Revised Rules
Structure and contents of
Detailed Syllabus

For

Bachelor of Architecture (B. Arch) 2015 CBCS COURSE (Amended in 2018)

To be implemented from 2018-19

Bharati Vidyapeeth (Deemed to be University)
College of Architecture, Pune

Bharati Vidyapeeth
(Deemed to be University)
Pune, India.
Founder Chancellor : Dr. Patangrao Kadam

Prof. Dr. Shivajirao Kadam
M.Sc., Ph.D.
Chancellor

Prof. Dr. M. M. Salunkhe
M.Sc., Ph.D., F.R.S.C.
Vice Chancellor

★ Accredited with 'A+' Grade (2017) by NAAC ★
★ Category-I University Status by UGC ★
★ NIRF Ranking - 66 ★

"Social Transformation Through Dynamic Education"

Celebrating and Beyond
BHARATI VIDYAPEETH

Dr. Vishwajeet Kadam
B.Tech., M.B.A., Ph.D.
Pro Vice Chancellor

G. Jayakumar
M.Com., Dip.Pub.Admn.
Registrar

NOTIFICATION NO. 925

It is hereby notified for the information of all concerned that the University authorities have decided to approve the revised syllabus of M.Arch. programme and B.Arch. programme by adopting the Council of Architecture's amendments in the existing B.Arch. 2015 CBCS syllabus (Sem VII-X) to be implemented from the academic year 2018-19.

All the concerned are requested to make a note of this.

G. Jayakumar
Registrar

Ref. No. BVDU/2018-19/ 906
Date : July 20, 2018

To,

1. The Dean, Faculty of Engineering & Technology, College of Engineering, Pune 43.
2. The Principal, College of Architecture, Pune 43.
3. The Controller of Examinations, BVDU.

Notification2018-19

- Exam-Section cat
- Lib. note
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- office file

Bharati Vidyapeeth
(Deemed to be University)
College of Architecure, Pune-43.
Inward No.: 153
Date: 21/7/18
Sign.:

Changes in the contents of syllabus as per MOM of BOS meeting conducted on 24/12/2018

A meeting of Board of Studies in architecture was conducted on 24th December 2018 to discuss the feed by faculty members for implemented course of B.Arch CBCS 2015 and M.Arch CBCS 2018. Both the courses are approved through university notification 925 and in academic council meeting conducted on 4th December 2018. It is decided by the BOS in the meeting that the feedback should be carefully considered for next revision of syllabus in the syllabus formation meetings after detailed discussion. The specific suggestions for immediate action are follows for **B.Arch (CBCS 2015 course).**

1. **Working Drawing I (B.Arch CBCS 2015 amended in 2018)**-'Municipal Drawing' needs to be included over and above the contents of the syllabus .

2. **Elective V-Sustainable architecture (B.Arch CBCS 2015 amended in 2018),** the contents are revised as follows:

   Aim: To understand the principles and practices of sustainable architecture.

   - Concept of sustainable development and its relation to built environment
   - Understanding relationship between climate and human comfort
   - Understanding sustainable building design principles and practices

11/1/2019

Prof. Archana Gaikwad

Chairperson BOS in Architecture

Table of Contents

Rules of Structure for First To Fifth Year B. Arch

Rule No.1: Eligibility for Admission

Eligibility Criteria: Students seeking admission to First year of Bachelors Degree Course in Architecture must fulfill the eligibility criteria laid down by Council of Architecture and the University as applicable from time to time.

Rule No.2: Duration and stages of the course (as per Council of Architecture)

- The architecture course shall be of minimum duration of 5 academic years/ 10 semesters of approximately 18 working weeks each inclusive of 90 days of practical training in IX semester in a professional's office.
- The 5 years Bachelors Degree Course in Architecture shall be conducted in two stages.
- The First stage of the course shall be the first 3 academic years or 6 semesters of institutional academic studies. The First stage shall be completed within the stipulated time as prescribed by the Council of Architecture.
- The Second stage of the course shall be of 2 academic years/ 4 semesters including 90 days (15-18 weeks) of practical training.
- A candidate will be eligible to register as an architect under the Architects Act, 1972 only after successful completion of both the stages.

Rule No.3: Scheme of Assessment

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

Stage I

- Semester I Examination in Architecture (First Year Sem I)
- Semester II Examination in Architecture (First Year Sem II)
- Semester III Examination in Architecture (Second Year Sem III)
- Semester IV Examination in Architecture (Second Year Sem IV)
- Semester V Examination in Architecture (Third Year Sem V)
- Semester VI Examination in Architecture (Third Year Sem VI)

Stage II

- Semester VII Examination in Architecture (Fourth YearSem VII)
- Semester VIII Examination in Architecture (Fourth YearSem VIII)
- Semester IX Examination in Architecture (Final YearSem IX)
- Semester X Examination in Architecture(Final YearSem X)

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Rule No. 4: Granting of Academic Term

Each semester shall comprise of Eighteen weeks (Minimum 90 working days).

The candidate will be permitted to appear for semester examination only if he/she has,

- 75% attendance in each course that constitute a head of passing, prescribed by the university.
- Satisfactory completion of the 100% term work prescribed for each course.
- Satisfactory conduct as a bonafide student

The Principal/ Director of the institution shall have the right to withhold the student from appearing for examination of a specific course if the above requirements are not fulfilled.

Rule No. 5: Progression Requisite

As general rule a student shall be allowed to keep the next year of study of the course if he/she has a backlog of not more than "**Six heads of passing**" in the preceding year. Furthermore,

- A student shall be allowed to get admitted to Second Year B. Arch. course if he/she has a backlog of not more than **six heads** of passing at First year B. Arch (semester I and II considered together).
- A student shall be allowed to get admitted to Third Year B. Arch course, if he/she has cleared all the subjects of passing at First year B.Arch and if he/she has a backlog of not more than **six heads** of passing at Second Year B.Arch (semester III and IV considered together).
- A student shall be allowed to get admitted to Fourth Year B.Arch course if he/she has cleared all the subjects of passing at Second Year B.Arch (Semester III and IV considered together.) and if he/she has a backlog of not more than **six heads** of passing at Third Year B.Arch (semester V and VI considered together)
- A student shall be allowed to get admitted to Final Year B.Arch course if he/she has cleared all the subjects of passing at Third Year B. Arch (Semester V and VI considered together), and if he/she has a backlog of not more than **six heads** of passing at fourth Year B.Arch (semester VII and VIII considered together)

Rule No 6: Examinations

6.1. Conduct of Examinations

The university examinations for all the 10 semesters shall be conducted at the end of each semester by the University.

***6.2. Pattern of Examination*:** The evaluation scheme for B.Arch comprises of;

University Examination (UE)

Internal Assessment (IA)

6.2.1: ***University Examination***

UE will be conducted by the University and will be based on the entire syllabus. Assessment would be undertaken by internal examiner and external examiner jointly in equal weightage. Oral will be based on sessional work produced by the student covering entire syllabus.

The nature of assessment will vary depending upon the subject and its delivery and whether it is studio-based or theory based. Refer to detailed syllabus on the format of UE for individual subjects.

6.2.2: ***Internal Assessment***

IA will be conducted by the Institution imparting B.Arch course. IA will be done by the teacher teaching the course through a continuous assessment system that is spread through the duration of course. The attendance will have weight age of 10 marks and 25 marks for IA of 40 marks and 100 marks respectively. For remaining at least **two** and a maximum **four** of the below components can be used for continuous assessment.

Individual faculty member shall have the flexibility to design the continuous assessment in a manner so as to evaluate students' capabilities across knowledge, skills and attitudes. IA may be undertaken through any or combination of the methods stated below:

- Seminar presentation
- Written Test /Open Book
- Reviews
- Essays
- Short answer questions
- Study of best practices /precedent study/field study
- Multiple choice questions/Quiz
- Projects/group projects/Dissertation
- Reflective Practical assignments
- Drawing Portfolios
- Report writings
- Learning logs/diaries

The faculty shall announce in advance the units based on which continuous assessment shall be conducted. This progressive assessment for the IA must be communicated by the Institute to the university as per the schedule declared by the university. Detailed records of continuous

assessment shall be maintained by the Institute. The student does not have facility of grade improvement, if he/she passes at IA in a course.

6.3: Assessment of Term work

- In respect of term work "due date" shall be fixed for the completion of each assignment and the same shall be collected on the due date.
- At the end of the semester term work shall be assessed jointly by the internal and external examiners from amongst the panel approved by the University.
- Performance of a candidate in viva-voce shall be assessed on basis of the depth of understanding of the principles involved.
- Students may use computers for preparing term work where nature of work is unique to an individual and stress is on content rather than skill. For common form of work, drawing and reports/notes shall be manually prepared.
- An examiner for any of the subjects of examinations shall have a minimum of 3 years teaching/ professional experience in his/her field of study.

Rule No. 7: Credits

- The credits are defined in terms of the student-time spent in hours which are divided into two parts such as face to face instruction and Notional (lectures and studio).
- The total credits to be earned by the student to achieve B.Arch degree will be 300credits.

Semester	I	II	III	IV	V	VI	VII	VIII	IX	X
Credits	30	30	30	30	30	30	30	30	30	30

- Where, one credit is equal to 1hour of Lectures and 1 hour of Studio.
- Note: If a student secure D grade in either or both IA and UE for a particular course credits earned by the student for that courses shall be zero

Rule No.8: Criteria for Passing

To pass in every semester examination and earn the assigned credits, a candidate must obtain minimum 40% marks in each head of passing.

a) For all courses, Both UE and IA constitute separate heads of passing. In order to pass in such courses and earn the assigned credits

The student must obtain minimum grade point of 5.0(40% marks) at UE and also minimum grade point of 5.0 (40%) marks at IA.

Or

If he/she fails in IA, the student passes in the course provided he/she obtains a minimum of 25% in IA and grade point average(GPA) for course is at least 6.0(50%in aggregate).the GPA for a course will be calculated only if student passes at UE.

b) A student who fails at UE in a course has to reappear only at UE as a backlog candidate and clear the head of passing. Similarly, a student who fails in a course at IA has to reappear only at IA as a backlog and clear heads of passing.
c) Students with backlog in IA will have to present themselves and their work for progressive marking throughout the semester for which they intend to appear.

Rule No.9: Grading system

9.1: Conversion of Marks to Grade points and Grades.

The marks shall be converted to grade points and grades as given in table below.

Range of marks (out of 100)	Grade Point	Grade
80≤Marks ≤100	10	O
70≤Marks <80	9	A+
60≤ $Marks < 70$	8	A
55≤Marks <60	7	B+
50 ≤Marks <55	6	B
40≤Marks <50	5	C
Marks <40	0	D

9.2: Performance

The performance of a student will be evaluated in terms of two indices, viz

a) Semester Grade Point average (SGPA)which is grade point average for all the semester
b) Cumulative Grade point average (CGPA) which is the grade point average for all the completed semesters at any point.

9.3: Semester Grade point average (SGPA)

SGPA measures the cumulative performance of a learner in all courses in a particular semester. SGPA is calculated by the formula

$$SGPA = \frac{\sum C_k \times GP_K}{\sum C_k}$$

Where C_k is the credit-value assigned to a course and $GP_K$is a GPA obtained by the learner in the course.

The SGPA shall be calculated up to two decimal place accuracy.

9.4: Cumulative Grade point average (CGPA)

CGPA measures the cumulative performance of a learner in all courses since his/her enrolment. CGPA is calculated by the formula

$$CGPA = \frac{\sum C_k \times GP_K}{\sum C_k}$$

Where C_k is the credit-value assigned to a course and $GP_K$is a GPA obtained by the learner in the course.

The CGPA shall be calculated up to two decimal place accuracy.

The CGPA calculated after the minimum credits specified for the programme are earned will be the final result.

9.5: Award of Honours

A student who has completed the minimum credits specified for the programme shall be declared to have passed in the programme. The final result will be in terms of letter grade only and is based on the CGPA of all courses studied and passed. The criteria for the award of honours are as given in table below

Range of CGPA	Final Grade	Letter Grade
9.50≤CGPA ≤10.00	O	Outstanding
9.00≤CGPA ≤9.49	A+	Excellent
8.00≤CGPA ≤8.99	A	Very Good
7.00≤CGPA ≤7.99	B+	Good
6.00≤CGPA ≤6.99	B	Average
5.00≤CGPA ≤5.99	C	Satisfactory
CGPA Below 5.00	F	Fail

Rule No.10: Introduction of this Curriculum

The new curriculum for the degree course in architecture B.Arch will be introduced from Academic Session 2015 -2016

- First year B.Arch Course from June 2015
- Second year B.Arch Course from June 2016
- Third year B.Arch Course from June 2017
- Fourth year B.Arch Course from June 2018
- Final year B.Arch Course From June 2019

Rule No 11: Completion

Completion of only Stage-I, shall not qualify the candidates for registration as an architect. Degree of Bachelors in architecture shall be awarded only after successful completion of stage II.

Registration as an architect by council of architecture will only be given as per the prevailing rule of Council of Architecture, India.

Degree Requirements

Earned credits: A candidate who has successfully completed all the Core courses and elective courses, not less than minimum number of credits prescribed shall be eligible to receive the degree.

Rule No.12: Subject Code

Code used for serial numbers of the subjects in the structure for B.Arch course shall be as follows (from left, five digit/alphabet code)

- First alphabet for faculty of engineering-K
- Second digit for Board of Studies of architecture
- Third digit representing the year of the course in architecture
- Fourth and Fifth digits representing number of that subject in the course structure of that particular year

Structure and Contents

For

B.Arch 2015 CBCS course (Amended in 2018)

Bharati Vidyapeeth (Deemed to be University)
College of Architecture, Pune

Structure & Examination Pattern of First Year B.Arch

Semester-I									**Total Duration-30hrs /week** **Total Credits-30**		
Subject code	Subject	Teaching Scheme (in hours/week)			Examination Scheme (marks)				Credits		
		L	S	Total	I.A	U.E		Total	L	S	Total
						Paper	Oral				
K8101	Architectural Design–I	2	4	6	40	-	60	100	2	4	6
K8102	Building construction and Material-I	2	4	6	40	-	60	100	2	4	6
K8103	Theory of structures-I	3	-	3	40		60	100	3	-	3
K8104	Creativity and Communication-I	2	2	4	40	-	60	100	2	2	4
K8104	Architecture drawings and graphics-I	2	4	6	40	60	-	100	2	4	6
K8106	Workshop - Model making	1	4	5	100	-	-	100	1	4	5
	Total	**12**	**18**	**30**	**300**	**60**	**240**	**600**	**12**	**18**	**30**

Notations: L-Lectures, S-Studio
IA: Internal Assessment; UE: University Examination

Semester-II									**Total Duration-30hrs/week** **Total Credits-30**		
Subject code	Subject	Teaching Scheme (in hours/week)			Examination Scheme (marks)				Credits		
		L	S	Total	I.A	U.E		Total	L	S	Total
						Paper	Oral				
K8107	Architectural Design-II	2	4	6	40	-	60	100	2	4	6
K8108	Building construction and Material-II	2	3	5	40	-	60	100	2	3	5
K8109	Theory of structures-II	2	-	2	40	-	60	100	2	-	2
K8110	Creativity and Communication-II	1	3	4	40	-	60	100	1	3	4
K8111	Architecture drawings and graphics-II	1	4	5	40	60	-	100	1	4	5
K8112	History of Architecture –I	3	-	3	40	60	-	100	3	-	3
K8113	Climatology and Climate Responsive Architecture	1	2	3	40	-	60	100	1	2	3
K8114	Workshop - Model making and Building Appraisal	-	2	2	100	-	-	100	-	2	2
		12	**18**	**30**	**380**	**120**	**300**	**800**	**12**	**18**	**30**

Structure & Examination Pattern of Second Year B.Arch

Semester-III								**Total Duration-30hrs/week Total Credits-30**			
Subject code	Subject	Teaching Scheme No.of hours			Examination Scheme No. of Marks				Credits		
		L	S	Total	I.A	U.E		Total	L	S	Total
						Paper	Oral				
K8201	Architectural Design -III	1	5	6	40	-	60	100	1	5	6
K8202	Building construction and Material-III	1	5	6	40	-	60	100	1	5	6
K8203	Theory of structures-III	2	-	2	40	-	60	100	2	-	2
K8204	Creativity and Communication-III	1	2	3	40	-	60	100	1	2	3
K8205	Architecture drawings and graphics-III	1	4	5	40	-	60	100	1	4	5
K8206	History of Architecture-II	3	-	3	40	60	-	100	3	-	3
K8207	Building Services -I	2	1	3	40	60	-	100	2	1	3
K8208	Elective-I	1	1	2	100	-	-	100	1	1	2
	Total	**14**	**16**	**30**	**380**	**120**	**300**	**800**	**14**	**16**	**30**

Elective I **:**Traditional Building Science/Vernacular architecture and Settlements/Environmental studies/Photography, etc.

Notations: L-Lectures, S-Studio
IA: Internal Assessment; UE: University Examination

Semester-IV								**Total Duration-30 hrs/week Total Credits-30**			
Subject code	Subject	Teaching Scheme			Examination Scheme				Credits		
		L	S	Total	I.A	U.E		Total	L	S	Total
						Paper	Oral				
K8209	Architectural Design-IV	1	5	6	40	-	60	100	1	5	6
K8210	Building construction and Material-IV	1	5	6	40	-	60	100	1	5	6
K8211	Theory of structures-IV	2	-	2	40	-	60	100	2	-	2
K8212	Computer aided Design and Drawings	1	3	4	40	-	60	100	1	3	4
K8213	History of Architecture-III	3	-	3	40	60	-	100	3	-	3
K8214	Surveying and leveling	1	3	4	40	-	60	100	1	3	4
K8215	Building services-II	2	1	3	40	60	-	100	2	1	3
K8216	Elective-II	1	1	2	100	-	-	100	1	1	2
	Total	**14**	**16**	**30**	**380**	**120**	**300**	**800**	**14**	**16**	**30**

Elective II:Seminar –I/Passive Design Principles/Animations/Communication Skills; etc.

Structure & Examination Pattern of Third Year B.Arch

Semester-V					**Total Duration-30hrs/week Total Credits-30**							
Subject code	Subject	Teaching Scheme			Examination Scheme				Credits			
		L	S	Total	I.A	U.E		Total	L	S	Total	
						Paper	Oral					
K8301	Architectural Design-V	1	7	8	40	-	60	100	1	7	8	
K8302	Building construction and Material-V	1	5	6	40	-	60	100	1	5	6	
K8303	Theory of structures-V	2	-	2	40	-	60	100	2	-	2	
K8304	Working drawing-I	1	4	5	40	-	60	100	1	4	5	
K8305	History of Architecture-IV	3	-	3	40	-	60	100	3	-	3	
K8306	Specification writing	2	-	2	40	60	-	100	2	-	2	
K8307	Building services-III	2	-	2	40	60	-	100	2	-	2	
K8308	Elective-III	1	1	2	100	-	-	100	1	1	2	
	Total	**13**	**17**	**30**	**380**	**120**	**300**	**800**	**13**	**17**	**30**	

Elective III: Architecture Journalism/Appropriate Technology/Barrier-free Architecture/Seminar-II, etc.
Notations: L-Lectures, S-Studio
IA: Internal Assessment; UE: University Examination

Semester-VI						**Total Duration-30hrs/week Total Credits-30**						
Subject code	Subject	Teaching Scheme			Examination Scheme				Credits			
		L	S	Total	I.A	U.E		Total	L	S	Total	
						Paper	Oral					
K8309	Architectural Design-VI	1	7	8	40	-	60	100	1	7	8	
K8310	Building construction and Material-VI	1	5	6	40	-	60	100	1	5	6	
K8311	Theory of structures-VI	2	-	2	40	-	60	100	2	-	2	
K8312	Working drawing-II	1	3	4	40	-	60	100	1	3	4	
K8313	Landscape Architecture	1	2	3	40	-	60	100	1	2	3	
K8314	Estimation and Costing	2	1	3	40	60	-	100	2	1	3	
K8315	Building services-IV	2	-	2	40	60	-	100	2	-	2	
K8316	Elective-IV	1	1	2	100	-	-	100	1	1	2	
	Total	**13**	**17**	**30**	**380**	**120**	**300**	**800**	**13**	**17**	**30**	

Elective IV: Green Materials/Theatre and set design/Visual Communication/Advanced Building Material, etc

Structure & Examination Pattern of Fourth Year B.Arch

Semester-VII								**Total Duration- 30hrs/week** **Total Credits-30**			
Subject code	Subject	Teaching Scheme			Examination Scheme				Credits		
		L	S	Total	I.A	U.E		Total	L	S	Total
						Paper	Oral				
K8401	Architectural Design-VII	1	9	10	40	-	60	100	1	9	10
K8402	Building construction and Material-VII	1	3	4	40	60	-	100	1	3	4
K8403	Theory of structures-VII	2	-	2	40	-	60	100	2	-	2
K8404	Interior Design I	1	3	4	40	-	60	100	1	3	4
K8405	Advance Landscape Architecture	1	2	3	40	-	60	100	1	2	3
K8406	Urban planning I	1	2	3	40	60	-	100	1	2	3
K8407	Building services-V	2	-	2	40	-	60	100	2	-	2
K8408	Elective-V	1	1	2	100	-	-	100	1	1	2
	Total	**10**	**20**	**30**	**380**	**-**	**420**	**800**	**10**	**20**	**30**

Elective V :Sustainable Architecture/Industrial architecture/Disaster management/Housings, etc
Notations: L-Lectures, S-Studio
IA: Internal Assessment; UE: University Examination

Semester-VIII								**Total Duration- 30hrs/week** **Total Credits-30**			
Subject code	Subject	Teaching Scheme			Examination Scheme				Credits		
		L	S	Total	I.A	U.E		Total	L	S	Total
						Paper	Oral				
K8409	Architectural Design-VIII	1	9	10	40	-	60	100	1	9	10
K8410	Building construction and Material-VIII	1	3	4	40	60	-	100	1	3	4
K8411	Vocabulary and Repertoire	1	2	3	40	-	60	100	1	2	3
K8412	Interior Design -II	1	3	4	40	-	60	100	1	3	4
K8413	Urban planning- II	1	2	3	40	60	-	100	1	2	3
K8414	Research Skills	1	3	4	40	-	60	100	1	3	4
K8415	Elective-VI	1	1	2	100	-	-	100	1	1	2
	Total	**10**	**20**	**30**	**340**	**-**	**360**	**700**	**07**	**23**	**30**

Elective VI : Conservation /Digital Architecture /Architectural software/ Real Estate Management , etc

Structure & Examination Pattern of Fifth Year B.Arch

Semester-IX: Practical Training								**Total Credits-30**			
Subject code	Subject	Teaching Scheme			Examination Scheme **				Credits		
K8501	Practical Training	L	S	Total	I.A	U.E		Total	L	S	Total
						Paper	Oral				
					40		60	100			
		-	-	-					-	-	30

Notations: L-Lectures, S-Studio
IA: Internal Assessment; UE: University Examination

Note 1: For practical training, a student is expected to work for standard office timings i.e. @ 8 hours a day and minimum five days per week. Student has to undergo minimum 15 -18 weeks (90 work days) of training per semester. The credit requirement for practical training as per circular No.265, pt.II.8 is 24. Since a student will spend the entire semester learning at an office as an intern he/she will be given the 30 credits which are consistent with the 30 credits that are allotted to all other semesters.
Note 2: The work from practical training will be assessed after the student completes the internship in this semester.
Note 3: Validity of training shall be only for a year after completion of training.

