

SANT GADGE BABA AMRAVATI UNIVERSITY GAZETTE



Official Publication of Sant Gadge Baba Amravati University

PART- ONE

Thursday, the 14th November, 2024

DIRECTION

No. 101 /2024

Date :- 14 /11/2024

Subject :- Examination leading to the Degree of Bachelor of Architecture (Five Year Degree Course.. Semester Pattern) (C.B.C.S.) in the Faculty of Science & Technology, Direction 2024.

Whereas, Direction No. 44 of 2021 in respect of the Scheme of teaching & examination of Semesters I to X of Bachelor of Architecture (B.Arch.) as per Credit Grade System in the Faculty of Engineering & Technology is in existence,

AND

Whereas, the letter received from the Registrar, Council of Architecture New Delhi dated 12.12.2021 regarding implementation of the Council of Architecture (Minimum Standards of Architectural Education), Regulation, 2020 placed before the meetings of the Ad-hoc Committee in Architecture dated 14.12.2021 & 11.02.2022 regarding to change the existing Scheme of teaching, learning, examination & evaluation and the existing Syllabus of Semester I to X of the Course Bachelor of Architecture (B.Arch.) as per the norms and the Regulation of Council of Architecture ,

AND

Whereas, as resolved in the above mentioned meetings of the Ad-hoc Committee in Architecture regarding submission of the Schemes of Semester I to X of the Course Bachelor of Architecture (B.Arch.) and recommendation of the same to the Faculty of Science & Technology, the Chairperson of the Committee has submitted final copy of the Draft Schemes of teaching, learning, examination & evaluation of Semester I to X as per CBCS Pattern and as per the norms of the Regulation of Council of Architecture to the University on 23.02.2022 for further process of recommendation and approval to be implemented from the academic session 2022-2023 onwards,

AND

Whereas, the Faculty of Science & Technology vide its meeting held on 19.03.2022 has accepted and approved the recommendation of the Ad-hoc Committee in Architecture regarding the Schemes teaching, learning, examination & evaluation of Semester I to X of the Course Bachelor of Architecture (B.Arch.) as per CBCS Pattern and as per the norms of the Regulation of the Council of Architecture to be implemented from the academic session 2022-2023 onwards,

AND

Whereas, the Academic Council vide its meeting held on 04.05.2022 vide Item No.31 has accepted and approved the recommendation of the Faculty of Science & Technology regarding the Schemes of teaching, learning, examination & evaluation of Semester I to X of the Course Bachelor of Architecture (B.Arch.) as per CBCS Pattern and as per the norms of the Regulation of the Council of Architecture to be implemented from the academic session 2022-2023 onwards,

AND

Whereas, the Ad-hoc Committee in Architecture in its meeting dated 30.6.2022 vide Item No. 11 has submitted and recommended the revised Syllabus of Semester I & II of the Course Bachelor of Architecture (B.Arch.) as per CBCS Pattern as per the approved Schemes of teaching, learning, examination & evaluation of Semester I to X to the Faculty of Science & Technology to be implemented from the academic session 2022-23 onwards,

AND

Whereas, the Honorable Vice-Chancellor has accepted and approved the recommendation of the Ad-hoc Committee in Architecture of its meeting dated 30.6.2022 vide Item No. 11 regarding the revised Syllabus of Semester I & II as per CBCS Pattern and as per Council of Architecture norms to be implemented from the academic session 2022-23 onwards,

AND

Whereas, the Ad-hoc Committee in Architecture as per its resolution in the meeting dated 11.03.2024 vide Item No. 26 regarding the Draft Scheme of Semester V to X, the updated Eligibility Criteria for admission to the Course (B.Arch.) as per the directives of the Council of Architecture norms and the draft syllabus of Semester V to VI, has submitted and recommended the corrected revised Scheme of Semester V to X and the draft syllabus of Semester V to VI as per CBCS Pattern and as per the approved Schemes of teaching, learning, examination & evaluation of Semester I to X to the Faculty of Science & Technology to be implemented from the academic session 2024-25 & onwards,

SANT GADGE BABA AMRAVATI UNIVERSITY GAZETTE - 2024 - PART ONE – 2076

AND

Whereas, the Scheme of teaching, learning, examination & evaluation of Semester I to X of the Course Bachelor of Architecture (B.Arch.) is required to be regulated by amending the respective Ordinance,

AND

Whereas, Direction No. 44 of 2021 dated 09.08.2021 which was issued under Sub section (8) of Section 12 of Maharashtra Public Universities Act, 2016 has to be converted into Statute, Ordinance or Regulation, as the case may be, within 06 months as per the proviso of said section, failing which such Direction shall automatically lapsed,

AND

Whereas, making amendments in the respective Ordinance is a time consuming process.

Now, therefore, I, Dr. Milind Barhate, Vice-Chancellor Sant Gadge Baba Amravati University, in exercise of powers conferred upon me under sub-section (8) of Section 12 of the Maharashtra Public Universities Act, 2016, do hereby direct as under :-

1. This Direction may be called "Examinations leading to the Degree of Bachelor of Architecture (Five Year Degree Course.... Semester Pattern as per Choice Based Credit System) Direction, 2024.
2. This Direction shall come into force w.e.f. its issuance.
3. Subject to the conditions prescribed by the Government from time to time for admission to First Year B.Arch. course, the candidates shall be considered eligible Passing XII standard examination of the Maharashtra State Board of Secondary and Higher Secondary Education / Statutory Body with the subjects:-

1. English (Higher or lower)
2. Modern Indian Language (Higher or lower)
3. Mathematics and Statistics.
4. Chemistry
5. Physics

Any other optional subject from out of the list prescribed by the said Secondary and Higher Secondary Education Board.

OR

1. English (Higher or lower)
2. Mathematics and Statistics
3. Chemistry
4. Physics
5. Vocational course (Defined by the said Board as Technical) Carrying 200 Marks.

OR

As per the directives of the Council of Architecture (Minimum Standards of Architectural Education), Regulation, 2020, in Regulation 4 of sub-regulation (1) the following sub-regulation shall be substituted as under:

"No candidate shall be admitted to the Bachelor of Architecture Course unless the candidate has passed 10 +2 or equivalent examination with Physics and Mathematics as compulsory subjects along with either Chemistry or Biology or Technical Vocational subject or Computer Science or Information Technology or Informatics Practices or Engineering Graphics or Business Studies with at least 45% marks in aggregate or passed 10 +3 Diploma Examination with Mathematics as compulsory subject with at least 45% marks in aggregate."

OR

An Examination recognized by Sant Gadge Baba Amravati University as equivalent to the above.

4. The duration of the course shall be of five Academic years. The final year, IX and X Semester will consist of (a) Practical training and (b) Project work and Dissertation respectively.
5. There shall be ten main examinations. The main examination of first, third, fifth, seventh and ninth semester B.Arch. shall be held by the University in winter & supplementary examination in summer every year, and main examination of second, fourth, sixth, eighth and tenth semester B.Arch. will be held at such places and so such dates as may be notified by the University.
6. The period of academic year / term shall be such as may be notified by the University.
7. The Internal Assessment marks for theory should be based on Class Test and Attendance as follows :-

(a) Class Test - 15

Marks will be based
upon two Class Tests

SANT GADGE BABA AMRAVATI UNIVERSITY GAZETTE - 2024 - PART ONE - 2077

OR

Assignments	
(b) Attendance -	Mark/s
75% to 80% -	1
81% to 85% -	2
86% to 90% -	3
91% to 95% -	4
96% to 100% -	5

Where ever if internal assessment marks are 'ten (10)' then it should be converted out of "20".

8. Subject to his/her compliance with the provisions of this Direction & other Ordinances pertaining to Examination in force from time to time, the applicant for admission, at the end of the course of study of a particular semester/session, to an Examination specified in column (1) of the table I below, shall be eligible to appear if,

- i) he/she satisfies with the conditions in the table and the provisions there under.
- ii) he/she complies with the provisions of the ordinance pertaining to the Examination in general from time to time.
- iii) he/she has prosecuted a regular course of study in a college affiliated to the University.
- iv) he/she has in the opinion of the Principal shown satisfactory progress in his/her studies.

TABLE - I

Name of Exam	The student should have passed the Exam. of	The student should have satisfactorily completed the following semester	The student should have passed following examination
1	2	3	4
First Sem. B.Arch.	XII standard examination or equivalent	-----	-----
Second Sem. B.Arch.	-----	I Semester	-----
Third Sem. B.Arch.	-----	II Semester	2/3 rd heads of I & II Sem. combined together
Fourth Sem. B.Arch.	-----	III Semester	-----
Fifth Sem. B.Arch.	I & II Semester B.Arch.	IV Semester B.Arch.	2/3 rd heads of I & II Sem. combined together
Sixth Sem. B.Arch.	-----	V Semester B.Arch.	-----
Seventh Sem. B.Arch.	III & IV Semester B.Arch.	VII Semester B.Arch.	2/3 rd heads of I & II Sem. combined together
Eighth Sem. B.Arch.	-----	VII Semester B.Arch.	-----
Ninth Sem. B.Arch.	V & VI Semester B.Arch.	VIII Semester B.Arch.	2/3 rd heads of I & II Sem. combined together
Tenth Sem. B.Arch.	-----	-----	-----

9. An examinee who has passed 2/3 rd heads of passing shall be allowed to keep term in the next higher class. Explanation:
 - i) While calculating 2/3 rd heads of passing, fraction if any shall be ignored,
 - ii) For considering the heads of passing, every theory and every practical / sessional shall be considered as separate head of passing, as per scheme of examinations.
10. The schemes of teaching, learning, examination & evaluation of the Course Bachelor of Architecture (B.Arch.) as per CBCS pattern shall be as provided under "Appendix-A" appended with this Direction.
11. The examination fees for each B.Arch. examination shall be as prescribed by the University from time to time.
12. The computation of Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA) of an examinee shall be as given below:-

The marks will be given in all examinations which will include college assessment marks and the total marks for each Theory / Practical / Sessional shall be converted into Grades as per **Table II**.

SGPA shall be calculated based on Grade Points corresponding to Grade as given in Table-II and the Credits allotted to respective Theory / Practical / Sessional shown in the scheme for respective semester.

SGPA shall be computed for every semester and CGPA shall be computed only in X semester. The CGPA of X semester shall be calculated based on SGPA of VII, VIII, IX and X semesters as per following computation:

SANT GADGE BABA AMRAVATI UNIVERSITY GAZETTE - 2024 - PART ONE – 2079

17. As soon as possible after the Examination, the Board of Examinations shall publish a list of successful examinees and merit list for B.Arch. Degree shall be notified under provision of Ordinance No.6.

18. Notwithstanding anything to the contrary in this Direction, no one shall be admitted to an examination under this Direction, if he/she has already passed the same examination or an equivalent examination of any Statutory University.

19. The examinees who have passed in all the subjects prescribed for the first to tenth semesters B.Arch. examination shall be eligible for award of the Degree of Bachelor of Architecture, in the prescribed form signed by the Vice-Chancellor.

20. The Guidelines received from the Council of Architecture (C.O.A.), New Delhi and the D.T.E., Govt. of Maharashtra, Mumbai after having noted / approved by the Competent Authority shall be applicable from time to time.

21. The existing Direction No. 44 of 2021 dated 09.08.2021 has been repealed and replaced by this Direction, since as per proviso 12(8) of Maharashtra Public Universities Act, 2016, the Direction shall have to be converted into Statute, Ordinances or Regulations as the case may be, within 06 months of issuing such Direction, failing which such Direction automatically lapsed.

21. The provisions in the existing Direction No. 44 /2021 shall stand abrogated stage-wise and only applicable to the students of the Course Bachelor of Architecture who have already sought their admissions as per its provisions and shall stand abrogated after exhausting the chances given to the failure students of Old Course by the University.

Date :- 14/11/2024

Sd/-
(Dr.Milind Barhate)
Vice Chancellor
Sant Gadge Baba Amravati University

SEMESTER : FIRST																	
Sr. No.	Subject Code	Subject	TEACHING SCHEME					EXAMINATION SCHEME									
			HOURS / WEEK			Total HOURS/WEEK	CREDITS	THEORY					PRACTICAL				
			Lecture	Tutorial	P/D			Duration Of Paper (Hr.)	Max. Marks Theory Paper	Maximum marks coll. Assessment	Total	Min. Passing Marks	Max. Marks		Total	Min. Passing Marks	
THEORY																	
01	1ARC01	Building Materials & Construction - I	3	--	--	3	3	4	80	20	100	40	--	--	--	--	
02	1ARC02	Architectural Graphics - I	2	--	--	2	2	4	80	20	100	40	--	--	--	--	
03	1ARC03	History of Architecture -I	3	-	--	3	3	3	80	20	100	40	--	--	--	--	
04	1ARC04	Humanities & Social Responsibilities	2	1	--	3	3	3	80	20	100	40	--	--	--	--	
05	1ARC05	Architectural Communication Skills	2	--	--	2	2	3	80	20	100	40	--	--	--	--	
PRACTICALS / DRAWING / DESIGN																	
07	1ARC06	Basic Skills of Design Studio -I	--	--	4	4	6	--	--	--	--	--	75	75	150	75	
08	1ARC07	Building Materials & Construction Studio - I	--	--	4	4	2	--	--	--	--	--	25	25	50	25	
09	1ARC08	Architectural Graphics studio - I	--	--	4	4	2	--	--	--	--	--	25	25	50	25	
10	1AR0C9	Visual Arts Studio	--	--	4	4	2	--	--	--	--	--	25	25	50	25	
TOTAL			12	1	16	29	25	--	--	--	500	--	--	--	300	--	
Grand Total															800		

Note : consider One Hour Lecture/ Tutorial and P/D is equal to one Credit for the subjects of Architectural Design and for all other subjects consider 1 Hour Lecture & Tutorial = 1 Credit & 2 Hours Practical /Design studio = 1 Credit.

FIVE YEAR DEGREE COURSE IN BACHELOR OF ARCHITECTURE: SEMESTER PATTERN CHOICE BASED CREDIT SYSTEM

SEMESTER : SECOND																	
Sr. No.	Subject Code	Subject	TEACHING SCHEME					EXAMINATION SCHEME									
			HOURS / WEEK			Total HOURS/WEEK	CREDITS	THEORY					PRACTICAL				
			Lecture	Tutorial	P/D			Duration Of Paper (Hr.)	Max. Marks Theory Paper	Maximum marks coll. Assessment	Total	Min. Passing Marks	Max. Marks		Total	Min. Passing Marks	
												Int.	Ext.				
THEORY																	
01	2ARC01	Building Materials & Construction - II	3	--	--	3	3	4	80	20	100	40	--	--	--	--	
02	2ARC02	Architectural Graphics - II	2	--	--	2	2	4	80	20	100	40	--	--	--	--	
03	2ARC03	History of Architecture - II	3	--	--	3	3	3	80	20	100	40	--	--	--	--	
04	2ARC04	Theory of Architecture	2	--	--	2	2	3	80	20	100	40	--	--	--	--	
05	2ARC05	Architectural Structure - I	2	1	--	3	3	3	80	20	100	40	--	--	--	--	
PRACTICALS / DRAWING / DESIGN																	
07	2ARC06	Architectural Design Studio II	--	--	4	4	6	--	--	--	--	--	75	75	150	75	
08	2ARC07	Building Materials & Construction Studio - II	--	--	4	4	2	--	--	--	--	--	25	25	50	25	
09	2ARC08	Architectural Graphics studio - II	--	--	4	4	2	--	--	--	--	--	25	25	50	25	
10	2ARC09	Carpentry & Model Making Workshop	--	--	2	2	1	--	--	--	--	--	25	25	50	25	
TOTAL			12	1	14	27	24	--	--	--	500	--	--	--	300	--	
Grand Total															800		

Note : Consider One Hour Lecture/ Tutorial and P/D is equal to one Credit for all the subjects of **Architectural Design Studio** and for all other subjects consider 1 Hour Lecture & Tutorial = 1 Credit & 2 Hour Practical /Design studio = 1 Credit.

FIVE YEAR DEGREE COURSE IN BACHELOR OF ARCHITECTURE: SEMESTER PATTERN CHOICE BASED CREDIT SYSTEM

SEMESTER : THIRD																	
Sr. No.	Subject Code	Subject	TEACHING SCHEME					EXAMINATION SCHEME									
			HOURS / WEEK			Total HOURS/WEEK	CREDITS	THEORY					PRACTICAL				
			Lecture	Tutorial	P/D			Duration Of Paper (Hr.)	Max. Marks Theory Paper	Internal Marks	Total	Min. Passing Marks	Max. Marks		Total	Min. Passing Marks	
												Int.	Ext.				
THEORY																	
01	3ARC01	Applied Materials	2	--	--	2	2	3	80	20	100	40	--	--	--	--	
02	3ARC02	Building Materials & Construction - III	3	--	--	3	3	4	80	20	100	40	--	--	--	--	
03	3ARC03	History of Architecture - III	3	--	--	3	3	3	80	20	100	40	--	--	--	--	
04	3ARC04	Climatology	3	--	--	3	3	3	80	20	100	40	--	--	--	--	
05	3ARC05	Architectural Structure - II	2	1	--	3	3	3	80	20	100	40	--	--	--	--	
PRACTICALS / DRAWING / DESIGN																	
07	3ARC06	Architectural Design Studio - III	--	--	6	6	9	--	--	--	--	--	75	75	150	75	
08	3ARC07	Building Materials & Construction Studio - III	--	--	4	4	2	--	--	--	--	--	25	25	50	25	
09	3ARC08	Architectural Expression & Presentation Skills	--	--	2	2	1	--	--	--	--	--	25	25	50	25	
10	3ARC09	Surveying & Leveling – Lab.	--	--	4	4	2	--	--	--	--	--	25	25	50	25	
TOTAL			13	1	16	30	28	--	--	--	500	--	--	--	300	--	
Grand Total															800		

Note : consider One Hour Lecture/ Tutorial and P/D is equal to one Credit for the subjects of Architectural Design and for all other subjects consider 1 Hour Lecture & Tutorial = 1 Credit & 2 Hours Practical /Design studio = 1 Credit.

