UNIVERSITY OF CALICUT

(Abstract)

Faculty of Engineering – B.Arch Degree Course- Curriculum and Syllabus of combined first and second semester - implemented – with effect from 2012 admissions – approved – orders issued.

GENERAL AND ACADEMIC BRANCH-IV- E SECTION


       2. Minutes of the meeting of the Board of studies in Architecture held on 30.07.2012 (item no. 1).
       3. Orders of the Vice- Chancellor in the file of even No. on 08.08.2012.

ORDER

As per paper read as 1 above, orders were issued implementing the Regulations of B.Arch Degree Course with effect from 2012 admissions.

Vide paper read as 2nd, the the Board of studies in Architecture at its meeting held on 30.07.2012 discussed in detail and finalized the curriculum and syllabus for the combined first and second semester B.Arch Degree course to be implemented from 2012 admissions onwards.

Considering the urgency of the matter, the Vice- Chancellor, exercising the powers of the Academic Council has approved and accorded sanction to implement the curriculum and syllabus of the combined first and second semester B.Arch Degree course with effect from 2012 admissions, subject to ratification by the Academic Council, vide paper read as 4 above.

Sanction has therefore been accorded for implementing the Curriculum and Syllabus for the combined first and second semester B.Arch Degree Course with effect from 2012 admissions. (The curriculum and syllabus is uploaded in the university website).

Orders are issued accordingly.

Sd/-

DEPUTY REGISTRAR (G&A-IV)
For REGISTRAR

To:- 1) The Principals of all affiliated Engineering colleges Offering B.Arch Course

Copy to: PS to Vice-Chancellor/ PA to Registrar/ PA to PVC/ PA to CE /DR /AR (B.Tech Section) EX Sn/Enquiry/EG. Sn/Chairman BOS in Engg.(UG/PG)/B.Tech Tabulation sn/ System Administrator (with a request to upload in the University website)/ SF/FC

Forwarded/By Order

SECTION OFFICER
CALICUT UNIVERSITY  B. ARCH COURSE
2012 ADMISSION SYLLABUS -FIRST &SECOND SEMESTER (S1&S2)

AR01 - 11 BASIC DESIGN

8 hrs/week. Credits-10

COURSE OBJECTIVES
Introduction to design- problem-solving, elements of design, principles of design, 2-D designs in different mediums, colours and textures for articulation of abstract ideas.
Development of student’s vision regarding 3-D forms (models and sculptures) in different materials, colours, and textures for specific themes/expressions to develop creative/imaginative thinking

GENERAL GUIDE LINES:
1. Course in Basic Design shall be conducted by giving small time assignments of the duration of 15 to 20 days each (total 10 to 12 Nos. in a year)
2. Each assignment shall be aimed at teaching the principles of Aesthetics and Visual Design and its application in Architecture forms and spaces.
3. Goals and Objectives of each assignments shall be made clear to the students before starting the assignments.
4. There shall be transparency in process of evaluation and students shall be made aware about the visual merits and demerits of their work/submissions.
5. Each assignment shall have meaningful sequence with the previous assignments and the next assignment.

MODULE 1: (40 Hours)
1. Principles of Visual Compositions: The assignment shall be aimed at understanding and using principles like Repetition, Rhythm, Radiation, Focal point, Symmetry, Unsymmetry, Background, Foreground, Sense of Direction, Harmony, Balance and Proportion.
2. Elements of Visual Composition: Assignment shall be aimed at understanding role of the following basic elements of visual design existing in paintings, compositions, murals, sculptures, building and in nature – Dots, Lines, Planes, Patterns, Shapes, Forms, Spaces, Colour, Texture, Levels, Light, Fenestration’s.
3. Exploring Colour Schemes and its application on Architectural Forms & spaces: Assignment on Colour shall be aimed at developing the skills to create Visually pleasing Colour Schemes based on principles of Harmony and Contrast and degree of Chromatism.