Semester-X								**Total Duration-30hrs/week** **Total Credits-30**			
Subject code	Subject	Teaching Scheme			Examination Scheme				Credits		
		L	S	Total	I.A	U.E		Total	L	S	Total
						Paper	Oral				
K8502	Architecture Design Project	2	14	16	40	-	60	100	2	14	16
K8503	Capstone project	1	5	6	40	-	60	100	1	5	6
K8504	Professional Practice	2	2	4	40	60	-	100	2	2	4
K8505	Self Study	1	3	4	100	-	-	100	1	3	4
	Total	**06**	**24**	**30**	**220**	**60**	**120**	**400**	**06**	**24**	**30**

Semester – I

Architectural Design -I

Subject Code	**K8101**	**Semester -I**
Credits	**6**	**Subject type-Core**

Learning Objectives	
1	To acquire knowledge about elements of design and principles of design.
2	To explore and understand fundamentals of design central to architecture and space design.
3	To understand design as a composite process of elements, principles and fundamentals of design.

A. **Learning Outcomes:** Student will be able to	
1	explore elements of design, principles of design and fundamentals of design
2	assimilate the above three to understand comprehensive design process
3	learn and analyze built and/or non-built spaces with respect to above elements

Units	**Contents**
Unit I	**Elements, Principles and Fundamentals of Design** Introduction to - different Elements of design, - Principles of design and - Fundamentals of Design
Unit II	**Design Process: Function** - Introduction to 'human dimensions' (anthropometry, modes of measurement) - Introduction to function and circulation of various building types - Demonstration the relationship of the above two with elements and principals of design (form, organization, movement, openings, linkages, etc)
Unit III	**Design Process: Structure** - Introduction to different structural systems - Introduction to components of structure - Introduction to structural behavior of different materials
Unit IV	**Design Process : Context** - Introduction to buildings and climate - Introduction to building and site - Introduction to building and orientation - Analyze and demonstrate relationship of context with elements and principles of design

Learning Resources	
Text Books:	1. ChingF. D. K. (2007), *Architecture: form, space, and order*, New Jersey, Canada, John Wiley and sons. 2. Pramar V. S.(1997),*Design Fundamentals in Architecture*,New York, U.S.A., Somaiya Publications
Reference Books:	1. Editors of Phaidon Press (2004), *ThePhaidon Atlas of Contemporary World Architecture*, Phaidon Press; Comprehensive Edition. 2. Pandya Y., VastuShilpa Foundation, (2013),*Elements of space making*, India, New Jersey, Mapin Publishing. 3. Salvadori M., & Robert H., (1975),*Structure in architecture: the building of*

	buildings,Cornell University,Prentice-Hall. 4. Gropius W., (1962), *Scope ofTotal Architecture,* New York, Collier book
Websites:	Drawing Guidelines – Shaping Space http://www.riai.ie/downloads/education/pdf/ss_guidelines/drawing_guidelines.pdf
Journals:	

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignment (Any 3)	
1	Analysis and study of design principles and elements using different kinds of examples of built and/or non-built spaces with help of sketches, photographs, drawings etc.
2	Study of structural systems, components of structures in built spaces.
3	Analysis of relationship between building and climate, building and site and orientation with the help of built and/or non-built environment with the help of sketches, photographs, drawings, etc.
4	Photo documentation and study of use of materials for various design components and design considerations.

Building Construction and Materials-I

Subject Code	**K8102**	**Semester-I**
Credits	**6**	**Subject type-Core**

Learning Objectives	
1	To understand the properties, characteristics, strength, processing and application of materials
2	To understand the different components of masonry construction

Learning outcomes: Student will be able to	
1	Explore materials, properties characteristics, methods of preservation, treatment andmethods of construction and uses of different materials
2	Describe in detail the method of construction of superstructure with various masonry
3	Discuss different material used for fencing as well as for gates.
Units	**Contents**
Unit I	**Introduction** - Building construction as subject and its relevance to architectural design. - Introduction to various components of building from foundation to roof. - Basic structural systems load bearing and framed structure
Unit II	**Study of Materials** Properties, various types, market form available, standard sizes, cost, application in buildings resource use, defects and strengths of each material - Bricks and stones - Cement, Sand , aggregates - Mortar, Plaster, Pointing - Lime
Unit III	**Superstructure Masonry** - Fundamentals, principal of load bearing construction for medium rise structures using Brick, stone, Concrete Blocks, solid Blocks, Hollow Blocks, Cavity Block etc. - Introduction to various types and junctions of brick bond and types of stone masonry
Unit IV	**Fencing And Entrance Gate** - Fencing and compound wall construction in different materials like Barbed wire, Chain link, Wire mesh, R.C.C. Grills, M.S. Grills etc. - Constructional details of an entrance gate in a compound wall of following types: Sliding Gate, Entrance gate side hung with floor channel, Entrance gate side hung with wicket gate

Learning Resources	
Text Books:	1. Rangwala S. C.(2007)*Engineering Materials*. Gujarat, Charotar, Publishing House. 2. Duggal S.K.(2009)*Building materials.* New Delhi, New Age International.
Reference Books:	1. Varghese P.C.(2005)*Building Materials.* New Delhi, Prentice Hall of India put Ltd. 2. Duggal S.K.(1997)*Building materials.* New Delhi, Oxford and IBH

	publishing Co, put, Ltd 3. Spencke R. F.and Cook D.J.(1983)*Building Materials in Developing Countries*. New York,John Wiley and sons
Websites:	**www.shannonmasonryconstruction.com**
Journals:	Construction and building materials -journal- else vier (www.journals.elsevier.com/construction-and-building-materials/) Journal of building construction and planning research (**www.scirp.org/journal/jbcpr/**)

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Portfolio of technical drawings of above mentioned topic with supporting documents of sketched booklet and pictographic presentation.(Min.4drgs.)
2	Field reports and Market survey of building technology topics.
3	Proposals of different designs in masonry construction and fencing designs for prescribed projects.(Under discretion of the subject faculty)

Theory of Structure -I

Subject Code	**K8103**	**Semester-I**
Credits	**3**	**Subject type-Core**

Learning Objectives	
1	To understand basic structural concepts
2	To understand behavior of different materials
3	To understand fundamentals of structure

Learning Outcomes: student will be able to	
1	Develop understanding of basic requirements of stability, strength of materials
2	Develop understanding of behaviour of basic structural elements
3	Understand importance of basic structural elements in structural systems.

Units	**Contents**
Unit I	**Introduction** Introduction to basic structural elements like column/post, beam, slab, load bearing walls. The load transfer mechanism. Introduction to dead load and live load. Simple calculation of dead load of one way slab and beam if their dimensions are known, in order to know how much load is transferred from each element
Unit II	**Supports** - Types Of Supports And Load Transfer To The Supporting Element : Explain beams as a system in equilibrium and explain conditions of equilibrium (Σfx, Σfy and Σm =0) - Types of supports:roller hinged and fixed supports. Explain in which practical connection we idealize it as hinge/ roller/ fixed. (theory only) - Type of beams: simply supported, cantilever and overhanged beam. Calculating the reaction they transfer to the support. (calculation should include udl and point load standard cases - UDL over entire span - Point load at centre and eccentric - UDL near one support - Shear force and Bending Moment and its importance
Unit III	**Properties Of Section** - Centre of gravity – its importance - How to find CG of standard T, Channel, I, angle section and combination of such sections
Unit IV	**Moment of Inertia** - Moment of inertia – its importance - MI formulae of standard sections. Calculations for rectangle and circle, T, Channel, angle and I section using parallel axis theorem. - Section modulus and radius of gyration – definition.

Learning Resources	
Text Books:	1. Mario Salvadori.(1980).*Why buildings stand up:The strength of architecture.*McGraw-Hill 2. Dongre A.P.(2011).*Strength of*

	*Materials.*Pune/Hyderabad,ScitechPublications
	3. Deo S.S.(2013).*Engineering Mechanics.*Pune,NiraliPrakashan 4. Deo S.S.(2013).*Strength of Materials.*Pune,NiraliPrakashan 5. S B Junnarkar& Dr. H J Shah,(2012).*Mechanics of Structures Vol. I & II.*Anand,CharotarPublishing
Reference Books:	1. Beer and Johnston,(2008).*Mechanics of Materials.*New Delhi,Tata McGraw-Hill 2. Khurmi R.S.(2014).*Strength of Materials.*New Delhi,S.Chand& Company Ltd 3. Nash W.A.(1994)International edition*Strength of materials - III rd edition, (theory and problems).*Singapore,McGraw-Hill book co. 4. Timoshenko Stephen.(2002).*Strength of materials part I &II(elementary theory and problems) IIIrd ed.*New Delhi,CBS Publishers
Websites:	
Journals:	

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Calculate the load transferred on the supporting beam/ column for simply supported cantilever and overhang beam. (find reactions)
2	Study of various cross sections such T, C,L, I and O as various structural elements. Calculations of T,C, L ,I and o sections
3	Photo Documentation : various type of beams, various type of supports, various types of loads, various types of cross sections
4	Making models : various type of beams, various type of supports, various types of loads, various types of cross sections

Creativity &Communication -I

Subject Code	**K8104**	**Semester -I**
Credits	**4**	**Subject type-Core**

Learning Objectives	
1	To understand elements of design and principles of design as a basic creative activity.
2	To study/analyze principles of organizations.
3	To develop artistic and architectural vocabulary for effective verbal and written communication.
4	To appreciate visual art forms like sculpture, paintings, calligraphy, caricatures etc.

Learning Outcomes: Student will be able to	
1	Explore basic elements of design and their expressions artistically
2	Explore principles of design and their expressions artistically
3	Understand and explore principles of organizations
4	Understand and develop artistic and architectural vocabulary

Units	**Contents**
Unit I	**Elements of Design** - Introduction to Elements of design - Interpretation of points, lines and planes - Expressions through colors, textures and light
Unit II	**Principles of Design** - Introduction to Principles of Design - Theory on Lateral Thinking and exercise on generation of alternatives - Explorations of Principles of Design through 2D compositions
Unit III	**Organization** - Introduction to Organization - Explorations of Organization through 3D compositions
Unit IV	- Introduction to Visual arts (painting, sculpture, calligraphy etc.) - Understanding attributes of elements of visual and architectural aesthetics - Visual Arts appraisal
Unit V	**Verbal and Written Communication** - Exploration of different ways of verbal and written communication

Learning Resources	
Text Books:	1. Ching Francis, D. K. (2007) *Architecture: Form Space & Order, New* Jersey, John Willy and Sons 2. Ching Francis, D. K. (1999) *Visual Dictionary of Architecture, New* Jersey, John Willy and Sons
Reference Books:	1. Yatin Pandya (2014) *Elements of Space Making*, Ahmedabad, Mapin Publishing 2. ShirishVasantBapat (1993) *Basic Design and Anthropometry*, Pune, Bela Books 3. Barry A Berkus (2000) *Architecture, Art – Parallels and Connections*, Australia, Watson-Guptill Publications 4. Bacon E.N. (1974) *Design of Cities*, England, Penguin Books

	5. Akiko Busch (1991) *The Art of Architectural Models*, Hong Kong, Design Press 6. Nick Bunn (2010) *Architectural Model Making*, London, Laurence King Publishing 7. Paul Jackson, Angela A Court, Marion Elliot (1993) *The Ultimate Papercraft and Origami Book*, United Kingdom, Acropolis Books 8. Thompson I (1999) *Frank Lloyd Wright: A Visual Encyclopedia*, London, Grange Book Plc 9. Edward De Bono (1990) *Lateral Thinking*, London, Penguin Books
Websites:	www.artinarch.org www.edwdebono.com
Journals	

Assessment		**Marks**
IA	**Internal Assessment**	40
	Refer To 'Rule number 6, sub point 6.2.2.'	
UE	**University Examination**	60
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
Drawing portfolio consisting of relevant exercises including	
1	Self Portrait
2	Exercise on inter-relation of emotions and their expressions though lines and colors – in the form on thumb sketches or series of expressions explaining a story line OR creating a graphic strip explain a story OR creating a graphical story board for a concept
3	Exploration of textures in form of 3D models
4	Analysis of effects of different lighting conditions in architecture
5	Exploration of different generations of alternatives through modules
6	Exploration of Principles of Design based on 2D compositions of modules
7	Exploration of Vertical and Horizontal Planes based on modules to understand anthropometry
8	Exploration of Organization through 3D composition with solids like cubes, cuboids, pyramids, cones, cylinders, spheres etc.
9	Group work on Appreciation of Visual Arts
10	Exercise on verbal and written communication in the form of compilation of an architect's works and seminar presentation of the same or newspaper article etc.

Architectural Drawings and Graphics-I

Subject Code	**K8105**	**Semester -I**
Credits	**6**	**Subject type-Core**

Learning Objectives	
1	To understand visualization principles of various objects related to architecture.
2	To enable students to present in graphical form all building elements and free hand sketching.

Learning Outcomes: student will be able to	
1	Develop skills in free hand sketching
2	Represent different forms, building elements and materials
3	Visualize and represent in Two-Dimension And Three-Dimension Graphic communication

Units	**Contents**
Unit I	**Basic skills of drafting** - Lettering: Freehand architectural lettering. - Lines: Concept and types of lines, Dimension lines. - Drafting convention. - Study of Scales.
Unit II	**Geometry** - Geometrical constructions
Unit III	**Represent 3D objects in 2 D** - Definition, Meaning & concept. - Projection of points, lines, planes and solids through orthographic projections to understand 2D building representation. **Sections** - To represent the building through sections
Unit IV	**Three dimensional representation** - Existing building views through sketching

Learning Resources	
Text Books:	1. F. D K. Ching (2009) *Architectural Graphics*,New Jersey, John and Wiley and Sons 2. Hugh C. Browing (1996) *The Principles of Architectural Drafting*, New York, Watson-Guptill Publications 3. N.D.Bhatt (2012) *Engineering Drawing*,Gujrat, Charator Publishing House. 4. Rangwala(1991)*Civil Engineering Drawing*, Gujarat, Charator Publishing House
Reference Books:	1. Calvin F. Schmid, Stanton E. Schmid, (1954) *Handbook on Graphic Presentation*, New York, The Ronald Press Company 2. David Littlefield (2012) *Matric Handbook*, London and New York, Routledge Taylor and Francis Group. 3. Sleeper R.(2000)*Architectural Graphic Standards*, New York, John Wiely and Sons.
Websites:	
Journals:	

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
UE	**University Examination**	**60**
	Theory paper of 03 hours	

Workshop –Model Making

Subject Code	**K8106**	**Semester -I**
Credits	**5**	**Subject type-Core**

Learning Objectives	
1	To equip students with the basic skills necessary to represent their ideas in a model format using simple materials like paper, thermocol, hardwood, Metals, glass fiber etc.
2	To familiarize students with cutting, drilling, grinding, slotting, shaping, bending and measuring instruments, filing, scraping and fitting etc.; processes used in making models.

Learning Outcomes: student will be able to	
1	Develop skills in making 2D and 3Dmodels.
2	Apply carpentry instruments and their uses.
3	Understand the importance of model making as a tool to represent ideas and visualize objects/ elements/structures in architecture.

Units	**Contents**
Unit I	**Introduction to types of model** - Block models, detailed model, Construction Model and interior, Models etc.
Unit II	**Introduction to various materials** - Experimentation with these materials for different geometries and scales of models
Unit III	**Tools in model making** - Development of the skill to use the tools with precision to obtain desired results in model making.
Unit IV	**Exploration of Building materials** - Hands on approach

Learning Resources	
Text Books:	1. Akiko Busch (1991) *The Art of Architectural Models*, Hong Kong, Design Press 2. Nick Bunn (2010) *Architectural Model Making*, London, Laurence KingPublishing. 3. Paul Jackson, Angela A Court, Marion Elliot (1993) *The Ultimate Papercraft and Origami Book*, United Kingdom, Acropolis Books 4. Alexander Schilling, (2008)*Basics Model Building*, BostenBerlin,Birkhauser publishers for Architecture
Reference Books:	1. ShirishVasantBapat (1993) *Basic Design and Anthropometry*, Pune, Bela Books. 2. Ching Francis, D. K. (1999) *Visual Dictionary of Architecture, New* Jersey, John Willy and Sons. 3. Ching Francis, D. K. (2007) *Architecture: Form Space & Order, New* Jersey, John Willy and Son
Websites:	www.artinarch.org
Journals:	

Assessment		**Marks**
I.A.	**Internal Assessment**	**100**
	Refer To 'Rule number 6, sub point 6.2.2.'	
Note	There is no 'University Examination' for this subjects	

Assignments	
1	Model making-design projects.
2	Model-Construction details.
3	Model -Creative Arts and crafts

Semester – II

Architectural Design -II

Subject Code	**K8107**	**Semester -II**
Credits	**6**	**Subject type-Core**

Learning Objectives	
1	To develop communication and representation skills
2	To document spaces in graphic form
3	To explore concepts of space design with a focus on function and anthropometry

Learning Outcomes: Student will be able to	
1	Develop skills to understand and represent design ideas through graphic communication.
2	Learn to measure, document and represent spaces.
3	Understand and demonstrate a simple design responding to functional requirements and appropriate scale.

Units	**Contents**
Unit I	**Measured Drawing** - Introduction and demonstration of modes of measurements and methods of documentation of built and/or non built spaces - Introduction and demonstration of different methods of representation
Unit II	**Analysis** - Study of function, circulation, scale and modes of measurement with respect to a specific activity.
Unit III	**Design Demonstration** - Design of single activity spaces reflecting understanding of the above.

Learning Resources	
Text Books:	
Reference Books:	1. Batley C., (1948), *The design development of Indian architecture*, J. Tiranti, ltd. 2. ChingF. D. K. (2007), *Architecture: form, space, and order*, New Jersey, Canada, John Wiley and sons. 3. Editors of Phaidon Press (2004), *ThePhaidon Atlas of Contemporary World Architecture*, Phaidon Press; Comprehensive Edition. 4. Pandya Y., VastuShilpa Foundation, (2013),*Elements of space making*, India, New Jersey, Mapin Publishing. 5. Thakkar J., & Morrison S., (2008)*Matra, Ways of Measuring Vernacular Built Forms of Himachal Pradesh*, Ahmedabad, India, SID Research Cell 6. Radford W. A., (1921), *Architectural Details and Measured Drawings of Houses of the Twenties*, Courier Corporation. 7. Chitham R, (1980), *Measured Drawing for Architects*, originally from the University of Michigan, Architectural Press.
Websites:	Drawing Guidelines – Shaping Space http://www.riai.ie/downloads/education/pdf/ss_guidelines/drawing_guidelines.pdf Pandya Y. & Tiwari. S., (nd), *An Ethnographic and Collaborative Model of Inquiry: Activity Centre Project in India*, Chapter 2, fromhttp://www.springer.com/978-981-4585-10-1
Journals:	

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Measured drawing of any structure relevant to the topic - Drawing Portfolio
2	Design of single activity unit with a demand of knowledge of function, circulation and anthropometry (e.g. Canteen, bus-stop, play school, library, clinic, boutique, etc.) – Drawing portfolio. Models to understand and explain the Designed Spaces.
3	Photo documentation and analysis of related / similar designed spaces.

Building Construction and Materials-II

Subject Code	**K8108**	**Semester -I**
Credits	**5**	**Subject type-Core**

Learning Objectives	
1	To involve students in a number of drawing exercises that will analyze the various building components in a simple load bearing structure.
2	To inform properties and characteristics of timber, its conversion, preservation and uses
3	To make students aware of various market forms of timber, their production, properties and application in the building industry

Learning Outcomes: Student will be able to	
1	Understand the different construction practices adapted for the various components of doors and windows to specific material in which it's made.
2	Understand the concept of opening and its construction techniques

Units	**Contents**
Unit I	**Door, Windows and Openings** - Introduction to various hardware used for doors, window - Terminology and construction aspects of door ,windowand opening
Unit II	**Spanning Of Opening** - lintel and arch construction - Terminology of arch construction and load transfer - Construction and formwork for lintel and arch - Spanning of opening using brick and stone for various types of arches like flat, segmental, semi circular etc. - Spanning of opening using brick, stone, timber, built-up sections for lintel construction
Unit III	**Doors** - Design considerations, single and double shutters, party glazed and partly paneled shutters - Glazed, Paneled and Flush doors in wood. Types of Flush doors. - Ledged, braced and battened and framed door. (Introduction) - Sliding and sliding- folding door in T.W. and Aluminum. - Steel Door Construction - Pressed sheet shutter - Box section frame and paneled shutter - Rolling shutter - Collapsible gates - Safety or Grilled doors
Unit IV	**Windows** - Underline principles for appropriate selection and application of different type of wooden windows &steel windows. - Paneled, fixed and partly and fully glazed and louvered, centrally pivoted, top hung windows, Side hung windows in wood. - Bay windows in wood - Steel window using 'Z' section - Steel window using Box section & of proprietary nature

Unit V	**Study of Materials** - Timber and Bamboo - Various timber joints - Hollow concrete block - Reinforced Brick work

Learning Resources	
Text Books:	1. Rangwala S. C.(2007)*Engineering Materials*. Gujarat,Charotar, Publishing House. 2. Duggal S.K.(2009)*Building materials.* New Delhi, New Age International.
Reference Books:	1. Don A. Watson, (1972) *Construction Materials and Processes*, New York, McGraw Hill. 2. WB Mackey, (1981) *Building construction, Vol 1,2*.UK, Longman UK. 3. Francisa D.K. Ching(2000)*Building Construction Illustrated.*NewYork,John Wiley & Sons.
Websites:	http://www.slideshare.net/parteeks9/doors-windows-12082151(doors n windows)
Journals:	The open construction and Building Technology journal (benthamopen.com/tobctj/home)

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination** Assignments or portfolios based on entire syllabus as mentioned below.	**60**

Assignments	
1	Portfolio of technical drawings of above mentioned topic with supporting documents of sketched booklet and pictographic presentation.(min.4 drawings.)
2	Field reports and Market survey of building technology topics.
3	Proposals of different designs in door and window construction and opening designs for prescribed projects (Under discretion of the subject faculty).

Theory of Structures-II

Subject Code	**K8109**	**Semester -II**
Credits	**2**	**Subject type-Core**

Learning Objectives	
1	To understand forces acting on members
2	To understand properties and behaviour of different materials
3	To understand shear and bending stresses

B. **Learning Outcomes:** Student will be able to	
1	Develop understanding of stresses and strains on members.
2	Develop understanding of properties of basic structural materials.
3	Understand importance of consideration of shear forces.

Units	**Contents**
Unit I	**Stress and Strain** - What is stress (axial, bending and shear), strain. - Calculation of axial stress, strain for composite material like RCC.
Unit II	**Bending Stress** - Calculation of bending stress using formulae for standard sections. T,C, L and I - What is combination of axial and bending stress,for a masonry column and base of retaining wall for stability.
Unit III	**Shear Stress Calculation** - Calculation of shear stress using formulae for standard sections. T, C, L and I.
Unit IV	**Elastic constants and stresses** - Structural properties: Elasticity, maximum Permissible Tensile/compressive stress, bending stress and shear stress for various materials like timber, masonry, concrete and steel. Explain the difference between behaviour of a ductile material like steel and brittle material like concrete subjected to tensile force. (stress-strain curve and Hooke's law).

