

# **SAVITRIBAI PHULE PUNE UNIVERSITY**

## **DETAILED SYLLABUS OF FIRST YEAR**

**[B.ARCH.]**

**TO BE IMPLEMENTED FROM 2015-16**

**BOARD OF STUDIES IN ARCHITECTURE**

**FACULTY OF ENGINEERING**

# DESIGN I

Design I			
Subject Code		1201501	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=3 Studio=7)	10	Sessional (Internal)	100
		Sessional (External)	100
		Viva (Internal)	25
		Viva (External)	25
		In semester exam	NIL
		End Semester exam	NIL
		Total Marks	250
		Total Credits	7

## COURSE OBJECTIVES:

- To introduce the students to the fundamentals and principles of basic design and to enable them to undertake design by application of basic design principles.
- To comprehend Design as a creative process of choice making and statement of intent.

## COURSE OUTLINE:

- Creation, creativity and motivation for architects. Relationship between visual aesthetics, design and creativity.
- Elements of Composition: Study of Point, Lines, Planes, Shapes, Material and Texture, Colour, Light etc.
- Principles of Composition: Alignment, Repetition, Pattern, Rhythm, Balance, Hierarchy, Focus, Axis, Emphasis, Juxtaposition, etc.
- Scale, proportion and anthropometry and spatial experience.
- Attributes of Form and Space, Forms in Nature, Platonic Forms, Derivative forms and transformation. Principles of Organization of Form & Space.
- Activation of space, Positive and Negative space; Relationship to location of composition with surroundings.
- Study and analysis of small scale built structure with respect to its context, comfort, function anthropometrical data, and space layout.

## SESSIONAL WORK:

- Minimum 8 tasks based upon elements and principles of composition on A3 sheets and/or models.
- Minimum one simple spatial design exercise such as seating area in public space, bus shelter, kiosks, play area, entrance gate etc. demonstrating the application of the design principles and communicated effectively through two and three-dimensional hand done drawings, sketches and models.

## RECOMMENDED READINGS

- Ching Francis D. K., Form Space and Order.
- Ching Francis D. K., A Visual Dictionary of Architecture.
- John R. Mather -Climatology: Fundamentals and Application.
- Christopher Alexander- Pattern Language.
- Robert Sommer. -Design Awareness.
- C.M. Deasy -Design for Human Affairs.
- Pierre Von Meiss -Elements of Architecture from form to place.
- Yatin Pandya- Elements of Space Making
- Paul Lassau – Graphic Thinking for Architects and Planners.

# BUILDING TECHNOLOGY AND MATERIALS I

<b>BUILDING TECHNOLOGY AND MATERIALS I</b>			
Subject Code		1201502(SV) 1201503(PP)	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=3 Studio=4)	7	Sessional (Internal)	25
		Sessional (External)	25
		Viva (Internal)	25
		Viva (External)	25
		In semester exam	30
		End Semester exam	70
		Total Marks	200
		Total Credits	5

## COURSE OBJECTIVES

- To help students understand the basic building elements, their function and behavior under various conditions with specific reference to load bearing construction.
- To help students to develop a clear understanding of the basic principles of construction and materials suitable for load bearing construction.
- To help students develop an analytical and logical sequence in thinking about structural aspects of architecture.
- To encourage a mix of classroom and field learning.

## COURSE CONTENTS:

### Unit 1

Introduction to various elements of building from foundation to roof.

### Unit 2

2.1 Principles of load bearing construction.  
 2.2 Introduction to various building materials which are commonly used in load bearing construction like stone, brick, concrete blocks, mud blocks, etc. with reference to their characteristics, market forms, applications and common quality tests. Cement and cement mortar.

### Unit 3

3.1 Different types of soils and bearing capacity, concept of bulb of pressure.  
 3.2 Strip Foundations suitable for load bearing structures in stone and brick upto plinth level including foundation for steps  
 3.2 Plinth formation, DPC.  
 3.3 Introduction to various tools and equipment commonly used in excavation.

### Unit 4

4.1 Load bearing and non- load bearing masonry construction using various masonry materials, various types of masonry walls and bonds.  
 4.2 Study of types of arches and lintels, principles and terminology of arch construction, spanning of openings using brick and stone arches and lintels.

### Unit 5

Various pointing and plastering techniques and their processes.

### Unit 6

Introduction to types of earthquakes and earthquake resistant measures for load bearing construction.