MODULE 2: (40 Hours)
4. Study of Textures and Textures Schemes.
5. Study of Openings for light, shadow, shades and sciography: This assignment shall be related to openings in the building, windows, roof, lighting and its impact on visual character of the space.
6. Study of Planer Forms: This assignment shall be aimed at creating abstract sculptures out of Mount Board, Box Board, Metal Foils and any other planer material and also exploring the adoptability of these sculptures to Architectural functions.

MODULE 3: (40 Hours)
7. Study of Paper Forms: This assignment shall include explorations of various folded paper forms and its possible use in Architectural Spaces.
8. Study of Solids and Voids: This assignment shall include creation of abstract and semi abstract symbolic sculptural forms and spaces.
9. Study of Linear Forms: Students should be asked to create: Wire Sculptures, Mobile Sculptures, Atrium Sculptures, Space sculptures, Geodesic Domes etc. for outdoor and indoor Architectural spaces.
MODULE 4: (40 Hours)
10. Study of Fluid / Plastic Forms: This assignment shall include use of clay, plaster or any other mouldable material and create plastic and free flowing Sculptural forms.
11. Building Appraisal: In this assignment the students shall be asked to present any analytical study of the sculptural building forms and its critical appraisal of visual character.
12. Application of Basic Design in Architecture: This assignment shall be aimed at learning to adopt compositions, murals and sculptures for semi recreational and semi functional Architectural spaces like children playing area, Exhibition Spaces, Outdoor Dining Area, Entrance Gates of Exhibition, Compound Wall, Compound Gate, Floor patterns, Atrium or Courtyard with levels, Monumental Sculptures in Foreground of Buildings, Outdoor Recreational Spaces, Atrium Sculpture, Building Facades, Graphics on the Dead Walls, Murals in the Entrance Halls etc.

TEXT BOOK

REFERENCE BOOKS
4. H. Gardner, Art through ages.
14. ‘Principles of three Dimensional Design’ by Wucius Wong
15. ‘Principles of two Dimensional Design’ by Wucius Wong
16. ‘Principles of color composition’ by Wucius Wong
17. “Rendering with Pen and Ink” by Robert Gill

WEBSITES
AR01 – 12 BUILDING MATERIALS AND CONSTRUCTION

3 hrs/week. 

Credits-5

COURSE OBJECTIVES
Understanding of materials, basic principles of construction and elements of building through theory and drawing
Impart required exposure to various constructions and the judicious use of materials for construction through visits to construction sites, material manufacturing sites etc.

MODULE I (20Hrs)
Introduction to vernacular and conventional building materials
Sand: Sources, classification, functions, properties,
Stone: Classification, properties- suitability for construction- various types of stones used for construction - dressing and various finishes in stone masonry- stone decay and preservation.
Brick: Brick as a building material - Raw materials for manufacture - Types of bricks - Brick manufacturing - Properties-use-classification - Simple tests to determine quality of brick - BIS specification - tests-energy and environmental aspects-suitability for construction
Clay Products and Ceramics: Tiles-types-properties-uses, manufacturing . terra cotta, stoneware ceramic materials- properties - raw materials for manufacture-uses
Timber: Various kinds of Timber-properties- suitability for construction-defects in timber- decay and preservation of timber- BIS specification

MODULE II (20 Hrs)
Introduction to all types of foundations
Foundations – Definition, functions, Types of foundations, foundation loads, Selection criteria for foundations based on soil conditions, Bearing capacity of soil, Methods of testing, Methods of improving bearing capacity of soil, Settlement of foundations, Precautions against settlement, Shallow and deep foundations, Different types of foundations – Wall footing (strip footing), isolated footing, Combined footing, raft foundation, pile foundation etc.
Drawings- Wall footing, isolated footing, Combined footing (1 sheet)