Learning Resources	
Text Books:	
Reference Books:	1. Khurmi R.S.(2014)*Strength of Materials.* New Delhi, S.Chand& Company Ltd. 2. Nash W.A.(1994)International edition *Strength of materials - III rd edition, (theory and problems).*Singapore, McGraw-Hill book company. 3. Timoshenko Stephen.(2002)*Strength of materials part I. (elementary theory and problems) IIIrd ed.* New Delhi, CBS Publishers..Timoshenko Stephen.(2002)*Strength of materials part II (elementary theory and problems) IIIrded.*NewDelhi,CBS Publishers. 4. Bansal R. K.(2014) *A text book of strength of materials*. 5. Singhal S.B.&Narayan.R. *Materials and structures (vol-I) Strength of materials.* New Delhi, R.Chand& Company Ltd. 6. Warnock F.V. *Strength of Materials with ED.* London, Sir Isaac Pitman & Sons.Ltd.

	7. RamamruthamS.Narayan.R. (2009)*Theory of Structures.* New Delhi, Dhanpatrai Publications P.Ltd. 8. RamamruthamS.Narayan.R.(2014)*Theory of Structures (for Engineering Degree ,Diploma).*New Delhi, Dhanpatrai Publications P.Ltd.
Websites:	
Journals:	

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
U.E.	Refer To 'Rule number 6, sub point 6.2.2.'	
	University Examination	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Numerical problems on calculation of axial stress and strain in composite elements.
2	Numerical problems on calculation of bending stress in beams and columns.
3	Numerical problems on calculation of combined stresses
	Photo Documentation: structural damages due to excessive stresses, identifying the reasons of damages.

Creativity &Communication-II

Subject Code	**K8110**	**Semester -II**
Credits	**4**	**Subject type-Core**

Learning Objectives	
1	To understand volume and form.
2	To study/analyze scale and proportions
3	To appreciate performing art forms like films, theatre, dance etc

Learning Outcomes: student will be able to	
1	Explore volume and form as basic elements of design
2	Understand scale and proportion and their impact on spaces
3	Appreciate performing arts

Units	**Contents**
Unit I	**Volume and Form** - Introduction to Attributes of Form and Space - Understanding derivatives of form - Volumetric Study of Spaces – positive and negative spaces
Unit II	**Scale and Proportion** - Theory on Scale and Proportion - Exploration of Scale and Proportion through 2D and 3D mediums
Unit III	**Performing Arts Appraisal** - Introduction to Performing arts (films, theatre, dance etc.) - Understanding attribute of elements of performing arts
Unit IV	**Communication through performing art** Exploration of different ways of communication through performing art

Learning Resources	
Text Books:	
Reference Books:	1. Ching Francis, D. K. (2007) *Architecture: Form Space & Order, New* Jersey, John Willy and Sons 2. Ching Francis, D. K. (1999) *Visual Dictionary of Architecture, New* Jersey, John Willy and Sons 3. Yatin Pandya (2014) *Elements of Space Making*, Ahmedabad, Mapin Publishing 4. ShirishVasantBapat (1993) *Basic Design and Anthropometry*, Pune, Bela Books 5. Barry A Berkus (2000) *Architecture, Art – Parallels and Connections*, Australia, Watson-Guptill Publications 6. Bacon E.N. (1974) *Design of Cities*, England, Penguin Books 7. Akiko Busch (1991) *The Art of Architectural Models*, Hong Kong, Design Press 8. Nick Bunn (2010) *Architectural Model Making*, London, Laurence King Publishing 9. Paul Jackson, Angela A Court, Marion Elliot (1993) *The Ultimate Papercraft and Origami Book*, United Kingdom, Acropolis Books 10. Thompson I (1999) *Frank Lloyd Wright: A Visual Encyclopedia*,

	London, Grange Book Plc 11. Edward De Bono (1990) *Lateral Thinking*, London, Penguin Books
Websites:	www.artinarch.org www.edwdebono.com
Journals:	

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
Drawing portfolio consisting of relevant exercises including	
1	Understanding Volume as an element of design and exploration of positive and negative spaces in a volume or 3D composition
2	Exercise on exploration of derivatives of form
3	Understanding theory of scale and proportions and representing the same through study of anthropometry of spaces
4	Group work on Documentary/ Film as Performing Arts appraisal

Architectural Drawings and Graphics-II

Subject Code	**K8111**	**Semester -II**
Credits	**5**	**Subject type-Core**

Learning Objectives	
1	To develop perception and presentation of different forms and their spatial dimension.
2	To develop rendering techniques and presentation skill

Learning Outcomes: Student will be able to	
1	Visualize three Dimensional representations of complex objects and to relate the graphics content with Architectural Design.
2	Explore Rendering technique skills with various media, incorporating scio-graphy and creating three-dimensional effects.

Units	**Contents**
Unit I	**Three dimensional representation** - Isometric, axonometric and oblique view of solid composition and building.
Unit II	**Interpenetration of solids** - Interpenetration of various solids and its relation in building design.
Unit III	**Presentation of drawings** - Rendering technique with various media.
Unit IV	**Sciography** - Introduction of sciography. - Representation of Shade and shadows in plans and elevations.

Learning Resources	
Text Books:	1. Calvin F. Schmid, Stanton E. Schmid, (1954) *Handbook on Graphic Presentation,* New York, The Ronald Press Company 2. F. D K. Ching (2009) *Architectural Graphics,*New Jersey, John and Wiley and Sons. 3. Francis DK Ching (1989) *Drawing A Creative Process,* Van Nostrad Reinhold 4. Hugh C. Browing (1996) *The Principles of Architectural Drafting,* New York, Watson-Guptill Publications. 5. .N.D.Bhatt(2012) *Engineering Drawing,* Gujarat, Charator Publishing House
Reference Books:	1. Calvin F. Schmid, Stanton E. Schmid, (1954) *Handbook on Graphic Presentation,* New York, The Ronald Press Company 2. David littlefield (2012)*Matric Handbook,* London and New York,RoutledgeTaylor and Francis Group.
Websites:	
Journals:	

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Theory paper of 03 hours	**60**

History of Architecture-I

Subject Code	**K8112**	**Semester -II**
Credits	**3**	**Subject type-Core**

Learning Objectives	
1	To understand development of architecture as a process of contextual and cultural evolution rather than simply as a product.
2	To acknowledge and interpret from history, best design guidelines which respond aptly to the vernacular character of that place, the lifestyle of the users and building traditions of that time.
3	To gain knowledge of the development of architectural form with reference to Technology, style and character.

Learning Outcomes: Student will be able to	
1	Discuss Geography, Politics, Economy, Social Systems, Religion, Paintings and Sculptures and its influence on Architecture at different periods of time.
2	Explore cultures and civilizations and settlements across the world

Units	**Contents**
Unit I	**Pre-historic** - Housing forms in the initial phase: Cave shelters- at Lascaux, Terra Amata - Community structures: Menhir, dolmen, gallery and passage graves, Stonehenge, Ggantija Malta
Unit II	**River Valley Civilizations** - Yellow River - Indus River - Nile River - Tigris River
Unit III	**Vedic Architecture** - Vedic culture and town planning layouts, Vedic Village, City Planning in later Vedic period, Building materials and construction techniques. **Buddhist Phase** - Major typologies – Stambha, Stupa, Chaitya, Vihara. - Development of Chaitya arch - Lomas Rishi, AshokanStambhas, The Great Stupa at Sanchi, Chaitya Hall at Karli, Viharas at Ajanta
Unit IV	**Greek Civilization** - History, evolution and characteristics Elements of special attributes: Classical Orders, Optical corrections – Acropolis, City of Athens - Major typologies - Temples, Theatres, Agora, Stoa, Council Halls
Unit V	**Roman Civilization** - History, evolution and characteristics Elements of special attributes: - Arches, lintels, bridges, aqueducts, Roman engineering skills - Major typologies - Temples- Pantheon, Basillica at Trajan, Amphitheatre, Hippodrome, Circus, Palaces, Thermae at Carcalla

Learning Resources	
Text Books:	
Reference Books:	1. Sir Banister Fletcher, (1999) *A History of Architecture,Indian Edition*. Delhi, CBS Publications. 2. Spiro Kostof , (1985) *A History of Architecture: Setting and Ritual.* London, Oxford University Press. 3. Leland M Roth ,(1994) *Understanding Architecture: Its Elements, History and Meaning*. Craftsman House; 4. Pier Luigi Nervi, General Editor, (1972) *History of World Architecture – Series*. New York, Harry N. Abrams Inc. Pub. 5. Burns, Ralph, Lerner, Meacham, (1991) *World Civilizations*. First Indian Edition, Delhi, Goyl Saab Publishers and Distributors. 6. Roger Smith, (1987) *An Illustrated history of Architectural Styles*. 7. Omega Books Ltd. 8. SebastianoSerlio,(1982) *The five books on architecture*. New York, Dover Publication Inc. 9. Percy Brown,(1983) *Indian Architecture (Hindu And Buddhist)*. Bombay, Taraporevala and Sons. 10. Denis Montagnon, (2001) *Rome* . ISBN 3-8228-5870-6. Germany, TashchenGmnH 11. Satish Grover, (2003) *The Architecture of India (Buddhist and Hindu Period)*. New Delhi, Vikas Publishing Housing Pvt. Ltd.
Websites:	www.ancient.eu/Roman_Architecture/ www.slideshare.net/mfresnillo/roman-architecture-398210 www.slideshare.net/mfresnillo/greek-architecture architecture.pppst.com/greek.htm msroseclass.weebly.com/uploads/2/5/9/.../ms_rose_greek_architecture.pp. http://www.slideshare.net/kabithamadhu/vedic-age
Journals:	JSAH-Society of Architectural Historians (www.sah.org/publications-and-research/jsah) Architectural Heritage-Edinburgh University Press (www.euppublishing.com/journal/arch) Architectural History (journal.eahn.org/)

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Theory paper	

Climatology and Climate Responsive Architecture

Subject Code	**K8113**	**Semester -II**
Credits	**3**	**Subject type-Core**

Learning Objectives	
1	To understand climate and its impact on architectural design.
2	To understand co-relation between climate and other environmental parameters and built form at individual and settlement level
3	To understand the use of surrounding environment as one of the strategic design parameters.

C. **Learning Outcomes:** Student will be able to-	
1	Familiarize with climatological influences on built environment and comfort conditions for inhabitants.
2	Explore design principles in different climatic zones

Units	**Content**
Unit I	**Basic Climatology** - Introduction: To climate, weather, earth, sun relationship. Global, Macro and Micro climate. Importance of climate in architecture. - Elements of climate: Temperature, rainfall, humidity, wind, solar radiation etc.
Unit II	**Basic Climatology** - Human Comfort: - Human heat balance and comfort, thermal comfort and means of thermal comfort, heat stress, effective temperature, bioclimatic chart, subjective variables - Thermal Comfort Indices - Active & Passive means of thermal control: Degree of control
Unit III	**Basic Climatology** - Structural control : Shadow formation, sun control and shading devices - Ventilation & Air movement: Study of ventilation & its functions in buildings, air flow through buildings, position & size of opening
Unit IV	**Climate Responsive Architecture** - Study of nature of climate, its physiological objectives and design criteria's and discomfort indices. Planning of internal and external spaces, surface treatments and openings etc. for various climatic zones - Case Study of a contemporary or traditional shelter in the given climate - Study of traditional /vernacular architecture from various climatic zones (Hot and Dry; Warm and Humid; Composite; Cold –Dry, Cold-wet) - Study of effect of orientation, topography, vegetation, form, building material and surfaces on building design in response to climate

Learning Resources	
Text Books:	1. Koenigsberger, Ingersoll,Mayhew, Szokolay, (1996) Manual of Tropical Housing and Building - Climatic Design, Orient Longman Limited
Reference Books:	2. G. Z. Brown and Mark Dekay, John Wiley and Sons,(2001) Sun, Wind and Light, 2nd Edition, New York

	3. Baruch Givoni,(1976) Man, Climate and Architecture, U. K., Applied science Publishers, 2nd Edition 4. T. N. Sheshadri,(2001) Climatological and Solar Data for India, Meerat, SaritaPrakashan A. Krishan,(2001), Climate Responsive Architecture, Tata Mcgraw Hill
Websites:	
Journals:	

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignment	
1	Case study of a climate responsive building
2	Study of shading devices in a building.
3	Performance of openings for light and ventilation
4	Site-Analysis (Climatic context) considering various climatic elements.

Workshop-Model Making and Building Appraisal

Subject Code	**K8114**	**Semester -II**
Credits	**2**	**Subject type-Core**

Learning Objectives	
1	To understand appreciation in architecture.
2	To understand how to read a building.

Learning Outcomes: Student will be able to	
1	Explain building using architecture language.
2	Analyses components of the building.
3	Represent same building in model format.
4	Apply model making as a tool of expression.

Units	**Contents**
Unit I	**Aspects of appraisal** - Aesthetics, Technical, Financial, Economic, Environmental and anthropological appraisals.
Unit II	**Art consciousness** - Aesthetics, perception, symbolism, expression, style, fashion, appropriateness and values.
Unit III	**Building Appraisal** - Understanding the meaning of appreciation and its normative criteria such as Form, space, site, function, structure etc.
Unit IV	**Analysing design** - Identification of place, Basic and modifying elements of architecture, geometries, Themes in Spatial organization - Appreciation of designer skills, theories of perception and variability of perception.
Unit V	**Model Making**

Learning Resources	
Text Books:	1. Simon Unwin (2009**).** *Analysing Architecturethird edition***,** *revised and enlarged.* USA and Canada by Routledge
Reference Books:	1. Corol Davidson cragoe(2008).*How to read building: A crash course in architectural styles.*NewYork,Rizzoli. 2. John Mittendrorf and Dave Dodson (2015).*The art of readingbuilding*.USA.Penwell Cooperation. 3. Corol Davidson cragoe(2008).*How to read building: A crash course in architecture Ne*w York, Herbert press Ltd
Websites:	
Journals:	

Assessment		**Marks**
I.A.	**Internal Assessment**	**100**
	Refer To 'Rule number 6, sub point 6.2.2.'	
Note	**There is no 'University Examination' for this subjects**	

Assignment	
1	Building appraisal Essay/report with sketches /Photographs
2	Model of a structure

Semester – III

Architectural Design -III

Subject Code	**K8201**	**Semester -III**
Credits	**6**	**Subject type-Core**

Learning Objectives	
1	To study and explore properties and behavior of different structural materials
2	To introduce students to a design process with a focus on materials and structural systems
3	To develop capacity of third dimensional thinking in students
4	To understand the process of multi activity space designing

Learning Outcomes: students will be able to	
1	Make appropriate choice of material based on the requirements of the design project
2	Explore properties of a particular material to its fullest.
3	visualize and think in third dimension and translate it into two dimensional design
4	synthesize and reflect analytical understanding of multi activity spaces into Architectural Design

Units	**Contents**
Unit I	**Exposure to Materials** - Introduction and knowledge of different materials and innovative structural systems
Unit II	**Exploration of Forms** - Exploration of innovative forms of structures based on the behavior of materials
Unit III	**Design Demonstration** - Introduction to a complex multi activity space design - Demonstrating the best use of the studied material/s in this space

Learning Resources	
Text Books:	
Reference Books	1. ChingF. D. K. (2007), *Architecture: form, space, and order*, New Jersey, Canada, John Wiley and sons. 2. Editors of Phaidon Press (2004), *ThePhaidon Atlas of Contemporary World Architecture*, Phaidon Press; Comprehensive Edition. 3. Salvadori M., & Robert H., (1975),*Structure in architecture: the building of buildings*,Cornell University,Prentice-Hall 4. Shankar P., (2014) *Himalayan Cities: Settlement Patterns, Public Places and Architecture*, New Delhi, India, USA, Canada, Niyogi Books.
Websites:	
Journals:	

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**

	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignment	
1	Analysis of different materials and structural systems through research and market surveys
2	Experimentation with models to explore properties, strengths, weaknesses, possibilities of different configurations of chosen materials (application of lateral thinking process)
3	Drawing portfolio for design of a complex multi activity space design (e.g., bungalow of some celebrity or professional, a small neighborhood shopping, primary health clinic, departmental store, small scale community housing, etc.

Building Construction and Materials-III

Subject Code	**K8202**	**Semester-III**
Credits	**6**	**Subject type-Core**

Learning Objectives	
1	To involve students in a number of drawing exercises that will analyze the Various building components in a simple framed structure.
2	To inform the properties and characteristics of different roofing and flooring materials

Learning outcomes: Student will be able to	
1	Understand the construction techniques of different building components like staircase and roof.
2	Acquire the knowledge of different flooring materials and its construction techniques.

Units	**Contents**
Unit I	**Staircase** - Design Consideration - Principles and components of staircase - Types of staircases - Staircase in Timber, steel and stone
Unit II	**Roof** - Timber Roofs: General idea of various forms in timber for different spans. General information of timber trusses, fixing of Mangalore tiles. - Steel roofing: Simple ridge roof trusses for various spans, design consideration, advantages, Connections of various members supported on RCC column, Brick piers, fixing of G.I. and A.C. and Aluminum sheets, gutter types, wind bracing etc. - Steel North light Roofing system: Connections, Gutters, paneled glazing etc. - Steel Monitor roofs: on steel Stanchions, Connections, Gutters, paneled glazing etc. - R.C.C. roofing types: Flat slabs (one way and two ways), vaults, domes, Grid slabs. - Masonry vaults and domes
Unit III	**Floors** - Specialized timber flooring for: - Dance halls, Sports halls etc. - Parquet flooring details. - General idea of timber floors in relation to spans, load transmission, Jack arch and composite floors. - Flooring & paving materials such, IPS Finish, Mosaic Tiles, and Plain Cement Tiles. Natural stones like Shahabad, Tandoor, Kota, Kadappa, Marble,Granite, etc. - Glazed and Ceramic Tiles, PVC Rubber, Linolium, Carpet etc

Unit IV	**Study of Materials** - Roofing materials. - Different flooring materials. - Importance of water proofing, its need in building construction. - Traditional and modern systems of water proofing and various water proofing materials available in the market

Text Books:	1. Rangwala S. C.(2007)*Engineering Materials*. Gujarat,Charotar, Publishing House. 2. Duggal S.K.(2009)*Building materials.* New Delhi, New Age International.
Reference Books:	1. Don A. Watson,(1972)*Construction Materials and Processes,* New York, McGraw Hill. 2. WB Mackey,(1981)*Building construction, Vol 3,4*.UK, Longman UK.
Websites:	www.slideshare.net/mohdasrimohdhasim/superstructure-construction
Journals:	Journal of construction engineering, technology stmjournals.com/index.php?journal=jocetm) Master builder -construction magazine, construction news(www.masterbuilder,co,in)

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Portfolio of technical drawings of above mentioned topic with supporting documents of sketched booklet and pictographic presentation. (min.4drgs.)
2	Field reports and Market survey of building technology topics.
3	Proposals of different design in staircase for prescribed projects. (Under discretion of the subject faculty

Theory of Structure -III

Subject Code	**K8203**	**Semester-I**
Credits	**2**	**Subject type-Core**

Learning Objectives	
1	To understand types-indeterminate and analysis of structures
2	To understand behavior of different structural elements

Learning Outcomes: Student will be able to	
1	develop understanding of basic requirements of framed structure
2	develop understanding of behaviour of basic structural elements
3	understand importance of basic structural elements in structural systems

Units	**Contents**
Unit I	**Shear force and bending moment diagram** - Simply supported beams, cantilever beams and overhang beams for simple combinations of the cases mentioned in segment 1.
Unit II	**Deflection in beams** - Using formulae for standard cases simply supported and cantilevers reaction of propped cantilever. Maximum and zero deflection conditions for simply supported and cantilever beams. Factors affecting deflection. Importance of deflection in design of structural elements.(no complicated problems with double integration
Unit III	**Introduction to arches** - Two hinged and three hinged. Differentiate between beam and arch action. (no problems) - Suspension structures: their behaviour and sample analysis. (no problems)
Unit IV	**Fixed beams** - Concept of fixity and end moments using formulae.Deflected shape and placement of steel. (no analysis) - Continuous beams Concept of continuity and moments using co-efficients from IS 456, concept of distribution of moments based on stiffness only explanation (no analysis by moment distribution method)

Learning Resources	
Text Books:	1. Dongre A.P. (2011)*Strength of Materials.*Pune/Hyderabad,Scitech Publications. 2. Deo S.S.(2013)*Strength of Materials.*Pune,NiraliPrakashan. 3. S B Junnarkar and Dr. H J Shah.(2012)*Mechanics of Structures Vol. I & II.*Anand,Charotar Publishing house.
Reference Books:	1. Parikh Janak P. (2002)*Understanding the concept of structural design and analysis.*Anand,Charotar Publishing house. 2. PanditG.S.Gupta S.P.(2002)*Structural analysis a matrix approach.*New Delhi, 3. Tata McGraw-Hill Publishing company limited. 4. Varghese P.C.(2001)*Limit state design of reinforced concrete.*New Delhi,Prentice-Hall of India.
Websites:	

Journals:	

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignment	
1	Problems of SFD, BMD
2	Deflection (limited to the standard load cases mentioned in segment 1) deflection problems using formulae, study of behavior of Arches, suspension bridges
3	Behavior of fixed and continuous beams.
	Making models of fixed beam, continuous beams, arches, suspension bridges, tensile structures, deflection of long span structures.

Creativity & Communication -III

Subject Code	**K8204**	**Semester -III**
Credits	**3**	**Subject type-Core**

Learning Objectives	
1	To enhance creative skills with different techniques and sources of inspiration.
2	To enhance digital communication skills.

Learning Outcomes: Student will be able to	
1	Understand various methods of improving creative skills.
2	Use different sources of inspiration to improve creative skills.

Units	**Contents**
Unit I	**Techniques for improving Creativity** - Brainstorming, Lateral Thinking, Random Combinations, Use of Manipulative Verbs, Tree of Possibilities, Abstraction, Transformation, Use of the Ridiculous, Matrix of Ideas, Role of Memory and Experience
Unit II	**Sources of inspiration for Creativity** - Material, Geometry, History, Nature & Climate, Mimesis, Multicultural, Association with other arts, Biographies, Fantasy.
Unit III	**Graphical Communication** - Introduction and application of computer software for graphical communication

Learning Resources	
Text Books:	
Reference Books:	1. Ching Francis, D. K. (2007) *Architecture: Form Space & Order, New* Jersey, John Willy and Sons 2. Ching Francis, D. K. (1999) *Visual Dictionary of Architecture, New* Jersey, John Willy and Sons 3. Yatin Pandya (2014) *Elements of Space Making*, Ahmedabad, Mapin Publishing 4. ShirishVasantBapat (1993) *Basic Design and Anthropometry*, Pune, Bela Books 5. Barry A Berkus (2000) *Architecture, Art – Parallels and Connections*, Australia, Watson-Guptill Publications 6. Bacon E.N. (1974) *Design of Cities*, England, Penguin Books 7. Akiko Busch (1991) *The Art of Architectural Models*, Hong Kong, Design Press 8. Nick Bunn (2010) *Architectural Model Making*, London, Laurence King Publishing 9. Paul Jackson, Angela A Court, Marion Elliot (1993) *The Ultimate Papercraft and Origami Book*, United Kingdom, Acropolis Books 10. Thompson I (1999) *Frank Lloyd Wright: A Visual Encyclopedia*, London, Grange Book Plc 11. Edward De Bono (1990) *Lateral Thinking*, London, Penguin Books
Websites:	www.artinarch.org www.edwdebono.com
Journals:	

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination-**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
	Drawing portfolio consisting of relevant exercises including –
1	Any two exercises to demonstrate Techniques for improving Creativity (2D and 3D)
2	Any two exercises to explore Sources of inspiration for Creativity (2D and 3D)
3	One exercise to demonstrate Graphical Communication
	(The nature of exercises will depend on the focus of the studio

Architectural Drawings and Graphics-III

Subject Code	**K8205**	**Semester -III**
Credits	**5**	**Subject type-Core**

Learning Objectives	
1	To understand the relation between depth of building elements and shades and shadows.
2	To understand three - dimensional view of architectural projects

Learning Outcomes: student will be able to	
1	Represent Scio-graphy in Plan and Elevation of Architectural design project
2	Sketch perspective of Interior and Exterior.

