

Detailed Syllabus

For

First Year Bachelor of Architecture

(Digital Architecture)

B. Arch. (Digital)

BACHELOR OF ARCHITECTURE (DIGITAL ARCHITECTURE)

Syllabus

(To be implemented from Academic year 2011-12)

Rules for B.Arch. (Digital Architecture)

Rule No.1: ELIGIBILITY FOR ADMISSION.

Eligibility Criteria: Students seeking admission to First year of Bachelor's degree course in Architecture (Digital Architecture) must fulfill the eligibility criteria laid down by **Council of Architecture**, which is, no candidate, with less than 50% marks in aggregate, shall be admitted to the architecture course unless he/she has passed an examination at the end of the new 10+2 scheme of Senior School Certificate examination or equivalent with Mathematics as subjects of examinations at the 10+2 level with a pass in Aptitude Test and also criteria led down by Govt. of Maharashtra / University of Pune from time to time.

Rule No.2: SCHEME OF ASSESSMENT.

A candidate to be eligible for the degree of Bachelor of Architecture (Digital Architecture) will be required to appear for and pass examinations as under.

| No. | Examination | Consisting of |
|------------|---|---------------------------------|
| | Stage -I | |
| 1. | First Examination in Architecture(D.A) | [I B.Arch. (D.A)]Term I & II |
| 2. | Second Examination in Architecture(D.A) | [II B.Arch. (D.A)] Term I & II |
| 3. | Third Examination in Architecture(D.A) | [III.B.Arch. (D.A)] Term I & II |
| | Stage –II | |
| 4. | Fourth Examination in Architecture(D.A) | [IV B.Arch. (D.A)] Term I &II |
| | Stage –III | |
| 5. | Bachelor of Architecture (D.A) | [V B.Arch. (D.A)] Term I & II |

Rule No.3: GRANTING OF TERM.

Academic year shall consist of two terms of 90 teaching days each. Sessional work completed by the students shall be continuously assessed by the internal teacher and jointly assessed at the end of academic year by a pair of external examiners.

.1.

The candidate will be permitted to appear for annual examination only if he/she keeps term at a College affiliated to the University and produces testimonials from the Principal of the College for -

1. 80% attendance in each head of passing of theory and / or sessional work as prescribed by the University.
2. **Satisfactory completion of the sessional work prescribed for each subject and securing at least 45% marks in the internal assessment for the same.**
3. Good Conduct.

Rule No.4 : PRE-REQUISITES FOR ADMISSION TO HIGHER CLASSES (AS STIPULATED BY COUNCIL OF ARCHITECTURE)

1. No student shall be promoted to 4th year B.Arch. unless he has passed in 1st, 2nd and 3rd year B.Arch. (D.A)
2. A candidate must pass Third year examination in Architecture within five years of first admission to First year B.Arch. (D.A)
3. The percentage of passing shall not be less than 45% in each subject head and shall not be less than 50% in aggregate.

Rule No.5: RULES OF A.T.K.T.

As a general rule a student shall be allowed to keep term for the next year of study of the course if he/she has a backlog of not more than TWO HEADS of passing in the preceding year.

- a) A student shall be allowed to keep term for the Second Year B. Arch. (D.A) course if he/she has a backlog of not more than TWO HEADS of passing in Theory/Sessional/Viva-voce examination at First Year B. Arch. (D.A)
- b) A student shall be allowed to keep term for the third year B. Arch. (D.A) Course, if he/she has no backlog of First Year B. Arch. (D.A) and if he/she has a backlog of not more than TWO HEADS of passing in Theory/sessional / Viva-voce examination at Second Year B. Arch. (D.A)
- c) A student shall be allowed to keep term for the Fourth Year only if he/she has no backlog of First, Second and Third year B. Arch. (D.A)

- d) A student shall be allowed to keep term for the Final Year B. Arch. (D.A) Course, if he/she has backlog of not more than TWO HEADS of passing in Theory/sessional/Viva-voce examination at Fourth year B. Arch. (D.A)

Note : Special concession to students failed in Fourth Year B.Arch. (D.A)

The students having failed in Fourth Year will be allowed provisional admission to Final Year term I. They will be allowed to complete the term of Practical Training and appear for the Viva-voce Examination at the end of the term. They will be required to appear for the Fourth Year Examination and pass in the Examination/obtain A.T.K.T. and then only they will be allowed to seek admission to Final Year term II in the next academic year.

Rule No.6: EXAMINATIONS.

At each examination,

- i. Paper
- ii. Sessional
- iii. Sessional and viva-voce based on sessional work, as prescribed in the subjects, for both the terms together, shall constitute separate heads of passing.

Rule No.7: SESSIONAL WORK ASSESSMENT.