FIVE YEAR DEGREE COURSE IN BACHELOR OF ARCHITECTURE : SEMESTER PATTERN CHOICE BASED CREDIT SYSTEM

SEMESTER : FOURTH																	
Sr. No.	Subject Code	Subject	TEACHING SCHEME					EXAMINATION SCHEME									
			HOURS / WEEK			Total HOURS/WEEK	CREDITS	THEORY					PRACTICAL				
			Lecture	Tutorial	P/D			Duration Of Paper (Hr.)	Max. Marks Theory Paper	Internal Marks	Total	Min. Passing Marks	Max. Marks		Total	Min. Passing Marks	
Int.	Ext.																
THEORY																	
01	4ARC01	Architectural Design – IV	2	--	--	2	2	12	100	--	100	40	--	--	--	--	
02	4ARC02	Building Materials & Construction - IV	3	--	--	3	3	4	80	20	100	40	--	--	--	--	
03	4ARC03	History of Architecture - IV	3	--	--	3	3	3	80	20	100	40	--	--	--	--	
04	4ARC04	Landscape Design	3	--	--	3	3	3	80	20	100	40	--	--	--	--	
05	4ARC05	Architectural Structure - III	2	1	--	3	3	3	80	20	100	40	--	--	--	--	
PRACTICALS / DRAWING / DESIGN																	
07	4ARC06	Architectural Design Studio-- IV	--	--	6	6	9	-	--	--	--	--	75	75	150	75	
08	4ARC07	Building Materials & Construction Studio - IV	--	--	4	4	2	-	--	--	--	--	25	25	50	25	
09	4ARC08	Computer Graphics studio - I	--	--	2	2	1	-	--	--	--	--	25	25	50	25	
10	4ARC09	Illustrated Climatology	--	--	4	4	2	-	--	--	--	--	25	25	50	25	
TOTAL			13	1	16	30	28	-	--	--	500	--	--	--	300	--	
Grand Total															800		

Note : consider One Hour Lecture/ Tutorial and P/D is equal to one Credit for the subjects of Architectural Design and for all other subjects consider 1 Hour Lecture & Tutorial = 1 Credit & 2 Hours Practical /Design studio = 1 Credit.

FIVE YEAR DEGREE COURSE IN BACHELOR OF ARCHITECTURE : SEMESTER PATTERN CHOICE BASED CREDIT SYSTEM

SEMESTER : FIFTH																	
Sr. No.	Subject Code	Subject	TEACHING SCHEME					EXAMINATION SCHEME									
			HOURS / WEEK			Total HOURS/WEEK	CREDITS	THEORY					PRACTICAL				
			Lecture	Tutorial	P/D			Duration Of Paper (Hr.)	Max. Marks Theory Paper	Internal Marks	Total	Min. Passing Marks	Max. Marks		Total	Min. Passing Marks	
THEORY																	
01	5ARC01	Building Materials & Construction - V	3	--	--	3	3	4	80	20	100	40	--	--	--	--	
02	5ARC02	History & Theory of Modern Architecture V	3	--	--	3	3	4	80	20	100	40	--	--	--	--	
03	5ARC03	Architectural Structure - IV	2	1	--	3	3	3	80	20	100	40	--	--	--	--	
04	5ARC04	Specification	2	--	--	2	2	3	80	20	100	40	--	--	--	--	
05	5ARC05	(*) Open Elect. – I :	3	--	--	3	3	3	80	20	100	40	--	--	--	--	
PRACTICALS / DRAWING / DESIGN																	
07	5ARC06	Architectural Design Studio - V	--	--	4	4	6	--	--	--	--	--	75	75	150	75	
08	5ARC07	Building Materials & Construction Studio - V	--	--	4	4	2	--	--	--	--	--	25	25	50	25	
09	5ARC08	Computer Graphics- II	--	--	4	4	2	--	--	--	--	--	25	25	50	25	
10	5ARC09	Working Drawing - I	--	--	4	4	2	--	--	--	--	--	25	25	50	25	
TOTAL			13	1	16	30	26	--	--	--	500	--	--	--	300	--	
Grand Total															800		

(*) **Open Elective – I :** (i) Fundamentals of Architecture Design (ii) Landscape Architecture

Note : i) The students will have to opt the Free Elective subjects offered from other Courses of their colleges / Institutions / University Depts. provided regular Faculty shall be available for the subject.
 ii) Consider one hour Lecture/Tutorial and P/D is equal to one Credit for the subjects of Architectural Design and for all subjects consider 1 hour Lecture & Tutorial = 1 Credit & 2 Hour Practical /Design studio = 1 Credit.

FIVE YEAR DEGREE COURSE IN BACHELOR OF ARCHITECTURE : SEMESTER PATTERN CHOICE BASED CREDIT SYSTEM

SEMESTER : SIXTH																	
Sr. No.	Subject Code	Subject	TEACHING SCHEME					EXAMINATION SCHEME									
			HOURS / WEEK			Total HOURS/WEEK	CREDITS	THEORY					PRACTICAL				
			Lecture	Tutorial	P/D			Duration Of Paper (Hr.)	Max. Marks Theory Paper	Internal Marks	Total	Min. Passing Marks	Max. Marks		Total	Min. Passing Marks	
												Int.	Ext.				
THEORY																	
01	6ARC01	Architectural Design – VI	2	--	--	2	2	18	150	--	150	60	--	--	--	--	
02	6ARC02	Building Materials & Construction - VI	3	--	--	3	3	4	80	20	100	40	--	--	--	--	
03	6ARC03	Architectural Structure – V	2	1	--	3	3	3	80	20	100	40	--	--	--	--	
04	6ARC04	Estimating & Costing	3	--	--	3	3	3	80	20	100	40	--	--	--	--	
05	6ARC05	(* Open Elect. – II :	3	--	--	3	3	3	80	20	100	40	--	--	--	--	
06	6ARC06	Building Services & Equipments	3	--	--	3	3	3	80	20	100	40	--	--	--	--	
PRACTICALS / DRAWING / DESIGN																	
07	6ARC07	Architectural Design Studio -VI	--	--	4	4	6	--	--	--	--	--	75	75	150	75	
08	6ARC08	Building Material & Construction Studio- VI	--	--	4	4	4	--	--	--	--	--	25	25	50	25	
09	6ARC09	Interior Design - I	--	--	4	4	2	--	--	--	--	--	25	25	50	25	
10	6ARC10	Working Drawing- II	--	--	4	4	2	--	--	--	--	--	25	25	50	25	
TOTAL			16	1	16	33	31	--	--	--	650	--	--	--	300	--	
Grand Total															950		

(* **Open Elective – II :** (i) Contemporary Architecture (ii) Vernacular Architecture

Note : (i) The students will have to opt the Free Elective subjects offered from other Courses of their colleges / Institutions / University Depts. provided regular Faculty shall be available for the subject.

FIVE YEAR DEGREE COURSE IN BACHELOR OF ARCHITECTURE : SEMESTER PATTERN CHOICE BASED CREDIT SYSTEM

SEMESTER : SEVENTH																	
Sr. No.	Subject Code	Subject	TEACHING SCHEME					EXAMINATION SCHEME									
			HOURS / WEEK			Total HOURS/WEEK	CREDITS	THEORY					PRACTICAL				
			Lecture	Tutorial	P/D			Duration Of Paper (Hr.)	Max. Marks Theory Paper	Internal Marks	Total	Min. Passing Marks	Max. Marks		Total	Min. Passing Marks	
												Int.	Ext.				
THEORY																	
01	7ARC01	Advance Construction - I	2	--	--	2	2	4	80	20	100	40	--	--	--	--	
02	7ARC02	Environmental Services - I	3	--	--	3	3	3	80	20	100	40	--	--	--	--	
03	7ARC03	Professional Practice & Valuation	3	--	--	3	3	3	80	20	100	40	--	--	--	--	
04	7ARC04	Urban Planning	2	--	--	2	2	3	80	20	100	40	--	--	--	--	
05	7ARC05	Architectural Structure - VI	2	1	--	3	3	3	80	20	100	40	--	--	--	--	
06	7ARC06	Acoustics & Illumination	2	1	--	3	3	3	80	20	100	40	--	--	--	--	
PRACTICALS / DRAWING / DESIGN																	
07	7ARC07	Architectural Design Studio - VII	--	--	6	6	9	--	--	--	--	--	100	100	200	100	
08	7ARC08	Advance Construction - Studio - I	--	--	3	3	3	--	--	--	--	--	25	25	50	25	
09	7ARC09	Interior Design - II	--	--	3	3	3	--	--	--	--	--	25	25	50	25	
10	7ARC10	Urban Planning Studio	--	--	3	3	3	--	--	--	--	--	25	25	50	25	
TOTAL			14	2	15	31	34	--	--	--	600	--	--	--	350	--	
Grand Total															950		

Note : consider One Hour Lecture/ Tutorial and P/D is equal to one Credit for the subjects of Architectural Design and for all other subjects consider 1 Hour Lecture & Tutorial = 1 Credit & 2 Hours Practical /Design studio = 1 Credit.

FIVE YEAR DEGREE COURSE IN BACHELOR OF ARCHITECTURE : SEMESTER PATTERN CHOICE BASED CREDIT SYSTEM

SEMESTER : EIGHTH																	
Sr. No.	Subject Code	Subject	TEACHING SCHEME					EXAMINATION SCHEME									
			HOURS / WEEK			Total HOURS/WEEK	CREDITS	THEORY					PRACTICAL				
			Lecture	Tutorial	P/D			Duration Of Paper (Hr.)	Max. Marks Theory Paper	Internal Marks	Total	Min. Passing Marks	Max. Marks		Total	Min. Passing Marks	
												Int.	Ext.				
THEORY																	
01	8ARC01	Architectural Design - VIII	2	--	--	2	2	24	200	--	200	80	--	--	--	--	
02	8ARC02	Advance Construction - II	2	--	--	2	2	4	80	20	100	40	--	--	--	--	
03	8ARC03	Environmental Services - II	3	--	--	3	3	3	80	20	100	40	--	--	--	--	
04	8ARC04	Sustainable Architecture	3	--	--	3	3	3	80	20	100	40	--	--	--	--	
05	8ARC05	Innovative Structural System	2	1	--	3	3	3	80	20	100	40	--	--	--	--	
06	8ARC06	(*) Professional Elective – I :	3	--	--	3	3	3	80	20	100	40	--	--	--	--	
PRACTICALS / DRAWING / DESIGN																	
07	8ARC07	Architectural Design Studio- VIII	--	--	6	6	9	--	--	--	--	--	100	100	200	100	
08	8ARC08	Advance Construction Studio - II	--	--	3	3	3	--	--	--	--	--	25	25	50	25	
09	8ARC09	Landscape Design - Studio	--	--	3	3	3	--	--	--	--	--	25	25	50	25	
TOTAL			15	1	12	28	31	--	--	--	700	--	--	--	300	--	
Grand Total															1000		

(*) **Professional Elective – I :** (i) Housing (ii) Architectural Conservation (iii) Sustainability Assessment & Rating Systems

FIVE YEAR DEGREE COURSE IN BACHELOR OF ARCHITECTURE : SEMESTER PATTERN CHOICE BASED CREDIT SYSTEM

SEMESTER : NINETH																
Sr. No.	Subject Code	Subject	TEACHING SCHEME					EXAMINATION SCHEME								
			HOURS / WEEK			Total HOURS/WEEK	CREDITS	THEORY					PRACTICAL			
			Lecture	Tutorial	P/D			Duration Of Paper (Hr.)	Max. Marks Theory Paper	Internal Marks	Total	Min. Passing Marks	Max. Marks		Total	Min. Passing Marks
											Int.	Ext.				
SESSIONAL / PRACTICAL																
01	9ARC01	Practical Training	--	--	--	--	26	--	--	--	--	--	150	150	300	150
TOTAL			--	--	--	--	26	--	--	--	--	--	--	--	300	--
													Grand Total		300	

Note : Practical Training shall be for Six (60) months in Architectural Firms approved by the Institutions.

FIVE YEAR DEGREE COURSE IN BACHELOR OF ARCHITECTURE : SEMESTER PATTERN CHOICE BASED CREDIT SYSTEM

SEMESTER : TENTH																	
Sr. No.	Subject Code	Subject	TEACHING SCHEME					EXAMINATION SCHEME									
			HOURS / WEEK			Total HOURS/WEEK	CREDITS	THEORY					PRACTICAL				
			Lecture	Tutorial	P/D			Duration Of Paper (Hr.)	Max. Marks Theory Paper	Internal Marks	Total	Min. Passing Marks	Max. Marks		Total	Min. Passing Marks	
THEORY																	
01	10ARC01	(* Prof. Elective – II :	2	1	--	3	3	3	80	20	100	40	--	--	--	--	
PRACTICALS / DRAWING / DESIGN																	
02	10ARC02	Architectural Project / Thesis	--	6	12	18	27	--	--	--	--	--	150	150	300	150	
03	10ARC03	Research Methodology & Writing	2	1	---	3	3	--	--	--	--	--	----	100	100	50	
04	10ARC04	Seminar	---	----	6	6	3	--	--	--	--	--	----	100	100	100	
TOTAL			4	8	18	30	36	--	--	--	100	--	----	--	500		
Grand Total															600		

(* Prof. Elective – II : (i) Sustainable Cities & Communities (ii) Climate Responsive Architecture (iii) Traffic Awareness & Transport Planning

NOTIFICATION

No. 106 /2022

Date : 10/08/2022

Subject : Implementation of new Syllabi of Semester I & II of B.Arch. (C.B.C.S.)

It is notified for general information of all concerned that the authorities of the University have accepted to implement new Syllabus of Semester I & II of Bachelor of Architecture (B.Arch.) (C.B.C.S.) to be implemented from the academic session 2022-23 onwards as per “**Appendix – A**” as given below:

Sd/-
(Dr.T.R.Deshmukh)
Registrar

“**Appendix – A**”

SYLLABUS OF SEMESTER I & II of B.Arch. [C.B.C.S.]

SEMESTER – FIRST

1ARC01 BUILDING MATERIALS & CONSTRUCTION - I

Course Objective:

To develop understanding of building materials and its application in construction of various building elements. The subject also aims at introducing students with design ability for integrating building elements with conscience of construction techniques in architectural spaces .

Unit I : Introduction to the subject and its relevance in Architecture General introduction of various components of building and materials from foundation to roof.

Different types of soils , load bearing capacity selection of basic Structural Systems, Load Bearing , Framed and Composite structures, brief idea about load transmission .

Unit II: Mud and Clay: as the most ancient material, adobe , wattle and dobe construction-vernacular construction system, soil stabilization , stabilized blocks – use for walling , roofing , plaster of walls – non erodible plasters . Brief introduction on manufacturing of clay bricks

Unit III: Bricks. Sundried & Burnt Bricks, different types of bricks, good quality bricks, manufacturing process , bricks made from other materials and blocks , terracotta bricks . its properties –suitability , Fly ash bricks , Autoclaved concrete blocks , hollow bricks. Innovation in different types of brick arches, various patterns in brick walls, floors and roof construction , guna tiles , decorative brick work and patterns in brick jalis and floor , brick paving patterns

Unit IV: Drawings of different types Brick arches, lintels, bonds in bricks, end junctions, attached and detached piers, jointing and pointing. Brick foundations for wall and piers. Cavity walls & rat trap bonds. DPC and its uses. Plinth filling details.

Unit V: Stone and it’s types, stone as a building material , tests for Stone- deterioration – preservation of stone – various stone finishes – cutting and polishing of various types of stones, stone as a natural building material for foundations, walls, roof, as structural elements .

Unit VI: Drawings of types of masonry – random rubble/Ashlar, etc. - cavity walls- flooring – copings, sills, lintels, corbels, Stone foundation for wall and piers. Types of arches in stones.

NOTE: Sessionals in the form of drawings sheets, Assignments and models. Construction site visits are essential for practical exposure. Hands on practical experience on handling different types of materials and construction is desired .

