UNIVERSITY OF PUNE

SYLLABUS

FOR

Five years Degree Course
of
BACHELOR OF ARCHITECTURE
And
BACHELOR OF ARCHITECTURE
(INTERIOR DESIGN)

And

Three Years Degree Course
of
BACHELOR OF BUILDING SCIENCES
(Stage I of B.Arch.)

(to be implemented from 2008-09)

FACULTY OF ENGINEERING

BOARD OF STUDIES IN ARCHITECTURE

BACHELOR OF ARCHITECTURE
And
BACHELOR OF ARCHITECTURE
(INTERIOR DESIGN)

And

BACHELOR OF BUILDING SCIENCES
(Stage I of B.Arch.)

UNIVERSITY OF PUNE

Rules of structure for First to Fifth year B.Arch.

Rule no.1: ELIGIBILITY FOR ADMISSION.

Eligibility Criteria: Students seeking admission to First year of Bachelor's degree course in Architecture must fulfill the eligibility criteria laid down by University of Pune / Govt. of Maharashtra / Council of Architecture as applicable from time to time.

Rule no.2: SCHEME OF ASSESSMENT.

A candidate to be eligible for the degree of Bachelor of Architecture will be required to appear for and pass examinations as under:

Examination	Consisting of
STAGE I	
1. First Examination in Architecture	(I B.Arch.) Term I & II
2. Second Examination in Architecture	(II.B.Arch.)Term I & II
3. Third Examination in Architecture	(III.B.Arch.) Term I & II
STAGE II	
4. Fourth Examination in Architecture	(IV B.Arch.) Term I & II
5. Bachelor of Architecture	(V B.Arch.) 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 teacher during the term and assessed at the end of the academic term jointly by the internal and external examiners.

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

1. 75% 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 50% marks in the Internal assessment for the same.
3. Good Conduct.

Rule no. 4: PREREQUISITES FOR ADMISSION TO HIGHER CLASSES.

A student shall be promoted to higher class only if he has scored minimum 45 % marks in each theory head and 50 % marks in each sessional / sessional and viva-voce head.

For admission to Stage II of the course:

- Candidates admitted to the course shall complete the first stage within five years of admission to the course.
- The pass percentage shall not be less than 50% in the aggregate marks of F.Y, S.Y., and T.Y. at the end of Stage I.

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 **FOUR HEADS** of passing in the preceding year.

a) A student shall be allowed to keep term for Second Year B.Arch. course if he/ she has a backlog of not more than **FOUR HEADS** of passing in Theory / sessional / Viva-voce examination at First Year B.Arch.

b) A student shall be allowed to keep term for the Third Year B.Arch. Course, if he/she has no backlog of First Year B.Arch. and if he/she has a backlog of not more than **FOUR HEADS** of passing in Theory /Sessional / Viva-voce examination at Second Year B.Arch.

c) A student shall be allowed to keep term for the Fourth Year B.Arch. Course, if he/she has no backlog of Second Year B.Arch. and if he/she has a backlog of not more than **FOUR HEADS** of passing in Theory /Sessional / Viva-voce examination at Third Year B.Arch.

d) Fourth Year and Final Year are considered as integrated Stage II of the course and hence students will be allowed to take admission to Fifth year irrespective of the number of subjects in which they are failing at Fourth Year.

The pass percentage shall not be less than 50% in the aggregate marks of Fourth Year and Fifth Year at the end of Stage II.

Rule no. 6: EXAMINATIONS.

At each examination,

i. Paper

ii. Sessional / Sessional and Viva-voce based on sessional work, as prescribed in the subjects, for both the terms together, shall constitute one head of passing.

Rule no. 7: CONDUCT OF EXAMINATIONS.

The examinations for First and Second Year B.Arch shall be conducted by individual institution offering the course. The results shall be declared within 45 days of completion of the examination and shall be conveyed to the University accordingly.

The examinations for Third, Fourth and Fifth Year B.Arch shall be conducted by Pune University.

Rule no. 8: SESSIONAL WORK ASSESSMENT.

a. In respect of Sessional work at F. Y. B.Arch., S. Y. B.Arch., T. Y. B.Arch. Fourth Yr. B.Arch and Fifth Year B.Arch. target date shall be fixed for the completion of each assignment and the same shall be collected on the target date. All assignments shall be continuously assessed by the teacher during Term I and Term II.

b. At the end of each Term sessional work shall be assessed jointly by the internal and external examiners from amongst the panel approved by the University for the subject. If the student fails in the First Term Sessional assessment, he / she will have to make up in the second term assessment and have to pass in the combined marks obtained by the candidate in the particular subject in both terms taken together as it is considered as one subject head.

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 and Third 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 Fourth and Final year examination external assessment shall be carried out by professional not teaching in any of the colleges under University of Pune.

g. Internal Examiner : Internal Examiner is one who is teaching that particular subject in the same/any other college under University of Pune.

h. External Examiner: For First, Second, Third and Fourth year, External Examiner at a center means a teacher who is not teaching in the college for which the examination is being conducted.

i. For Fourth and Fifth year examination an external examiner means a professional not teaching in any of the colleges under University of Pune.

j. An Examiner for any of the subjects of examination from 1st year to 3rd Year Architecture, shall have a minimum of 3 years teaching / professional experience in his/her field of study.

k. To qualify for the External Examiner at Fourth and Fifth year examination, the professional shall have a minimum of five years professional experience.

Rule no. 9 : CRITERIA FOR PASSING.

To pass the F.Y. / S.Y./ T.Y./ Fourth Yr./ Fifth Yr B.Arch. Examination, a candidate must obtain minimum 45% marks in each paper and 50% marks in each sessional / sessional and Viva-voce head.

Rule no. 10: GRADING SYSTEM.

The class at the end of each Year should be awarded to the student on the aggregate marks obtained by him. The award of class shall be as follows:-

a)	Aggregate 66% or more marks	: First class with Distinction
b)	Aggregate 60% or more marks but less than 66%	: 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
e)	Aggregate less than 50% subject to criteria of passing	: Pass class

The pass percentage shall not be less than 50% in the aggregate marks of F.Y, S.Y., and T.Y. at the end of Stage I.

CLASS OF STAGE II EXAMINATION SHALL BE AWARDED ON THE BASIS OF PERFORMANCE OF FOURTH AND FIFTH YEARS TAKEN TOGETHER.
The pass percentage shall not be less than 50% in the aggregate marks of Fourth Year and Fifth Year at the end of Stage II.

Rule no. 11: 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 combined result of Term I and Term II examination taken together will be allowed to appear for the supplementary examination. The candidate failing in sessional / sessional and viva-voce head shall have to improve upon and present the sessional work of term I and term II both at the time of supplementary examination

Rule no. 12: INTRODUCTION OF THIS CURRICULUM.

The new curriculum for the Degree course in Architecture B.Arch and B.Arch (Interior Design) will be introduced gradually as under:

a) First Yr. B. Arch. course from June 2008
b) Second Yr. B. Arch. course from June 2009
c) Third Yr. B. Arch. course from June 2010
d) Fourth Yr. B. Arch. course from June 2011
e) Final Yr. B. Arch. course from December 2012.

Rule no. 13 : DEGREE OF BACHELOR IN BUILDING SCIENCES

A Degree of Bachelor in Building Sciences shall be awarded to candidates after successful completion of Stage I in case he / she is unable to complete the first stage within five years of admission to the course and / or wants to opt out of the course at this stage.
Completion of only Stage I shall not qualify the candidates for registration as an Architect.

Rule no. 14: OTHER RULES.

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

COURSE STRUCTURE

FIVE YEARS DEGREE COURSE
BACHELOR OF ARCHITECTURE & BACHELOR OF ARCHITECTURE (INTERIOR DESIGN)
And
THREE YEARS DEGREE COURSE - BACHELOR OF BUILDING SCIENCES (Stage I of B.Arch.)

A total of 40 periods per week per term shall be conducted for the course. In addition to the 36 periods specified below, 4 periods per week are given to the institution to orient the course as per their own philosophy. Intensive study as per the institution's philosophy may also be done in addition to the detail syllabus in each subject.

STAGE I

Legend : SV = Sessional & Viva-voce, SS = Sessional.

FIRST YEAR B.ARCH, FIRST YEAR B.ARCH (I.D.), FIRST YEAR B.B.S.

Sr. No.	Subject Code	Name of Subject	Head	Teaching Scheme			Examination Scheme		
				Lecture Periods	Studio Periods	Total Periods	Term I Marks	Term II Marks	Total Marks
1	113421	Basic Design I	SV	1	5	6	150	150	300
2	113422	Architectural Design I	SS	1	5	6	150	150	300
3	113423	Arch. Drg. & Graphics I	SS	1	5	6	100	100	200
4	113424	Bldg. Tech. & Materials I	SV	2	4	6	150	150	300
5	113425	Bldg. Tech. & Materials I	Theory				--	100	100
6	113426	Theory of Structures I	SS	2	2	4	50	50	100
7	113427	Theory of Structures I	Theory				--	100	100
8	113428	H.A. & H.S. I	SS	3	--	3	50	50	100
9	113429	H.A. & H.S. I	Theory				--	100	100
10	113430	Design Fundamentals of Arch I	SS	2	--	2	100	100	200
11	113431	Design Fundamentals of Arch I	Theory				--	100	100
12	113432	Workshop and Model Making	SS	--	3	3	50	50	100
		T O T A L		**12**	**24**	**36**	**800**	**1200**	**2000**

SECOND YEAR B.ARCH, SECOND YEAR B.ARCH (I.D.), SECOND YEAR B.B.S.

Sr. No.	Subject Code	Name of Subject	Head	Teaching Scheme			Examination Scheme		
				Lecture Periods	Studio Periods	Total Periods	Term I Marks	Term II Marks	Total Marks
1	213421	Basic Design II	SS	1	4	5	150	150	300
2	213422	Architectural Design II	SV	2	5	7	150	150	300
3	213423	Arch. Drg. & Graphics II	SS	1	4	5	100	100	200
4	213424	Bldg. Tech. & Materials II	SV	2	4	6	150	150	300
5	213425	Bldg. Tech. & Materials II	Theory				--	100	100
6	213426	Theory of Structures II	SS	2	2	4	50	50	100
7	213427	Theory of Structures II	Theory				--	100	100
8	213428	H.A. & H.S. II	SS	3	--	3	50	50	100
9	213429	H.A. & H.S. II	Theory				--	100	100
10	213430	Building Services I	SS	2	--	2	100	100	200
11	213431	Building Services I	Theory				--	100	100
12	213432	Building Sciences	SS	1	3	4	50	50	100
		T O T A L		**14**	**22**	**36**	**800**	**1200**	**2000**

THIRD YEAR B.ARCH, THIRD YEAR B.ARCH (I.D.), THIRD YEAR B.B.S.

Sr. No.	Subject Code	Name of Subject	Head	Teaching Scheme			Examination Scheme		
				Lecture Periods	Studio Periods	Total Periods	Term I Marks	Term II Marks	Total Marks
1	313421	Architectural Design III	SV	4	6	10	250	250	500
2	313422	Architectural Design III	Theory				--	100	100
3	313423	Bldg. Tech. & Materials III	SV	2	5	7	150	150	300
4	313424	Bldg. Tech. & Materials III	Theory				--	100	100
5	313425	Theory of Structures III	SS	2	1	3	50	50	100
6	313426	Theory of Structures III	Theory				--	100	100
7	313427	Building Services II	SS	2	2	4	100	100	200
8	313428	Building Services II	Theory				--	100	100
9	313429	Landscape Architecture & Environmental Sciences	SS	1	2	3	50	50	100
10	313430	Seminar on Contemporary Arch	SS	2	-	2	50	50	100
11	313431	Working Drawing	SS	2	3	5	100	100	200
12	313432	Technical Communication	SS	1	1	2	50	50	100
		T O T A L		**16**	**20**	**36**	**800**	**1200**	**2000**

STAGE II

Legend : SV = Sessional & Viva-voce, SS = Sessional.

Intensive Study of the subjects of Interior Design for B.Arch (I.D.) shall be carried out additionally under the subjects having heads of SS or SV as per the curriculum framed by the affiliated institution offering the course after the approval of the University.

FOURTH YEAR B.ARCH AND FOURTH YEAR B.ARCH (I.D.)

Sr. No.	Subject Code	Name of Subject	Head	Teaching Scheme			Examination Scheme		
				Lecture Periods	Studio Periods	Total Periods	Term I Marks	Term II Marks	Total Marks
1	413421	Architectural Design II	SV	2	10	12	300	300	600
2	413422	Adv. Bldg. Tech. & Services	SV	2	5	7	150	150	300
3	413423	Design & Tech. Elective	SS	1	1	2	50	50	100
4	413424	Quantity Surveying and Est.	SS	1	3	4	50	50	100
5	413425	Quantity Surveying and Est.	Theory				--	100	100
6	413426	Specification Writing	SS	2	-	2	50	50	100
7	413427	Specification Writing	Theory				--	100	100
8	413428	Town Planning	SS	1	3	4	50	50	100
9	413429	Town Planning	Theory				--	100	100
10	413430	Professional Practice	SS	2	-	2	50	50	100
11	413431	Professional Practice	Theory				--	100	100
12	413432	Dissertation & Architectural Project Part I	SS	1	2	3	100	100	200
		T O T A L		**12**	**24**	**36**	**800**	**1200**	**2000**

FIFTH YEAR B.ARCH AND FIFTH YEAR B.ARCH (I.D.)

Sr. No.	Subject Code	Name of Subject	Head	Teaching Scheme			Examination Scheme		
				Lecture Periods	Studio Periods	Total Periods	Term I Marks	Term II Marks	Total Marks
1	513421	Practical Training	SV	--	--	--	100	--	100
2	513422	Architectural Project Part II	SV	2	10	12	--	400	400
3	513423	Management Elective	SS	1	1	2	--	50	50
4	513424	Allied Elective	SS	1	1	2	--	50	50
		T O T A L		**4**	**12**	**16**	**100**	**500**	**600**

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 Stabiles / 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.

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 : 113422		**ARCHITECTURAL DESIGN I - SS**	
TEACHING SCHEME		**EXAMINATION SCHEME**	
Lecture Periods	1	Paper	nil
Studio Periods	5	Sessional Term I	150
Total Contact Period (Per Week)	6	Sessional Term II	150
		Viva-voce	nil
		Total Marks	300

Term I :

COURSE OBJECTIVES :
Introduction to 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 :
- Analyzing single activity, single space structures its context of form, construction, anthropometrical data, space layout, relationship with surrounding environment etc.
- Analyzing relationship of more than one activity in a building of simple nature and understand the same in context to form, construction, anthropometrical data, space ad furniture layout etc.
- Designing single activity, single spaces e.g. gate cabins, entrance gates, bus shelters, monuments, kiosks, children play areas etc.
- Designing progressively complex spaces and buildings eg. Snack bars, exhibition stalls, weekend cottages, bandstand etc.

SESSIONAL WORK :
Sufficient number of projects to cover the topic.
Stress should be given on three-dimensional study and communicating the design / study through effective two and three-dimensional drawings / sketches and models, rather than words.

REFERENCE MATERIAL
- Elements of Architecture – Meiss Pieree Von
- A pattern Language by Alexander Christopher
- Structure in Architecture – Heller Robert and Salvadori Mario
- Total Architecture Walter Gropius
- Structure in Nature – Strategy for Design – Peter Pearce
- Patterns in Nature – Peter Streens
- Visual Thinking – Am heim Rudolf
- Architecture : Form, Space and order – Francis D. K. Ching
- A.J. Metric Handbook, editors, Jan Bilwa and Leslie Fairweather
- Architectural Graphic standards editor – Boaz Joseph
- Planning – the Architect's handbook by E and O.E.

- Dernst Neufert's Architect's data
- Time saver standards for Architectural Design Data, Editor, John Callender
- Time saver standards for building types, editor joseph D. C. and John Callender.

Term II :

COURSE OBJECTIVES :

Elaborating 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 :

- 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.
- Study of the road and transportation network within the settlement and connectivity with surrounding areas.
- Design project should be related to settlement study carried out.

SESSIONAL WORK :

Sufficient number of projects to cover the topic.
Stress should be given on three-dimensional study and communicating the design / study through effective two and three-dimensional drawings / sketches and models, rather than words.

REFERENCE MATERIAL

- Elements of Architecture – Meiss Pieree Von
- A pattern Language by Alexander Christopher
- Structure in Architecture – Heller Robert and Salvadori Mario
- Total Architecture Walter Gropius.
- Structure in Nature – Strategy for Design – Peter Pearce.
- Patterns in Nature – Peter Streens
- Visual Thinking – Am heim Rudolf
- Architecture : Form, Space and order – Francis D. K. Ching
- A.J. Metric Handbook, editors, Jan Bilwa and Leslie Fairweather
- Architectural Graphic standards editor – Boaz Joseph
- Planning – the Architect's handbook by E and O.E.
- Neufert's Architect's data
- Time saver standards for Architectural Design Data, Editor, John Callender
- Time saver standards for building types, editor Joseph D. C. and John Callender.

SUBJECT CODE : 113423 **ARCHITECTURAL DRAWING AND GRAPHICS I - SS**			
TEACHING SCHEME		**EXAMINATION SCHEME**	
Lecture Periods	1	Paper	nil
Studio Periods	5	Sessional Term I	100 marks
Total Contact Period (Per Week)	6	Sessional Term II	100 marks
		Viva-voce	nil
		Total Marks (Sessional)	200

Term I :

COURSE OBJECTIVES :

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

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 line-continuity. 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.

