

SAVITRIBAI PHULE PUNE UNIVERSITY

COURSE STRUCTURE

FIVE YEAR DEGREE COURSE IN ARCHITECTURE

[B.ARCH.]

TO BE IMPLEMENTED FROM 2015-16

BOARD OF STUDIES IN ARCHITECTURE

FACULTY OF ENGINEERING

SAVITRIBAI PHULE PUNE UNIVERSITY

BACHELOR OF ARCHITECTURE

COURSE STRUCTURE AND RULES

Preamble

The New Syllabus of the B.Arch course hence forth to be referred as the 2015 Pattern, to be implemented from the year 2015-16, is designed to address and update the knowledge about the field. The course focuses to develop the design ability, impart knowledge about various aspects of architecture and develop various skill sets. Considering this certain subjects are reduced in scope while certain new subjects are added.

As per the University guidelines, the course is structured upon the Credit System Based Assessment. In semester and End semester assessment is introduced for theory paper subjects and at end of the semester sessional assessment for studio based subjects.

Following are the salient features of the course content.

- To bridge the gap between learning Basic Design and its application in Architectural Design, a comprehensive subject titled as “Design” is introduced where in there is simultaneous and synchronized learning of basic design and architectural design fundamentals in the first two years of the course.
- “Introduction to Architecture” a one semester (first semester) course would give an overview of the discipline of architecture as well as the structure of five-year course.
- “Humanities” as a separate subject is introduced to enable the understanding of human culture, society and civilisations and prepare a base for learning the history of architecture in the later semesters. The subject should be taught from the perspective of architecture.
- “Urban Studies” in the fourth year (both the semesters) is a comprehensive subject integrating urban planning, urban design, architectural conservation & byelaws. An introduction to building economics is also included in the course content.
- “Research in Architecture I” would introduce the students to the research methodology and research methods while in “Research in Architecture II” the students would undertake a research project to employ the knowledge they gained in the first leg of this subject.
- “Electives” are introduced from sixth semester onwards. The subjects / topics of the elective are thematically grouped: Sixth semester Elective I (Interior design elective), Seventh semester Elective II (Design and Technology

elective), Eighth semester Elective III (Allied elective) and Tenth semester Elective IV (Management Elective).

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 (Total credits of Stage I = 144)

1. I B.Arch. Semester I & II exams
2. II.B.Arch Semester III & IV exams
3. III.B.Arch. Semester V & VI exams

STAGE II (Total credits of Stage II = 70)

4. IV B.Arch. Semester VII & VIII exams
5. V B.Arch. Semester IX & X exams

Total Credits of the Course = Stage I + Stage II = 214

Rule no. 3: GRANTING OF TERM.

Academic year shall consist of two semesters of 90 teaching days each. Sessional work completed by the students shall be continuously assessed internally 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 examination **only** if he/she 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 minimum 45% 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/she has scored minimum 45 % marks in each theory / sessional / sessional and viva-voce head and minimum 50% aggregate.

For admission to Stage II of the course:

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

Rule no. 5 : Rules of Passing

5.1 To pass sessional and /or oral, the student has to earn minimum 45% marks in each head.

5.2 To pass the theory subject head the student has to earn minimum of 45% marks in the End semester exam and minimum 45% average marks (In semester + End semester).

5.3 The failing student can repeat the end semester exam to pass the head in any semester and the In semester exam marks will be retained as it is. Or the failing student can repeat for end semester exam as well as in semester exam for the head of even semester in the even semester only and for the head of odd semester in the odd semester only for the theory head.

5.4 To earn credits of a course (paper/sessional/oral) student must pass the course with minimum passing marks / grade.

5.5 Student can apply only for the revaluation / photocopying / verification of answer sheets of End semester exam only.

Rule no. 6: RULES OF A.T.K.T.

1. A student can be admitted for the third semester if he/she earns minimum **50%** credits of the total of first and second semester.
2. A student can be admitted for the fifth semester if he/she earns minimum **50%** credits of the total of third and fourth semester and all the credits (**100%**) of the first and second semester and passing grade of aggregate for first year.
3. A student can be admitted for the seventh semester if he/she earns minimum **50%** credits of the total of the fifth and sixth semesters and all the credits (**100%**) of the third and fourth semesters and passing grade of aggregate for second year.
4. 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 credits earned by the student in seventh and eighth semesters.
5. A student would be awarded B.Arch. only if he/she earns 214 (100%) credits and clears all the courses specified in the syllabus and gets passing grade of aggregate.

Rule no. 7: ASSESMENT AND GRADE POINT AVERAGE

7.1 A grade assigned to each head based upon marks obtained by the student in examination of the course.

Table 1

GRADING SYSTEM FOR PASSING HEADS (theory / sessional / sessional-viva)

Grade	Grade Points	% of Marks Obtained	Remarks
O	10	90-100	Outstanding
A	9	80-89	Very good
B	8	70-79	Good
C	7	60-69	Fair
D	6	50-59	Average
E	5	45-49	Below average
F	0	Below 45	Fail

Table 2

GRADING SYSTEM FOR AGGREGATE

Grade	Grade Points	% of Marks Obtained	Remarks
O	10	90-100	Outstanding
A	9	80-89	Very good
B	8	70-79	Good
C	7	60-69	Fair
D	6	50-59	Average
F	0	Below 50	Fail

7.2 **Passing grades for various heads:** The grades O,A,B,C,D & E are passing grades for various heads (paper / sessional / sessional viva voce). A candidate acquiring any one of these grades in a course shall be declared as pass only in that particular subject head. And student shall earn the credits for a course only if the student gets passing grade in that course (which includes paper and/or sessional and/ or sessional viva voce).

7.3 **Passing grades for Aggregate :** The grades O,A,B,C & D are passing grades in the aggregate.

7.4 **F grade for various heads:** The grade F is a failure grade. The student with F grade will have to pass the concerned course by reappearing for the examination.

7.5 **F grade for aggregate:** The grade F is a failure grade for aggregate. The student with F grade will have to appear for paper &/ or sessional & /or session viva voce for improvement of aggregate.

Rule no. 8: EXAMINATIONS.

- i. Paper **and/ or**
- ii. Sessional / Sessional and Viva-voce based on sessional work, as prescribed in the subjects will be treated as **separate heads of passing.**

8.1 Structure of Theory Paper Examinations

The theory Examination shall be conducted in two phases for the subjects as indicated in the structure viz.: In Semester Examination and End Semester examination. The structure detailing the time, mode of syllabus coverage, maximum marks etc is given below. This structure of examinations shall be followed by the regular candidates :-

Phase of examination	Time	Mode	Syllabus Coverage	Duration	Max. Marks
In semester	End of 6 th week	Written	Unit I & II	60 minutes	30
End Semester	End of Semester	Written	All Units	150 minutes	70

The detail examination schedule shall be decalred at the beginning of the semester by the Savitribai Phule Pune University.

Rule no. 9: CONDUCT OF EXAMINATIONS.

- 9.1 All the examinations will be conducted at University level.
- 9.2 In-Semester Examination : Shall be carried out at concerned college by appointing examiners from the panel given by the 32/5 committee of the University and the result to be conveyed to the University.
- 9.3 End-Semester Examination : Shall be carried out at concerned college as per the University schedule of examination program and the question paper will be made available by the University.

Rule no. 10: Assesment

- 10.1 **In-semester Examination Assessment** will be done at the College by the expert who is appointed as the examiner for the subject as per 32/5 Panel of the In-semester exam.
- 10.2 **End-Semester Examination Assessment** will be done at the CAP center by the Expert(s) appointed as the examiner for the subject as per 32/5 Panel of the End-semester exam for Third to Fifth Yr.

10.3 SESSIONAL WORK ASSESSMENT.

- a. The sessional and /or oral examinations is to be conducted and assessed jointly by external and internal examiner approved by the University.
- b. 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 completed and collected on the fixed target date. All assignments shall be continuously assessed by the teacher during semester.
- c. At the end of each semester sessional work shall be assessed jointly by the internal and external examiners from amongst the panel approved by the University.
- d. Performance of Sessional / Viva-voce Examination shall be assessed on the basis of understanding of the principles involved and not on the basis of mere correctness or results and ornamental or colourful presentation.
- e. Drawings and reports / notes shall be manually prepared. Students may use computers for sessional work under the guidance of the teachers where nature of work is individual and stress is on content rather than skill. The work done by the students has to be authenticated for its originality by the concerned teachers.
- f. At all the examinations **except** for the SEMESTER X : ARCHITECTURAL PROJECT, external assessment shall be carried out by Internal teachers from other college in the University not teaching that or any other subject in the institute where the examination is being conducted.
- g. For tenth semester Architectural Project an external examiner means a professional not teaching in any of the colleges under University of Pune.
- h. Internal Examiner : Internal Examiner is one who is teaching that particular subject in the same/any other college under University.
- i. 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.
- j. An Examiner for any of the subjects of examination for 4th year and Final Year Architecture, shall have a minimum of 5 years teaching / professional experience in his/her field of study.
- k. To qualify for the External Examiner at the tenth semester Architectural Project, the professional shall have a minimum of five years professional experience.

Rule no.11 : PERFORMANCE INDICES

1. The semester end grade sheet will contain grades for the course along with titles and SGPA. Final grade sheet and transcript shall contain CGPA.
2. **SGPA** : The performance of a student in a semester is indicated by a number called the semester grade point average (SGPA). The SGPA is the weighted average of grade points obtained in all the courses registered by the student during the semester.

Semester Grade Point Average (SGPA) =

$$\begin{aligned}
 \text{SGPA} &= \frac{\sum_{i=1}^p C_i G_i}{\sum_{i=1}^p C_i} \\
 &= \frac{\sum \text{Grade Points earned} \times \text{Credits for each course}}{\text{Total Credits}}
 \end{aligned}$$

For example : Suppose in a given semester a student has registered for five courses having credits C1, C2, C3, C4, C5 and his / her grade points in those courses are G1, G2, G3, G4, G5 respectively,

Then the SGPA would be

$$\begin{aligned}
 \text{SGPA} &= \frac{C_1 G_1 + C_2 G_2 + C_3 G_3 + C_4 G_4 + C_5 G_5}{C_1 + C_2 + C_3 + C_4 + C_5}
 \end{aligned}$$

SGPA is calculated up to two decimal places by rounding off.

3. **CGPA** : The CGPA is the weighted average of the grade points obtained in all the courses (theory /sessional /vivavoce) of **seventh, eighth, ninth and tenth** semesters. It is calculated in the same manner as the SGPA. It is calculated based upon the SGPA of the concerned semesters.

Rule no. 12: RESULT

Based on the performance of the student in the semester examinations, the Savitribai Phule Pune University will declare the results and issue the Semester grade sheets.

The class shall be awarded to a student on the CGPA calculated in rule no. 11(3). The award of the class shall be as per the table no. 3 below.

Table 3

Sr.No.	CGPA	Class of the degree awarded
1	7.75 or more than 7.75	First class with distinction
2	6.75 or more but less than 7.75	First class
3	6.25 or more but less than 6.75	Higher second class
4	5.5 or more but less than 6.25	Second class

Rule no. 13: EXEMPTIONS

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

- a) Examinations will be held in Oct. / Nov. & Apr / May.
- b) He/ She may be exempted from appearing in the head/s of passing in which he/she has passed.
- c) The students failing to get minimum passing grade for aggregate in a year can also appear for the examinations (paper and/or sessional and/or sessional-vivavoce) to enhance their marks in maximum four heads.

Rule no. 14: INTRODUCTION OF THIS CURRICULUM.

The new curriculum for the Degree course in Architecture B.Arch will be introduced gradually as under:

- a) First Yr. B. Arch. course from June 2015
- b) Second Yr. B. Arch. course from June 2016
- c) Third Yr. B. Arch. course from June 2017
- d) Fourth Yr. B. Arch. course from June 2018
- e) Final Yr. B. Arch. course from June 2019

Note : The B.Arch. course introduced in June 2015 would be conducted by the University for 10 consecutive years since inception for the Students admitted between June 2015 to June 2019. However the student has to pass the first stage of this course in maximum five years since admission.

Rule no. 15: OTHER RULES.

University may frame additional rules and regulations or modify these regulations if needed and once approved by the University they would be binding on the students.

COURSE STRUCTURE

FIVE YEARS DEGREE COURSE

BACHELOR OF ARCHITECTURE

As per the Council of Architecture guidelines approx. 75% course curriculum is prescribed. While remaining may be as per the individual philosophy of the institute. A total of 40 periods (45 min duration) per week per term shall be conducted for the course. Out of these 36 periods are specified below. 4 periods per week are given to the institutions 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.

The periods considered for calculating the teaching load are of 45 min duration. The credit calculation is based upon 60 minutes amounting to one credit.

Considering the peculiarity of Architecture Education, the studio load is considered equal to the lecture load as one to one contact with the students is desirable and hence credits are calculated by considering full load of lecture and studio periods.

The detail structure of the syllabus for the ten semesters course is given below.

(Note : SS= Sessional work ; PP=theory Paper ; SV = Sessional + Viva voce)

FIRST YEAR B.ARCH. SEM. I

Code	Subject	Teaching Scheme Periods/Week		Examination Scheme				Total Marks	Credits
		Lecture	Studio	In Semester	Sessional	Oral	End Semester		
1201501	Design I	3	7	--	200	50	--	250	7
1201502	Building Technology & Materials I (SV)	3	4	30			70	200	5
1201503	Building Technology & Materials I (PP)				50	50			
1201504	Theory of Structures I (PP)	1	2	30			70	100	2
1201505	Arch Drawing & Graphics I	2	5	--	100	--	--	100	4
1201506	Humanities	2	1	--	50	--	--	50	2
1201507	Introduction to Architecture	2	1	--	50	--	--	50	2
1201508	Workshop I	1	2	--	50	--	--	50	2
		14	22					800	24

FIRST YEAR B.ARCH. SEM. II

Code	Subject	Teaching Scheme Periods/Week		Examination Scheme				Total Marks	Credits
		Lecture	Studio	In Semester	Sessional	Oral	End Semester		
1201509	Design II	3	7	--	200	50	--	250	7
12015010	Building Technology & Materials II(SV)	3	4	30			70	200	5
12015011	Building Technology & Materials II (PP)				50	50			
1201512	Theory of Structures II	1	2	30			70	100	2
1201513	Arch Drawing & Graphics II	2	5	--	100	--	--	100	4
1201514	History of Architecture I	2	1	--	50	--	--	50	2
1201515	Climatology	2	1	--	50	--	--	50	2
1201516	Workshop II	1	2	--	50	--	--	50	2
		14	22					800	24

SECOND YEAR B.ARCH. SEM. III

Code	Subject	Teaching Scheme Periods/Week		Examination Scheme				Total Marks	Credits
		Lecture	Studio	In Semester	Sessional	Oral	End Semester		
2201517	Design III	3	8	--	200	50	--	250	7
2201518	Building Technology & Materials III(SV)	3	4	30			70	200	5
2201519	Building Technology & Materials III(PP)				50	50			
2201520	Theory of Structures III	1	2	30			70	100	2
2201521	Building Services I (SS)	2	2		50			150	3
2201522	Building Services I (PP)			30			70		
2201523	History of Architecture II	2	1	--	50	--	--	50	2
2201524	Arch Drawing & Graphics III	2	3	--	100	--	--	100	3
2201525	Surveying & Levelling	1	2	--	50	--	--	50	2
		14	22					900	24

SECOND YEAR B.ARCH. SEM. IV

Code	Subject	Teaching Scheme Periods/Week		Examination Scheme				Total Marks	Credits
		Lecture	Studio	In Semest er	Sessional	Oral	End Semester		
2201526	Design IV	3	8	--	200	50	--	250	7
2201527	Building Technology & Materials IV(SV)	3	4	30			70	200	5
2201528	Building Technology & Materials IV (PP)				50	50			
2201529	Theory of Structures IV	1	2	30			70	100	2
2201530	Building Services II (SS)	2	2		50			150	3
2201531	Building Services II (PP)			30			70		
2201532	History of Architecture III	2	1	--	50	--	--	50	2
2201533	Technical Communication	1	2		50			50	2
2201534	Working Drawing I	2	3		100			100	3
		14	22					900	24

THIRD YEAR B.ARCH. SEM. V

Code	Subject	Teaching Scheme Periods/Week		Examination Scheme				Total Marks	Credits
		Lecture	Studio	In Semeste r	Sessional	Oral	End Semester		
3201535	Design V	3	8	--	200	50	--	250	7
3201536	Building Technology & Materials V(SV)	3	4	30			70	200	5
3201537	Building Technology & Materials V (PP)				50	50			
3201538	Theory of Structures V	1	2	30			70	100	2
3201539	Landscape Architecture I	1	3		50			50	2
3201540	Building Services III (SS)	2	2		50			150	3
3201541	Building Services III (PP)			30			70		
3201542	History of Architecture IV	2	1	--	50	--	--	50	2
3201543	Working Drawing II	2	2		100			100	3
		14	22					900	24