References:

- 1.S.C. Rangwala, Engineering Materials, Charotar Publishing House, Anand,1997
2. HUDCO - All you want to know about soil stabilized mud blocks, HUDCO Pub, New, Delhi, 1989.
3. W.B. Mckay Building Constrution, vol. 1, 2, 3, Longmans, U.K.1981.
4. Don A Watson, Construction Materials and Processes, McGraw Hill Co., 1972.

1ARC02 ARCHITECTURAL GRAPHICS - I

Course Objective:

To sensitize students about the significance of graphic fundamentals & train to understand, develop good drafting skill for Architectural drawings. Importance different line intensities, line weights, thickness, handling different drafting equipments and tools.

Unit I: Introduction to drafting procedures, lines, different types of Architectural Letterings and dimensioning techniques. Architectural annotations and conventions including representation of various building materials and building components, different scales graphic codes and symbols.

Unit II: Construction of Architectural scales (plain scales, diagonal scale, isometric scale). Reduction and enlargement of drawings on different scales.

Unit III: Construction of basic and complex geometrical shapes and curves.

Unit IV: Principles and projection methods of orthographic projection (third angle projection). Orthographic projection of simple, complex solids and hollow object.

Unit V: Projection of straight lines, planes, solids, sections of solids and Development of surfaces illustrated on practical examples.

Unit VI: Measured drawings of an existing structure . Architectural elements illustrated by standardized architectural drawing methods.

References:

1. Bhatt N.D. and Panchal V. M. Engineering Drawing, Charotar Publishing House, Gujrat, 1996.
2. I. H. Morris, Geometrical Drawing for Art students-Orient Longman, Madras, 1982 .

1ARC03 HISTORY OF ARCHITECTURE - I

Course Objective : Art and History as Cultural Heritage:

Art and culture goes hand in hand . Various forms of Art have enriched Architecture , History of Architecture exposes the student to evolution of different architectural styles & solutions through historical periods to understand the influence of geographical , topographical , climatic , social , cultural and economic condition of that period and use of appropriate building materials, construction techniques, planning and designing features.

Creation of Art & Architecture is a struggle - journey to explore what is there within . Different form of Art - paintings , sculptures, , relief work – high , low & bass relief work form an eternal link between art , culture and Architecture through various stages of history.

Unit I: Introduction to the course – Old Stone Age – the agricultural revolution – The New stone age- Development of shelter. Prehistoric to Early Civilization

Unit II: Most Ancient Civilizations of the World. River valley civilizations and Cultures – Indus (India), Nile (Egypt), Tigris & Euphrates (Mesopotamia), Yellow River / Yangtse (China) its Architectural Significance, Social & Cultural impact

Unit III: Defining Culture and study of patterns of settlement in India. Impact of Aryan culture – Vedic villages and the rudimentary forms of bamboo and wood. Origin of wooden construction under the Mauryan rule, Buddhist Schools during Ashokan period.

Unit IV: Comprehensive survey of Indian and Western sculptures of different periods, thematic study of cultural influence . Freestanding & Relief Sculptures

Unit V: Cave painting - Frescos and Murals of Ajanta, Bagh, Badami, Ellora, Hampi, etc; Mythological influence; Techniques and characteristics.

Unit VI: Miniature painting – Indian and Islamic miniature paintings; Influence of changing period; Artist, subjects and techniques.

Sessional work : Assignments and drawing on the above topics.

References:

- 1 Janson, H. W. History of Art, New York, 1978. .
- 2 Tomory Edith, A History of Fine Arts in India and the west; Orient Longman, 1995.
- 3 Sir Banister Fletcher, A History of Architecture, University of London, The Antholone press, 1986.

1ARC04 - HUMANITIES & SOCIAL RESPONSIBILITIES

Course Objective: To understand the World History System & Knowledge . History of Culture by understanding the stages Human Development & Sociology ,to sensitize students about the social issues & their significance in Architecture by being a responsible citizen .

Unit-I : Evolution of Significant settlements Patterns world wide along the Timeline

Unit II : Development of Agriculture ,Water Conservation Methods , Greyware & Redware . Development of Language and methods of writing like on Papyrus Leaves , Clay Tablets , Hieroglyphs , Bhurjpatra . Most ancient libraries of world as sources of knowledge

Unit-III: Development of Civilization , Archeological Evidences ,Study of Lost Cities like Susa, Mari , Harappa , Ur , Knossos . Mycenae , Patliputra , Persepolis . Aspects of civilization with respect to culture, language, arts, literature.

Unit-IV: Meaning of Culture , Evolution with religions, customs and philosophies-eastern and western. Social virtues and civic responses in different cultures - Historical developments, India as a cradle of Civilization , significance as a silk route .

Understanding Legacy of Social & Cultural Reforms in India – Philosophies & Works of Raja Ram Mohan Roy , Ishwarchand Vidyasagar , Shahu Mahartaj , Mahatma Phule , Savitribai Phule , Dhondo Keshav Karve , Gopal Ganesh Agarkar , Karmaveer Bhaurao Patil , Dr. Babasaheb Ambedkar , Dr. Panjabrao alias Bhausaheb Deshmukh

Unit-V: Study of salient features of Constitution of India , Duties , Sensitization students of basic Civic sense and responsibility at various levels

Unit-VI: Edicts of Ashoka , Gandhian Philosophy , 4 H Principles – Head , Heart , Hand & Health (Universal Health). Different types of Economies – Economy of Permanence. Environmental Awareness ,Group Dynamics & Social behavior, Status and Role in the society

Reference Books :

1. Urban Pattern by Arthur & Gullion
2. The Economy of Permanence by J.C. Kumarappa
3. Unto the Last by Jhon Ruskin
4. Town Planning by H.K. Hiraskar
4. Rise and Development of Religion by Dr. Panjabrao Deshmukh in Vedic Literature

1ARC05 ARCHITECTURAL COMMUNICATION SKILLS

Course Objective – Develop Good Communication Skill , sensitizing about the roots of words , their **Etymology** , **Prefix & Suffix** . Significance & Development of writing skill as students of Architecture , use of appropriate words , developing vocabulary , word power , Architectural Vocabulary- Illustrative methods of Expression . Developing Skill of Conducting Meeting & Protocol – How to conduct Meeting

Unit I: Comprehension Skills: 1. Skimming for general ideas 2. Contextual vocabulary 3. Summarizing, note-making 4. Ability to answer factual, inference and personal response questions

Unit II: Writing Skills: 1. Architectural reports, inspection reports 2. Paragraph developments 3. Visual Interpretation

Unit III: Architectural Communications 1. Verbal and visual presentations on architectural terminology such as promenade, vista, forum, sky-line, capital 2. Presenting architectural concepts with the help of texts, drawings, transparencies, slides, video, photographs, models etc.

Unit IV: Other forms of written communications 1. Job applications 2. Official Correspondence 3. Preparation of curriculum vitae, resume

Unit V: Public speaking and presentation skills Non verbal communication - personal appearance, posture, gesture, facial expression, eye contact etc.

Unit VI: Methodology of conducting meetings, conferences, seminars, workshops and group discussions. Storytelling & Narration. Office setup, culture and preparation of Design Proposals.

References Books:

1. Developing Communication Skills; Krishna Mohan, Meera Banerjee : Macmillan
2. English for Practical Purposes : Z.N.Patil, B.S.Walake, Ashok Thorat, Zeenat Merchant : Macmillan
3. Business Communication : V.K.Jain, Omprakash Biyani : S.Chand and Company.

Sessional Work : Assignments, reports, seminars and Computer-aided presentation on above topics

1ARC06 BASIC DESIGN SKILLS STUDIO - I

Course Objective:

To impart students an overview of the profession of Architecture and to develop a comprehensive understanding of Design fundamentals.

Introduction to Architecture:

A brief summary of Architecture – its various definitions, aspects/ dimensions, approaches through different ages and factors affecting architecture of a region.

- 1) Introduction to elements of Design like point, line, plane, solid and void etc. with respect to their expression quality.
- 2) Introduction and Importance of Design principles like Balance, Harmony, Rhythm, Contrast, Symmetry, Scale, Proportions etc. leading to unity in design.
- 3) Creation of two and three- dimensional composition of abstract and non abstract architectural nature.
- 4) Introduction to external and internal form concept, their quality, concept of space, relation of space and volume
- 5) Relationship between basic design and Architectural Design, comprehensive understanding of space, form, order and design.
- 6) Preparation of 3D models based above assignments to understand the volumetric concepts by using different materials and textures.

Sessional work: Assignments and drawing on the above topics.

Viva Voce by external examiner at the end of Semester.

Suggested Text Books:

1. Ching, F.D.R. : Form, Space and Order, Van Nostrand Rheinhold, New York (1979).
2. Parmar V.S.: Design Fundamentals in Architecture, Somoiya Publications, Bombay (1973)
3. Scott: Design Fundamentals 4. Edward d Mills- Planning the Architects Hand Book – Bitterworth, London, 1985.

1ARC07 BUILDING MATERIALS & CONSTRUCTION STUDIO - I

Sessional work : Assignments and drawing on the topics given in subject **01AR01** Building Materials & Construction-I.

Viva Voce by external examiner at the end of Semester.

1ARC08 ARCHITECTURAL GRAPHICS STUDIO - I

Sessional work : Assignments and drawing on the topics given in subject **01AR02** Architectural Graphics I.

Viva Voce by external examiner at the end of Semester.

1ARC09 VISUAL ARTS STUDIO

Objective : To sensitize students about importance of Art , Visual Art . nature of Art . Science & Art serve humanity in complementary ways , purpose is to create an awareness among students about Visual Thinking , Aesthetics , Art & Beauty and develop an understanding of principles of design in visual arts.

Unit I : Introduction & definition of art – the necessity of Art , Purposes & Functions of Arts and meanings of the work of art – Technical language of the art – Technique of looking and appreciation of art form.

Visual thinking , Art & experience Drawing – architecture – sculpture – paintings – printing , arts , serigraph , lithographic prints . Experimentation in Art Exercises inspired from different Schools like Bauhaus , Shanti Niketan , Bengal school of Arts , JJ. School of Arts.

Colour in Architecture . Colour as Stimulus . Different Colour Theories – Goeth , Paul Klee Kandinsky .Application of colour in architecture Effect of colour in architecture – colour symbolism.

Unit II: Composition Basic Design. Visual elements -Line , shape, mass, light, color, texture. Principles of Design

Understanding order , scale, proportion, proximity, visual tension, balance and rhythm co-ordination skills . Develop different types of perceptions – visual , tactile

Unit III : Basic Design – harmony character , sense of solid and void , the hollow , positive spaces , form – space inter relation, juxtaposition, and a contrast , sketching skills indoor and outdoor sketching , life drawing - rapid sketching , creative skills , Sculpture in different materials – clay , wire , rope , jute , paper . Sensitizing & developing students about the idea of Space – time , Spatial sequence , aesthetics & kinesthetics

Unit IV : Fabonnaci Series , Golden Ration , Gesalt Theory , Teachers and Experimentation at Bahaus , Johannes Itten , Kandisky , Schlemmer

Unit V : Hues , grades & different scales of grey & color , Language & Art of Graphic Design , Significance of White Space in Graphic Design , Logo Designs , Different types & fonts , Calligraphy

Unit VI: Impressionism/Expressionism/Cubism/Fauvism Futurism/ Purism / Abstract Art/ Art Installations . Indian Schools , Shanti Niketan , Bengal School , Progressive Art Group- Famous works of contemporary artist, sculptors from West & India.

Sessional work : Assignments and drawing on the above topics.

Viva Voce by external examiner at the end of Semester.

References :

- 1.Jax Themier, B.W., "How to paint and draw", Thames and Hudson, 1985
- 2.Gill, R.W., "Rendering with Pen and Ink", Thames and Hudson, 1985
3. "Principles of three Dimensional Design" by Wucious Wong
4. "Principles of Two Dimensional Design" by Wucious Wong.

SEMESTER - SECOND

2ARC01 BUILDING MATERIALS & CONSTRUCTION-II

Course Objective :

To enable students about the learning in progression, starting from simple building elements, components, materials and construction techniques to develop strong sense of visualization.

Unit I : Timber and allied products Timber – Properties and uses – Defects, Conversion, Seasoning, decay and preservations of timber – Unit II : Fire retardant treatment, anti-termite treatment. Industrial timbers – plywood, blockboard, particle board, fibre boards. Manufacture and uses – advancements & developments.

Unit III : Timber doors and windows Drawings of timber joinery for windows, doors, ventilators. Types of timber doors such as ledged, braced and battened, panel, glazed, flush doors.

Unit IV : Types of windows such as Fixed, side and top hung, pivoted, louvered, ventilators and fanlights

Unit V : Timber partitions, paneling, wall paneling. Timber staircases – Designed staircase

Unit VI : Timber trusses – lean to – close couple – Kingpost – Queen post – Trusses.

References:

1. S.C. Rangwala, Engineering Materials, Charotar Publishing House, Anand,1997.
2. W.B. McKay Building Construction, vol. 1,2,3, Longmans, U.K.1981. .
3. Don A Watson, Construction Materials and Processes, McGraw Hill Co.,1972.
4. R.Chudleu,'Building Construction Handbook', British Library Cataloguing in Publication, Data, London, 1990.
5. S.C.Rangwala, Engineering Materials, Charotar Pub.House, Anand, 1997.

2ARC02 ARCHITECTURAL GRAPHICS -II

Course Objective:

To make students understand the idea of drawing as a Language of Architecture and its expression . Develop the skill of drawings in by means of visual thinking , develop skill of observation , drawing objects , elements , perspective & isometric view, & Sciography

Unit I: Measured drawing of simple objects (like furniture, entrance gates, etc) and building components (like columns, cornice, door, window, etc.)

Unit II : Introduction to architectural presentations techniques, isometric and oblique three dimensional views, conical projections, perspectives, one point and two point. Development of surfaces.

Unit III : Perspective Introduction to basic terms, principles, types and techniques of perspective drawing: realistic expression of ideas.

Unit IV : Two point perspective of simple objects. (drafted and free hand) presentation of interior and exterior views in one point perspective .

Unit V : Introduction of basic principles of Sciography and it's application to the field of architecture - two dimensional objects in plan and elevation

Unit VI : Sciography of three dimensional objects in plan and elevation and views. (isometric, Axonometric and Perspective) simple building element

References:

1. Bhatt N.D. and Panchal V. M. Engineering Drawing, Charotar Publishing House, Gujrat, 1996.
2. Clande Batley, Indian Architecture, D.B. Taraporevale Sons and Co. Ltd., Bombay.
3. John M. Holmes, Applied Perspective, Sir Isaac, Piotman and Sons Ltd., London 1954
4. Robert W. Gill, Basic Perspective, Thames and Hudson, London, 1974.

2ARC03 HISTORY OF ARCHITECTURE - II

Course Objective :

We learn from the wisdom of our ancients . History of Architecture enrich the students by exploring our treasures of past , study the evolution of different architectural styles through different periods , understand the influence of geographical , topographical , climatic , social , cultural and economic condition on Architecture and use of appropriate building materials, construction techniques, planning and designing features.

Unit I: Rock cut Architecture, Hindu, Buddhist & Jain Caves – Ajanta, Ellora, Pitalkhora, Nasik , Bhaja, Bedse caves, Karla, Kanheri caves & Elephanta, Rani gumpha (Bhubaneswar), Udaigiri. Takt-i-bhai Buddhist Monastery, Gandhara, Most ancient Lomus Rishi Cave-Barabar.

Unit II: Architecture of Hinayana and Mahayana Buddhism. Interaction of Hellenic & Indian Ideas in Northern India – Architecture during Ashoka's rule – Ashokan Pillar, Sarnath , Sanchi Stupa. Salient features of a Chaitya hall and Vihara, Tibetan Architecture

Unit III: Hindu Architecture - Evolution of form of Temple, Symbolism, Coding & decoding of Spatial Sequence in Temples.

Unit IV: Different Styles of Temple Architecture. Comparison between North Indian & South Indian Temples during Gupta and Chalukyan periods

Unit V: Early Chalukyan Architecture at Aihole, Badami, Pattadakal Late Chalukyan/ Hoysala Style Dravidian Architecture under Pallavas – Shore Temple, Mahaballipuram, Dravidian Order, Brihadeeswara Temple-Tanjore , Minakshi Temple-Madurai.

Unit VI: Northern/ Indo Aryan style – Orissa , Khajuraho (Central India) , Salient features of an Indo Aryan Temple – Lingaraja Temple, Bhuvanewar – Sun temple, Konarak Kunds and Vavs, Sabali Kund Vav – Adalaj, Surya kund-Modhera.

Sessional work: Assignments and drawing on the above topics.

References:

1. Sir Banister Fletcher, A History of Architecture, University of London, The Antholone press, 1986.
2. Percy Brown, Indian Architecture (Buddhist and Hindu Period), Taraporevala and Sons, Bombay, 1983
3. Satish Grover, The Architecture of India (Buddhist and Hindu Period), Vikas Publishing Housing Pvt. Ltd., New Delhi, 1981
4. Christopher Tadgelli, The History of Architecture in India from the Dawn of Civilization to the end of Raj, Longman group, U.K.Ltd., London, 1990.