Units	**Contents**
Unit I	**Sciography** - Sciography in buildings. - Projection of sciography in plan and elevation
Unit II	**Perspective** - Anatomy of perspective: Station point, Eye level, Cone of vision, Picture plane, Horizon line, Ground line, Vanishing points. - Types of perspectives: One point, Two point, Three point
Unit III	**Perspective** - Perspective drawing by, Measuring pt. method, directs projection method Grid method etc - Perspectives of simple and complex blocks - Perspectives of simple household furniture items. - Perspectives of interiors - Perspectives of Residences
Unit IV	**Sciography in perspective**

Learning Resources	
Text Books:	1. F. D K. Ching (2009) *Architectural Graphics*,New Jersey, John and Wiley and Sons. 2. Francis D K Ching (1989) Drawing a creative process, Van Nostrad Reinhold 3. Hugh C. Browing (1996) *ThePrinciples of Architectural Drafting,* New York, Watson-Guptill Publications. 4. Rangwala(1991)*Civil Engineering Drawing*, Gujarat, Charotor Publishing House.
Reference Books:	1. Gill R.W.(2011) *Rendering with Pen and Ink*, London, Thames &Hudson ltd. 2. Sleeper R. (2000)*Architectural Graphic Standards*, New York, John Wiely and Sons.
Websites:	http://www.assignmenthelp.net/sciography-of-geometrical
Journals:	

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	20

U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
I**.A. Assignments**	
1	Sem II AD Project to be presented with 2 point Perspective using any method.
2	Sciography of overhangs, stairs porticos pergolas to be enhanced on vertical, horizontal and curved surfaces.
U.E.Assignments	
3	Drawing portfolio - Adequate number of drawings covering all the units.

History of Architecture-II

Subject Code	**K8206**	**Semester -III**
Credits	**3**	**Subject type-Core**

Learning Objectives	
1	To understand development of architecture as a process of contextual and cultural evolution rather than simply as a product.
2	To acknowledge and interpret from history, best design guidelines which respond aptly to the vernacular character of that place, the lifestyle of the users and building traditions of that time.
3	To gain knowledge of the development of architectural form with reference to technology, style and character

Learning Outcomes: Student will be able to	
1	Explore Geography, Politics, Economy, Social Systems, Religion, Paintings and Sculptures and its influence on Architecture at different periods of time.
2	Acquire knowledge of the development of architectural form with reference to technology, style and character in the Indian context through the evolution of the temples, mosques and tombs in the various phases of Hindu and Islamic rule in India.
3	Acquire knowledge of the development of architectural form with reference to technology, style and character in the Western World through the evolution of the church from early Christian phase up to the Renaissance period

Units	**Contents**
Unit I	**Architecture in Indian sub-continent-Hindu Temple Architecture** - Evolution of architectural style, major influences on development of form and other architectural elements. - Gupta and early Chalukyan style - Gupta temple, Tigawa, Dasavatara Temple, Deogarh, Ladkhan and Durga temples, AiholeVirupaksha temple, Pattadakkal, Papanath temple, Pattadakkal, Cave temple, Badami, Kailash Temple, Ellora **Dravidian style** - Pallava - Rathas, Mamallapuram, Shore temple, Mamallapuram - Chola - Brihadeswara temple, Thanjavur - Hoysala - Keshava temple, Somnathpur - Vijayanagara - Vitthalaswami temple, Hampi, column orders - Madura - Meenakshi temple, Madurai, Sriranganathaswami temple, Srirangam **Indo Aryan Style** - Orissa - Parasurameswara, Mukteswara, Lingaraja temples, Bhubaneswar, Sun temple, Konark - Khajuraho - KandariyaMahadeo temple, Khajuraho - Gujarat - Sun temple, Modhera **Jain School** - Vimal Shah at Mount Abu, Chaumukh at Ranakpur
Unit II	**Architecture in Indian sub-continent -Islamic Architecture in India** - A brief introduction to origin and characteristics of Islamic architecture: building types, elements, structural systems, construction techniques

	Imperial style of Delhi - Slave dynasty - Quwat-ul-Islam Mosque, QutbMinar, Khirki Masjid, Sultan Ghari, Tomb of Iltumish, Tomb of Balban - Khilji Dynasty - Alai Darwaza., JamatKhana masjid **Provincial styles: (any two provinces)** - Punjab,Sind,Bengal,Gujrat,Kashmir,Jaunpur,Malwa,Deccan - Mosque: Jami – Ahmedabad, Champaner and Gulbarga - Tomb: GolGumbaj, Ibrahim Rauza, Bijapur - Civic work: Dada Hari stepped well, Adalaj **The Mughal phase** - Evolution of Mughal style and the different eras of rule: - Mosque: Jami – FatehpurSikri , Delhi - Tomb: Humayun, Akbar, Itmadud-daulla, TajMahal - Fort: FatehpurSikri, Red Fort, Delhi, - Regal Buildings: Birbal's house, Jodhabai's palace at FatehpurSikri
Unit III	**Architecture in Europe** **Early Christian and Byzantine Architecture** - Evolution of Church form, technique adopted to construct domes, surface treatment and material of construction - Elements of Special Attributes: - Domes, timber trusses, clear storey, pendentives - Major typologies - St. Peters, Rome (earlier one) Hagia Sophia, Constantinople **Romanesque** - Design evolution, planning principles and structural details - Elements of Special Attribute: Wall passages, raking arcades, triforium gallery, vaulting systems - Major typologies - Churches – St. Michelle Pavia, Campus at Pisa
Unit IV	**Architecture in Europe** **Gothic Phase** - Elements of Special Attribute: Structural innovations with buttresses, pointed arches, vaulting systems, window traceries, flying buttresses etc. - Major typologies - Churches- Amines Cathedral, Notre dame cathedral, Salisbury cathedral, West Ministers Abbey, castles **Renaissance Phase** - Elements of Special Attribute: Revived column orders, rusticated masonry, grand cornices, public architecture – piazzas- St Mark, Del Signoria - Major typologies - Churches – St. Peters Rome, St Paul's, Palladian villas, buildings with respect to architects

Learning Resources	
Text Books:	
Reference Books:	1. Percy Brown, (1983) *Indian Architecture (Hindu And Buddhist)*. Bombay, Taraporevala and Sons.

	2. Henri Stierlin, (2002) *Hindu India*. ISBN 3-8228-1767-8. Taschen GmbH. 3. George Michell, (1995) *Architecture of the Islamic World.* London, Thames and Hudson Ltd. 4. Sandra Forty, (2004) *Architecture*.. Rochester, Grange books 5. Sir Banister Fletcher, (1996) *A History of Architecture*. Delhi, CBS Publishers. 6. Hiraskar, (2009) *The Great Ages of World Architecture*. New Delhi, 7. DhanpatRai Publications (P) Ltd, 16th Reprint.
Websites:	http://www.twcenter.net/forums/showthread http://www.mughalhistory.com/humayun.htm www.indhistory.com http://www.indianetzone.com
Journals:	JSAH-Society of Architectural Historians (www.sah.org/publications-and-research/jsah)ArchitecturalHeritage-EdinburghUniversity Press(www.euppublishing.com/journal/arch) Architectural History (journal.eahn.org/)

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Theory paper	

Building Services-I

Subject Code	**K8207**	**Semester -III**
Credits	**3**	**Subject type-Core**

Learning Objectives	
1	To Study Water supply, treatments, distribution and plumbing system for various type of buildings.
2	To Study Waste water treatments, Sewer lines for various types of buildings
3	To Study Drainage system for a low and medium level building

Learning Outcomes : Students will be able to	
1	Understand how water supply and sanitation services are managed, in small and medium buildings.
2	Acquire knowledge about the principles of water supply and sanitation

Units	**Contents**
Unit I	**Water supply** - Sources of water supply. - Treatment plants and Pipe Appurtenances
Unit II	**Distribution Patterns** - Service Connection (Ferrule, water meter etc.) - Water storage tanks (Ground and overhead), their capacity and location. Calculation of water consumption. - Water Distribution pipes, their sizes, materials, jointing, fixing and laying
Unit III	**Sanitation** - Principles of sanitation. Introduction of various terminologies used in sanitation. Collection of waste matter in buildings. Various sanitary fittings and fixtures like washbasins, WC's, bathtubs, sink urinals, bidets, flushing cistern traps etc. Various traps and their functions. - Sewerage Systems: Dry conservancy method Water carriage systems. - Sewage collection and disposal system for individual house of urban areas. - Locations and use of appurtenances i.e. I.C, manholes, disconnecting chambers. - Various types of sanitary pipes, their joining, fixing and laying. Pipes and piping network. Anti- Siphonage Pipes.
Unit IV	**Testing of house drains.** - Sewage disposal system for individual house of rural areas or un-sewered localities (Septic tank, soak pit, cesspools, aqua privy, leeching pits. - Self-cleaning and non-scouring velocities for drain pipes. Invert levels and drains on sloping site

Learning Resources	
Text Books:	1. S.C.Rangwala,(1989)*Water supply and sanitary engineerin.*,Gujarat, Charotar publishing house.
Reference Books:	1. AFE Wise, JA Swaffied Water,(2002)*Sanitary & Waste Services in buildings*. V Edition, Los Angeles, Mitchell Publishing, Co. Ltd. **2.** C. shah,(1999) *Water supply and sanitary engineering*, Delhi,Galgotia publishers.

Websites:	http://www.slideshare.net/prrinskhaleel/sanitary-and-water-supply http://www.slideshare.net/Liguidliguid/presentation-plumbing
Journals:	Building Services Engineering Research and Technology (bse.sagepub.com) Energy and buildings-Journal-Elsevier (www.journals.elsevier.com/energy-and-buildings/) Technical journals- CIBSE-(www.cibse.org/knowledge/technical-**journals**/technical-**journals**-bsert-lr-t)

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Theory paper	

Elective-I

Subject Code	**K8208**	**Semester- III**
Credits	**2**	**Subject type-Elective**

Learning Objectives	
1	To give students an opportunity to develop their skills in a subject they may opt for further studio.
2	To study the selected topic in depth of a particular subject that student is interested.
3	To prepare a technical base for students through in depth study.

Learning Outcomes: student will be able to	
1	Engage in systematic self study of topic they feel interested in.

	Students can select one elective from the following list
1	**Traditional Building science**
	- Introduction, Meaning, Elements etc. - Vastusastra Principles - Climatological, sustainable aspects of VastuSastra. - Relevance of vastushastra in Todays Built Environment
2	**Vernacular architecture and settlements (Regionalism)**
	- Defining Vernacular - Culture ,Tradition, Society, Climate and Shelter - Vernacular architecture in India - Study of traditional Building materials and Techniques - Study of Vernacular Settlements pattern - Style of the Maratha region
3	**Environmental Studies**
	- Environmental Factors effecting human habit such asclimate,environmental pollution, environmental degradation, Green cover etc.at micro and macro scales. - Fundamentals of eco system - Environmental legislation
4	**Photography**
	- Introduction to Architectural Photography. - Techniques of Recording Building and surrounding on a film with respect to position of viewer and angle, light and shades, foreground and background, scale, colour, texture, mood, time etc. - Techniques of Photography for documentation - Photographs of drawings, models, feature of buildings and surroundings to be elaborated. - Close up Photographs - Photography practicals on: simple objects, still life composition with the play of light and shadow, Historical and modern Buildings with surroundings landscape ,Architectural details such as brackets, staircase etc.

Assessment		**Marks**
IA	**Internal Assessment**	**100**
	Refer To 'Rule number 6, sub point 6.2.2.'	
Note	**There is no 'University Examination' for this subjects**	

Semester – IV

Architectural Design -IV

Subject Code	**K8209**	**Semester -IV**
Credits	**6**	**Subject type-Core**

Learning Objectives	
1	To understand the contextual relationship of buildings with climate and landform
2	To document rural/traditional settlement to understand the context, people, function
3	To understand the process of complex multi-activity space design

Learning Outcomes: student will be able to	
1	understand relationship of building and site, climate and landform
2	document rural/traditional settlement
3	design multi-activity spaces responding to climate and landform

Units	**Contents**
Unit I	**Documentation and analysis of Settlement** - Document rural settlement in terms of settlement patterns, cluster configurations and building typology. - Document and analyze influence of climate and landform and all three levels - Document and analyze any traditional knowledge systems, structural system and architectural vocabulary of that place. - Documentation of social structure, religious and cultural practices that guide the built form
Unit II	**Application of Context** - Proposal of small design insert responding to existing context of the settlement based on the analysis
Unit III	**Design Demonstration** - Climate responsive design demonstrating passive design principles

Learning Resources	
Text Books:	
Reference Books:	1. Baruch G., (1976), *Man, Climate and Architecture*, 2nd Edition, U. K., Applied Science Publishers. 2. ChingF. D. K. (2007), *Architecture: form, space, and order*, New Jersey, Canada, John Wiley and sons. 3. Dengle N., (2013), *Zarokha*, Brain Tonic Publishing. 4. Dengle N., (1998), *The Introvert and Extrovert Aspects of the Marathi House'*, House and Home in Maharashtra, USA, Oxford University Press. 5. Editors of Phaidon Press (2004), *ThePhaidon Atlas of Contemporary World Architecture*, Phaidon Press; Comprehensive Edition. 6. Shankar P., (2014) *Himalayan Cities: Settlement Patterns, Public Places and Architecture*, New Delhi, India, USA, Canada, Niyogi Books. 7. Jain K. B. & Jain M., (2001), *Architecture of the Indian Desert* 8. Koenigsberger O.H.; Ingersoll, T.G.; Mayhew, Alan; Szokolay, S.V., (1980), *Manual of Tropical Housing and Building. Part one: Climatic design*, Longman Used.

	9. Steele J., Doshi B.V., (1998) *The complete architecture of BalkrishnaDoshi: rethinking modernism for the developing world*, India, Super Book House
Websites:	
Journals:	Ahmed Muhaisen, S. "Shading simulation of the courtyard form indifferent climatic regions", Building and Environment Vol. 41,pp. 1731-1741, 2005.

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Rural/traditional settlement studio - Drawing portfolio, Models
2	Drawing portfolio or a detailed model for short design-insert related to settlement study shall be carried out as a time bound exercise
3	Drawing portfolio for design of a small campus involving complex issues of site, topography, integration, environment (primary school, sports club, small resort / institute, primary health care, nursing home, etc.)

Building Construction and Materials-IV

Subject Code	**K8210**	**Semester -IV**
Credits	**6**	**Subject type-Core**

Learning Objectives	
1	To involve students in construction process of special construction of cavity walls and retaining walls.
2	To aware student for natural disasters and techniques of protection
3	To inform the students about materials like steel and aluminum its properties

Learning Outcomes: student will be able to	
1	Understand special construction of masonry walls.
2	Understand site development with retaining walls with respect to different materials.
3	Be aware about earthquake resisting structures and its protections.

Units	**Contents**
Unit I	**Retaining Wall** - Retaining walls and its terminology, mass retaining wall in bricks, Stones etc. and cantilever retaining wall in R.C.C.
Unit II	**Cavity Walls:** - Principles of Cavity wall construction & advantages of Cavity wall - Cavity wall in Brick, Stone and Concrete blocks - Precautions in Hollow Concrete wall construction - Reinforced and Decorative Brick masonry, Jali construction
Unit III	**Aluminum Doors &Windows** - Aluminum and P.V.C. Windows - Aluminum and P.V.C. Doors
Unit IV	**Earthquake Resistant Structures** - For engineered and non-engineered construction.
Unit V	**Study of Materials** - Steel and Aluminum. - Water concrete admixtures. - Paints and varnishes

Learning Resources	
Text Books:	1. Rangwala S. C.(2007)*Engineering Materials*. Gujarat,Charotar, Publishing House. 2. Duggal S.K.(2009)*Building materials.* New Delhi, New Age International.
Reference Books:	1. J. S. Foster, Roger Greeno (2007)*Mitchell's Structure & Fabric: Part 2*.New York,Taylor and Francis group
Websites:	www.slideshare.net/vikskyn/earthquake-resistant-structure
Journals:	Journal of construction engineering, technology stmjournals.com/index.php?journal=jocetm) Master builder -construction magazine, construction news(www.masterbuilder.co.in)

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**

	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Portfolio of technical drawings of above mentioned topic with supporting documents of sketched booklet and pictographic presentation. (min.4drgs.)
2	Field reports and Market survey of building technology topics.
3	Proposals of different design in aluminum door and window for prescribed projects. (Under discretion of the subject faculty).

Theory of Structures-IV

Subject Code	**K8211**	**Semester -IV**
Credits	**2**	**Subject type-Core**

Learning Objectives	
1	To understand basic structural concepts
2	To understand behavior of RCC as a material for framed structure
3	To understand fundamental beam column slab construction and loading

Learning Outcomes: student will be able to	
1	develop understanding of basic requirements of framed structure
2	develop understanding of strength of RCC structure
3	Understand different loads affecting strength and stability of structure.

Units	**Contents**
Unit I	**Design of RCC structures using limit state method (IS456)** - Different type of loads: dead load, live load, wind load, earthquake load. - Calculation of dead load (self weight) if dimensions of a beam, column, wall or slab and unit weight of material are given. - Principles and applications of live load and wind load in different types of structures such as residential, commercial, institutional etc. - Introduction to related IS specifications.
Unit II	- RCC framed structures flat roof i.e. beam slab column system - IS 456 provisions for removal of formwork, nominal cover. - Design of one way and two way slab, cantilever slab, load transfer from one way and two way slabs to beams and cantilever slab. - Beam design 1) simply supported 2) cantilever and 3) continuous. Continuous beam moments to be found using co-efficient. Explain similar details for continuous slab - Design of columns. Explain the structural actions on columns, explain slenderness ratio and its effect on load carrying capacity of columns, design of only short axially loaded columns. Explain uni-axial and biaxial bending cases. - Introduction to doubly reinforced beams and T or L beams. (no design problems)

Learning Resources	
Text Books:	1. Dr.Shah V.L. & Dr. Karve S.R.(2014)*RCC Theory andDesign.*Pune,Structures Publishers. 2. Shah H.J. (2013)*Design of Reinforced Concrete Structures.*Anand,Charotar Publishing house. 3. Sinha S.N. (2014) *Reinforced Concrete Design.*New Delhi,Tata McGraw-Hill Publishing Company limited.
Reference Books:	1. Dr.Shah V.L. & Dr. Karve S.R.2014) *Illustrated design of reinforced concrete buildings(design of G+3 storied office/residential building).*Pune, Structures Publishers. 2. Negi L.S.&Jangid R.S.(2000)*Structural analysis.* New Delhi,Tata McGraw-Hill Publishing company limited
Websites:	Bureau of Indian standards

Journals:	IS: 456 - 2000

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	calculation of dead load, live load, G+1 building slab design, one beam, one column design, make drawings and schedule for the same

Computer Aided Design and Drawings

Subject Code	**K8212**	**Semester -IV**
Credits	**4**	**Subject type-Core**

Learning Objectives	
1	To develop computer aided drafting skill in 2D and 3D.
2	To familiarize with various software available for documentation, presentation and drawing purpose.
3	To understand the use of computer for graphical applications.
4	To introduce and use of various software's available for computer application in Architecture.

Learning Outcomes: Student will be able to	
1	Understand the use of computer as a tool for imagination and design.
2	Apply architectural presentation techniques using different software's.
3	Know how to use commands rather than what commands are.
4	Create 3D compositions and drafting plans.

Units	**Contents**
Unit I	**Computer Aided Drawing (2D Composition)** - Introduction of Auto CAD as drafting tool. - Basics of 2D drafting, Drawing simple objects, projections and plans etc. - Preparation of 2 dimensional drawing with dimensioning. - Creating layers, styles, Blocks, line types etc
Unit II	**Computer Aided Architectural Modeling** - Introduction to Auto cad 3D/Sketch up /3Dmax. - Drawing 3D standard solid models. - Drawing 3D planes and surfaces. - Complex 3D commands such as extrude/revolve, meshes and solids - Solid editing in 3D such as subtract - General introduction to rendering and light effects
Unit III	**Computer aided presentation skills** - Introduction of various software available for Architectural presentation. - Introduction to power point, Microsoft excel, Microsoft word
Unit IV	**Animation/Walkthroughs**

Learning Resources	
Text Books:	1. George Omura(1998).*Mastering Autocad,*Singapore,Tech publications. 2. Ted Boardman and Jercy Hubbell (1998).*Inside 3D studio Max2*, volume II,Modeling and Materials,New Delhi,G.C.Jain for techmedia. 3. Stephen Paul Jacobs(1991)*The CAD Design studio,3DModeling as a Fundamental Design Skill,*New York,McGraw-Hill,Inc. 4. Durvid Frey (1998)Autocad 14,New Delhi,BPB publications.
Reference Books	As required by subjects /topics in a particular semester.

Websites:	
Journals:	

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Rendering drafting for Sem.III design .
2	Prepare digital drawings for Sem.III design portfolio.
3	Create 3D model.

History of Architecture-III

Subject Code	**K8213**	**Semester -IV**
Credits	**3**	**Subject type-Core**

Learning Objectives	
1	To gain knowledge of the development of architectural form with reference to style and character in the Indian context through the evolution of colonial Architecture in the country
2	To understand the Industrial era as evolving within specific contexts including aspects of social and political factors.
3	To gain knowledge of the development of architectural form with reference to technology, style and character in the Western World through the Industrial revolution and in the phases covering the Art and Craft , Art Nouveau styles

Learning Outcomes: Students will be able to	
1	Explore spatial and stylistic qualities associated with Colonial architecture**.**
2	Explain architecture as an outcome of various social, political and economic upheavals
3	Comprehend the condition of Industrial Revolution and its impact on architecture
4	Understand Art and Craft, Art Nouveau styles with reference to Industrial Revolution.