- a. In respect of Sessional work at F.Y. B.Arch. (D.A), S.Y. B.Arch. (D.A), T.Y. B.Arch. (D.A) and fourth Yr. B.Arch. (D.A) target date shall be fixed for the completion of each assignment. All assignments shall be continuously assessed by the internal teacher during term I and term II.
- b. At the end of the academic year combined sessional work of Term I and Term II shall be assessed jointly by the internal and external examiner from amongst the panel approved by the University for the subject. The results for sessional work shall be based on marks obtained by the candidate in the particular subject in both terms taken together. The internal marks secured by the students will be displayed on notice board at the end of each such assessment.
- c. Performance of sessional/Viva-voce Examination shall be assessed on the basis of the depth of understanding of the principles involved and not on the basis of mere correctness or results of ornamental or colorful presentation.
- d. Students may use computers for preparing sessional work where nature of work is unique to an individual and stress is on content rather than skill. For common form of work, drawings and reports/notes shall be manually prepared.
- e. At First, Second, Third and Fourth year examination, external assessment shall be carried out by the examiner, external to the college i.e. teacher from college other than one whose students are being examined.

- f. For Final year examination, external assessment shall be carried out by professional not teaching in any of the colleges under University of Pune.
- ◆ **Internal Examiner** : Internal Examiner is one who is teaching that particular subject in the same/any other college under University of Pune.
 - ◆ **External Examiner** : For First, Second, Third and Fourth year, External Examiner means a teacher who is not teaching in the college for which the
- .3. examination is being conducted.
- ◆ For Final year examination an external examiner means a professional not teaching in any of the colleges under University of Pune.
 - ◆ An Examiner for any of the subjects of examination from 1st year to 4th year Architecture shall have a minimum of 3 years teaching/professional experience in his/her field of study.
 - ◆ To qualify for the External Examiner at 5th year architecture, the professional shall have a minimum of ten years professional experience.

Rule No.8: CRITERIA FOR PASSING

To pass the F.Y./S.Y./T.Y./Fourth Yr./B.Arch. (D.A) examination, a candidate must obtain minimum 45% marks in each paper/sessional/Viva-voce and 50% in aggregate.

Rule No.9: GRADING SYSTEM.

The class shall be awarded to the student on the aggregate marks obtained by him. The award of class shall be as follows:

- | | | |
|----|--|--------------------------------|
| a) | Aggregate 65% or more marks | : First class with Distinction |
| b) | Aggregate 60% or more marks but less than 65% | : First class |
| c) | Aggregate 55% or more marks but less than 60% | : Higher Second class |
| d) | Aggregate 50% or more marks but less than 55% | : Second class |

CLASS WILL BE AWARDED ON THE PERFORMANCE AT FOURTH AND FINAL YEAR EXAMINATIONS TAKEN TOGETHER

Rule No.10: EXEMPTIONS & SUPPLEMENTARY EXAMINATION.

In case a candidate fails in an examination but desires to appear again,

- a) He/she may be exempted from appearing in the head/s of passing in which he/she has passed.
- b) **Supplementary examination will be held in Oct/Nov.**
- c) Only those candidates who appeared but failed / failed with A.T.K.T. in the annual examination will be allowed to appear for the supplementary examination.

Rule No.11: INTRODUCTION OF THIS CURRICULUM.

The curriculum for the B.Arch. (Digital Architecture) will be introduced gradually as under:

- a) First Yr. B.Arch. (Digital Architecture) course from June 2011
- b) Second Yr. B.Arch. (Digital Architecture) course from June 2012
- c) Third Yr. B.Arch. (Digital Architecture) course from June 2013
- d) Fourth Yr. B.Arch. (Digital Architecture) course from June 2014
- e) Final Yr. B.Arch. (Digital Architecture) course from December 2015.

Rule No.12: OTHER RULES

University/affiliated colleges may frame additional rules and regulations or modify these regulations if needed and once announced, they would be binding on the students.

| SUBJECT CODE : 113421 | | BASIC DESIGN I - SV | |
|---------------------------------|---|----------------------------------|-----|
| TEACHING SCHEME | | EXAMINATION SCHEME | |
| Lecture Periods | 1 | Paper | Nil |
| Studio Periods | 5 | Sessional + Viva-voce Term I | 150 |
| Total Contact Period (Per Week) | 6 | Sessional + Viva-voce Term II | 150 |
| | | Total Marks | 300 |

Term I :

COURSE OBJECTIVES :

To help the students grasp the fundamentals of design as a basic creative activity.
The help the students learn about the basic elements of design such as the point, line, planes, volumes and masses, colour, texture etc. though exercises aimed at experimentation.

COURSE OUTLINE :

The course should contain exercises that will cover the following topics:

1. Study of lines and forms : Lines (Their Visual Qualities),Composition of two Dimensional Forms, Forms in Nature (Animate and Inanimate).
2. Material and Texture, Colour, Light.
3. Anthropometry.
4. Study of spaces: Positive and Negative Spaces, Activation of spaces through Stables / Mobiles.
5. Design of an object in everyday use.

SESSIONAL WORK :

Sufficient number of projects to cover the topics mentioned above should be worked in class. Stress should be given on three-dimensional study and communicating the design / study through effective two and three-dimensional sketches and models, rather than words.

REFERENCE BOOKS

Ching Francis D. K. Architecture : Form Space & Order
Pramar V. S. Fundamentals in Architecture
Walter Groups Total Architecture

Term II :

COURSE OBJECTIVES :

To help the students grasp the fundamentals of Architectural aesthetics.
To help the students learn about the basic elements of visual aesthetics through exercises aimed at experimentation.
The final exercise will culminate in application of all the knowledge and skill gained during the term.