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 – Friendrich 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).

(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.

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

- 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.

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 intertia 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.

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 indeterminancy.
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

4) Elements of special attributes like column, styles, gateways, pillars, statues, heiroglyphic,& 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 Releif works in ceramics
Column Style

4. Greek & Agean, Mycanean, Cretan Civilizations

1) General Architectural Character of Agean, Cretan, & Mycanean 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, Aquqduct, Thermae,
3) Elements of Special Attribute
Roman Column Orders, Roman Contruction Technology,
Masonary Types

2) Mayan, Inca, Mexican Civilisation

1) General Architectural Character with description

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 Jellico: 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 Achitecture
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.

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 – Pramar
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 – Pramar
3. Architecture : Form, Space and order – Francis D. K. Ching
4.

SUBJECT CODE : 113432		**WORKSHOP AND MODEL MAKING - SS**	
TEACHING SCHEME		**EXAMINATION SCHEME**	
Lecture Periods	-	Paper	nil
Studio Periods	3	Sessional Term I	50 marks
Total Contact Periods (Per Week)	3	Sessional Term II	50 marks
		Viva-voce	nil
		Total Marks (Sessional)	100

COURSE OBJECTIVES :
To elaborate upon the importance of model making.
To acquire the skill in constructing three dimensional forms using different model making materials and equipment, using different scale.
To develop dexterity of hand in manipulation of different materials.
Introduction to materials used for model making.
Use of instruments and adhesives required for model making.

COURSE OUTLINE:

TERM-I

- Introduction to various materials used for model making.
- Use of various instruments required for model making.
- Use of various adhesives and joining techniques.
- Importance of appropriate use of colors in model making and methods of coloring the models.
- 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.

TERM-II

- Study and preparation of model of a complete built structure.
- Elementary joinery in wood and plywood.
- Working with metal sheets, wires, etc.
- Tools used for stone and brick masonry and surface covering.
- Models of Interior Spaces.

It is recommended that the similar assignments of model making as required in Subjects of Architectural Design, Building Construction & Materials, Basic Design may be coordinated as a part of Workshop Studio instead of repeating models on the same topics.

SESSIONAL WORK:

Sufficient number of projects to cover the topics mentioned above should be worked in class.

RECOMMENDED READINGS

- New Origami Arts.
- Model building for Architects & Engineers by John Taylor.
- Architectural Models by Rolf Janke.

DETAIL SYLLABUS

FOR

SECOND YEAR

BACHELOR OF ARCHITECTURE

(Second Year B.Arch.)

(to be implemented from 2009-10)

FACULTY OF ENGINEERING

BOARD OF STUDIES IN ARCHITECTURE

SECOND YEAR B.ARCH

Sr. No.	Name of Subject	Teaching Scheme			Examination Scheme		
		Lecture Periods	Studio Periods	Total Periods	Paper Marks	Sessional Marks	Total Marks
1	Basic Design II	1	4	5	--	300	300
2	Architectural Design II	2	5	7	--	300	300
3	Arch. Drg. & Graphics II	1	4	5	--	200	200
4	Bldg. Tech. & Materials II	2	4	6	100	300	400
5	Theory of Structures II	2	2	4	100	100	200
6	H.A. & H.S. II	2	1	3	100	100	200
7	Building Services I	1	1	2	100	200	300
8	Building Sciences	1	3	4	--	100	100
	TOTAL	**12**	**24**	**36**	**400**	**1200**	**2000**

UNIVERSITY OF PUNE.

SECOND YEAR B.ARCH.

BASIC DESIGN-II (sessional)			
Teaching Scheme		**Examination Scheme**	
		Paper	nil
Lecture Periods	1per week.	Sessional (Internal)	75 marks per term Total-150 marks
Studio Periods	4 per week.	Sessional (External)	75 marks per term Total-150 marks
Total Periods	5 per week.	Viva-Voce	nil
		Total Marks for two terms.	300 marks

OBJECTIVES :

This subject aims to provide the students with a sound background in design skills by treating Design as a basic creative activity. It focuses on improving creativity through practicing certain established methods & exercises in creativity and tries to draw inspiration from and establish analogies between other creative arts and architecture.

COURSE OUTLINE :

1. Creation, Creativity and Motivation for architects
2. Psychological qualities, skills & behavior for creativity
3. Role of Experience and Memory in Design
4. Role of Fantasy, Imagination and Reality in Design
5. Blocks to Creativity : Physical and Mental
6. Techniques for improving Creativity :
   - a. Brainstorming
   - b. Lateral Thinking
   - c. List of Mental Associations
   - d. Random Combinations
   - e. Matrix of Ideas
   - f. Use of Manipulative verbs
   - g. Tree of Possibilities
   - h. Abstraction
   - i. Transformation
   - j. Use of the Ridiculous
7. Sources of Inspiration for Architectural Creativity :
   - a. Material
   - b. Geometry
   - c. History
   - d. Nature & Climate
   - e. Mimesis
   - f. Paradox & Exotic & Multicultural
   - g. Association with other arts
   - h. Architectural Biographies

SESSIONAL WORK

Sufficient number of projects should be undertaken to cover the topics. The nature of projects would vary to suit the topics. Documentation of these exercises will be done in A3 size portfolio.
Topics 1 to 5 will carry 15% of total marks, topics 6a to 6j will carry 35% of total marks and topics 7a to 7h will carry 50% of total marks. The institutes may take up any 7 topics from 6a to 6j and any 6 topics from 7a to 7h.

REFERENCE BOOKS

1. Graphic Thinking for Architects and Planners by Paul Lassau
2. Poetics in Architecture : Theory of Design by Anthony Antoniadis
3. Architecture : Form Space and Order – Francis D. K. Ching
4. Interior Spaces : Francis D K. Ching
5. Pattern Language – Christopher Alexander
6. Sharpen your team skills & creativity – British Council Library
7. Design of Cities – British Council Library
8. Looking and Seeing Series – British Council Library
9. How architects visualize – SCOA library
10. Art, Architecture Parallels & Connections – SCOA library
11. Design Source Book – BNCA library

TEACHING PLAN

Total Number of projects should be between 12 to 15 in a year (3 to 4 Nos. in topics 1 to 5, and 4 to 6 Nos. in topics 6 and 7 each.)

NATURE OF PROJECTS

Topic numbers 1 to 5 could be in the form of lectures to introduce the subject to the students. They must be documented in form of notes and sketches but may or may not be supported by exercises.

Whereas topic number 6 and 7 should be in the form of exercises followed by documentation in A3 size sheets. The nature of exercises will vary from topic to topic and will be oriented towards exploration of the topic by the students Preferably, the analogy or application of each topic towards architecture is to be made explicit.

ARCHITECTURAL DESIGN-II (sessional and viva)			
Teaching Scheme		**Examination Scheme**	
		Paper	nil
Lecture Periods	2 per week.	Sessional (Internal)	50 marks per term Total-100 marks
Studio Periods	5 per week.	Sessional (External)	50 marks per term Total-100 marks
Total Periods	7 per week.	Viva-Voce	50 marks per term Total-100 marks
		Total Marks for two terms.	300 marks

AIM :

To introduce the students to the various approaches to design process and to impart understanding of various design parameters related to climatic sustainability and seismic resistance along with functional, aesthetic and structural aspects.

TERM-I

Objectives:

1. Introduction of Architectural spaces for multiple activities.
2. Application of climatic consideration as strategic design parameter with respect to human comfort and energy consumption.
3. Introduction to various design process like binary, cyclic, intuitive etc and the importance of literature and case studies in the design process.

Course Outline:

1. Problem seeking and solving within the framework of the design program requirements, inter-relation of spaces, response to climatic parameters etc by means of cyclic and binary design process.
2. Imbibe understanding of built and open spaces by means of rational analysis and intuitive perception.
3. Locating and documenting required contextual information from appropriate sources.
4. Introduction to the application of various tools used for design process such as use of grid, regulating lines, modules etc.

Sessional work:

Sufficient number of projects to be given as assignments to cover the course. Emphasis should be given on the 3-dimensional studies through sketches, study models etc. at various stages of design process. Written description about design should be encouraged as an activity to initiate and sustain a logical and rational thought process for the same.

Teaching plan:

1. At least one project to study, analyze and compare a private residential unit and a small building of public use with respect to the spaces, their inter-relation, scale, ambience, Technology and material for construction, details of doors windows etc..

2 Two projects of six weeks duration for design of building for residential use and small facility of public use. Elements of site planning should be introduced and incorporated in the layout.

3. One Project of one week duration for design of specialized indoor or outdoor space.

Sessional Assesment :

1. 15% of the total marks to be allotted for the study and analysis of the architectural spaces.
2. Out of the remaining 85% marks for the Architectural design proposals, the break-up of marks should be as follows:
    - 20% marks to be allotted for evolving a rational for design.
    - 50% marks to be allotted for development of concept into a workable design
    - 10% marks to be allotted for awareness of climatic design parameters and their application.
    - 20% marks to be allotted for proficiency in Graphical and verbal communication skills (Drawings, models, sketches, and verbal explanation skills etc.)

Term-II

Objectives:

1. Understanding of the co-relation of ***visual aesthetics*** study of basic design exercises with architectural building forms and spaces.
2. Application of climatic design parameter with reference to human comfort and energy conservation..
3. Understanding of the context for the design proposals.
4. Introduction and application of planning approaches for site planning and layout of multi-building campus on level and sloping site.
5. Application of the design parameters for earthquake resistant structures of load bearing building construction systems

Course Outline:

1. Concept development of a given design program on the basis of the basic design principles using various tools like sketches and models and by means of using cyclic and binary design process.
2. Application of layout principles for an architectural development having more than one building.
3. Detailing the basic services(water supply & drainage) and the structural system for their design proposals with specific emphasis on seismic resistant load bearing structures.
4. contextual architectural proposal by studying a settlement and working on a architectural program in that settlement.

Sessional work:

Sufficient number of projects to be given as assignments to cover the course. Emphasis should be given on the 3-dimensional studies through sketches, study models etc. at various stages of design process. Written description about design should be encouraged as an activity to initiate and sustain a logical and rational thought process for the same.

Teaching plan:

1. One project of studying a settlement having primary, secondary and tertiary occupational activities and population between 25,000 to 50,000 persons, by means of surveys and analysis.

2 One to two projects of six to eight weeks duration for design of buildings of varied typology. At-least one project should be based on the settlement studies. Principles of layout should be introduced and incorporated in the layout. Interior furniture layout should be worked out for the proposal.

3. One Project of generating working drawing for their design proposal.

4. One project of detailing the provision of basic services (water supply and drainage) for their design proposal.

Sessional Assesment :

1. 15% of the total marks to be allotted for the study and analysis of the settlement.

2. 20% of the total marks to be allotted for the generation of working drawing and services layout.
3. Out of the remaining 65% marks for the Architectural design proposals, the break-up of marks should be as follows:
    - 30% marks to be allotted for evolving a rational for design.
    - 60% marks to be allotted for development of concept into a workable design.
    - 10% marks to be allotted for proficiency in Graphical and communication skills (Drawings, models, sketches, etc.)

Recommended Reading :

- Francis D.K.Ching -Architecture: form space and order
- Paul Lassau -Graphic thinking for Architects and planners
- Anthony Antoniadis -Poetics in Architecture: Theory of design
- A.P. Kanvinde- Campus Planning in India
- Le Corbusier- The Modular.
- Le Corbusier- Towards the new Architecture.
- Watson Donald and Labs Kenneth. -Climatis Design
- John R. Mather -Climatology: Fundamentals and Application
- Maxwell Fry And Jane Drew -Tropical Architecture
- Christopher Alexander- Pattern Language
- Pierre Von Meiss -Elements of Architecture from form to place
- Jonathan A. Hale -Building Ideas. An introduction to Architectural Theory.
- Robert Sommer. -Design Awareness
- C.M. Deasy -Design for Human Affairs

Architectural Drawing And Graphics II (sessional)			
Teaching Scheme		**Examination Scheme**	
		Paper	nil
Lecture Periods	1 per week.	Sessional (Internal)	50 marks per term Total-100 marks
Studio Periods	4 per week.	Sessional (External)	50 marks per term Total-100 marks
Total Periods	5 per week.	Viva-Voce	nil
		Total Marks for two terms.	200 marks

Objectives:

To understand and practice the application of the various techniques of perspective, sciography, CAD and advanced presentations in Architectural Design.

Course outline: **Term One**

UNIT I: **Perspective Drawing:** The topic of perspective drawing will consist of drawing exercises on :

- Understanding the application of principles of perspective drawing.
- Drawing perspective views by one point and two point perspective methods.
- Perspective by measuring point method.

- Perspective views of interior designs by projection / measuring point method.

UNIT II: **Sciography:** The topic of sciography drawing will consists of drawing exercises on

- Principles of shades and shadows.
- Drawing shades and shadows of lines, planes, solids and architectural features in plan, elevations and isometric view
- Shades and shadows of typical building on plan, elevation and perspective.

Term Two

UNIT III Presentation Drawings:

Complete presentation drawings of architectural design project with plans, elevations, sections and perspective views of building by any method of drawing perspectives showing landscape, human figures, accessories and street furniture etc.

UNIT IV CAD

All commands in latest version of CAD software in 2D and application to prepare sketch, presentation and working drawings.

Assignments for sessional work:

A) Adequate number of drawings covering all aspects mentioned in course outline.
B) A complete presentation including concept sheet, site plan with landscape design, all floor plans, four elevations and appropriate number of sections, part sections and strip sections to explain the building design.
C) A3 size sketch book with interior and exterior sketches of individual buildings, building complex, streetscapes, vehicles, street furniture and human figures.

Teaching Plan

Term One

1) Perspective drawings:
The topic of perspective drawing will consists of drawing exercises on

- Principles of perspective and terminology
- One point perspective
- Two point perspective
- Measuring point method
- Exterior views of Architectural Design projects
- Interior views of Architectural Design projects
  [Approximately 9 sheets]

2) Sciography:
The topic of sciography drawing will consists of drawing exercises on

- Principles of shades and shadows

- Drawing shades and shadows of point, line, plane, solids and building elements in plan, elevation and isometric
- Drawing shades and shadows in site plan, elevations and perspectives of Architectural Design project
  [Approximately 10 sheets]

Term Two

3) Presentation drawings:

The submission program will include plan, elevations, sections, exterior and interior perspective [*drawn by any method mentioned above in teaching plan for Perspective Drawings*] drawings of Architectural Design project of second year B. Arch.

4) CAD drawings:

CAD submission will consist of one set of detail drawings of first Architectural Design project of the First Semester including all floor plans, sections, toilet details, staircase, doors and window details.

Sketching:

Submission program will consist A3 size sketch book with individual sketches prepared of building elements, street furniture, landscape elements, Architectural Design settlement study project and study tour.

SESSIONAL ASSESSMENT:

This subject has been allotted 100 marks for sessional work of each term out of which 50 marks have been allotted for Internal and 50 marks for External Marking totaling 200 marks for Term I and Term II together..

Recommended readings:

1	Architectural graphics:	C. Leslie Martin
2	Perspective for Architects:	Themes and Hudson
3	Perspective and Sciography:	Shankar Mulik
4	Mastering AutoCAD:	George Omura
5	Interior design:	Ahmed Kasu

Building Technology and Materials II (Paper, Sessional and viva)

Teaching Scheme		**Examination Scheme**	
		Paper	100 marks at the end of term II
Lecture Periods	2 per week.	Sessional (Internal)	50 marks per term Total-100 marks
Studio Periods	4 per week.	Sessional (External)	50 marks per term Total-100 marks
Total Periods	6 per week.	Viva-Voce	50 marks per term Total-100 marks
		Total Marks for two terms.	100 marks (Paper) 300 marks (Sessional + viva)

OBJECTIVES:

- To introduce students to the structural principles of load bearing construction, with due importance to earthquake resistance, and with thorough knowledge of methodology and material used for such a construction
- To introduce students to the structural principles of RCC frame construction, with due importance to earthquake resistance, and basic knowledge of ferro-crete construction, along with study of reinforcement steel
- To study about composite type of construction with timber truss roof, structures of temporary nature, and masonry vaults and domes
- To study more about doors, windows, different types of fencing materials, gates and their use in construction
- To study different building materials such as reinforced cement concrete, structural steel, sheet roof coverings, different mortars and pointing & plastering techniques, different flooring materials, along with special construction details for timber flooring

C O U R S E O U T L I N E :

TERM-I

UNIT-1: SOIL & FOUNDATION

1.1: Different types of soils and their baring capacities.
1.2: Concept of bulb of pressure and its significance for site investigation
1.3: Different types of foundations, shallow & deep foundation, foundation for continuous and point load (foundation for load-bearing and frame structure), including eccentric and cantilever footing, foundation on sloping site, along with causes of failure of foundation.
1.4: Introduction to relevance of soil mechanics in foundation design, along with necessity of combined footings at certain places
1.5: Timbering and strutting for different types of soils.