## SESSIONAL WORK

Hand drawn drawings on Units 3 and 4; Assignments on units 1, 2, 5 and 6.

## RECOMMENDED READINGS

1. 'Elements of Structure' by Morgan
2. 'Structure in Architecture' by Salvadori
3. 'Building Construction' by Mackay W. B., Vol. 1 – 4
4. 'Building Construction' by Barry, Vol. 1 – 5
5. 'Construction Technology' by Chudley, Vol. 1 – 6
6. 'Building construction Illustrated' by Ching Francis D. K.
7. 'Elementary Building Construction' by Michell
8. 'Structure and Fabric' by Everet
9. 'Engineering Materials' by Chaudhary
10. 'Building Construction Materials' by M. V. Naik
11. 'Civil Engineers' Handbook' by Khanna
12. 'Vastu Rachan' by Y. S. Sane
13. National Building Code and I.S.I. Specifications
14. 'Materials and Finishes' by Everet
15. 'A to Z Building Materials in Architecture' by Hornbostle

## THEORY OF STRUCTURES I

THEORY OF STRUCTURES I			
Subject Code		1201504	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=1 Studio=2)	3	Sessional (Internal)	NIL
		Sessional (External)	NIL
		Viva (Internal)	NIL
		Viva (External)	NIL
		In semester exam	30
		End Semester exam	70
		Total Marks	100
		Total Credits	2

### COURSE OBJECTIVES:

- To Introduce Applied Mechanics as an important Subject for Architecture.
- To Understand Different Systems of Forces and their Equilibrium and that a Building is a System of Forces in Equilibrium.
- To Introduce and Understand Concepts of Support, Support Reactions, Beams, Loads, Bending and Shear.

### COURSE OUTLINE:

#### Unit 1. Forces.

1. Applied Mechanics, Statics and Dynamics. Importance of Study.
2. Forces, Definition, Effects, Different Systems, Principle of Transmissibility and Superimposition of Forces. Resolution and Composition of Forces.
3. Equilibrium of Concurrent Forces. Parallelogram, Polygonal & Triangular Law of Forces. Lami's Theorem. Analytical and Graphical Solution of Forces. Resultant and Equilibrant of a System of Concurrent Forces.
4. Equilibrium of Non Concurrent Forces. Varignon's Principle. Resultant of a system of noncurrent forces as in a beam.

## **Unit 2. Centre of Gravity.**

1. Definition of Centre of Gravity and Centroid. C.G of Regular Shapes. Computing of C.G of complex Shapes limited to Standard Steel Sections like C, T, L, I and Compound Sections.

## **Unit 3. Moment of Inertia**

1. Definition of Moment of Inertia and M.I of Standard Shapes. Parallel Axis Theorem, Perpendicular Axis Theorem, Radius of Gyration. Computing M.I of Complex Shapes Limited to C,T,L,I and Compound Sections using these Shapes.

## **Unit 4. Supports and Loads**

1. Supports, Definition, Reactions offered by Simple, Fixed, Hinged and Roller Support.
2. Statically Indeterminate and Determinate Structures and Degree of Indeterminacy. Beams classified as Simply Supported, Cantilever, Over Hanging, Propped Cantilever, Fixed and Continuous.
3. Loads Classified as U.D.L, Point Load & Varying Load.
4. Loads Classified as Dead, Live, Wind, Snow, Seismic. Introduction to Densities of Material and Calculation of Dead loads on a Beam from slab, Brick work above to act as U.D.L and from a abutting beam as a Point Load
5. Support Reactions. For Simply Supported Beams and Cantilevered Beams only. Loading limited to Point Loads and U.D.L only.

## **Unit 5. S.F.D and B.M.D - 1**

1. Shear Force and S.F.Diagram & B.M.D and B.M.Diagram for :: Simple Support with an U.D.L., Simple Support with a Central Point Load, Simple Support with an eccentric point Load, Cantilever with a full U.D.L, Cantilever with a Point Load.

## **Unit 6. S.F.D and B.M.D - 2**

1. S.F.D and B.M.D of a Simple Supported Beam and Over Hanging Beams with U.D.L and Point Loads. Point of Zero Shear, Point Of Max S.F and B.M max. Point of Contra flexure.
2. Relationship between S.F.D and B.M.D.