COURSE OUTLINE :

The course should contain exercises that will cover the following topics:

1. Understanding Architectural Aesthetics.
 2. Elements of Visual Aesthetics.
 3. Attributes of Form and Space.
 4. Platonic Forms. (Derivatives forms and transformation).
 5. Scale, Proportion, Contrast.
 6. Alignment, Repetition, Pattern, Rhythm
 7. Principles of Organization of Form & Space
 8. Study of building by application of principles of Aesthetic Appraisal.
- SYLLABUS 2008 F.Y.B.Arch. 2 /14

SESSIONAL WORK

Sufficient number of projects to cover the topics mentioned above should be worked upon in class. Stress should be given on three-dimensional study and communicating the design / study through effective two and three-dimensional sketches and models, rather than words.

REFERENCE BOOKS

Ching Francis D. K. Architecture : Form Space & Order
Pramar V. S. Fundamentals in Architecture
Walter Groups Total Architecture

| | | | |
|--|----------|---|------------|
| SUBJECT CODE : 113461 | | Name of Subject: Architectural Design & Model making | |
| TEACHING SCHEME | | | |
| Lecture Periods | 1 | Paper | Nil |
| Studio Periods | 5 | Sessional Term I | 150 |
| Total Contact Period (Per Week) | 6 | Sessional Term II | 150 |
| | | Total Marks | 300 |

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OBJECTIVES: -

Introduce students to Architectural Design as core subject of Digital architecture studies. New design process from conceptualization to fabrication in the practical world will be explained to students. Develop perception of space and sense of visualization based in the theories of other fields like biology, mathematics etc. through digital tools will be explored.

COURSE OUTLINE:

1. Introduction to Architectural design as a core subject and its relationship with other studies & subjects.
2. Scope and study of Architecture in relation to Software world and machinist world.
3. Scope and study of Building and Climate.
4. Passive Design Policies for Indian Climate and application through environmental analysis software.
5. Scope and study of Building and Site.
6. Scope and study of orientation of internal spaces of buildings.
7. Scope and study of circulation.
8. Conceptual outline of scope of Architectural Structure.
9. Brief outline of Basic components of Architectural Structure.
10. Conceptual comparison of various structural systems.
11. Analyzing single activity, single space structures its context of form, construction, anthropometrical data, space layout, relationship with surrounding environment, etc.
12. Designing single activity, single spaces e.g. gate cabins, entrance gates, bus shelters, monuments, kiosks, children play areas, etc.

13. Analyzing relationship of more than one activities in a building of simple nature and understand the same in context to form, construction, anthropometrics data, space and furniture layout, etc.
14. Designing progressively complex spaces & buildings e.g. – snack bars, exhibition stalls, weekend cottages, bandstand, etc.
15. Study of settlement environment- visit to nearby settlement to study spaces in the cluster environment. Study of life style, climate and social structure. Study of houses, their relationship with common spaces, Public buildings of the settlement with residential clusters, etc. study of various categories of open spaces of the settlement and their inter relationship with each other as well as built spaces around.

Model making

- Introduction to various materials used for model making.
- Experiments with various materials and equipment in terms of preparation of basic forms / geometrical forms with appropriate scale and dimensions.
- Introduction to various types of models such as site model, study model, block model and finished presentation models.
- Importance of various types of models to appropriate stages of Architectural Design.
- Use of appropriate scales, suitable to various types of models.
- Study and preparation of model of a complete built structure.
- Introduction to computer modeling.

SESSIONAL WORK:

1. Sufficient number of projects to cover the topic. One design project of term II should be related to settlement study carried out.
2. Stress should be given on three-dimensional study through software and communicating the design/study through effective two and three-dimensional drawings/ sketches and models, rather than words.

3. Model making: Study Models at various stage of design shall be prepared in the studio and separate exercise may be given for computer modeling

RECOMMENDED READINGS:

1. A pattern Language by Alexander Christopher
2. Structure in Architecture – Heller Robert and Salvadori Mario
3. Total Architecture- Walter Gropius
4. Design Fundamentals in Architecture- Pramar

5. Structure in Nature- Strategy for Design – Peter Pearce
6. Patterns in Nature- Peter Streens
7. Elements of Architecture – Meiss Pieree Von
8. Visual Thinking- Am heim Rudolf
9. Architecture: form, space and order - Francis D.K.Ching

REFERENCE MATERIAL:

1. A.J. Metric Handbook, editors, Jan Bilwa and Leslie fair weather
2. Architectural Graphic standards editor- Boaz Joseph
3. Planning- the Architect's handbook by E and O.E.
4. Dernst Neufert's Architect's data
5. Time saver standards for Architectural Design Data, Editor John Callender
6. Time saver standards for building types, editor Joseph D.C. and John Callender.