MODULE III (45 hrs)
Introduction to mortar – types of mortar, uses of mortar
Introduction to masonry: superstructure - Stone masonry – Types-dry rubble, random rubble, coarsed rubble, uncoarsed rubble- Ashlar masonry, Ashlar faced stone work, ancient, traditional and modern construction practices
Brick masonry - general principles - construction bonding - types of bonding - relative merits and demerits of different bonds - English and Flemish bond in detail 1, 1 1/2, 2 1/2 brick walls corners, junctions and cross junctions - special bonds like rat trap, herring- bone bonds, decorative brick work-brick jallies. Damp proofing
Drawings - English bond I, 1 1/2, 2 brick walls; (1 sheet)
Flemish bond 1, 11/2, 2 brick walls ;(1 sheet)
Details of corners and junctions (1 sheet)
Neat sketches of different types of stone masonry ;(1 sheet)
Case study/site study: Brick masonry, stone masonry and simple foundations.(atleast 3 sites-9 hours)
MODULE IV (12 Hrs)
Joinery details in wood (ancient and modern)- Terms for various members, fasteners and fixtures used in joinery.
Doors-paneled, battened, glazed & sliding. (. 2 sheets)
Drawings-Joinery details ( 1 sheet)

TEXT BOOKS
1. Punmia B.C ,” Building construction”
2. Arora &Bhindra, “building construction”
5. Arora, “soil mechanics & foundation engineering”

REFERENCES
1. Harry Parker, "Materials and Methods of Architectural Construction"
2. Mackey. "Building construction"
6. Francis Ching, "Building Construction Illustrated"
7. Relevant BIS Code

UNIVERSITY EXAMINATION PATTERN
Q I  -8 short type questions of 5 marks, 2 from each module.
Q II -2 Questions of 15 marks from module I with choice to answer anyone.
Q III -2 Questions of 15 marks from module II with choice to answer anyone.
Q IV -2 Questions of 15 marks from module III with choice to answer anyone.
Q V -2 Questions of 15 marks from module IV with choice to answer anyone.
MODULE I (15 Hours)
Study of the world civilizations to understand how people lived, their thoughts, beliefs, religions, social customs, cultural practices and related architectural growth.
A brief introduction to World Architecture
Prehistoric: Factors influencing Architecture, General characteristics.
Ancient Mesopotamia: History, evolution, factors influencing architectural characteristics–Ziggurat of Ur
Ancient Rome: History, evolution, factors influencing architectural characteristics – Tuscan and composite orders, Roman engineering skills- lintels, arches & vaults, Aqueducts - Pantheon, Colosseum, Forum
Pre Colombian America: History, evolution, factors influencing architectural characteristics: Mayan Architecture

MODULE II (10 Hours)
Indus Valley Civilisation: Introduction to art, culture and pattern of settlement - City planning, domestic architecture, building materials and construction techniques -- Mohenjo-Daro, Harappa

MODULE III (10 Hours)
Hindu temple architecture: Principles of Design and Construction
Dravidian style
Pallavas : Rock cut architecture– Shore Temple and Rathas at Mahabalipuram ,Kailasanatha and Vaikuntaperumal Temples, Kanchipuram
Chola period- Brihadeswara temple, Thanjavur.
Hoysala - Hoysaleswara temple, Halebid
Vijayanagara : Hampi , Vittalaswami temple, Hampi.
MODULE IV (10 Hours)

Pandya Period: Evolution of Gopuram – Complexity in Temple Plan of Srirangam Temple, Meenakshi Temple, Madurai-
Nayak style – Rameshwaram temple

Indo Aryan Style: Salient features of IndoAryan Temples

Orissan : Parasurameswara, Mukteswara, Lingaraja temples, Bhubaneswar. Sun temple, Konark.

Khajuraho : Kandariya Mahadeva Temple and Lakshmana Temple, Khajuraho.

Gujarat - Sun temple, Modhera

REFERENCE BOOKS


UNIVERSITY EXAMINATION PATTERN

Q I   -8 short type questions of 5 marks, 2 from each module.
Q II   -2 Questions of 15 marks from module I with choice to answer anyone.
Q III  -2 Questions of 15 marks from module II with choice to answer anyone.
Q IV   -2 Questions of 15 marks from module III with choice to answer anyone.
Q V    -2 Questions of 15 marks from module IV with choice to answer anyone.
COURSE OBJECTIVE:
The objective of the course is to introduce students to the fundamental techniques of architectural drawing and develop the appropriate manual skills for visualization and technical representation of built forms in different types of drawings. The course also acts as a bridge to understanding basics of computer-aided drafting and architectural graphics.