## **RECOMMENDED READINGS**

1. Design of steel structures-Vazirani – Rathwani.
2. Design of steel structures- L.S. Negi.
3. R.C.C. Design – Khurmi, Punmia, Sushilkumar.
4. Elements of Structures – Morgan.
5. Structure in Architecture – Salvadon and Heller.
6. Structure Decisions – F. Rosenthal.
7. Strength of Materials by Amol Dongre

# ARCHITECTURAL DRAWING AND GRAPHICS I

<b>ARCHITECTURAL DRAWING AND GRAPHICS I</b>			
Subject Code		1201505	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=2 Studio=5)	7	Sessional (Internal)	50
		Sessional (External)	50
		Viva (Internal)	NIL
		Viva (External)	NIL
		In semester exam	NIL
		End Semester exam	NIL
		Total Marks	100
		Total Credits	4

## **COURSE OBJECTIVES:**

- To introduce students to architectural drawing techniques and to the language of graphics, its vocabulary and grammar such as scale, annotations, labelling and dimensioning.
- To enable students to express simple three dimensional objects and building components through Technical Drawings, using various graphic projection systems such as orthography, Isometric and Axonometric projections.
- To introduce various techniques of sketching for recording, studying and communicating objects, buildings and building components.

## **COURSE OUTLINE:**

**Unit 1** Introduction to various drawing instruments and methods of employing them for technical drawing and sketching.

### **Unit 2 Introduction to graphic language and its components:**

- Line types: meaning and application
- Architectural Lettering and dimensioning techniques
- Architectural annotations and conventions including representation of various building materials and building components
- Graphic scales and their application

### **Unit 3 Plane and Solid geometry:**

- Introduction to graphical construction of various plane geometrical shapes.
- Introduction to various projection systems used in Architectural drawing; such as Orthographic, Isometric and Axonometric projections to draw and represent various three dimensional geometrical objects/forms including Section/s.

### **Unit 4 Scale Drawing:**

- Scale drawing (plan/s section/s and elevation/s) of a simple building of sufficient size to demonstrate use of various metric scales, conventions and standard annotations.

### **Unit 5 Sketching:**

- Introduction to architectural sketching using various mediums such as graphite pencil, charcoal, pens, markers etc.
- Principles of free hand sketching such as proportions, light and shade; with primary thrust on sketching of building elements and built environment.

### SESSIONAL WORK:

- Sessional work should be planned to cover all the units mentioned in course outline with thrust on skill development, accuracy and understanding of the topic.
- Twenty five percent weightage in assessment should be given to the assignments of sketching
- Minimum of Eight manually drafted assignments to cover the course outline based on the following modules:

a	Architectural scales and annotations	2 to 3 Assignments
b	Orthographic (plan, section/s, elevation/s) isometric, axonometric projections of three dimensional objects and building components	5 Assignment
c	Scale drawing of building/s of sufficient size to demonstrate basic building components, standard annotations.	1 to 2 Assignments

### RECOMMENDED READINGS

1. Ching Francis D.K.: Architectural Graphics
2. Kelsey W. E.: Geometrical & Building Drawing
3. Leslie Martin: Architectural graphics:
4. B. James: Essential of Drafting
5. H. Joseph and Morris: Practical plane and solid geometry
6. Gill Robert: Rendering with pen and ink
7. Burden Ernest: Architectural Delineation

## HUMANITIES

HUMANITIES			
Subject Code		1201506	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=2 Studio=1)	3	Sessional (Internal)	25
		Sessional (External)	25
		Viva (Internal)	NIL
		Viva (External)	NIL
		In semester exam	NIL
		End Semester exam	NIL
		Total Marks	50
		Total Credits	2

### COURSE OBJECTIVE

- To introduce the students to the study of humanities and its importance in understanding of human settlements and architecture.

### COURSE OUTLINE

- To introduce the disciplines of study such as anthropology, sociology, linguistics, philosophy, history, political science and understand their connection with understanding of architecture.
- To introduce the students to the aspects of human society, civilisation and culture.

### SESSIONAL WORK

- The sessional work shall comprise of minimum one tutorial and two assignments.

### RECOMMENDED READINGS

1. History of World Civilizations by J.E. Swain.
2. A Short History of the World – H.G.Wells
3. The Ascent of Man – J. Bronowski

## INTRODUCTION TO ARCHITECTURE

INTRODUCTION TO ARCHITECTURE			
Subject Code		1201507	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=2 Studio=1)	3	Sessional (Internal)	25
		Sessional (External)	25
		Viva (Internal)	NIL
		Viva (External)	NIL
		In semester exam	NIL
		End Semester exam	NIL
		Total Marks	50
		Total Credits	2

### COURSE OBJECTIVES:

To introduce the students to the field of Architecture, its scope, and fundamentals.