UNIT-2: LOAD BEARING CONSTRUCTION

2.1: Basic fundamentals and principles of load bearing construction for medium-rise structures
2.2: Thumb rules for load bearing construction, with respect to thickness of superstructure and foundation wall, strengthening of walls, location & spanning of openings etc., along with earthquake resistant methods and norms *ASSIGNMENT-1*
2.3: Use of different materials for load bearing construction including brick, stone and stabilised mud block
2.4: Study of manufacturing of solid and hollow concrete blocks, and load-bearing construction with concrete blocks *ASSIGNMENT-2*
2.5: Masonry vaults and domes in brick, stone and stabilised mud block

UNIT-3: DAMP- & WATER-PROOFING

3.1: Causes of dampness and reasons for damp- & water-proofing
3.2: Different methods or treatments of damp- & water-proofing
3.3: Different materials, rigid and flexible, used in damp-proofing, including brick on edge, rough Shahabad stone, bitumen sheets, plastic sheets and other proprietary materials
3.4: Cavity wall construction

UNIT-4: T.W. DOORS WITH M.S. SAFETY DOOR

4.1: Framed and panelled t.w. doors along with revision of solid-core and hollow-core flush doors, with wooden and pressed steel box section door frame
4.2: Double-leaf partially glazed and partially panelled t.w. door, with m.s. grill safety door for the same, to understand fixing and working of two doors together. *ASSIGNMENT-3*

UNIT-5: T.W. WINDOWS

5.1: Principles for selection and application of different types of wooden windows, along with introduction to bay windows.
5.1: Framed and panelled t.w. windows.
5.3: Typical glazed t.w. casement window with movable and fixed shutters and ventilators, along with fixed / movable, glazed / wooden louvers. *ASSIGNMENT-4*

UNIT-6: T.W. ROOF

6.1: Introduction to timber roof truss.
6.2: King-post & Queen-post roof truss, with line diagram of trusses and forces in members
6.3: Built-up and Composite roof truss *ASSIGNMENT-5*
6.4: Study of different sheet roof covering material viz. asbestos cement, galvanised iron, aluminium, asphaltic, fibreglass reinforced plastic, polycarbonate and other, along with fixing details.

UNIT-7: SPECIAL CONSTRUCTION

7.1: Purpose of providing specialised timber flooring
7.2: Specialised timber flooring for dance hall, sports hall, gymnasium etc.
7.3: Study of available market forms of timber flooring along with parquet flooring details.

TERM-II

UNIT-8: REINFORCED CEMENT CONCRETE CONSTRUCTION

8.1: Introduction to concrete as a material
8.2: Study of its ingredients viz. binding material, fine aggregate, coarse aggregate and water in detail, along with storage of materials on site, understanding good quality material and field & lab tests involved

8.3: Reinforcement steel and steel-mesh reinforcement, along with role of reinforcement in RCC

8.4: Reinforced concrete construction process with mixing of concrete, transportation, formwork, laying of reinforcement, casting, de-shuttering, curing and further construction to follow

8.5: RCC frame structure for smaller spans generally applicable to residential structures, along with earthquake resistant conditions and norms, reference of a RCC drawing and concerned site-visit required for study of elements of RCC frame structure.

R.C.C structural details up to plinth .. viz. footings, columns, external and internal plinth beams, with plinth formation, with details for toilet block *ASSIGNMENT-6*

R.C.C floor slab details ..viz. one-way, two-way and cantilever slabs, column-beam-slab junction, with details for toilet block, also lintel & weather-shed *ASSIGNMENT-7*

8.6: Introduction to ferro-crete as a material and construction method

UNIT-9: STRUCTURAL STEEL

9.1: Introduction to Structural steel as a material in frame construction

9.2: Market forms of steel, with reference to Indian Standard Sections

9.3: Appropriate use of sections in construction.

9.4 Use of structural steel for small shed such as cafeteria, godown, factory shed shall be studied for spans up to 10 mts .using roofing sheets. *Assignment 8.*

UNIT-10: M.S. WINDOWS AND DOORS.

10.1: M.S. doors such as collapsible gates and rolling shutters..

10.2: Other modern steel gates for residential and commercial purpose, and automation / modern technology involved

10.3: Steel-framed glazed window using Z-section and pressed steel box frame or wooden frame. *Assignment-9*

UNIT-12: COMPOUND WALL , FENCING AND M.S GATES.

12.1: Compound walls in brick, stone, c.c. blocks, concrete grills or other pre cast elements

12.2: Fencing using different materials like wood, bamboo, steel, barbed wire, chain-link, weld-mesh and other available materials in market

12.3: Details of construction / erection of compound wall fencing and suitable gate for an open plot, with due consideration to design parameters

The above information will be collected by the students/group of students and one drawing shall be prepared showing typical fencing and m.s gate details. Assignment10

UNIT-13: TEMPORARY STRUCTURES

13.1: Understanding requirements of temporary structures

13.2: Study of locally available materials and simple method of construction for these structures through case studies

13.3: Temporary structures viz. cow-shed, onion store, grain store, contractor's site office, exhibition *pandal* or any other multipurpose shed ***.....Notes and sketches.***

UNIT-14: CEMENT MORTAR, PLASTERING & POINTING

14.1: Cement mortar and various additives & admixtures
14.2: Cement lime mortar, and other types of traditional mortars
14.3: Pointing and finishing techniques for exposed masonry work
14.4: Plastering including internal plaster finishes viz. neeru-finish plaster, texture plaster & other proprietary types, and external plaster finishes viz. sand-faced plaster, rough-cast plaster, pebble-dash plaster, grit plaster & other proprietary types

UNIT-16: FLOORING AND PAVING

15.1: Different flooring & paving materials
15.2: Different flooring & paving types that are cast-in-situ viz. Mud flooring, Brick flooring, Indian Patent Stone finish, Terrazzo flooring etc. and readymade tiles available in market viz. natural stone tiles / slabs, plain & mosaic cement tiles / blocks, ceramic tiles, vitrified tiles and other modern materials, including the process of providing or laying the flooring or pavement
15.3: Floor finishes of various materials viz. carpet, linoleum, rubber, PVC etc.

RECOMMENDED READING:

To understand basic, fundamental principles in construction, following books are recommended:

1. 'Elements of Structure' by Morgan
2. 'Structure in Architecture' by Salvadori

To study standard building construction:

1. 'Building Construction' by Mackay W. B., Vol. 1 – 4
2. 'Building Construction' by Barry, Vol. 1 – 5
3. 'Construction Technology' by Chudley, Vol. 1 – 6
4. 'Building construction Illustrated' by Ching Francis D. K.
5. 'Elementary Building Construction' by Michell
6. 'Structure and Fabric' by Everet

To study building materials:

1. 'Engineering Materials' by Chaudhary
2. 'Building Construction Materials' by M. V. Naik
3. 'Civil Engineers' Handbook' by Khanna
4. 'Vastu Rachan' by Y. S. Sane

5. National Building Code and I.S.I. Specifications
6. 'Materials and Finishes' by Everet
7. 'A to Z Building Materials in Architecture' by Hornbostle

TEACHING PLAN:

The subject of Building Technology and Materials shall be covered by teaching the fundamental principles and its application in actual construction by conducting sufficient number of site visits and practical at the construction yard. The sessional assignments shall consist of library research, preparing adequate number of drawings based on classroom lectures, market survey and actual visits to the site. Assignments can also be done in groups like models etc.

While setting the assignments care shall be taken to link this subject with other subjects especially Architectural Design and not learn in isolation.

Assignments will be set only for certain topics as specified in the above-mentioned sub-units.

The learning process should give students more exposure to the on-site training, at the same time developing the skills in drafting, sketching and innovative use of computers in preparing 3D animations etc. and use of simple software such as sketch up etc. so as to understand the teaching principles thoroughly.

SESSONAL ASSESSMENT:

Sessional work will carry 150 marks per term, out of which 50 marks are reserved for internal assessment, 50 marks for external assessment and a joint viva-voce will be conducted and both the examiners will give marks out of 50 for the viva examination.

THEORY OF STRUCTURES II (Paper and Sessional)			
Teaching Scheme		**Examination Scheme**	
		Paper	100 marks at the end of term II
Lecture Periods	2 per week.	Sessional (Internal)	25marks per term Total-50 marks
Studio Periods	2 per week.	Sessional (External)	25 marks per term Total-50 marks
Total Periods	4 per week.	Viva-Voce	nil
		Total Marks for two terms.	100 marks (Paper) 100 marks (Sessional)

OBJECTIVES :

1. To understand concept of load bearing and framed construction.
2. To understand the behavior of various structural elements in load bearing and simple framed construction.

COURES OUTLINE :

Unit I : Introduction to principles of load bearing construction and introduction to arches.

Unit II : Analysis and designed of simple beams in timber, steel and introduction to fletched beams (No. calculations).

Unit III : Detailed Analysis of fixed beams, introduction of short and long columns.(No calculation)

Unit IV : I.S. provision for load bearing ,R.C.C. and Reinforced Brick Construction.

Unit V : R.C.C. Analysis and Design.

Unit VI : Design of steel structure with connections.

Note : While teaching the subject of Theory of Structures Limit State Method shall be adopted instead of Working Stress Method.

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 – Salvadon and Heller.
6. Structure Decisions – F. Rosenthal.

TEACHING PLAN :

1. Introduction to principle of Load bearing construction with relevant clauses from I.S. Code.
2. Study of two hinged and fixed arches. (Without numerical).

HISTORY OF ARCHITECTURE & HUMAN SETTLEMENTS II (Paper and Sessional)

Teaching Scheme		**Examination Scheme**	
		Paper	100 marks at the end of term II
Lecture Periods	2 per week.	Sessional (Internal)	25marks per term Total-50 marks
Studio Periods	1 per week.	Sessional (External)	25 marks per term Total-50 marks
Total Periods	3 per week.	Viva-Voce	nil
		Total Marks for two terms.	100 marks (Paper) 100 marks (Sessional)

- **COURSE OBJECTIVES:**

Architectural History is the manifestation of the socio-cultural, intellectual and other factors of the specific time, space and people. It is necessary for students to develop interest in understanding styles, buildings, construction, and special attributing features in those contexts.

- **COURSE OUTLINE:**

The study includes the progressive developments of the requirements, architectural character and technological advancements of each period / style. The analytical study must include examples and sketches with highlighting the relevant features.

• Term I

1. **Early Christian Architecture:**
    - Transitional socio-cultural, political and other factors.
    - Basilican church typology: planning, construction and other features.
    - Relevant examples for analytical studies.
2. **Byzantine Architecture:**
    - Influence of socio-political, geo-cultural and other factors.
    - Centralized church typology: Spatial planning, construction and other features.
    - Relevant examples for analytical studies.
3. **Romanesque Architecture:**
    - Influence of Early Medieval socio-political, cultural and other factors.
    - Church and the precinct: Architectural planning, constructional and other features.
    - Elements of special attributes: Campanile, raking arcade, wall-passage, triforium

    Relevant examples for analytical studies.

4. **Gothic architecture:**
    - Influence of Late Medieval socio-cultural and other factors.
    - Cathedrals, Monastic establishments, Parish churches: spatial planning, construction and other architectural and structural features.
    - English and French church planning.
    - Secular architecture: Manor houses, castles.
    - Town planning principles.
    - Elements of special attributes: flying buttress, window tracery, stained glass.

    Relevant examples for analytical studies.

5. **Renaissance Architecture:**
    - Influence of socio-cultural and other factors.
    - Revivalism and synthesis of classical features.
    - Churches, Palazzo, villa: spatial planning, construction and other architectural features.
    - Elements of special attributes: Order, Balustrade, Cornice, rustication
    - Town Planning principles.
    - Post Renaissance: Baroque architecture.
    - Relevant examples for analytical studies.

Sessional Work

The Sessional work shall comprise of individual work of the student completed under the guidance and supervision of the subject teacher as follows:

1. **Journal**: Hand written journal with notes and manually drawn sketches of relevant examples on the above mentioned syllabus contents: **30 marks**
2. **Project work**: a report or graphical representation or a model of any relevant topic from the above mentioned syllabus contents**: 20 marks**

Term II

1. **Indus Valley Civilisation:**
    - Influence of socio-political and geo-climatic aspects.
    - Dwellings and Public Buildings: Architectural character, constructional features.
    - Town planning principles.

    Relevant examples for analytical studies

2. **Vedic Civilisation:**
    - Influence of socio-political and geo-climatic aspects.
    - Architectural and constructional features.
    - Town planning principles.

    Relevant examples for analytical studies.

3. **Buddhist Architecture:**
    - Influence of socio-cultural aspects.
    - Rock-cut architecture: Hinayana and Mahayana periods.
    - Stupa, Chaitya, Vihara: spatial planning, architectural features.
    - Elements of special attributes: free-standing pillars, railing, torana.

    Relevant examples for analytical studies.

4. **Hindu Architecture:**
    - Temples: spatial arrangements, construction, ornamentation.
    - Elements of special attributes: columns, shikharas.
    - Temple complex.
    - Following styles to be studied with relevant examples:

    a. Gupta Period.
    b. Indo-Aryan / Nagara School: Khajuraho, Orissa school.
    c. Dravidian School: Early Chalukyan, Rashtrakuta, Late Chalukyan.
    d. Deccan Styles: Pallava, Chola, Pandya, Vijaynara, Madura.
    e.

5. **Jain Architecture:**
    - Chaumukh temple, Temple town.

6. **Indo-Islamic Architecture:**
    - Socio-political influence.
    - Building Types: Mosques, Tombs.
    - Architectural character: Spatial arrangements, structural system, constructional features, surface ornamentations, fenestration details.
    - Elements of special attributes: arch, dome.
    - Following styles to be studied with relevant examples:

    b. Delhi-Sultanate / Pathan Imperial.
    c. Pathan Provincial: Gujrat, Deccan.
    d. Mughal.
    e. Post-Mughal: Maratha architecture: forts, temples, wada.

Sessional Work

The Sessional work shall comprise of individual work of the student completed under the guidance and supervision of the subject teacher as follows:

1. **Journal:** Hand written journal with notes and manually drawn sketches of relevant examples on the above mentioned syllabus contents: **30 marks.**
2. **Project work**: a report or graphical representation or a model of any relevant topic from the above mentioned syllabus contents: **20 marks.**

- **Recommended Readings:**

1. A 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.

BUILDING SERVICES I (Paper and Sessional)

Teaching Scheme		**Examination Scheme**	
		Paper	100 marks at the end of term II
Lecture Periods	1 per week.	Sessional (Internal)	25marks per term Total-50 marks
Studio Periods	1 per week.	Sessional (External)	25 marks per term Total-50 marks
Total Periods	2 per week.	Viva-Voce	nil
		Total Marks for two terms.	100 marks (Paper) 100 marks (Sessional)

AIM : To introduce students to the concepts of water supply, sanitation, electrification and equip them in its application to architectural design, so as to create hygienic and comfortable living conditions.

COURSE OBJECTIVES

a. To introduce students to concepts of basic services and its applications.
b. To equip students with the required information and technologies.
c. Application of this knowledge in architectural design project.
d. Evolving understanding in students to choose appropriate systems and integrate the same in their design projects.

TERM 1

COURSE OUTLINE.

- Introduction to sources of water. Elements of public water systems, quality of water, pumping and transportation of water, distribution systems, components of water supply network in a building premise, ferrule, water meter, stop cocks, bib cocks and pipe appurtenances. Overhead and underground reservoirs.
- Connections for hot and cold water distribution systems in a building premise, their layouts, fittings, joints, materials and valves. Direct and indirect systems of hot water supply. Solar heating methods. Special installations in multistoried buildings. Types of fixtures and materials.
- Rain water harvesting methods.
- Conditions of flow in building drainage pipes. traps, vents and their material specifications. Design of drainage and vent system for low, medium and high rise buildings. Design of storm water drainage, building drains, sewers, gully traps, inspection chambers, manholes, connection to public sewer.
- Waste water disposal systems, septic tanks, soak pits, on site processing and disposal methods.
- Collection, removal and disposal of solid waste from building premise.

TEACHING PLAN

Unit 1 Water Supply

a. Tapping of water.
b. Storage and distribution of water in premises.
c. Pipes, piping network, specials, materials, joinery, installation of network both open and concealed.
d. All appurtenances required for installations e.g. taps, faucets, mixing units, valves, flushing cisterns, flushing valves and other fittings.

Unit 2: Hot water supply.

a. Direct and indirect systems of hot water supply, their components and equipments used for the same.
b. Insulation of piping work and safety devices.
c. Solar heating.

Unit 3: Drainage and sanitation.

a. Study of sanitary fittings with reference to use, materials and functions.
b. Traps and their uses. Classification of traps as per use and shape.
c. Pipes and piping systems, specials, vent and anti-siphonage systems, jointing and installations.
d. Storm water and roof drainage systems and their installations.
e. Underground drainage systems with application of ventilation, self cleansing velocity, laying of drains to required gradients and testing of drains.
f. Disposal of sewage within the premises using septic tanks, effluent treatment plants, their function and layouts.

Unit 4: Solid Waste disposal

a. Collection, treatment and disposal of organic and inorganic waste, like traditional methods, garbage chutes, urban solid waste treatment systems, vermicomposting etc.

SESSIONAL ASSIGNMENT

Assignments shall consists of

1. Designing of toilet blocks in residential and public buildings and preparation of working drawings of the same, showing complete details of fittings and plumbing required for water supply and drainage.
2. Designing and preparing a complete water supply and drainage layout of an academic architectural design project, with all required calculations.
3. Compiling of required information collected from site visits, market surveys and other sources.