MODULE 1
INTRODUCTION (10 hrs)
Introduction to Architectural drawings: types of drawings- Freehand sketches and mechanical drawing for architectural applications and presentation drawings. Different mediums used such as pencil, ink, types of papers, reproduction methods. Demonstration of drawing instruments and their use. Essential kit for making architectural drawings.

BASIC ARCHITECTURAL DRAWING (10 hrs)
Concept of orthographic projections, drawing conventions such as plan, elevation and section, symbols, lettering, dimensioning, values in drawn lines, tone, texture and color. Different types of lettering for titles and annotation of drawings. Architectural representation of materials on drawings, terminology and abbreviations used in architectural drawings.

MODULE NO: 2
SCALE AND MEASURED DRAWING (15 hrs)
Use of scale in drawings, Classification of scales- Representation fraction (R.F.), Construction detail of Plain scale, Diagonal scale and Vernier scale. Making simple 3-dimensional model forms of thermocole sheets, scaling and measuring of these forms and representing them in plan, elevations and sections using different scales. Reduction and enlarging of given drawings, tracing in pencil and ink medium. Measured drawing to scale of furniture pieces, rooms, doors, windows etc. Representation of wall thickness and openings in walls in geometrical plan shapes.

MODULE NO: 3
BUILDING GEOMETRY IN 2D (15 hrs)
Drawing by method different polygons, circle, ellipse, hyperbola, parabola, and spiral.

PROJECTION (15 hrs)

MODULE NO: 4
PICTORIAL PROJECTIONS AND SCIIOGRAPHY (20 hrs)
Isometric projection, Isometric scale, difference between Isometric projection and isometric view-method of drawing isometric projection, isometric views of solids like prisms, cylinders and pyramids-isometric projection of composite solids. Perspective projections: Introduction to perspective projections, classification of perspectives. Constructing one point and two point perspective views of
simple solids and furniture pieces. Introduction to Sciography and principles of shades and shadows, Drawing shadows of simple objects in plan, elevation and perspective. Note: All drawing exercises mentioned above are for class work. Additional exercises wherever necessary may be given as home assignments.

**REFERENCE BOOKS**

1. N. D. Bhatt, ‘Elementary Engineering’.

**UNIVERSITY EXAMINATION PATTERN**

   Q I - 1 Questions of 25 marks from module I with choice to answer anyone.
   Q II - 1 Questions of 25 marks from module II with choice to answer anyone.
   Q III - 1 Questions of 25 marks from module III with choice to answer anyone.
   Q IV - 1 Questions of 25 marks from module IV with choice to answer anyone.
OBJECTIVE

To provide the student of architecture a foundation in the conception of forms, spatial aspects, compositions and their analysis in buildings

INSTRUCTIONAL OBJECTIVES

To develop understanding of the basic principles of space and mass, circulation and architectural composition.

MODULE 1 (15 Hours)

ARCHITECTURAL SPACE AND MASS
Definition of architecture- elements of architecture - Space defining elements , openings in space defining elements, spatial relationship, spatial organization
Primary forms, properties of form, transformation of forms - dimensional transformation, subtractive, additive forms, organization of additive forms - Articulation of forms

MODULE 2 (10 Hours)

AESTHETIC COMPONENTS OF DESIGN Exploration of the basic principles of design such as Proportion, scale, balance, rhythm, symmetry, hierarchy, axis with building examples.
PRINCIPLES OF COMPOSITION
Study of the basic principles that govern an architectural composition such as Unity, Harmony, Dominance, Fluidity, Emphasis, Contrast etc.