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|---|---|----------------------|-------------|
| SUBJECT CODE : 113451 ARCH. DRG,GRAPHICS I | | | |
| TEACHING SCHEME | | | |
| Lecture Periods | 1 | Paper | Nil |
| Studio Periods | 5 | Sessional Term I | 100 |
| Total Contact Period (Per Week) | 6 | Sessional Term II | 100 |
| | | | Total Marks |
| | | | 200 |

Term I :

COURSE OBJECTIVES :

1. To develop students to understand Graphic Language for Communication.

SYLLABUS 2008 F.Y.B.Arch. 4 /14

2. To develop student in acquiring skills to express more complex objects through graphic presentation.

COURSE OUTLINE :

Scale Drawing

(a) Introduction to drawing instruments and drawing materials and their use.

(b) Drafting techniques : Basis for Architectural Drawing - LINE, essence of linecontinuity.

Quality of line sharpness, clarity blockness (Tone) weight, (Thickness)

Types of lines continuous thin, continuous thick, dotted, dash and dotted, horizontal, vertical inclined lines.

Application of all types of lines in architectural drawing..

(c) Scale : Architectural Metric scale. Introduction of various proportions of scales, necessity of scaled drawing, selection of proportions of scales while preparing architectural drawing.

Method of construction of Graphics Scale i.e. dividing a given length of line into equal parts..

(d) Building Elements : Techniques of representing building elements such as doors, windows, steps, chajja, porch, canopy, balcony, roofs, difference of levels, furniture fittings such as wash hand basins, WC pans, traps etc. on drawings.

(e) Lettering : Introduction to architectural lettering, its proportion to scale drawing simplicity of lettering.

(f) Annotations : Use of annotations on drawings titles and uses in presentations drawings.

(g) Material Indications : Symbolic representation of building materials with colour code as specified Indian Standard Code of practice.

(h) Measuring and drawing to different scale : existing ground floor building maximum of 100.0 sq. mtrs. Plinth area, in plan elevations and WC fittings, symbolic representation of materials used. Ground Floor Plan along with plot boundaries, four side elevations, two sections, block plan, site plan, north point. In addition to this drawings shall be prepared based on examples of buildings by giving a sketch design. Plinth area of such design will be maximum of 100.0 sq. mts.

Solid Geometry :

1. Introduction to solid geometrical forms projection methods of representing on

drawings such as orthographic on vertical and horizontal planes. Isometric views – Plan, elevations and sections of solids.

2. Composite solid geometrical objects in plan, elevation, section and isometric. Application of such forms in buildings, Penetration of solid geometrical objects into each other vertically, horizontally and inclined its representation in plan, elevations and sections. True shapes of sections of solid geometrical objects.

Free Hand Sketching : Importance of free hand sketching in architectural drawing / practice. Principles of free hand sketching such as proportions.

Indoor sketching of three dimensional solid forms, buildings and parts of building.

SESSIONAL WORK :

Sessional Work' to be done as per the 'Course outline' above.

REFERENCE MATERIAL

1. Architectural Graphics by Ching Frank.
 2. Geometrical & Building Drawing by Kelsey W.E.
 3. Architectural Graphics by Martin C. Leslie.
 4. A. J. Metric Hand Book.
 5. Architectural Graphic Standards.
 6. Architectural Drawing ISI Publication.
 7. Essential of Drafting by B. James.
- SYLLABUS 2008 F.Y. B.Arch. 5 /14
8. Practical Plane and Solid Geometry by H. Joseph and Morris.
 9. Rendering with Pen and Ink.
 10. Architectural De-lineation by Burden Ernest.
 11. Architectural Presentation Techniques.
 12. Architectural Rendering.
 13. Rendering with pen and ink by Gill Robert.
 14. Applied perspective, Holmes John M.
 15. Perspective for the Architect- Themes and Hadson.
 16. Professional perspective Drawing for Architects and Engineers – Friedrich W. Capelle.
 17. Interior perspective in Architectural Design-Graphic Sha Publishing Col. Ltd. Japan.
 18. Modern Architectural Rendering best 180, Japan Publishing Co.
 19. Perspective Drawings of Modern Architecture, Japan Publishing Co.
 20. Air brushing in rendering, Japan Publishing Co.

Term II :

COURSE OBJECTIVES :

To acquaint student in various techniques of presentation of Building Designs.

To acquaint students in various techniques of Architectural Photography.

To acquaint students to the use of Computer aided Drafting.

COURSE OUTLINE :

Perspective Drawing :

(a) Principles of perspective drawings and understanding of all relevant terms like Picture Plane, Central Visual Ray, Vanishing Parallel, Eye Level, Height Lines, Vanishing Points, Cone of Vision etc.

(b) Drawing Perspective Views by – Projection Methods with different combination of variable like picture plane, station point/viewer, eye level

etc. for One Point and Two Point perspective.

(c) Alternative Methods of Perspective :

- Drawing perspective by Approximate Method.
- Drawing Perspective by Measuring Point Method.
- Drawing Perspective view of Interior Designs by Projection / Measuring Point Method.

Sociography :

(a) Principles of Shades and shadows. & Shades & Shadows of typical building on Plan & Elevation.

(b) Techniques of drawing shades and shadows of lines, planes, solids and Architectural Building Elements.

(c) Colouring of shades and shadows using transparent colours.

(d) Study of drawing shadows in isometrics.

(e) Shades and Shadows in perspective.

Photography : Introduction to Architectural Photography.

(a) Techniques of Recording Building and surrounding on a film with respect to position of viewer and angle, light and shades, foreground and background, scale, colour, texture, mood, time etc.