2ARC04 THEORY OF ARCHITECTURE

Course Objective :

To understand the Spirit and soul of principles of Architecture pertaining to visual and aesthetic aspects of architecture. Comparisons with nature and other forms of visual art are intended to be understood through study of examples.

Unit I: Trinity of Architecture, introduction to Architecture, understanding Architecture, interpreting, reinterpreting, coding -decoding Architecture. Thoughts on Architecture by eminent personalities. Different schools of thought in Architecture & their influence

Unit II: Scope of Architectural Design, Architectural design – An analysis – Integration of aesthetic and function.

Unit III : Architecture as a narrative. Architecture as subjective & Objective Expression. Narrating Architectural thinking from concept to manifestation.

Unit IV : Architectural space , Mass and Space, Visual and Emotional effects of geometric forms and their derivatives – the sphere, the cube, the pyramid, the cylinder and cone.

Unit V : Aesthetic components of Design Proportion, scale, balance, rhythm, symmetry, hierarchy, pattern and axis with building examples. Subtractive & additive surfaces & forms, Fenestration Exercises

Unit VI : Influence of Industrial Revolution on Architecture and contribution by Masters in Architecture. Architectural Orders.

Sessional work: Assignments and drawing on the above topics.

References:

1. Paul Alan Johnson – The Theory of Architecture – Concepts and themes, Van Nostrand Reinhold Co., New York, 1994.
2. V.S.Pramar, Design Fundamentals in Architecture, Somaiya Publications Private Ltd., New Delhi, 1973
3. Francis D.K.Ching, Architecture – Form, Space and Order, Van Nostrand Reinhold Company, New York, 1979
4. Helm Marie Evans and Caria David Dunneshil, an initiation to design, Macmillan Publishing Co.Inc., New York, 1982.

02AR05 ARCHITECTURAL STRUCTURE - I

Course Objective : To introduce students the Theory and Design of Structure , understand the necessity of studying the subject & significance of studying the structural components from foundation to the roof The course also envisage the simple types of structural elements followed by determination of forces and stresses .

Unit I: introduction to the Theory and Design of Structure , its importance in Architecture .Technical terms for various structural components of the buildings from foundation to the roof . Fundamentals of Mechanics .

Unit II: Forces & Moments , Determination of forces in members of frames by analytical and graphical methods . Concurrent and non-concurrent coplanar forces, moment, conditions of equilibrium.

Unit III: Understanding Stress, strain . Shear force and bending moment diagrams for strained beams subjected to concentrated and distributed loads

Unit IV: : Centroid and moment of inertia of plain areas, parallel axis theorem, moment of inertia, principal axis

Unit V: Bending stresses , shear stresses and deflection in simply supported beams

Unit VI : Determination of support reactions using visual work principles

Sessional work : Assignments and tutorials on the above topics.

References:

1. P.C.Punmia, Strength of Materials and Theory of Structures; vol I, Laxmi Publications, Delhi 1994.
2. S.Ramanmurtham, Strength of Materials – Dhanpatrai & Sons, Delhi 1990
3. W.A.Nash, Strength of Materials – Schaums Series – McGraw Hill Book Company, 1989
4. R.K.Bansal – engineering Mechanics and Strength of Materials – Lakshmi Publications, Delhi, 1990.

02ARC06 ARCHITECTURAL DESIGN STUDIO - II

Course Objective : To introduce architectural design as a process and as a final product; to understand fundamentals of space, form and order through basic perception of architectural skills.

Basic Exercises:

1. Study of anthropometrics and their relationship with the dimensioning of objects of daily use viz. furniture, fixtures equipments vehicles, etc; determining space for activities, such as, living, dining, sleeping, conveniences, etc.
2. Measured drawing of small building, such as a small house or office, etc.
3. Simple circulation/flow diagrams for a small house or a small school or hostel or an office to understand the functional interrelationships of various spaces in building.

4. Three dimensional organization of a variety of forms to create built forms and importance of shades and shadows in the entire composition. Layout of repetitive units within a site to create interesting and functional compositions.

5. Design exercise (Two Nos.) of small space structures or buildings such as, compound wall, gate, milk booth, vendor stall, guard room, cycle stand, bus stop/ shelter. Etc.

6. To prepare different views such as, Perspective, Hexanometric and Isometric views to express the building design and hands on exercises for 3D model.

Sessional work Assignments and drawing on the above topics.

Viva Voce by external examiner at the end of Semester.

Suggested text books :

1. Ching, F.D.R. : Form, Space and Order, Van Nostrand Rheinhold, New York (1979).
2. Parmar V.S.: Design Fundamentals in Architecture, Somoiya Publications, Bombay (1973)
3. Scott: Design Fundamentals
4. Edward d Mills- Planning the Architects Hand Book – Bitterworth, London, 1985.

2ARC07 BUILDING MATERIALS & CONSTRUCTION STUDIO - II

Sessional work: Assignments and drawing on the topics given in the subject 02AR01 Building Materials & Construction-II Viva Voce by external examiner at the end of Semester.

2ARC08 ARCHITECTURAL GRAPHICS STUDIO - II

Sessional work: Assignments and drawing on the topics given in the subject 02AR02 **Viva Voce** by external examiner at the end of Semester.

2ARC09 CARPENTRY & MODEL MAKING WORKSHOP

Course Objective : To make students aware of the skill of Model making as one of the tool for creative thinking and to understand it's practical application in construction . The students are to made acquainted to the different tools & materials in model making, the quality of materials, its properties and its response.

Unit I: Study and preparations of wooden joineries required in timber constructions.

Unit II: Use of clay, Plaster of Paris, metal scrap, Jute fiber, bamboo sticks, Papier-mache etc. for study of forms.

Unit III: Development of surfaces of simple and composite forms using paper, foam sheets, wire. Model making with different materials.

Unit IV: Introducing various tools, machineries and equipments of model making in card & mount boards, wood – soft wood (e.g. Balsa), teak wood, plywood, mdf, foam & acrylic sheets, aluminum sheets

Unit V: Paintings on Terracotta/ ceramic/ Cloth –items in context with Architectural theme.

Unit VI: Carvings on Soap/ Soft wood/ Chalk, etc based on Historical theme.

Sessional work: Assignments and drawing on the above topics.

Viva Voce - by external examiner at the end of Semester.

References:

1. Wenninger (Magrus.J.) Spherical Models, Cambridge University Press, 1979.
2. John W. Mills, The Technique of Sculpture, B.T.Batsford Ltd., New York Reinhold Publishing Corpn., London, 1966.

NOTIFICATION

No. 111/2023

Date : 14/08/2023

Subject : Implementation of new Syllabi of Semester III & IV of Bachelor of Architecture (B.Arch.) (CBCS) as per Council of Architecture norms.

It is notified for general information of all concerned that the authorities of the University have accepted to implement the new Syllabi of Semester III & IV of Bachelor of Architecture (B.Arch.) (CBCS.) as per Council of Architecture norms to be implemented from the academic session 2023-2024 onwards as per “**Appendix – A**” as given below:

Sd/-
(Dr. T.R. Deshmukh)
Registrar
Sant Gadge Baba Amravati University

“Appendix A”

SEMESTER : III

03ARC01 APPLIED MATERIALS

Objective: To develop understanding of building materials and its application in construction of various building elements. The subject also aims at introducing students with the various types of building finishing materials.

Unit I: Different types of furnishing and finishing materials for Interior and Exterior surfaces. Special finishes like aluminum based materials, anti-corrosive and water bound paints.

Unit II: Paving and Cladding materials-natural and artificial, its types, properties & behavior.

Unit III: Polymers and polymer based materials for walls, pipes, sanitary ware, glues and mastic. Polycarbonate and acrylic materials, its properties.

Unit IV: Manufactured timber based materials for interior such as plywood's, veneers, mica, laminates, etc. Types of materials useful for false ceiling, its properties.

Unit V: Material useful for different types of partitions. Aluminium, plastic, glass and different alloy and its application in the building industry.

Unit VI: Introduction to appropriate and cost effective building material. Viz; stabilized mud blocks, adobe, bamboo, terracotta, filler slab etc.

Sessional work: Test, assignment and Material survey report.

Reference Books :

1. S.C. Rangwala, Engineering Materials, Charotar publishing House, Anand, 1997.
2. R.K. Rajput, Engineering Materials.
3. Don. A. Watson, Construction Materials and processes, Mc Graw Hill Co. 1972.

03ARC02 BUILDING MATERIALS & CONSTRUCTION - III

Objective: To enable students about the learning in progression, starting from simple building elements, components, materials and construction techniques to develop strong sense of visualization.

Unit I: An introduction to timber floors and its specific application to various activities. Detail study of single joist, double joist and triple joist timber floors.

Unit II: Cement and its varieties, composition, properties and uses; brief study on manufacture of Portland cement; test for cement; mortars for various work.

Unit III: Concrete, its ingredients, manufacture & properties, ingredients suitability requirements for aggregates, grading of aggregates, role of water, reinforcement, admixtures in concrete, properties of concrete. Manufacturing of concrete and concreting, grades of concrete, mixing of proportions, placing, compactions, transporting, curing, testing of concrete, joints in concrete and concrete finishes.

Unit IV: Formwork and its importance to R.C.C. building elements such as column footing, columns, beams, arches, slabs. Comparative analysis of timber & steel formwork.

Unit V: Introduction and purpose of foundation. Brief introduction to types of shallow and deep foundation. Detail study of masonry foundation & R.C.C. footing foundations and its types.

Unit VI: Application of false ceiling materials such as asbestos sheets, soft boards, acoustic boards, plaster of paris etc; on timber, steel or aluminium framework.

Sessional work: Assignments, test, site visit and drawing on the above topics.

References:

1. S.C. Rangwala, Engineering Materials, Charotar Publishing House, Anand, 1997
2. Arora, S.P. & Bindra, S.P., "A Text Book of Building Construction", Dhanpat Rai & Sons, New Delhi, 1994.
3. Barry R., "Construction of Building", Orient Longman Ltd., 1999.
4. Chudley R., "Building Construction Handbook", British Library Cataloguing, 2008.
5. Francis DK Ching, "Building Construction Illustrated", Van Nostrand Reinhold Ltd., 2001
6. W.B. McKay Building Construction, vol. 1,2,3, Longmans, U.K. 1981.
7. Don A Watson, Construction Materials and Processes, McGraw Hill Co., 1972.
8. Punmia B.C., "Building Construction", Laxmi Publications Pvt. Ltd., 1995.

03ARC03 HISTORY OF ARCHITECTURE – III

Objective : We learn from the wisdom of our ancients. History of Architecture enrich the students by exploring our treasures of past, study the evolution of different architectural styles through different periods, understand the influence of geographical, topographical, climatic, social, cultural and economic condition on Architecture.

Unit I : Egyptian and Mesopotamian Architecture and its impact on social, economical and geographical conditions.

Unit II : Introduction to the western civilization and study of Greek civilization and its impact on Architectural development.

Unit III: Introduction to the Roman Architectural development and study of public buildings and spaces.

Unit IV: Brief study of Romanesque, Gothic, Byzantine and renaissance architecture.

Unit V: Evaluation of Islamic architecture with its functions and aesthetic elements at world Scenario. Rise of Islam in Arabia and resulting architecture: Dome of rock, Jerusalem, Ummayyad mosque Damascus, Great mosque & minaret of Samara, great mosque of Cordoba Spain etc.

Unit VI: The architectural development of the mosque, the tomb, minaret (Tower), and other religious structures; method of construction and building elements. The rise of Persian style: Tomb of Ismail Samani Bukhara, Mosque at Zevera, Tomb of Zudeh at Mehmandust, Gumbad I Qabus, Madarsa of Ulugh Beg Samarqand. Etc.

Sessional work: Test, Assignments and drawing on the above topics.

References:

1. Sir Banister Fletcher, A History of Architecture, University of London, The Antholone press, 1986.
2. Percy Brown, Indian Architecture (Islamic period), Taraporevala and Sons, Bombay, 1983
3. Satish Grover, The Architecture of India (Buddhist and Hindu Period), Vikas Publishing Housing Pvt. Ltd., New Delhi, 1981
4. Christopher Tadgelli, The History of Architecture in India from the Dawn of Civilization to the end of Raj, Longman group, U.K.Ltd., London, 1990

03ARC04 CLIMATOLOGY

Objective: Understanding Climate as a determining factor for architectural design.

Unit I: (a) Understanding the Earth-Sun relationship, global trade wind pattern, Coriolis's effect and Formation of Climate and weather.

(b) Elements of climate with their measuring instruments along with graphical representation and understanding climate at different scales ie, global, regional, macro and micro.

Unit II: (a) Global Climate classification
(b) Climatic zones of India and its classifications
(c) Solar Geometry

Unit III: (a) Introduction to concept of Thermal Comfort factors, thermal comfort indices
(b) Introduction to concept of Thermal Comfort in buildings.

Unit IV: (a) Natural ventilation in and around the building
(b) Ventilation systems.

Unit V: Climatic elements and data collection equipments. Air temperature, inversion of temperature, thermal diffusivity, thermal conductivity, effective temperature, humidity its types, solar radiation and its effects on building surfaces, wind – study of diurnal and seasonal variations, wind eddies, stack effect, Precipitation- rain, water vapour, fog and snow.

Unit VI: Tropical climates and its types with characteristics.

Sessional work: Assignments, Tutorial and test on the above topics.

References:

1. O. H. Keonigsberger, T.G. Ingersoll and others; Manual of tropical housing and building- Part-I; Longmans, London-1980
2. M. Evans; Housing, climate and comfort; Architectural press London-1980
3. B.G.Givoni; Man, climate, and architecture; Applied science, banking, Essex, 1982
4. Norbert Lechner; Heating, Cooling, Lighting: Sustainable methods for Architects; .
5. S.Drake; The third skin architecture technology and environment; UNSW –press-2007.

03ARC05 ARCHITECTURAL STRUCTURE-II

Objective: To understand loading, structural elements and to analyze them.

Unit I: Strain energy in tension, compression and shear; tension member under impact load.

Unit II: Simple or pure bending theory. Theory of simple bending, section modulus, moment of resistance, distribution of bending stresses in solid, hollow sections and distribution of shearing stress on horizontal sections.

Unit III: Column and struts, Euler's theory of long column, Rankin theory.

Unit IV: Investigation of soil and foundation design.

(a) Relevance of the subject to architectural studies (b) Types of soil and their engineering properties. (Void ratio porosity, bulk density, moisture content, degree of saturation, liquid limit, plastic limit.) (c) Compaction and consolidation. (d) assessing load bearing capacity of soil. (g) criteria for selection of foundation type depending on different soil condition. (e) effect of water level, settlement of soil.

Unit V: Direct and bending stresses, eccentric loading on short column, middle third rule, chimneys.

Sessional Work: Assignments, Tutorial and test on the above topics.

References :

1. B.C.Punmia, Strength of Materials and Theory of Structures; vol I, Laxmi Publications, Delhi 1994.
2. S.Ramanmurtham, Strength of Materials – Dhanpatrai & Sons, Delhi 1990.
3. W.A.Nash, Strength of Materials – Schaums Series – McGraw Hill Book Company, 1989.
4. R.K.Bansal – engineering Mechanics and Strength of Materials – Lakshmi Publications, Delhi, 1990.

03ARC06 ARCHITECTURAL DESIGN STUDIO– III

Objective: To introduce architectural design as a process and as a final product; to understand fundamentals of space, form and order through basic perception of architectural skills.

Basic contents:

- 1) Introduction to the design assignment, their aims and objectives, scope, special emphasis and limitation. Application of planning and design standards for the proposed design project.
- 2) Planning and design data collection, area analysis, study and evolution of plan forms for each activity, grouping of activities, case study analysis and its presentations.
- 3) Major design project shall include house design, clinic, elementary school, restaurant with respect to planning & design aspect.

Sessional work: One major design project and one time project with other task and assignments.

Reference books:

1. Ching, F.D.R. : Form, Space and Order, Van Nostrand Rheinhold, New York (1979).
2. Parmar V.S.: Design Fundamentals in Architecture, Somoiya Publications, Bombay (1973)
3. Scott: Design Fundamentals Edward d Mills- Planning the Architects Hand Book – Bitterworth, London, 1985.
4. Watson, D (editor) Time –saver standards for Architectural Design: Technical data for professional practice, McGraw-Hill, 2005.
5. Neufert, P; Architects Data; Blackwell Science, 2000.
Agkathidis, A, Hudert, M and Schiling, G., "Form defining strategies: experimental architectural design". Wasmuth, 2007.

03ARC07 BUILDING MATERIALS & CONSTRUCTION STUDIO - III

Objective: To enable students about the learning in progression, to develop strong sense of visualization of building composition in the form of Drawings, sketches and study models.

Sessional work : Assignments and drawing on the above topics given in the subject 03ARC02 Building Materials & construction – III.

Viva Voce by external examiner at the end of Semester.

03ARC08 ARCHITECTURAL EXPRESSION & PRESENTATION SKILLS

Objective:

The main objective of this course is to develop the skill of students by Introducing fundamental techniques of Visual representation and to equip them with basic principles of representation which will enhance the quality of graphical language for architecture. This subject will also improve the skill of delivering and engaging crowd. To develop the presentation skills required for architecture students through different media for conveying their concepts & designs effectively to the viewer.