THIRD YEAR B.ARCH. SEM. VI

Code	Subject	Teaching Scheme Periods/Week		Examination Scheme				Total Marks	Credits
		Lecture	Studio	In Semester	Sessional	Oral	End Semester		
3201544	Design VI (SV)	3	8	--	200	50		350	7
3201545	Design VI (PP)			--	--	--	100		
3201546	Building Technology & Materials VI(SV)	3	4	30			70	200	5
3201547	Building Technology & Materials VI (PP)				50	50			
3201548	Theory of Structures VI	1	2	30			70	100	2
3201549	Landscape Architecture II	1	3		50			50	2
3201550	Building Services IV(SS)	2	2		50			150	3
3201551	Building Services IV (PP)			30			70		
3201552	Contemporary Arch Seminar	1	3	--	50	--	--	50	3
3201553	Elective I	1	2		50			50	2
		12	24					950	24

FOURTH YEAR B.ARCH. SEM. VII

Code	Subject	Teaching Scheme Periods/Week		Examination Scheme				Total Marks	Credits
		Lecture	Studio	In Semester	Sessional	Oral	End Semester		
4201554	Design VII	3	9		200	50		250	8
4201555	Advanced Building Technology and Services I	3	4		150	50		200	5
4201556	Professional Practice I	1	2	30			70	100	2
4201557	Urban Studies I	1	2		50			50	2
4201558	Research in Architecture I	1	2		50			50	2
4201559	Quantity Surveying and Estimation I	1	2	30			70	100	2
4201560	Specification Writing I	1	2	30			70	100	2
4201561	Elective II	1	1		50			50	1
		12	24					900	24

FOURTH YEAR B.ARCH. SEM. VIII

Code	Subject	Teaching Scheme Periods/Week		Examination Scheme				Total Marks	Credits
		Lecture	Studio	In Semester	Sessional	Oral	End Semester		
4201562	Design VIII	3	9		200	50		250	8
4201563	Advanced Building Technology and Services II	3	4		150	50		200	5
4201564	Professional Practice II	1	2	30			70	100	2
4201565	Urban Studies II	1	2		50			50	2
4201566	Research in Architecture II	1	2		50			50	2
4201567	Quantity Surveying and Estimation II	1	2	30			70	100	2
4201568	Specification Writing II	1	2	30			70	100	2
4201569	Elective III	1	1		50			50	1
		12	24					900	24

FIFTH YEAR B.ARCH. SEM. IX

Code	Subject	Teaching Scheme Periods/Week		Examination Scheme				Total Marks	Credits
		Lecture	Studio	In Semester	Sessional	Oral	End Semester		
5201570	Practical Training	--	--	--	150	50	--	200	8
		--						200	8

FIFTH YEAR B.ARCH. SEM. X

Code	Subject	Teaching Scheme Periods/Week		Examination Scheme				Total Marks	Credits
		Lecture	Studio	In Semester	Sessional	Oral	End Semester		
5201571	Architectural Design Project	4	16	--	350	100	--	450	12
5201572	Elective IV	1	2		50			50	2
		5	18					500	14

SAVITRIBAI PHULE PUNE UNIVERSITY

DETAILED SYLLABUS OF FIRST YEAR

[B.ARCH.]

TO BE IMPLEMENTED FROM 2015-16

BOARD OF STUDIES IN ARCHITECTURE

FACULTY OF ENGINEERING

DESIGN I

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

COURSE OBJECTIVES:

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

COURSE OUTLINE:

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

SESSIONAL WORK:

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

RECOMMENDED READINGS

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

BUILDING TECHNOLOGY AND MATERIALS I

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

COURSE OBJECTIVES

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

COURSE CONTENTS:

Unit 1

Introduction to various elements of building from foundation to roof.

Unit 2

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

Unit 3

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

Unit 4

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

Unit 5

Various pointing and plastering techniques and their processes.

Unit 6

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

SESSIONAL WORK

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

RECOMMENDED READINGS

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

THEORY OF STRUCTURES I

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

COURSE OBJECTIVES:

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

COURSE OUTLINE:

Unit 1. Forces.

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

Unit 2. Centre of Gravity.

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

Unit 3. Moment of Inertia

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

Unit 4. Supports and Loads

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

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

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

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

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

RECOMMENDED READINGS

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

ARCHITECTURAL DRAWING AND GRAPHICS I

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

COURSE OBJECTIVES:

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

COURSE OUTLINE:

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

Unit 2 Introduction to graphic language and its components:

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

Unit 3 Plane and Solid geometry:

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

Unit 4 Scale Drawing:

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

Unit 5 Sketching:

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

SESSIONAL WORK:

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

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

RECOMMENDED READINGS

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

HUMANITIES

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

COURSE OBJECTIVE

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

COURSE OUTLINE

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

SESSIONAL WORK

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

RECOMMENDED READINGS

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

INTRODUCTION TO ARCHITECTURE

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

COURSE OBJECTIVES:

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

COURSE OUTLINE

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

SESSIONAL WORK

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

RECOMMENDED READINGS

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

WORKSHOP I

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

COURSE OBJECTIVES:

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

COURSE OUTLINE:

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

SESSIONAL WORK:

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

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

RECOMMENDED READINGS

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

DESIGN II

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

COURSE OBJECTIVES:

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

COURSE OUTLINE:

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

SESSIONAL WORK:

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

RECOMMENDED READINGS

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

BUILDING TECHNOLOGY AND MATERIALS II

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

COURSE OBJECTIVES

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

COURSE CONTENTS

Unit 1

- Construction of reinforced masonry walls, pillars and lintels

Unit 2

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

Unit 3

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

Unit 4

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

Unit 5

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

Unit 6

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

SESSIONAL WORK

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

RECOMMENDED READING

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

THEORY OF STRUCTURES II

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

COURSE OBJECTIVES:

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

COURSE OUTLINE.

Unit 1. Simple Stresses and Strains

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

Unit 2. Spanning Members.

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

Unit 3. Deflection.

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

Unit 4. Combined Stresses

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

Unit 5. Frames and Trusses.-1

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

Unit 6. Frames and Trusses.-2

1. Graphical Solution of Frames.

RECOMMENDED READING

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

ARCHITECTURAL DRAWING AND GRAPHICS II

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

COURSE OBJECTIVES:

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

COURSE OUTLINE:

Unit 1 Solid Geometry:

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

Unit 2 Measured drawing/ Scale Drawing:

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

Unit 3 Sketching:

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

Unit 4 Introduction to CAD:

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

SESSIONAL WORK:

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

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

RECOMMENDED READINGS

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

HISTORY OF ARCHITECTURE I

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

COURSE OBJECTIVE

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

COURSE OUTLINE

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

SESSIONAL WORK

- At least 3 project based assignments including one tutorial.

RECOMMENDED READINGS

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

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

CLIMATOLOGY

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

COURSE OBJECTIVES:

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

COURSE OUTLINE

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

SESSIONAL WORK

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

RECOMMENDED READINGS

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

WORKSHOP II

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

COURSE OBJECTIVES:

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

COURSE OUTLINE:

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

SESSIONAL WORK:

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

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

RECOMMENDED READING:

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

SAVITRIBAI PHULE PUNE UNIVERSITY

DETAILED SYLLABUS OF SECOND YEAR

[B.ARCH.]

TO BE IMPLEMENTED FROM 2016-17

BOARD OF STUDIES IN ARCHITECTURE

FACULTY OF ENGINEERING

DESIGN III

Design III			
Subject Code		2201517	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=3, Studio=8)	11	Sessional (Internal)	100
		Sessional (External)	100
		Viva (Internal)	25
		Viva (External)	25
		In-semester exam	nil
		End Semester exam	nil
		Total Marks	250
		Total Credits	7

COURSE OBJECTIVES:

- To comprehend Design as iterative process at various scales/ levels.
- To comprehend relationship between design, visual arts, building construction, climatology, building materials, structure etc and evolve a design solution.

COURSE OUTLINE:

- Aesthetical, functional (activity, user, space relation) , technical (construction and material) and environmental (climatic, socio-geographic) aspects of architectural design.
- Various sources for inspiration for architectural design such as nature, history, geometry, culture etc.
- Design projects to focus on multi-functional, multi-cellular built environments such as nursery school, library, canteen, house, primary medical centre, cresse, community hall, health club, hobby centre for children etc.

SESSIONAL WORK:

Minimum two Architectural design assignments with multi-cellular dual level spaces approximately 300-500 sq.m and communicated effectively through architectural graphics, two and three-dimensional sketches, models and narratives. Additional one eskee of short duration.

REFERENCE BOOKS

1. Antoniades, C. Anthony: Epic Space: Towards roots of Western Architecture.
2. Robert Sommer. -Design Awareness.
3. C.M. Deasy -Design for Human Affairs.
4. Christopher Alexander- Pattern Language.
5. Anthony Sealey, Introduction to Climatology.
6. Karen A. Frank and R. Bianca Lepori, Architecture from the Inside Out.
7. Heller Robert and Salvadori Mario, Structure in Architecture.

BUILDING TECHNOLOGY AND MATERIALS III

BUILDING TECHNOLOGY AND MATERIALS III			
Subject Code		2201518(SV) 2201519(PP)	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=3, Studio=4)	7	Sessional (Internal)	25
		Sessional (External)	25
		Viva (Internal)	25
		Viva (External)	25
		In-semester exam	30
		End Semester exam	70
		Total Marks	200
		Total Credits	5

COURSE OBJECTIVES

- To study various types of deep and shallow foundations used in various types of soils for framed construction
- To introduce students to medium span timber roofs between 6m to 12m.
- To understand basic principles of RCC construction
- To study other components of a building project

COURSE CONTENT

Unit 1

- Sheet roof coverings
- Different types of flooring and paving materials and finishes and preformed and in-situ techniques for the same.
- Cement Concrete- ingredients, admixtures and additives, manufacturing/ mixing properties, placing, curing, testing.
- Steel for reinforcement of concrete.
- All tools for reinforced cement concrete construction.

Unit 2

- Different types of foundations, shallow and deep foundations for different types of soils, foundation on sloping site, failure of foundations
- Introduction to the relevance of soil mechanics to foundation design

Unit 3

- Causes of dampness and necessity of damp- and water- proofing.
- Different methods or treatments of damp- and water proofing.
- Different materials used in damp- proofing including brick on edge, rough Shahabad stone, bitumen sheets, plastic sheets and other proprietary materials.

Unit 4

- Various types of sliding and folding doors
- Doors in non- timber materials
- Bay window

Unit 5

- Fencing and Gates- types, materials and techniques

Unit 6

- Principles of RCC
- Reinforced concrete construction process with mixing of concrete, transportation, form-work, laying of reinforcement, casting, deshuttering and curing.
- RCC frame structure for smaller spans

SESSIONAL WORK

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

RECOMMENDED READING

1. 'Elements of Structure' by Morgan
2. 'Structure in Architecture' by Salvadori
3. 'Building Construction' by Mackay W. B., Vol. 1 – 4
4. 'Building Construction' by Barry, Vol. 1 – 5
5. 'Construction Technology' by Chudley, Vol. 1 – 6
6. 'Building construction Illustrated' by Ching Francis D. K.
7. 'Elementary Building Construction' by Michell

8. 'Structure and Fabric' by Everet
9. 'Engineering Materials' by Chaudhary
10. 'Building Construction Materials' by M. V. Naik
11. 'Civil Engineers' Handbook' by Khanna
12. 'Vastu Rachan' by Y. S. Sane
13. National Building Code and I.S.I. Specifications
14. 'Materials and Finishes' by Everet
15. 'A to Z Building Materials in Architecture' by Hornbostle

THEORY OF STRUCTURES III

THEORY OF STRUCTURES III			
Subject Code		2201520	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=1, Studio=2)	3	Sessional (Internal)	Nil
		Sessional (External)	NIL
		Viva (Internal)	NIL
		Viva (External)	NIL
		In-semester exam	30
		End Semester exam	70
		Total Marks	100
		Total Credits	2

COURSE OBJECTIVES

1. To understand the concept of Buckling and Crushing in Columns.
2. To understand Fixity at supports and Concept of Continuity over supports and Negative Bending Moments
3. To understand the principles of Load Bearing Construction, Use of Arches and Lintels.
4. To Study the strength of one Material - Steel and the use of these material as Beams, and Columns or as members of a Truss.
5. Design By **Working Stress Method**

COURSE CONTENT

Unit 1 - Analysis of Columns

1. Euler's and Rankine's Theory for Buckling and Crushing Failure in Columns. Assumptions and Limitations. Concepts of End Conditions, Slenderness Ratio. No Derivations, Simple Problems only.

Unit 2 - Analysis of Fixed Beams and Continuous Beams

1. Fixed Beam as a statically in-determinate structure. Concept of Negative Bending Moment at supports. Fixed End Reactions (No derivations). Simple Problems with full u.d.l and one or two point Loads.
2. Continuous Beams. Concept of continuity over supports and Typical B.M.D to explain the negative B.M.D over supports. Enlist methods for computing B.M.D. Theory only. No problems.

Unit 3- Loading on Structures, Transfer of loads, Load Bearing Constructions.

1. Loads classified as Live Loads (as per occupancy), Dead Loads (Densities), Wind Loads (Wind Pressure Tables, Reversal of Stresses), Snow Load, and Seismic Loads. Loads Transfer from Slab to Beam to Columns to Footing. Beam Loads to Include Brick wall Loads.

- Principles of Load Bearing Constructions. Load Transfer in Arches – Different Kinds of Hinged Arches. Load Transfer across Lintels. Theory only – No Problems.

Unit 4- Methods of Design –Working Stress Method

- Explanation, Assumptions, Factors of Safety, Limitations. And Advantages.

Unit 5- Design of Steel structures

- Introduction to I.S.800. (W.S. Method). Different Grades and Properties of Steel.
- Steel Tables- Different Sections Available and their applications. Reading of Steel Tables.
- Design of Steel Girders – Using I sections.
- Design of Steel Stanchions – Using I Sections and C.
- Design of Compression Member and Tension Members of a Roof Truss Using Angle Sections.

Unit 6- Connections in Structural Steel

- Riveting, Welding, Bolting. Advantages and Disadvantages.
- Numerical problems on welding and bolting only.

RECOMMENDED READING

- Design of steel structures-Vazirani – Rathwani.
- Design of steel structures- L.S. Negi.
- R.C.C. Design – Khurmi, Punmia, Sushilkumar.
- Elements of Structures – Morgan.
- Structure in Architecture – Salvador and Heller.
- Structure Decisions – F. Rosenthal.

BUILDING SERVICES I

BUILDING SERVICES I			
Subject Code		2201521(SS) 2201522(PP)	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=2, Studio=2)	4	Sessional (Internal)	25
		Sessional (External)	25
		Viva (Internal)	NIL
		Viva (External)	NIL
		In-semester exam	30
		End Semester exam	70
		Total Marks	150
		Total Credits	3

COURSE OBJECTIVES:

To introduce students to following Building Services in low, medium and high rise buildings and inculcate in them the integration of services in architectural design. This term aims at following two services.

- Commonly used systems for Sewage, Sullage & and Garbage disposal
- Systems for hot and cold water supply in a building premises.

COURSE OUTLINE:

To introduce students to drainage systems i.e. collection, conveyance & disposal of sewage, sullage and Effluents from a building premises , including methods and equipments involved.

Introduction to storage , sourcing and distribution of hot and cold water in a building premises including the study of all components involved

Acquainting students to indoor lighting systems, natural and artificial. Introduction to electrical Installation in a building, from the supply company. Mains to individual outlet points, including all components and systems involved.

UNIT I Water supply - I

- 1.1 Tapping of water mains on street by means of ferrule
- 1.2 Storage and distribution of water in the premises
 - Sump / Suction tank, overhead water storage tank / pressure tanks, community over head water storage tanks.
 - Lifting of water from the sump / suction tank to the overhead water storage tank with the use of Pumps.
- 1.3 Pipes and piping network
 - Pipes made of materials commonly used that is Galvanized Iron , P.V.C., Copper etc.
 - Classification of pipes, specials used in the network , joinery. Installation of the network – open and concealed.
- 1.4 Various control valves

UNIT II Water supply - II

- 2.1 Taps, faucets and other fittings
 - Bib taps (ordinary, Screw down , half turn , quarter turn using ceramic disks) variations such as pillar taps , angle valves , shower roses etc.
 - Mixing units for wash-hand basins, kitchen sinks, shower units, baths etc. (Both of valve and diverter type and single lever type)
- 2.2 Flushing cisterns and flush valves.

UNIT III Hot Water Supply.

- 2.1 Systems of hot water supply using conventional and non conventional energy sources.
 - Direct systems, In-direct systems , components and equipments used for the same.
- 2.2 Circulation systems i.e. ring system, up feed systems , drop system etc.]
- 2.3 Insulation of piping and safety devices.