(b) Techniques of Photography for documentation :

(c) Photographs of drawings, models, features of buildings and surroundings to be elaborated.

(d) Close up Photographs.

Computer:

(a) Introduction to Computer Hardware, Software.

(b) Introduction to Operating systems. (DOS-Optional, Windows-Compulsory).

SYLLABUS 2008 F.Y.B.Arch. 6 /14

(c) Use of computer as a tool for architectural draughting using appropriate software eg. Autocad, Archigram, etc.

Presentation Techniques :

a) Techniques of representing elements graphically such as trees, lawns, shrubs, paving, pathways, flowerbed, water pools, human figures, vehicles.

b) Colours theory and use of colours in presentation. Medium of presentation - pencil, pastel colours, and transparent water colours.

c) Advanced Presentation Techniques.

SESSIONAL WORK :

‘Sessional Work’ to be done as stipulated in the ‘Course outline’ above.

REFERENCE MATERIAL

1. Architectural Graphics by Ching Frank.
2. Geometrical & Building Drawing by Kelsey W.E.
3. Architectural Graphics by Martin C. Leslie.
4. A.J. Metric Hand Book.
5. Architectural Graphic Standards.
6. Architectural Drawing ISI Publication.
7. Essential of Drafting by B. James.
8. Practical Plane and Solid Geometry by H. Joseph and Morris.
9. Rendering with Pen and Ink.

10. Architectural De-lineation by Burden Ernest.
11. Architectural Presentation Techniques.
12. Architectural Rendering.
13. Rendering with pen and ink by Gill Robert.
14. Applied perspective Holmes John M.
15. Perspective for the Architect- Themes and Hadson.
16. Step by step perspective drawing for Architects Draftsman and Engineering – Claudius Coulin.
17. Professional perspective Drawing for Architects and Engineers – Friendrich W. Capelle.
18. Interior perspective in Architectural Design-Graphic Sha Publishing Col. Ltd. Japan.
19. Modern Architectural Rendering best 180, Japan Publishing Co.
20. Perspective Drawings of Modern Architecture, Japan Publishing Co.
21. Air brushing in rendering, Japan Publishing Co.
22. Perspective & Sociography- by Shankar Mulik.
23. As mentioned for Architectural Drawing and Graphics – III.
24. The Step by Guide to Photography by Michael Langford.
25. Architectural Photography by Joseph W. Molitor.
26. Computer and common sense by Roger Hunt.

| SUBJECT CODE : 113424 | | BUILDING TECHNOLOGY AND MATERIALS I - SV | |
|----------------------------------|---|--|-----------|
| SUBJECT CODE : 113425 | | BUILDING TECHNOLOGY AND MATERIALS I - Theory | |
| TEACHING SCHEME | | EXAMINATION SCHEME | |
| Lecture Periods | 2 | Theory Paper on contents of both terms at the end of term II | 100 marks |
| Studio Periods | 4 | Sessional + Viva-voce Term I | 150 marks |
| Total Contact Periods (Per Week) | 6 | Sessional Term II+ Viva-voce | 150 marks |
| | | Total Marks (Sessional + Viva-voce) | 300 |

Term I :

COURSE OBJECTIVES :

To help students understand the basic building elements, their function and behavior under various conditions with specific reference to 'Load bearing Construction' and simple non RCC frame structure.

To help students to develop a clear understanding of the basic principles of construction and materials suitable for Indian conditions.

To help students develop an analytical and logical sequence in thinking.

To encourage students to study both in classroom and also outside at work sites in order to get the practical exposure.

COURSE OUTLINE :

1. Introduction to various elements of building from foundation to roof.
2. Introduction to various building materials, which are commonly used in load bearing construction.
3. Introduction to various tools and equipment commonly used in
 - (a) Excavation (b) Masonry Construction (c) Carpentry work
4. Study of following building materials with their characteristics, available market forms, preservation, appropriate use and common tests.
 - Stone, Brick, Cement concrete blocks, Stabilized Mud blocks.
 - Lime and Lime Mortar.
5. Following standard constructions shall be covered

Foundations :

 - Strip foundation suitable for load bearing structure in stone and brick up to plinth level including plinth formation, P.C.C. coping (reinforced and un-reinforced) to act as damp proof course.
 - Foundation for brick pillars, plasters, entrance, steps etc.
6. Superstructure
 - Load bearing / non load bearing masonry construction using materials such as stone, bricks, cement concrete blocks, stabilized mud blocks shall be studied.
7. Spanning of Openings

- Introduction to evolution of arches, terminology of arch construction and load transfer in arches.
- Spanning of openings using brick and stone in the form of Flat arch, Segmental arch, Semi circular arch, Corbelled arch.
- Form Work for Arches

SESSSIONAL WORK :

Sufficient number of projects to cover the topics mentioned above should be worked in class. Stress should be given on self study and site visits to understand the basics of construction technology together with drawings.