Outlines: By understanding their content, the student must concentrate on.

- Intent of presentation
- Analyzing Core subject/issue
- Focusing
- Emphasizing
- Selecting a Media that can best convey their idea
- Application with respect to time factor

Skills that need to be developed are:

Unit I: Introduction to Architectural Expression and Presentation: Architectural Expression of Form, Architectural Expression of Space, Architectural Expression of Building Elements, Architectural Expression of Colours. Architectural Expression of various natural and man made elements. Introduction to Architectural Presentation.

Unit II: Verbal and Textual : Using universally adopted architectural vocabulary to convey the idea with least amount of explanation but effectively conveying the matter exercises of 5-6 by each may be carried out by giving a detailed note on a matter with clarity of speech & grammar. Writing related to architecture with appropriate words and vocabulary. Writing concisely and effectively, making paragraphs & chapters etc. 4-5 exercises on different subject of architecture may be dealt.

Unit III: Graphical: making a graphical representation using different media such as pencil rendering, pen & ink rendering, colour rendering or any other media. Understanding colour combinations and their effects for presentation. Analytical diagrams, info graphics, flow charts, mind maps, posters, logo design.

Unit IV: Model: making of blocks and details models through different materials in short time & arranging them such that the purpose of making model is fulfilled.

Unit V: Digital: Introduction to windows and its applications. Introduction to Microsoft, Office, word, excel, Power point - setting of header & footer, font's text & height, line spacing, page insertion & its layout, references, merging of documents, insertion of formulas, linking of pages, slides presentation, slide master, slide show, etc, respectively, Photoshop, Corel Draw.

Unit VI: Architectural Vocabulary: introduction to computer aided 2D drafting Understanding the use of drawing tools, object editing, drawing objects, setting up of drawings of various simple architectural objects with complete text and dimensioning. Hatching utilities, assigned colour and line type, use of multiline, style, block, symbol Library for accurate drawings, incorporating the above said utilities.

Assignment:

Application of the above for one of the design problems dealt in the previous semester. Report writing on theory subject assignment, spread sheets for preparing formats of mark sheets, estimates & presentation based on above software, Cad drawing- Simple Objects, small building drawings.

Reference Books: [1 to 7]

1. 'Rendering with Pen & Ink', by Robert W.Gill.
2. Ching, F.D.R.: Form, Space and Order, Van Nostrand Rheinhold, New York (1979).
3. Artist Drawing Techniques, edited by Georgina Palfy, Penguin random house.
4. The Creative Calligraphy Source Book, Adrian Waddington.
5. Parmar V.S.: Design Fundamentals in Architecture, Somoiya Publications, Bombay (1973)
6. Contrast of Form, Geometric Abstract Art 1910-1980, by Magdalena Dabrowski.
7. Form Defining Strategies: Experimental Architecture Design by Asterios Agkathidis.

03ARC09 SURVEYING AND LEVELLING – LAB.

Objective: To Understand methods of survey, and documentation, Introduction to tools and equipment of Land surveying Introduction to modern methods of surveying.

Unit I: Importance of geomagnetic engineering techniques to architecture, field surveying, photographer, remote sensing, geographic information system and global positioning system.

Unit II: Types of maps, scales and uses, map sheet numbering, map projection, definition of surveying, principles, importance, classification, surveying equipment namely levels, compass, theodolites, tachometer, EDM, total stations and other instruments.

Unit III: Measurement of distance, angles, and directions; determination of elevation through spirit leveling, trigonometrically leveling, tachometric surveying and contouring.

Unit IV: Method of control establishment namely traversing, triangulation, plane table surveying and mapping. Introduction to GPS survey.

Sessional work : Organizing a survey camp for terrain mapping with its extension to AD studio. Assignments, test and tutorials on the above topics.

Practicals:

- (a) Chain and compass surveying.
- (b) Levelling
- (c) Plain table surveying and preparation of map.
- (d) Determination of height of a building.

Reference books:

- 1) Schofield W., Engineering surveying., Butterworth-Heinemam.,2007.
- 2) Chandra. A.M., Surveying., New Age publisher-2000.
- 3) Surveying & leveling, Shaha and Kale.
- 4) Surveying & Leveling Vol – I & II : T P Kanetkar

SEMESTER: FOURTH

04ARC01 ARCHITECTURAL DESIGN – IV

Objective: To expose the students to the designing of multifunctional community buildings with emphasis on building bye laws, impact of culture, traditions, material and techniques.

Basic contents:

- 1) Introduction to the designing of multifunctional community buildings on an intermediate scale.
- 2) Importance of case studies, data collection, area analysis, evolution of plan forms, climatic oriented planning and design features, space utilization, building & site services, site analysis and site planning ,etc; in the Architectural design process.
- 3) Importance of culture, tradition, topography, climate and building bye laws in generating built form.
- 4) Major design project may include design of library, club, gymnasium, low rise apartment, low cost housing element, office cum shop, etc.

Sessional work: One major design project and one time project with other task and assignments.

Reference books:

1. Ching, F.D.R.: Form, Space and Order, Van Nostrand Rheinhold, New York (1979).
2. Parmar V.S.: Design Fundamentals in Architecture, Somoiya Publications, Bombay (1973)
3. Scott: Design Fundamentals Edward d Mills- Planning the Architects Hand Book – Bitterworth, London, 1985.
4. Watson, D (editor) Time –saver standards for Architectural Design: Technical data for professional practice, McGraw-Hill, 2005.
5. Neufert, P; Architects Data; Blackwell Science, 2000.
6. Agkathidis, A, Hudert, M and Schiling, G., “Form defining strategies: experimental architectural design”. Wasmuth, 2007.

04ARC02 BUILDING MATERIALS & CONSTRUCTION- IV

Objective: The course will enable the learning in progression, starting from ferrous and non ferrous materials and construction techniques to develop strong sense of visualization.

Unit I: Ferrous metals, brief study of cast iron, wrought iron, pig iron and steel; its manufacturing process and properties. Steel door.

Unit II: Non ferrous metals and its various uses in building construction. Aluminium sections for door design. Use of Copper, Titanium in Architecture.

Unit III: Metal casements useful for windows and ventilators. Types of metal casements windows with fixtures, fitting and method of fixing. Metal casements useful for partitions fixtures, fitting and method of fixing.

Unit IV: Composition of Glass, brief study on manufacture, treatment, properties and uses of glass, (Types of glass and fixing.)

Unit V: Plastics: Thermoplastic and thermosets properties and architectural uses of plastics, structural plastics, fiber reinforced plastics and decorative laminates, plastic coatings, adhesives and sealants. Study of PVC, UPVC.

Unit VI: Study of Acoustical materials such as different fabrics & rugs, acoustical boards, panels, etc and its application.

Sessional work: In the form of reports, drawings, and models. Construction site visits are essential for practical exposure. Assignments and drawing on the above topics.

Viva Voce by external examiner at the end of Semester.

Reference Books:

1. S.C. Rangwala, Engineering Materials, Charotar Publishing House, Anand, 1997
2. HUDCO - All you want to know about soil stabilized mud blocks, HUDCO Pub, New, Delhi, 1989.
3. W.B. McKay Building Construction, vol. 1,2,3, Longmans, U.K. 1981.
4. Don A Watson, Construction Materials and Processes, McGraw Hill Co., 1972.

04ARC03 HISTORY OF ARCHITECTURE - IV

Objective: History of Architecture exposes the student to evolution of different architectural solutions through historical periods to understand the building materials, construction techniques, planning and designing features.

Unit-I: The Architecture of Nayaka's at Vijayanagar (Hampi), Solanki's at Gujarat.etc.

Unit-II: The evolution of Islamic architecture in India Delhi OR Imperial Style. Development of Architectural Style during the Rule of the slave, Khilji, Tuglag, Sayyid & Lodhi Dynasties- important examples for each period.

Unit-III: Provincial Style: Development of the Provincial Style of different regions- Punjab, Jaipur, Bengal, Gujrat, Malwa, The deccan (bijapur, Golconda, bidar and Gulbarga) – Important Examples for each style with building construction techniques and design elements.

Unit-IV: Mughal Style: Development of the Mughal Style under the different rulers – Humayun, Akbar, Jahangir & Shahjahan-Important Examples for each style with building construction techniques and design elements.

Unit-V: The evolution of Rajputana and Sikh architecture.

Unit-VI: The Maratha Architecture and Architecture of Forts

Sessional work: Assignments and drawing on the above topics.

References:

1. Sir Banister Fletcher, A History of Architecture, University of London, The Antholone press, 1986.
2. Percy Brown, Indian Architecture (Islamic period), Taraporevala and Sons, Bombay, 1983
3. Satish Grover, The Architecture of India (Buddhist and Hindu Period), Vikas Publishing Housing Pvt. Ltd., New Delhi, 1981
4. Christopher Tadgelli, The History of Architecture in India

04ARC04 LANDSCAPE DESIGN

Objective: The course aims to understand that landscape is an integral part of sustainable development as it blends man's technology into the natural surroundings. Further to study its role in preservation, improvement and enhancement of environment.

UNIT-I : Introduction : Landscape Architecture. Understanding man and nature land and landscape. Relationship of architecture, Landscape Architecture and urban landscape design.

UNIT-II :- Landscape traditions and garden design of India, China, Persia, Japan, Italy, France and England.

UNIT-III : Garden Design of the modern world and overview of modern garden design with case studies.

UNIT-IV: Man and nature, Basic Principles of landscape design and element. Types of landscape elements and its various uses.

UNIT-V: Characteristics of various types of plants and their suitability of landscaping, planting design and visual aspects of plant form. Selection of Plant Material for Landscape.

UNIT-VI: Site analysis: with respect to topography and existing features; slopes, drainage; sensitive areas and natural ecosystem; vegetation and tree survey etc. Green Practices such as Soil and water conservation, contour bundding, bandharas, tanks, etc. Water efficient landscaping; design to include existing site features.

Sessional work : Assignments and test on the above topics.

Reference Books:

1. Sylvia Crowe Sheila Haywood, The Gardens of Mughal India , Vikas Publishing House, Pvt. Ltd, India, Delhi, 1973.
2. Garrett Eckbo, The Art the Home Landscaping, McGraw-hill Book Co., London, 1956.
3. Testsuro Yoshida, Gardens of Japan, Jr. Marcus G. Sims, 1963.
4. Time saver Standard for Landscape Design.

04AR05 ARCHITECTURAL STRUCTURE-III

Objective: Understanding of Basic Theory and principles of structural analysis and structural properties of elements.

UNIT-I : Fixed beams with concentrated load and uniformly distributed load (over complete span.)

UNIT-II: Continuous beams (without settlement) with uniform sections by three moments. Only vertical load and uniformly distributed load over whole span by theorem of three moments.

UNIT-III: Moment distribution method for symmetrical portal frames with symmetrical load. Only point load and uniformly distributed load over whole span.

UNIT-IV: Introduction to earth retaining structures/ walls, various types of retaining walls, key components of retaining walls.

UNIT-V: a) Design procedures for simple load bearing foundations.
b) Failure of foundations systems.
c) Ground improvement techniques.

Sessional work : Assignments and tutorials on the above topics.

Reference Books:

1. P.C.Punmia, Strength of Materials and Theory of Structures; vol I, Laxmi Publications, Delhi 1994.
2. S.Ramanmurtham, Strength of Materials – Dhanpatrai & Sons, Delhi 1990
3. W.A.Nash, Strength of Materials – Schaums Series – McGraw Hill Book Company, 1989
4. R.K.Bansal – engineering Mechanics and Strength of Materials – Lakshmi Publications, Delhi, 1990.

04AR06 ARCHITECTURAL DESIGN STUDIO – IV

Objective: To expose the students to the designing of multifunctional community buildings with emphasis on building bye laws, impact of culture, traditions, material and techniques.

Sessional work : Assignments and drawing on the above topics given in the subject 04AR01 ARCHITECTURAL DESIGN – IV. Viva Voce by external examiner at the end of Semester.

04AR07 BUILDING MATERIALS & CONSTRUCTION STUDIO – IV

Objective: The course will enable the learning in progression, starting from ferrous and non ferrous materials and construction techniques to develop strong sense of visualization.

Sessional work : Assignments and drawing on the above topics given in the subject 04AR02 Building Materials & construction – IV. Viva Voce by external examiner at the end of Semester.

04ARC08 COMPUTER GRAPHICS STUDIO- I

Objective : The prime objective of this course is to introduce the fundamental concepts of software and to develop basic skills in Application of Architectural software and rendering tools.

UNIT I: Advance computer aided 2D Drafting Advance command programming – concept of Layers, object properties, grouping and ungrouping of objects, blocks, dimension editing, use of multiline, style, symbol Library manipulation for accurate drawings, incorporating the above said utilities with generation of Architectural design.

UNIT II Productivity tools: Introduction to tools of productivity – blocks, slide facilities, scriptfiles, attributes Understanding concepts of view port, concept of object linking, and editing session.

UNIT III: Introduction to 3D Drafting : Introduction to 3D modeling technique and construction planes, drawing object, 3D surfaces setting up elevation and thickness, and use of dynamic projections. Solid modeling, with driving primitive command and Boolean operation. Use of region modeling solid modife.

UNIT IV: 3D Rendering and setting: Rendering and scene setting to create a photo realistic picture understanding material mapping, environment setting and image filing. Construction of any object or building using above said utilities.

Sessional Work: It includes assignments incorporating the use of CAD in form of drawings. Conversion of 2D drawing of previous semester to 3D using softwares like Autocad, Sketchup, revit, 3DS Max. etc. and presentations through photoshop, Corel draw, Power Point etc.

Viva Voce by external examiner at the end of Semester.

04ARC09 ILLUSTRATED CLIMATOLOGY

Objective: To understand the use of climate analysis tools and preparation of data charts / records for prevailing climate.

UNIT-I: Study of climate of different climatic zones and its responsive vernacular architecture.

UNIT-II: Climate Analysis Tools (Bio Climatic Chart, Mahoney’s Table, Temperature Isoleths, Humidity, Temperature gauge ,Rain Guage, Wind vane, Cup anemometer, Solar radiation UV meter) for study of impact of Micro and Macro climatic conditions on the built and un-built spaces, simulation software, etc.

UNIT-III: Solar chart and its use, shadow angles, use of shadow angle protractor; types and design of shading devices. Heliodon & its use. Introduction to passive design strategies at various scales ie urban, building and building component scale. Study of U values for Traditional and contemporary materials with comparative charts.

UNIT-IV: Study of different Passive techniques in contemporary Scenario for varying case situations and case studies of IGBC/ and TERI / Green buildings.

Sessional Work:

1. Charts, Graphical sheets/ drawings, designing of shading devices, different calibrations on each of the above topic.
2. Use of digital aid for simulation of building work. [**Sr.No.2 nahi**]
3. Workshop on Climate Responsive Built and Un-built Spaces using various tools.

Reference Books:

1. ‘Climate Responsive Architecture’, Arvind Krishnam.
2. Norbert Lechner; ‘Heating, Cooling, Lighting: Sustainable methods for Architects’.
3. ‘Urban Microclimate’, Evyatar Erell.
4. ‘Design with climate’, Victor Olgyay, Aladar Olgyay.
5. ‘Fundamentals of Environmental Studies’, Mahua Basu and S.Xavier, Cambridge University Press, first edition [8th November, 2017]

NOTIFICATION

No. 65/2024

Date : 24/06/2024

**Subject : Implementation of new Syllabi of Semester V & VI of Bachelor of Architecture
(B.Arch.) (CBCS) as per Council of Architecture norms.**

It is notified for general information of all concerned that the authorities of the University have accepted to implement the new Syllabus of Semester V & VI of Bachelor of Architecture (B.Arch.) (CBCS.) as per Council of Architecture norms to be implemented from the academic session 2024-2025 onwards as given below:

Sd/-
(Dr.A.M.Asanare)
Registrar
Sant Gadge Baba Amravati University

**SYLLABUS PRESCRIBED FOR FIVE YEAR DEGREE COURSE IN ARCHITECTURE
SEMESTER PATTERN (CHOICE BASED CREDIT SYSTEM)
FIFTH & SIXTH SEMESTER**

SEMESTER: FIFTH

05ARC01 BUILDING MATERIALS & CONSTRUCTION-V

Objective: The course will enable to learn RCC frame structure starting from building foundation to roof, Components and construction techniques to develop strong network of RCC members.

Unit I: R.C.C frame structures and advantages over load bearing masonry constructions. Shallow foundations and its types. Detail study of raft foundations, its types and uses.

Unit II: Detailing of R.C.C. work with reinforcement for R.C.C. beams, columns, one way & two-way slabs.

Unit III: R.C.C. cantilevers and reinforcement details in chajjas, balcony, canopy, lofts, etc. R.C.C. Staircases and its reinforcement details. Introduction to flat plate slab and its purpose.

Unit IV: Special concrete and concreting methods such as light weight, high density, fibre reinforced, polymer concrete-outline of manufacture, properties and uses. Ready mix concrete and current developments in concrete product.