MODULE 3 (5 Hours)

CIRCULATION Components of building circulation - The building approach, The building entrance, Configuration of path, Path space relationship, Form of circulation space -Circulation diagram for residence and restaurant

MODULE 4 (10 Hours)

DESIGN PROCESS AND ANALYSIS OF BUILDING Design process –integration of aesthetics and function - Understanding of formative ideas, organization ,concepts, spatial characteristics, Massing and circulation in design analysis of the following buildings:
Falling water house,& Guggenheim museum by f . l. wright –
Villa Savoye & Chapel of Notredame DuHaut by le corbusier.

TEXT BOOKS


REFERENCE BOOKS

UNIVERSITY EXAMINATION PATTERN

- **Q I** - 8 short type questions of 5 marks, 2 from each module.
- **Q II** - 2 Questions of 15 marks from module I with choice to answer anyone.
- **Q III** - 2 Questions of 15 marks from module II with choice to answer anyone.
- **Q IV** - 2 Questions of 15 marks from module III with choice to answer anyone.
- **Q V** - 2 Questions of 15 marks from module IV with choice to answer anyone.
OBJECTIVES

To acquaint the general methods of analyzing engineering problems.
To illustrate the applications of the methods to solve practical engineering problems.
Units: System International

MODULE I (16 hours)
Introduction to Engineering Mechanics-Principles of statics- Free body diagrams - Composition and resolution of forces - Resultant and equilibrant concurrent forces - Triangle of forces - Lami’s theorem - Parallelogram law of forces - Method of moments - Theorem of Varignon - Parallel forces - Couples - Centre of parallel forces and centre of gravity - Conditions of equilibrium for general system of coplanar forces - Polygon of forces - Resultant of a system of coplanar forces - Problems of equilibrium.

MODULE II (16 hours)
Friction - Laws of friction - Angle of friction - Equilibrium of a body on a rough inclined plane - Ladder friction-Properties of surfaces - First moment and centroid of curve and area- centroid of composite plane figures of various shapes- Theorems of Pappus and Guldinus-Parallel and perpendicular axis theorem-Centre of Gravity- Moment of inertia of a lamina - Product of Inertia-Principal axes and principal moment of inertia- Moment of inertia of composite sections and rigid bodies (cylinder, circular rod, sphere)

MODULE III (14 hours)
Plane trusses- Different types of supports-Reaction at supports-Method of joints- Method of sections. Graphical method- Funicular polygon- Maxwell’s diagram- Distributed forces in a plane-beams-different types of beams- support conditions- different types of loads-support reactions. Principle of virtual work (Elementary treatment only)-application of virtual works in beams.

MODULE IV (14 hours)

TEXT BOOKS

REFERENCES BOOKS.


UNIVERSITY EXAMINATION PATTERN

Q I - 8 short type questions of 5 marks, 2 from each module.
Q II - 2 Questions of 15 marks from module I with choice to answer anyone.
Q III - 2 Questions of 15 marks from module II with choice to answer anyone.
Q IV - 2 Questions of 15 marks from module III with choice to answer anyone.
Q V - 2 Questions of 15 marks from module IV with choice to answer anyone.
The objective of the course is to provide requisite knowledge of visual language involving various media. The primary focus is on developing basic drawing and painting skills, as applied to architecture. Through this course a student acquires basic knowledge about the characteristic of colors (water/ poster/ crayon etc.) and develops skills in using this medium as an effective and versatile presentation tool.

MODULE I:

FUNDAMENTALS OF VISUAL ARTS (15 HRS)

a. Introduction to Art object, definition and Interpretation. Introduction to History of Art, Artistic Tradition and Theories.
c. Drawing: Types, Characteristics & functions of lines and its visual impacts.

Module II: (20 HRS)

a. Primary pencil sketching, tonal value and variation, shading techniques and texture technique.
b. Primary ink drawing techniques using nib pens, Radiograph, Rotring pens, tonal value and variation, shading techniques and texture technique.
c. Study of Objects having varied shapes (cuboids, prismatic, spherical, globular etc.) in different media- charcoal, pencils, pastels and ink.
d. Out door Study; study of monuments. Buildings in pencils, ink, charcoal, pastels etc. study should focus on Architectural details, wherever relevant.