REFERENCE READING

a. To understand basic fundamental principles in construction following books are recommended

1. Elements of structure by Morgan
 2. Structure in Architecture by Salvadori
- b. Studying standard building construction
1. Building construction by Mckay W. B., Vol. 1 to 4
 2. Construction of Building by Barry, Vol. I to V
 3. Construction Technology by Chudley R. Vol. I to IV
 4. Building Construction Illustrated – Ching Francis D. K.

SYLLABUS 2008 F.Y.B.Arch. 8 /14

5. Elementary Building Construction by Michell

c. To study building materials

1. Engineering Material – Chaudhary
2. Building Construction Materials – M. V. Naik
3. Civil Engineer's Hand Book – Khanna
4. Vastu Rachana – Shri Sane
5. National Building code and ISI specifications

Term II:

OBJECTIVES:

To help students understand the basic building elements, their function and behavior 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 Indian conditions.

To help students develop an analytical and logical sequence in thinking.

To encourage students to study both in classroom and also outside at work sites in order to get the practical exposure.

COURSE OUTLINE:

1. Introduction to various tools and equipment commonly used in carpentry work.
2. Study of following building materials with their characteristics, available market forms,

preservation, appropriate use and common tests.

- Timber, bamboo, thatch
- Roofing tiles.

3. Following standard timber constructions shall be covered including simple timber joinery required.

- Doors – Frameless, ledged, braced, battened, paneled, glazed, solid and hollow core flush and their combinations.
- Windows – frameless, ledged, battened, glazed etc.
- Staircases – terminology and construction
- Roofs : sloping, lean to, coupled, collar, etc Fixing of clay tiles for roofs.
- Floors : single and double floors, framed construction, Introduction to steel girder and T joist floors with stone tile fillers and concrete topping with IPS finish .
- Balconies.

4. Study of Earthquake resistant structures and Disaster Management.

- Introduction to the concept of disaster and significance of the subject to the overall building design
- Introduction to earthquake, its magnitude and its effects to underline the need to safe design of buildings.
- Introduction to types of earthquakes and its brief history.

SESSSIONAL WORK:

Sufficient number of projects to cover the topics mentioned above should be worked in class. Stress should be given on self study and site visits to understand the basics of construction technology together with drawings.

REFERENCE READING

To understand basic fundamental principles in construction following books are recommended

- Elements of structure by Morgan
- Structure in Architecture by Salvadori
- Studying standard building construction
- Building construction by Mckay W. B., Vol. 1 to 4
- SYLLABUS 2008 F.Y.B.Arch. 9 /14
- Construction of Building by Barry, Vol. I to V
- Construction Technology by Chudley R. Vol. I to IV

To study building materials

- Engineering Material – Chaudhary
- Building Construction Materials – M. V. Naik
- Civil Engineer's Hand Book – Khanna
- Vastu Rachana – Shri Sane
- National Building code and ISI specifications.

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|--|---|--|-----------|
| SUBJECT CODE : 113426 THEORY OF STRUCTURES I - SS | | | |
| SUBJECT CODE : 113427 THEORY OF STRUCTURES I - Theory | | | |
| TEACHING SCHEME | | EXAMINATION SCHEME | |
| Lecture Periods | 2 | Theory Paper on contents of both terms at the end of term II | 100 marks |
| Studio Periods | 2 | Sessional Term I | 50 marks |
| Total Contact Period (Per Week) | 4 | Sessional Term II | 50 marks |
| | | Viva-voce | nil |
| | | Total Marks (Sessional) | 100 |

Term I :

COURSE OBJECTIVES :

To help students, understand the basic principles of structural behavior and requirements of buildings with emphasis laid more on expositions of principles involved rather than situational intricacies and computational rigour.

COURSE OUTLINE :

1. Statics : System of coplanar forces and conditions of equilibrium analytical and graphical treatment .
2. Reactions for simple statically determinate beams with simple loads and their combination analytical treatments.
3. Bending moment and shear force diagrams for simple beams with simple loading.
4. Centre of gravity and moment of inertia of geometrical figures and structural sections, analytical treatments.
5. Graphical analytical solutions of frames.

SESSIONAL WORK :

‘Sessional Work’ to be done as stipulated below:

Bending moment and shear force diagrams for simple beams.

Graphical solution to at least two types of perfect frames.

Minimum two tutorials based on problems set on topics under course outline.

RECOMMENDED READINGS.

1. Strength of Material by Khurmi R. S.
2. Applied Mechanics and Strength of Materials by Khurmi R. S.
3. Text-Book of Applied Mechanics by Khurmi R. S.

Term II :**COURSE OBJECTIVES :**

To help students, understand the basic principles of structural behavior and requirements of buildings with emphasis laid more on expositions of principles involved rather than situational intricacies and computational rigour.

SYLLABUS 2008 F.Y.B.Arch. 10 /14

COURSE OUTLINE :

1. Stress, strain, elastic constants, elastic behaviour of material, Hook's law and yield point, stress strain diagrams for steel, timber and concrete.
2. Compressive, tensile and shear stresses and strains
3. Theory of simple bending, bending moment and moment of resistance, section modulus.
4. Bending and shear stress distribution in simple sections.
5. Direct and bending stresses in compression members.
6. Deflection in simply supported beams and cantilevers. Double integration method (Problems of full, uniformly distributed load and point load only).
7. Concept of statically indeterminate structures. Degree of indeterminacy.
8. Propped cantilevers : Standard loadings

SESSIONAL WORK :

'Sessional Work' to be done as stipulated below:

Minimum four tutorials based on topics under course outline.