Unit V: Introduction to precast building elements, comparative study with cast in situ constructions. Appropriate use of various types of precast building elements and its construction details.

Unit VI: Appropriate cost-effective construction techniques and materials to be useful to conserve the energy.

References:

1. S.C. Rangwala, Engineering Materials, Charotar Publishing House, Anand,1997
2. HUDCO - All you want to know about soil stabilized mud blocks, HUDCO Pub, New, Delhi, 1989.
3. Don A Watson, Construction Materials and Processes, McGraw Hill Co.,1972.
4. R. Chudley, Construction technology, Richard Clay (Chaucer Press) Ltd.,Suffolk,1978.
5. J.H.callender,Time saver standard for Architectural Design Data, McGraw-Hill,1994.

Sessional work: Assignments, test,site visit and drawing on the abovetopics.

5ARC02 HISTORY AND THEORY OF MODERN ARCHITECTURE -V

Objective: The course will enable to learn the historical development starting from industrial era to modern age, reflected through school of thoughts and works of pioneer Architects.

Unit I: Industrial revolution and its effect on modern Contemporary Architecture. Its characteristics, techniques and materials.

Unit II: The newly evolved schools of thoughts and theories in Architecture viz; Expressionism, Cubism, Brutalism, monumentalize with architectural examples.

Unit III: The postmodern theories like Futurism, De-constructivism,Eclecticism, Rhapsodic architecture, Contemporary architecture and sustainable Architecture.

Unit IV: Western pioneer Architects with their philosophies: H.H. Richardson, Peter Behrens, F.L. Wright, Louis Sullivan, Walter Gropius, Mies Van der Rohe, Le Corbusier, Alvar Alto etc.

Unit V: New Age architects with their philosophies, methodologies and tools like: Frank Gehry, Zaha Hadid, Peter Eisenman, Daniel Libskind, Santiago Calatrava, I.M. Pei, Jeffery Bawa, Ken Yeang etc.

Unit VI: The works and philosophies of modern Indian architects: B.V. Doshi, Charles Correa, A.P.Kanvinde, U.C.Jain, Bimal Patel, Lauri Baker, Hafeez Contractor, Christopher Benninger, Raj Rewal Chitra Vishwanath, Brinda Somaya, etc.

Sessional work: Assignments, sketches, presentations on the above topics & interviews of renowned architects.

05ARC03 ARCHITECTURAL STRUCTURE-IV

Objective: Understanding of development in Concrete technology, basic Theory, principles of structural analysis and structural properties of elements & use of related IS codes.

Unit I: Behaviour of various structural elements under varying loading conditions with load flow diagram, sketches for failure mechanisms.

Unit II: Introduction to concrete technology- fine and coarse aggregate, water cement ratio, workability, etc. Various steps involved in concreting like, proportioning, batching, mixing, placing of concrete, etc, and method of compacting, expansions and construction joints in concrete, durability of concrete with respect to honeycombing, role of admixtures in concrete.

Unit III: Introduction to Mild steel and tor steel reinforcement, properties bending and fixing. Introduction and use of IS. Code for RCC member IS 456, IS 800, IS 875.

Unit IV: Introduction to R.C.C. theory, Introduction to limit state method, basic concepts of singly-doubly reinforcement, neutral axis and moment of resistance.

Unit V: Design of Column, beam and slab using limit state method.

Unit VI: Design of R.C.C. footing and staircases using limit state method.

Sessional work: Assignments and tutorials on the above topics. Visit to construction sites to understand structural detailing.

References:

1. P.C.Punmia, Strength of Materials and Theory of Structures; vol I, Laxmi Publications, Delhi 1994.
2. S.Ramanmurtham, Strength of Materials – Dhanpatrai & Sons, Delhi 1990
3. W.A.Nash, Strength of Materials – Schaums Series – McGraw Hill Book Company, 1989
4. R.K.Bansal – engineering Mechanics and Strength of Materials – Lakshmi Publications, Delhi, 1990.

05ARC04 SPECIFICATION

Objective: To impart knowledge of specification of building materials and its importance.

Unit I: Introduction and Importance of specification in the building activities, types of specification. Use of Indian Standard specification viz; NBC, P.W.D., ECBC, various state departments specification.

Unit II: Primary considerations for selections of materials for various items of construction and equipment's for various construction operations.

Unit III: Art of writing specifications of material along with emphasis on the quality of the materials and proper sequence of construction works. Method of writing correct order and sequence of use of materials.

Unit IV: Specifications of basic materials such as bricks, Sand, Stones & Aggregates, glass, timber, cement, metals, etc. and construction works for Load bearing masonry type and R.C.C. framed type, steel structures such as brick work, concreting, plastering, flooring, roofing, etc. required in building construction.

Unit V: Specification of works for various kinds of finishes -ceiling and partitions, paneling, insulation, timber work, waterproofing and various kinds of interior works. Specification for services such as drainage, water supply, electrical installation.

Unit VI: Specifications for special items such as demolitions work, temporary constructions like sheds, exhibition stalls, gateways etc. Specifications for special items such as green building works. Study of proprietary building materials along with manufactures specifications, trade name of such materials.

Sessional work: Assignments, tests, and tutorials on the above topics.

References:

1. W.H.King and D.M.R.Esson, Specification and quantities for Civil Engineers, The English university Press Ltd.
2. P.W.D. Standard specifications, Govt. Publications.
3. Dutta, Estimating and Costing, S. Dutta and Co., Lucknow.

05ARC05 Free Elective - I

(i) FUNDAMENTALS OF ARCHITECTURAL DESIGN

Objective: The prime objective of this course is to introduce architectural design as a process and as a final product , to understand fundamentals of space, form and order through basic perception of architectural skills.

Unit I: Introduction to Architecture. Definition of Architecture, design art, fine art, visual art.

Unit II: Principles of two dimensional design elements, such as point, line, direction, shape, size, colour and texture, levels, light, fenestrations.

Unit III: Aesthetic components of design- proportions, scale, balance, rhythm, symmetry, asymmetry, hierarchy, pattern and axis with building examples.

Unit IV: Harmony and contrast in 2D and 3D design, interplay of light and shade on building blocks and their effects.

Unit V: Form and functions in Architecture, use of building materials and construction techniques.

Unit VI: Architectural design process, site observations and analysis.

Sessional work: Assignments, tests, and tutorials on the above topics.

Suggested Text Books:

1. Ching, F.D.R.: Form, Space and Order, Van Nostrand Reinhold, New York (1979).
2. Parmar V.S.: Design Fundamentals in Architecture, Somaiya Publications, Bombay (1973)
3. Scott: Design Fundamentals Edward d Mills- Planning the Architects Hand Book – Bitterworth, London, 1985.
4. Watson, D (editor) Time –saver standards for Architectural Design: Technical data for professional practice, McGraw-Hill, 2005.
5. Neufert, P; Architects Data; Blackwell Science, 2000.
6. Agkathidis, A, Hudert, M and Schiling, G., “Form defining strategies: experimental architectural design”. Wasmuth, 2007.

05ARC05 Free Elective - I

(2) LANDSCAPE ARCHITECTURE

Objective: To expose students with historical relevance of Landscape design & landscape elements & the role of Landscape Architect in tune with ecological balance

Unit I: Introduction to Landscape Architecture. Understanding man and nature, land and landscape.

Unit II: Relationship of Architecture and Landscape Architecture. Study of basic principles of landscape design.

Unit III: History of the art of garden design of India, China, Persia, Japan, France and England.

Unit IV: Garden designs of the modern world.

Unit V: Ecological and environmental aspects of Landscape Design.

Unit V: Study of elements of landscape design.

Sessional work : Assignments, sketches, and tests on the above topics.

References:

1. Sylvia Crowe Sheila Haywood, The Gardens of Mughal India , Vikas Publishing House, Pvt. Ltd, India, Delhi, 1973.
2. Garrett Eckbo, The Art the Home Landscaping, McGraw-hill Book Co., London, 1956.
3. Testsuro Yoshida, Gardens of Japan, Jr. Marcus G. Sims, 1963.
4. Sir Banister Fletcher, A History of Architecture , University of London, The Antholone press, 1986.
5. Percy Brown, Indian Architecture (Islamic period), Taraporevala and Sons, Bombay, 1983tt
6. Satish Grover, The Architecture of India (Buddhist and Hindu Period), Vikas Publishing Housing Pvt. Ltd., New Delhi, 1981
7. Christopher Tadgelli, The History of Architecture in India from the Dawn of Civilization to the end of Raj, Longman group, U.K.Ltd., London, 1990.

5ARC06 : ARCHITECTURAL DESIGN STUDIO - V

Objective: To expose the students to the architectural design process of multifunctional building with emphasis on topography, climatic consideration, materials and techniques.

Basic contents:

- 1) Introduction to the designing of multifunctional community buildings on an intermediate scale.
- 2) Importance of case studies, data collection, area analysis, evolution of plan forms, climatic oriented planning and design features, space utilization, building & site services, site analysis and site planning ,etc; in the Architectural design process.
- 3) Importance of culture, tradition, topography, climate and building bye laws in generating built form.
- 4) Major design project may be based on institutional, Museum, community center, sports club, etc. at appropriate level.
- 5) Architectural study tour relevant to design project.

Sessional work: One major design project and one time project with other task and assignments.

Viva Voce by external examiner at the end of Semester.

Suggested Text Books:

1. Ching, F.D.R.: Form, Space and Order, Van Nostrand Reinhold, New York (1979).
2. Parmar V.S.: Design Fundamentals in Architecture, Somaiya Publications, Bombay (1973)
3. Scott: Design Fundamentals Edward d Mills- Planning the Architects Hand Book – Bitterworth, London, 1985.
4. Watson, D (editor) Time –saver standards for Architectural Design: Technical data for professional practice, McGraw-Hill, 2005.
5. Neufert, P; Architects Data; Blackwell Science, 2000.
6. Agkathidis, A, Hudert, M and Schiling, G., “Form defining strategies: experimental architectural design”. Wasmuth, 2007.

5ARC07 BUILDING MATERIALS & CONSTRUCTION STUDIO - V

Sessional work: Drawings, Models and site visit on the above topics given in the subject 5ARC01 Building Materials & Construction – V.

Viva Voce by external examiner at the end of Semester.

05ARC08 COMPUTER GRAPHICS STUDIO - II

Objective : The prime objective of this course is to develop & utilize 3D rendering tools used in 4ARC08 Computer Graphics studio-I leading to building walkthroughs and study of online building approval systems.

Unit-I: 3D Drafting & modeling technique and application on a case project of a student.

Unit-II: 3D Rendering and setting: Rendering and scene setting to create a photo realistic picture understanding material mapping, environment setting and image filing with use of different rendering tools. (ex-Lumion, twin motion, etc.)

Unit-III: Animation leading to walkthrough of the above project.

Unit- IV: Introduction to online building approval system organised by Government Authorities.

Sessional work: One major design project with the use of above tools.

Viva Voce by external examiner at the end of Semester.

Suggested Books:

1. Chiara, J.D., Panero, J., Zelnik, M., “Time Saver Standards for Housing and Residential Development”, 2nd Ed., McGraw-Hill.
2. Neufert, P., “Architects Data”, 3rd Ed., Blackwell Science.
3. Watson, D.(Editor), “Time-saver Standards for Architectural Design: Technical Data for Professional Practice”, McGraw-Hill
4. Ballard Bell, Victoria and Rand, P., “Materials for Architectural Design”, Laurence King

5ARC09 WORKING DRAWING – I

Objective: The students shall impart the knowledge of construction details for the execution of building from foundation to roof level.

Contents: Working drawing of load bearing masonry structure for design project done during fourth semester. The drawing should be in an appropriate scales.

The working drawing should include from foundation level to roof level as follows:

- a) Municipal drawing and detail of all level plans.
- b) Detail section showing toilets, Staircase and levels of floors.
- c) Working detail of toilet, staircase.
- d) Working details of any interesting features in the plan, sections & elevation.
- e) Site plan showing drainage layout, landscape layout, internal roads etc.
- f) Working details of water supply & electrical layout plan's.

Sessional Work : Assignments and drawing plates on the above topics.

Viva Voce by external examiner at the end of Semester.

Suggested Text Books:

1. Ching, F.D.R.: Form, Space and Order, Van Nostrand Rheinhold, New York (1979).
2. Parmar V.S.: Design Fundamentals in Architecture, Somoiya Publications, Bombay (1973)
3. Scott: Design Fundamentals Edward d Mills- Planning the Architects Hand Book – Bitterworth, London, 1985.
4. Watson, D (editor) Time –saver standards for Architectural Design: Technical data for professional practice, McGraw-Hill, 2005.
5. Neufert, P; Architects Data; Blackwell Science, 2000.
6. Agkathidis, A, Hudert, M and Schiling, G., “Form defining strategies: experimental architectural design”. Wasmuth, 2007.

SEMESTER: SIXTH

6ARC01 ARCHITECTURAL DESIGN – VI

Objective : To expose the students to the architectural design process of multifunctional building with emphasis on topography, climatic consideration, materials and techniques.

Basic contents:

- 1) Introduction to the designing of multifunctional community buildings on an intermediate scale.
- 2) Importance of case studies, data collection, area analysis, evolution of plan forms, climatic oriented planning and design features, space utilization, building & site services, site analysis and site planning ,etc; in the Architectural design process.
- 3) Importance of culture, tradition, topography, climate and building bye laws in generating built form.
- 4) Major design project may be based on commercial, institutional, Hotel, Luxurious apartment, Hospital etc. at appropriate level.
- 5) Architectural study tour relevant to design project.

Evaluation: There shall be university paper of eighteen hours distributed within three days in six sittings.

Suggested Text Books:

1. Ching, F.D.R.: Form, Space and Order, Van Nostrand Rheinhold, New York (1979).
2. Parmar V.S.: Design Fundamentals in Architecture, Somoiya Publications, Bombay (1973)
3. Scott: Design Fundamentals Edward d Mills- Planning the Architects Hand Book – Bitterworth, London, 1985.
4. Watson, D (editor) Time –saver standards for Architectural Design: Technical data for professional practice, McGraw-Hill, 2005.
5. Neufert, P; Architects Data; Blackwell Science, 2000.
6. Agkathidis, A, Hudert, M and Schiling, G., “Form defining strategies: experimental architectural design”. Wasmuth, 2007.

6ARC02 BUILDING MATERIALS & CONSTRUCTION - VI

Objective : The course will enable to learn steel structure starting from building foundation to roof, components and construction techniques to develop strong network of structural members.

Unit I: Study of Deep foundation. Detail study of Pile foundation, types and its purpose.

Unit II: Structural steel frame work & trusses for various spans, design consideration, advantages, connection of various members supported on R.C.C. column, brick piers, fixing, wind bracing etc.

Unit III: Structural steel members with connections of girders, stanchions and grillage foundations.

Unit IV: Steel north light roof trusses, connections Gutters. Patent glazing for skylights, lanterns, steel Monitor roofs, methods of fixing, fixtures and fastenings.

Unit V: Introduction to pre-engineering buildings, its types, footing details, flooring, structural components, roofing materials, ventilation and lighting systems. Its advantages and disadvantages.

Unit VI: Shoring, purposes and types . Underpinning its purposes and types.

Sessional work: Assignments, test,site visit and drawing on the above topics.

References :

1. S.C. Rangwala, Engineering Materials, Charotar Publishing House, Anand,1997
2. HUDCO - All you want to know about soil stabilized mud blocks, HUDCO Pub, New, Delhi, 1989.
3. W.B. McKay Building Construction, vol. 1,2,3, Longmans, U.K.1981.
4. Don A Watson, Construction Materials and Processes, McGraw Hill Co.,1972.
5. R. Chudley, Construction technology, Richard Clay (Chaucer Press) Ltd.,Suffolk,1978.
6. J.H.callender,Time saver standard for Architectural Design Data, McGraw-Hill,1994.

6ARC03 ARCHITECTURAL STRUCTURE - V

Objective: Understanding of Basic Theory and principles of steel structural, its analysis and structural properties of elements.

Unit I: Introduction to pre cast concrete, various structural precast members available. Flat plate slab merits over conventional slab, proportioning and opening in flat slab.

Unit II: Introduction to shear wall, importance, types and locations in structural system.

Unit III: Introduction to IS-1893 & IS-13920. Detailing of earthquake resistant structure, ductile detailing for beam, column, beam column junction& footing.

Unit IV: Introduction to Steel structure, Types of steel section and their properties. Understanding types of joints in steel structures, riveted, welded and bolted joints.

Unit V: Simple welded and riveted connection (without moments) only axial loads.

Unit VI: Design of simple tension and compression member of trusses.

Sessional work: Assignments, tutorials and site visit on the above topics.

References:

1. P.C.Punmia, Strength of Materials and Theory of Structures; vol I, Laxmi Publications, Delhi 1994.
2. S.Ramanmurtham, Strength of Materials – Dhanpatrai & Sons, Delhi 1990
3. W.A.Nash, Strength of Materials – Schaums Series – McGraw Hill Book Company, 1989
4. R.K.Bansal – engineering Mechanics and Strength of Materials – Lakshmi Publications, Delhi, 1990

6ARC04 ESTIMATING AND COSTING

Objective: To impart knowledge of cost estimation of building construction work as per specification of materials and its importance.