UNIT IV Drainage-I

- 4.1 Sanitary fittings – Water Closets (Indian and European) Wash down, double syphonic , floor mounted , wall hung etc.
 - Bidets
 - Wash hand Basins, Bath- Tubs.
 - Kitchen and laboratory sinks.
 - Urinals.
- 4.2 Traps: their uses and functioning.
 - 'p' , 's' , and 'q' traps for Water Closets.
 - Bottle traps, floor traps, gully traps, grease traps and disconnecting traps.
- 4.3 Pipes and piping network.
 - Single and double stack systems.
 - Materials of pipes – Cast iron , P.V.C. , A.C. Stoneware , R.C.C. etc. and their methods of jointing.
 - Specials- Jointing and installations.
 - Anti- Siphonage Pipes.

UNIT V Drainage-II

Underground Drainage

- Locations and use of appurtenances i.e. inspection chambers , manholes, disconnecting chambers, ventilating shafts , light shafts etc.
- Storm water drainage systems- Separate, combined, partially separate.
- Ventilation of building drainage system.
- Self cleansing velocity- Thumb rules for diameters and gradients of pipes in relation to self cleansing velocity.
- Laying of underground drainage systems.
- Testing of building drainage systems.
-

UNIT VI Sewage Treatment

Disposal within the Premises.

- Septic tanks, its function and design.

- Bio gas plants and their functioning.
- Effluent treatment tanks.
- Introduction to sewage treatment plants

SESSIONAL WORK

- Preparing drainage and water supply layouts of a building site with more than one building on the site based upon the theory learnt and supported with necessary calculations (70% weightage).
- Visits to construction sites and preparing site visit reports, market survey and finding out latest trends and new materials (30% weightage).

RECOMMENDED READING

1. Plumbing-Johnson A.
2. Sanitation, Drainage and Water Supply-Mitchell.
3. Environment and Services-Peter Burberry.

HISTORY OF ARCHITECTURE II

HISTORY OF ARCHITECTURE II			
Subject Code		2201523	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=2, Studio=1)	3	Sessional (Internal)	25
		Sessional (External)	25
		Viva (Internal)	NIL
		Viva (External)	NIL
		In-semester exam	NIL
		End Semester exam	NIL
		Total Marks	50
		Total Credits	2

COURSE OBJECTIVE

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

COURSE OUTLINE

- To introduce students to the evolution of architecture of Europe and its immediate surroundings from 1st century CE to 18th century CE.
 - Religious architecture under Christianity
 - Broad periods of European cultural history including Gothic, Renaissance, Baroque and Revival
- To sensitize students to the linkages between architecture and the socio- cultural, political and economic context of the period.
- To introduce students to the developments in technology and the subsequent effect on architecture.
- To familiarise students with noteworthy architectural productions from the period and their significance.
- To introduce students to the regional and temporal variations in archetypes and the rationale for the same.

SESSIONAL WORK

Two project based assignments and one tutorial AND.

Measure drawing and documentation of architectural components/ small building dating from the Colonial period in India.

RECOMMENDED READING

1. History of Architecture by Sir Bannister Fletcher.

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

ARCHITECTURAL DRAWING AND GRAPHICS III

ARCHITECTURAL DRAWING AND GRAPHICS III			
Subject Code		2201524	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=2, Studio=3)	5	Sessional (Internal)	50
		Sessional (External)	50
		Viva (Internal)	NIL
		Viva (External)	NIL
		In-semester exam	NIL
		End Semester exam	NIL
		Total Marks	100
		Total Credits	3

COURSE OBJECTIVES:

- To enable the students to communicate an architectural idea / proposal in a legible and effective manner through perspective projections, use of shades and shadows, and various architectural presentation and rendering techniques.
- To enable the students to generate simple architectural drawing using **CAD**

COURSE OUTLINE:

Unit 1 Perspective Drawing:

- Drawing one-point and two-point perspective of objects and buildings/ building components using various methods including grid method.
- Introduction to concept of bird's eye view, worm's eye view etc

Unit 2 Sciography: Principles of Sciography (shades and shadows) for 3-Dimensional objects and buildings on plans, elevation, isometric and perspective.

Unit 3 Presentation Techniques: Introduction to various mediums for architectural presentations in various drawing formats.

Unit 4 Sketching: Introduction to Sketching techniques using various mediums to capture spatial character (built or inbuilt)

Unit 5 Computer Aided Drawing: Advance commands in CAD such as Setting Drawing parameters, Layer controls, Hatching, Model and paper space settings etc
Draughting single building from Semester II Design on CAD

SESSIONAL WORK:

- Sessional work should be planned to cover all the units mentioned in course outline with thrust on skill development, accuracy and understanding of the topics.
- Minimum of Eight manually drafted and at least one CAD assignment to cover the course outline and based on the following modules:

a	One-point and two-point perspective (objects and buildings)	3 to 4 Assignments
b	Sciography of objects and buildings/ building components	3 to 4 Assignments
c	Demonstration of Presentation techniques in various drawing formats (Preferably with 'own Design Drawings')	2 to 3 Assignments
d	CAD drawings (Plan, Section/s Elevation/s) with layers and hatch.	1 Assignment

RECOMMENDED READING:

- Holmes John M. : Applied Perspective
- Themes and Hudson: Perspective for Architects
- Friendrich W. Capelle: Professional perspective drawing for Architects and Engineers
- Sha Publishing Co. Ltd,:Interior perspective in Architectural Design- Japan Graphics
- Japan Publishing Co: Modern Architectural Rendering best 180
- Japan Publishing Co: Perspective Drawings of Modern Architecture
- Japan Publishing Co: Air brushing in rendering
- Shankar Mulik: Perspective and Sciography

SURVEYING AND LEVELLING

SURVEYING AND LEVELLING			
Subject Code		2201525	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=1, Studio=2)	3	Sessional (Internal)	25
		Sessional (External)	25
		Viva (Internal)	NIL
		Viva (External)	NIL
		In-semester exam	NIL
		End Semester exam	NIL
		Total Marks	50
		Total Credits	2

COURSE OBJECTIVES

- 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 bearings, use of prismatic compass, calculation of included angles, Fore and back Bearings, declination plotting and adjustment of closed traverse

Unit IV

- 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 A djustments.

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.

SESSIONAL WORK

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.

DESIGN IV

Design IV			
Subject Code		2201526	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=3, Studio=8)	11	Sessional (Internal)	100
		Sessional (External)	100
		Viva (Internal)	25
		Viva (External)	25
		In-semester exam	nil
		End Semester exam	nil
		Total Marks	250
		Total Credits	7

COURSE OBJECTIVES:

- To comprehend site specific stimuli through responses to physical, climate, visual, cultural contexts through indigenous construction, technology, building materials, structure etc.

COURSE OUTLINE:

1. Multiple layering of architectural space (without aid of mechanical means of vertical transport), its relationship with structure, technology and resultant built form; Concept of earthquake resilient structural systems for indigenous applications.
2. Attributes of Architectural character through application of indigenous materials, construction methods.
3. Function and space studies; defined user group specific perception of space; Concept of minimum and maximum limits of development wrt to foot print, building heights.
4. Concept of Passive solar responses; fenestration design.
5. Site analysis wrt to surroundings; zoning and activity distribution; Circulation and activity relationships through adjacencies, achieving performance integrity through functional adjacencies and elementary services of water and drainage.
6. Study and analysis of multicellular, multiple level (without aid of mechanical means of vertical transport), spaces by application of principles of functionality, climate, composition, and aesthetics.
7. Study of a Settlement of a semi urban type/ community in an urban location and the analysis and documentation w.r.t. lifestyle of occupants, climatic and topographical response, semipublic built and open spaces, and associated architectural character.

SESSIONAL WORK:

- Graphic documentation and analysis of the settlement study and along with a short written report with one design assignment related to the settlement studied.
- Minimum one architectural design project (other than the one mentioned above) with multicellular multi-level spaces such as primary school, hostel, sports facility, resorts, medical facility etc. approximately 1000-1200 sq.m. and effectively communicated through architectural graphics, two and three-dimensional sketches, models and narratives.

REFERENCE BOOKS

1. Jan Bilwa and Leslie Fairweather, editors, A.J. Metric Handbook.
2. DernstNeufert's Architect's data.
3. Walter Gropius, Total Architecture.
4. Giedion, Siegfried; Space, Time and Architecture.
5. Gibbered, Fredrick: Town Design.
6. David Gosling, Gordon Cullen – Visions of Urban Design.
7. David Robso, Geoffrey Bawa – the complete works.
8. Casa Scheer Brenda, The Evolution of Urban Form.

BUILDING TECHNOLOGY AND MATERIALS IV

BUILDING TECHNOLOGY AND MATERIALS IV			
Subject Code		2201527(SV) 2201528(PP)	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=3, Studio=4)	7	Sessional (Internal)	25
		Sessional (External)	25
		Viva (Internal)	25
		Viva (External)	25
		In-semester exam	30
		End Semester exam	70
Total Marks		200	
Total Credits		5	

COURSE OBJECTIVES

- To introduce students further to RCC frame construction and a basic understanding of ferrocement construction.
- To introduce students to different building materials related to RCC construction

COURSE CONTENT

Unit 1

- Ready mix concrete, light weight concrete

Unit 2

- RCC floor slabs: one-way, two way slabs, cantilever slabs, column- beam- slab junctions, toilet slabs, balcony slabs, canopies.
- Construction of various types of pre-cast and in-situ RCC stairs
- Introduction to ferrocement as a material and technique of construction.

Unit 3

- Types of elevators and escalators- installation process and detail.
- Construction of lift shafts and machine rooms.

Unit 4

- Windows in non- timber materials
- Water- proofing materials used in basement construction

SESSIONAL WORK

- Hand drawn drawings on Units 2, 3 and 4; Assignments on unit 1.

RECOMMENDED READING

16. 'Elements of Structure' by Morgan
17. 'Structure in Architecture' by Salvadori
18. 'Building Construction' by Mackay W. B., Vol. 1 – 4
19. 'Building Construction' by Barry, Vol. 1 – 5
20. 'Construction Technology' by Chudley, Vol. 1 – 6
21. 'Building construction Illustrated' by Ching Francis D. K.
22. 'Elementary Building Construction' by Michell
23. 'Structure and Fabric' by Everet

24. 'Engineering Materials' by Chaudhary
25. 'Building Construction Materials' by M. V. Naik
26. 'Civil Engineers' Handbook' by Khanna
27. 'Vastu Rachan' by Y. S. Sane
28. National Building Code and I.S.I. Specifications
29. 'Materials and Finishes' by Everet
30. 'A to Z Building Materials in Architecture' by Hornbostle

THEORY OF STRUCTURES IV

THEORY OF STRUCTURES IV			
Subject Code		2201529	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=1, Studio=2)	3	Sessional (Internal)	Nil
		Sessional (External)	NIL
		Viva (Internal)	NIL
		Viva (External)	NIL
		In-semester exam	30
		End Semester exam	70
		Total Marks	100
		Total Credits	2

COURSE OBJECTIVES

1. To Study Wood as a Material.
2. To Study Limit State Method.
3. To Study Reinforced Cement Concrete as a Material.
4. To Design Simple Compressive and Flexural Members in R.C.C.

COURSE CONTENT

Unit 1.Wood by W.S Method

1. Introduction to I.S.883. Study of Wood as a Material. Different Grades Available
2. Design of a Wooden Flexural Member either as a Simple Supported Beam or a Cantilever with Simple Loading. Depths Limited to 300 mm. Design by Working Stress.
3. Introduction to Modification Factors and Form Factors in Design of Wood.

Unit 2 - Concrete Technology

1. Concrete Technology. I.S.456 – Different Grades of Concrete. Different Grades of Cement and Steel Used. Study of Cement, Sand, Aggregate and Water. Process of Concreting, Curing, Form Work and Stripping, Water Cement Ratio, and various other details, tests in brief.
2. Basic R.C.C section and terms like Effective depth, covers, Overall Depth. Covers for different R.C.C members.

Unit 3.Limit State Design

1. Concept, Various Limit States, Partial Factors of Safety. Characteristic Stresses and Loads
2. Assumptions, Limitations, Advantages and Disadvantages.
3. Stress Block Diagram for Flexural Members and Derivation of Formulae.
4. Combination of M20 Grade concrete and Fe 500 Steel.
5. Balanced, Under Reinforced, Over Reinforced Sections.

Unit 4.Design of Various R.C.C Members as per I.S.456

1. Span to Depth Ratios for various flexural members.
2. Concept of one way and two way slab. Importance of distribution steel in one way slab.
3. Design of One Way Slab for different live loads and floor finishes.
4. Design of Two Way Slab using Rankine Gashroff Method of load distribution/constants
5. Design of Singly Reinforced Beam with Shear Reinforcement.
6. Design of Chajja, and Cantilever Slabs.
7. Design of Short R.C.C Columns. Reduction factor for long R.C.C columns. I.S. Provisions. All Answers to include Schedules, and Typical Reinforcement Details.
8. Bond, Lap in Reinforcement, Development Length and Placing of Reinforcement. Theory only.

RECOMMENDED READING

1. Design of Steel Structures: Vazirani-Rathwani.
2. Design of Steel Structures-Negi.
3. R.C.C.Design –Khurmi, Punmia, Sushilkumar.
4. Elements of Structure –Morgan.
5. Structure in Architecture-Salvadori and Heller.
6. Structural Decisions-F.Rosenthal.

BUILDING SERVICES II

BUILDING SERVICES II			
Subject Code		2201530(SS) 2201531(PP)	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=2, Studio=2)	4	Sessional (Internal)	25
		Sessional (External)	25
		Viva (Internal)	NIL
		Viva (External)	NIL
		In-semester exam	30
		End Semester exam	70
		Total Marks	150
		Total Credits	3

COURSE OBJECTIVES

To introduce students to following Building Services in low, medium and high rise buildings and inculcate in them the integration of services in architectural design. This term aims at following two services.

- Lighting and electrification.
- Introduction to rainwater harvesting and alternative energy sources.

COURSE OUTLINE

UNIT I Waste Disposal.

- Collection and disposal of organic and in-organic waste
- Sacks, bins, grinders , incinerators , compactors and refuse chutes.
- Vermiculture and composting.

UNIT II Lighting:

- Indoor lighting- natural and artificial
 - Systems of lighting such as direct, indirect, diffused.
 - Applications of lighting systems with special reference to levels of illumination for various uses and lumen method calculations.
 - Light fittings.

UNIT III Electrification.

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

SESSIONAL WORK

- Preparing electrical layout and lighting plan of a building interior supported with necessary calculations (70% weightage).
- Visits to construction sites and preparing site visit reports, market survey and finding out latest trends and new materials (30% weightage).

RECOMMENDED READING

- Daylight in Architecture-Benjamin Evans.
- Lighting in Buildings-Hapkinsen H.D.Kajr.
- Lighting in Architectural Design.-Derek Philips.
- BBC83 P[art VII, Section I, Lighting and Ventilation.

HISTORY OF ARCHITECTURE III

HISTORY OF ARCHITECTURE III			
Subject Code		2201532	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=2, Studio=1)	3	Sessional (Internal)	25
		Sessional (External)	25
		Viva (Internal)	NIL
		Viva (External)	NIL
		In-semester exam	NIL
		End Semester exam	NIL
		Total Marks	50
		Total Credits	2

COURSE OBJECTIVE

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

COURSE OUTLINE

- To introduce students to the evolution of architecture of the Indian sub-continent from 1st century CE to 18th century CE.
 - Architecture of the Buddhists, Hindus and Jains and its evolution with reference to regional and stylistic variations.
 - Architecture under Islam.
 - Evolution of form, technique and ornamentation, and regional and stylistic variations in Indian architecture
 - Architecture of Maharashtra in the 18th and 19th centuries.
- To sensitize students to the linkages between architecture and the socio- cultural, political and economic context of the period.
- To introduce students to the developments in technology and the subsequent effect on architecture.

- To familiarize students with noteworthy architectural productions from this period and their significance.
- To introduce students to the regional and temporal variations in archetypes and the rationale for the same.
- To study in detail extant examples from this period available in the region of the college.

SESSIONAL WORK

- At least 2 project based assignments and one tutorial AND
- Detailed measured drawing and documentation of one building/ complex dating from the above mentioned period.

TECHNICAL COMMUNICATION

TECHNICAL COMMUNICATION			
Subject Code		2201533	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=1, Studio=2)	3	Sessional (Internal)	25
		Sessional (External)	25
		Viva (Internal)	NIL
		Viva (External)	NIL
		In-semester exam	NIL
		End Semester exam	NIL
		Total Marks	50
		Total Credits	2

COURSE OBJECTIVES

- To equip the students to communicate effectively using various modes of communication such as graphical, textual, oral and help them to develop various soft skills.

COURSE CONTENT

- Writing skills : Formal letter writing, job applications, preparing a resume, reporting an event, précis writing, comprehension in English.
- Oral skills : Group discussions, giving a speech, appearing for an interview.
- Presentation skills : Presenting using power point presentation, graphical modes (sketching, 3D views).
- Body language, appearance, gestures, voice modulation, speech organization etc.
- Using various computer applications such as word processing, MS excel, photoshop etc.

SESSIONAL WORK

- Minimum 10 assignments to cover all the aspects of the course content mentioned above.