RECOMMENDED READINGS.

1. Strength of Material by Khurmi R. S.
2. Applied Mechanics and Strength of Materials by Khurmi R. S.
3. Text-Book of Applied Mechanics by Khurmi R. S.

| SUBJECTCODE : 113428 HISTORY OF ARCHITECTURE AND HUMAN SETTLEMENT I - SS | | | |
|--|---|--|-----------|
| SUBJECTCODE : 113429 HISTORY OF ARCHITECTURE AND HUMAN SETTLEMENT I - Theory | | | |
| TEACHING SCHEME | | EXAMINATION SCHEME | |
| Lecture Periods | 3 | Theory Paper on contents of both terms at the end of term II | 100 marks |
| Studio Periods | - | Sessional Term I | 50 marks |
| Total Contact Period (Per Week) | 3 | Sessional Term II | 50 marks |
| | | Viva-voce | nil |
| | | Total Marks (Sessional) | 100 |

Term I :

COURSE OBJECTIVES :

Broad study of periodic history of culture, architecture and human settlements of specified western civilizations with reference to formative influence and salient architectural contributions in terms of structural technology, planning and form of significant building types. (Stress to be laid on comparative and critical studies so as to develop among students habits of reading and research as well as sympathetic awareness of architectural heritage in the environment bearing significance to periodic history under study.

COURSE OUTLINE :

Broad study of the following periods and representatives examples of architectural history of concerned Western civilizations / countries in keeping with the aforesaid objectives.

1. Pre – historic Period :

Housing forms in the initial phase-Cave shelters , Known dwellings and settlements, community structures, Tombs, menhir, temple, stone henge, dolmen

2. Egyptian Period

- 1) Influence of socio-political system and climate
- 2) Architectural Character
- 3) Major building types Tombs, Temples

SYLLABUS 2008 F.Y.B.Arch. 11 /14

- 4) Elements of special attributes like column, styles, gateways, pillars, statues, hieroglyphic, & frescoes.

3. West Asiatic Civilizations

- 1) Architectural Character of Sumerian Assyrian, & Persian Architecture

- 2) Building Types- Temples: Ziggurat

Gateway: Ishtar gate

Palaces of Persepolis & Palace of Steliphon

- 3) Elements of Special Attribute

Statues of winged bull

Bas Relief works in ceramics

Column Style

4. Greek & Aegean, Mycenaean, Cretan Civilizations

- 1) General Architectural Character of Aegean, Cretan, & Mycenaean Architecture
- 2) Socio Political & geo climatic status for Greek civilization
- 3) Architectural Character of Greek Architecture and Civilisation
- 4) Major building types
Temples, Theatres, Agora, Stoa, Open air theatres, Council halls
Civic structures, Hippodrome
- 5) Elements of Special Attributes
Column Orders, Optical Correction,
Construction Techniques.

Sessional Work

The 'Sessional Work' shall comprise of the following.

- (i) A hand written journal with notes and manual sketches of representative examples (10 marks)
- (ii) A graphically presented or a written report with illustration of Any One of the topics to be individually elected and completed under the periodic supervision and guidance of the subject teacher. (20 marks)
 - (a) Scaled manual documentation of field studies of precincts, streets, building or parts thereof and artifacts bearing significance to the periodic history under study (not more than two half imperial sized sheets A2 – 420 x 594 mm each)
OR
 - (b) Graphically illustrated and annotated manual presentation on 'Style identification' of Building or parts thereof bearing significance to periodic history under study (not more than two half imperial sized sheets (42 – 420 x 594 mm each).
OR
 - (c) A hand written illustrated report of not more than 1000 words on comparative study of architectural features, motifs, design themes and typological planning evolutions in the periodic history under study. (20 marks)

Term II :

1) Roman Civilisation

- 1) General Architectural Character
- 2) Major Building Types
Tombs Temples, Amphitheatre,
Hippodrome, Circus, Palaces,
Arches, Bridges, Aqueduct, Thermae,
- 3) Elements of Special Attribute
Roman Column Orders, Roman Construction Technology,
Masonry Types

2) Mayan, Inca, Mexican Civilisation

- 1) General Architectural Character with description
SYLLABUS 2008 F.Y.B.Arch. 12 /14
- 2) Elements of Special Attributes

3) Chinese Civilisation

- 1) General Architectural Character with description of elements of special Attributes

Sessional Work -

The 'Sessional Work' shall comprise of the following.

(i) A hand written journal with notes and manual sketches of representative examples (10marks)

(ii) A graphically presented or a written report with illustration of Any One of the topics to be individually elected and completed under the periodic supervision and guidance of the subject teacher. (20 marks)

(a) Scaled manual documentation of field studies of precincts streets, building or parts thereof and artifacts bearing significance to the periodic history under study (not more than two half imperial sized sheets A2 – 420 x 594 mm each)

OR

(b) Graphically illustrated and annotated manual presentation on 'Style identification' of Building or parts thereof bearing significance to periodic history under study (not more than two half imperial sized sheets (42 – 420 x 594 mm each).