Units	**Contents**
Unit I	**Colonial Architecture in India** - Colonial Architecture under British, Portuguese and French with reference to industrial revolution and emergence of new materials and construction techniques. - Indian Colonial architecture-British: The styles and trends of architecture brought by British to India and their evolution – The impact of Indo-Sarcenic style on the British Architecture in India – The characteristics of British Colonial Architecture with examples from work of Edwin Lutyens. - The Impact of Portuguese architecture in India – The characteristics of Portuguese Colonial Architecture with examples from Goa-Bom Jesus Cathedral Complex-Old Goa. - The Impact of French Architecture in India – The characteristics of French Colonial Architecture with examples from Puducherry, Maheetc - The Impact of French Architecture in India – The characteristics of French Colonial Architecture with examples from Puducherry, Maheetc
Unit II	**Baroque Art, Rococo Art** - Roman Baroque churches: The central plan modified – St. Peters, Rome; - French Baroque: Versailles - English baroque – Sir Christopher Wren; - St. Paul's London – Domestic Architecture in England. - Rococo Architecture – Interiors – hotels
Unit III	**Neo classical Art and Architecture** - Beginnings of modernity –Origin and development of Neo Classicism Structural Neo classicists: Laugier, Soufflot, Schinkel, Labrouste - Romantic Neo classicists: Ledoux, Boulle, Durand, Jefferson

Unit IV	**Industrial Revolution** - Causes, consequence and impact in Architecture – Urbanization in Europe and America- split of design education into architecture and engineering streams- Emergent new building / space types. Growing need for mass housing .Its influences in building, technology and modern building materials Steel, glass, RCC etc. Industrial exhibitions- Chicago School and skyscraper development. - Arts and Crafts in Europe and America : Morris, Webb - Art Nouveau: Opposition to industrial arts and production Horta, Van De Velde, Gaudi, Guimard, Mackintosh Hoffman, Olbrich- Wright's early works

Learning Resources	
Text Books:	1. Kenneth Frampton, (1994) *Modern Architecture: A Critical History*. London, Thames & Hudson. 2. James C. Harle, (1994) *The Art and Architecture of the Indian Subcontinent.* Second Edition. Yale,Yale University Press. 3. Banister Fletcher, (1996) *A History of Architecture*. New York, Architectural Press, 4. Raeburn Micheal, (1988) *Architecture of the Western World*. England, Popular Press.
Reference Books:	1. Hiraskar, (2009) *The Great Ages of World Architecture*. New Delhi, DhanpatRai Publications (P) Ltd, 16th Reprint. 2. Christian Norburg-Schulz,(1993) *Meaning in Western Architecture*. Rizzoli, Revised edition, 3. Ed.HenriStierlin,(2002) *Architecture of the world- Baroque.* ISBN 3-8228-9300-5.Germany, BenediktTaschenVerlagGmbtt
Websites:	www.culturalindia.net › Indian Architecture www.britannica.com/EBchecked/...architecture/.../Baroque-and-Rococo www.greatbuildings.com/types/styles/neo-classical.html https://thearchiblog.wordpress.com/.../impact-of-industrial-revolution http://www.quora.com/What-is-impact-of-the-Industrial-Revolution-on-nineteenth-century-architecture
Journals:	JSAH-Society of Architectural Historians (www.sah.org/publications-and-research/jsah) Architectural Heritage-Edinburgh University Press (www.euppublishing.com/journal/arch) Architectural History (journal.eahn.org/)

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Theory paper	

Assignments	
1	Study of Colonial Architecture in India with literature survey
2	Analysis of various Architecture and Art styles studied and their development
3	Report based on field study.

Surveying & Leveling

Subject Code	**K8214**	**Semester -IV**
Credits	**4**	**Subject type-Core**

Learning Objectives	
1	To understand various land forms.
2	To introduce surveying as a method to explain land form and its utility in site planning.
3	To acquaint students with the physical surveying and levelling work in order to, Measure and document built and non-built spaces.
4	To prepare and interpret of Base Map for Architectural Design Projects.
5	To read and interpret various forms of cartographic presentation.

Learning Outcomes: Students will be able to	
1	Understand importance of land forms and topography and its significance in site planning /Design.
2	Calculate area of a site / plot.
3	Discuss slope of land for site planning.
4	Design services and buildings on sloping terrain

Units	**Contents**
Unit I	- Introduction to surveying and survey equipments, understanding land topography and its relevance in Architecture. - Methods of Surveying: Chain and Compass, Plane Table Survey, computation of areas
Unit II	- Methods of Levelling: Contour Survey, Use of Theodolite. - Use of electronic equipment like EDM, Total Station etc.
Unit III	- Introduction to remote sensing and aerial photographic surveying etc. - (Electronic Total Station) ETS Survey - Study and analysis of Topo-sheet

Learning Resources	
Text Books:	1. N.N. Basak ,*(2004) Surveying and Levelling* , *New* Delhi ,Tata Mcgraw Hill, 2. Kanetkar, T.P and Kulkarni, S.V *(2013) Surveying and Leveling*. Pune Vidyarthi Pune. **3.** R.Subramanian *(2012) Surveying and Leveling*Roorkee,Cyber TechPublication.
Reference Books:	1. David Clerk, Surveying Vol -I & II, 2. Dr. K.R. Arora, Surveying Vol -I & II, 3. S.K. Duggal, Fundamentals of Surveying Milton.O.Schimidit.
Websites:	www.aboutcivil.org, www.cambridge.org, www.civilprojectsonline.com
Journals:	International Organization of Scientific Research (IOSR) IOP Science (Institute of Physics), American Journal of Engineering Research (AJER)

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	To measure plot by linear method and determine the area.
2	To measure the contour plot and work out the site sections to understand levels and slopes.
3	To prepare small report with presentation of various equipments used in surveying and leveling
4	Measurement of plot by using different methods. (Equipments, plot selection can be done by the student and approved by instructor
5	To measure the live plot by using chain &compass, plane table survey, and prepare drawing for the area calculation
6	Survey of a given area of city road to understand slope, road details by using chain &compass, plane table survey .submission will in the form of drawings and digital presentation
7	Report on topics related to remote sensing and aerial photographic survey.

Building Services-II

Subject Code	**K8215**	**Semester -IV**
Credits	**3**	**Subject type-Core**

Learning Objectives	
1	To Study basics of electricity and wiring systems within domestic and commercial buildings.
2	To Study fundamentals of lighting and lighting design.
3	To familiarize the students with the fundamentals of acoustics and principles in designing various built environment

Learning Outcomes: Student will be able to	
1	Understand the basics of Electricity and wiring system
2	Understand various fundamentals of Lighting and Lighting design
3	Learn and evaluate fundamentals of acoustics and its applications in buildings.

Units	**Contents**
Unit I	**Electrical Services.** - Different wiring systems, fuses and MCBs, electrical fittings and appliances. Detailed layout of electrical services in residences
Unit II	**Daylighting** - Day lighting, sky condition, daylight availability graph, sky condition square. - Luminance levels for various sky conditions as a function of solar altitude, daylight factor, daylight factor standards, components of daylight factor, functional objectives of daylight, - Site criteria, building configuration, building orientation. - Day light apertures, glare control, shading devices- external and internal, measurement of day lighting
Unit III	**Illumination (Artificial lighting)** - Light radiation, its unit, laws of illumination, types of illumination schemes –direct, semi direct, diffused lighting and their design consideration - Light sources, various types of lamps and their characteristics - Types of luminaries for interior and exterior - Exterior lighting for monuments, gardens, fountains, sculptures etc
Unit IV	**Acoustics** - Frequency range of Audible sound. - Propagation of sound, sound reflection, diffusion, diffraction, sounds insulation. - Echo, Reverberation and Doppler effect. - Sound absorption, absorbing materials, their classification and application. Sound Reflection and reflecting materials, their classification and application. - Space layout consideration and Buffer zones - Noise and Noise control Noise criteria curves,noise from ventilation and AC systems. - Floor and ceiling construction for noise insulation. - Floating floors, outdoor barriers for noise Control. - At least one live case study in detail of acoustical treatment of

	- Auditorium, Lecture halls/Conference hall (any performing space) - Acoustical defects and remedies.

Learning Resources	
Text Books:	
Reference Books:	1. E.P. Ambrose,(1968) *Electric Heating*. New York, John Wiley & Sons Inc. 2. Philips,(1964)*Lighting in Architectural Design.* New York, McGraw Hill. 3. R. G. Hopkenson& J. D. Kay, (1969)*The lighting of Buildings*, London, Faber& Faber. 4. National Building Code of India, 2005 (NBC 2005)
Websites:	www.slideshare.net/haroldtaylor1113/9-acoustics-sound-and-noise-control https://www.scribd.com/doc/59706240
Journals:	Building Services Engineering Research and Technology (bse.sagepub.com) Energy and buildings-Journal-Elsevier (www.journals.elsevier.com/energy-and-buildings/) Technical journals- CIBSE-(www.cibse.org/knowledge/technical-journals/technical-journals-bsert-lr-t)

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Theory paper	

Assignments(Any 2)	
1	Design electrical layout for a low or medium size building.(an individual /independent unit)
2	Layout of acoustical space with reverberation time calculations
3	Daylight Calculation in medium sized space.

Elective - II

Subject Code	**K8216**	**Semester IV**
Credits	**2**	**Subject type-Elective**

Learning Objectives	
1	To give students an opportunity to develop their skills in a subject they may opt for further studio.
2	To study the selected topic in depth of a particular subject that student is interested.
3	To prepare a technical base for students through in depth study.

Learning Outcomes: student will be able to	
1	Engage in systematic self study of topic they feel interested in.

	Students can select one elective from the following list
1	**Passive Design Principles (SBDP)** - Meaning ,Need of Passive Cooling - Principles of Passive Cooling - Passive Cooling in Different Climatic zones - Case studies
2	**Seminar –I (Design Philosophies of Master Architects)** - Independent study and documentation of architectural and allied subjects by individual student along with oral and visual presentation. - The seminar shall be a research paper on a topic related to Architecture.
3	**Human settlements** - Origin and growth of human settlement. - Role of River Banks in growth of human settlement. - Study of ancient Indian settlements like Mohenjodaro, Taxila, Nalanda. - Study of ancient Indian cave settlements of Ajanta, Ellora, Elephanta. - Ancient texts and treatises on settlement and area planning in India. - Historical survey of the city as an expression of the vitality of a civilization. - Human settlements during ancient medieval and modern periods in and India, and other parts of the world. - Characteristics of human settlements built by Hindu and Islamic Rulers in India
4	**Communication skill/public speaking** - Basic principles and Benefits of Better Communication, Communication Theory, Organizing Thoughts, Valuing People, Choosing Appropriate Words, Using Non Verbal Behaviors (Body Language, Voice Inflection) - Conducting Meetings, Giving Presentations, Writing for Business, Writing Letters, Memos and minutes, Writing Reports and reviews, Using Visuals, Interviewing and facing interviews. - English usage, grammar and composition, learning to listen and speak correctly (One to one communication, on the telephone, Group discussions) - Basic knowledge of effective use of ms word and excel and power point. - Business Etiquettes: Professional Image, Introductions and Greetings, Networking Manners, General, Workplace Manners, Life on the Cube Farm, Interacting With Superiors, Manager's Manners, Business Meetings,

	Business Gifts, Business Cards, Telephone Manners, Cell Phone Etiquette, E-Mail Etiquette, Gender-Free Etiquette, Business Dining, Avoiding Social Blunders When Abroad, Dealing with Angry Customers

Assessment		**Marks**
IA	**Internal Assessment**	**100**
	Refer To 'Rule number 6, sub point 6.2.2.'	
Note	**There is no 'University Examination' for this subjects**	

Semester – V

Architectural Design -V

Subject Code	**K8301**	**Semester -V**
Credits	**8**	**Subject type-Core**

Learning Objectives	
1	To understand and reflect 'culture as maker of space'

Learning Outcomes: Students will be able to	
1	Develop analytical skill set for spatial design of built spaces
2	Synthesize and translate analytical understanding into Architectural Design

Units	**Contents**
Unit I	Research and analysis of community living with examples.
Unit II	Study of theories on neighborhood planning concepts, community living, campus planning principles etc.
Unit III	It can be a small eskii project like a club house, small community hall, badminton court.

Learning Resources	
Text Books:	
Reference Books:	1. Bhatt V. &Seniver P., (1990), *Contemporary Indian Architecture: After The Masters,* Ahmedabad, USA, Mapin Publishing Pvt. LTD. 2. Kanvinde A. P. & Miller J. H., (1969), *Campus Design in India: Experience of a Developing Nation*, Jostens/American Yearbook Company 3. Mehta J., (2011) *Rethinking Modernity*, New Delhi, India, Niyogi Books 4. Pressman A., *Design Architecture the elements of Process*, USA, Routledge 5. Pandya Y., (2005) *Concepts of Space in Traditional Indian Architecture*, India, New Jersey, Mapin Publishing. 6. Salvadori M., & Robert H., (1975),*Structure in architecture: the building of buildings*,Cornell University,Prentice-Hall 7. Steele J., Doshi B.V., (1998) *The complete architecture of BalkrishnaDoshi: rethinking modernism for the developing world*, India, Super Book House 8. Unwin S. (4th Ed), *Analysing Architecture*, Canada, Routledge
Websites:	
Journals:	

Assessment		**Marks**
I.A.	**Internal Assessment** Refer To 'Rule number 6, sub point 6.2.2.'	**40**
U.E.	**University Examination** Assignments or portfolios based on entire syllabus as mentioned below.	**60**

Assignments	
1	Design Project demonstrating principles of community living, neighborhood planning etc. on any one of the following - Group Housing, High-end residential building, housing for economically weaker sections, Community Housing etc. –

	Drawing portfolio and model.
2	Design Project on any one of the following – Club House, Community Hall, Sports Club etc. which can be an extension of the projects mentioned above - Drawing portfolio and model.

Building Construction and Materials-V

Subject Code	**K8302**	**Semester-V**
Credits	**6**	**Subject type-Core**

Learning Objectives	
1	To introduce construction of building components in Reinforced Cement Concrete.
2	To introduce water proofing, insulation & protection systems and their methods of construction
3	To explain the concept of curtain wall and its architectural relevance.

Learning outcomes: Student will be able to	
1	Understand different foundation systems with respect to site and building character
2	Explore special construction techniques of curtain wall and design integration.
3	Become knowledgeable of alternative building materials used in construction

Units	**Contents**
Unit I	**Foundation** : - Concept of bulb of pressure and its significance for site investigation. - Introduction to relevance of soil mechanics in foundation design - Soil types & its behavior under different loading conditions
Unit II	**Types Of Foundation** - Mass concrete strip foundation. - Foundation for brick piers, entrance steps, compound walls etc. - Foundation on sloping site. - Foundation for point load. - Isolated R.C.C. footing for columns - Combined R.C.C. footing - Cantilever R.C.C .footing & eccentric footing - Foundation on weak strata. - Raft Foundation. - Pile Foundation
Unit III	**Foundation and D.P.C.** - Damp proof course treatment using rigid & flexible treatment - Brick on edge - Rough Shahabad stone - Bitumen sheets
Unit IV	**Misc. Constructions** : - Construction Details of Curtain Walls and Structural Glazing Including External Fixing andCladding Details. **Special Construction**: - Basement Construction, Water Proofing details, etc. (Sketches, notes etc.) - Shoring and Underpinning - Flying, raking & dead shoring - Wall, Jack and mega pile, needle &pile, column underpinning

Unit V	**Study of Materials** - R.C.C. end connection details.(beam and column. Slab and beam etc.) - Reinforcement. - Fly ash brick, Stabilized earth block, Rammed earth block, Ferrocrete, Concrete debri block. - Timbering & shuttering for French excavation - Glass

Learning Resources	
Text Books:	1. M.S.Shetty(1986)*Concrete Technology* New Delhi, S.Chand&Co.ltd.
Reference Books:	1. J. S. Foster, Roger Greeno(2007). *Mitchell's Structure & Fabric: Part 2*.New York,Taylor and Francis group. 2. Mörsch, Emil (1909). *Concrete-steel Construction(Der Eisenbetonbau)*.New York, The Engineering News Publishing Company.
Websites:	www.slideshare.net/mvm2594/concrete-technology-12587295
Journals:	Journal of construction engineering, technology stmjournals.com/index.php?journal=jocetm) Master builder -construction magazine, construction news(www.masterbuilder.co.in)

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Portfolio of technical drawings of above mentioned topic with supporting documents of sketched booklet and pictographic presentation. (min.4drgs.)
2	Field reports and Market survey of building technology topics.
3	Proposals of different design in aluminum door and window for prescribed projects. (Under discretion of the subject faculty).

Theory of Structure -V

Subject Code	**K8303**	**Semester-V**
Credits	**2**	**Subject type-Core**

Learning Objectives	
1	Tounderstand basic structural concepts in steel design.
2	To understand behavior of steel as a structural materials.
3	To understand fundamentals of steel structure.

Learning Outcomes: Student will be able to	
1	Developunderstanding of basic requirements of steel structure
2	Developunderstanding of behavior of use of steel structures
3	Explain importance of types of steel connections and jointing

Units	**Contents**
	Steel design (working stress and limit state both are acceptable – IS: 800)
Unit I	**Sloping roof system** - truss, loads acting on truss, design of purlin (working stress or limit state both shall be acceptable), analysis of truss using method of joints, identifying ties and struts, design of tension and compression members.
Unit II	**Connections** - Riveted, welded bolted connections, their strength. Explain single and double shear (no calculations, no zigzag riveting). Finding length of weld and arranging it along member edges
Unit III	**Design of steel beams**
Unit IV	**Design of steel columns** - (Compression members) single and built in (Introducing lacing and battening. No calculations for lacing and battening design) - Introduction to masonry structures and timber structural members. (no numericals)

Learning Resources	
Text Books:	1. Negi L.S (2008)*Design of Steel Structures.*New Delhi,Tata McGraw-Hill Publishing company limited. 2. Bhavikatti S.S.(2009)*Design of Steel Structures.*I.K. International publishing house. 3. Vazirani V. N. &Ratwani M. M. &Mehra H.(2012)*Analysis and Design of Steel Structures.*New Delhi,Khanna Publishers.
Reference Books:	1. Mckay J.K.*The construction of buildings, vol- IV, 4th ed. (metric), preparations steel RCC fire protection.* 2. Ed Ownens, G.W. Knowles,P.R. Dowling. *Steel designers manual Vththe steel construction institute.* 3. Iyengar K.T.S.&Viswanathan C.S.(2003)*Torsteel design handbook for reinforced concrete members with limit state design.*New Delhi,Tata McGraw-Hill Publishing company limited. 4. Negi L.S.(2002)*Design of steel structures 2nd ed.*NewDelhi,Tata McGraw-Hill Publishing company limited. 5. Karve S.R. & Shah V. L.(2014)*Structural designdatabook steel structures according to I S 800-1984.*Pune,Structures Publication.

	6. Vazirani V. N. &Ratwani M. M. &Mehra H. (2012)*Steel structure design and analysis.*New Delhi,Khanna Publishers. 7. Habermann S.S.*Steel construction manual.*InternationalCertification. 8. AISC*Seismic provisions for structural steel buildings april 15th 1997.*American society of plant physiologists. 9. RamamruthamS.&Narayanan R.(1997)*Design of steel structure.*New Delhi,DhanpatRai Publishing.
Websites:	www.bis.org.in
Journals:	IS 800-2007

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Design of an industrial building, show column locations for given plan area, determine type of truss, design of purlin, purlin-truss connection detail, analysis of any three joints of truss, design of tension member with rivet/weld/bolt, design of compression member, design of columns (built in) supporting the trusses. Drawings and schedule

Working Drawing-I

Subject Code	**K8304**	**Semester -V**
Credits	**5**	**Subject type-Core**

Learning Objectives	
1	To understand and prepare working drawings necessary for construction/execution of buildings on site.
2	To make student understand how to read "Working drawings" on site

Learning Outcomes: Students will be able to	
1	Prepare working drawings for load bearing structure.
2	Prepare Detailed drawings such as doors, windows, toilets, kitchen, flooring etc.
3	Prepare drawing which are readable for all agencies which are involved in execution of the project.

Units	**Contents**
Unit I	Introduction to WD, their significance, study of Example of Working Drawings, site visit
Unit II	Translating design into working drawing of entire project.
Unit III	Drawing showing construction details**.**
Unit IV	Details of toilets, doors, windows etc

Learning Resources	
Text Books:	
Reference Books:	**1.** Wakita, Osamu A., Richard M. Linde, and Nagy R. Bakhoum (2011). "The Professional Practice Of Architectural Working Drawings" **2.** Drawings from ISO certified architect office
Websites:	
Journals:	Gawne, Eleanor. "Cataloguing architectural drawings." Journal of the Society of Archivists 24.2 (2003): 175-187

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Site visit report, Common project assignment.
2	Assignment of Time bound working studio assignment.
3	A portfolio of working drawings where student selects their own design.

History of Architecture-IV

Subject Code	**K8305**	**Semester -V**
Credits	**3**	**Subject type-Core**

Learning Objectives	
1	To introduce the idea of modernity and demonstrate its impact in the realm of Architecture.
2	To study modern architecture as evolving from specific aspects of modernity industrialization, urbanization, material development, modern art.
3	To study in detail different post modern and contemporary directions in World Architecture
4	To study quest for Indianness in architecture of India from the end of colonial rule to contemporary period

Learning Outcomes: student will be able to	
1	Acquire knowledge of the development of architectural form with reference to technology, materials, style and character of the decades of modernism, post modernism and contemporary architecture and architects.
2	Obtain an overall understanding of the architectural developments of Architecture of post-colonial India

Units	**Contents**
Unit I	**Modernism** - Introduction to Modern Architecture. **Isms in Art and Architecture** - Adolf Loos and critique of ornamentation- Raumplan: Peter Behrens-Werkbund. Expressionism: Mendelsohn, Taut, Polzeig- Futurism-Constructivism, Cubism-Suprematism- De–Stijl. Bauhaus- Gropius, Meyer and Mies. Bauhaus School, Chicago School of Architecture and Taliesin School of Architecture – Great masters like Louis Sullivan, Frank Lloyd Wright **International Style** - Post WW II developments and spread of international style –works of Corbusier:- Brasilia, Unite - Works of later modernists: Louis Kahn, Paul Rudolph, Eero Saarinen, Philip Johnson
Unit II	**Post Modernism** - Critiquing Modernism - Brutalism- projects of Smithsons and Aldo Van Eyck – writingof Jane Jacobs, Robert Venturi, Aldo Rossi and Christopher Alexander - Deconstructivism –Critical regionalism - Innovation and ideas of Archigram – post modern architects like Peter Cook, Paolo Soleri, Robert Venturi - Contemporary architects: Norman Foster, Richard Rogers, James Sterling, Peter Eisenman, Renzo Piano, Daniel leibskind, Zahahadid, Frank O Gehry, Santiago Calatrava, , Rem koolhaas
Unit III	**Post Colonial Architecture in India and any two examples across the globe** - Architectural debates associated with nation formation– early modernist architecture-

	- Post-independence city planning: Chandigarh and Bhuvaneswar- influences on post-independence architects- Architecture of Kanvinde, Raje, Doshi, Correa, Nari Gandhi, RajRewal.
Unit IV	Master Architects influenced by Vernacular/Regional Architecture of India

Learning Resources	
Text Books:	
Reference Books:	1. Kenneth Frampton, (1994) *Modern Architecture: A Critical History*. London, Thames & Hudson. 2. Kenneth Frampton, Richard Ingersoll, (2000) *World Architecture-A Critical Mosaic 19002000 Vol 1*. New York , China Architecture and Building Press. **3.** ManfredoTafuri, (1980) *Modern Architecture.* New York, Harry N. Abrams Inc. 4. William Jr. Curtis,(1988) Balkrishna Doshi, An Architecture for *India* .New York, Rizzoli Publication. James Steele,(1985) *Hassan Fathy*. London, Academy Editions. 5. Sandra Forty, (2004) *Architecture*. Rochester, Grange books 6. Andeas C. Papadakis (1991) A spirit in Architecture, London
Websites:	www.historiasztuki.com.pl/ARCHWSP-POSTMODERNIZ www.modern-architect.com http://www.quora.com/What-are-the-main-differences-of-modern-and-post-modern- architecture http://www.arthistoryarchive.com/arthistory/architecture/Architecture-UrbanCactus.html
Journals:	JSAH-Society of Architectural Historians (www.sah.org/publications-and-research/jsah) Architectural Heritage-Edinburgh University Press(www.euppublishing.com/journal/arch)

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
Note	Based on the Assignments listed below with continuous assessment and attendance scrutiny. The final presentation in standard specified Portfolio with all written reports and graphical representations (sketches, pictures)
1	Analytical study of Post-Colonial Architecture in India with literature survey
2	Power point Presentation and discussion of Modern, Post modern, Contemporary World Architects with references to their styles ,designs, technologies, materials and directions
3	Critical Analysis through book /literature survey of various architects and their buildings with relevance to vernacular architecture of India
4	Report based on field study.
5	Model making.