SESSIONAL ASSESMENT

1. 40% marks will be allotted for compilation of literature, brochures, material/product specifications, market surveys etc. As per assignment no.3 above.
2. 60% marks shall be allotted for service layout, with details. As per assignment nos. 1&2 above

TERM- II

COURSE OUTLINE

- Introducing students to different illumination systems; light sources; daylight; incandescent; fluorescent; arc lamps and lasers; luminaries; wiring; switches and control circuits.
- Laws of illumination; illumination from point, line and surface sources. Environment and glare, general illumination design; interior lighting- industrial, office, residential, commercial etc; exterior lighting- flood, street, transport, lighting for displays, neon signs, LED-LCD display beacons.
- Layout of different meters and protection units. Different type of electrical loads and hazard prevention . Selection of cable/wire sizes; emergency supply-stand by and UPS.

TEACHING PLAN

Unit 5: Lighting

a. Indoor lighting- natural and artificial.
b. Systems of lighting such as direct, indirect, diffused.
c. Applications of lighting systems with reference to levels of illumination for various uses and lumen method calculations.
d. Light fittings/ luminaries-All types of energy efficient lamps, optic fiber, led etc.

Unit 6: Electrification

a) Introduction to generation and distribution of electric power in urban areas, substations for small schemes in industrial units.
b) Electrical system installations in a building from the supply mains to individual outlet points, including meter board, distribution board and layout of points with load calculations.
c) Electrical wiring systems for small and large installations including different material specification.
d) Electrical control and safety devices- switches, fuse, circuit breakers, earthing, lightning conductors etc.

SESSIONAL ASSIGNMENT

Assignments shall consists of

a. Preparing an electrical layout for part of design project, with load calculations. .

b. Compiling of required information collected from site visits, market surveys and finding out latest trends and materials for the same.

SESSIONAL ASSESMENT

1. 40% marks will be allotted for compilation of literature, brochures, material/product specifications, market surveys etc.
2. 60% marks shall be allotted for service layout, with details.

- **RECOMMENDED READING**
  a. Johnson A- Plumbing
  b. Mitchell-Sanitation, Drainage, and Water Supply
  c. Peter Burberry-Environment and Services
  d. E.H.Blake-Drainage and Sanitation
  e. Kshirsagar-Water Supply and Sanitation Engineering
  f. Woolley Leslie-Drainage Details
  g. National Building Code 2005

BUILDING SCIENCES (Sessional)			
Teaching Scheme		**Examination Scheme**	
		Paper	nil
Lecture Periods	1 per week.	Sessional (Internal)	25marks per term Total-50 marks
Studio Periods	3 per week.	Sessional (External)	25 marks per term Total-50 marks
Total Periods	4 per week.	Viva-Voce	nil
		Total Marks for two terms.	100 marks (Sessional)

TERM 1 : CLIMATOLOGY

AIM :

To help students understand the methods of passive climatic control of the surrounding and energy efficiency in habitable spaces and integrating this in their architectural design process.

COURSE OBJECTIVES

- To understand the different climatic zones of world and evolution of traditional architecture in response to the same.
- To enable the students to read and interpret climatological data of the different climatic zones.
- Role of site planning and orientation in their architectural design.
- The role of landscape elements and paved areas in site planning and its impact on microclimate.
- Role played by building elements such as shading devices, fenestrations and its application to achieve comfort in building.

COURSE OUTLINE

Introduction to Climatology: To make application of climatology an integral part of their design. To make students aware of solar passive strategies, the principles of daylight and natural ventilation. To introduce ECBC rules and concept of green buildings.

OBJECTIVE:

To help students understand the use of surrounding environment as a strategic design parameter with respect to human comfort and energy conservation.

UNIT-1

a) Introduction to climate as a factor of human shelter, comfort and environment.
b) Its classification as global, macro and micro climate. Preparation of sketches showing earth-sun relationship and atmospheric depletion.
c) Understanding maps showing ocean currents, wind pattern and wind shifts with respect to seasonal changes.
d) Study of climatic zones along with traditional dwelling units.

UNIT-2

a) Study of analysis of climatic zones (Hot –dry, Hot-Humid, Composite, Cold-dry, Cold-humid) in India along with data analysis.
b) Study measurement and analysis of micro climatic elements and its use for a Designer.

UNIT-3

a) Study of heat exchange process between human body and its surroundings with respect to criteria of comfort.
b) Study of heat exchange processes between building along with periodic change and the calculations required for heat exchange.
c) Study of bio-climate charts its analysis and extension of comfort zone with respect to given data and relating this with (b) of unit 2.

UNIT-4

a) Design strategies for Indian climate zones with respect to various climate zones.
b) Study of solar control with references to solar charts.
c) Methods of calculating and designing of shading devices.
d) Introduction to concepts of solar energy utilization in heating water such as Flat Plate collectors.
e) Introduction to use of Solar energy in lighting in buildings such as Photovoltaic cells.
f) Solar passive strategies-Principals of natural light and natural ventilation.
g) Introduction to ECBC rules, Energy audit and Green buildings rating eg. TERI Griha, LEED etc.

SESSIONAL WORK (Total 50 Marks at the end of Term I)

01) Assignments based on analysis and design.
    a. Analysis of bio-Climatic Charts.
    b. Identification of climatic zones from given data.
    c. Suggestions to extend comfort zone.
02) Site analysis with respect to micro-climatic elements.
    a. Analysis of site and identification of suitable zone for building site for the first assignment done in Arch. Design

03] Design of appropriate shading devices for given openings for different orientation for the 2nd assignment done in Arch. Design.

Sessional work for 2 & 3 *may* be assessed in Arch Design III giving an allocation of 10% of the total marks allotted for Arch Design III

04] Study and analysis of an existing structure with respect to:
a) Orientation
b) Opening size and shading devices.
c) Walls and roofs.
d) Internal space distribution with respect to activity Preparation of report in groups consisting of not more 10 students.

05) Journal with class notes and tutorials.

RECOMMENDED READING

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

TERM II : SURVEYING AND LEVELLING
AIMS AND OBJECTIVES.

- To enable the students to get conversant with locating the object positions in horizontal and vertical plane with desired accuracy as needed for architectural profession.
- To prepare and interpret survey drawings.

Every effort will be made to relate the practical and field work and make it appropriate for the profession of Architecture and execution of building projects. Students should be exposed to latest modern gadgets available for precise work in the field and also use of computer software in this subject.

DETAILED SYLLABUS.

Unit I: Linear Measurements. Measurements in horizontal plane, survey stations, survey lines open and closed traverse, locating objects by chaining and offsetting, direct and indirect ranging, locating field boundaries and working out area of field, measuring distances with chain, tapes, ODM's ,EDM's, introduction to Total Station, survey accessories, measurements along sloping ground.

Unit II: Chain Surveying: Base line, tie lines, check lines.

Unit III: Directional and Angular Measurements. Magnetic and true meridian, Magnetic and true bearings, use of prismatic compass, calculation of included angles, Fore and back Bearings, declination plotting and adjustment of closed traverse.

Unit III: Levelling: Dumpy level, auto and tilting level, principle lines of leveling instrument, axis of telescope, axis of bubble tube, line of collimation, vertical axis recording by collimation plane method and rise-fall method, B.S/J.S/F.S, change point, level surface, horizontal surface,datum, Reduced Level/ elevation of a point, Bench Marks, GTS,PBM/ABM/TBM. Temporary Adjustments.

Unit IV: Contours: Characteristics, contour interval, direct and indirect methods of contouring, block contour surveys, profile leveling, longitudinal and cross sections, plotting the contours and profiles, gradient.

Unit V: Uses of Transit Theodolite. Measuring horizontal and vertical angles, calculation height of buildings, use of Theodolite as technometer, techeometric tables, interpolation of contours.

Unit VI: Plane Table Surveys; Accessories used in plane tabling, methods of locating objects, methods of table orientation, Advantages and disadvantages.

Unit VII: Use of Planimeter: Area of zero circle, calculating area of irregular shape figures.

SUBMISSION ASSIGNMENT DETAILS.

Based on field measurements sheet entered in field book,

1) Calculation of area of field(Chain and cross staff survey)
2) Compass Survey.
3) Plane Table Survey.
4) Block Contour Survey.
5) Profile Levelling.

UNIVERSITY OF PUNE

DETAIL SYLLABUS

FOR

THIRD YEAR BACHELOR OF ARCHITECTURE

(Third Year B.Arch. & B.Arch. Interior Design) 2008 Course

(to be implemented from 2012-13)

FACULTY OF ENGINEERING

BOARD OF STUDIES IN ARCHITECTURE

THIRD YEAR B.ARCH. & B.ARCH. INTERIOR DESIGN

Sr. No.	Subject Code	Name of Subject	Head	Teaching Scheme			Examination Scheme		
				Lecture Periods	Studio Periods	Total Periods	Term I Marks	Term II Marks	Total Marks
1	313421	Architectural Design III	SV	4	6	10	250	250	500
2	313422	Architectural Design III	Theory				--	100	100
3	313423	Bldg. Tech. & Materials III	SV	2	5	7	150	150	300
4	313424	Bldg. Tech. & Materials III	Theory				--	100	100
5	313425	Theory of Structures III	SS	2	1	3	50	50	100
6	313426	Theory of Structures III	Theory				--	100	100
7	313427	Building Services II	SS	2	2	4	100	100	200
8	313428	Building Services II	Theory				--	100	100
9	313429	Landscape Arch. and Env. Sciences	SS	1	2	3	50	50	100
10	313430	Seminar on Contemporary Architecture	SS	2	--	2	50	50	100
11	313431	Working Drawing	SS	2	3	5	100	100	200
12	313432	Technical Communication	SS	1	1	2	50	50	100
		TOTAL		16	20	36	800	1200	2000

DETAIL SYLLABUS

Subject Code : **313421 ARCHITECTURAL DESIGN III.**(Sessional and Viva) **313421 ARCHITECTURAL DESIGN III.**(Paper)			
Teaching Scheme		**Examination Scheme**	
Lecture Periods per week	4	Term I and Term II Sessional (Internal) Sessional (External) Viva	 100 marks (for each term) 100 marks (for each term) 50 marks (for each term)
Studio Periods per week	6	Total sessional marks for both terms	500 marks
Total Contact Periods per week	10	Paper	100 marks
		Total Marks	600 marks

AIM :

Introduce students to design of buildings with complexities related to services, structure and site planning to accommodate more than one building on a site and help the students to evolve the integrated understanding of the complex relationship between the form, function, context and aesthetics in a building.

OBJECTIVES

1. Introduction to Campus design with reference to design development of campuses developed in the past.
2. Integrating function, structure and services in a building, choice of structural system and resultant effect on visual form / aesthetics of building
3. Development of building design program from client or user's requirements and other social, economic and climate context.
4. Managing a design project – Management of time, compilation, documentation, presentation of information to others and self.
5. Labouring the design process, communicating the design.
6. Introduction to design philosophy.
7. Analysing multiple buildings to be accommodated within a campus and understanding their relationship with each other in context to continuity of form, construction and materials, design theme, climate, etc.
8. Analysing activities around the buildings within a campus and understand the same in context to relation of built form and open spaces, elements of landscape, pedestrian and vehicular movement, their segregation, managing sloping sites, contours, etc.
9. Designing of progressively complex spaces and buildings in terms of area, typology, function etc, with emphasis on either scale or complexity of the project, or both. Complex of low rise and medium rise nature, e.g. – Shopping Mall, Nursing homes / Hospitals with residences, Educational Campus for schools. Auditorium for Cinema / performing arts, Museum, Small industrial complex, Medium scale hotels and resorts, etc.
10. To study a location in a different socio-geographic setting than the Institute, and document the study done during in the tour in the form of a report with emphasis on relevant aspects like climate, social structure, culture, architectural typology, construction technology, urban fabric, economy, etc or any other issues which need to be considered for envisaging a design project in totality.
11. To design in the context of the Location studied, with emphasis on all the aspects that would influence the Design solution.
12. To understand various issues and aspects like sustainability, earthquakes, construction, barrier free environments, etc. and study how these could be integrated in the architectural design process.

SESSIONAL WORK.

Design projects to be given as assignments could be classified into two types.

Type 'A' :- Long duration projects (8-12 weeks)

These could be :

i. Project based on Campus Design with emphasis on site planning & relationship of built and open spaces, circulation and movement pattern, activity pattern, architectural character and image, philosophy etc.

ii. System based project (multistoried / service oriented) with emphasis on structural system, services like HVAC, electrical, etc. fire frightening systems, parking, rules & regulations etc.

Either i or ii could be Issue based Projects- designing in the context studied and addressing various issues of the study context like climate, social structure, culture, architectural typology, construction typology, urban fabric, economy etc.

Type B : Short duration Project (1-3 weeks)

These could be projects dealing with a singular aspect at a time, with emphasis on structures / sociology/ sustainability/ earthquake resistant construction/ specialized services / adaptive reuse of buildings / façade design / interiors / industrial building / barrier free environment or any other appropriate aspect

At least one project of type 'A' and one project of type 'B' to be taken up in a term.

- Stress shall be give on three- dimensional studies through sketch perspectives and models prepared at various stages of design process.
- All Architectural Design Assignments and submissions shall lay emphasis on designing Earthquake Resistant Structures, which will be worked out in consultation with the Teacher of Structures and the Submission work will reflect various technologies adopted.

NOTE:

In order to have parity in nature and complexity of Design Projects it is Suggested that teachers from all the Colleges teaching the subject of Architectural Design shall meet at the beginning of First and Second Term and finalise broad outline of the subject topics, its extent and complexity and also the submission requirements.

RECOMMENDED READING

1. Campus design in India – Kanvinde & Miller
2. Compus Planning _ Richard Dober.
3. Urban Design. The Architecture of towns and cities. –Paul Sprereingen.
4. Exterior design in Architecture ___Ashihara Toshinibu
5. Modern Language of Architecture ___Bruno Zevi.
6. Modern Movements in Architecture ___Charles Jencks
7. Language of Post – modern Architecture - Charles Jencks
8. Complexities and contradictions in Architecture – Robert Venturi
9. Architectural Composition. –Rob Krier.
10. Pattern Language Christopher Alexander.
11. Town Design –Fredrick Gibberd Alexander
12. Various monographs and periodicals

Subject Code : **313423 BUILDING TECHNOLOGY & MATERIALS III.**(Sessional and viva) Subject Code : **313424 BUILDING TECHNOLOGY & MATERIALS III** (Paper.)			
Teaching Scheme		**Examination Scheme**	
Lecture Periods	2	Term I and Term II Sessional (Internal) Sessional (External) Viva	 50 marks (for each term) 50 marks (for each term) 50 marks (for each term)
Studio Periods	5	Total sessional for both terms	300 marks
Total Contact Periods per week	7	Paper	100 marks
		Total Marks	400 marks

OBJECTIVES :

To introduce students to

A. Soil types & its behavior under different loading conditions
B. Foundation on low load bearing soil
C. More about R.C.C. & Steel skeleton structures
D. Sliding & Sliding folding doors & bay windows in wood
E. Aluminium & P.V.C. doors and windows
F. R.C.C. and mass retaining wall
G. Reinforced cavity and decorative brickwork
H. Simple joinery and design for wood furniture
I. Long span structures in R.C.C. & Steel
J. Modular Co-ordination & introduction to prefabricated types construction using pre-cast building components.
K. Paneling, partition and suspended ceiling in various materials.
L. Basement construction & waterproofing
M. Use of stainless steel in building construction.

Note : The portion covered in Third Year out of following topics shall be taught with special reference to Earthquake Resistant Detailing with local practices and regional responses.

COURSE OUTLINE

- Foundations, Soil Stabilization, Retaining Walls, Plinth Filling
- Flooring, Walls, Openings
- Roofs, Parapets, Terraces, Boundary Walls
- Underground and Overhead Tanks
- Staircases and isolation of structures.

TERM I:

PART – I

Foundation:

1.0 Setting out of structures.

2.0 Soil types & its behavior under different loading conditions.
3.0 Foundation on weak strata.
3.1 Raft Foundation.
3.2 Pile Foundation.
4.0 R.C.C. stub columns & stanchion fixing details (Sketches and notes).

PART- II

Super Structure:

1.0 Study of R.C.C. framed multi-storied structure of about ground +four upper floors with specific study of:-
1.1 Balconies and Canopies.
1.2 Stairs.
1.3 Lift shafts, machine rooms, etc. *Assignment I* (Approx.3 Drawings)
2.0 Medium span steel structures using built-up sections, appropriate roof trusses, lattice construction, castellated beams, cladding details, rain water disposal etc.
Assignment II (Approx. 2 Drawings).
3.0 Retaining walls and its terminology, mass retaining wall in bricks, stones etc. and cantilever retaining wall in R.C.C. (Sketches and notes).
4.0 Reinforced brickwork including reinforced brick walls, piers of different thicknesses, reinforced brick lintols and reinforced brick slabs screens and jails
(Sketches and notes).

PART- III

Roofs & Floors:

1.0 Introduction to long span (upto 25 to 30 mts) construction in steel and reinforced concrete (Sketches, notes, models, etc.)
2.0 Modular co-ordination. Pre-cast building components and systems developed by C.B.R.I. and other renowned National and International research organizations.
Assignment III(Approx. 2 Drawings).

PART- IV

Materials:

Sketches,notes, collecting material samples, brochures, visits to sites, place of manufacture, site reports, etc.
1.0 Light weight concrete.
2.0 Guniting
3.0 Readymix concrete.
4.0 Waterproofing- cement based, chemical based, bituminous and other proprietary systems.
5.0 Metal alloys and stainless steel and their application in the building industry.