Unit I : Introduction estimating & costing. Types of estimates,data required for preparing estimate.

Unit II :Standard mode of measurement. Method of taking quantities viz; long wall short wall & center line method.

Unit III: Examples and exercise for working out quantities for items from excavation to the final finishing of load bearing and R.C.C. items viz. slab, beams, columns etc.

Unit IV:Introduction to schedule of rates published by various governmental departments & its use.Procedure of working out abstract and bill of quantities.

Unit V: Rate analysis, factors affecting the rate of an item, rate analysis of usual items used in construction works. Introduction to writing & recording of Measurement Book for interim and final payments during construction.

Unit VI: Administrative approval and technical sanction for a project. Detail estimate of project given and use of computers for the same.

Sessional work: Assignments, tests, and tutorials on the above topics.

References:

1. W.H.King and D.M.R.Esson, Specification and quantities for Civil Engineers, The English university Press Ltd.
2. P.W.D. Standard specifications, Govt. Publications.
3. Dutta, Estimating and Costing, S. Dutta and Co., Lucknow.
4. Singh, S.C. and Sofat, C.G., Ed., "Handbook on Building Economics and Productivity", Central Building Research Institute
5. Birdie, G.S., "Text Book of Estimating and Costing (Civil Engineering)", Dhanpat Rai Publishing Company (P) Ltd.

06ARC05 Free Elective - II .

(1) CLIMATE RESPONSIVE ARCHITECTURE

Objective: The course aims to understand the various features to be considered for planning and designing of climate responsive built and un-built spaces.

UNIT-I: Introduction of Sun – Earth relationship and its impact on earth surfaces. Thermal balance of Earth, Tropical Zones on earth surfaces.

UNIT-II: Human comfort through body metabolisms, heat gain and heat loss, thermal balance of body, clothing pattern its effect on body.

UNIT-III: Climatic factors and climatic elements. Importance of climatic factors to create micro and macro climatic conditions.

UNIT-IV: Introduction of planning, designing, materials and techniques considered in traditional structures with respect to climate.

UNIT-V: Solar charts, types of shading devices, shadow angles and its use.

UNIT-VI: Planning and design of building in hot and dry climates.

Sessional work: Assignments and test on the above topics.

References:

1. O.H. Keonigsberger; T.G. Ingersoll and others; Manual of tropical housing and building- Part-I; Longmans, London-1980
2. M. Evans; Housing, climate and comfort; Architectural press London- 1980
3. B.G. Givoni; Man, climate, and architecture; Applied science, banking, Essex, 1982
4. N.K. Bansal and others; Passive building design; Elsevier science- 1994.
5. S. Drake; The third skin architecture, technology and environment; UNSW –press-2007.

06ARC05 Free Elective- II

(2) SUSTAINABLE ARCHITECTURE

Objective: To sensitize students about the importance and need for Sustainable Planning concept with respect to conservation of Environment.

Unit-I: Introduction to the ideas, issues and concepts of Sustainable Architecture, global environment and the built environment, principles of environmentally and ecologically supportive architecture.

Unit-II: Study of sustainable architecture in context with resource efficiency viz. Land, Water, Energy, Materials, Human resources, Biodiversity, health and global environment related to constructions and operation of buildings.

Unit-III: Appropriate materials and constructions to maintain sustainability. Eco friendly construction practices – sustainable campuses and case studies.

Unit-IV: Sustainable and conservation practices, water conservation, sewerage treatment, solid waste treatments, economics and managements.

Unit-V: Low energy design, hybrid system, modeling and simulation of energy system, integration of P.V. and wind system in the building, wind, solar and other non-conventional energy systems.

Unit-VI: Climatic factors and sustainability.

Sessional work : Assignments and test on the above topics.

References:

1. O.H.keonigsberger; T.G. Ingersoll and others; Manual of tropical housing and building- Part-I; Longmans,London-1980
2. M. Evans; Housing, climate and comfort; Architectural press London- 1980
3. B.G.Givoni; Man,climate,and architecture; Applied science, banking, Essex, 1982
4. N.K Bansal and others; Passive building design; Elsevier science- 1994.
5. S.Drake; The third skin architecture,technology and environment;UNSW–press-2007.

6ARC06 BUILDING SERVICES AND EQUIPMENTS

Objective: To impart knowledge of various aspects of building services-water supply systems, drainage and solid waste disposal system.

Unit I: General ideas of water qualities & impurities. Systems of water supply for low rise &high rise buildings.

Unit II: Computing water demands for various uses and its basis. Hot water supply system- solar water heater & geysers.

Unit III: Water storage reservoir, their types and importance in water supply scheme.

Unit IV: Water supply pipes & fittings, materials, sizes and itsclassification. Types of taps, toilet and kitchen fittings.

Unit V: Drainage systems, conservancy and water carriage systems. Types of traps and sanitary fittings. Sewage disposal systems from buildings & premises. Garbage disposal & solid waste management systems at community & city level.

Unit VI: Basic knowledge of electrical generation systems. Electrical distribution systems in buildings & premises. Electrical control, wiring systems and appliances at building level.

Sessional work: Assignments, test, site visit and drawings on the abovetopics.

References:

1. Manual of Water supply and treatment , second edition, CPHEEO, Ministry of Works and housing, New Delhi, 1977.
2. Manual of Sewerage and sewage treatment, CPHEEO Ministry of Works and housing, New Delhi, 1980.
3. S.C.Rangwala, water supply and sanitary Engineering, Charotar publishing House , Anand 1989.

6ARC07 ARCHITECTURAL DESIGN STUDIO – VI

Objective and contents as per subject 06ARC01ARCHITECTURAL DESIGN - VI.

Sessional work: One major design project and one time project with theother task given by studio coordinator

Viva Voce by external examiner at the end of the Semester.

06AR08 BUILDING MATERIALS & CONSTRUCTION STUDIO – VI

Sessional work:

Assignments and drawing on the above topics given in the subject 6ARC02 Building Materials & construction- VI.

Viva Voce by external examiner at the end of Semester.

6ARC09 INTERIOR DESIGN – I

Objective: To Impart the knowledge of interior design as an integralpart of Architectural Design. The study of latest trends/ styles of interior design & decoration.

Unit - I: Background to furniture design and decoration styles with reference to varying time lines, geography and cultures viz; Georgian, Victorian, missionary, Rajasthani, Gujrati, Maratha, Dravidian, etc.

Unit – II: Various elements & components of interior design spaces such as, walls, floors, ceilings, openings, furniture's & decorative items to achieve or improvise desired ambience of the space.

Unit - III: Interior Design process through brainstorming and using material pallet to arrive at desired ambience and the style.

Sessional work:

One material survey on latest & trending interior materials and one major interior design project as decided by studio coordinator.

Sessional work: One major interior design project on the above topics with assignments.

Viva Voce by external examiner at the end of the Semester.

Suggested Books :

1. Chiara, J.D., Panero, J., Zelnik, M., "Time Saver Standards for Housing and Residential Development", 2nd Ed., McGraw-Hill.
2. Neufert, P., "Architects Data", 3rd Ed., Blackwell Science.
3. Watson, D.(Editor), "Time-saver Standards for Architectural Design: Technical Data for Professional Practice", McGraw-Hill

6ARC10 WORKING DRAWING – II

Objective : The students shall impart the knowledge of construction details for the execution of building from foundation to roof.

Contents: Working drawing of RCC structure for design project done during fifth semester. The drawing should be in an appropriate scale.

The working drawing should include from foundation level to roof level as follows:

- a) Study of building by laws
- b) Municipal drawing and detail of all level plans.
- c) Details center line plan of columns
- d) Working details of any interesting features in the plan, sections & elevation.
- e) Site plan showing drainage layout, landscape layout, internal roads etc.
- f) Working details of water supply & electrical layout plans.

Sessional Work : Assignments and drawing plates on the above topics.

Viva Voce by external examiner at the end of the Semester.

Suggested Text Books:

1. Parmar V.S.: Design Fundamentals in Architecture, Somaiya Publications, Bombay (1973)
2. Scott: Design Fundamentals Edward d Mills- Planning the Architects Hand Book – Bitterworth, London, 1985.
3. Watson, D (editor) Time –saver standards for Architectural Design: Technical data for professional practice, McGraw-Hill, 2005.
4. Design & Practical handbook on plumbing by C.R. Mohan & Vivek Anand.
5. Architectural Drafting: Structure & Environment by John D. Bias, Ph.D.
6. Working Drawing handbook Second edition by Keith Styles.
7. Agkathidis, A, Hudert, M and Schiling, G., "Form defining strategies: experimental architectural design". Wasmuth, 2007.

NOTIFICATION

No. 105 /2025

Dated : 19 /07/2025

Subject: Implementation of new syllabus of the subjects of Semester VII to X of B.Arch. (Bachelor of Architecture) as per C.B.C.S. pattern.

It is notified for general information of all concerned that the authorities of the University have accepted to implement the new syllabus of the subjects of **Semester VII to X of B.Arch. (Bachelor of Architecture) as per C.B.C.S. Pattern** to implemented from the academic session 2025-2026 & onwards as mentioned below:

Sd/-
(Dr.A.M.Asanare)
Registrar
Sant Gadge Baba Amravati University

**SYLLABUS OF SEMESTER VII TO X OF BACHELOR OF ARCHITECTURE
SEMESTER PATTERN (CHOICE BASED CREDIT SYSTEM)
SEMESTER: SEVENTH**

07ARC01 ADVANCE CONSTRUCTION - I

Objective : The course will enable the learning in progression, Construction systems of large buildings from foundation to roofs and walling systems.

Unit I: Different types of construction systems for foundation of large span and multistoried buildings, Viz; shaft foundation, Caisson foundation, group pile system, combined pile & raft foundation.

Unit II: Earthquake resistant structure.

- a) Fundamentals of seismic design & control systems.
- b) Introduction & role of non-structural elements in earthquake

Unit III: a) Remedial measures in terms of planning, designing and materials.
b) Retrofitting of earthquake affected buildings.

Unit IV: a) General study of standardization of building elements its uses for various construction.
b) Study of Modular co-ordination and its multipurpose functional application.

Unit V: Concept of structural glazing, curtain wall & building skin system, viz; glass, ACPs, jalies& adaptive building envelopes with fixing details.

Unit VI: Introduction & designing of Light Gauge Framing System (LGFS) or Light gauge Steel framing (LGSF).

Sessional work: Assignments, test, site visit and drawing on the above topics.

Reference Books:

1. S.C. Rangwala, Engineering Materials, Charotar Publishing House, Anand,1997
2. HUDCO - All you want to know about soil stabilized mud blocks, HUDCO Pub, New, Delhi, 1989.
3. W.B. McKay Building Construction, vol. 1,2,3, Longmans, U.K.1981.
4. Don A Watson, Construction Materials and Processes, McGraw Hill Co.,1972.
5. R. Chudley, Construction technology, Richard Clay (Chaucer Press) Ltd.,Suffolk,1978.
6. J. H. Callender,Time saver standard for Architectural Design Data, McGraw-Hill,1994.

07ARC02 ENVIRONMENTAL SERVICES – I

Objective: To impart knowledge of various aspects of city level water supply systems, drainage and solid waste disposal.

Unit I: Sources of water supply their types, water collection, water treatment, distribution of water from various sources.

Unit II: Rain water disposal and roof drain and rain water harvesting system.

Unit III: Water pollution and preventive measures.

Unit IV: Sewage treatment plant and its locational factor.

Unit V: Garbage disposal and recycling methods. Concept of recycling of solid and liquid waste in building. Vermi-compost, Biogas production, etc.

Unit VI: Sewage disposal systems in unsewered location viz. septic tank, soak pit, acqua privy.

Sessional work: Assignments, test, site visit and drawings on the above topics.

Reference Books:

1. Manual of Water supply and treatment, second edition, CPHEEO, Ministry of Works and housing, New Delhi, 1977.
2. Manual of Sewerage and sewage treatment, CPHEEO Ministry of Works and housing, New Delhi, 1980.
3. S.C.Rangwala, water supply and sanitary Engineering,Charotar publishing House , Anand 1989.
4. Bureau of Indian Standards.
5. Pachauri, A.K., “Water Supply and Sanitary Installations, Design, Construction and Maintenance”, New Age International Ltd.
6. Manas Handbook of Plumbing, Manas Publishers.

07ARC03 PROFESSIONAL PRACTICE & VALUATION

Objective: The objective of the course is to expose the students to the present trends of architectural practice and valuation.

- Unit I: The Architects Act of 1972. Role of professional bodies like COA, IIA its working, byelaws, categories of membership, election procedure and code of conduct. Other professional bodies such as, ITPI, IIV, COA & IIA, etc.
- Unit II: Professional responsibilities of the architect, copyrights, scale of charges, variation of charges, mode of payment, termination of services, specialized building services.
- Unit III: Techniques of valuation, elements of valuation and factors affecting valuation. Methods, valuation of land and building property, comparable cost of sale, purchase and mortgage.
- Unit IV: Valuation for compensation on acquisition, compensation under central and state legislation with reference to Town Planning Act.
- Unit V: Valuation for renewal or lease/extension of lease, standard rent, easement rights, dilapidation, insurance, estate development and advice on investment policy.
- Unit VI: Arbitration, arbitrators, umpire and nature of arbitration.

Sessional work: Assignments on - documentation for complete project with design documents & valuation report of site with respect to its visit and various aspects.

Reference Books:

1. Rangwala, S C , “Valuation of Real Properties”.
2. Piotrowski, A. and Williams, Julia, “The Discipline of Architecture”, University of Minnesota Press.
3. Eldred, G.W., “The Beginners Guide to Real Estate Investing”, John Wiley & Sons
4. Publications of COA, IIA Hand Book on Professional Practice, The Architects publishing Corporation of India, and Bombay 1987.

07ARC04: URBAN PLANNING

Objective: The objective of the course is to develop the understanding of urban planning process through surveys, analysis, alternative planning strategies and to address settlement planning issues.

- Unit I: Planning during Medieval and renaissance period in western and Indian context.
- Unit II: Evolution of modern planning concepts. Impact of industrial revolution on planning process. Planning theories developed by Patric Geddis, EbenzerHoward, Lewis Mumford, C. L. Doxiadis, Patric Abercrombie.
- Unit III: Need and study of Urban planning interrelationship between urban planning, urban design, urban landscape design and Architecture planning as a team work and role of urban planner in planning team. Hierarchical levels of planning.
- Unit IV: Introduction to TPS, master plans, structure plan, regional plans, land use planning, Neighborhood Planning, zoning.
- Unit V: Recent trends in urban planning, various governmental policies and schemes in urban development viz- SEZ, Amrut, Smart cities mission, ISHDP, Urban renewal process and Slum improvement scheme etc.
- Unit VI: National habitat and housing policy, introduction to housing, various housing schemes and various housing agencies such as HUDCO, MHADA etc.
- Sessional work: Assignments, test, site survey & analysis resulted into urban planning studio and drawings on the above topics.

Reference Books:

1. Gallion Arthur B & Eisna Simon, The Urban Pattern, City Planning and Housing.
2. C. L. Doxiadis, Ekistics, An introduction to the Science of Human Settlements, Hutchinson, London, 1968
3. John Ratchiffe, An Introduction to Town and Country Planning.
4. Gupta, V., “Energy and Habitat: Town Planning and Building Design for Energy Conservation”, Wiley Eastern.
5. Rangwala, S.C., “Town Planning”, Charotar Publishing House.
6. Eleanor, S.M., “British Town Planning and Urban Design: Principles and Policies”, Longman.
7. Randall, A., “Crossroads, Hamlet, Village, Town: Design Characteristics of Traditional Neighbourhoods, Old and New”, American Planning Association.

07ARC05 ARCHITECTURAL STRUCTURE-VI

Objective: Understanding of Basic Theory and principles of structural analysis and structural properties of elements.

Unit I : Design and detailing of simple ground plus onestory structure.

Unit II: Various structural systems for multistoried buildings, analysis of multistoried buildings and structure subjected to wind pressure.

Unit III: Introduction to coffered grid slab and design of flat slabs with its elements and details.

Unit IV: Failure of structure

- a. Types of failure in various structure.
- b. Causes of failure.
- c. Evaluation of damage
- d. Nondestructive testing techniques.
- e. Techniques to prevent collapse failure of structures.

Unit V: Plastic analysis of Steel Structure and design of industrial shed.

Unit VI: Introduction to Digital structural design systems such as Etabs, Stadpro etc. with its pre-requisites, menus and toolbars.

Sessional work: Assignment based on G+1 RCC structural design and site visit reports of flat slab / grid slab.

Reference Books:

1. P.C.Punmia, Strength of Materials and Theory of Structures; vol I, Laxmi Publications, Delhi, 1994.
2. S.Ramanmurtham, Strength of Materials – Dhanpatrai & Sons, Delhi 1990
3. W.A.Nash, Strength of Materials – Schaums Series – McGraw Hill Book Company, 1989
4. R.K.Bansal – engineering Mechanics and Strength of Materials – Lakshmi Publications, Delhi, 1990.