Specification Writing

Subject Code	**K8306**	**Semester -V**
Credits	**2**	**Subject type-Core**

Learning Objectives	
1	To develop skill of writing specifications for materials and works.

Learning Outcomes: students will be able to	
1	Write specifications with reference to building trades, materials, workmanship and performance of different items of work
2	Discuss specifications as integral part of contract document for building projects

Units	**Contents**
Unit I	- Specifications as part of contract document, definition, need and importance, its relationship with working drawings, bill of quantities and Schedule of rates. - Types of specifications, open, closed, restricted, prescriptive, performance based, or combination of above types. Use of manufacturers guide etc. - Specification writing method to include master list, sectional formats, page formats, general material items, tests, performance, mode of measurements etc
Unit II	- Methodology of writing detailed specifications including methods and forms of writing descriptive notes on materials and workmanship based on working drawings. - Collection of catalogues and technical information on various materials, products and specialized items. - Preparation of checklist for writing detailed specifications
Unit III	- Study of different building trades, their scope and contents. - Introduction to writing specifications for building services and checklist for services such as Water Supply, Drainage, Electrical and HVAC installations. - Writing specifications of a previous design project in full or part as final assignment

Learning Resources	
Text Books:	1. S. Patil (2013) *Civil Engineering Contracts and Estimate.* Anand. Orient Blackswan,Bangalore 2. B.N.Datta (2011) *Estimation and Quantity Surveying*, UBS Publishers & Distributors Ltd.Mumbai.
Reference Books:	1. SP 27 (1987) *Handbook of Method of Measurement of Buildings Works,Bureau of Indian Standards (BIS)* 2. *[CED 44: Methods of Measurement of Works of Civil Engineering] (first revision-2003) Bureau of India Standards*. 3. Willis, C. & A. Willis (1997) *Specification writing for architects and surveyors*, Blackwell Science, United Kingdom
Websites:	www.trainning@theNBS.com(National Building Specifications) www.ncarb.org
Journals:	National Council of Architectural Registration Boards(N.C.A.R.B) - See more at: http://www.ncarb.org/en/About-NCARB.aspx#sthash.bpyDoY2q.dpuf International Cost Estimating and Analysis Association (ICEAA)

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Theory paper.	

Building Services-III

Subject Code	**K8307**	**Semester -V**
Credits	**2**	**Subject type-Core**

Learning Objectives	
1	To expose students to the science behind HVAC system.
2	To familiarize students with the various air- conditioning systems and their applications
3	To study various aspects of Natural Ventilation

Learning Outcomes: student will be able to	
1	Acquire knowledge of various air conditioning systems and their applications.
2	Address various issues in design of HVAC system
3	Understand various issues in natural ventilation systems in buildings

Units	**Contents**
Unit I	**HVAC** - Air distribution systems, ducts and ducting layout. - Costing data and space requirements. Integration of AC systems in Design. - Principles of Psychometrics and heat transfer
Unit II	**Components of HVAC** - Unit AC's, Central AC's split AC's. - Components of AC system such as chilling plant, cooling towers, air handling units, calculation of AC load. - Water consumption for AC
Unit III	**Ventilation of buildings** - Natural ventilation (passive.) - Ventilation functions and requirements. - Physical mechanism of ventilation. - Design factors affecting ventilation
Unit IV	**Mechanical ventilation (active)** - Need of mechanical ventilation a) Forced ventilation – Exhaust fans, Axial flow fans, Blowers for industrial ventilation. b) Introduction to Air conditioning, heating and cooling

Learning Resources	
Text Books:	1. Benjamin Stein and John Renolds.(2006)*Mechanical and Electrical Equipment for Building*, New York, John Wiley and Sons.
Reference Books:	1. Vasisth K.(2011)*Waste management* New Delhi, Essential books. **2.** National Building Code of India, 2005 (NBC 2005)
Websites:	**http://bst1.cityu.edu.hk/e-learning/**
Journals:	Building Services Engineering Research and Technology (bse.sagepub.com) Energy and buildings-Journal-Elsevier (www.journals.elsevier.com/energy-and-buildings/) Technical journals- CIBSE-(www.cibse.org/knowledge/technical-journals/technical-journals-bsert-lr-t)

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Theory paper	

Elective- III

Subject Code	**K8308**	**Semester IV**
Credits	**2**	**Subject type-Elective**

Learning Objectives	
1	To give students an opportunity to develop their skills in a subject they may opt for further studio.
2	To study the selected topic in depth of a particular subject that student is interested.
3	To prepare a technical base for students through in depth study.

Learning Outcomes: Student will be able to	
1	Engage in systematic self study of topic they feel interested in.

	Studentscan select one elective from the following list
1	**Barrier Free Architecture** - Types of disabilities and its implications in Architecture, barrier free environment, access- provisions to facilities and amenities. - Typical barrier problems of the physically challenged people-parking, approaches to buildings travel within buildings etc. - Special design considerations in residential buildings, congregational buildings like auditoriums, theatres, studios, transport terminals etc, Institutional buildings, outdoor appurtenances, garden – parks etc. - Study of norms set by Central Government
2	**Appropriate technology** - Introduction to the concept of Appropriate technology and services suitable in Indian context for both rural and urban application - Study of theoretical and practical aspects of innovative /alternative materials and construction techniques developed in recent past. - Mud wall, suitability of soil for mud walls - Waffle and daub walls, Rammed earth walls, adobe walls - Walls, vaults using soil cement, compressed mud blocks, Nubian arch roof - Use of Bamboo as material its properties ,available in country - Burnt clay tile roofing, ferro cement roofing units, doubly curved tile roofing
3	**Contemporary Design Theory(History and Design)** - Detail study and analysis of styles of contemporary Indian and foreign Architects - Study of spatial order, structural, constructional and material order, manner of articulation, symbols, and meanings as these evolved in time and space. - Comparative study of building typologies in vernacular and architecture in modern period
4	**Seminar II** - Independent study and documentation of architectural and allied subjects by individual student alongwith oral and visual presentation. - The seminar shall be a research paper on a topic related to Architecture

Assessment		**Marks**
I.A.	**Internal Assessment**	**100**
	Refer To 'Rule number 6, sub point 6.2.2.'	
Note	**There is no 'University Examination' for this subjects**	

Semester – VI

Architectural Design -VI

Subject Code	**K8309**	**Semester -VI**
Credits	**8**	**Subject type-Core**

Learning Objectives	
1	To explore and demonstrate 'technology and services as major determinants of Architectural form' and understand co-relation between function, structure, services and form.

Learning Outcomes: Student will be able to	
1	Develop analytical skill set for understanding built and non-built spaces
2	Synthesize and translate the analytical understanding into Architectural Design

Units	**Contents**
Unit I	Research and Analysis of innovative technologies and materials prevailing in market, state of the art services and systems.
Unit II	Multi-functional public buildings like IT Complex, Hospitals, Commercial Centers, High Rise Structures
Unit III	Extension of the large project mentioned above e.g. Design of gymnasium, bank, departmental store, operation theatre, auditorium, etc.

Learning Resources	
Text Books:	
Reference Books:	1. Bhatt V. &Seniver P., (1990), *Contemporary Indian Architecture: After The Masters,* Ahmedabad, USA, Mapin Publishing Pvt. LTD. 2. Kanvinde A. P. & Miller J. H., (1969), *Campus Design in India: Experience of a Developing Nation,* Jostens/American Yearbook Company 3. Mehta J., (2011) *Rethinking Modernity,* New Delhi, India, Niyogi Books 4. Pressman A., *Design Architecture the elements of Process,* USA, Routledge 5. Pandya Y., (2005) *Concepts of Space in Traditional Indian Architecture,* India, New Jersey, Mapin Publishing. 6. Salvadori M., & Robert H., (1975),*Structure in architecture: the building of buildings,*Cornell University,Prentice-Hall 7. Steele J., Doshi B.V., (1998) *The complete architecture of BalkrishnaDoshi: rethinking modernism for the developing world,* India, Super Book House **8.** Unwin S. (4th Ed), *Analysing Architecture,* Canada, Routledge
Websites:	
Journals:	

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Design project demonstrating integration of the building components and

	technology, services, vertical circulation, byelaws etc. on any one of the following – 3-star hotel, commercial complex, hospital, civic center, convention centre etc – Drawing portfolio and models
2	Design Project on any one of the following – gymnasium, bank, departmental store, operation theatre, auditorium, etc. - Drawing portfolio and models

Building Construction and Materials-VI

Subject Code	**K8310**	**Semester -VI**
Credits	**6**	**Subject type-Core**

Learning Objectives	
1	To introduce construction of building components in Reinforced Cement Concrete.
2	To introduce construction of building components in steel and its use in industrial construction
3	To introduce methods of the pre-engineered structures

Learning Outcomes: student will be able to	
1	Explore different R.C.C components of framed construction as well as special component construction.
2	Discuss different steel components and its construction
3	Understand concept of pre-engineered construction with respect to industrial construction

Units	**Contents**
Unit I	**R.C.C. Framed ConstructionElement study** - Principles and practices of R. C. Framed construction and its components - R. C. C. Footing for column, Isolated footing - R. C. C. Plinth beams and Plinth formation - R. C. C. Lintels and Chajja projections - R. C. C. Slab – one way, two way, single span and continuous spans - R. C. C. Beams – singly and doubly reinforced, single and continuous spans, cantilever beams - R. C. C. Columns
Unit II	**R.C.C. Framed Construction Special Component study** - R.C.C., Balconies, Canopies, fins, parapets - R.C.C. its potential and application - Details of junctions of slab and beam, slab-beam- column, primary, secondary beams - Study of form work construction - R.C.C. Staircase
Unit III	**Steel Structures** - Study of portal frames, its various types & connection details. - Study of Castellated Beam, Veradale girder, Portal Frames & Lattice Construction with - Connection details. - Medium span Roof Trusses with Sheet Cladding details & Rain Water Disposal details. - Introduction to framed steel structures using steel sections & steel decking
Unit IV	**Industrial Building**: - Study of constructional details for industrial buildings. - Details for lighting, Ventilation & Rain water disposal for industrial buildings. - Study of Machine foundation, gantry & high Strength flooring etc
Unit V	**Study of Materials**

	- Different cladding materials with fixing details. - Pre engineered structures. - Pre-stressed and post-tensioning methods pros and cons.

Learning Resources	
Text Books:	1. M.S.Shetty(1986)*Concrete Technology* New Delhi, S.Chand&Co.ltd. **2.** J. S. Foster, Roger Greeno(2007)*Mitchell's Structure & Fabric: Part 2*.New York,Taylor and Francis group.
Reference Books:	1. Gorenc, Tinyou, Syam(2005)*SteelDesinger's Handbook.* New Delhi,CBS Publishers and Distributors. 2. Ralph Monletta(1989)*Plastics in Architecture" – A guide to acrylic and Polycarbonate.N*ew York, Marcel Dekker Inc. **3.** Jack M Landers(1983)*Construction Materials, Methods, Careers* USA,Good Heart - WilCox Company,Inc Publishers, Homewood, IL.
Websites:	www.slideshare.net/mvm2594/concrete-technology-12587295
Journals:	Journal of Construction Engineering, Technology stmjournals.com/index.php?journal=jocetm) Master Builder -Construction Magazine, construction News(www.masterbuilder.co.in)

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Portfolio of technical drawings of above mentioned topic with supporting documents of sketched booklet and pictographic presentation. (min.4drgs.)
2	Field reports and Market survey of building technology topics.
3	Proposals of different design in industrial building for prescribed projects. (Under discretion of the subject faculty).

Theory of Structures-VI

Subject Code	**K8311**	**Semester -IV**
Credits	**2**	**Subject type-Core**

Learning Objectives	
1	To understand basic concepts for RCC foundations
2	To understand behavior of different soils and foundation choice
3	To understand different types of RCC footings

Learning Outcomes: student will be able to	
1	develop understanding of basic staircase design.
2	develop understanding of behaviour of footings
3	understand importance of prestressing structural elements

Units	**Contents**
Unit I	**Staircases** - Types based on supports, loads, design of simply supported doglegged staircase
Unit II	**Soil types and foundations** - Soil types and determining suitable foundation (only theory) : safe bearing capacity, shear failure, excessive settlement, differential settlement, trial pits, need of pile foundation, need of raft foundation. - Design of rcc isolated pad footing. Explain (not design)rcc details of isolated circular and sloped footing, eccentric footing. - Necessity of combined footing, behaviour of combined footing, rcc details. (no design problem)
Unit III	**Foundation for steel columns** - Theory.(no numerical)
Unit IV	**Prestressing** - Introduction to prestressed structural elements, procedures, advantages, disadvantages, simple numerical beam problem to explain the concept of prestressing

Learning Resources	
Text Books:	1. Shah H.J. (2014) *Design of RCC structures part II*. Anand, Charotar publishing house.
Reference Books:	1. Dr.Shah V.L.& Dr. Karve S.R.(2014)*RCC Theory and Design.*Pune,Structures Publishers. 2. Shah H.J.(2013)*Design of Reinforced Concrete Structures.*Anand,Charotar Publishing house. **3.** Sinha S.N.(2014)*Reinforced Concrete Design.*New Delhi,Tata McGraw-Hill Publishing company limited.
Websites:	www.bis.org.in www.nptel.ac.in
Journals:	IS: 456-2000 code of practice for plain and reinforced concrete SP:16-Design aids for reinforced concrete

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**

	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Design of simply supported doglegged stair case, drawing and schedule
2	Design of isolated pad footing, drawing and schedule
3	Making a typical RCC structural drawing with column location, numbering, beams (identifying beams to be designed as simple/cantilever/continuous…slabs to be identified as one way/two way/cantilever/continuous…typical detail of each element and schedule – no design)
4	Photo documentation of various foundation problems and their solutions

Working Drawings -II

Subject Code	**K8312**	**Semester -VI**
Credits	**4**	**Subject type-Core**

Learning Objectives	
1	To understand and prepare advanced drawings necessary for construction/ execution of the buildings on site

Learning Outcomes: Student will be able to	
1	Prepare working drawings for RCC Framed structure
2	Prepare Detailed drawings such as OHWT, staircase, electrical layout, toilet details
3	Ability to coordinate with other consulting agencies involved in the project.

Units	**Contents**
Unit I	Preparation of working drawing for RCC structure
Unit II	Details
Unit III	Fieldwork: Setting of structure on Site

Learning Resources	
Text Books:	
Reference Books:	1.Wakita, Osamu A., Richard M. Linde, and Nagy R. Bakhoum (2011). "The Professional Practice Of Architectural Working Drawings
Websites:	
Journals:	Gawne, Eleanor. "Cataloguing architectural drawings." Journal of the Society of Archivists 24.2 (2003): 175-187

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignment	
1	Common project
2	Field assignments
3	Individual design translated to working drawing portfolio with all details necessary for construction.

Landscape Architecture

Subject Code	**K8313**	**Semester -VI**
Credits	**3**	**Subject type-Core**

Learning Objectives	
1	To emphasis learning of architecture beyond building, in the outdoor environment and spaces
2	To introduce the role and importance of landscaping and site planning in enhancing and improving the quality of building environs, functionally and aesthetically.
3	To explain site and its context while designing of buildings
4	To use landscape elements to create and enhance exterior spaces and to achieve climatic control at the buildings and site level.

Learning Outcomes: Students will be able to	
1	Explore various aspects of site planning and relationship between built and openspaces
2	Understand role of landscape in architecture.
3	Design small scale landscape project using landscape elements.

Units	
Unit I	**Introduction to landscape architecture – Importance, need and scope** **Landscape Elements** - Plant element: Different aspects of - trees, shrubs, lawns, climbers, hedges, Indoor plants as elements. Basic idea about plants, plant selection, planting design and care of plants. Importance and use of NATIVE vegetation - Land element: Different aspects –soils, topography, levels, grading, earth forms, and foundations. - Water elements: Fountains, waterfalls, pools, cascades, channels, irrigation etc. - Architectural elements: sculptures, curbs, walls, steps, fence, etc
Unit II	**Historical and contemporary landscape practices and case studies** **Integration of indoor and outdoor spaces**
Unit III	**Climate** - Macro and microclimatic consideration in landscaping; effect on landscape and microclimate **Site analysis and planning** - Methodology and process of site study. Landform analysis, site analysis techniques. Importance of site planning for landscape design and architecture. **Principles of landscape design** - Aesthetical consideration
Unit IV	**Relation between built and open spaces** Pedestrian and vehicular circulation Landscape construction details Services related to landscape - Plumbing, water supply, electrical, sewage management

Learning Resources	
Text Books:	
Reference Books:	1. Jellicoe, G. A., & Jellicoe, S. (1982). *The Landscape of Man: Shaping the Environment from Prehistory to the Present Day*: Van Nostrand Reinhold. 2. Simonds, J. O. (1998). *Landscape Architecture: A Manual of Site Planning and Design*: McGraw-Hill. 3. Booth, N. K., & Hiss, J. E. (2012). *Residential Landscape Architecture: Design Process for the Private Residence*: Prentice Hall. 4. Reid, G. W. (2007). *From Concept to Form in Landscape Design*: Wiley. 5. Robinette, G. O. (Ed.). (1983). *Landscape Planning for Energy Conservation*. NewYork: Van Nostrand Reinhold Company. 6. White, S., & Stein, J. A. (1993). *Building in the garden: the architecture of Joseph Allen Stein in India and California*: Oxford University Press. 7. Kanvinde, A., & Miller, H. J. (1969). *Campus Design in India: Experience of a Developing Nation*: Jostens/American Yearbook Company. 8. Lynch, K. (1984). *Site Planning* (Third ed.): M.I.T. Press
Websites:	
Journals:	Journal of landscape Architecture (LA)

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Comprehensive landscape proposal(Drawing portfolio) **a)** One project for Functional and Aesthetic considerations, at residence level. (Especially landscape places like interiors, courtyards, terrace gardens, window landscaping etc.) **b)** One project for campus planning including vegetation, parking, road sections, footpaths, lighting etc.
2	Case studies of landscape project under consideration in the form of report

Estimation and Costing

Subject Code	**K8314**	**Semester -VI**
Credits	**3**	**Subject type-Core**

Learning Objectives	
1	To equip students with necessary technical knowledge for calculating estimates and detailed costing for small to medium projects with developing the skill of writing specifications for materials and item works.

Learning Outcomes: Students will be able to	
1	Computequantities of various building items for simple load bearing structures and be acquainted with various types of Estimates including mode of measurements as adopted by I.S.1200.
2	Compute quantities and rate analysis of various building items of R.C.C. framed structure along with building services such as water supply, sanitation and drainage, electrical installations etc

Units	**Contents**
Unit I	Introduction, purpose of "Quantity Computation" i.e. estimating, types of estimates (preliminary, Detailed) - Study of I.S.-1200. - A small project in load bearing and R.C.C. frame construction or their part to work out quantities and to understand market rate of materials and labours.
Unit II	- Bill of quantities for single story structures - Load bearing construction system. - R.C.C. Frame construction system.
Unit III	- Methods of calculating quantities for building works - Preparation of Bill of Quantities (B.O.Q.) Mode of measurements of quantities. Market rates of labour and building materials. Labour requirement and norms for consumption of basic materials. - Schedule of rates
Unit IV	- Study of different agencies involved in construction e.g. CPWD, PWD, etc. - Rate analysis and cost index. - Study of rate of innovative building materials in the market. - General factors affecting the rate of an item .rate analysis for different components of construction. - Software for calculation of quantities of various building items

Learning Resources	
Text Books:	1. B. S. Patil(2006). Civil Engineering Contracts and Estimates (Third Edition), Orient Blackswan. 2. B.N.Datta, (2011) Estimation and quantity surveying
Reference Books:	1. *SP 27 (1987): Handbook of Method of Measurement of* 2. *Buildings Works [CED 44: Methods of Measurement of Works of* 3. *Civil Engineering] (first revision-2003) Bureau of India Standards* 4. Arthur J.Willls (1979). Specification writings for Architects and surveyor by. Published by Crosby Lockwood 5. National Building Code(N.B.C.)2005,*Bureau of India Standards*
Websites:	www.bdg.org. WDBG- National Institute of Sciences.(Cost Estimating)

	www.cost -estimating.com
Journals:	Specifications Consultants in Independent Practice (SCIP) International Cost Estimating and Analysis Association (ICEAA)

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Theory paper	

Assignments	
	Exercises for IA
1	To work out the quantities of a small load bearing structure having area not more than 40 sqm.
2	To work out the quantities of items of construction work of load bearing and R.C.C. framed structure along with presentation
3	To prepare the list of items in construction and work out the quantities of items as directed by instructor

Building Services-IV

Subject Code	**K8315**	**Semester -VI**
Credits	**2**	**Subject type-Core**

Learning Objectives	
1	To study different high rise systems with respect to service core designs and building automation systems.
2	To familiarize the students with firefighting equipment and their installation
3	To familiarize students with water supply and sanitation systems in high rise
4	To study various aspects of vertical communication systems.

Learning Outcomes: Student will be able to	
1	Explore various services including core and building automation systems.
2	Understand fire safety, fire fighting, fire prevention and installations in buildings including codal requirements
3	Address various design issues of water supply and sanitation systems in high rise buildings.
4	Understand various systems of vertical communication

Units	**Contents**
Unit I	**Advanced Building Services** - Types of High Rise Buildings - Building Core Arrangements
Unit II	- Water distribution systems in High rise buildings- downfeed water distribution, pumped upfeed distribution, constant pressure upfeed, gravity downfeed system - Sanitation systems in High rise buildings- two pipe system, solvent system.
Unit III	- Vertical communication systems for high rise buildings-Types of Elevators, Sky lobby Elevator system, double- deck elevator system, Hydraulic Elevators
Unit IV	- Fire fighting in high rise buildings- Water fire suppression systems and other fire suppression systems, Fire detection systems - Codal provision and standards for Fire fighting
Unit V	- Building automation system

Learning Resources	
Text Books:	1. Benjamin Stein and John Renolds.(2006)*Mechanical and Electrical Equipment for Building*, New York, John Wiley and Sons.
Reference Books:	1. "Fire Safety: National Building Code of India 1983" published by Bureau of Indian Standards. 2. Andrew H Buchanan, (2001) *Design for fire safety*.New York,John Wiley & Sons Ltd 3. Yeang K.(2002) *Service cores details in building*. New York, John Wiley and sons. 4. National Building Code of India, 2005 (NBC 2005)
Websites:	http://www.slideshare.net/rdpatil65/fire-fighting-presentation http://www.powershow.com

Journals:	Building Services Engineering Research and Technology (bse.sagepub.com) Energy and buildings-Journal-Elsevier (www.**journals**.elsevier.com/energy-and-**buildings**/) Technical journals- CIBSE-(www.cibse.org/knowledge/technical-**journals**/technical-**journals**-bsert-lr-t)

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Theory paper	

Elective-IV

Subject Code	**K8316**	**Semester IV**
Credits	**2**	**Subject type-Elective**

Learning Objectives	
1	To give students an opportunity to develop their skills in a subject they may opt for further studio.
2	To study the selected topic in depth of a particular subject that student is interested.
3	To prepare a technical base for students through in depth study.