TERM II

PART –I

Doors and Windows:

1.0 Sliding and Sliding-folding doors in wood *Assignment IV*(approx 2 Drawings)
2.0 Aluminium and PVC doors and windows of proprietary type (Sketches, notes and models)
3.0 Bay windows in wood (Sketches and notes)

PART –II

Furniture & Interior Construction:

1.0 Simple joinery in wood and wood based products for interiors.(Models, sketches and notes).
2.0 Paneling and Space dividers using wood, aluminium and steel skeleton and various finishing materials such as Ply-boards,Fibre-boards, Gypsum-boards, metal sheets Plastic extruded sections, etc.- Single skin and Double skin. *Assignment V(Approx 2drawings)*

3.0 Suspended ceiling in teak wood or metal framing with A.C. sheets, Gypsum boards, Fibre boards,etc. as finishing material. Proprietary system for suspended ceiling.

Assignment VI

4.0 Simple residential furniture in wood and wood derived boards like Divan, Bed, Dinning table, Storage cabinet, Kitchen cabinet, Chair, etc -Any 4 items.

Assignment VII (2 Drawings)

Note: Total no of drawings to be restricted to between 6 to 8 per term.

PART – III

Misc. Construction:

1.0 Single Basement construction with water-proofing details, etc.(Sketches and notes)

2.0 Escalator and elevators – planning concepts, terminology and general construction. (Sketches and notes).

PART – IV

Materials

Sketches, notes, collecting material samples, brochures, visits to sites and places of manufacture, reports, etc

1.0 Glass and Glass products applicable in building industry.

2.0 Polishing of new and old wood and wood derivatives.

3.0 Painting.

4.0 Rendering.

Submission format:

The above mentioned submission format is indicative only.

It is expected that the students develop all round skills in drafting, sketching, model making, 3-d graphics and innovative use of computers to understand the basic principles and use it to applied construction problems.

The subject should be effectively linked with architectural design and more stress will be laid to on site training and hands on experience.

Distribution of marks:

Drawings – 40%,

Site visit reports, presentations etc. with models, 3D graphics etc.– 40%,

Journal – 20%.

References:

Subject Code : **313425 THEORY OF STRUCTURES III** (Sessional) Subject Code : **313426 THEORY OF STRUCTURES III** (Paper.)			
Teaching Scheme		**Examination Scheme**	
Lecture Periods	2	Term I and Term II Sessional (Internal) Sessional (External) Viva	 25 marks (for each term) 25 marks (for each term) nil
Studio Periods	1	Total sessional for both terms	100 marks
Total Contact Periods per week	3	Paper	100 marks
		Total Marks	200 marks

NOTE : While teaching the subject of Theory of Structures Limit State Method shall be adopted instead of Working Stress Method.

COURSE OUTLINE :

1. Soil Mechanics : Introduction to soil Mechanics, trial pits, bearing capacities of common soils, various limits, Foundation problems at site. Bulb of pressure etc.
2. Retaining Walls.
   (i) Active and passive pressures of soil.
   Ranking's theory of Earth pressure. (ii)
   Masonry retaining walls.
   (iii) R.C.C. cantilever retaining wall.
   (iv) Counter fort type retaining wall-concept and general detailing of counter forts.
3. R.C.C. columns with Eccentric loading-introduction only. No calculations.
4. Staircase : Types, loading and design. Details design of simply supported staircases.
5. R.C.C. Foundation : details of isolated footing.
6. Combined footing.
7. Detailed design of rectangular combined footing.
8. Introduction to following :
   (a) Masonry and R.C.C. underground water storage tanks. (b)
   Elevated water towers.
   (c) R.C.C. and steel portal frame.
   (d) Steel columns.
   (e) Steel plate girders and Crane girder.
   (f) Steel castellated girder.
   (Introduction not to include calculation of any of the elements but the selection criteria, placement of main reinforcement, fabrication producer etc.).
9. Introduction to :
   - Trapezoidal footing.
   - Raft footing.
   - Pile foundation.
   - Pile cape.
10. Pre-stressed concrete : Definition, difference between R.C.C. and pre stressed concrete, advantages and disadvantages, type and methods of pre stressing simple problem on calculation of resultant stresses of external forces etc.
11. Ultimate load theory :
    Definition and explanation. Why this theory was developed, difference between working stress block, calculation of balance rectangular simply reinforced section, area of steel required for this Mud to develop working load factor(simple problem on beams only).
12. Limit state analysis : Introduction to concept only and I.S. requirements.
13. Compound Stanchions :
    - Simple problems.
    - Lacing : Finding spacing and size of lacing.
    - Battens : Finding spacing and size of battens.
    - No details design

Design and detailing of a factory building including detailed design and drawings of purlins, trusses and N griders. (Drawing on A2 size sheets).

14. Earthquake Resistance Structural Detailing :
    Seismic Design and detailing of R.C.C. and steel buildings :
    - IS : 1893-2002. IS : 13920-1993, IS : 456-2000, IS : 800-20045.
    - Special reinforcing and connection details in structural drawings.

RECOMMENDED READINGS :

1. Structure in Architecture Salvadori and Heller.
2. Design of steel Structures-Vaziranini and Rathvani.
3. Elements of Structures-Morgan.

Subject Code : **313427 BUILDING SERVICES II** (Sessional) Subject Code : **313428 BUILDING SERVICES II** (Paper)			
Teaching Scheme		**Examination Scheme**	
Lecture Periods per week	2	Term I and Term II Sessional (Internal) Sessional (External) Viva	 100 marks (for each term) 100 marks (for each term) Nil
Studio Periods per week	2	Total sessional marks for both terms	200 marks
Total Contact Periods per week	4	Paper	100 marks
		Total Marks	300 marks

AIM : To introduce students to the concepts of, indoor environmental quality control and providing ambient / comfortable habitable conditions, by integrating the knowledge of active as well as passive methods, in architectural design aimed at environmental sustainability.

TERM 1

COURSE OBJECTIVE

1. To equip students with the knowledge of mechanical ventilation /HVAC and the required technology for application.
2. Integrating these technologies with their architectural design.
3. Evolving understanding in students to choose appropriate systems.

COURSE OUTLINE

AIR CONDITIONING

Introduction to mechanical ventilation, forced ventilation, types of fans used, simple calculations to decide on the no. of fans / sizes

Introduction to fundamental principles of air conditioning. Fluid flow, Heat transfer. Psychometrics of air conditioning processes. Health and comfort criteria, comfort chart. Selection of indoor and outdoor design conditions. Air conditioning systems, selection of systems, ventilation for cooling. Transmission and distribution of conditioned air. Duct size calculations.

TEACHING PLAN

Unit 1

a. Forced ventilation- types of fans used, calculations to decide on the no of fans required
b. Air conditioning – heating and cooling, air conditioning equipment, air distribution, data and space requirements.

SESSIONAL ASSIGNMENT

Assignments shall consists of

a. Calculating the sizes and no. of fans required to be provided or a specific interior and its layout for the same.
b. Preparing an air conditioning layout for part of design project, with duct size calculations.
c. Compiling of required information collected from site visits, market surveys and finding out latest trends and materials for the same.

SESSIONAL ASSESMENT

1. 40% marks will be allotted for compilation of literature, brochures, handbooks, market surveys etc.

2. 60% marks shall be allotted for services layouts, with details.

TERM II:

AIM.

Understanding of design criteria for good hearing conditions in enclosed and open spaces with relation to spatial characteristics and developing the ability to apply the same to architectural design.

Integrating passive and active fire fighting systems in architectural design projects.

COURSE OBJECTIVES:

1. To equip students with the knowledge of acoustics and the required technology, for its application.
2. Integrating these technologies with their architectural design.
3. Evolving understanding in students to choose appropriate systems.

COURSE OUTLINE

Introduction to architectural acoustics. Acoustical problems in architectural design. Criteria for good hearing conditions in enclosed and open spaces. Properties of sound. Human ear and its cognizance to hearing. Reverberation; Sabine's formula for reverberation time. Sound absorbing materials, their properties and applications. Acoustical requirements in an auditorium design. Acoustical designs of rooms for speech, music and recording studio. Sound amplification systems. Environmental noise control, air-borne and structure borne noise, control of mechanical noise and vibrations. Transmission of sound, noise reduction.

Methods of fire-fighting, rules, regulations and equipment.

TEACHING PLAN

Unit 1. Acoustics

a. Brief history of architectural acoustics, acoustical problems as outcome of contextual influences and limitations of materials and technologies.
b. Characteristics of sound.
c. Study of acoustical materials, their classification and application.
d. Acoustical treatment to various enclosed spaces with calculations of the time of reverberation.
e. Noise control.
f. Sound amplification systems.
g. One live case study.

Unit 2. Fire fighting and fire safety.

a. Causes and spread of fire, combustibility of building materials, structural elements and their fire resistance.
b. Passive control- fire protection in buildings, safety codes, rules and regulations.
c. Active control- fire fighting using fixed and portable fire fighting equipment.

SESSIONAL ASSIGNMENT

Assignments shall consists of

a. Calculating the time of reverberation for an enclosed space and designing an acoustical treatment for the same, to achieve good hearing conditions.
b. Compiling of required information collected from site visits, market surveys and finding out latest trends and materials for the same.
c. Case study for fire fighting and fire control for an apartment building, with basement parking.

SESSIONAL ASSESMENT

1. 40% marks will be allotted for compilation of literature, brochures, handbooks, market surveys etc. .
2. 60% marks shall be allotted for acoustical treatment of an interior space.

RECOMMENDED READING

1. Ernest Tricomi-ABC of Air conditioning
2. Heating and Air Conditioning of buildings.
3. Smith, Philips and Sweeney-Environmental Science
4. Doelle Leslie-Environmental Acoustics
5. Knudsen and Harris-Acoustical designing in architecture
6. K.A.Siraskar-Acoustics in building design
7. National Building code.

Subject Code : **313429** **LANDSCAPE ARCHITECTURE & ENVIRONMENTAL SCIENCES** (Sessional)			
Teaching Scheme		**Examination Scheme**	
Lecture Periods per week	1	Term I and Term II Sessional (Internal) Sessional (External) Viva	 50 marks (for each term) 50 marks (for each term) Nil
Studio Periods per week	2	Total sessional marks for both terms	100 marks
Total Contact Periods per week	3	Paper	Nil
		Total Marks	100 marks

AIM :

To introduce the students to landscape design and site planning and imbibe importance of integrated design of built & open spaces and evolve understanding of sustainable site development addressing the functional, aesthetic and environmental issues.

TERM 1

COURSE OBJECTIVES

a. To introduce the students to Landscape architecture and its scope.
b. To develop understanding of site analysis and site planning and integrated design of open and built spaces.
c. To understand the elements and principles of landscape design and role of landscape elements in design of outdoor environments on the site.
d. To study the changing relationship of man with nature in various parts of the world through various ages and study history of landscape design.

COURSE OUTLINE

Introduction to Landscape Design – its scope and objectives; elements and principles of landscape design and their application in outdoor space design; Site studies and site planning : Integration of built and open spaces; Introduction to storm water drainage , planting design & grading. History of landscape design.

TEACHING PLAN

Unit 1 Introduction

Introduction of landscape architecture, its scope and understanding the differences between landscape design and building design. Significance of time in landscape design.

Unit 2 Site Studies and Site Planning

Principles of site planning. Site survey and appraisal – the physical and social context of the site and various site characteristics such as microclimate, topography, hydrology, existing features (natural and manmade), etc. Site suitability analysis. Process of developing a brief for open spaces. Design issues in site planning and siting of buildings. Integrated approach to design of building and open spaces. Introduction to grading, landform modifications and surface water drainage.

Unit 3 Elements & Principles of Landscape Design

Elements of landscape Design – Landform, water, plants and built elements (hard areas, paths, terraces) . Understanding the visual (colour, form, texture) characteristics and also the non-visual characteristics (smell, touch, sound) characteristics of these elements and their usage to achieve the functional, aesthetic and environmental goals. Principles of landscape design (harmony, balance, contrast, etc.).

Unit 4 History of Landscape Architecture

Changing relationship of man with nature in various phases in history and its influence on the environment. Reviewing landscape design and garden design in history in various parts of the world & phases in history – Eastern (India, China, Japan), Western (Egypt, Mesopotamia, Greece, Roman, Medieval, Renaissance & Baroque, English school) and Central (Persia, Islamic landscapes). Industrialization, New towns, Need for parks, Park movement in America. Contemporary movements.

SESSIONAL WORK

1. At least one landscape design & site development project (limited to one building on a site) in which students should evolve a rational behind design of open spaces based upon functional aspects, microclimatic analysis including building shadow analysis, visual and spatial character desired and then develop a landscape design. (**60%** of total marks allotted). The design should be presented in form of drawings to explain the landscape development in totality, which shall include comprehensive landscape development plan, site sections, sectional details, planting policy, views etc.
2. Written Assignments (**40%** of total marks)

a. Unit 3 (Landscape elements): Visit to designed landscapes and preparing case study appraisal report of not less than 1000 words supported by graphics. (10% of total marks)

b. Unit 4 (History of landscape architecture) : Detailed essay of at least 1500 words with graphical illustrations based upon the topics in the syllabus on themes such as comparisons, case studies, use of landscape elements in history etc. (10% of total Marks)

c. Test on units 1 to 4: 20% of total marks.

<u>TERM 2</u>

COURSE OBJECTIVES

a. To evolve understanding of plant selection for functional, aesthetical and ecological applications in design based upon the plant characteristics and their habits.

b. To introduce the concepts of sustainable site planning, components of environment and environmental concerns.

c. To develop understanding of the role of landscape design in evolving sustainable site planning and also in passive climatic control at building and site level.

d. Introduction to landscape construction and services.

e. Application of the knowledge of site planning and landscape design to address the environmental issues.

COURSE OUTLINE

Plants and Design; Introduction to landscape construction and services (drainage, irrigation, lighting); Execution of a landscape proposal; Environment – components and issues; Environmental concerns: landscape design & sustainable site planning; landscape design in situations such as roof tops & indoor locations; role of landscape design in response to environmental issues in urban areas.

TEACHING PLAN

Unit 5 Plants and Design

Study of plant material – trees, shrubs, ground covers and climbers, physical characteristics and habit. Role of plants in landscape design. Plant selection criteria – functional, visual, ecological and micro climatic aspects. Building shadow analysis for ascertaining hard-soft areas and choice of plants.

Unit 6 Landscape Construction and Services

Introduction to the landscape services – lighting, surface water drainage systems, irrigation systems. Introduction to construction in landscape – paths, retaining walls, level changes, fences, boundary walls, decks, gates, trellis, pergola etc. Introduction to landform modifications, earthworks and grading. Roof top landscapes and indoor landscapes. Understanding the process of the execution of a landscape proposal.

Unit 7 Environment: Components and Concepts

Introduction to environment and its components (biotic and abiotic), Concepts of energy and resource conservation, bio-diversity, pollution, green house effect, ozone layer depletion, sustainability.

Unit 8 Environmental Concerns, Landscape Design and Sustainable Site Planning.

Application of the knowledge of site planning and landscape design to address the environmental issues, achieve passive climatic control and evolve sustainable site plan. Water harvesting (roof water, recharging ground water), solid waste management (vermiculture pits, composting, degradable and non-degradable wastes). Root zone treatment. Sewage treatment plant. Landscape design in response to environmental problems in urban areas.

SESSIONAL WORK

1. At least one campus planning project (with more than two buildings on the site) from the third year architectural design which the student has undertaken. A comprehensive site and landscape development plan should be submitted along with supporting background work such as site analysis, slope analysis, zoning rationale, building program analysis. Design proposal should include a comprehensive landscape development plan, Site sections, planting policies, details of civil work items such as steps, retaining wall, planters etc., surface water drainage concept. (**70%** of total Marks).
2. Written Assignments (**30%** of total marks)
    a. Unit 5 (Plants and design): Study and documentation of at least four plants to understand their characteristics and use in landscapes. (10% of total marks)
    b. Unit 7 & 8 (Environment): Literature or case study review and discussion of any one environmental issues pertinent to the syllabus. (10% of total marks).
    c. Test on units 5 to 8: 10% of total marks.

RECOMMENDED READINGS:

1. **Appleton, J**. *The Experience of Landscape*, London: John Wiley & Sons. 1995.
2. **Bose, T.K. and Choudhary, K.**Tropical Garden Plants in Colour. Horticulture and Allied Publishers. 1991.

3. **Botkin D. B. & Keller E.A**. *Environmental Science: Earth as a Living Planet*. NY: John Wiley & Co. 1995.
4. **Dee, C**. *Form and Fabric in Landscape Architecture : A visual introduction*, UK : Spon Press. 2001.
5. **Eckbo, G**. *Urban Landscape Design*, NY: McGraw Hill Book Company.1964.
6. **Gopalaswamiengar, K.S**. *Complete Gardening in India*, 4th ed. Bangalore: Gopalswamy Parthasarathy. 1991.
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18. **Simonds, J.O**. *Landscape Architecture : The Shaping of Man's Natural Environment*, NY : McGraw Hill Book Co. Inc. 1961.
19. **Thompson, I. H** . *Ecology, Community And Delight: Sources Of Values In Landscape Architecture*, London : E & FN Spon.2000.
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Subject Code : **313430 SEMINAR ON CONTEMPORARY ARCHITECTURE** (Sessional)			
Teaching Scheme		**Examination Scheme**	
Lecture Periods per week	2	TermI and Term II Sessional (Internal) Sessional (External) Viva	 25 marks (for each term) 25 marks (for each term) nil
Studio Periods per week	--	Total sessional marks for both terms	100 marks
Total Contact Periods per week	2	Paper	nil
		Total Marks	100 marks

COURSE OBJECTIVES:

Modern architecture is the synthesis of a series of progressive movements since post-industrial period. It is necessary for students to understand these movements, styles, buildings, construction, and contribution of masters in a wider context.