WORKING DRAWING I

WORKING DRAWING I			
Subject Code		2201534	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=2, Studio=3)	5	Sessional (Internal)	50
		Sessional (External)	50
		Viva (Internal)	NIL
		Viva (External)	NIL
		In-semester exam	NIL
		End Semester exam	NIL
		Total Marks	100
		Total Credits	3

COURSE OBJECTIVES

- 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.

COURSE CONTENT

- Introduction to the concept of working drawings and their importance.
- 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.

SESSIONAL WORK

- One working drawing of an architectural design project having load bearing structure with minimum 100 sq. m. carpet area. (4 to 5 drawings).
- At least two details such as doors / windows / railings / kitchen otah etc. (1 drawing)

DRAFT SYLLABUS FOR APPROVAL OF FACULTY

Third year 2015 Pattern

Semester V

Design V			
Subject Code		3201535	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week= 11 (lectures=3, Studio=8)		Sessional (Internal)	100
		Sessional (External)	100
		Viva (Internal)	25
		Viva (External)	25
		In-semester exam	nil
		End Semester exam	nil
		Total Marks	250
		Total Credits	7

COURSE OBJECTIVES:

- Design of Campus comprising of more than one building and evolving design in response to the site, its characteristics and the context.
- Designing of buildings with different functions, requiring spaces of different scales and employing suitable structural systems.

COURSE OUTLINE:

- Designing in a different socio geographic context [other than where the institute is located].
- Undertake programming research to understand the socio-cultural patterns, geographic context and address the needs of the users and the site and evolve a sustainable design.
- Creation and design of open spaces within the campus.
- Study, analysis and synthesis of various design parameters in built-unbuilt spatial relationship.
- Conceptualizing services such as storm water management, locations of water tanks, sewage disposal system, etc.
- Introduction to functions requiring column free spaces and employing suitable structural systems.
- Modular planning, grid planning and coordination of various grids in plan and three dimensions.
- Time bound decision making and preparing sketch design.

SESSIONAL WORK:

- A major design project of duration 10-12 weeks of campus planning. Example : Residential school, Club, Institutional buildings, Home for the elderly, Community centre, Resort etc.
- A minor design project of duration 4-6 weeks which could be stand alone building on a site with a focus on two to three activities housed in one building with area not less than 1500 sq.m. Example : Diagnostic centre, Dining hall, Convenience shopping etc.
- One time bound project of duration around 12 hours. The typology and scale of the project can be decided by the college.

Important Note : At least one of the two projects [major or minor] mentioned above has to be in a different socio geographic context. The design has to be communicated through architectural graphics, two and three-dimensional sketches, models and narratives. All the design projects must have different sites.

REFERENCE BOOKS

It is strongly recommended that students refer books focusing on various building types, journals, magazines to widen their knowledge of design and the readings not to be limited to the list of books given below.

Correa, C. (2010). *A Place in Shade*. Delhi: Penguin Books.

Kanvinde, A., & Miller, H. (1969). *Campus Design in India*. Topeka: ostens/American Yearbook Co. .

Lynch, K. (1962). *Site Planning*. MIT Press.

Pandya, Y., & Foundation, V. S. (2007). *Elements of Space Making*. Ahmedabad: Mapin Publishing Pvt Ltd.

White, S. (1995). *Building in the Garden: Architecture of Joseph Allen Stein in India and California*. Delhi: Oxford India Paperbacks.

Building Technology and Materials-V			
Subject Code		3201537(SV), 3201536(PP)	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=3, Studio=4)	7	Sessional (Internal)	25
		Sessional (External)	25
		Viva (Internal)	25
		Viva (External)	25
		In-semester exam	30
		End Semester exam	70
		Total Marks	200
Total Credits		5	

COURSE OBJECTIVES:

- To understand the variations in frame structure with options of different types of slab like flat slab, ribbed and waffle slabs etc. along with pre-stressed RCC technology.
- To understand various structural system to be employed for long span structures.
- To introduce materials and technology of assembling interior elements like partitions, suspended ceiling, furniture units etc.

COURSE OUTLINE:

Unit-1: Characteristics, Properties and types of following materials and their application in interior elements.

- a) Wood, wood derivatives and other panel materials used for interior application.
- b) Finishing materials like laminates, veneers, plastics and metal sheets.
- c) Paints and varnishes.
- d) Hardware required for application to interior and furniture elements.

Unit-2: Various types of Reinforced Cement Concrete Flooring Systems for medium spans.

- a) Flat plate, Flat slab, Ribbed slab, Waffle slab, Band beam and slab.
- b) Pre-stressed slabs.

Unit-3: Partitions and Paneling

- a) Demountable Partition construction using proprietary and non-proprietary systems using all available materials.
- b) Proprietary and non-proprietary systems of paneling in timber, timber derivative materials plastic, metal and other materials.

Unit 4: Suspended Ceiling.

- a) Suspended Ceiling construction using proprietary and non-proprietary systems using all available materials.

Unit 5: Furniture Design and assembly using timber and other material along with finishing and upholstery.

Unit 6: Construction systems used for long span construction.

- a) Section/bulk active systems (beam structure, frame structure, slab structure)
- b) Vector active systems (portal frames, 2-D and 3-D trusses etc.)
- c) Surface active systems (Shell structures, folded plate structures etc)
- d) Form active systems (Tensile structures, Pneumatic structures, Arch structures etc.)

SESSIONAL WORK:

- Unit-1:** Compilation of market surveys in form of relevant hand drawn sketches, notes and tabulated information regarding; available types, commercial sizes, properties, unit of measurement, rates etc.
- Unit-2:** Sketches and notes in the journal.
- Unit-3:** Manually drafted scaled drawings of Partitions and Paneling using proprietary and non-proprietary systems of construction using various materials.
- Unit4:** Manually drafted scaled drawings of Suspended Ceiling using proprietary and non-proprietary systems of construction using various materials.
- Unit5:** Manually drafted scaled drawings of furniture units like Bed, Dining Table, etc. using various materials.
- Unit6:** Sketches and notes in the journal.

REFERENCE BOOKS

1. Ching Francis D.K. Building Construction illustrated. John Wiley & sons. 2014
2. National Building Code-2005 & ISI specifications for Materials and Methodology of Various Construction.
3. Technical Manuals of various manufacturing companies for proprietary systems of partitions, paneling and suspended ceilings.
4. Alan Everett, Yvonne Dean. Mitchell building series, Building materials and finishes. Routledge 2014
5. Mackay J.K. Building Construction vol.-1-4. Longman Scientific & Technical, 1988.
6. Barry. 'Building Construction' Vol. 1 – 5
7. Cudley. 'Construction Technology' Vol. 1 – 6

THEORY OF STRUCTURE V			
Subject Code		3201538(PP)	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=1, Studio=2)	3	Sessional (Internal)	nil
		Sessional (External)	nil
		Viva (Internal)	nil
		Viva (External)	nil
		In-semester exam	30
		Semester exam.	70
		Total Marks	100
		Total Credits	2

COURSE OBJECTIVES:

1. To design complex RCC structural elements.
2. Different types of staircases.
3. Types of beams like doubly reinforced, 'T' and 'L'
4. Design of continuous equal span slab by I.S.456 factors.
5. Different structural elements like pre-stressed construction and flat slabs.
6. Columns in multistoried buildings.
7. Types of foundations and design of isolated column footing.
8. Need of retaining wall and design of gravity type retaining wall.

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COURSE OUTLINE:**Unit 1: –Staircase Support Systems**

Numerical on Design of Dog Legged Staircase with Beams at Various Positions:

Theory only on Support Systems and Reinforcement Detailing in the following Cases

- a. Stringer Beams - End Stringer Beams with S.S Slabs Treads.
- b. Stringer Beams - Central Stringer Beams with cantilever Slab Treads.
- c. Folded Plate Staircases.
- d. Open Well Staircases.
- e. Spiral staircase
- f. Dog-legged Staircase with Various Beam Positions.

Unit 2: Design of Beams

- I. **Doubly Reinforced Beam** –Concept, Detailing, Need, Locations. **Numerical** on Design of Doubly Reinforced Beams
- II. **T Beams, L Beams / One Way Continuous Slabs:** Divisions of Larger Spaces into smaller one way or two way Slab Units by Using Intermediate Beams. T Beams and L Beams. I.S. Provisions for same.
 1. **Numerical** on Design of T Beams and L Beams - N.A position within flange.
 2. **Numerical** on Design of One Way Continuous Slabs - 3 equal spans using I.S.456 Coefficients
 3. **Theory only** on Design of Coffered Slab.

Unit 3: Column Design across Multiple Floors:

Design of Columns across Vertical Floors: Vertical Load Calculation, Change of Size, Change of Grades (not for problems), Change of Percentage of Steel.

1. **Numerical** on design of columns with change in size and percentage of steel.
2. **I. S. provisions for eccentrically loaded columns.**

Unit 4: Pre-stressed constructions and Flat Slabs:

1. **Pre-stressed Concrete:**
 1. Concept and Process of **Pre-tensioning and Post-Tensioning.**
 2. Advantages and Disadvantages over Conventional R.C.C Construction.
 3. Use of High Strength Concrete and Steel in Pre-Stressed Elements
 4. Methods of Pre-stressing - Freyssinet System
 5. **Numerical** on Extreme Fiber Stresses at Mid Span and End Span.
2. **Flat Slab Construction:** Concept of Large Beam less Spaces, Column Capitals, Header Beams
I.S.456 Provisions for Various R.C.C Elements

Unit 5: Foundations:

1. Shallow and Deep Foundations
2. Isolated Footings to Combined Footings to Strip Footings to Raft Foundations
3. **Foundations in Soil of low S.B.C** , Piles ,Group of Piles and Pile Caps, Reinforcement Detailing involved
4. **Numerical** on Design of **Isolated Footing** for Square and Rectangular Column, Pad Footing with One Way and Two Way Shear.
5. **Numerical** on Design of **Combined Footing** - Finding Dimensions in Plan only
6. **Theory only on** Design of Combined Footing - B.M.D and Reinforcement Detailing

Unit 6: Retaining Walls:

1. Need for **Retaining Wall**, Angle of Repose, Rankine's Theory for Active and Passive Earth Pressures. Types of Retaining Walls.
2. **Gravity Retaining Walls** - Height, Proportioning –**Numerical** on Stability Study for O.T.M, Sliding, Maximum and Minimum Pressure at Base

REFERENCE BOOKS

1. R.C.C. design – Khurmi, Punmia, Sushilkumar.
2. Design of steel structures- L. S. Negi., Vajrani-Ratwani.
3. Structure in Architecture – Salvadori and Heller.
4. Structural Decisions.- F. Rosenthal
5. I.S. 456, I.S. 800, I.S. 875, I.S. 1893, I.S. 13920

LANDSCAPE ARCHITECTURE I			
Subject Code		3201539(SS)	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=1, Studio=3)	04	Sessional (Internal)	25
		Sessional (External)	25
		Viva (Internal)	nil
		In-semester exam	nil
		End Semester exam	nil
		Total Marks	50
		Total Credits	2

COURSE OBJECTIVES:

- To introduce the students to Landscape Architecture and its scope.
- To understand the elements and principles of landscape design and role of landscape elements in design of outdoor environments on the site.
- To introduce the students to various traditions in designed and vernacular landscapes.
- To develop understanding of site analysis and site planning and integrated design of open and built spaces.
- Creating awareness about using Landscape design as a tool to address environmental concerns in Architecture.

COURSE OUTLINE: DRAFT SYLLABUS FOR APPROVAL OF FACULTY

- Unit 1.** Introduction to Landscape Architecture and its scope ,elements(natural and manmade)and their application in achieving functional, aesthetic, environmental and cultural goals.
- Unit 2.** Introduction to Landscape history/traditions (Eastern, western, central) with emphasis on Indian Landscape traditions.
- Unit 3.** Study of Hardscape (civil work) details with respect to materials and construction techniques. This study should be conducted through visits to designed landscapes.
- Unit 4.** Study of Softscape (plant material), their characteristics and contribution in terms of creating and imparting character to outdoor spaces. This study should be conducted through site/ nursery visit with emphasis on native and naturalized species.
- Unit 5** Introduction to environmental concerns and sustainable site planning (rain water harvesting, solid waste management, passive climate control, etc)
- Unit 6.** Site analysis including understanding natural and manmade aspects (such as microclimate, topography, hydrology, vegetation), physical and socio-cultural context of the site. Introduction to basics of Site planning.
- Unit 7.** Relevance of Art in landscape design (Land art, art in public spaces, etc) for. Eg. works of Andy Goldsworthy, Richard Shilling, Walter Mason, Jim Denevan, Robert Smithson, Andrew Rogers,Dani Caravan, Simon Beck, Anish Kapoor, Neckchand, Subodh Kerkar.
- Unit 8.** Landscape design Project I- A small scale, theme based Landscape design project culminating into an idea/ concept generation/ 3D visualization that encourages creative thinking.

SESSIONAL WORK:

- Assignments that shall individually or comprehensively cover unit 1 – unit 5. Duration 10-12 weeks.

- Landscape design project with drawings, views, model (optional) holistically representing the concept and the design process .4- 6 weeks.

NOTE: It is expected that application of Unit 6 will be demonstrated in landscape design projects.

REFERENCE BOOKS

1. Mcharg, I, *Design with Nature*. John Wiley and co. 1978.
2. Jellicoe, G and Jellicoe, S, *The Landscape of Man*, London: Thames and Hudson, 1991.
3. Simonds, J .O, *Landscape Architecture: The Shaping of Man's Natural Environment*, N Y: McGraw Hill Book Co.Inc. 1961.
4. Lynch, K, *Site Planning*, Cambridge: The MIT Press, 1962.
5. Shaheer, M, Wahid Dua, G and Pal A (editors), *Landscape Architecture In India, A Reader:* LA, Journal of Landscape Architecture, 2013.
6. Lyall, S, *Designing The New Landscape:* UK:Thames and Hudson, 1998.
7. Dee, C, *Form And Fabric In Landscape Architecture: A Visual Introduction*, UK: Spon Press, 2001.
8. Eckbo, G, *Urban Landscape Design*, N Y: McGraw hill co. 1961.
9. Laurie, M, *An Introduction to Landscape Architecture*, N Y: American Elsevier Pub. Co. Inc. 1975
10. Rutledge, A J. *A Visual Approach to Park Design*. New York: John Wiley and Sons, 1985.
11. Randhawa, M S, *Flowering Trees*, New Delhi: National Book Trust, 1998.
12. Bose, T K and Choudhary, K, *Tropical Garden Plants in Colour*, Horticulture and Allied Publishers, 1991.
13. Krishen, P. *Trees of Delhi: A Field Guide*, Penguin India, 2006.
14. Mukherjee, P, *Trees of India (WWF Natures Guide)*, Oxford, 2008.
15. Sahni, K C, *The Book of Indian Trees (Bombay Natural History Society)*, Oxford, 1998.
16. Krishna, N and Amrithalingam, M, *Sacred Plants of India*, Penguin Books Limited, 2014
17. Motloch, J. L, *Introduction to Landscape Design*, US: John Wiley and Sons, 2001.
18. Dines, N and Harris, C, *Timesavers Standards for Landscape Architecture*, McGraw Hill Education, 1998.
19. Reid, G, L, *Landscape Graphics*, Watson-Guption, 2002.
20. Botkin, D. B and Keller, E. A, *Environmental Science: Earth As a Living Planet*, N Y: John Wiley And Co. 1995.
21. Grosholz, E, *The Poetics of Landscape Architecture*, University of Pennsylvania Press, 2010.

BUILDING SERVICES III			
Subject Code		3201540 (SS) 3201541 (PP)	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (Lectures = 2 Studio = 2)	4	Sessional (Internal)	25
		Sessional (External)	25
		Viva (Internal)	nil
		Viva (External)	nil
		In-Semester exam	30
		End-Semester exam	70
		Total Marks	150
		Total Credits	3

COURSE OBJECTIVES:

- To comprehend building services as an inclusive part of architectural design process
- To obtain knowledge of technical and design aspects of natural ventilation and HVAC

COURSE OUTLINE:

- Technical and environmental aspects as principles of working, components, construction and materials of natural ventilation and HVAC system
- Functional and aesthetical aspects of services layout for comprehensive architectural design.

