of using such spatial organizations

GUIDELINES FOR THE TEACHERS
The course should be oriented towards more practical approach and students should be encouraged to acquaint themselves with the latest materials and techniques in the market

INSTRUCTIONS FOR THE EXAMINER/PAPER SETTER
- Ten questions are to be set (two from each unit).
- Candidate has to attempt one question from each unit.
Contents

Unit I
Need for low-cost buildings, both in the rural and the urban sectors.

Unit II
Use of cost-effective technologies through the use of local materials, up gradation of traditional technologies, prefabrication etc.

Unit III
Innovations of building techniques for low cost construction.

Unit IV
Analysis of space norms for low cost buildings.

Unit V
Study of usage pattern of low cost building by the inhabitants, cost analysis of low cost buildings. Comparative analysis of building materials and cost.

GUIDELINES FOR THE TEACHERS
The course should be oriented towards more practical approach and students should be encouraged to acquaint themselves with the latest materials and techniques in the market.

INSTRUCTIONS FOR THE EXAMINER/PAPER SETTER
- Ten questions are to be set (two from each unit).
- Candidate has to attempt one question from each unit.
Contents

UNIT I
Environmental design - its nature and scope.

UNIT II
Ecology - the forces of man and nature: their relationship and effect in shaping the environment.

UNIT III
Natural elements of landscape design, earth, rock, water and plants, detailed study of their problems and potential of using these elements in natural and urban environments.

UNIT IV
History of landscape, gardens from their early beginnings of formal and informal gardens to contemporary park design.

UNIT V
Site analysis, site and structure relationship and landscape assessment.

GUIDELINES FOR THE TEACHERS
The course should be oriented towards a practical approach.

INSTRUCTIONS FOR THE EXAMINER/PAPER SETTER
- Ten questions are to be set (two from each unit).
- Candidate has to attempt one question from each unit.
Contents

Objective: To appraise the students with problems and solution of large structures involving advanced building construction techniques

UNIT I
Foundation:
Function, Bearing Pressure on soils, Choice of Foundation type, Types of foundation

UNIT II
FLOOR STRUCTURES:
Functional requirements, Solid concrete floor slab, flat plate floor, Flat slab floor, Tee beam or ribbed floor. Hollow block floor, Waffle slab floor, Diagonal beam floor, Pre cast floors (beams & Panels) spring floors, openings & services in concrete floors

UNIT III
MULTISTOREY STRUCTURES:
Frame & load bearing wall, site, type & use of building, Span & spacing of beams, choice of material, slipform construction, Lift slab construction

UNIT IV
Pre cast concrete structures, Pre stressing, Post tensioning, Pre fabrication and its advantages & disadvantages

UNIT V
ROOF STRUCTURES:
Functional requirements, Method of construction of trusses & girders, (latticed) Frames & their types, shall roof (singly curved, doubly curved, hyperbolic paraboloids, Grid Structures (Single layer, Double layer) Geodesic, Ribbed Domes Folded Plates, Y-beams. Choice of roof structure

GENERAL GUIDELINES FOR TEACHERS
Visit should be conducted to the sites for better exposure of construction methods.
Students will observe, sketch/draw what they see at site and submit the file to teacher incharge for evaluation. This award will form part and parcel of the sessional work of internal assessment.

INSTRUCTIONS FOR THE EXAMINER/PAPER SETTER
- Ten questions are to be set (two from each unit).
- Candidate has to attempt one question from each unit.
Contents:

UNIT I
- Framed Structures: Simple frame, multiple frame, criteria incorporated in the plan of building, location of members.
- One way slab; identification, span relevance, criteria of design, code provisions.
- Two way slab; identification, span relevance, criteria of design, code provision.
- Flat slab; types, design criteria, suitability.
- Waffle slab; design consideration, suitability, types, IS:456 code provision.

UNIT II
- Barrel shell; definition, long and short barrel shell, membrane action, bending action, thermal displacement, stiffness.
- Folded slabs/shell; lever arm demonstration, beam action, types, suitability.
- Hyperbolic paraboloids; definition, stress generated, types of paraboloids, suitability, bending action.
- Domes; definition, hoop and meridinal stresses, high rise dome, shear mechanism, suitability.

UNIT III
- Foundations, types, suitability of different types with respect to the superstructure, type of soil, loading conditions, site conditions and technology.
- Tented/tension structures; types, membrane actions, span criteria, erection techniques and suitability.

UNIT IV
- Space frame; definition, composition, detailed connections, span criteria and suitability.
- Pneumatic structures; definition, composition, development process, suitability.
- Geodestic dome; definition, theory behind the development, examples from nature, design variables, suitability.