COURSE OUTLINE:

The study includes the progressive developments of the requirements, architectural character and technological advancements of each period / style. The analytical study must include examples and sketches with highlighting the relevant features. The study emphasizes to inculcate the research spirit and awareness of architectural heritage among the students.

TERM I

Socio-political and other influences Philosophies, approaches and purposes Architectural, constructional and other features Contribution of the pioneers
Following movements / schools / styles (3 to 9) to be studied with relevant examples based on the above mentioned points:

1. Industrial Revolution: new materials, methods and requirements
2. Revivalism: Neo-Classic, Neo-Gothic
3. Arts & Crafts Movement
4. Art Nouveau Style
5. Expressionism
6. Bauhaus
7. De Stijl
8. International Style
9. Post Modernism
10. Colonial architecture in India

SESSIONAL WORK

The Sessional work shall comprise of individual work of the student completed under the guidance and supervision of the subject teacher as follows:

1. **Journal:** Hand written journal with notes and manually drawn sketches of relevant examples on the above mentioned syllabus contents: **30 marks**
2. **Project work**: a report or graphical representation or a model of any relevant topic from the above mentioned syllabus contents: **20 marks**

TERM II

1. **Seminar**: on Cotemporary architecture with global context as Styles / Movements / contribution of any international architects / significant buildings
2. **Measured Drawing**: Any significant structure relevant to three years of syllabus contents

SESSIONAL WORK

The Sessional work shall comprise of **individual work** of the student completed under the guidance and supervision of the subject teacher as follows:

1. **Seminar**: a report of the seminar presented of any relevant topic from syllabus contents (appx. 1500 words): **25 marks**
2. **Measured Drawing:** Manually drawn (one A1 or A2 size sheet per student): **25 marks**

RECOMMENDED READINGS:

1. Modern Architecture since 1900 by William Curtis
2. Modern Architecture (Vol. I & II) by Manfredo Tafuri, Francesco Dal Co
3. A History of Western architecture by David Watkin
4. The Story of Western Architecture by Bill Risebero

Subject Code : **313431 WORKING DRAWING** (Sessional)			
Teaching Scheme		**Examination Scheme**	
Lecture Periods per week	2	TermI and Term II Sessional (Internal) Sessional (External) Viva	 50 marks (for each term) 50 marks (for each term) nil
Studio Periods per week	3	Total sessional marks for both terms	200 marks
Total Contact	5	Paper	nil
Periods per week		Total Marks	200 marks

AIM : To enable the students to prepare working drawings of an architectural project and imbibe the significance of working drawings from the point of view of execution of the work on site and as important component of tender documents.

OBJECTIVES :

- The students should be able to prepare drawings in sufficient details such that the contractor is able to construct a building as per the design.
- Graphical presentation of all the components of a building along with dimensioning and annotations.
- Understand and apply IS Codes and internationally accepted norms / conventions / methods of preparing a working drawing along with tabulation of schedules of materials, finishes and hardware.
- Linking up working drawings / specifications / bill of quantities in an architectural project.

TERM I :

- One working drawing of a 2nd yr. architectural design project having load bearing structure with minimum 100 sq. m. carpet area.
- At least two details such as doors/windows/railings/kitchen otah etc.
- Total no of drawings (approx 6 to 8 of A1 size).

TERM II :

- One working drawing of any project of minimum 200 sq.m. from Third Year Architectural Design project having frame construction and minimum G+1 structure.
- Introduction to preparing drawings for approval of local authorities for a residential unit having G+1 structure
- Details of civil work of staircase and a toilet.
- Interior working drawing of a room from the project with at least details of two furniture types : 1 drawing A1 size.
- Total No of drawings (approx.6to 8 of A1 size.)

The drawings may be manually drafted or computer generated as per the choice of students and availability of computers with the college.

REFERENCES:

Architects Working Details

Subject Code : **313432 TECHNICAL COMMUNICATION** (Sessional)			
Teaching Scheme		**Examination Scheme**	
Lecture Periods per week	1	TermI and Term II Sessional (Internal) Sessional (External)	 25 marks (for each term) 25 marks (for each term)
		Viva	nil
Studio Periods per week	1	Total sessional marks for both terms	100 marks
Total Contact Periods per week	2	Paper	nil
		Total Marks	100 marks

COURSE OBJECTIVES:

To equip the student to communicate effectively on technical matters, using various mediums of verbal, written, graphic and electronic communication.

COURSE OUTLINE : TERM I

Unit 1: Introduction

1. Introduction to technical communication, the need for learning the subject.
2. Various mediums of communication and their relevance to professional practice.
3. Reading, writing conversation public speaking, etc. as skills to be aquired for effective communication

   .
4. Importance of knowledge,
5. Linguistic skills and structure in communication

Suggested sessional work: short report

Unit2: Written Communication:

1. Language Skills, structuring of ideas,
2. Various types of written Communication i.e. writing, abstract synopsis, reports, dissertation, etc.
3. Effective beginning, logical division of matter under various heads, elaboration, conclusions appendices and annexures (technical writing aspects),
4. Understanding the reader /purpose of the communication,
5. Preparation of drafts, finalisation of content
6. Handwriting skills,
7. Software like MS word, Excel, etc.

Suggested sessional work: Contemporary architecture seminar

Unit: 3 Graphic Communication:

1. Graphic skills,
2. Presentation techniques using mediums like pencil, ink, water colour, etc.
3. Use of software suitable for graphic communication.
4. Types of paper, sizes, suitability of paper & medium for the purpose & their compatibility with each other,
5. Printing & plotting – including scales, font sizes, etc. composition of matter on given paper space, display formats, etc.

Suggested sessional work: case studies / individual report- study tour / data collection

Unit 4: Electronic Communication:

1. Use of suitable softwares.
2. Introduction to presentation techniques & formats using computer,
3. In put- output devices, their compatibility, data storage formats, transmission of data through. the Internet, basics of email, website design, etc.

Suggested sessional work: powerpoint presentation contemporary architecture seminar / case studies / design presentation

TERM II :

Unit 5: Verbal communication:

1. Language skills
2. Structuring &, organization of speech.
3. Understanding the audience, transmitting of ideas, voice modulation, personal style-tone emphasis, gestures, etc.

Suggested sessional work: Verbal presentation- Contemporary Architecture seminar

Unit 6: Group Communication:

1. Working in teams.
2. Structure & organization of an efficient team,
3. Roles played by members, leadership qualities and skills
4. Communication within a group, group presentations, group discussion etc.
5. Time management, schedules, etc.

Suggested sessional work: Study tour- report & presentation / group case study / site analysis

Unit 7: Interviews:

1. Effective communication skills, personal style.
2. Commonly raised questions and effective answers.
3. Knowledge level and effective communication of information.
4. Understanding the interviewer and the purpose of the interview, etc.

Suggested sessional work: flexible- to be decided by the institute

Unit 8: Formats:

1. Formats for letters, memos, resume, job application, project proposals, feasibility reports, progress report, information page, brochure, website.etc

Suggested sessional work: preparation of formats as assignments

Unit 9: Appraisal / Self Judgment:

1 Setting up objectives, methodologies,
2. Achieving targets.
3. Effective Communication of ideas, image knowledge, information.
4. Creating a self identity.

Suggested sessional work: flexible- to be decided by the institute

Final.

UNIVERSITY OF PUNE

DETAIL SYLLABUS

FOR

FOURTH YEAR

BACHELOR OF ARCHITECTURE

(Fourth Year B.Arch. & B.Arch. Interior Design)

2008 Course

(to be implemented from 2013-14)

FACULTY OF ENGINEERING

BOARD OF STUDIES IN ARCHITECTURE

FOURTH YEAR B.ARCH.

Sr. No.	Subject Code	Name of Subject	Head	Teaching Scheme			Examination Scheme		
				Lecture Periods	Studio Periods	Total Periods	Term I Marks	Term II Marks	Total Marks
1	413421	Architectural Design IV	SV	2	10	12	300	300	600
2	413422	Adv. Bldg. Tech. & Services	Theory	2	5	7	150	150	300
3	413423	Design & Tech. Elective	SS	1	1	2	50	50	100
4	413424	Quantity Surveying and Est.	SS	1	3	4	50	50	100
5	413425	Quantity Surveying and Est.	Theory				--	100	100
6	413426	Specification Writing	SS	2	--	2	50	50	100
7	413427	Specification Writing	Theory				--	100	100
8	413428	Town Planning	SS	1	3	4	50	50	100
9	413429	Town Planning	Theory				--	100	100
10	413430	Professional Practice	SS	2	--	2	50	50	100
11	413431	Professional Practice	Theory				--	100	100
12	413432	Dissertation & Architectural ProjectPart I	SS	1	2	3	100	100	200
		TOTAL		12	24	36	800	1200	2000

DETAIL SYLLABUS
FOURTH YEAR B.ARCH.

Subject Code : **413421 ARCHITECTURAL DESIGN IV** (Sessional and Viva)			
Teaching Scheme		**Examination Scheme**	
Lecture Periods per week	2	Term I and Term II Sessional (Internal) Sessional (External) Viva	 125 marks (for each term) 125 marks (for each term) 50 marks (for each term)
Studio Periods per week	10	Total sessional marks for both terms	600 marks
Total Contact Periods per week	12	Paper	nil
		Total Marks	600 marks

OBJECTIVE

Introduce students progressively to designing for larger environmental contexts (preferably Indian) and for more complex multifunctional complex of buildings / situations like mass scale residential, institutional, commercial transportation, health-care facilities.

COURSE OUTLINE

A Design of Urban Large Scale / density based housing with approximately minimum 200 tenements of density 120 tenements / hectare. Socio-economic determinates, legislative, economic constraints and technological alternatives shall be studied in detail. Exercises in simulation and conceptual modeling shall be conducted. Application of concepts of community participation, financing and construction planning, computer aided project documentation including working drawings, preliminary estimates, outline specifications and scheduling aimed at comprehensive understanding of the implementation process.

B Design of multifunctional complex of buildings in the urban context. Issues related to the growing problems of urban areas in third world countries and their future developments shall be explored. Emphasis on the design with relation to the contextual environment, traffic and planning controls and impact analysis. An understanding of the architectural implications of such developmental scheme should lead to insight in the formulation of political and administrative policies for the development of the physical environment.

SESSIONAL WORK

- Two assignments for a period of 18 weeks each
- Complete Self-explanatory projects, graphically presented in the form of hard copies / printouts showing comprehensive understanding of the design and implementation process as mentioned in the course outline.
- Second Design project can be given in group of not more than 3 students provided the project is complex enough.

□ Case studies, which will supplement / support the Architectural Design project can be done in groups.

All Architectural Design Assignments and submissions shall lay emphasis on designing Earthquake Resistant Structures, which will be worked out in consultation with the Teacher of Structures and the submission work will reflect various technologies adopted.

REFERENCE BOOKS :

All available books on Architectural Design.

Subject Code : **413422 ADVANCED BUILDING TECHNOLOGY & SERVICES** (Sessional and viva)			
Teaching Scheme		**Examination Scheme**	
Lecture Periods	2	Term I and Term II Sessional (Internal) Sessional (External) Viva	 50 marks (for each term) 50 marks (for each term) 50 marks (for each term)
Studio Periods	5	Total sessional for both terms	300 marks
Total Contact Periods per week	7	Paper	nil
		Total Marks	300 marks

COURSE OBJECTIVE :

To acquaint students with more complex structural systems, constructional details and building types with emphasis on applied constructional details from Architectural Design Project with developing the skills in Architectural Detailing.

COURSE DETAILS :

Note : As far as possible and practicable various topics mentioned below shall be combined and studied as extension of Architectural Design Programme in Sem VII AND VIII in the form of Applied Constructional Details.

1. Conceptual study of Design and Construction of long span structures like Sports Stadiums, Gymnasium, Auditorium etc. with special reference to design of seating, and various types of roofing systems. (Any one type of building shall be studied in detail)

2. Conceptual study of design and constructional details of
□ Shell roofs
□ Single curvature shells
□ Short and Long span barrel vaults
□ North light and cantilever Barrel vaults
□ Double curvature shells
□ Shell domes
□ Double curved shells.

3. Folded slab roofs

4. Grid structures
□ Space frames
□ Flat grids

4. Building Construction illustrated by CHING FRANCIS D. K.
5. Elementary Building Construction by MITCHELL
6. Structure and Fabric by EVERET

To study building materials

1. National Building Code and I.S.I. Specifications
2. Materials and Finishes by EVERET
3. A to Z Building Materials in Architecture by HORNBOSTLE

Subject Code : **413423 DESIGN & TECHNOLOGY ELECTIVE** (Sessional)			
Teaching Scheme		**Examination Scheme**	
Lecture Periods per week	1	Term I and Term II Sessional (Internal) Sessional (External) Viva	 25 marks (for each term) 25 marks (for each term) nil
Studio Periods per week	1	Total sessional marks for both terms	100 marks
Total Contact Periods per week	2	Paper	nil
		Total Marks	100 marks

AIMS AND OBJECTIVE

The subject of Electives has been introduced in the syllabus with the specific intention of in depth study of a particular subject of a student's liking in greater detail but in the larger context of overall scope of Architecture syllabus at undergraduate level. This will give students an opportunity to develop their skills in a subject they may opt, to make their career in future. Architectural practice is a team effort in which persons of different skills in varied fields are required such as concept developers, technical / working drawing experts, specification writers, quantity surveyors, project managers, contract managers, interior designers, architectural photographers, architectural Journalists, signage and graphic designers, energy consultants, building services consultants, marketing managers etc. In depth study in Electives will prepare the technical base of the students. Since the Architectural Projects in future are going to be very complex, the need of support staff in Architectural Practice will be fulfilled and the student's skills and talent will be effectively used.

The Colleges will have the opportunity to focus upon a particular group of Design and Technology electives depending upon the overall philosophy and mission statement of the College. Individual colleges may offer topics depending upon the availability of experts and resource material.

COURSE OUTLINE TERM I: The probable Design Elective topics are as follows :

1. Interior Design
2. Industrial and Product Design
3. Urban Design
4. Advanced Landscape Design
5. Housing
6. Set Design
7. Special Facilities Planning
8. Sustainable Development and Architecture
9. Barrier free Environment and Design

10. Urban and Rural Planning
11. Infrastructure Planning
12. Advanced Computing in Architecture
13. Climate responsive Architecture
14. Mathematics and Science in Design
15. Theory of Architecture.

DETAILED SYLLABUS

Sustainable Development and Architecture

- Philosophy of Sustainability, management and design aspects
- Management in terms of resource and conservation management, anti-pollution measures, Water / waste management etc.
- Design aspect in terms of designing the structures, such as solar passive, passive, energy efficient, cost-effective, eco friendly designing
- Studying other forms of energy and their applications like Tidal / hydal / wind / biotic.
- Studying environmentally sustainable technologies, construction techniques, and use of materials.
- Studying environment related broader topics and issues like river-beds, environmental pollution etc.

Barrier free environment and design

- Types of disabilities and its implications in Architecture, barrier free environment, access- provisions to facilities and amenities.
- Special design considerations in residential buildings, congregational buildings like auditoriums, theatres, stadias, transport terminals etc, Institutional buildings, outdoor appurtenances, garden – parks etc.
- Study of norms set by Central Government.

Natural Disaster resistant architecture

- Types of disasters like earthquake, fire, floods, cyclones, Tsunami and its effects on Architecture.
- Study of geological structure and its deformation, study of behavior of the structure in such disasters, Measure to counteract destabilizing forces, design aspects and considerations for various types of buildings especially the residential, congregational and institutional buildings.

Urban and Rural Planning

- Introduction to hierarchy of planning – levels and their impact on architecture and architectural profession, understanding the interrelation between urban planning and architecture in terms of FSI, Ground Cover page, density and urban form.
- Comprehensive plan of action for reducing inter-regional and intra-regional disparities. Introduction to Regional plans, Master plans, Zonal plans, town planning schemes and urban design schemes. Special requirements for rural planning.

Infrastructure Planning

- Need for infrastructure planning. Introduction to types and design of infrastructure requirements for large scale architectural projects like drainage, water supply, storm transport facilities, provision of amenities, security systems, remote control systems, telecommunication system etc.

Advanced Computing in Architecture

- Software customization – developing expert system for parametric design using languages such as Visual Basic, Auto Lisp etc. Developing plug-ins for programs like 3D, Studio Max etc.
- Expert software which can either be a part of the main software or a third party software for tasks like working of quantities making atomization for typical drawings such as municipal / centerline plans etc.
- Advanced 3D modeling with the use of animated maps, Special effects plug-ins, advanced lighting, animations etc.

- Exploring the sue of Internet for architectural data exchange and development of web-based solutions for the same (eg. Web page designing).
- Virtual Reality
- Intelligent building and design
- Understanding / Exploring softwares like ideas, Catia ProE

Used for designing complicated structures like the Bibau Museum in Spain or most of the buildings of Frank Gehry.

Special Facilities Planning in Hotels and Hospitals

- Fumigation
- A/c for rooms, lobbies, lounges, OT
- Central gas / suction supply
- Electrification for various spaces and gadgets like defibrillator, CT scan, radiology, MRI etc.
- Water management with incinerator etc.
- Laundry
- Hot water, Boiler, Solar
- Emergency lighting
- Food management / movement / kitchen layouts / sotres / eating places.
- Service floor
- Channeled music

Large span structures like Multiplex, Auditorium, Railway stations, covered studio, airport terminal, hangers etc.