Learning Outcomes; student will be able to	
1	Engage in systematic self study of topics they feel interested in.

	Studentscan select one elective from the following list
1	**Architectural Journalism** - Structure of architecture Journals - Writing Descriptive and analytical reports - Editing write ups,Photo Journalism. - Book reviews - Page compositions - The public process - Electronic media
2	**Theatre /Film set Design** - History of set and backdrop design for performance - Theme based design strategies - Period and modern sets,Technology applications
3	**Green material/advanced material** - Green material Selection, factors in selection, Resources to assist in determining materials appropriateness. - Material consideration when using the LEED rating program - Finishing materials for interior and exterior - Insulating materials :organic binders and bitumen and tar based materials like Bitumen, tar, emulsions, mastics, waterproofing items - Folymer sand polymer –based materials and components, polymer based building material for walls, pipes, sanitary-ware, glues and mastics - Metals in advanced building systems, steel cables, structural glazing and curtain walling - Light weight roofing materials :asbestos, galvanized iron, acrylic, polycarbonate
4	**Visual Communication** - Visual communication in architecture - Non verbal communication –signs, symbols, metaphor. - General concepts of image and schema - Concept sketches, bubble Diagrams, Area Diagram - Exploring methods of presentation for design through photographs, ppt, sketching, rendering etc. - Built forms and environment, Way finding in architecture and space between environment

Assessment		**Marks**
I.A.	**Internal Assessment**	**100**
	Refer To 'Rule number 6, sub point 6.2.2.'	
Note	**There is no 'University Examination' for this subjects**	

Semester – VII

Architectural Design -VII

Subject Code	**K8401**	**Semester -VII**
Credits	**10**	**Subject type-Core**

Learning Objectives	
1	To learn different visual mapping methods in architecture
2	To understand and analyze the urban context and respond through design of a public space /public building

Learning Outcomes: Student will be able to	
1	Learn methods of mapping data
2	Develop analytical skills responsive to the broader socio-economic & physical context of the study area
3	Synthesize and translate analytical understanding into Architectural Design

Units	**Contents**
Unit I	**Data Collection, Representation** - Learning different methods of data collection, documentation and representation through mapping - Documenting the socio-economic & physical context of the study area, understanding character and distinctive features of the same. - Understanding of the legislative provisions including land-use, zoning, DCR& relevant acts as applicable to the study area.
Unit II	**Data Analysis** - Analyzing the available data to arrive at issues, concerns and design decisions based on methods like SWOT analysis. - Arriving at a design proposal and developing design brief based on the analysis
Unit III	**Design Proposal** - Design of a public space/building responsive to the context - site and people

Learning Resources	
Text Books:	
Reference Books:	1. Alexander C., Ishikaw S., Silverstein M. & Jacobson, *A Pattern Language, Town, Buildings, Construction*, Oxford University Press 2. Alexander C., Ishikaw S., Silverstein M. & Jacobson, *A Timeless way of Buildings*, Oxford University Press 3. Bacon E. N., (1976), *Design of Cities* Revised Edition, USA, Penguin Books 4. Jain K. B., (2011), *Architecture Conceptual to the Manifest* 5. Lang J., (1994) *Urban Design: The American experience*, John Wiley & Sons, 6. Cullen G., (1971), *The Concise Townscape*, New York, USA, Architectural Press, Routledge. 7. Lang J. T. , Desai M. & Desai Madhavi, (1997) *Architecture and independence: the search for identity--India 1880 to 1980*, USA, Oxford University Press 8. Lynch K., (1960, 1990), *The Image of the City*,Massachusetts Institute of Technology Cambridge, Massachusetts, and London, England, The M.I.T. Press (20th Printime)

Websites:	Atre S., *Comprehensive Architecture + Urban Design Studio, Architecture And Context* California Polytechnic State University, San Luis Obispo College of Architecture & Environmental Design, From http://www.calpoly.edu/~arch/program/fifthyr/atre.pdf
Journals:	

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignment	
1	Data collection and analysis of urban fabric of selected site
2	Site responsive design demonstration of the following building typologies may be encouraged — residential, industrial, museums, libraries, transportation, institutional, hospitality buildings, recreational, any public activity spaces, etc. - Drawing portfolio and 3 - d model

Building Construction and Materials-VII

Subject Code	**K8402**	**Semester-VII**
Credits	**4**	**Subject type-Core**

Learning Objectives	
1	To introduce students to the advanced construction systems.
2	To introduce large scale roof constructions like stadiums, industrial buildings etc, and related materials.
3	To introduce types of swimming pool design and construction.
4	To introduce student to concepts of modular design and construction.

Learning outcomes: Student will be able to	
1	Understand various typologies and technologies of long span structures.
2	Understand various design and construction parameters of swimming pools.
3	Analyze modular concept of design and construction in large scale projects.
4	Explore sport stadiums, their field area and support space as well as building envelopes.

Units	**Contents**
Unit I	**Long Span Structures** • Shell structure like single curvature and double curvature etc. • Folded slab structure • Tension Structures like membrane, cable net and air supported etc. • Grid structure and skeletal like Space frames etc.
Unit II	**Multi-basement** - Soil bearing capacity and excavation techniques for basement. - Different uses of basement, it's planning criteria, Techniques of construction techniques like retaining wall, diaphragm wall, caissons, cofferdam etc. - Various services related to Basement like waterproofing, drainage, Ventilation, Ramps, elevators etc.
Unit III	**Auditorium** - Auditorium shape and size, seating arrangements. - Cone of vision, sightlines, stage and back stage design. - Acoustical design consideration, Noise and its criteria, sound defects etc. - Ancillary spaces like projection room, balcony, green rooms, orchestra pit etc. required for Auditorium. - Services related to Auditorium like fire protection and ventilation etc.
Unit IV	**Modular coordination.** • Precast and prefabricated building components used for roof, wall, interior and floor construction etc.
Unit V	**Study of Materials** - Study of modern building materials with respect to long span roof, modular system ,Acoustics ,basement etc.

Learning Resources	
Text Books:	1. T.D Ahuja and G.S. Birdie (1996)*Fundamentals of Building Construction* New Delhi, Dhanpat Rai Publishing Company Pvt. Ltd
Reference Books:	2. J. S. Foster, Roger Greeno(2007)*Mitchell's Structure & Fabric: Part **2**.*New York,Taylor and Francis group. 3. Gorenc, Tinyou, Syam(2005)*Steel Designer's Handbook* New Delhi,CBS

	Publishers and Distributor. 4. Ralph Monletta (1989)*Plastics in Architecture" – A guide to acrylic and Polycarbonate*.New York, Marcel Dekker Inc.
Websites:	http://roofhugger.com/ConstructionDetails.htm?utm_source=Come+See+Us+in+New+Orleans&utm_campaign=Hugger+News-January+2018&utm_medium=email`
Journals:	Journal of Construction Engineering, Technology stmjournals.com/index.php?journal=jocetm) Master Builder -Construction Magazine, Construction News(www.masterbuilder.co.in)

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2'	
U.E.	**University Examination**	**60**
	Theory paper	

Theory of Structures -VII

Subject Code	**K8403**	**Semester-VII**
Credits	**2**	**Subject type-Core**

Learning Objectives	
1	To understand trends and challenges in contemporary building structural systems.
2	To understand complex building structures and large spans
3	To understand importance and need for structural modeling

Learning Outcomes :Student will be able to	
1	Develop connections between Design, Construction and Material.
2	Design Ground and First floor structures with R.C.C. and steel building with simple configuration
3	Apply software as tool for modeling structures

Units	**Contents**
Unit I	- Earthquake zoning, base shear, lateral forces. Introduction to IS: 1893 - Introduction to shear wall, structural behaviour, typical details. - Ductile detailing: introduction to IS: 13920, typical details of beams, columns, junctions
Unit II	- Introduction to flat slab (beamless). Major structural actions, behaviour and RCC details. - Introduction to plate girders, gantry girders, castellated girders. - Introduction to flitched beams.
Unit III	- Introduction to shell roofs. Behaviour, structural actions and rcc details of spherical dome. - Understanding space frame and space truss (3D elements, equilibrium conditions and concepts only) - Introduction to long span structures: arches, open web sections, bow string girders, typical details. - Modelling and analysis of structure on STAAD-Pro software.

Learning Resources	
Text Books:	1. Sarma T.S. (2014) *STAAD Pro V8i for Beginners with Indian Examples.*Chennai, Notion Press. 2. Shah H.J.(2014)*Design of RCC Structures part II.*Anand,Charotar Publishing house.
Reference Books:	1. Dr.Shah V.L.& Dr. Karve S.R.(2014)*Illustrated design of reinforced concrete buildings(design of G+3 storeyed office/residential building).*Pune,Structures Publishers. 2. Negi L.S.&Jangid R.S.(2000)*Structural analysis.*New Delhi,Tata McGraw-Hill Publishing company limited.
Websites:	www.nicee.org www.bis.org www.nptel.ac.in INSDAG website
Journals:	IS :1893 and IS: 13920

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignment	
1	Sketching and explaining structural behaviour of above topics.
2	Case study of structural systems implemented by imminent architects in their projects
3	Modelling and analysis of simple structure on STAAD-Pro

Interior Design I

Subject Code	**K8404**	**Semester -VII**
Credits	**4**	**Subject type-Core**

Learning Objectives	
1	To make students understand various aspects of interior spaces
2	To make students understand qualities of interior spaces to develop skills in designing for functional and aesthetical meaningful interior spaces.

Learning Outcomes: Student will be able to	
1	Design interior spaces of buildings.
2	Design furniture with all necessary details.
3	Develop competence for working with various materials & construction techniques used in interior design

Units	**Contents**
Unit I	- Introduction to the field of interior design and various parameters. market survey of various interior materials
Unit II	- Market survey of various interior materials.
Unit III	- Case study of a small interior project. (100sq.m to 150 sq,m) Carpet area.
Unit IV	- A detailed design of the interior projects. (50sq.m to 100 sq,m) Carpet area.

Learning Resources	
Text Books:	1. John Coles & Naomi, (2007) The fundamentals of interior architecture/AVA Publishing SA.
Reference Books:	1. Mitcheil Beazley (2004), The new colour book/octopus publishing group ltd. 2. Julie Savill (2001), Good homes magazine(101 colour schemes that really works)/BBC World wide. 3. Elizabeth wilhide. (2007), Surface & Finish(Directory of materials for interiors) /Quadrille publishing Ltd. UK
Websites:	www.quadrille.co.in. www.theaid.in.
Journals:	Magazine published by IIID "Insite" International journal of interior architecture & spatial design.

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Study Example report with drawings & Studio based time bound Interior design project.
2	Report on survey of materials in market (This will be referred for UE examination)
3	Drawing portfolio comprising of Individual interior design layout, elevations,

	sections and views
4	Constructional drawing of various interior components and specification of the above interior finalized project.

Advance Landscape Architecture

Subject Code	**K8405**	**Semester -VII**
Credits	**3**	**Subject type-Core**

Learning Objectives	
1	To understand the complex issues related to landscape architecture and respond comprehending natural, man-made and social environment.
2	To understand various factors affecting landscape design at urban scale

Learning Outcomes: student will be able to	
1	Respond to complex issues related to landscape architecture at macro level
2	Understand influences of various factors on design of landscape at urban scale

Units	**Contents**
Unit I	**Understanding advancements in Landscape Architecture** -Terrace Gardens, Roof Gardens, Vertical Landscapes, etc. -Landscape for atriums -Innovative Landscape construction techniques.
Unit II	**Understanding the process of site analysis and planning at macro level (involving complex issues such as physical, functional, environmental and socio-cultural)** - Physical factors such as topography, geology, site features, hydrology, surrounding land-use, buildings and soil conditions - Environmental factors such as climate, existing flora and fauna - Socio-cultural such as existing use, structures of historic or religious importance if any , - Aesthetics such as views from and within site - Strom water management
Unit III	**Understanding role of landscape for energy conservation** -Role of vegetation -Role of water bodies -Role of land form -Effect on temperature, air movement, noise and pollution
Unit IV	**Understanding the various factors affecting design and planning of urban open spaces and provide landscape solution for the same.** - Physical Factor - Social Factors - Environmental Factors - Functional Aspects

Learning Resources	
Text Books:	-----
Reference Books:	1. 1.Jellicoe .G and Jellicoe. S (1987).The Landscape of Man, Thames and Hudson, London 2. Simonds. J. O. (1961). Landscape Architecture, The Shaping of Man's Natural Environment. F.W. Dodge Cooperation, London 3. Harris.C.W and Dine.N.T ; Time Saver Standards For Landscape Architecture, McGraw – Hill International Edition, Arch. Series

	4. Starke .B and Simonds. J. O. (2013) Landscape Architecture: A Manual of Site Planning and Design. McGraw-Hill Professional 5. Reid G. W: (1987) Landscape Graphics. 6. Reid G. W: (1993) From Concept to Form: In Landscape Design. John Wiley & Sons . 7. 7.Robinette, G.O (1977) Landscape planning for energy conservation. Environmental Design Press,Reston, VA
Websites:	-----
Journals:	Journal of Landscape Architecture

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Case studies based on unit I
2	Assignment based on unit III
3	Case studies or readings based on unit IV
4	One large scale studio project based on unit II or IV

Urban Planning I

Subject Code	**K8406**	**Semester -VII**
Credits	**3**	**Subject type-Core**

Learning Objectives	
1	To introduce students to the basic concepts of Town and Urban Planning.
2	To understand the hierarchy of planning.
3	To understand the importance of Town Planning with respect to legislative guidelines, through Acts and Byelaws
4	To introduce the subject of Urban Design in order to enable students to establish a larger context for Architectural Design

Learning Outcomes: Student will be able to	
1	Understand the basic concepts of Town and Urban Planning
2	Legislation and rules of Town Planning
3	Do the Subdivision of Layout, and Municipal Drawings.
4	Understand the evolution of urban form of cities

Units	**Contents**
Unit I	**Introduction to the subject of Urban Planning**. Introduction to the Basic concepts in planning like landuse, zoning, byelaws etc Need and importance of study of Rural/ Town /Urban Planning for an architect.
Unit II	**Evolution of planning in settlements from ancient to contemporary times.** Principles, influences on Indus cities, Egyptian cities, Greek cities, Roman cities, Industrial cities etc.
Unit III	**Planning Theories By** Patrick Geddes; Kevin Lynch; Clarence Perry; Frank Lloyd Wright; Ebenezer Howard; Le Corbusier, C.A. Doxiadis, Lewis Mumford. **Conceptual study** of Garden city, Satellite towns, Industrial Towns, New Towns, Planned Cities, Twin Cities, Neighbourhood Etc. **City plan patterns**-Linear, Radial, Grid Iron layout and Ribbon development
Unit IV	**Introduction to Housing and Housing Typologies** Characteristics of Urban housing. Study of Housing typologies based on Topographical and Social, Economics aspects. Housing scenario and its impact. Study of Housing Neighbourhoods with reference to planning concepts and principles by planners.
Unit V	**Introduction to Planning Legislation** Introduction to various planning related laws, their contents and provisions, viz: M.R.T.P. Act of 1966, Land Acquisition Act of 1894, Maharashtra Slum Redevelopment Act, Urban Arts Commission Act, Municipal Act etc
Unit VI	**Introduction to urban form and space** Urban Form and space in historical and theoretical terms.

Learning Resources	
Text Books:	1. Kevin Lynch (1960)*The Image of the City* USA, MIT press. 2. Lewis Mumford (1972)*The City in History: Its Origins, Its Transformations, and Its Prospects*.USA, Harcourt, Inc.

	3. Peter Geoffrey Hall (1996 Updated Edition) *Cities of Tomorrow: An Intellectual History of Urban Planning and Design in the Twentieth Century* USA, Blackwell publishing. 4. Anthony J. Catanese, James C. Snyder (2014) *Urban Planning*. New Delhi, McGrawHill Education Private Limited. 5. AbirBandyopadhyay, (2010) *Town Planning*, Kolkata, ArunabhaSen
Reference Books:	1. Browm A.J.(1969) *Introduction to town and country planning* Australia, Angus and Robertson publisher. 2. P.Healey,(1981) *Planning Theory*.UK, Pergamon Press 3. Arthur Gallion(1993)*The Urban Pattern*. New York, John Wiley and Sons
Websites:	**www.planetizen.com/websites/2014** http://www.unhabitat.org / @UNHABITAT http://sustainablecitiescollective.com / @sustaincities
Journals:	Cities: The International Journal of Urban Policy and Planning Urban Policy and Research Urban Studies

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Theory paper	

Building Services-V

Subject Code	**K8407**	**Semester -VII**
Credits	**2**	**Subject type-Core**

Learning Objectives	
1	To expose students to the various integrated services of water supply And drainage at campus level.
2	To familiarize students with solid waste management.
3	To study various Building Management Systems.

Learning Outcomes: student will be able to	
1	Acquire knowledge of various integrated building services.
2	Address various issues of solid waste management.
3	Understand various Building management systems

Units	**Contents**
Unit I	**Water Distribution systems** - For housing schemes and high rise buildings. Schematic water distribution from treatment plant to town, group housing etc. - Hot water supply in high rise buildings. - Water heaters, boilers - Solar water heating
Unit II	**Sewage collection and disposal** - For large campuses, complexes, High rise Buildings etc. Mechanical methods of removal of sewage from basements (Shone's ejector). - Sewage treatment, Waste water conservation, recycling, biogas etc
Unit III	**Urban Drainage Systems** - For private and public places. - Drainage ,sub drains, culverts, ditches, gutters, drop inlets and catch basins - Rain water Harvesting.
Unit IV	**Solid waste or refuse Disposal** - Refuse chutes. - Waste /kitchen - waste Managements
Unit V	**Integration of Services** - ETP, STP and other building management services like CCTV, PG & UPS

Learning Resources	
Text Books:	1. Benjamin Stein and John Renolds.(2006)*Mechanical and Electrical Equipment for Building*, New York, John Wiley and Sons.
Reference Books:	1. Vasisth K.(2011)*Waste management* New Delhi, Essential books. 2. National Building Code of India, 2005 (NBC 2005)
Websites:	**http://bst1.cityu.edu.hk/e-learning**
Journals:	CIBSE journal http://www.cibsejournal.com/ Building Services Engineering Research and Technology (bse.sagepub.com) Energy and buildings-Journal-Elsevier (www.**journals**.elsevier.com/energy-and-**buildings**/) Technical journals- CIBSE-(www.cibse.org/knowledge/technical-**journals**/technical-**journals**-bsert-lr-t)
Assessment	**Marks**

I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Detail services layout which includes water supply and sanitation requirements for a campus project. (Project is preferably the architectural design project which the students have already worked on)

Elective- V

Subject Code	**K8408**	**Semester IV**
Credits	**2**	**Subject type-Elective**

Learning Objectives	
1	To give students an opportunity to develop their skills in a subject they may opt for further studio.
2	To study the selected topic in depth of a particular subject that student is interested.
3	To prepare a technical base for students through in depth study.

Learning Outcomes: Student will be able to	
1	Engage in systematic self study of topics they feel interested in.

	Students can select one elective from the following list
1	**Housing** - Housing survey and methodologies - Factors effecting housings - Housing demand, slums, Typologies, finance, etc. - Comparative study of various housing policies and programmes. - Housing case studies - Post Occupancy evaluation. - Importance of housing in urban and regional development - Structural concepts, use of traditional and new building materials ,self help and low cost housing - Role of co-operative and public and private agencies
2	**Disaster Management** - Study of building designs to resist following types of disasters: Earthquake; Fire; Flood; Cyclone; Tsunami; Other natural disasters - Post-disaster problems - Study of geological structure and its deformation - Study of behaviour of the structure in such disasters - design aspects and considerations for various types of buildings especially the residential, congregational and institutional buildings
3	**Sustainable architecture** - Study of effects of Luminous Environment on comfort condition in built space, including Analysis Techniques, Design Strategies and Evaluation Procedures - Introduction and Analysis of the Precedent - Analysis of the site and climate - Analysis of the building programme and use. - Schematic design. - Design development. - System integration - Various rating systems like LEED, GRIHA.
4	**Industrial Architecture** - Location and planning aspects of Industrial areas - Indoor and Outdoor working environment in Industries - Services essential for Industries, considerations f industrial safety (Fire) - Various acts applicable to construction of industries such as Factory act,

	Pollution control Act etc. - Review of structural systems used for Industries with materials. - Environmental pollution as resultant of industrial activity.

Assessment		**Marks**
I.A.	**Internal Assessment**	**100**
	Refer To 'Rule number 6, sub point 6.2.2.'	
Note	**There is no 'University Examination' for this subjects**	

Semester – VIII

Architectural Design VIII

Subject Code	**K8409**	**Semester -VIII**
Credits	**10**	**Subject type-Core**

Learning Objectives	
1	To develop understanding of present day urban/socio-economic/technological/infrastructural issues and identify redevelopment triggers.
2	To evaluate performance of a built space with respect to present day urban parameters.
3	To develop skill of feasibility analysis and design capacity in given urban context.

Learning Outcomes: Student will be able to	
1	Learn building Design issues such as parking, additional FSI with design and work out feasibility due to change in life style.
2	Redevelop a precinct to meet the present day needs like innovative technology
3	Study of relevant bylaws applicable for the above mentioned project.

Units	**Contents**
Unit I	Identify, Research and analyze urban issues such as parking/changed life style/ changed urban fabric/infrastructure of a given plot of land and feasibility study.
Unit II	Case study of redevelopment projects
Unit III	Design of given plot (Redevelopment)

Learning Resources	
Text Books:	
Reference Books:	1. Shah Jagan, 2008, Contemporary Indian Architecture, Lustre Press 2008 8 ISBN 174364463, 9788174364463 2. National Building Code of India, 2016
Websites:	
Journals:	

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignment	
1	Collecting data about a project/site to be developed.
2	Feasibility study and formulation of design brief
3	Design: The project that can be taken up can be redevelopment of a plot/, addition and alterations to existing structures/change of use.

Building Construction and Material VIII

Subject Code	**K8410**	**Semester -VIII**
Credits	**04**	**Subject type-Core**

Learning Objectives	
1	To introduce the concept of multi-basement and its construction systems.
2	To introduce the Acoustical design considerations for Auditorium and its construction systems.
3	To introduce various considerations in Design and Construction of high rise structures.

Learning Outcomes: Student will be able to	
1	Understand different systems of basement constructions and its services.
2	Understand different systems of Semi- permanent structures and its installation techniques.
3	Understand different design consideration for Auditorium and its systems of construction.