Teaching Plan:

Unit I: Natural Ventilation

- 1.1. Indicators for comfortable condition
- 1.2. Wind and stack effects, evaporative cooling
- 1.3. Examples (book/ on site): Implementation of various methods of natural and composite ventilation system in architectural design

Unit II: Mechanical ventilation

- 2.1. Forced ventilation system
- 2.2. Types of fans and blowers
- 2.3. Mounting, sizes and calculation of fans

Unit III: Air-conditioning system 1

- 3.1. Principles of air-conditioning system
- 3.2. Components of air-conditioning system

Unit IV: Air-conditioning system 2

- 4.1 Types of conventional systems of air-conditioning
- 4.2 Non-conventional systems of air-conditioning

Unit V: Air-conditioning 3

- 5.1 Air-conditioning layout calculation
- 5.2 Air-conditioning layout design

Unit VI: Air-conditioning 4

- 6.1 On site case study: Air-conditioning system

SESSIONAL WORK: (with marking scheme)

- Tutorials for four Units (I to IV): 25% marks
- Layout of air-conditioning (preferably architectural design of the earlier semester to be considered): 50% marks
- On site Case study: 25% marks

REFERENCE BOOKS

1. Tricomi, Ernest. *ABC of Air-conditioning*. 1970
2. Smith, Philips & Sweeney. *Environmental Science*
3. Daniels, Klaus. *Advanced Building Systems – A Technical Guide for Architects and Engineers*. Birkhauser, Boston. 2003
4. National Building Code of India

History of Architecture IV			
SubjectCode		3201542 (SS)	
TeachingScheme		ExaminationScheme	
TotalContact Periodsperweek (lectures=2, Studio=1)	3	Sessional(Internal)	25
		Sessional(External)	25
		Viva (Internal)	nil
		Viva (External)	nil
		In-semester exam	nil
		End Semester exam	nil
		TotalMarks	50
		Total Credits	2

COURSE OBJECTIVES:

- To understand the architecture and architectural discourse in the nineteenth and twentieth centuries and the various factors like industrialization, modernity, wars, global-local concerns, etc. that shaped it.
- To get acquainted with various important architectural works and the contribution and role of individual designers that distinctively marked the course of architecture in the nineteenth and twentieth centuries.

COURSE OUTLINE:

- The course intends to present architecture as a product of its times especially with reference to the salient socio- political, cultural, economic and technological markers of the nineteenth and twentieth centuries. It also intends to bring out the plurality of approaches as a response to the above contexts and examine the different strands of architectural practice and works that developed as a result.
- The study should include examples of architectural works and designers drawn from across the world wherever relevant and necessary while also emphasizing the happenings in India.
- The course should inculcate an analytical thinking about architecture, introduce various theoretical positions, and train the students to research and isolate a thought of their own.

Unit 1: Architecture of the Industrial Period

Revivalism

Introduction of steel and glass as new materials in architecture

New building types

Reactions to Industrialization: Arts and Crafts, Art Nouveau

Unit 2: Architecture of the Twentieth Century

Stylistic explorations: Expressionism, De Stijl, Art Deco, etc.

Influences like various manifestoes, congresses, writings, Bauhaus

Modernism and International style

Experiments and explorations around the world

Development of the high-rise

Influential Designers: Frank Lloyd Wright, Mies van der Rohe, Le Corbusier, Louis Kahn, etc.

Unit 3: Architecture of India

Colonial architecture: European Revivalist and Indian adaptations

Search for a National idiom: Claude Batley to G BMhatre

Indian Modernists: AchyutKanvinde, Charles Correa, BalkrishnaDoshi, etc.

Influence of Indian works of international architects

SESSIONAL WORK:

The sessional work shall comprise of individual/ group work of the students completed under the guidance of the subject teacher as follows:

1. Journal: Hand written notes and manually drawn sketches of relevant examples of most of the contents mentioned above. Journal is an individual work. 20 marks
2. Project work: An exploratory or critical report/ graphical presentation/ analytical models/ tutorials/ etc. based on any relevant topic from the contents mentioned above. Project work could be undertaken in groups such that the contribution of individual students in the group is identifiable. 30 marks

REFERENCE BOOKS

1. Bhatt, V., & Scriver, P. (1990). *Contemporary Indian Architecture- After the Masters*. Ahmedabad: Mapin Publishing.
2. Chhaya, N. (Ed.). *Harnessing the Intangible*. New Delhi: National Institute of Advanced Studies in Architecture.
3. Ching, F. D. (1997). *A Visual Dictionary of Architecture*. New York: Van Nostrand Reinhold.
4. Correa, C. (2010). *A Place in Shade*. Delhi: Penguin Books.
5. Curtis, W. (1988). *Balkrishna Doshi- An Architecture for India*. New York: Rizzoli International.
6. Curtis, W. J. (1996). *Modern Architecture Since 1900*. London: Phaidon Press.
7. Dhongde, S., & Sahasrabudhe, C. (Eds.). (2009). *Achyut Kanvinde*. Pune: BNCA Publication Cell.
8. Didee, J., & Gupta, S. (2013). *Pune - Queen of Deccan*. Pune: INTACH Pune Chapter.
9. Dwivedi, S., & Mehrotra, R. (2008). *Bombay Deco*. Mumbai: RMA Architects.
10. Ford, E. R. (1997). *The Details of Modern Architecture*. MIT Press.
11. Frampton, K. (1992). *Modern Architecture- A Critical History*. London: Thames and Hudson Ltd.
12. Jain, K. (2012). *Architecture- Concept to the Manifest*. Ahmedabad: AADI Centre.
13. Kagal, C. (Ed.). (1986). *Vistard- The Architecture of India*. Bombay: The Festival of India.
14. Kanvinde, A., & Miller, H. (1969). *Campus Design in India*. Topica-rosens/American Yearbook Co.
15. Lang, J., Desai, M., & Desai, M. (1997). *Architecture and Independence: The search for identity, India- 1880 to 1980*. New Delhi: Oxford University Press.
16. Pallasmaa, J. (2009). *The Thinking Hand : Existential and Embodied Wisdom in Architecture*. London: John Wiley and Sons Ltd.
17. Pandya, Y. (2013). *Concpets of Space in Traditional Indian Architecture*. Ahmedabad: Mapin Publishing.
18. Pandya, Y., & Foundation, V. S. (2007). *Elements of Space Making*. Ahmedabad: Mapin Publishing Pvt Ltd.
19. White, S. (1995). *Building in the Garden: Architecture of Joseph Allen Stein in India and California*. Delhi: Oxford India Paperbacks.
20. Wolfe, T. (1981). *From Bauhaus to Our House*. New York: Farrar Straus Giroux.

WORKING DRAWING II			
Subject Code		3201543(SS)	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=2, Studio=2)	4	Sessional (Internal)	50
		Sessional (External)	50
		Viva (Internal)	Nil
		Viva (External)	Nil
		In-semester exam	nil
		End Semester exam	nil
Total Marks		100	
Total Credits		3	

COURSE OBJECTIVES:

- To Introduce idea of Design Development and detailing and its relevance in converting 'concept design' to working drawing and hence the realization of design on site.
- To imbibe further the importance of working drawings as an essential tool for effective site execution and execution of a building contract.
- To expose to the standard methods, conventions, drawing annotations including International standards, IS codes, its application in working drawing set with material and component and schedules.

COURSE OUTLINE:

- Lecture demonstration/s to elaborate on standard practices, conventions, graphic annotations, sequencing and cross reference systems of a good working drawing set.
- Design development and detailing of own **design** to resolve the design idea to one which can be executed/ constructed, exposing students to construction parameters, limitation and sequencing.
- Generating a working drawing set for the **chosen design/ building** with framed/composite construction including schedules of material, finishes, components and accessories
- Developing and drafting details of Civil work and furniture including schedule of finishes

SESSIONAL WORK:

- Preparing a manually drafted/ CAD generated **working drawing** set of 'own design project' with carpet area not less than 250 Sq. M. and at least Ground plus one storied building having framed/composite construction. **The set to also include** at least two civil details out of following.

- I. Façade / skin of the building with fenestration and weather protection.
- II. Stairway/ staircase
- III. Public Washroom

And

Any one detail related interior finishes/ custom made furniture of following

- IV. Floorings,
 - V. False ceiling
 - VI. Paneling or partitions
 - VII. Built in or stand alone furniture
- A rough folio comprising of design development drawings, sketches supporting the final working drawing set shall be retained by the candidate.

DRAFT SYLLABUS FOR APPROVAL OF FACULTY

Third year 2015 Pattern

Semester VI

DRAFT SYLLABUS FOR APPROVAL OF FACULTY

DESIGN VI

Design VI			
Subject Code		3201544(SV),3201545(PP)	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week= 11 (lectures=3, Studio=8)	11	Sessional (Internal)	100
		Sessional (External)	100
		Viva (Internal)	25
		Viva (External)	25
		In-semester exam	nil
		End Semester exam	100 [12 hours duration – to be conducted 6 hours for two days en-lodge]
		Total Marks	350
		Total Credits	7

COURSE OBJECTIVES:

- Designing a building by stacking of different functions vertically and addressing various concerns such as coordinating various building services, vertical circulation, basement parking, and structural grids with introduction to disaster management design strategies/techniques and universal design.

COURSE OUTLINE:

- Introduction to various concerns of building design in an urban context on sites with limited areas there by necessitating multi storied buildings.
- Strengths and weaknesses of horizontal vis a vis vertical spatial arrangements in buildings.
- Study of buildings in which vertical arrangements are desired.
- Design and layering of different activity areas with different spatial scales.
- Coordination of various building services such as water supply, lifts, drainage, garbage disposal, lighting, air conditioning etc.
- Exposure to natural disaster management or disaster management through design mitigation.
- Exposure to Universal Design or Accessible Design concept.

SESSIONAL WORK:

- A major design project of duration 10-12 weeks of a building complex. Example : Hotel, Hospital, Office building, commercial complex, bus station etc.
- A minor design project of duration 4-6 weeks which could be stand alone building on a site with area not less than 1500 sq.m. It is recommended that the minor project may be programmed to integrate knowledge of art-architecture history, contemporary art-architecture movements learnt by the student in history / contemporary architecture seminar.
- One time bound project of duration around 12 hours. The typology and scale of the project can be decided by the college.

Important Note : At least one of the two projects [major or minor] mentioned above has to be in a different socio geographic context. The design has to be communicated through architectural graphics, two and three-dimensional sketches, models and narratives. All the design projects must have different sites.

REFERENCE BOOKS

It is strongly recommended that students refer books focusing on various building types, journals, magazines to widen their knowledge of design and the readings not to be limited to the list of books given below.

1. Correa, C. (2010). *A Place in Shade*. Delhi: Penguin Books.
2. Kanvinde, A., & Miller, H. (1969). *Campus Design in India*. Topeka: ostens/American Yearbook Co. .
3. Lynch, K. (1962). *Site Planning*. MIT Press.
4. Pandya, Y., & Foundation, V. S. (2007). *Elements of Space Making*. Ahmedabad: Mapin Publishing Pvt Ltd.
5. White, S. (1995). *Building in the Garden: Architecture of Joseph Allen Stein in India and California*. Delhi: Oxford India Paperbacks.

Building Technology and Materials-VI			
Subject Code		3201546(PP), 3201547(SV)	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=3, Studio=4)	7	Sessional (Internal)	25
		Sessional (External)	25
		Viva (Internal)	25
		Viva (External)	25
		In-semester exam	30
		End Semester exam	70
		Total Marks	200
		Total Credits	5

COURSE OBJECTIVES:

- To understand the construction of basement along with its waterproofing, provision for access and ventilation details. To understand the construction of different types of retaining walls and the detailing of the same.
- To understand issues and construction of earthquake resistant frame structures.
- To understand the concept of modular co-ordination and industrialized building construction along with precast technology.
- Introduction to steel structures and detailing of trusses and deck floors.

COURSE OUTLINE:

Unit-1: Characteristics, Properties and types of following materials and their application in buildings.

- a) Glass
- b) Metal & Metal alloys
- c) Plastics and rubbers
- d) Adhesives and sealants

Unit 2: Earthquake resistant frame structures.

1. Ductility and Rigidity of building and earthquake loads
2. Overview of earthquake resisting structural systems.
3. Application of Moment resisting frames, crossed braced frames and shear wall for Earthquake resistance structures.
4. Role of Floor and Roof Diaphragm in earth quake resistance.
5. Retrofitting and base isolation.

Unit-3: Single basement construction along with waterproofing details, alternative ways of providing and constructing access and provisions to be made for ventilation.

Unit-4: Retaining wall and its terminology (mass/gravity retaining, cantilever retaining, counter-fort retaining wall and precast retaining wall, etc.)

Unit 5: Steel structures -

- a) Structural steel sections, Built-up sections.
- b) Assembly of steels structure with trusses with north light truss (Industrial building)
- c) Multi-storey steel building assembly with stanchion, beams and metal deck flooring.

Unit 6: Modular co-ordination and Industrialized building construction, Planning and construction details.

1. Precast floor and roof construction along with the following systems developed by CBRI.
2. Floor and roof construction using partially precast planks and joist.
3. Floor and roof construction using precast Waffle unit.
4. Introduction to locally available proprietary Precast systems.

SESSIONAL WORK:

Unit-1: Compilation of market surveys in form of relevant hand drawn sketches, notes and tabulated information regarding; available types, commercial sizes, properties, unit of measurement, rates etc.

Unit-2: Sketches and notes in the journal.

Unit-3: Manually drafted scaled drawings of Single and multi-basement construction with various types of waterproofing Techniques. Information on materials and methodology for waterproofing should be included in the journal.

Unit4: Sketches and notes in the journal.

Unit5: Manually drafted scaled drawings of various steel trusses, north light truss etc with details of fixing of roofing sheets and sheet cladding. Details of multi-storied steel structure with construction of steel deck and steel staircase.

Unit6: Manually drafted scaled drawings of modular coordinated building using precast building components. Sketches and notes in the journal.

REFERENCE BOOKS

1. Central Public Work Department, Indian Building Congress. Handbook on Seismic Retrofit of Buildings. Narosa Publishing House. 2008 Andrew Charleson. Seismic Design for Architects: Outwitting the Quake. Elsevier Ltd 2008
2. Terri Meyer Boake. Understanding Steel Design: An Architectural Design Manual. Birkhauser Basel 2012.

3. Stephen Emmitt. Barry's advanced construction of buildings. Wiley, 2006
4. Central Public works Department CPWD), IBC, CEAI & CCPS. Guidelines on use of Glass in Buildings - Human Safety.
5. Mackay J.K. Building Construction vol.-1-4. Longman Scientific & Technical, 1988.
6. IS 7921 : Recommendations for modular coordination in building industry Horizontal coordination
7. IS 7922 : Recommendations for modular coordination in building industry Vertical coordination
8. M. M. Mistry. Modular coordination & prefabrication, Principles of Modular Coordination in building.
9. BMTPC. Standards & Specifications for Cost-Effective Innovative Building Materials and Techniques. BMTPC 1996

THEORY OF STRUCTURE VI			
Subject Code		3201548(PP)	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=1, Studio=2)	3	Sessional (Internal)	nil
		Sessional (External)	nil
		Viva (Internal)	nil
		Viva (External)	nil
		In-semester exam	30
		Semester exam	70
		Total Marks	100
		Total Credits	2

DRAFT SYLLABUS FOR APPROVAL OF FACULTY

COURSE OBJECTIVES:

1. Types of RCC retaining walls and their use.
2. Different types of liquid retaining structures and their structural detailing.
3. Design of Steel structure elements by L.S.M.
4. To Develop in Students the Feel for **Structural Principles** and their Relates to Building Design
5. To Develop in Students the Concept that **"Every Structure is a System that Forms the Space"** and the fact that **Architecture and Structure cannot be conceived independently.**
6. To Develop in Students the fact that Structural Engineering is a Specialist Discipline and that the Architect has to appreciate the consultant's concern and make an **informed** choice about the most appropriate Structural System for his Building with Reasonable Understanding of its **Economic and Operational Implications.**
7. To Develop in Students the Mathematical logic that would enable him to Design the Structural System for Ground +2l Storey R.C.C Structure and a medium span Factory Building in steel.
8. To instill in the Students a Confidence that they could develop and explore a Structural System of their own design and execute the same.

COURSE OUTLINE:

Unit 1: Retaining Walls

R.C.C Cantilever Retaining Wall - Proportioning and Need. **Numerical** on Stability and Design of Stem Reinforcement: **Theory only**. Detailing of Base Reinforcement, Shear Key, Retaining Wall without Toe and without Heel

1. **Counter Fort and Buttress type Retaining Walls** – **Theory only** on parts and Structural Action and Reinforcement Detailing
2. **Theory only** on Weep Holes and Effects of Surcharge on Retaining Walls

Unit 2: R.C.C Water Tanks and Portal frames: *Theory only*:

a. Water Tanks

1. Joints in Water Tanks, Minimum Percentage of Steel, Other Standards.
2. R. C.C. Circular Water Tank with Flexible and Rigid Joint between Wall and Base -Concept of Hoop Tension – Reinforcement Detailing.
3. R. C.C. Square and Rectangular Water Tanks -Reinforcement Detailing.
4. R.C.C. Under-Ground Water Tanks - Pressure Conditions -Reinforcement Detailing.
5. Over Head Water Tank - An Intze Tank - Parts and General Detailing

b. Portal Frames: *Theory only*:

1. Basic Concept - Rigid, Two Hinged and Three Hinged Portal Frames with B.M.D.
2. Advantages and Disadvantages of R.C.C Portal Frame - Detailing of Hinged and Pinned Column to Footing Junction.
6. Advantages and Disadvantages of Steel Portal Frame - Detailing of Hinged and Pinned Column to Footing Junction, Rigidity at Beam to Column Junctions.