Module III: (15 HRS)

a. Elements of Painting: Pictorial & Spatial organizations, Form and texture in Painting, Theory of Colour- Chromatic Values, Colour wheel, colour chart, Two-dimensional/ Three dimensional aspects of Painting.
b. Basic psychological aspects of lines, forms and colours, Unity of forms: Gestalt theory.
c. Techniques of Rendering in water, poster, oil, mixed media and New Media.

Module IV: (20 HRS)

a. Introduction to Indian aesthetics/ Canonical principles of Indian Art, Sculpture & Painting.
b. Mural Tradition in Kerala- Study of Style, Form and Technique.
d. Techniques: Molding & casting in Plaster, Mud, Cement and Fiber glass.

Students may be assigned to prepare studies at home and submit them in classes.
REFERENCE BOOKS
5. Luis Slobodkin, ‘Sculpture-Principle and Practice’.
7. Roy C. Craven, ‘Indian Art’.

UNIVERSITY EXAMINATION PATTERN
Q I  -8 short type questions of 5 marks, 2 from each module.
Q II -2 Questions of 30 marks from module I and module II with choice to answer anyone.
Q III -2 Questions of 30 marks from module III with choice to answer anyone.
AR01-18 BASIC COMPUTER GRAPHICS

2hrs/week. Credits-2

OBJECTIVE
To familiarize students to computer based representations and to impart necessary skills for using graphic software and creating two dimensional composition and drawings

MODULE I (10 HRS)
Introduction to the advancements in the field of computer application in Architecture, Information technology and network concepts- Computer as a design medium. Applications and limitations of computer in Architecture.
Concept of Computer aided drafting – Conventional drafting and CAD- Brief overview of related software. Units of a CAD workstation, their operation and critical parameters. General concepts of building geometry and typology

MODULE II (10 HRS)
Introduction to Graphics Software – Painting, drawing and image editing using Photoshop, Paint shop, Corel Draw, Power Point and Illustrator.

MODULE III (10 HRS)
Creating two dimensional composition and drawings-
Controlling various CAD software environment – creating two dimensional drawings and editing commands. Coordinate space and metric, Geometric, Primitive and Symbols, Object properties. Basic transformations absolute and referential, Editing, Segmentation by colour, layering and grouping.

MODULE IV (10 HRS)
Organizing drawings with layers – Advanced geometry editing & using blocks inquiry tools – CAD-design center. Text annotation – Creating hatch patterns - dimensioning Plotting slide presentation &. Importing/exporting files.

TEXT BOOKS
2. Omusa, George – Advanced techniques n AutoCAD

REFERENCES
1. DH Sanders, ‘Computers Today’ Mc Graw Hill
2. Omura George, “Mastering AutoCAD, BPB Publications, New Delhi,
4. Adele and Seth Green Berg – Fundamental Photoshop 5.5.
AR01-19 CONSTRUCTION & MODELLING WORKSHOP

2hrs/week.  

Credits-2

MODULE I (10 Hours)

Introduction to carpentry tools and machines - Introduction to the carpentry tools, processes, joints and wood working machines.
Different types of timber joints. Identification and selection of timber, Timber finishes, varnish, polish etc.

MODULE II (10 Hours)

Demonstration of brick work, plastering textures and finishes.
Models for Basic design and Architecture design studio – work.
fixing of plywood, blackboards, commercial boards etc. and their application in furniture.

MODULE III (10 Hours)

Introduction to modelling with paper, paper board and plaster.
Basic model making techniques.
Techniques for preparation of models using different mediums i.e. clay, thermocol, mountboard, paper, acrylic sheet etc with application of different mediums for painting different surfaces and textures.

MODULE IV (10 Hours)

Modelling- Preparation of models of live materials in full scale and models of 3D objects.
Painting and polishing- Classification of paints, varnishes ingredients of paints, painting methods-brush, spray, hot spray etc.
Use of clay, Plaster of Paris, metal scrap, jute fiber etc. for study of forms.