### COURSE OUTLINE

- Introduction to the profession of architecture and its distinguishing characteristics with respect to other professions, trades and businesses.
- Scope of Architecture as a discipline and Architect as a professional.
- Fundamentals of architecture- function, form and structure, and their integration.
- Generators of architectural design- site, function, circulation, context, structural system and materials, aesthetic principles, sustainability.

### SESSIONAL WORK

- Minimum 3 individual assignments covering the generators of architectural design as mentioned above.

### RECOMMENDED READINGS

1. Architecture : Form, Space and Order – F.D.K.Ching
2. Design fundamentals in Architecture – Prammar
3. A Visual Dictionary of Architecture - F.D.K.Ching

## WORKSHOP I

WORKSHOP I			
Subject Code		1201508	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=2 Studio=1)	3	Sessional (Internal)	25
		Sessional (External)	25
		Viva (Internal)	NIL
		Viva (External)	NIL
		In semester exam	NIL
		End Semester exam	NIL
		Total Marks	50
		Total Credits	2

### COURSE OBJECTIVES:

- Introducing students to various materials and techniques used in making Architectural models.
- Enabling Students to make Architectural models for study and presentation.



**COURSE OUTLINE:**

- Introduction to various materials (such as paper, mount board, thermocol, foamboard, etc.) tools and techniques of architectural model making through construction of simple three dimensional objects and scaled building models.
- Models should preferably be co-ordinated with other subjects like 'Design', 'Building technology', 'Theory of Structure', 'History of Architecture and human settlement' etc.

**SESSIONAL WORK:**

- Sufficient number of assignments to cover the topics given below, with thrust on exploring maximum materials and techniques, understanding their appropriateness for the purpose and skill development.

a	Three dimensional objects	1 to 2 Assignments
b	Models based on Design projects	1 to 2 Assignments
c	Based on building technology topics	2 to 3 Assignments
d	Based on history of architecture and theory of structure	1 to 2 Assignment

**RECOMMENDED READINGS**

- John Taylor, Model Building for Architects and Engineers
- Rolf Janke, Architectural Models

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**DESIGN II**

<b>Design II</b>			
Subject Code		1201509	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=3 Studio=7)	10	Sessional (Internal)	100
		Sessional (External)	100
		Viva (Internal)	25
		Viva (External)	25
		In semester exam	NIL
		End Semester exam	NIL
		Total Marks	250
		Total Credits	7

**COURSE OBJECTIVES:**

- To introduce the students to the iterative design process and various channels of creativity.

**COURSE OUTLINE:**

- To comprehend various design alternative processes like binary, cyclic, intuitive, bio-mimicry etc. and the importance of literature, humanities and case studies in the design process.
- To comprehend the symbiotic relationships between creativity, arts, crafts, environment, human spatial experience, structure with Design.
- Techniques of improving creativity in design such as brainstorming, mind maps, tree of possibilities, lateral thinking, matrix of ideas etc.
- Study of spaces: Positive and Negative Spaces, Human scale and user perception and experience of space.
- Activity & Spatial Relationship in terms of size, shape and volume of space; Concept of circulation and activity relationship diagrams.
- Study of a nearby rural, semi urban settlement / community for study, analysis and documentation of its built elements, open spaces and associated architectural character.

### SESSIONAL WORK:

- Minimum 6 number of assignments to cover the study of forms and spaces and principles of organization, scale and experience, etc. on A3 size sheets and/or models.
- Graphic documentation and analysis of the settlement study with sufficient individual work contribution.
- One spatial/ building design projects with single use spaces approximately 150-200 sq.m such as café, reading hall, parking layout, tourist facility, public toilet etc. preferably in the context of settlement/community study carried out and communicated effectively through graphical drawings, two and three-dimensional sketches, models and narratives.

### RECOMMENDED READINGS

1. Peter Pearce, Structure in Nature – Strategy for Design.
2. Peter Streeens, Patterns in Nature.
3. Anthony Antoniadis - Poetics in Architecture: Theory of design.
4. Am heim Rudolf, Visual Thinking.
5. John R. Mather -Climatology: Fundamentals and Application.
6. Maxwell Fry And Jane Drew -Tropical Architecture.
7. Paul Lassau - Graphic thinking for Architects and planners.
8. Jonathan A. Hale -Building Ideas. An introduction to Architectural Theory.