Unit 3: Design of RCC structure:

- a) Total review of design of ground + two storied RCC building.
- b) Defining Structural system, different loads, Design sequence, transfer of load, actual design procedure.
- c) Understanding structural schedules and drawings.
- d) R.C.C Detailing- Diagrams from Schedules: Sketching Based on Given Schedule

Unit 4: Design of Steel Structures

1. Introduction to Limit State in Steel i.e. Plastic Design in Steel:

- a. **Theory only** on Yield Strength, Ultimate Strength, Partial Factors of Safety for Yield and Ultimate Strength, Shear, Load as per I.S.800 2007
- b. **Numerical** on Design on Steel Beams for Flexure, Shear and Deflection. Plastic Flexure Diagram, Z_p (Section Modulus Plastic). Classification of Sections as Plastic, Compact and Semi Compact.
- c. **Numerical** of Analytical type in Increasing the Strength of a Beam Section by adding Flange Plates.
- d. **Theory only** on Castellated Girders, Plate Girders and Gantry Girders.
- e. **Numerical** on Design of Stanchions in Limit State and **Analytical Numerical** on Stanchion with Flange Plates to Increase Their Strength:
- f. **Numerical** on Design of Compound Stanchions - Design and Analytical Problem.
- g. **Theory only** on Lacing and Battening Systems – I.S. Provisions – Need and Sketches.

h. **Theory only** on Moment Resisting Columns – for wind load and gantry load.

Unit 5: Elements of a Factory Building in Steel Structures:

- a) Total review of design of medium span factory building in steel.
- b) Structural systems, different loads, Design sequence, transfer of load, actual design procedure.
- c) Understanding structural drawings.

Unit 6: Advance structural systems for long span and high rise buildings

1. Long span structural systems like, cable structure, arches, shell, dome, vaults, folded plate, geodesic domes, space frames, tensile structure, fabric etc
2. Appropriate use of structural system in Architectural design.
3. Advantages and disadvantages of different systems.
4. High rise buildings structural system like Rigid frame, Framed truss, Framed tube, Tube in tube, Shear wall etc.

References :

1. R.C.C. design – Khurmi, Punmia, Sushilkumar.
2. Design of steel structures- L. S. Negi., Vajrani-Ratwani.
3. Structure in Architecture – Salvadori and Heller.
4. Structural Decisions.- F. Rosenthal
5. I.S. 456, I.S. 800, I.S. 875, I.S. 1893, I.S. 13920

DRAFT SYLLABUS FOR APPROVAL OF FACULTY

LANDSCAPE ARCHITECTURE II			
SubjectCode		3201549(SS)	
TeachingScheme		ExaminationScheme	
TotalContact Periodsperweek (lectures=1, Studio=3)	04	Sessional(Internal)	25
		Sessional(External)	25
		Viva (Internal)	nil
		Viva (External)	nil
		In-semester exam	nil
		End Semester exam	nil
		TotalMarks	50
		Total Credits	2

COURSE OBJECTIVES:

- To study use of Landscape design as a tool to address environmental concerns in Architecture.
- Application of site planning principles in integrated design of open and built spaces.
- To study the work of Master Landscape Architects and their contribution to built environment.

COURSE OUTLINE:

- **Unit 1.** Study of Works of Master Landscape Architects like Humphrey Repton, Andre Le Notre, 'Capability' Lancelot Brown, William Kent, Sir Geoffrey Jellicoe, Fredrick Law Olmstead and Calvert Vaux, Ian Mcharg, Lawrence Halprin, Gertrude Jekyll, Edwin Lutyens, Dan Kiley, Luis Barragan, Bernard Tschumi, Peter Walker, Martha

Schwartz, Robert Burle Marx, Geoffrey and Bevis Bawa, Ram Sharma, Mohammad Shaheer, Ravindra Bhan, Prabhakar Bhagwat, etc. and contemporary landscape projects.

- **Unit 2.** Introduction to site services like lighting and water management to be integrated in the landscape design project II.
- **Unit 3.** Landscape design Project : Essentially related to III Year Architectural Design studio (sem V / VI) which demonstrates application of all studied theory units.

SESSIONAL WORK:

- Assignment based in the form of drawings /report/ presentation on theme based topics from Unit 1 wherein the students are encouraged to critically appraise the works of the landscape architects, understand various design approaches, undertake comparative studies, region specific design language etc. Duration 4-6 weeks.
- Portfolio comprising of drawings , views, model (optional) representing built and open space relationship, circulation (vehicular and pedestrian) parking, levels , schematic planting, schematic site services, material palette , nomenclature of outdoor spaces. All the theoretical aspects in Semester V and VI must be applied in this Landscape design Project II. Duration 10-12 weeks.

REFERENCE BOOKS

1. Mcharg, I, *Design with Nature*. John Wiley and co. 1978.
2. Jellicoe, G and Jellicoe, S, *The Landscape of Man*, London: Thames and Hudson, 1991.
3. Simonds, J .O, *Landscape Architecture: The Shaping of Man's Natural Environment*, N Y: McGraw Hill Book Co.Inc. 1961.
4. Lynch, K, *Site Planning*, Cambridge: The MIT Press, 1962.
5. Shaheer, M, Wah-Dua, G and Pal A (editors), *Landscape Architecture In India. A Reader*: LA, Journal of Landscape Architecture, 2013.
6. Lyall, S, *Designing The New Landscape*: UK:Thames and Hudson, 1998.
7. Dee, C, *Form And Fabric In Landscape Architecture: A Visual Introduction*, UK: Spon Press, 2001.
8. Eckbo, G, *Urban Landscape Design*, N Y: McGraw hill co. 1961.
9. Laurie, M, *An Introduction to Landscape Architecture*, N Y: American Elsevier Pub. Co. Inc. 1975
10. Rutledge, A J. *A Visual Approach to Park Design*. New York: John Wiley and Sons, 1985.
11. Randhawa, M S, *Flowering Trees*, New Delhi: National Book Trust, 1998.
12. Bose, T K and Choudhary, K, *Tropical Garden Plants in Colour*, Horticulture and Allied Publishers, 1991.
13. Krishen, P. *Trees of Delhi: A Field Guide*, Penguin India, 2006.
14. Mukherjee, P, *Trees of India (WWF Natures Guide)*, Oxford, 2008.
15. Sahni, K C, *The Book of Indian Trees (Bombay Natural History Society)*, Oxford, 1998.
16. Krishna, N and Amrithalingam, M, *Sacred Plants of India*, Penguin Books Limited, 2014.
17. Motloch, J. L, *Introduction to Landscape Design*, US: John Wiley and Sons, 2001.
18. Dines, N and Harris, C, *Timesavers Standards for Landscape Architecture*, McGraw Hill Education, 1998.
19. Reid, G, L, *Landscape Graphics*, Watson-Guptill, 2002.
20. Botkin, D. B and Keller, E. A, *Environmental Science: Earth As a Living Planet*, N Y: John Wiley And Co. 1995.
21. Grosholz, E, *The Poetics of Landscape Architecture*, University of Pennsylvania Press, 2010.

BUILDING SERVICES IV			
Subject Code		3201550 (SS) 3201551(PP)	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (Lectures = 2 Studio = 2)	4	Sessional (Internal)	25
		Sessional (External)	25
		Viva (Internal)	nil
		Viva (External)	nil
		In-Semester exam	30
		End-Semester exam	70
		Total Marks	150
		Total Credits	3

COURSE OBJECTIVES:

- To understand building services as integral part of comprehensive architectural design
- To obtain knowledge for fire safety measures and aspects of good acoustics and treatment in comprehensive architectural design

COURSE OUTLINE:

- Fire fighting: Active and passive criteria as norms, recommendations, components, and specifications of construction and materials used for fire-fighting system in a building
- Acoustics: Properties of sound, Technical aspects of acoustic layout for comprehensive architectural design.
- Comprehensive architectural design for both fire fighting and acoustics

Teaching Plan:

Unit I: Fire Fighting I

- 1.1. Fire triangle, Causes and spread of fire in buildings, fire resistance
- 1.2. Active control systems of fire: fixed and portable fire fighting equipments

Unit II: Fire Fighting II

- 2.1. Passive control of fire: fire safety codes, rules and regulations

Unit III: Acoustics I

- 3.1. Properties and defects of sound
- 3.2. Parameters for good acoustical condition of a room

Unit IV: Acoustics II

- 4.1. Noise control methods for air-borne and structure-borne noises
- 4.2. Acoustical materials and construction
- 4.3. Sound amplification system

Unit V: Acoustics III

- 5.1. Reverberation time calculation and recommendations for acoustical treatment
- 5.2. Acoustical treatment Layout design

SESSIONAL WORK:

- Tutorials for four Units (I to IV): 25% marks
- Reverberation Time calculations and recommendations for acoustical treatment with layout (preferably architectural design IV of the earlier semester to be considered): 50% marks
- Live case study: 25% marks

REFERENCE BOOKS

5. Leslie, Doelle. *Environmental Acoustics*. McGraw Hill.1972
6. Kundsen, V.O. & Harris, C.M. *Acoustical designing in Architecture*. John Wiley. 1950
7. Egan, M. David. *Architectural Acoustics*. McGraw-Hill, NY.1988
8. Mehta, Madan, Johnson, J., Rocafort, J. *Architectural Priciples and Design*. Prentise_Hall, NJ. 1999
9. National Building Code of India

CONTEMPORARY ARCHITECTURE SEMINAR			
Subject Code		3201552 (SS)	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=1, Studio=3)	4	Sessional (Internal)	25
		Sessional (External)	25
		Viva (Internal)	-
		Viva (External)	-
		In-semester exam	nil
		End Semester exam	nil
		Total Marks	50
		Total Credits	3

COURSE OBJECTIVES:

- To establish a critical and comprehensive viewpoint about the contemporary trends/approaches in architectural production in terms of design, practices, its perception, appreciation and critical discourses.
- To develop the ability in students to position themselves in today's time so as to be able to establish an argument and testify the same.

COURSE OUTLINE:

- Course aims at critical inquiry into the contemporary (post 1980s) thought processes involved in architectural production, its perception and appreciation.
- Seminar should encourage students to assess and establish their relevance and/or validity in today's context.
- Though it's a seminar course, subject teachers are advised to take introductory lectures about today's (post 1980s) trends, various critical discourses and current architectural issue so as to put students in the frame of critical thinking.

SESSIONAL WORK:

Each student to write a paper of about 1500-2000 words critically discussing or deliberating the current phenomenon in architecture especially related to its production and appreciation. Preferably paper should be focusing on local and regional issues in architecture. This paper to be presented at the end of the semester orally with the help of computer media as required.

Students should be encouraged to write this paper manually and to follow the formalities of writing a paper in terms of references and acknowledgements.

Students should be assessed primarily for the identification of issues, ability to take position and development of an architectural argument.

REFERENCE BOOKS

1. Hays, K. Michael. *Architecture Theory since 1968 (2000)*. MIT Press., Oct 1997, Feb. 2000.
2. Buchanan, Peter. "*The Big Rethink*". The Architectural Review (AR), (Articles – December 2011, January to May 2012, July – September 2012, November 2012)
3. Leach, Neil. *Anaesthetics of Architecture*, MIT Press, 1999
4. Plasmas, Juhani. *The Eyes of the Skin: Architecture and the Senses*. Academy Press, 2 edition, 2005
5. Correa, Charles. *A Place in the Shade: The New Landscape and Other Essays*. Penguin Books India, 2010.
6. Mehrotra, Rahul. *Architecture In India: Since 1990*. Pictor Publishing, 2007.

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ELECTIVE I – INTERIOR DESIGN			
Subject Code		3201553(SS)	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=1,Studio=2)	03	Sessional (Internal)	25
		Sessional(External)	25
		Viva	NIL
		In-semester exam	nil
		End Semester exam	nil
Total Marks		50	
Total Credits		2	

COURSE OBJECTIVES:

- To enable students to comprehend relationship between Architecture and Interior Design as a Space making disciplines.
- To evolve understanding about thoughtful design of interior spaces & how it can increase efficiency and add depth and meaning to the built environment.
- To enable students to comprehend the connection that the subject of Interior design has with other Design Disciplines like Conservation, Preservation, Restoration, Sustainability, Art ,Product design and Graphic design.

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 a particular group of topics according to the overall philosophy and mission statement of the College. The probable Interior Design elective topics are – [the list is only suggestive and individual colleges can frame newer topics which meet the course objectives].

- Exhibition Design
- Set Design
- Commercial & Office Space Design
- Residential Interiors
- Specialized interiors – Hospitals, Laboratories, Auditoriums, Gymnasiums.
- Furniture Design
- Product Design
- Graphic Design
- Retrofitting of Buildings

SESSIONAL WORK:

The faculty is expected to set out the broad contour and sub aspects (including basic principles, case studies, application in building projects etc.) of the particular elective and conduct input and demonstration interactions and define the nature of the sessional work to be done by the students.

The students are expected to present the work done in an **A4 report format of 20 pages**, to include summary of interactions and sessional work prescribed by the faculty with a signed certificate from the concerned Teacher / Expert stating that the study was carried out under his /her guidance and countersigned by the Principal / Academic coordinator.

Fourth year 2015 Pattern

Semester VII

DRAFT SYLLABUS FOR APPROVAL OF FACULTY

DESIGN VII			
Subject Code		4201554 (SV)	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week= 12 (lectures=3, Studio=9)	12	Sessional (Internal)	100
		Sessional (External)	100
		Viva (Internal)	25
		Viva (External)	25
		In-semester exam	nil
		End Semester exam	nil
		Total Marks	250
		Total Credits	8

Course Objective

Subject aims at preparing the students to handle complex architectural issues at this stage addressing various challenges in terms of scale, complexity of functions, social economic context, traffic and vehicular movement and so on. Along with the challenges of physical issues, students are also now expected to address spatial and visual language of their project with reference to the urban context and setting of their site.

Course Outline

- Multifamily Residential Development with Focus on : Mixed Use Development, Development of Communities, Addressing Issues of Social Stratification v/s Inclusiveness, Identification of target Group/ End User's requirement, Relation of Location/ Land values on Defining the Housing Product, Project being part of the City, Context, Green Initiatives, Efficient Planning of Services Minimum Area 100 to 200 depending on Context and Complexity. Designed within parameters as laid out by Local Authority and NBC.
- One Esquee / Charette be undertaken in each of the Terms (One week Duration) exploring design solution for a project / component , ideas for which would help the Main Design project.

Submissions

The design has to be communicated through architectural graphics, two and three-dimensional sketches, models and narratives.

ADVANCED BUILDING TECHNOLOGY AND SERVICES I			
Subject Code		4201555 (SV)	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week= 07 (lectures=3, Studio=4)	07	Sessional (Internal)	75
		Sessional (External)	75
		Viva (Internal)	25
		Viva (External)	25
		In-semester exam	nil
		End Semester exam	nil
		Total Marks	200
		Total Credits	5

COURSE OBJECTIVES:

- To introduce advanced structural systems, materials and services required in buildings with complex and special requirements and enable the students to integrate the same in design.

COURSE OUTLINE:

Unit 1 .Multi-basements. Design and construction of multi-basements giving constructional details required for natural Lighting, ventilation and surface water disposal. Study of various methods of access to parking areas other than ramps. Drawings to include application of all required services. [Minimum four A1 drawings]

- Unit 2. Industrial Buildings. : Types of roofing systems, PEB systems, Proprietary systems, Industrial flooring.
Assignments. Drawings showing structural system, construction details and services in plan, section and elevation [minimum two A1 drawings]
- Unit 3. Swimming pools.
Design and construction of swimming pools (Olympic size, semi Olympic, leisure pools) and study of situations such as -- at ground level , podium level and upper / roof level with reference to all constructional and services details. [Minimum two A1 drawings]
- Unit 4 Study of long span structures [indoor stadia, railway / metro stations, shopping malls, sky walks etc] in RCC and Steel to understand structural behavior. Introduction of lighting and ventilation of spaces in such large buildings.
Assignment would comprise of Case study report and construction details in sketch form.

SESSIONAL WORK:

- Drawings / sketches / notes to be as mentioned in the course outline above. Computerized drawings may be allowed only when individual design / detailing is undertaken.

REFERENCE BOOKS

PEB manufacturer's details
Advanced Building Construction By MACKEY
Stadia by John Geraint

PROFESSIONAL PRACTICE I			
Subject Code :		4201556(PP)	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week = 3 (Theory Lectures – 1 + studio -2)	03	Sessional (Internal)	Nil
		Sessional (External)	Nil
		In-semester exam	30
		End Semester exam	70
		Total Marks	100
		Total Credits	2

COURSE OBJECTIVES:

- To acquaint the Student with the Role and Stature of an Architect in Society, and understand the duties, responsibilities, liabilities and ethics as a professional.

- To acquaint the Student with the Scope and Avenues of professional Architectural services, and the demands and Mode of professional practice, and to prepare the Student for the professional field.
- To familiarize and prepare the Student with adequate knowledge of an Architect's office administration, documentation and procedures of office and site management to enhance his comprehension and utility during his professional training in the field in Semester IX.