- Structural systems
- Light and ventilation
- Seating
- Crisis planning routes during emergency
- Surface finishes
- Rain water disposal
- Luggage movement
- Parking
- Telecommunication and security systems.

COURSE OUTLINE TERM II The probable Technology Elective topics are as follows :

1. Modular Planning and System Building Construction
2. Non-Conventional Technologies
3. Rural (Vernacular) Architecture.
4. Energy Efficient and Eco Friendly Construction
5. Earthquake Resistant Construction
6. Smart and Intelligent Buildings
7. Building Performance Analysis and Appraisal
8. Structure and Form in Architecture.

Detailed syllabus given above is indicative only. Detail syllabus for all Elective Topics can be finalized, considering the time and marks allotted to the subject, by individual College in consultation with expert faculty and can be implemented after approval by the board of studies.

SUBMISSION DETAILS :

The students are expected to study the selected topic in depth, including the basic principles, and their application in built projects by undertaking case studies, necessary site visits, and collecting all the relevant information to make it an exhaustive study and present it in a well documented format having A-3 / A-4 size papers property filed in a file with a signed certificate from concerned Teacher / Expert stating that the study was carried out under his guidance and countersigned by the Principal / Academic Co-ordinator.

Subject Code : **413424** **QUANTITY SURVEYING & ESTIMATING** (Sessional) Subject Code : **413425** **QUANTITY SURVEYING & ESTIMATING** (Paper)			
Teaching Scheme		**Examination Scheme**	
Lecture Periods per week	1	Term I and Term II Sessional (Internal) Sessional (External) Viva	 25 marks (for each term) 25 marks (for each term) nil
Studio Periods per week	3	Total sessional marks for both terms	100 marks
Total Contact Periods per week	4	Paper	100 marks
		Total Marks	200 marks

OBJECTIVES :

1. To train students in computing quantities of various building items for simple load bearing structures and acquaint them with various types of estimates including mode of measurements as adopted by I. S. 1200.
2. To train students in computing quantities of various building items of R.C.C. framed structure, steel structure, building services such as water supply, sanitation and drainage, electrical installations and acquainting them with rates of various building items.

COURSE OUTLINE

1. Introduction to the definition, aim and scope of "Quantity Computation"
2. Study of different types of estimates
3. Study of mode of measurements as stipulated in I. S. 1200
4. Methods of computing quantities for load bearing types of structure and preparing abstract and bills of quantities including units of measurements.
5. Computing quantities of various building items for r.c.c. framed structure, steel structure and building services such as plumbing and water supply. Preparing of quantities for estimation and tendering purposes.
6. Study of composition of rates of various building items, percentage distribution in the rates of materials, labour, tools and plant, contractor's profits and overheads etc.
7. Analysis of rates of main items of building work with reference to prevalent market rates of materials and labour wages.
8. Preparation of indent of various building materials for r.c.c. framed structure.
9. Measurements of completed items for payment to contractor's interim and final certificate.
10. Introduction to use of computer for computation of quantities of various building items.

SESSIONAL ASSIGNMENTS

Hand written Computation and Bills of Quantities shall be prepared of following :

1. Load bearing structure of total plinth area between 15 to 25 sq. mts.

2. Load bearing structure having total built-u area between 100 to 150 sq. mts. Including staircase and toilet block
3. R.C.C. framed structure comprising of Ground and First Floor having total built-up area between 100 to 150 sq. mts. Including staircase and toilet block
4. Computing quantities of single storied steel framed factory building or workshop having total built-up area between 100 to 150 sq. mts. Including m. s. trusses, purlins and sheet roofing.
5. Working out rate analysis of routine civil items.

RECOMMENDED READING :

1. Professional Practice by R. H. Namavati
2. Estimating and Costing by Rangawala and B. N. Dutta
3. Civil Engineering Contracts and Estimates by B. S. Patil
4. I.S.I. Handbook of measurements of building works.

Subject Code : **413426 SPECIFICATION WRITING** (Sessional) **413427 SPECIFICATION WRITING** (Paper)			
Teaching Scheme		**Examination Scheme**	
Lecture Periods per week	2	Term I and Term II Sessional (Internal) Sessional (External) Viva	 25 marks (for each term) 25 marks (for each term) nil
Studio Periods per week	--	Total sessional marks for both terms	100 marks
Total Contact Periods per week	2	Paper	100 marks
		Total Marks	200 marks

OBJECTIVES :

To acquaint students with methodology of writing specifications with reference to building trades, materials, workmanship and performance of different items of work and introducing the students to specifications as an integral part of contract document for building projects.

COURSE OUTLINE

1. Specification as part of contract document, definition, need and importance, its relationship with working drawings, bill of quantities and schedule of rats.
2. Types of specifications, open, closed, restricted, prescriptive, performance based, or combination of above types. Use of manufactures guide etc.
3. Specification writing method to include master list, sectional formats, page formats, general material items, tests, performance, mode of measurements etc.
4. Methodology of writing item wise detailed specifications including methods and forms of writing descriptive notes on materials and workmanship based on working drawings.
5. Collection of catalogues and technical information on various materials, products and specialized items.
6. Preparation of checklist for writing detailed specifications.
7. Study of different building trades, their scope and contents
8. Introduction to writing specifications for building services and checklist for services such as Water Supply, Drainage, Acoustics, Electrical and HVAC installations.
9. Broad outline of specification for other service-installations in building such as
   - Communication systems – elevators, escalators, telecommunication
   - Accessibility – arrangements for disabled person.
   - Water-proofing. (Cement, bitumen, polymer based).

- External development like roads (flexible and rigid construction) pavements, kerbs, lighting, security – systems, fencing.
- Environment Responsive Systems, Renewable energy applications, efficient fuel-systems.

SESSIONAL ASSIGNMENTS :

1. A journal shall be prepared which will cover notes on the portion mentioned above.
2. Specification writing shall be studied in conjunction with working drawings and the first assignment of Load bearing structure of 15 to 25 sq. mt. Plinth area will be covered by preparing specification for common building materials and trades.
3. Technical literature on various specialized items and manufacture's catalogues shall be collected.

RECOMMENDED READING :

1. Indian Standard Specifications
2. C.P.W.D. Specifications and schedule of rate analysis
3. Specification Writing for Architects and Engineers. By Donald A. Watson.
4. Specification Writing for Architects and Surveyors by Arthur J. Wills

Subject Code : **413428 TOWN PLANNING** (Sessional) **413429 TOWN PLANNING** (Paper)			
Teaching Scheme		**Examination Scheme**	
Lecture Periods per week	1	Term I and Term II Sessional (Internal) Sessional (External) Viva	 25 marks (for each term) 25 marks (for each term) nil
Studio Periods per week	3	Total sessional marks for both terms	100 marks
Total Contact Periods per week	4	Paper	100 marks
		Total Marks	200 marks

OBJECTIVE

To provide Town Planning inputs to architectural design. It is intended that Town Planning exercise should run parallel to the topics being taken up in architectural design studio. The focus will be on application of Town Planning theories in Town Planning studio.

COURSE OUTLINE

- Introduction to the subject of Town Planning, need of study of Town Planning for an architect.
- Planning Theories – Theories by Le Corbusier, Sir Pattrick Geddes, Sir Ebenezer Howard, C. A. Doxiadis, Clarence Perry and Lewis Mumford.
- Study existing settlement with respect to current theories in planning.
- New towns and cities in India. (Administrative, Tourism Potential Areas, Industrial, Railway Town, Religious Activities, Project Based Areas etc.)
- Introduction to Town Planning Schemes, Development Plan and Regional Plan. Types of surveys (Physical, social and Economical, Aesthetic Surveys) and method of their analysis, policy making and implementation, including finance funding and phasing.
- Housing – National housing policy, social aspects of housing, economics of housing, types of housing based on various aspects and land economics.

- Introduction to Planning Legislation : Introduction to M.R.T.P. Act of 1966, Land Acquisition Act of 1894, Maharashtra Slum Redevelopment Act, Urban Arts Commission Act, Maharashtra Tree Act, Municipal Act, Urban Ceiling Act.
- M.I.D.C. Act, Mhada Act. Development Control Rules for A, B, C Class Towns, and Municipal Corporations. Development Control Rules of Local Municipal Corporations.
- Introduction about Professional Bodies in planning profession such as T.C.P.O. and I.T.P.I. etc. Various Planning authorities like D.D.A., CIDCO, MMRDA, and PCNTDA etc. Introduction to Local and Self Government in urban as well as rural areas, introduction to 73rd and 74th amendment to the constitution.
- Urban redevelopment and renewal including necessary surveys, Urban traffic and Transportation.
- Brief study about role of Urban Design, Landscape Design and Streetscape Design in Town Planning.

SESSIONAL WORK

- Subdivision of plots (including conversion of land to Non Agriculture use)
- Study report on Town Planners and towns designed by them.
- Neighborhood layout.
- Redevelopment of existing slum area of the city
- Project based on Urban Design and Landscape Design aspect in planning.
- Case studies of various types of housing
- Visit to any of the planning organizations, builders and promoters
- Study of existing Town and Town Planning proposals
- Urban renewal scheme
- Social and environmental problems of sporadic and unplanned growth of urban and rural areas.

REFERENCE BOOKS :

1. Urban Pattern – Arthur B. Gallion
2. Design of Cities – Edmund Bacon
3. Site Planning – Kevin Lynch
4. Image of City – Kevin Lynch
5. Town and Country Planning in India – N. K. Gandhi
6. Town Planning – Law, Administration and Professional Practice – G. R. Diwan
7. P.W.D. Handbook of Town Planning
8. Development Plan and Regional Plan Reports
9. Tomorrow – Peaceful Path To Social Reforms – Sir Ebenezer Howard.
10. Basics of Town Planning – J. G. Keskar
11. Townscape – Gorden Cullen
12. Architecture of Town and Cities – Paul D. Spreiregen
13. The New Landscape – Charles Correa
14. Land Acquisition Act of 1894
15. Maharashtra Slum Redevelopment Act
16. Urban Arts Commission Act
17. M.R.T.P. Act of 1966.

TEACHING PLAN :

1. Out of all the exercise mentioned in sessional work, minimum six exercises are to be completed including following three compulsory exercises
   - i. Case studies of various types of housing
   - ii. Study of existing Town and Town Planning proposals.

iii. Project based on Landscape Design, Urban Design aspects in Town Planning.

2. Out of the rest excluding above three exercises any three could be taken up in rotation.
3. The exercises can be group work.

Subject Code : **413430 PROFESSIONAL PRACTICE** (Sessional) **413431 PROFESSIONAL PRACTICE** (Paper)			
Teaching Scheme		**Examination Scheme**	
Lecture Periods per week	2	Term I and Term II Sessional (Internal) Sessional (External) Viva	 25 marks (for each term) 25 marks (for each term) nil
Studio Periods per week	--	Total sessional marks for both terms	100 marks
Total Contact Periods per week	2	Paper	100 marks
		Total Marks	200 marks

OBJECTIVES :

- To acquaint the student with the various responsibilities of an architect and understand the technicality of the profession.
- To acquaint students with avenues of professional services as well as with relevant scope, mode and conduct of architectural practice.
- To acquaint students with documentation and procedures for execution of building works/projects as well as with managerial aspects of the same.

COURSE OUTLINE

TERM I

- Nature of profession, difference between trade, business and profession,
- Introduction to the importance of professional organizations like I.I.A., COA & their membership.
- Architects office set up and administration, correspondence, letters, reports, taking instruction from the client, its interpretation, design process and its stages, preparation of drawing, filing, standardization and documentation.
- Office Organization, Proprietorship, Partnership, Company etc; Registration as Firm / Company etc.
- Accounts systems and Taxation.
- Detailed study of scope of comprehensive architectural services as framed under Architect's Act 1972.
- Code of Conduct, scale of professional fees as per rules and regulations framed by the Council of Architecture.
- Architectural Competition – Types, procedures, as per guidelines of the Council of Architecture.
- Introduction to valuation of properties, its purpose and different methods of valuation as adopted by different organizations / bodies. Dilapidations and Easements.

COURSE OUTLINE

TERM II

- Tenders – Types and procedures, selection of contractor for building work / project, pre-qualification of contractors, letter of Intent / "Works-order" to the Contractor.
- Articles of Agreement and Conditions of Contract. (Study of conditions stipulated by I.I.A., Price Escalation).
- Site - visit reports and instructions.

- Introduction to architectural supervision, quality control and monitoring of projects, with the help of Bat-Charts / CPM / Pert-Charts.
- Introduction to 'Arbitration'.

TERM – WORK

Term-Work to comprise of the following exercise/s
Minimum three hand-written tutorials on all aspects covered in the 'Course-outline' above.

RECOMMENDED READINGS :

(1) Private Architectural practice – by Manrice E. Tayler
(2) Architectural Practice and Procedure – by Hamilton H. Turner.
(3) Professional Practice in India – by Madhav G. Deobhakta
(4) Professional Practice – by R. H. Namavati
(5) Architect's Act 1972
(6) Council of Architecture and I.I.A. Publications relevant to the 'Course-outline above'.

Subject Code : **413432 DISSERTATION AND ARCHITECTURAL PROJECT (PART I)** (Sessional)			
Teaching Scheme		**Examination Scheme**	
Lecture Periods per week	1	Term I and Term II Sessional (Internal) Sessional (External) Viva	 50 marks (for each term) 50 marks (for each term) nil
Studio Periods per week	2	Total sessional marks for both terms	200 marks
Total Contact Periods per week	3	Paper	nil
		Total Marks	200 marks

AIM :

The subject of Dissertation is included in the syllabus with the intention of introducing the students to the process of conducting systematic research in the subject of their choice but in the overall Architectural Context and acquainting them with the research methodologies adopted while carrying out research in a particular subject. The students are expected to get an orientation in Technical Writing which is an emerging field for making a career. The Dissertation is expected to impart initial training at undergraduate level so as to prepare them for more advanced research at postgraduate level.

The topic of research should relate to the "Architectural Project" that the student intends to undertake. This will help the student to extend the findings of the research to the architectural design.

COURSE OBJECTIVES

1. To introduce the students to research in architecture and its significance in the architectural practice.
2. To introduce the students the types of research in architecture and the process of formulating a research plan.
3. To introduce the students to various methods of research in architecture, their relative advantages and disadvantages and their applications.

4. To introduce the students to data analysis and simple statistical analysis and to interpret and infer from the data.
5. To introduce the students to the technical writing and presenting a research report.

COURSE OUTLINE

TERM I

Introduction to research in architecture – its significance, research design, types of research, literature study, methods of research in architecture (interviewing / visual methods / content analysis); data documentation and analysis, introduction to statistics, presenting the data and reporting the research.

TEACHING PLAN

The course outline has been compiled into 8 units which have to be communicated in the form of lectures to the students to achieve the objective of acquainting the students with the research methods and the process of research. The amount of time in weeks required for each unit is mentioned in parenthesis. Approximately 15 weeks are required for covering the units.

It is recommended that units 1 to 4 shall be covered in the earlier part of term I of the year. By knowledge of the methods of research and having introduced to the research design, students can undertake the research design and primary data collection after initial 8 weeks of the term. Units 5 to 8 can be covered in the earlier part of term II of the year by demonstrating these units using the data collected by the students.

TERM I:

Unit 1 Introduction (2 week)

Introduction to "research" and its significance in architecture – meaning of research. Relationship between design and research. Types of research in architecture, areas of research in architecture, qualitative and quantitative paradigms.

Unit 2 Research Design (2 weeks)

Components of research design – formulating the research questions, hypothesis, choosing the sample, methods of data collection, analyzing the data and inferring from the data. Concepts of dependent and independent variables, unit of analysis. Defining the scope and limitations of a research plan, significance of the research outcome. Preparing time schedule & budget for a research plan.

Unit 3 Literature Study and Research (1 week)

Significance of literature study in research, different sources of information such as books, journals, newspapers, internet, magazines, audio-recordings, etc. Referencing and documenting the bibliography.

Unit 4 Methods of Research in Architecture (3 weeks)

Interview Techniques : Questionnaires /Face to face Interviews / Internet survey. Designing a Questionnaire / Interview schedule.

Visual Techniques : Observations (participant / non-participant / direct), activity mapping, accession/erosion trace observations, cognitive maps, etc.

Content Analysis : Secondary data analysis.

Understanding the relative advantages, disadvantages and application of various methods mentioned above and choosing a method appropriate for a research to achieve its objectives.

TERM II:

Unit 5 Data Documentation and Analysis (2 weeks)

Understanding the nature of data collected and methods of analysis suitable for that data (graphical / numerical / descriptive). Converting data into numerical form for data analysis.

Unit 6 Introduction to the Statistics (3 weeks)
Introduction to the simple statistical methods of analyzing numerical data – frequencies / percentages, mean / median / mode, correlation, chi square test – inferring from the data and interpreting the meaning of those inferences. Use of MS Excel for statistical data analysis.

Unit 7 Presentation of the Data (1 week)
Techniques of presenting the numerical data – graphical (pie charts, bar charts, line graphs etc.), tabulations, verbal qualitative data, architectural drawings / maps.

Unit 8 Reporting the Research (1 week)
Different sections of a research report, technical writing and language (tense, voice, etc.), formatting of a report.