OR

(c) A hand written illustrated report of not more than 1000 words on comparative study of architectural features, motifs, design themes and typological planning evolutions in the periodic history under study. (20marks)

Recommended Readings

A. B. Gallion : Urban Pattern.

Pt. Jawaharlal Nehru, 'Glimpses of world history'

Geoffrey and Susan Jellicoe: Landscape of Man

Sir Bannister Fletcher, The History of Architecture

J.E. Swain: History of World Civilisation

H.G. Wells: A short History of the World

Sybil Moholy Nagy : The Matrix of Man

Dora Crouch: History of Architecture

Arnold Toynbee: A study of Architecture

Dora Crouch: Traditions in Architecture

J.Bronowski: The Ascent of Man

Spiro Kostof: History of Architecture

Gerald Burke : Towns in the Making.

| SUBJECT CODE : 113430 DESIGN FUNDAMENTALS IN ARCHITECTURE I - SS | | | |
|--|---|--|-----------|
| SUBJECT CODE : 113431 DESIGN FUNDAMENTALS IN ARCHITECTURE I - Theory | | | |
| TEACHING SCHEME | | EXAMINATION SCHEME | |
| Lecture Periods | 2 | Theory Paper on contents of both terms at the end of term II | 100 marks |
| Studio Periods | - | Sessional Term I | 50 marks |
| Total Contact Period (Per Week) | 2 | Sessional Term II | 50 marks |
| | | Viva-voce | nil |
| | | Total Marks (Sessional) | 100 |

Term I:

COURSE OBJECTIVES:

Introduce students to Architectural Design as core subject of architecture studies.

SYLLABUS 2008 F.Y.B.Arch. 13 /14

Understand the relationship of Design Fundamentals of Architecture with other subjects of study.

Progressively introduce the design process as a synthesis of variety of factors analyzed and studied.

COURSE OUTLINE:

1. Introduction to Architectural design as a core subject and its relationship with other studies and subjects
2. Scope and study of Architecture in relation to Art and Technology
3. Scope and study of Building and climate
4. Passive Design policies for Indian climate
5. Scope and study of Building and site
6. Scope and study of orientation of internal spaces of buildings
7. Scope and study of circulation.

SESSIONAL WORK :

Sufficient number of projects to cover the above topics. (30 marks)

Additionally Sessional Work shall consist of minimum four tutorials based on the above topics. (20 marks)

RECOMMENDED READINGS :

1. Structure in Architecture – Heller Robert and Salvadori Mario
2. Design Fundamentals in Architecture – Prammar
3. Architecture : Form, Space and order – Francis D. K. Ching

Term II :

COURSE OBJECTIVES :

Introduce the design process as a synthesis of a variety of factors, analyzed and studied.
Develop a perception of space and a sense of visualization with the help of tools like sketches, drawings, models, computer animation etc.

COURSE OUTLINE:

- Conceptual outline of scope of Architectural structures, consideration of climate, site and circulation in designing efficient activity spaces.
- Brief outline of Basic components of Architectural structure
- Structural efficiencies of materials, Loads and Stress – Situations.
- Principal determinants of 'Form'
- Performance analysis of conventional material, structural efficiencies.
- 'Formal' characteristics of 'Supporting' and 'Supported' elements of conventional structural materials.
- Conceptual comparison of various structural systems.
- Process of Architectural Designing, underlining its implicit need to match the emphasis on technical and aesthetical components. Guidelines on proto-type approaches.

SESSIONAL WORK :

Sufficient number of projects to cover the topic. (30 marks)

Minimum four tutorials based on above topics. (20 marks)

RECOMMENDED READINGS :

1. Structure in Architecture – Heller Robert and Salvadori Mario
2. Design Fundamentals in Architecture – Prammar
3. Architecture : Form, Space and order – Francis D. K. Ching

| | | | |
|--|----------|--|------------|
| SUBJECT CODE : 113462 | | Name of Subject: Introduction to Digital Architecture | |
| TEACHING SCHEME | | | |
| Lecture Periods | 0 | Paper | Nil |
| Studio Periods | 3 | Sessional Term I | 50 |
| Total Contact Period (Per Week) | 3 | Sessional Term II | 50 |
| | | Total Marks | 100 |

OBJECTIVE:

To introduce new digital Design Process, digital theories and Historical background of past 20 years formation period of Digital Architecture.

STUDIO CONTENT:

New design process in architecture will be explained in this elective with intermediate stages. Comparison between conventional approach of architects' style oriented process and Digital design process will be introduced. A micro scale project will be taken as design problem to know the whole process.

SESSIONAL WORK :

Theoretical aspect will lead to the formation of the content for written exams. Submission in the form of reports, discussions and debates will make the students interested in the Historical aspect of the particular subject. The outcome will also be in the form of individual perceptions on historical theories.

SESSIONAL ASSESSMENT:

The sessional work as stipulated above will be assessed internally of 25 marks

REFERENCES:

Contemporary Processes in Architecture – by Ali Rahim

Digital Cities AD: Architectural Design – Prof. Neil Leach

Performative Architecture : Beyond Instrumentality – by Branko Kolarevic