COURSE OUTLINE :

- Unit 1 Introduction to the nature, scope and avenues of service and professional practice as an Architect. Define the Role of an Architect as a technical professional - who is not a Trader or a Businessman. Illustrate the changing nature of the Architects profession- Local & Global competition in the field.
- UNIT 2 The Architects Act 1972 - The Council of Architecture, its composition, legal status and mandate for to Registration of Architects and for monitoring the Academics and Profession of Architecture, Rules and Regulations of the Council regarding Professional Liabilities & Code of Conduct.
- Unit 3 Avenues of Professional service and mode and nature of professional Practice - Types of Organisations - Scope of comprehensive Services, Scale of Fees, and Office Management, Project management, Site supervision, Documentation, Taxation, Banking and Insurance.
- Unit 4 Architectural Competitions - Pros and Cons - with Rules and Regulations of the Council.
- Unit 5 Introduction to IIA, IIID, IUDI, ITPI, ISOLA and such professional organisations and the need for Architects to be aware, sensitive and active in Social and Civic issues in Urban context.

REFERENCE BOOKS :

- | | | |
|----|--------------------------------------|---------------------------------------|
| 1) | Handbook of Professional Documents | - Council of Architecture publication |
| 2) | The Architects Act, 1972 | - Govt. of India publication |
| 3) | Professional Practice | - By Roshan H. Namavali |
| 4) | Professional Practice in India | - By Madhav G. Deobhakta |
| 5) | Architectural Practice and Procedure | - By Vasant .S. Apte |

URBAN STUDIES-I			
Subject Code		4201557 (SS)	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=1, Studio=2)	03	Sessional (Internal)	25
		Sessional (External)	25
		Viva (Internal)	nil
		In-semester exam	nil
		End Semester exam	nil
		Total Marks	50
		Total Credits	02

COURSE OBJECTIVES:

- To enable students to understand the urban context of an Architectural Project beyond the site and understand the implications of various factors (such as traffic-transportation, socio economics, urban landscape, spatial and visual aspects etc) influencing the development of an urban area.
- To introduce the students to urban planning and design theories and concepts and enable them to undertake planning and design of large scale land development.

COURSE OUTLINE:

- Introduction to urban studies and relevance of its learning in Architecture profession. Principles and theories of Urban Planning and Urban Design.
- Various aspects of urban land.
- Urban residential developments such as neighborhood planning, high-rise housing, slum rehabilitation, public housing, town planning schemes etc
- Affordable housing: introduction and concepts.

SESSIONAL WORK:

- **Handwritten journal** based upon the theory syllabus as above.
- **Assignments:**
 1. Subdivision of land for residential development (approx area 4Ha) –Individual submission (20 marks)
 2. Study of housing typologies as mentioned in course outline- Case study in a group of maximum 5 students (20 Marks)
 3. One Tutorial based upon course outline (10 marks)

REFERENCE BOOKS

1. Gallion, Arthur. **The Urban Pattern**. New Delhi: CBS Publishers and Distributors, 2003
2. Bacon, Edmund. **Design of Cities** London: Thames and Hudson, 1974
3. Paddison, Ronan. **Handbook of Urban Studies**. London: sage Publications, 2001
4. Correa, Charles. **Housing and Urbanisation**. London: Thames and Hudson, 2000.
5. Mohanty, Swati. **Slum in India**. New Delhi: APH Publishing Corp., 2005.
6. Jagdale, Rohit. **Slum Rehabilitation Schemes in Mumbai**. University of Texas 2014.

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RESEARCH IN ARCHITECTURE I			
Subject Code		4201558 (SS)	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=1, Studio=2)	3	Sessional (Internal)	25
		Sessional (External)	25
		Viva (Internal)	-
		Viva (External)	-
		In-semester exam	nil
		End Semester exam	nil
		Total Marks	50
		Total Credits	2

COURSE OBJECTIVES:

- To introduce students to Research in Architecture and its value in design
- To enable the students to prepare a research proposal.

COURSE OUTLINE:

- Unit I -- Introduction to the meaning and need of research in architecture. Introduction to various concepts such as types of variables, measurement of variables, sample selection, ethics in research.
- Unit II – Process of research – Methodology
- Unit III – Literature study

- Unit IV – Methods of research in architecture. Use of surveys, observations, experiments, secondary sources.

SESSIONAL WORK:

- Tutorial based on all of the above units
- Literature Review of at least 5 papers related to the topic of their choice.
- Research proposal giving details of aims, objectives, scope, limitations, methods, samples selected on the topic approved by the head of the institution.

NOTE:

- The guide must have minimum 5 years of teaching experience. Preferably a guide should not guide more than 8 students.
- It is desirable that the research seminar is presented in front of experts.
- It is beneficial to the students if the topic is related to the architectural design project of semester X.

REFERENCE BOOKS

1. Babbie, E. *The Practice of Social Research*. third edition. Belmont: Wadsworth Publishing Co., 1983. book.
2. Cresswell, J.W. *Research Design: Qualitative and Quantitative Approaches*. Thousand Oaks: Sage, 1994. Book.
3. De Vaus, D.A. *Surveys in Social Research*. Jaipur: Rawat Publications, 2003. Book.
4. Dey, I. *Qualitative Data Analysis: A User Friendly Guide for Social Scientists*. London: Routledge, 1993. Book.
5. Groat, L. & Wang, D. *Architectural Research Methods*. New York: John Wiley and Sons Inc., 2002. Book.
6. Kothari, C.R. *Research Methodology: Methods and Techniques*. New Delhi: Wishwa Prakashan, 2005. Book.
7. Michelson, William. *Behavioural Methods in Environmental Design*. Stroudsburg, Pennsylvania: Dowden, Hutchinson and Ross, Inc., 1982.
8. Nachmias, C.F. & Nachmias, D. *Research Methods in Social Sciences*. Great Britain: St. Martin's Press Inc., 1996. Book.
9. Patton, M.Q. *Qualitative Evaluation Methods*. Newbury Park: Sage Publications, 1980. Book.
10. Sanoff, H. *Methods of Architectural Programming*. Vol. 29. Dowden Huthinson and Ross, Inc., 1977. document.
11. —. *Visual Research Methods in Design*. USA: Van Nostrand Reinhold, 1991.

Quantity Surveying And Estimation - I			
Subject Code		4201559 (PP)	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=1, Studio=2)	03	Sessional (Internal)	Nil
		Sessional (External) Viva (Internal)	Nil
		Viva (External)	Nil
		In-semester exam	30
		End Semester exam	70
		Total Marks	100
		Total Credits	2

COURSE OBJECTIVES:

- To Introduce Estimation as an important Subject for Architecture.
- To Understand Different methods of Computing Quantities for items of work in a structure.
- To enable students in working out quantities of various items of work for simple load bearing and R.C.C. framed structure and acquaint them with various types of estimates including standard method of measurement on building works and mode of measurements as adopted by I.S 1200.

COURSE OUTLINE:

Unit I. Introduction to Quantity Surveying and Estimating, Data for Estimate, Purpose of Estimating, Accompaniments of an Estimate, Qualities of an Estimator, Spot Items, Contingencies, Prime Cost & Provisional Sums, Provisional Quantities, Extra Items of work.

Unit II. Different types of Estimate their uses & Characteristics, Schedule of Quantities, Schedule of Rates & its uses, Stages of work, Complete Estimate of a Project, Methods of taking out Quantities, Measurement Sheet, Abstract Sheet, Bill of Quantities,

Unit III. Study of mode of measurement as stipulated in IS-1200, Classification of strata as per IS-1200, Trial pit data, Lift and Leads , Unit of Measurement.

Unit IV Bill certification, Part rate certification, Interim/Running Bill Certification,

Unit V Working out quantities for load bearing structure (below plinth only) of approximately 15-30 Sqm by offset and centre-line method illustrating L and T junctions and preparing measurement sheet and abstract for all items of work.

Unit VI Working out quantities for R.C.C. G+1 structure of approximately 150-200 sqm and preparing measurement sheet and abstract for all items of work.

REFERENCE BOOKS

1. *B.I.S 1200- Part-I 1992.* n.d.
2. Prof. B.N.Dutta, *Estimating and Costing in Civil Engineering.*
3. B.S.Patil. *Civil Engineering Contracts and Estimates.*
4. Dr. Roshan Namavati. *Professional Practice.*
5. Rangawala. *Estimating Costing and Valuation.*

Specification Writing I			
Subject Code		4201560 (PP)	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (Lectures = 1 Studio = 2)	3	Sessional (Internal)	nil
		Sessional (External)	nil
		Viva (Internal)	nil
		Viva (External)	nil
		In-Semester exam	30
		End-Semester exam	70
		Total Marks	100
		Total Credits	2

COURSE OBJECTIVES:

- To acquaint students with methodology of writing specifications with reference to building trades, materials, workmanship & performance of different items of work.
- To know importance of specifications in contract document for any construction project.

COURSE OUTLINE:

- Techniques, Importance & methods of writing different types of specifications of different items of works in construction.
- Technical and functional role of specifications in any construction project.

Unit I: Specifications

- 1.4. Definition, need & importance of Specification writing
- 1.5. Relation with working drawing, bill of quantities, schedule of rates
- 1.6. Specification as a integral part of contract document

Unit II: Types of Specifications

- 2.1. Basic types like open, closed, restricted etc
- 2.2. Use of manufacturers guide
- 2.3. Combination of above types

Unit III: Specification writing (Workmanship)

- 3.1. Item-wise detailed specifications including methods
- 3.2. Forms of writing descriptive notes on material and workmanship based on working drawing

Unit IV: Specifications for construction works

- 4.2 Demolition work of existing buildings
- 4.2 Formwork

REFERENCE BOOKS

1. Indian Standard specifications
2. C.P.W.D. Specifications and schedule of rates
3. Specification Writing for Architects & Engineers, By Donald A. Watson
4. Specification Writing for Architects & Surveyors, By Arthur J. Wills
5. Estimating, Costing, Specification & Valuation, By M. Chakraborty

ELECTIVE II - DESIGN & TECHNOLOGY ELECTIVE			
Subject Code		4201561(SS)	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week= 2 (lectures=1, Studio=1)	2	Sessional (Internal)	25
		Sessional (External)	25
		Viva (Internal)	NIL
		Viva (External)	NIL
		In-semester exam	nil
		End Semester exam	nil
		Total Marks	50
		Total Credits	1

COURSE OBJECTIVES:

The subject of Electives has been introduced in syllabus with specific intention of 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.

The Design and technology elective aims at exploring the recent developments in the field of architecture from point of view of building design, services and construction. Aspects such as disaster resistance, accessibility, retrofitting, conservation, architectural design theory, can be addressed through these electives.

DRAFT SYLLABUS FOR APPROVAL OF FACULTY

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 a particular group of topics according to the overall philosophy and mission statement of the College. The probable elective topics are – [the list is only suggestive and individual colleges can frame newer topics which meet the course objectives].

- Universal Design
- Seismic Resistance design
- Services in High rise buildings.
- Design theory
- Architectural Conservation
- Computer & design
- Modular design
- Prefabricated & Precast construction
- Advanced Landscape Design

Note : The topics selected in this elective should not focus on any of the aspects of interior design.

SESSIONAL WORK:

The faculty is expected to set out the broad contour and sub aspects of the particular elective and conduct input and demonstration interactions and define the nature of the sessional work to be done by the students.

The students are expected to present the work done in an **A4 report format of 20 pages**, to include summary of interactions and sessional work prescribed by the faculty with a signed certificate from the concerned Teacher / Expert stating that the study was carried out under his /her guidance and countersigned by the Principal / Academic coordinator.

DRAFT SYLLABUS FOR APPROVAL OF FACULTY

Fourth year 2015 Pattern

Semester VIII

DRAFT SYLLABUS FOR APPROVAL OF FACULTY

DESIGN VIII			
Subject Code		4201562(SV)	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week= 12 (lectures=3, Studio=9)	Sessional (Internal)	100	
	Sessional (External)	100	
	Viva (Internal)	25	
	Viva (External)	25	
	In-semester exam	nil	
	End Semester exam	nil	
Total Marks		250	
Total Credits		8	

Course Objective

Subject aims at preparing the students to handle complex architectural issues at this stage addressing various challenges in terms of scale, complexity of functions, social economic context, traffic and vehicular movement and so on. Along with the challenges of physical issues, students are also now expected to address spatial and visual language of their project with reference to the urban context and setting of their site.

Course Outline [Project type 1 – one of the two options & Project type 2]

1. Study of Urban Areas in terms of Urban level issues like Mobility, movement network, builtform, disposition, character, identity, activities, open space, networks, walkability, inclusiveness, etc.

Community participation initiatives and analysis.

Identify issues related to above aspects at Neighbourhood level and offer design solutions for improving the status of the neighbourhood with reference to the above aspects. Setting up of Guidelines to achieve the master plan objectives and broad implementation strategy to achieve sustainable neighbourhoods.

The project shall include a Study area and Master Plan area of 2- 3 Ha. with detailed Architectural Resolution of a component/s admeasuring not less than 10000 to 20000 sqm Area of Functional space depending on Context and Complexity.

The Architectural project should evolve of the study of the Area and be an outcome of issue formulation, Development Plan proposals for the area if any and a subset of the overall Master Plan for the Area.

OR

1. Multi Functional Complex of Buildings or Speciality Building in an Urban Context with substantial Complexity addressing Issues of Character, Identity, Builtform, Contextuality, Advanced Services, Green Initiatives , landscape integration, traffic management with impact on immediate surroundings, structural resolution in detail. Building Quantum not less than 10000 to 20000 sqm Area of Functional space depending on Context and Complexity and appropriate plot Area. (eg. Healthcare facility, Educational Institution, 5 Star Hotel, Convention Centre, Multimodal Transport Hub, Shopping Mall and Multiplex, redevelopment project etc.).

Project should explore the Impact on the Surrounds and from the Surrounds with reference to the Urban Insert being proposed.

2. One Esquee / Charette be undertaken in each of the Terms (One week Duration) exploring design solution for a project / component , ideas for which would help the Main Design project.

Submissions

The design has to be communicated through architectural graphics, two and three-dimensional sketches, models and narratives.

ADVANCED BUILDING TECHNOLOGY AND SERVICES II			
Subject Code		4201563 (SV)	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week= 07 (lectures=3, Studio=4)	7	Sessional (Internal)	75
		Sessional (External)	75
		Viva (Internal)	25
		Viva (External)	25
		In-semester exam	nil
		End Semester exam	nil
		Total Marks	200
		Total Credits	5

DRAFT SYLLABUS FOR APPROVAL OF FACULTY

COURSE OBJECTIVES:

- To introduce advanced structural systems, materials and services required in buildings with complex and special requirements and enable the students to integrate the same in design.

COURSE OUTLINE:

- Unit 1. Auditoriums - Design and construction of Auditorium of min capacity 500 with provision of a balcony and application of all required services.
All architectural drawings, framing plans and sections, showing all services and constructional detail for balcony [minimum four A1 drawings]
- Unit 2. Construction details of architectural features in design projects.
Assignment -- Complete details with reference to materials used and details of construction. Minimum five working details to an appropriate scale. [Minimum 3 A1 size drawing].
- Unit 3. Introduction to high rise buildings.
Behavior of high rise structures under different loading conditions. Understanding of structural systems for high rise structures. Assignment; Notes and sketches.
- Unit 4 Curtain walls-- Framing systems and construction details for a curtain wall.
Assignment -- Students shall study cases of curtain wall and prepare working details for the same. [minimum one A1 size drawing].

SESSIONAL WORK:

- Drawings / sketches / notes to be as mentioned in the course outline above. Computerized drawings may be allowed only when individual design / detailing is undertaken.

REFERENCE BOOKS

Advance building construction by MACKEY
 High Rise Buildings by JASWANT MEHTA
 Theatres and Auditoriums by Harold Burris- Meyer & Edward Cole.
 Architects Working Details

PROFESSIONAL PRACTICE II			
Subject Code :		4201564 (PP)	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week = 3 [Lecture 1, Studio 2]	3	Sessional (Internal)	Nil
		Sessional (External)	Nil
		In-semester exam	30
		End Semester exam	70
		Total Marks	100
		Total Credits	2

COURSE OBJECTIVES:

- To acquaint the Student with the Role and Stature of an Architect in Society, and understand the duties, responsibilities, liabilities and ethics as a professional.
- To acquaint the Student with the Scope and Avenues of professional Architectural services, and the demands and Mode of professional practice, and to prepare the Student for the professional field.
- To familiarize and prepare the Student with adequate knowledge of an Architect's office administration, documentation and procedures of office and site management to enhance his comprehension and utility during his professional training in the field in Semester IX.

COURSE OUTLINE:

- Unit 1 Introduction to Construction Management - Types and Systems of Tendering - Open and Invited Tenders - Pre-Qualification and Empanelment procedures - Selection of Contractors.
- Unit 2 Introduction to Contracts - Articles of Agreement and Conditions of Contract (IIA document) Contents of a Tender - Terms of Reference - Specifications - Bill of Quantities - Billing, Measurement of work and Payments - Advances and recovery - Bonus and Penalties, etc ..
- Unit 3 Introduction to National Building Code - ISI Codes and Standards, Limits and Tolerances.
- Unit 4 Role of Architects in Construction / Site management - Supervision and monitoring of Speed, Quality and Economy - Status on project sites - Meetings, Minutes, Instructions & Records.
- Unit 5 General Introduction to the Role and Legal duties of Architects in Arbitration and Valuation.