## BUILDING TECHNOLOGY AND MATERIALS II

BUILDING TECHNOLOGY AND MATERIALS II			
Subject Code		1201510(SV) 1201511(PP)	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=3 Studio=4)	7	Sessional (Internal)	25
		Sessional (External)	25
		Viva (Internal)	25
		Viva (External)	25
		In semester exam	30
		End Semester exam	70
		Total Marks	200
		Total Credits	5

### COURSE OBJECTIVES

- To help students understand the basic building elements, their function and behaviour under various conditions with specific reference to timber construction.
- To help students to develop a clear understanding of the basic principles of construction and materials suitable for load bearing construction.
- To help students develop and analytical and logical sequence in thinking about structural aspects of architecture.

### COURSE CONTENTS

#### Unit 1

- Construction of reinforced masonry walls, pillars and lintels

#### Unit 2

- Study of building materials like bamboo, timber, timber derivatives, roofing materials for small span sloping roofs including Mangalore tiles with reference to their characteristics, market forms, applications and preservation, etc.

#### Unit 3

- Various types of timber panelled and flush doors
- Various types of timber windows
- Hardware and carpentry tools used for timber fashioning, especially for doors and windows

#### Unit 4

- Single and double floor construction for G+1 building.

#### Unit 5

- Timber stairs and construction of any one type of stairs.

#### Unit 6

- Construction of various types of roofs for spans up to 6m
- Introduction to timber roof truss, king post and queen post trusses, built-up trusses, forces in truss members
- Masonry vaults and domes

### **SESSIONAL WORK**

Hand drawn drawings on Units 3, 4, 5 and 6; Assignments on units 1 & 2.

### **RECOMMENDED READING**

16. 'Elements of Structure' by Morgan
17. 'Structure in Architecture' by Salvadori
18. 'Building Construction' by Mackay W. B., Vol. 1 – 4
19. 'Building Construction' by Barry, Vol. 1 – 5
20. 'Construction Technology' by Chudley, Vol. 1 – 6
21. 'Building construction Illustrated' by Ching Francis D. K.
22. 'Elementary Building Construction' by Michell
23. 'Structure and Fabric' by Everet
24. 'Engineering Materials' by Chaudhary
25. 'Building Construction Materials' by M. V. Naik
26. 'Civil Engineers' Handbook' by Khanna
27. 'Vastu Rachan' by Y. S. Sane
28. National Building Code and I.S.I. Specifications
29. 'Materials and Finishes' by Everet
30. 'A to Z Building Materials in Architecture' by Hornbostle

## **THEORY OF STRUCTURES II**

<b>THEORY OF STRUCTURES II</b>			
Subject Code		1201512	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=1 Studio=2)	3	Sessional (Internal)	NIL
		Sessional (External)	NIL
		Viva (Internal)	NIL
		Viva (External)	NIL
		In semester exam	30
		End Semester exam	70
		Total Marks	100
		Total Credits	2

## **COURSE OBJECTIVES:**

1. To Analyze the forces in a Frame.
2. To Study and analyze the stresses in various Building Elements like Columns and Beams.
3. To Study the deflection effect of loads on Beams.
4. To Study Combined Stresses on Eccentrically Loaded Columns and Apply the Same to the Design of Foundations of Load Bearing Walls.

## **COURSE OUTLINE.**

### **Unit 1. Simple Stresses and Strains**

1. Linear Stresses and Strains. Hooke's Law. Stress Strain Diagram for Various Materials. Lateral Strain, Poisson's Ratio, and . Elongation of Long Rods , Volumetric Strain, Bulk Modulus. Shear Stress. Modulus of Rigidity. Relationship between various Modulli. Composite Materials, Modulus Ratio and Equivalent Area e.g. R.C.C Column with Concrete and Steel.
2. Elastic, Plastic, Brittle and Ductile Materials. Yield Stress, Factor of Safety and Working or Permissible or Safe Stress.

### **Unit 2. Spanning Members.**

1. Bending Stresses. Theory of Simple Bending. Assumptions, Flexural Formula, Stress Distribution across a Section and across the span of the Beam. Modulus of Resistance. Section Modulus and how M.R is proportional to square of depth.
2. Shear Stresses. Formula, Shear Stress Distribution across a Rectangular, Circular, T, C, L, I Section.