Units	**Contents**
Unit I	**Swimming Pool** • Components of Swimming pool like basin, drain, filter, deck, ladder, diving board, lane and lane marking etc. • Types like private, public, recreational, theme based, sports etc. • Materials used for swimming pool like brick, concrete, fiber reinforced etc. • Techniques used for constructions of swimming pool like underground, above ground, elevated etc. - Services related to swimming pool like filtration, electrical, drainage , maintenance etc.
Unit II	**Stadium**: • Introduction to Components of Stadiums like stadium field area, Seating area, envelope and roof. • Field area and their shapes, orientation, field drainage, field protection etc. • Stadium Bowl design parameters like viewing distances and sightlines, gangways, vomitories, media boxes, VIP areas, player areas, facility areas like food and services. • Building Envelope and roof materials and their technologies. • Roof design considerations like wind and sun. • Services related to Stadium like lighting, access control, signage, toilet, maintenance etc. -
Unit III	**Semi-permanent Structures** - Need, Planning and Layout, Installation techniques used worldwide. - Various Semi-permanent Structural systems for floor, wall, roof etc. - Services related to water and sanitation layout, natural and mechanical ventilation, lighting, insulation etc.
Unit IV	**High Rise Structures** - Design consideration like wind and seismic, foundation, form work systems,

	Construction Techniques and Building Envelope, mechanical floors. - Systems in steel and Concrete. - Structural glazing, elevators,
Unit V	**Study of Materials** - Study of different modern building materials with respect to Swimming Pool, Stadium, installable structures and high rise.

Learning Resources	
Text Books:	1. T.D Ahuja and G.S. Birdie (1996)*Fundamentals of Building Construction* New Delhi, Dhanpat Rai Publishing Company Pvt. Ltd
Reference Books:	2. J. S. Foster, Roger Greeno(2007)*Mitchell's Structure & Fabric: Part **2***.New York,Taylor and Francis group. 3. Gorenc, Tinyou, Syam(2005)*Steel Designer's Handbook* New Delhi,CBS Publishers and Distributor. 4. Ralph Monletta (1989)*Plastics in Architecture" – A guide to acrylic and Polycarbonate*.New York, Marcel Dekker Inc.
Websites:	https://www.som.com/ideas/research/design_of_high-rise_buildings www.losberger.com/us/en_us/applications/semi-permanent-structu... www.theatresolutions.net › Layouts & Design
Journals:	Journal of Construction Engineering, Technology stmjournals.com/index.php?journal=jocetm) Master Builder -Construction Magazine, Construction News(www.masterbuilder.co.in)

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Theory paper	

Assignments	
1	Portfolio of technical drawings of above mentioned topic with supporting documents of sketched booklet and pictographic presentation. (min.4drgs.)
2	Field reports and Market survey of building Material topics.
3	Proposals of different designs of swimming pool and sitting area for small scale stadia. (as per discretion of the subject faculty)

Vocabulary and Repertoire

Subject Code	**K8411**	**Semester -VII**
Credits	**3**	**Subject type-Core**

Learning Objectives	
1	To express understanding of architecture writings.
2	To learn vocabulary to be used for analyzing Architecture.

Learning Outcomes: student will be able to	
1	Acquire effective verbal communication in architecture
2	Write essays, research papers, book reviews etc.

Units	**Contents**
Unit I	**Architectural expression** - Form and expression - structural expression - society - culture and expression - spatial expression **Vocabulary and grammar of form** **Glossary of technical words**
Unit II	**Architectural Journalism** - Writing Descriptive and analytical reports - Book reviews - Page compositions
Unit III	**Elements of Architecture** - Basic elements of architecture - Modifying elements of architecture
Unit IV	**Seminar on Architects Biography and Concepts in contemporary architecture**

Learning Resources	
Text Books:	Simon Unwin (2009**).** *Analysing Architecturethird edition***,** *revised and enlarged.* USA and Canada by Routledge.
Reference Books:	John Ruskin (1989).*The seven lamps of Architecture*.London,Dover Publications NeelkanthChhaya(2014).*Harnessing the intangible,collected essays on the work of BalkrishnaDoshi,*New Delhi,NIASA Council of Architecture.

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Writing Journals on Theory of design
2	Any one Book review and Any one Architects Biography

Interior Design II

Subject Code	**K8412**	**Semester -VIII**
Credits	**04**	**Subject type-Core**

Learning Objectives	
1	In this subject students will apply their skills, knowledge gained in the previous interior design studio for more complex interior design projects with all details of services.
2	The students will also understand the complex interior designing process , specification, various detailing and tentative estimate of to fulfill the needs of client.

Learning Outcomes: Student will be able to	
1	Acquire knowledge of various high end interior building materials their specification its cost and its application in interior design project.
2	Design complex Interior spaces with services, construction details with cost consideration to suit its function and aesthetics in a Systematic cad presentation with all detail drawings.

Units	**Contents**
Unit I	Introduction to the field of interior design with respect to services.
Unit II	Market survey of application of various finishing interior materials and techniques.
Unit III	Detailed Case study of a medium scale interior project. (150 sq.m to 250 sq.m.)
Unit IV	A detailed design of the medium scale interior projects showing all necessary services, specifications and costing. Carpet Area (150 sq.m to 250 sq.m.)

Learning Resources	
Text Books:	Office Spaces – Crane Dixon, Architectural Data Sheeets
Reference Books:	Corporate Interiors – Kogek Yee, Office Interiors – Alan Phillips
Websites:	www.quadrille.co.in. www.theaid.in.
Journals:	Architectural Digest, Elle Décor, Home and Design, Interior Design etc.

Assessment		**Marks**
I.A.	**Internal Assessment** Refer To 'Rule number 6, sub point 6.2.2.'	**40**
U.E.	**University Examination** Assignments or portfolios based on entire syllabus as mentioned below.	**60**

Assignment	
1	Report based on Market survey of interior Materials
2	Live Case Study of a completed Interior Project
3	Detailed drawings of the Interior Design project of the following – residential , public , commercial etc with thrust on services , specification and tentative

	estimate etc.
4	Design of the decorative ceiling, paneling, lightings, floor details, toilet details etc for the above projects.
5	Detailed design of two furniture units with specification and construction/ joinery details.

Urban Planning II

Subject Code	**K8413**	**Semester -VIII**
Credits	**03**	**Subject type-Core**

Learning Objectives	
1	To introduce students to the advanced concepts of Town and Urban Planning.
2	To understand the planning procedures at various levels of planning.
3	To understand the holistic relationship of planning with various other aspects of physical developments.
4	To develop an urban vocabulary required to understand urban form and public spaces

Learning Outcomes: Student will be able to	
1	Understand the interrelated concepts of Town and Urban Planning
2	Exposure to the various laws and rules for planning and balanced development.
3	Understand the effects of various policies on physical development.
4	Understand urban form and space

Units	**Contents**
Unit I	**Introduction to the process of formulation and implementation of** : Regional Plan, Development Plan and Town Planning Schemes. Study of various Planning agencies and their role in planning like HUDCO, CIDCO, HDFC, MHADA etc.
Unit II	Role and relevance of Transport Planning, Landscape and Environmental issues, Heritage etc in Urban Planning.
Unit III	**Introduction to various planning tools.** Methodology of conducting town planning surveys, types of surveys (physical, social, and economical, Aesthetic Surveys etc) and analysis of data collected.
Unit IV	**Urbanization and Its Impacts.** Introduction to Study of Contemporary Issues of Urban Development and concerns in the City.
Unit V	**Policies and legal framework for contemporary planning development**: National Missions, Schemes for funding various planning activities, infrastructure development schemes like JNNURM, HRIDAY, SMART CITY etc.
Unit VI	**Introduction to urban design terminologies and definitions** To understand the urban form derived from theories as well as empirical evidence.

Learning Resources	
Text Books:	6. Kevin Lynch (1960)*The Image of the City* USA, MIT press. 7. Lewis Mumford (1972)*The City in History: Its Origins, Its Transformations, and Its Prospects*.USA, Harcourt, Inc. 8. Peter Geoffrey Hall (1996 Updated Edition) *Cities of Tomorrow: An Intellectual History of Urban Planning and Design in the Twentieth Century* USA, Blackwell publishing. 9. Anthony J. Catanese, James C. Snyder (2014) *Urban Planning.* New Delhi, McGrawHill Education Private Limited.

	10. AbirBandyopadhyay, (2010) *Town Planning,* Kolkata, ArunabhaSen
Reference Books:	4. Browm A.J.(1969) *Introduction to town and country planning* Australia, Angus and Robertson publisher. 5. P.Healey,(1981) *Planning Theory*.UK, Pergamon Press 6. Arthur Gallion(1993)*The Urban Pattern*. New York, John Wiley and Sons
Websites:	**www.planetizen.com/websites/2014** http://www.unhabitat.org / @UNHABITAT http://sustainablecitiescollective.com / @sustaincities
Journals:	Cities: The International Journal of Urban Policy and Planning Urban Policy and Research Urban Studies

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Theory paper	

Research Skills

Subject Code	**K8414**	**Semester -VIII**
Credits	**04**	**Subject type-Core**

Learning Objectives	
1	To inculcate in students methodical process to approach an architectural design project holistically.
2	To develop research skills necessary to provide approach and directions in design of architectural project.
3	To develop a systematic approach of research for application in Architectural Design Project.
4	To develop skill sets of writing research paper

Learning Outcomes: student will be able to	
1	Develop primary skills to conduct research in Architecture
2	Demonstrate Visual Research Methods.
3	Demonstrate acquired research skills through the topic selected for Architectural Design Project.

Units	**Contents**
Unit I	Introduction to Research Skills , Types of research , Methods of data collection , Ethics ,and Referencing
Unit II	Visual Research Methods in Design Imageability Environmental mapping – Direct observation and direct communication Visual representation Environmental behaviour
Unit III	Selection of topic for Architectural Design project giving overview of introduction, background, context, relevance, scope and limitation, methodology and identification of case studies.
Unit IV	Demonstration of Case study and its analysis (Minimum two Book /live case studies) to understand the Project. Literature review minimum three research papers relevant to the research project
Unit V	Research Paper Writing

Learning Resources	
Text Books:	
Reference Books:	1. Robert Bechtel et al (eds). Methods in Environmental and Behavioral Research, NY:VanNostrand Reinhold, 1987. 2. Gary T Moore et al. Environmental Design Research Directions: Process and Prospect. New York: Preager Publishers, 1985. 3. Henry Sanoff. Visual Research Methods in Design. New York: Van Nostrand Reinhold, 1991
Websites:	
Journals:	

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Synopsis of Architectural design project.
2	Literature review.
3	Case studies and its analysis (minimum two).
4	Research Paper Writing.
5	Seminar presentation of components level research areas based on selected Architectural Design Project .

Elective- VI

Subject Code	**K8415**	**Semester IV**
Credits	**2**	**Subject type-Elective**

Learning Objectives	
1	To give students an opportunity to develop their skills in a subject they may opt for further studio.
2	To study the selected topic in depth of a particular subject that student is interested.
3	To prepare a technical base for students through in depth study.

Learning Outcomes: Student will be able to	
1	Engage in systematic self study of topics they feel interested in.

	Students can select one elective from the following list
1	**Real Estate Management** - Real estate development: Fundamental concepts and techniques, -recognizing institutional and entrepreneurial elements, issues encountered in various phases of development like site evaluation and land procurement, development team assembly, -market study and development scheme, construction & project management, project marketing and hand-over of completed projects. -Development & project financing**:** Project Feasibility, Development Financing, Asset Disposal and Redevelopment Options, -Analyses of Development Sites and Case Studies, integrated case study on a specific development project, which requires reviewing, analyzing and resolving the problems or strategic issues. - Urban policy & real estate markets **:** Impact of Government Regulations and Public Policies on Real Estate Markets, include urban land rent and location theories, land use structures, community and neighbourhood dynamics, degeneration and renewal in urban dynamics, private-public participation, government policies on 95 public and private housing, and urban fiscal policy including property taxation, local government finance. - Corporate real estate asset management: Strategic plans to align real estate needs with corporate business plans; -Performance measurement techniques to identify asset acquisition or disposal; methods for enhancing value through alternative uses, efficient space utilization or improving user satisfaction. - Commercial real estate appraisals: Determination of the capitalization rates across different types of properties;-Appraisal of freehold and leasehold interests; -Critical analysis of the valuation approaches adopted for securitized real estate; Asset pricing models; investment flexibility and future redevelopment opportunities.
2	**Architectural Conservation** - History and theory of conservation - Philosophy of conservation

	- Pioneers of conservation - Definition of conservation, preservation, restoration, reconstruction ,Adoption - Broad concepts of terms such as Reuse, Rehabilitation, Revitalization, Regeneration, Up gradation etc. - Value and ethics - Traditional building materials and their decaying characteristics. Environmental influences: thermal effect, corrosion and oxidation. - Preparation of Inspection reports. - Cultural Heritage - Conservation methods - Classifications - Management of historic sites - Studies of various charters. Role of INTACH,UNESCO, ECOMOS and other organizations
3	**Digital architecture** (can be a combination of seminar and workshop - project and practice based course) -Compare approaches of design processes - conventional process focused on architects' style and contemporary process influences by digital tools -Introduce the new tools of design, production and fabrication in architecture that affect various stages of architectural production, from conception and visualization to development and manufacturing -Provide opportunities to integrate the use of the computer for design, production, and presentation with the help of individual projects -Provide understanding of software packages, and modeling techniques
4	**Architectural Software** -Provide hands-on exposure to various software packages to work on design, modelling, and simulations used in architectural design -Use of various (relevant at the time) 2D drafting and 3D modeling tools for rendering and architectural presentation -Use of various software packages for analysing building systems and services performance (this can be for passive and/or active measures relevant to the semester focus) -Options Advanced AutoCAD Advanced SketchUp with various plugins Revit

Assessment		**Marks**
I.A.	**Internal Assessment**	**100**
	Refer To 'Rule number 6, sub point 6.2.2.'	
Note	**There is no 'University Examination' for this subjects**	

Semester – IX

Practical Training

Subject Code	**K8501**	**Semester -IX**
Credits	**30**	**Subject type-Core**

Learning Objectives	
1	To acquaint students with prevalent purview and procedure of architectural and allied practice
2	To invite practitioners participation in the education of the 'would-be entrants' to the profession for up datedness of information and orientation
3	To boost the dialogue between 'practice' and 'academics' of architecture for progressive learning of a student

Learning Outcomes: student will be able to	
1	Develop skills in professional behavior
2	Explore different facets of office management including preparation of working drawings, detailed drawings, perspectives, study of filing systems of documentation, preparation of tender documents etc.
3	Gain site experience in respect of supervision of construction activity, observation, layout on site, taking the measurements and recordings.

Units	**Contents**
Unit I	**Indoor activities, office administration** - Routine correspondence with client's local authorities, contractors and other agencies dealing in building industries - Systematic filing and registering office correspondence for easy re-reference. - Regular maintenance of work-diaries with notes on principal's instructions, interviews with various agencies, indoor and/or outdoor work and time-spent - Systematic filing and indexing of technical catalogues and price lists for handy reference. - Systematic ordering and use of office library
UnitII	**Indoor activities, drawing and designing** - Making of preliminary designs and drawings accountably by requisite prior study, research, and case studies. - Preparing 'Presentation' 'statutory ', working' and 'detailed' drawings of customary contents and format by understanding their propriety and logic - Reading and making use of 'Contour Plans' while at VI & VII above - Dependably efficient handling of auxiliary routine operations like taking off and codified rendering of prints and electronic and/or computerized communication, drafting, copying etc - Briefing with various technical consultants and co-coordinating their drawings. - Preparation of 'study' and 'Presentation' models of buildings and/or development lay-outs in different levels and chromatic material-textures
Unit III	**Outdoor activities:** - Attending routine meetings with clients, local authorities, contractors and other trade representatives - Checking of lining-out of buildings on site - Systematic surveying of sites and/or existing buildings of moderate size and complexity in conventionally comprehensive format - Architecturally monitoring the work-progress on site/s through periodic

	supervisions, instructions and reports thereon

Learning Resources	
Reference	**Architects Drawings**

Assessment		**Marks**
I.A.	**Internal Assessment**- Refer To 'Rule number 6, sub point 6.2.2.'	**40**
1	**The Log-Book** duly filled in and authenticated by the said responsible registered architect- member of the employer-organization. (one member-signatory throughout Log-Book)	**15**
	Diary-The day to day hand-written preformed Work-Diary maintained by the student during the period of 'training' (as stipulated hereinabove) and certified by the said responsible registered architect-member of the employer-organization- one and the same members signatory who authenticates the Log-Book. (preferably initialed per day)	15
	Work report-The manually laboured 'Work-Report' structured as herein after prescribed under 'Term work' and authenticated too only by the said responsible registered architect-member of the employer organization. (One member-signatory who certifies Log-Book and Work-Diary).	10
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
	Portfolios consisting of drawings prepared by the student as intern in the office

Details of training	-The practical training of minimum duration of 15 to 18 working weeks (90 work days) shall be carried out in the office of an architect or an organization Operating in an allied field of practice or research, duly approved by the institution, under mentorship of an architect having experience of at least 5 years. -Training in Foreign Country shall be done under the Registered Architect of that Country and to be approved and monitored by the Head of the Institution.

Semester – X

Architectural Design Project

Subject Code	**K8502**	**Semester-X**
Credits	**16**	**Subject type-Core**

Learning Objectives	
1	To inculcate in the students methodological process to approach an architectural project holistically.
2	To prepare students to handle large scale complex architectural projects individually.

Learning Outcomes: student will be able to	
1	Include intensive study of relevant literature, case studies, climatology and analysis of problems concerned with development of functional organisation of space form and structure.
2	Study based on correlation and interpretation of the social, economic and physical data.

Units	**Contents**
Unit I	The architectural project should consist of 2 parts: A. Technical Report: well documented report consisting of hypothesis formulation, data acquisition, verification, and analysis by following qualitative and quantitative research methods. B. Design Solution: Self explanatory drawings, covering various aspects of construction, function, technology, services, and site planning etc. few suggested buildings types are institutional projects, civic amenities, commercial, industrial, sports and recreation, administrative, transportation facilities, housing, specialized building, etc.
Unit II	**Technical report:** - A hard bound copy of original report shall be submitted, which will be certified and signed by the college authorities as authentication of the work and by the guide who has guided the work - Size: Project Report size A4 Sized '120 Mm x 297 mm portrait with embossed title necessarily on the spine and front page. - Total Pages: There Shall Be Maximum 50 Pages with double side printing excluding drawings. - Printing: Font type like Arial/ Times New Roman With 12-point size shall be used for regular typing with 15- point size shall be used for captions. The typing shall be done with 1.5 lines spacing throughout. - The presentation copy shall be necessarily a hard bound copy. Number of copies shall be as prescribed by the college. (1 copy for the student, 1 original copy for the college library and 1 soft copy on a CD.)
Unit III	**Design solution:** Graphically presented design solution with minimum 5000 Sq.M Built up area shall be in form of a drawing portfolio. It shall consist sufficient number of architectural drawings (manually drawn / computerized) with models, etc. Since the architectural project is the culmination of five years of learning in various aspects of architecture, it is expected that student demonstrates an ability of holistic and comprehensive thinking in the areas of, - Site Planning - Structural considerations

	- Space Designing - Landscape Design - Building Services - Climate Responsive, Energy Efficient and Exhibiting Qualities of sustainable architecture. - Architectural Detailing. The portfolio will consist of drawings (minimum of 10 and maximum of 15) sufficiently in detail to demonstrate consideration given to above mentioned attributes. The emphasis shall be given to prepare self-explanatory drawings.

Learning Resources: As required by individual project.

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	The Internal Assessment of "Architectural Project shall be carried out stage wise as decided by the subject Coordinator for the year which shall be announced to the students at the beginning of the semester.	
U.E.	**University Examination**	**60**
	The final assessment in the examination shall be done by both internal and external examiners in which the student will display his/her work and answer all the queries raised by the examiner.	

Capstone Project

Subject Code	**K8503**	**Semester -X**
Credits	**06**	**Subject type-Core**

Learning Objectives	
1	To study interrelationship of all subjects that a student has learned in the curriculum of architectural studies.
2	To understand the architecture as a "craft".

Learning Outcomes; Student will be able to	
1	Develop competence in transforming architectural drawing to professional working document
2	Prepare documents of building design project minimum 500 Sq.M. such as Presentation drawings, Working drawings, Specifications, Quantities, Estimates, and Tender document.

Units	**Contents**
Unit I	Preparation of working drawing, municipal drawing of the above
Unit II	Preparation of Specifications and Bill of Quantities (BOQ)
Unit III	Preparation of Contract Document

Learning Resources	
Text Books:	
Reference Books:	1. Wakita, Osamu A., Richard M. Linde, and Nagy R. Bakhoum (2011) "The Professional Practice of Architectural Working Drawings. 2. Reference drawings from an ISO certified architect's office 3. Handbook of Professional Documents: 2011, Council of Architecture, New Delhi, India 4. Indian Institute of Architects, Handbook
Websites:	
Journals:	Gawne, Eleanor. "Cataloguing Architectural Drawings." Journal of the Society of Archivists 24.2 (2003): 175-187.

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Assignment I: Preparation of Presentation Drawings with rough estimates
2	Assignment II: Preparation of Set of Working Drawings, Specifications, BOQ, and Contract Document

Professional Practice

Subject Code	**K8504**	**Semester -X**
Credits	**4**	**Subject type-Core**

Learning Objectives	
1	To introduce aspects of professional conduct, duties and responsibilities, legal rights and procedures of architectural profession.
2	To enable student to acquaint with various responsibilities of professional architect.
3	To acquaint students with documentation and procedures for execution of building work/projects as well as with management aspects

Learning Outcomes	
1	Visualise various working situations that may arise in practice as an architect
2	Manage his/her professional environment towards fair practice
3	Understand ethics of architectural profession
4	Learn to work with various agencies in practice

Units	**Contents**
Unit I	**Laws, Rules and Guidelines related to Architectural Practice** - Architects Act 1972 - brief overview, introduction to nature, scope and functions of Council of Architecture - Detailed study of professional conduct regulation - Comprehensive architectural services, scale of professional fees as framed by Council of Architecture - Architectural competitions guidelines by Council of Architecture - Architects Liability
Unit II	**Setting up architectural practice as profession, tax liabilities** - Nature of profession, difference between trade, business and profession - Emerging Role of architectural profession - Accounting and taxation - Organization of architects office and different models of business
Unit III	**Land tenures and contracts** - Introduction to valuation, land tenures and easements and dilapidations - Architects role in construction contracts

Learning Resources	
Text Books:	RoshanNamavati (1968). Professional Practice: Estimating and Valuation, , Universal Book Corporation
Reference Books:	MadhavDeobhakta, MeeraDeobhakta (2007) Architectural Practice in India, , Council of Architecture, New Delhi Handbook of Professional Documents: 2011, Council of Architecture, New Delhi, India Indian Institute of Architects, Handbook Standard Contracts, International Federation of Consulting Engineers (FIDIC) The Architect's Handbook of Professional Practice- 2013, American Institute of Architects, John Wiley & Sons.
Websites:	

Journals:	

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Theory paper	60

Self Study

Subject Code	**K8505**	**Semester -X**
Credits	**4**	**Subject type-Core**

Learning Objectives	
1	To facilitate the students to learn out of a pool of specialized subjects, which provides extended scope or which enables exposure to cross-disciplinary subjects
2	To facilitate the students to learn cross-disciplinary subjects.

Learning Outcomes	
1	Engage in systematic self study.

Units	**Contents**
	Under this, the student can select any one subject related the parent course or other than the parent course. The choice of the subject is not restricted. If a student is interested in a subject of a particular discipline he/she has to inform accordingly to the Principal and academic Co-ordinator of that department.

Learning Resources: As required by subject.

Assessment		**Marks**
U.E.	**University Examination**	**100**
	Based on Reports and evidences of the course	