SESSIONAL WORK : Preparation of a JOURNAL with NOTES based upon the syllabus content. Journal to be submitted at the end of Term-II for Internal and External Marking.

REFERENCE BOOKS :

- 1) Handbook of Professional Documents - Council of Architecture publication
- 2) The Architects Act, 1972 - Govt. of India publication

- 3) Professional Practice - By Roshan H. Namavati
- 4) Professional Practice in India - By Madhav G. Deobhakta
- 5) Architectural Practice and Procedure - By Vasant .S. Apte

Urban Studies-II			
SubjectCode		4201565 (SS)	
TeachingScheme		ExaminationScheme	
TotalContact Periodsperweek (lectures=1, Studio=2)	03	Sessional(Internal)	25
		Sessional(External)	25
) Viva (Internal)	nil
		Viva (External)	nil
		In-semester exam	nil
		End Semester exam	nil
		TotalMarks	50
		Total Credits	02

COURSE OBJECTIVES:

- To introduce the students to the process of planning and urban development and associated legislation.
- To introduce the students to urban economics.

COURSE OUTLINE:

- Study of planning process in detail (Survey, analysis, proposals and development)
- Conservation and related Urban Design controls
- Planning and Urban Design legislation- introduction and relevance
- Unified Building bye laws and Development Control rules of local authorities.
- Urban economics: introduction and concepts (demand and supply, housing finance, Government schemes and various bodies etc)

SESSIONAL WORK:

- **Handwritten journal** based upon the theory syllabus as above.
- **Assignments:**
 1. Reading of Urban fabric: Study of existing town and town planning proposals for municipal council level town-(group work) (20 marks)
 2. Identification of urban issues related to various aspects such as environment, society, traffic and transportation, hills and hill slopes, riverfront development, urban heritage conservation through primary surveys(group work in a group of 5 students) (20 marks)
 3. One Tutorial based upon course outline (10 marks)

REFERENCE BOOKS

Urban Pattern: Arthur Gallion
 City in History: Lewis Mumford
 Spreerigen, Paul. Urban Design: **The Architecture of Town and Cities**. Malabar,FL-USAKrieger Publishing Co., 1967
 Lynch, Kevin. **The Image of The City** London: The MIT Press, 1960
 Book of Development Control Regulations by Local Municipal Corporation (latest edition available)
 Book of AITP Exam study material: 'Planning Law and Legislation' by ITPI New Delhi
 Guide to Planning Surveys including Landuse Classification: TCPO, Govt of India: 2004

Housing and Urbanization: Charles Correa
 Garden Cities of Tomorrow: Sir Ebenezer Howard
 Maharashtra Regional and Town Planning Act, 1966
 Traffic and Transportation Planning by L.R. Kadiali

Research in Architecture II			
Subject Code		4201566 (SS)	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=1, Studio=2)	3	Sessional (Internal)	25
		Sessional (External)	25
		Viva (Internal)	-
		Viva (External)	-
		In-semester exam	nil
		End Semester exam	nil
		Total Marks	50
		Total Credits	2

COURSE OBJECTIVES:

- To enable students to undertake research focussed on an issue related to the built environment.
- To report research in a technical manner.

COURSE OUTLINE:

- Unit I Data collection and Analysis preferably with use of statistics
- Unit II Presentation of data using various techniques (verbal, visual, graphical, numerical)
- Unit III Technical writing
- Unit IV Presentation of a research paper in form of a seminar

SESSIONAL WORK:

- Tutorial based on units I to III.
- To undertake original research work on the research proposal prepared in Semester VII and report the research in form of a technical paper of 4000 words minimum.

NOTE:

- The guide must have minimum 5 years of teaching experience. Preferably a guide should not guide more than 8 students.
- It is desirable that the research seminar is presented in front of experts.
- It is beneficial to the students if the topic of research is related to the architectural design project of semester X.

REFERENCE BOOKS

Babbie, E. *The Practice of Social Research*. third edition. Belmont: Wadsworth Publishing Co., 1983. book.
 Cresswell, J.W. *Research Design: Qualitative and Quantitative Approaches*. Thousand Oaks: Sage, 1994. Book.

- De Vaus, D.A. *Surveys in Social Research*. Jaipur: Rawat Publications, 2003. Book.
- Dey, I. *Qualitative Data Analysis: A User Friendly Guide for Social Scientists*. London: Routledge, 1993. Book.
- Groat, L. & Wang, D. *Architectural Research Methods*. New York: John Wiley and Sons Inc., 2002. Book.
- Kothari, C.R. *Research Methodology: Methods and Techniques*. New Delhi: Wishwa Prakashan, 2005. Book.
- Michelson, William. *Behavioural Methods in Environmental Design*. Stroudsburg, Pennsylvania: Dowden, Hutchinson and Ross, Inc., 1982.
- Nachmias, C.F. & Nachmias, D. *Research Methods in Social Sciences*. Great Britain: St. Martin's Press Inc., 1996. Book.
- Patton, M.Q. *Qualitative Evaluation Methods*. Newbury Park: Sage Publications, 1980. Book.
- Sanoff, H. *Methods of Architectural Programming*. Vol. 29. Dowden Huthinson and Ross, Inc., 1977. document.
- . *Visual Research Methods in Design*. USA: Van Nostrand Reinhold, 1991.

Quantity Surveying And Estimation - II			
Subject Code		4201567 (PP)	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (lectures=1, Studio=2)	03	Sessional (Internal)	Nil
		Sessional (External) Viva	Nil
		(Internal)	Nil
		Viva (External)	Nil
		In-semester exam	30
		End Semester exam	70
		Total Marks	100
		Total Credits	2

COURSE OBJECTIVES:

- To enable students in working out quantities for items of plumbing and sanitation work in a structure.
- To enable students in working out quantities of various items of work for an Industrial structure and acquaint them for preparing rate analysis and indent of material.

COURSE OUTLINE:

- Unit I.** Introduction to Analysis of Rate, Factors affecting Rate of any Item of work, Importance of Rate Analysis, Essentials of Rate Analysis.
- Unit II.** Unit Rate, Direct Cost, Indirect Cost, Overhead Charges, Day Work, Task Work, Piece work, Indent of Material,
- Unit III.** Studying and Working out rate Analysis of minimum 20 numbers of standard items of work based on prevailing market rates.
- Unit IV** Studying and preparing Indent of Material of minimum 20 numbers of standard items of work.
- Unit V** Working out quantities for plumbing and sanitation items of work and preparing measurement sheet and abstract for all items of work.

Unit VI Working out quantities for Industrial structure of approximately 200-300 sqm with steel Truss and sheet roofing and preparing measurement sheet and abstract for all items of work.

REFERENCE BOOKS

- *B.I.S 1200- Part-I 1992.* n.d.
- Prof. B.N.Dutta, *Estimating and Costing in Civil Engineering.*
- B.S.Patil. *Civil Engineering Contracts and Estimates.*
- Dr. Roshan Namavati. *Professional Practice.*
- Rangawala. *Estimating Costing and Valuation.*

Specification Writing II			
Subject Code		4201568 (PP)	
Teaching Scheme		Examination Scheme	
Total Contact Periods per week (Lectures = 1 Studio = 2)	3	Sessional (Internal)	nil
		Sessional (External)	nil
		Viva (Internal)	nil
		Viva (External)	nil
		In-Semester exam	30
		End-Semester exam	70
		Total Marks	100
		Total Credits	2

DRAFT SYLLABUS FOR APPROVAL OF FACULTY

COURSE OBJECTIVES:

- To acquaint students with methodology of writing specifications with reference to service installations of different items of work in construction.
- To know importance of specifications in contract document for any construction project.

COURSE OUTLINE:

- Techniques, Importance & methods of writing different types of specifications of different items of works in construction.
- Technical and functional role of specifications in any construction project.

Unit I: Detailed Specifications

- 1.3. Checklist preparation

Unit II: Specification for Building Services

- 2.1. Water Supply & Drainage
- 2.2. Acoustics
- 2.3. Electrification
- 2.4. HVAC installation

Unit III: Building Trades

3.1. Different Building trades scope & contents

Unit IV: Broad outline specification for service installations

- 4.4. Communication systems- elevators, escalators
- 4.5. Accessibility- arrangements for disabled persons
- 4.6. Water proofing- cement, bitumen, polymer based
- 4.7. External development- roads, pavements, kerbs, lighting

REFERENCE BOOKS

- Indian Standard specifications
- C.P.W.D. Specifications and schedule of rates
- Specification Writing for Architects & Engineers, By Donald A. Watson
- Specification Writing for Architects & Surveyors, By Arthur J. Wills
- Estimating, Costing, Specification & Valuation, By M. Chakraborty

ELECTIVE III – ALLIED ELECTIVE			
Subject Code	4201569 (SS)		
Teaching Scheme	Examination Scheme		
Total Contact Periods per week= 2 (lectures=1, Studio=1)	2	Sessional (Internal)	25
		Sessional (External)	25
		Viva (Internal)	NIL
		Viva (External)	NIL
		In-semester exam	nil
		End Semester exam	nil
		Total Marks	50
	Total Credits	1	

COURSE OBJECTIVES:

The subject of Electives has been introduced in syllabus with specific intention of 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.

The allied elective gives opportunity to the students to explore links of design as a faculty with allied fields such as social sciences, visual art, performing arts, psychology, etc.

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 a particular group of topics according to the overall philosophy and mission statement of the College. The probable elective topics are – [the list

is only suggestive and individual colleges can frame newer topics which meet the course objectives].

- Music and Architecture
- Environmental psychology
- Art movements and Architecture
- Sociology and Architecture
- Building Economics
- Biomimicry

SESSIONAL WORK:

The faculty is expected to set out the broad contour and sub aspects of the particular elective and conduct input and demonstration interactions and define the nature of the sessional work to be done by the students.

The students are expected to present the work done in an **A4 report format of 20 pages**, to include summary of interactions and sessional work prescribed by the faculty with a signed certificate from the concerned Teacher / Expert stating that the study was carried out under his /her guidance and countersigned by the Principal / Academic coordinator.

DRAFT SYLLABUS FOR APPROVAL OF FACULTY

Fifth year 2015 Pattern

Semester IX

DRAFT SYLLABUS FOR APPROVAL OF FACULTY

Practical Training		
Subject Code	5201570 (SV)	
Teaching Scheme	Examination Scheme	
Student should work for Total 120 working days in organization where architecture or its allied disciplines are practiced under supervision of a professional who is registered with COA India.	Sessional (Internal)	75
	Sessional (External)	75
	Viva (Internal)	25
	Viva (External)	25
	In-semester exam	NIL
	End Semester exam	NIL
	Total Marks	200
	Total Credits	8

Objectives:

- To undertake practical training under the guidance of experts / professionals.
- To Learn about architect's office management and learn about the process of design, execution and management of a project.

Course outline:

- Students should work in organization where architecture or its allied disciplines are carried under professional who is registered architect with COA
- In case a student undergoes Training at a firm outside India, the professional should be registered with the professional body governing practice in that country in addition to the registration with COA India.
- Total duration of Professional Training will be 120 working days in IX sem

Submissions :

- Prepare a separate report along with formal log book & work diary.
- Student should maintain week wise work record in a diary to summarize the work done in the office, site visits, meetings with clients, agencies, interaction with principal architect. This diary should be authenticated by the architect every week.
- Professionals should issue a certificate of performance to the student with respect to the work quality, overall approach, attitude towards office work.
- Students should produce report, log book, work diary & some drawings with permission from the employer [to indicate the kind of work s/he has carried out] at the time of sessional -viva voce examination.

Fifth year 2015 Pattern

Semester X

DRAFT SYLLABUS FOR APPROVAL OF FACULTY

Elective IV			
SubjectCode		5201572 (SS)	
TeachingScheme		ExaminationScheme	
TotalContact Periodsperweek (lectures=1, Studio=2)	3	Sessional(Internal)	25
		Sessional(External)	25
		Viva (Internal)	NIL
		Viva (External)	NIL
		In-semester exam	nil
		End Semester exam	nil
		TotalMarks	50
		Total Credits	2

COURSE OBJECTIVES:

The subject of Electives has been introduced in syllabus with specific intention of 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.

Architecture professionals will have to deal with more and more complex buildings as well as organizational structures to realize a project. Architects need to be introduced to "Management Concepts" if they are to manage projects right from design stage through the documentation and construction stage. Acknowledging the fact that the Architectural Practice is a team effort and understanding the necessity of management in this field, the following elective topics have been suggested.

Note: This elective will not focus on design and technology aspects of the topics offered.

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 a particular group of topics according to the overall philosophy and mission statement of the College. The probable management elective topics are as follows:

- Project Management
- Construction Management
- Environment and Energy management
- Architectural Design Management

SESSIONAL WORK:

The faculty is expected to set out the broad contour and sub aspects (including basic principles, case studies, application in building projects etc.) of the particular elective and conduct input and demonstration interactions and define the nature of the sessional work to be done by the students.

The students are expected to present the work done in an **A4 report format of 20 pages**, to include summary of interactions and sessional work prescribed by the faculty with a signed certificate from the concerned

Teacher / Expert stating that the study was carried out under his /her guidance and countersigned by the Principal / Academic coordinator.

Guidelines for content for the electives

Construction Management

Human Resource Management in Construction
 Contracts and Claims Management
 Construction Materials, Stores and Inventory Control and Technology Management
 Construction Equipment Management
 Construction Quality and Safety Management
 Construction Site Administration and Control
 Introduction to Computer applications for construction management

Project Management

Soft Skills in Project Management
 Project Risk Management
 Project Cost Estimation and Cost Control
 Contracts and Claims Management
 Project Procurement and Materials Management
 Project Quality and Safety Management
 Introduction to Computer Application in Contract Management

DRAFT SYLLABUS FOR APPROVAL OF FACULTY

Environment and Energy Management

Environment and Energy Policies and Management in Indian Context
 Environment Technology Management-Water and Waste Management Technologies
 Energy Management in Buildings (Demand and Supply Management)
 Building Management Systems

Architectural Design Management

Design Management
 Drawing and Documentation Management
 Computer Applications for Design Management

Architectural Design Project			
SubjectCode		5201571 (SV)	
TeachingScheme		ExaminationScheme	
TotalContact Periodsperweek=20 (lectures=4, Studio=16)	20	Sessional(Internal)	175
		Sessional(External)	175
		Viva (Internal)	50
		Viva (External)	50
		In-semester exam	nil
		End Semester exam	nil
		TotalMarks	450
		Total Credits	12

OBJECTIVE: To provide an opportunity to the students to apply the **knowledge gained** in earlier years to full-fledged Architectural Design project of student's choice with a holistic approach including background research, programme formulation, site selection investigations and design demonstration.

COURSE OUTLINE: The Architectural Design Project shall consist of **Design Demonstration** i.e. formulation of design programme, site investigation and selection, and culmination in architectural design proposal.

TOPIC FOR ARCHITECTURAL PROJECT: The topic for the project shall be approved by the Institute and guided by the Faculty. The student may consult external resource persons specializing in the chosen topic but the assessment shall be done by the faculty. **A guide** may guide upto EIGHT students during the session. In order to qualify to work as a Guide, the faculty must possess minimum of **ten YEARS** of teaching / professional experience.

SESSIONAL WORK:

The portfolio of the work submitted by the student shall contain MANUALLY LABOURED / COMPUTER GENERATED drawings **of sheet sizes as per international standards** and a PHYSICAL MODEL explaining the architectural proposal. Alongwith the drawings A4/A3 size report consisting of the background and rationale of the project, the methodology and the prints of the final proposal shall be submitted after the oral examination, to be kept in the library of the college. The choice of the size of the report is left to the institute , however, within one institute report size should be constant.

In addition the student may show other presentations like 3D views, walkthroughs etc. if permitted by the examiners.

SESSIONAL ASSESSMENT:

The Internal assessment of architectural project shall be carried out STAGE WISE as decided by the college. The final assessment in the examination shall be done by both Internal and External examiner in which the student shall display the work on the space allotted to him/her and explain his work and answer all the queries raised by the examiner.

The examiners shall assess the work done and presented by the student, duly approved by the Faculty. The drawings and models, duly stamped and signed by the Faculty shall be treated as authentic work done by the student under the guidance of the Faculty. The student may submit sufficient number of drawings required to satisfactorily explain the project. The student shall also present a separate portfolio of study & process sheets, study models etc.

ORAL EXAMINATION : The oral shall be held in the physical presence of the student in **examination centre of the candidate** jointly by the internal and external examiners. The student shall be allowed to present his project for minimum 10 minutes without any interruption. The student shall be judged for the depth of understanding of the subject and clarity of graphical presentation of the project.

RECOMMENDED READING:

All books relevant to the topic of the architectural project.