### **Unit 3. Deflection.**

1. Deflection. Concept of Slope and Deflection. Double Integration Method and Derivation of Formula for a S.S Beam with Full U.D.L only. Formula for Deflection and Slope in the Standard cases (studied in Sem. I). Application in Problems.
  - a. Propped Cantilever. Use Deflection to Find Reactions in this case of a Statically Indeterminate Structure.

### **Unit 4. Combined Stresses**

1. Compressive Members Subjected to Eccentric Loading. Stresses developed at four corners.
2. Middle third Rule, Kernel of a Column. Application of Middle Third Rule in Foundations.
3. Application of the theory to Chimneys.

### **Unit 5. Frames and Trusses.-1**

1. Introduction of Trusses as a Building Element and Why Important.
2. Perfect and Imperfect Frames. Redundant Members.
3. Analytical Solutions. – Method of Joints, Method of Sections

### **Unit 6. Frames and Trusses.-2**

1. Graphical Solution of Frames.

## **RECOMMENDED READING**

1. Design of steel structures-Vazirani – Rathwani.
2. Design of steel structures- L.S. Negi.
3. R.C.C. Design – Khurmi, Punmia, Sushilkumar.
4. Elements of Structures – Morgan.
5. Structure in Architecture – Salvador and Heller.
6. Structure Decisions – F. Rosenthal.
7. Strength of Materials by Amol Dongre

## ARCHITECTURAL DRAWING AND GRAPHICS II

<b>ARCHITECTURAL DRAWING AND GRAPHICS II</b>			
Subject Code		1201513	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=2 Studio=5)	7	Sessional (Internal)	50
		Sessional (External)	50
		Viva (Internal)	NIL
		Viva (External)	NIL
		In semester exam	NIL
		End Semester exam	NIL
		Total Marks	100
		Total Credits	4

### COURSE OBJECTIVES:

- To enable the students to understand and express Composite three-Dimensional objects and buildings formed by additive and interpenetrated solids using various graphical projection systems including sections.
- To help the students understand the technique of graphical documentation of a built structure/environment through measured drawing/s.
- To enable the students to express their design ideas through various sketching techniques.

### COURSE OUTLINE:

#### Unit 1 Solid Geometry:

- Understanding and drawing of composite and complex three dimensional objects formed by addition and/or interpenetration of various objects in various planes.
- Surface Development of various three dimensional objects.
- Orthographic projections of true shapes of sectional planes.

#### Unit 2 Measured drawing/ Scale Drawing:

- measured drawing (Plan/s Section/s Elevation/s and isometric/ axonometric view), drawn to appropriate scale, of a simple two storeyed building including a stairway and/or toilet.

#### Unit 3 Sketching:

- Free hand sketching to communicate design/concept sketches, Building construction details etc.

#### Unit 4 Introduction to CAD:

- Introduction to basics of Computer Aided Drawing with basic commands for Drawing, Modifications, Text and Annotations (dimensions) sufficient to construct simple geometrical shapes.

### SESSIONAL WORK:

- Sessional work should be planned to cover all the units mentioned in course outline with thrust on skill development, accuracy and understanding of the topic.
- Twenty five percent weightage in assessment should be given to the assignments of sketching
- Minimum of Eight manually drafted assignments to cover the course outline based on the following modules:

a	Architectural scales and annotations	2 to 3 Assignments
b	Orthographic (plan, section/s, elevation/s) isometric, axonometric projections of three dimensional objects and building components	5 Assignment
c	Scale drawing of building/s of sufficient size to demonstrate basic building components, standard annotations.	1 to 2 Assignments

### RECOMMENDED READINGS

1. Ching Francis D.K.: Architectural Graphics
2. Kelsey W. E.: Geometrical & Building Drawing
3. Leslie Martin: Architectural graphics:
4. B. James: Essential of Drafting
5. H. Joseph and Morris: Practical plane and solid geometry
6. Gill Robert: Rendering with pen and ink
7. Burden Ernest: Architectural Delineation

## HISTORY OF ARCHITECTURE I

HISTORY OF ARCHITECTURE I			
Subject Code		1201514	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=2 Studio=1)	3	Sessional (Internal)	25
		Sessional (External)	25
		Viva (Internal)	NIL
		Viva (External)	NIL
		In semester exam	NIL
		End Semester exam	NIL
		Total Marks	50
		Total Credits	2

### COURSE OBJECTIVE

- To introduce student to architectural development with reference to time, space and people.