SESSIONAL WORK

1. A **Class test** based upon the units 1 to 4. (20 % of total marks) to be conducted at the **end of term I.**
2. Writing a **review essay** of about 1000 words on any one book / part of a book (chapter) related to architecture, read by the student. (10% of total marks) in **term I.**
3. Undertaking **research on a topic** (for Architectural Project - approved by the University of Pune).
    a. Approach to research, research design (20% of total marks)
    b. Field work (data collection) and Analysis of the data (20% of total marks)
    c. Report writing and presentation (30% of total marks).

Phases (a) above can be assessed in term I while phases (b) & (c) above, will be essentially assessed in the term II.

SUBMISSION, CHAPTERS AND FORMAT OF THE REPORT (Architectural Project Part I):

Candidates must submit three copies of the report duly signed and endorsed by the Principal and the Guide to their respective colleges. Following is a brief guideline for the sections / chapters in the report and the formatting of the report.

1. **The report will have three main parts** :
    a. Initial Pages –in the following sequence.
        i. Title Page
        ii. Certificate from the College
        iii. Acknowledgement
        iv. Table of Contents
        v. List of figures, photos, drawings, tables.
        vi. List of abbreviations
    b. Main body of the report (not to exceed 4000 words).
        i. Introduction
        ii. Literature review
        iii. Methodology
        iv. Data Analysis and Findings
        v. Conclusions and Discussions
        vi. Recommendations / Design Guidelines
        vii. Glossary
    c. Appendices
2. **Formatting of the report**
    a. The report shall be presented in A4 Portrait form using executive bond paper.
    b. The font to be used shall be either **Bookman Old Style** or **Times News Roman.**
    c. **CHAPTER TITLES** : 16 point upper case bold, **Sub-headings** : 14 point title case bold and overall text shall be in 12 point sentence case.
    d. Line Spacing shall be 1.5 lines.

e. Page numbers shall be given at the bottom centre of a page. The initial pages (as in 1 above) should have roman small numerals (i, ii, iii etc.) while the body of the report and appendices shall have English numerals (1,2,3 etc.)
f. Margins : Left Margin 40mm (1.5 inch approx) All other margins 25mm (1 inch approx).
g. Report shall be typed on one side of the page.
h. Black binding with Golden Embossing.
i. Standard conventions for giving references, writing bibliography, annotating figures /tables shall be followed.

RECOMMENDATIONS

Topic for Research : The topic of research should be related to the "Architectural Project" that the student intends to undertake. This will help the student to extend the findings of the research to the architectural design. In this manner, the effort for dissertation would become focused, directional and relevant. The choice of subject shall depend upon many factors such as student's personal interest, circumstances and abilities. A careful check shall be made to see that access is available to relevant buildings and to appropriate libraries, record offices, laboratories and other technical resources. Thought must be given to any travel, and field trips, which may be necessary.

Thus coordination between "Dissertation" and "Architectural Project" at the college level is very essential and an over view meeting with the students should be arranged at the end of the third year B.Arch. Depending upon the philosophy of a particular college, the college may allow topics focusing upon a particular area related to their mission statement.

Following is a list of some Building Types for reference.

1. Housing

Individual or Group Housing Schemes.

2. Transportation Projects

Railway stations, City / Interstate Bus Terminus / Domestic and International Air Ports.

3. Cultural, Educational Projects

Display oriented topics like Museums, Art Galleries, and Theatres for Performing Arts such as Drama, Dance and Music. University and College campuses, Libraries etc.

4. Sports Recreation and Tourism oriented topics

Stadium, Gymnasium, Swimming Pool, Students Recreation Centers, Clubs, Tourist Resorts, Holiday Homes, Motels, Conference Centers etc.

5. Administrative and Civic Buildings

Private and Government Offices, work centers, Town Halls, Police Headquarters, Law Courts etc.

6. Industrial Projects

Factories, Specialised Production Centers such as Pharma Industry, IT Parks and related types of building

7. **Technical and Specialized topics such as** Hospitals, Clinics, Film and T. V. Studios, Cost and Structure oriented topics such as cost effective technologies, Energy efficient building design, Pre fabricated and Industrialized Construction etc.

Guide : The guides for the dissertation should have minimum 5 yrs. of teaching experience as full time faculty member at an architecture college or shall be a visiting faculty member / practitioner with at least 10 yrs experience. Preferably, a guide should not guide more than 8 students for the dissertation.

The dissertation coordinator at a college, should deliver research methods lectures and at times call experts from the field of architecture to review students' work, experts from other fields to give special inputs such as technical writing, statistical methods etc.

RECOMMENDED BOOKS

1. Babbie, E. *The Practice of Social Research*, (third edition). Belmont :Wadsworth Publishing Co. 1983.
2. Creswell, J. W. *Research Design: Qualitaitve, quantitative and mixed methods approaches*, 2nd Ed., Thousand Oaks : Sage. 2003.
3. Creswell, J.W. *Research Design: Qualitative & Quantitative Approaches*. Thousand Oaks : Sage. 1994.
4. De Vaus, D. A. *Surveys in Social Research*, Jaipur : Rawat Publications. 2003.
5. Dey, I. *Qualitative Data Analysis : A User Friendly Guide for Social Scientists*,London : Routledge.1993.
6. Groat, L. & Wang, D. *Architectural Research Methods*, NY : John Wiley and Sons Inc. 2002.
7. Kothari, C.R. *Research Methodology : Methods and Techniques*, New Delhi : Wishwa Prakashan. 2005.
8. Nachmias, C. F. and Nachmias, D. *Research Methods in the Social Sciences*, 5th Edition Great Britain: St. Martin's Press Inc. 1996.
9. Norman K Denzin and Yvonna S Lincoln (Eds.) *Handbook of Qualitative Research*, Thousand Oaks : Sage Publications, pp. 377-392. 1994.
10. Patton, M. Q. *Qualitative Evaluation Methods*, Newsbury Park : Sage Publications. 1980.
11. Sanoff, H. *Methods of Architectural Programming*, Dowden Hutchinson and Ross, Inc. Vol. 29, Community Development Series. 1977.
12. Sanoff, H. *Visual research methods in design*, USA : Van Nostrand Reinhold. 1991.
13. Silverman, D. *Interpreting Qualitative Data : Methods for Analysing Talk, Text and Interaction*, London: Sage Publication. 1993.
14. William Michelson (ed.) *Behavioral Methods in Environmental Design*, Stroudsberg, Pennylvania : Dowden Hutchinson and Ross. Inc. 1982.

UNIVERSITY OF PUNE

DETAIL SYLLABUS

FOR

FIFTH YEAR

BACHELOR OF ARCHITECTURE

(Fifth Year B.Arch. & B. Arch. (ID)

2008 COURSE

(to be implemented from 2014-15)

FACULTY OF ENGINEERING

BOARD OF STUDIES IN ARCHITECTURE

FIFTH YEAR B.ARCH.

Sr. No.	Subject Code	Name of Subject	Head	Teaching Scheme			Examination Scheme		
				Lecture Periods	Studio Periods	Total Periods	Term I Marks	Term II Marks	Total Marks
1	513421	Practical Training	SV	--	--	--	100	--	100
2	513422	Architectural Project Part II	SV	2	10	12	--	400	400
3	513423	Management Elective	SS	1	1	2	--	50	50
4	513424	Allied Elective	SS	1	1	2	--	50	50
		TOTAL		4	12	16	100	500	600

FIFTH YEAR B.ARCH.

DETAIL SYLLABUS

<table>
<tr><td colspan="4">Subject Code : 513421 PRACTICAL TRAINING (Sessional and Viva)</td></tr>
<tr><td colspan="2">Teaching Scheme</td><td colspan="2">Examination Scheme</td></tr>
<tr><td rowspan="2">Lecture Periods per week</td><td rowspan="2">--</td><td>Term I Only</td><td></td></tr>
<tr><td>Sessional (Internal)</td><td>25 marks (for Term I)</td></tr>
<tr><td rowspan="2">Studio Periods per week</td><td rowspan="2">--</td><td>Sessional (External)</td><td>25 marks (for Term I)</td></tr>
<tr><td>Viva</td><td>50 marks (for Term I)</td></tr>
<tr><td rowspan="3">Total Contact Periods per week</td><td rowspan="3">--</td><td>Total sessional marks for Term I Only</td><td>100 marks</td></tr>
<tr><td>Paper</td><td>nil</td></tr>
<tr><td>Total Marks</td><td>100 marks</td></tr>
</table>

AIMS AND OBJECTIVE

The aim of introducing one complete term for the students to undergo practical training is to expose them to the world of Professional Practice and get hands on training under the guidance of a professional who is actively engaged in Architectural Practice. It sill give the students first hand experience of dealing with live projects of various nature and also the site experience to see how the projects get built on the site. The students will also be able to learn about the Office Management, Project Management, Contract Management, Human Resource Management, new techniques of construction, advance building services, landscape and environmental designing etc. This rich experience is expected to enhance the students' ability to think comprehensively and better prepare them for undertaking the Architectural Project work in the final semester.

COURSE OUTLINE

1 The term of Practical Training will commence immediately after the examination of Fourth Year and will continue till the end of IX SEM or thereabout. The students are expected to work in the organization where architecture and its related practice are carried out and under the guidance of the professional who is registered with Council of Architecture. In case the student opts to go abroad he / she will work under the guidance of the professional who is registered with the council / any other organization controlling the profession of Architecture in the respective country. The students will decide very carefully about their placement venue as it is expected that they learn best ethics in Professional Practice and which produces quality architecture. The placement cell of each College will extend all possible help to the students in this regard.

2 The total duration of the training will be minimum 18 working weeks / 90 working days excluding the holidays.

SUBMISSION

1. The students shall prepare an exhaustive Training Report separately or in a formal Log Book issued to him by the College as per the College policy, week by week, which will cover detailed record of the work done in the office, site visit reports, interviews with clients and any other agency, interaction with principal architect etc. The professional with the seal of the organization, under whose guidance the student worked, will sign the report and also his reflection about the student's work and his overall approach and attitude towards the office work.

2. The students shall produce the above mentioned Training Report and the Log Book at the time of viva-voce examination. He will also produce few drawings with the permission of his employer to indicate the kind of work he has carried out.

SESSIONAL ASSESSMENT AND VIVA-VOCE: The sessional and viva assessment shall be done jointly by the Internal and External Examiners and the allocation of marks shall be as stipulated in the syllabus

Subject Code : **513422 ARCHITECTURAL PROJECT (PART II)** (Sessional and Viva)

Teaching Scheme		**Examination Scheme**	
Lecture Periods per week	2	Term II	
		Sessional (Internal)	150 marks (for Term II)
Studio Periods per week	10	Sessional (External)	150 marks (for Term II)
		Viva	100 marks
		Total sessional marks	400 marks
		for both terms	
Total Contact Periods per week	12	Paper	nil
		Total Marks	400 marks

OBJECTIVE

To expose and to provide opportunity to the students to extend the findings of the research carried out under the subject of "Dissertation" to the architectural project and exercise full-fledged large scale Architectural Design with holistic approach including site investigation, programme formulation, and design demonstration.

COURSE OUTLINE

The architectural project(Part II) shall consist of : **Design Demonstration i.e.** Formulation of Design Programme, Site investigation, and selection, and culmination in a concrete design demonstration.

SUBMISSION WORK :

Sessional work for the Part II of Architectural Project shall consist of a **Design Solution :** Graphically presented Design solution in from of sufficient number of architectural drawings, (manually drawn/computerized) with models etc. Since the Architectural Project is the culmination of five years of learning in various aspects of Architecture, it is expected that students demonstrates an ability of holistic and comprehensive thinking in the areas of ,

- Site Planning
- Structural considerations
- Interior space planning
- Environmental planning
- Building Services
- Climate responsive, Energy efficient and exhibiting qualities of sustainable architecture.
- Architectural Detailing.

The portfolio will consist of drawings sufficiently in detail to demonstrate the consideration given to the above-mentioned attributes of a good quality Architectural Project. Emphasis shall be given to the preparation of self-explanatory drawings in great detail, as if in any Architectural Competition.

SESSIONAL ASSESSMENT

The Internal assessment of "Architectural Project" shall be carried out **STAGE WISE** as decided by the individual College.

The final assessment in the examination shall be done by both Internal and External Examiner / s in which the student will display his work on the space allotted to him and explain his work and answer all the queries raised by the Examiners.

The Time allotted per student shall be minimum 30 minutes to maximum 45 minutes. The Internal stage wise making shall be done out of 150 marks and External marking shall be done jointly by the External Examiner/s out of 150 marks. 100 marks shall be reserved for oral presentation to be assessed jointly by both Internal and External Examiners.

The individual college will make available Guides specializing in various disciplines who will make themselves available to the students in College premises on pre appointed days and time.

Individual Guide will guide maximum of **FIVE STUDENTS** of a particular College in which he is working as a Guide. Total number of students from all the Colleges shall not exceed **EIGHT** at any one time.

In order to qualify to work as a Guide the teacher / professional must possess minimum of **FIVE YEARS** of teaching / professional experience. Efforts shall be made to appoint guides who have high academic qualification, having rich Professional experience and contributed in a major way to the field of Architectural Education / Profession.

RECOMMENDED READING

All books relevant to the topic of the architectural project.

Subject Code : **513423 MANAGEMENT ELECTIVE** (Sessional)

Teaching Scheme		**Examination Scheme**	
Lecture Periods per week	1	Term II	25 marks (for Term II)
		Sessional (Internal)	
Studio Periods per week	1	Sessional (External)	25 marks (for Term II)
		Viva	nil
		Total sessional marks	50 marks
		for both terms	
Total Contact Periods per week	2	Paper	nil
		Total Marks	50 marks

AIMS AND OBJECTIVE

The subject of Electives has been introduced in syllabus with specific intention of in depth study of a particular subject of student's liking in greater detail but in the larger context of overall scope of Architecture syllabus at undergraduate level. This will give students an opportunity to develop their skills in a subject they may opt, to make their career in future. Architectural practice is a team effort in which persons of different skills in varied fields are required such as Concept Developers, Technical / Working Drawing Experts, Specification Writers, Quantity Surveyors, Project Managers, Contract Managers, Interior Designers, Architectural Photographers, Architectural Journalists, Signage and Graphic Designers, Energy Consultants, Building Services Consultants, Making Managers etc. In depth study in Electives will prepare the technical base of the students. Since the Architectural Projects in future are going to be very complex, the vital need of support staff in Architectural Practice will be fulfilled and the student's skills and talent will be effectively used.

COURSE OUTLINE

Individual College may offer topics depending upon the availability of experts and resource material. The Colleges will have the opportunity to focus on particular group of topics according to overall philosophy and mission statement of the College. The probable management elective topics are as follows :

1. Project Management.
2. Energy management.
3. Architectural legalities.
4. Architect's office management.
5. Disaster management.
6. Risk management.
7. Entrepreneurship Development and Total Quality management.
8. Information Technology in Architectural profession.
9. Financial Management and Budgeting

SUBMISSION DETAILS :

The students are expected to study the selected topic in depth, including the basic principles, and their application in built projects by undertaking case studies, necessary site visits, and collecting all the relevant information to make it an exhaustive study and present it in a well documented format having A-3 / A-4 size papers properly filed with a signed certificate from concerned Teacher / Expert stating that the study was carried out under his guidance and countersigned by the Principal / Academic Co-ordinator.

Subject Code : **513423 ALLIED ELECTIVE** (Sessional)

Teaching Scheme		**Examination Scheme**	
Lecture Periods per week	1	Term II	
		Sessional (Internal)	25 marks (for Term II)
		Sessional (External)	25 marks (for Term II)
Studio Periods per week	1	Viva	nil
		Total sessional marks for both terms	50 marks
Total Contact Periods per week	2	Paper	nil
		Total Marks	50 marks

AIMS AND OBJECTIVE

The subject of Electives has been introduced in syllabus with specific intention of in depth study of a particular subject of student's liking in greater detail but in the larger context of overall scope of Architecture syllabus at undergraduate level. This will give students an opportunity to develop their skills in a subject they may opt, to make their career in future. Architectural practice is a team effort in which persons of different skills in varied fields are required such as Concept Developers, Technical / Working Drawing Experts, Specification Writers, Quantity Surveyors, Project Managers, Contract Managers, Interior Designers, Architectural Photographers, Architectural Journalists, Signage and Graphic Designers, Energy Consultants, Building Services Consultants, Making Managers etc. In depth study in Electives will prepare the technical base of the students. Since the Architectural Projects in future are going to be very complex, the vital need of support staff in Architectural Practice will be fulfilled and the student's skills and talent will be effectively used.

COURSE OUTLINE

Following is a list of topics from which individual Colleges may offer few topics depending upon the availability of experts and resource material. The Colleges will have the opportunity to focus on particular group of Electives such as Design, Technology, Management or Allied group, according to overall philosophy and mission statement of the College. The probable Allied Elective topics are as follows :

1. Visual Communication
2. Fine Arts and Graphics
3. Architectural Journalism
4. Advanced Computer Graphics
5. Architectural Conservation
6. Photography
7. Applied Psychology in Arch. Housing Finance and Building
8. Applied Sociology in Arch.
9. Economics

SUBMISSION DETAILS :

The students are expected to study the selected topic in depth, including the basic principles, and their application in built projects by undertaking case studies, necessary site visits, and collecting all the relevant information to make it an exhaustive study and present it in a well documented format having A-3 / A-4 size papers properly filed with a signed certificate from concerned Teacher / Expert stating that the study was carried out under his guidance and countersigned by the Principal / Academic Co-ordinator.