UNIT V
- High rise buildings; definition, lateral load design philosophy, concept of premium for height, factors responsible for reducing the weight of structure, structural scheme options, cross bracing system, framed tubes, non-tubular schemes.

INSTRUCTIONS FOR THE EXAMINER/PAPER SETTER
- Ten questions are to be set (two from each unit).
- Candidate has to attempt one question from each unit.
Contents:

UNIT I
Introduction
• Definition and characteristics of Intelligent Buildings with brief history and contemporary concept.
• Automated buildings,
• Responsive buildings.

UNIT II
Facility Management
• Study of Concepts of Management of facilities,
• Importance and study of planning and operational techniques for facility management.
• various models of Building Intelligence.

UNIT III
Services
• Demands on building and services,
• Control systems,
• Study of development of Computer Integrated Building from single function systems to integrated solutions.
• Use of building intelligence in energy management.

UNIT IV
Key Issues for Intelligent Buildings
• Multiple activity settings,
• Generic analysis of space utilization.
• Models for shared space use.
• The development of briefing process including design activity and building elements, life cycles, Coordination between life cycle, building technologies.
• Study of issues related to site, shell, skin, services and technology.

UNIT V
Intelligent design and construction
• Effective Space utilisation,
• Expectations of user, effective communication of architectural concepts to user, Locating people and information,
• Introduction to building efficiency with respect to life cycle costs.

INSTRUCTIONS FOR THE EXAMINER/PAPER SETTER
• Ten questions are to be set (two from each unit).
• Candidate has to attempt one question from each unit.
CONTENTS:

1. Thesis:
The development of thesis if the student’s opportunity to prove that he/she has adequate ability to handle all phases of a building design; the definition of thesis is a preposition that one offers to be proved. It is subject for scholastic study through analysis. It is a development and presentation of the design of a building. Including its setting in a specific environment and its technical aspects. In former times, the thesis was perhaps only evidence of a student’s academic ability offered for the educational inspection.

2. Subject of Thesis:
After an orientation talks by a member of the Faculty each student will submit to the Head of Department his/her subject he/she proposed to work upon. The criterion for the choice of the subject will be its relevance to the actual needs of the country. The students will commence the work on the subject only after it has been approved by the Board of Control.

3. Contents of Thesis:
Among other things, a thesis project will comprise of the following:
(a) A written and illustrated report which should include validity of the chosen project methodology, prototype studies, client’s and architect’s brief, design criteria along with sketches, photographs, tables and diagrams.
(b) A fully worked-out design.

4. Submission of Thesis:
The final output shall include a report, all drawings study models, and a presentation model. The hard and soft copy of report shall discuss the programme, site-analysis, literature review, case studies, design criteria, concept and detailed design. Three copies of the reports & a digital presentation in CD shall be submitted along with competed set of drawings and models at least 4 days before the viva exam. Digital presentation shall be sent to the external examiner by the department well before viva examination.

5. Procedure of Marking Thesis:
Each student shall be assigned a thesis guide from amongst the teaching faculty and or practicing architect whose name shall be approved by the Board of Control. One of the senior members of the faculty to be nominated by the BOC shall act as Thesis Coordinator while the Head of Department shall be the examiner and would be a member of jury for all the students.
The Thesis submission shall be made in the following stages:

- Synopsis.
- Rough Report.
- Preliminary submission.
- Presentation drawings and other material.
PERIOD OF TRAINING: The total period of practical training will be of 24 weeks inclusive of vacation.

INTERNAL ASSESSMENT
Internal Assessment shall consist of periodical reports as given below:
1. Joining Report
2. Monthly Progress reports (6nos.) 20 marks each.

UNIVERSITY EXAMINATION
University examination shall consist of:
1. Study of building
2. Viva-Voce

STUDY OF BUILDING:
This includes a building design analysis for a study report which the students are required to do in extra office hours. The study should comprise of multifaceted aspects of any building or a complex in the final stage of construction. This shall put under following heads:
1. Space Usage
2. Circulation
3. Built in Furniture
4. Services
5. Constructional Techniques
6. Materials used etc.

Viva Voce:
The following work done by students during the office hours must be submitted:
Drafting, Tracing, Perspectives, Models, Submission Drawings, working drawings, drawings and details.

Note:
- The maximum number of blue prints to be submitted at the time of viva-voce is restricted to 16. Such prints shall be attested by the employer. The prints should cover the important projects done during the training.
- At least one complete project of any nature should form part of submission, the drawings and site supervision of which should have been handled by the students.

INSTRUCTIONS FOR EXAMINERS
The criteria of judging shall be the student’s comprehension of the work submitted and professional experience gained during the training period.
The student shall prepare a report showing their performance in curricular and extracurricular activities during the course of studies from I semester to IX semester, in chronological order.