### COURSE OUTLINE

- To introduce students to the historical architecture of various civilisations before 1 century CE. : Ancient Civilisations of Egypt, Mesopotamia, Indian sub-continent, China, and Mediterranean region.
- To sensitise students to the linkages between architecture and the socio- cultural, political, geographical and economic context with respect to the ancient civilisations.
- To familiarise students with noteworthy architectural production from the period under study and their significance.

### SESSIONAL WORK

- At least 3 project based assignments including one tutorial.

### RECOMMENDED READINGS

1. History of Architecture by Sir Bannister Fletcher.
2. History of Architecture by Spiro Kostof.
3. The Story of Western Architecture by Bill Risebero.

4. Indian Architecture (Vol. I & II) by Percy Brown.
5. History of Indian and Eastern Architecture by James Fergusson.
6. Hindu India by Henry Stierlin.
7. Islamic Architecture in India by Satish Grover.
8. The History of Architecture in India by Christopher Tadgell.
9. A History of Fine Arts in India and West by Edith Tomory.

## CLIMATOLOGY

<b>CLIMATOLOGY</b>			
Subject Code		1201515	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=2 Studio=1)	3	Sessional (Internal)	25
		Sessional (External)	25
		Viva (Internal)	NIL
		Viva (External)	NIL
		In semester exam	NIL
		End Semester exam	NIL
Total Marks		50	
Total Credits		2	

### COURSE OBJECTIVES:

To understand climate as a determinant of architectural design and to enable the students to evolve climate responsive design.

### COURSE OUTLINE

- Introduction to elements of nature, variables of climate (definitions, measurement and significance).
- Global climate, regional variations and microclimate.
- Climatic zones in India and respective traditional climate responsive architecture.
- Concept of heat exchange in buildings. Theory and concept of thermal comfort, comfort indices and its application to architectural design.
- Climate responsive design strategies like site planning, orientation, building form, shading, ventilation, materials and technology.

### SESSIONAL WORK

- One individual design assignment related to design of openings with respect to their size, location, shading and ventilation.
- One individual study assignment each based on climatic responsive building from traditional and contemporary architecture.

### RECOMMENDED READINGS

1. Climatology Fundamentals and application – John R Mather
2. Introduction to Climatology – Anthony Sealey.
3. Climatologically & Solar data for India – T. N. Seshadry.
4. Climatic Design – Watson Donald.
5. Manual of tropical housing and building – Koenigsberger & Ingersol.
6. Tropical Architecture – Maxwell Fry & Jane Drew
7. Design Primer for Hot Climate – Allan Konya
8. Sun, Wind and Light by G. Z. Brown.
9. Energy Efficient Housing by Mili Majumadar, Published by TERI.
10. Climatically Responsible Energy Efficient Architecture by Arvindkrishnan.  
Housing Climate and Comfort by Martin Evans.

## WORKSHOP II

WORKSHOP II			
Subject Code		1201516	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=1 Studio=2)	3	Sessional (Internal)	25
		Sessional (External)	25
		Viva (Internal)	NIL
		Viva (External)	NIL
		In semester exam	NIL
		End Semester exam	NIL
		Total Marks	50
		Total Credits	2

### COURSE OBJECTIVES:

- Introducing students to various materials and techniques used in making Architectural models.
- Enabling Students to make Architectural models for study and presentation.
- To introduce computer aided 3D modeling.

### COURSE OUTLINE:

- Introduction to materials such as balsa wood, plastics, cork and the techniques to make Architectural Models should preferably be co-ordinated with subjects like 'Design', 'Building Technology and Materials' etc.
- Introducing computer aided 3D Modeling of simple and composite objects.

### SESSIONAL WORK:

- Sufficient number of assignments to cover the topics given below, with thrust on exploring maximum materials and techniques, understanding their appropriateness for the purpose and skill development.

a	Producing 2-dimensional drawing of small scale building using computer aided drafting softwares	2 Assignments
b	3-dimensional model of small scale building/ building construction details etc using softwares	2 Assignments

### RECOMMENDED READING:

- Sandeep Singh, Beginning Google Sketch up
- Aidan Chopra, Sketchup-2014 for Dummies
- Chris Grover, Google Sketch up