07ARC06 ACCOUSTICS & ILLUMINATION

Objective: To enable the students understand the articulation of sound within and around building, fundamentals of sound propagation and lighting requirements in buildings.

UNIT-I: Fundamentals - sound waves, frequency, intensity, wave length, measure of sound, decibel scale, speech and music frequencies, human ear characteristics.

UNIT-II: Sound transmission and absorption – outdoor noise levels, acceptable indoor noise level, sonometer. Sound absorbing materials, absorption co-efficient and measurements, resonance reverberation time , sound levels and their calculations.

UNIT-III: Acoustical defects and remedies. Structure borne and air borne noise, their effects and control.

UNIT-IV: Site selection, shape, volume, treatments for interior surfaces, basic principles in designing open air theatres, cinemas , broadcasting studio, concert hall , theaters, lecture Halls.

UNIT-V: Principles of Illumination- Visual tasks - factors affecting visual task – Modern theory of light and colour - synthesis of light - luminous flux - candela – solid angle illumination – Utilizations factor- Depreciation factor – MSCP – MHCP Laws of illumination. Application of laws in lighting calculations using point by point method.

UNIT-VI: Lighting Design – Classification of lighting – Artificial light sources - spectral energy distribution – luminous efficiency. Design of modern lighting for stores, offices, schools, hospitals and residential lighting.

Sessional work: Assignments on latest lighting & illumination systems, market survey on latest acoustical materials and test on the above topics.

07ARC07 ARCHITECTURAL DESIGN STUDIO – VII

Objective: To enable the student to design the large-scale housing and housing project in an urban/ peri urban environment with emphasis on advanced building services and systems, urban development regulations, building byelaws and socio-economic analysis.

Basic Contents:

- 1) Introduction to the designing of multifunctional community housing project on an appropriate scale with varying building typologies.
- 2) Importance of case studies, data collection, area analysis, evolution of plan forms, climatic oriented planning and design features, space utilization, building & site services, site analysis and site planning, etc; in the Architectural design process.
- 3) Importance of culture, tradition, topography, climate and building bye laws in generating built form.
- 4) Planning and designing of large-scale housing and building projects in an urban/ peri urban environment, advance building services, energy conservations, cost effective techniques and materials, building bye laws, housing schemes etc.
- 5) Architectural study tour relevant to design project.

Sessional work: One major design project and one time project with other task and assignments.

Viva Voce by external examiner at the end of Semester.

Suggested Text Books:

1. Ching, F.D.R.: Form, Space and Order, Van Nostrand Rheinhold, New York (1979).
2. Parmar V.S.: Design Fundamentals in Architecture, Somoiya Publications, Bombay (1973)
3. Scott: Design Fundamentals ,Edward d Mills- Planning the Architects Hand Book – Bitterworth, London, 1985.
4. Watson,D (editor) Time –saver standards for Architectural Design: Technical data for professional practice, McGraw-Hill, 2005.
5. Neufert,P; Architects Data; Blackwell Science, 2000.
6. Agkathidis, A, Hudert, M and Schiling, G., “Form defining strategis: experimental architectural design”. Wasmuth, 2007.

07ARC08 ADVANCE CONSTRUCTION STUDIO – I

Sessional work: Assignments and drawing on the above topics given in the subject 07ARC01 Advance construction – I.

Viva Voce by external examiner at the end of Semester.

07AR09 INTERIOR DESIGN – II

Objective: To enable students to work upon public scale interiors and transform initial designer into an interior designer.

Design of a larger interior space, viz; public & corporate buildings with respect to style, function, services, etc.
Special emphasis on material pallet, product design, visual arts, graphics, lighting, acoustics & presentation skills.

Sessional work: One major interior design project on the above topics with assignments.

Viva Voce by external examiner at the end of Semester.

Suggested Books:

1. Chiara, J.D., Panero, J., Zelnik, M., “Time Saver Standards for Housing and Residential Development”, 2nd Ed., McGraw-Hill.
2. Neufert, P., “Architects Data”, 3rd Ed., Blackwell Science.
3. Watson, D.(Editor), “Time-saver Standards for Architectural Design: Technical Data for Professional Practice”, McGraw-Hill
4. Ballard Bell, Victoria and Rand, P., “Materials for Architectural Design”, Laurence King.

07ARC10 URBAN PLANNING STUDIO

Sessional work: Assignments and drawing on the above topics given in the subject 07ARC04 Urban Planning.

Viva Voce by external examiner at the end of Semester.

SEMESTER: EIGHTH

08ARC01 ARCHITECTURAL DESIGN – VIII

Objective : To expose students for designing of large scale urban design projects with emphasis on modern material, techniques, architectural styles advanced services, sustainable architecture, green architecture, climate responsive architecture etc.

Basic contents:

- 1) Introduction to urban design project planning and design consideration.
- 2) Importance of case studies, data collection, area analysis, evolution of plan forms, climatic oriented planning and design features, space utilization, building & site services, site analysis and site planning ,etc; in the Architectural design process.
- 3) Importance of culture, tradition, topography, climate and building bye laws in generating built form.
- 4) Major design project may include midrise/ high tall buildings viz. apartment and commercial mixed used complexes, five star Hotel, multifunctional complex, community centers, super specialty hospital, institutions etc.
- 5) Architectural study tour relevant to design project.

Sessional work: One major design project and one minor/ Allied design project with other task and assignments.

Suggested Text Books:

1. Ching, F.D.R.: Form, Space and Order, Van Nostrand Rheinhold, New York (1979).
2. Parmar V.S.: Design Fundamentals in Architecture, Somoiya Publications, Bombay (1973)
3. Scott: Design Fundamentals Edward d Mills- Planning the Architects Hand Book – Bitterworth, London, 1985.
4. Watson,D (editor) Time –saver standards for Architectural Design: Technical data for professional practice, McGraw-Hill, 2005.
5. Neufert,P; Architects Data; Blackwell Science, 2000.
6. Agkathidis, A, Hudert, M and Schiling, G., “Form defining strategis: experimental architectural design”. Wasmuth, 2007.

08ARC02 ADVANCE CONSTRUCTION – II

Objective: Study is to aim at teaching students the advance and more complex aspects of construction industry. It also aims at exposing them to systems and technology of construction use for large spaces with complex utilities.

Unit I: General introduction to large span structures and high rise structures, planning features and its construction aspects. Chronological development of large span structural framework such as lamella, laminated portal frame, R.C.C. & steel portal frames.

Unit II: A) R.C.C. and steel space frame structures. B) Study of shell structures and its construction techniques from historical perspective. C) Shell structures such as Geodesic Schwedeler and Gitter Kuppel and its construction aspect.

Unit III: Construction aspect considered in temporary structures which are of portable nature for various short terms events. Use of modular techniques and materials.

Unit IV: Ferrow cement techniques and its appropriate various uses for building construction elements.

Unit V: Stressed Skin Structures – Introduction:

Suspended / Tensile Roof Structures - Introduction, definition, design and structural principles - All types, a complete architectural study. Constructional aspect, erection of cable roofs. Examples, Merits and Demerits.

Unit VI: Tensile Membrane and Pneumatic Structures – Introduction, definition, design and structural principles - all types, a complete architectural study. Constructional aspects, Examples, Merits, Demerits.

Sessional work: Assignments, test, site visit and drawing on the above topics.

Reference Books:

1. S.C. Rangwala, Engineering Materials, Charotar Publishing House, Anand,1997
2. HUDCO - All you want to know about soil stabilized mud blocks, HUDCO Pub, New, Delhi, 1989.
3. W.B. Mckay Building Construction, vol. 1,2,3, Longmans, U.K.1981.
4. Don A Watson, Construction Materials and Processes, McGraw Hill Co.,1972.
5. R. Chudley, Construction technology, Richard Clay (Chaucer Press) Ltd.,Suffolk, 1978.
6. J.H.callender, Time saver standard for Architectural Design Data, McGraw-Hill, 1994.

08ARC03 ENVIRONMENTAL SERVICES – II

Objective: Understanding complex relationship between natural and build environment with emphasis on strategies to transform the built environment considering the environmental issues.

Unit I: Natural and artificial ventilation system in buildings. Air conditioning methods equipments and ducting.

Unit II: Refuse disposal system in high-rise buildings, viz. – refuse chute, purpose of service floor and other services.

Unit III: Vertical & Horizontal transport system –Elevators Electric, hydraulic, passenger, hospital, capsule, freight etc., Parallel and criss cross escalators, horizontal belt conveyors , horizontal moving walkway’s.

Unit IV: Energy conservation, low energy systems, hybrid systems, integration of P. V. and wind system in the building, wind, solar and other non-conventional energy systems, solar thermal application for heating and cooling, electricity generation in building.

Unit V: Fire safety – general provisions. Causes of fire in buildings, Fire protection standards – safety regulation – NBC – planning consideration in building like non- combustible material, construction, stair cases and lift lobbies, fire escapes and A.C. system.(Fire detectors and fighting installation. Type of detectors and usage. Alarm system, Firefighting pumps, fire tank, dry and wet risers, automatic sprinkler, fire drill, refuge areas)

Unit VI: Special features required in building types considering universal design principals. Lighting conductors& building automation system.Intelligent energy conservation systems, electronic security and surveillance systems for buildings, etc.; compliance requirements w.r.t. National Building Code and Energy. Conservation Building Code.

Sessional work: Assignments, test, site visit and drawings on the above topics.

Reference Books:

1. Manual of Water supply and treatment , second edition, CPHEEO, Ministry of Works and housing, New Delhi, 1977.
2. Manual of Sewerage and sewage treatment, CPHEEO Ministry of Works and housing, New Delhi, 1980.
3. S.C.Rangwala, water supply and sanitary Engineering, Charotar publishing House , Anand 1989.
4. Bureau of Indian Standards.
5. Pachauri, A.K., “Water Supply and Sanitary Installations, Design, Construction and Maintenance”, New Age International Ltd.
6. Manas Handbook of Plumbing, Manas Publishers.

08ARC04 SUSTAINABLE ARCHITECTURE

Objective: To sensitize students about the importance and need for Sustainable Planning concept and appropriate Architectural design concept as an emerging thrust area.

UNIT-I :Development in Historical Context - Climate Responsive features in early settlements – orientation of Streets and Buildings, Creation of Habitable Environment, Early Planning Methods.

UNIT-II: Introduction to– Environmental Impact Analysis– Ecological foot prints – Essential ingredients of sustainable development apart from social and economical – environment, stake holder, participation, institutional mechanism.

UNIT-III: Characteristics of sustainable architecture: fundamentals of passive designing with respect to thermal comfort, visual comfort, acoustic comfort.

UNIT-IV: Resource Efficiency – Land, Water, Energy, Human Resource, Biodiversity – Sustainable practices at settlement, Campus and Building Level.

UNIT-V:Sustainable Architecture –Basic strategies-3 R’s, vernacular practices &innovative designs.Strategies with respect to ISO rating systems, assessment and ratingsystems like GRIHA, LEED, IGBC, ECBC etc.

UNIT-VI: Global Sustainable Planning and Policies – Awareness programme at International conventions on sustainability, Kyoto protocol, United nations SDG’s and its relevance to Architecture.

Sessional work: Assignments and test on the above topics.

Reference Books:

1. O.H.keonigsberger; T.G. Ingersoll and others; Manual of tropical housing and building- Part-I; Longmans,London-1980
2. M. Evans; Housing, climate and comfort; Architectural press London- 1980
3. B.G.Givoni; Man,climate and architecture; Applied science, banking, Essex, 1982
4. N.K Bansal and others; Passive building design; Elsevier science-1994.
5. S.Drake; The third skin architecture, technology and environment;
6. UNSW–press-2007.
7. Manik & Girish Komisva, IIPA, keeping Cities Clean and Green, Uppal Publishing House, 1997.
8. Beer, Environment Planning for Site Development.

08ARC05 INNOVATIVE STRUCTURAL SYSTEMS

Objective: Application of Basic Theory and principles of structural analysis and structural properties of elements with innovative and creative design techniques.

Unit-I Long span structures with spanning techniques Such as: - Conventional techniques of Arch, Vault Doming and its limitations Modern techniques for spanning -Parabolic shapes or hyperbolic shapes: - Long span trusses.

Unit-II Tall structures and its structural systems: - Earlystructures,lateral load resisting systems: - Braced systems, shear wall systems, shear wall frame and shear truss frame system, core out-rigger system, Tubular systems:- Frame tube, breast tube, bundle tube, tube in tube- with detailed diagrammatic illustration.

Unit-III Advance tubular system :- Composites building systems, combined & shared systems, concrete core systems with detailed diagrammatic illustration.

Unit-IV Tensile Structures:- Loading and tensile materials the relationship between form, function and structural material, case studies of some tensile systems.

Unit-V Ferrocement Structures to achieve plasticity in architecture, materials, concept and case studies advantages and disadvantages -Low cost systems Cost saving techniques applied for building elements such as – structural elements, wall elements, floor and roofing elements.

Unit-VI Sustainable, Green and Biophilic Architecture: -Green is Environment friendly,Sustainability is wider considers their pillars- Social, Environmental and economy. Biophilic-Tries connect with nature and other living organisms. Concept and case studies of above, Green rating systems .

Sessional work: Assignments, tests, and tutorials on the above topics.

References:

- Building structures Illustrated: Patterns, systems and Design:- By F.D.K. Ching
- Structural Systems for Tall Buildings-I.D. Bennets
- Thin-Walled Structures - Advances and Developments - J. Zaras, K. Kowal-Michalska, J. Rhodes

08ARC06 PROFESSIONAL ELECTIVE – I (1) HOUSING

Objective: To sensitize students about the need for, demand and supply of housing in India, to expose the role or function of various housing agencies, the typologies of housing with basic environmental issues.

UNIT-I: Housing Issues – Indian Context. Housing as Architecture – basic need – demand and supply of housing – Housing Agencies and their role in housing development.

UNIT-II: Social factors influencing housing design, affordability, economic factors and influence of traditional housing and planning features.

UNIT-III: Housing surveys and standards. Sources of Data and information, methods and techniques of housing survey, housing standards etc.

UNIT-IV : Housing Design – Traditional Patterns – Row housing and cluster housing – layout concepts – use of open spaces – utilities and common facilities.

UNIT-V: Case studies of housing schemes designed by eminent architects.
High Rise Housing.

UNIT-VI: Government schemes for slum improvement, Housing and urban development in India.

Sessional work : Assignment and case studies of above topics.

Text Books :

1. Joseph de chiara and others – Time Saver Standards for Housing and Residential Development
McGraw-Hill Co., New York, 1995
2. Karnataka state Housing Board – MANE – Publication – 1980

08ARC06 PROFESSIONAL ELECTIVE – I(2) ARCHITECTURAL CONSERVATION

Objectives: To understand the significance of built heritage as a resource of an identity. To identify causes of deterioration and suggest remedial measures. To understand the importance of conservation and its legal aspects.

Unit:I Conservation, concepts, history, principles and methods. Various issues and practices of conservations, values and ethics.

Unit:II Concept of integrated conservation, related problems, Issues and solutions. Inventory and Documentation Techniques.

Unit:III International charters - INTACH, UNESCO, ASI, ICOMOS, etc., Introduction to approaches to conservation with relevant case studies from India and abroad.

Unit:IV Comprehensive scope of Architectural conservation, lessons for Indian situation. Character and issues in our heritage towns through case studies.

Unit: V Various guidelines for the preservation, conservation and restorations of buildings.

Unit: VI Community participation in Conservation, introduction to concept of World Heritage Sites.

Sessional work: Notes, Seminars, assignments on above topics. Method of Assessment: Sessional Exams, Teacher's Assessment, End Term Exam

References:

1. Bernard Feilden, "Conservation of Historic Buildings", Third Edition 2003,.
2. Aylin Orbasli, "Architectural Conservation: Principles and Practice".
3. Picard Gilbert, Charles, "Encyclopaedia of Archaeology".
4. A. S. Bizht, I. K. Bhatnagar, "Conservation of cultural property in India".

08ARC06 PROFESSIONAL ELECTIVE – I (3) SUSTAINABILITY ASSESSMENT & RATING SYSTEMS

Objectives: To understand sustainability as a global concern and every individuals responsibility.
To study the various aspects and principles of sustainability in architecture and planning.
To study various nuances of assessment of architectural sustainability.

Unit: I: Sustainability: - Definition Core idea, historical backdrop and traditional practices ensuring sustainability. Three pillars of Sustainability: - Social, economic and environmental. Principals to ensure suitability: 3 Rs Reduce, Reuse & Revitalize, following of traditional / cultural/ sustainable practices, innovative designs and community measures to stop their non- sustainable practices

Unit: II: Policies and lessons learnt from Global summits and united Nations Conferences on the Environment :-

- First Earth summit at stalkholm (1972) and community development pxogra memes as solution.
- Rio de janario conference 1992 focused sustainable development
- Kyoto Protocols
- Johannesburg Summit 2002, viz.
- Earth summit at stalkhotm in 2022 to set out post Covid-19 sustainable recovery plans.

Unit: III: Environmental and social sustainability in urban areas, Human activities and energy in cities, Ecological footprint, population carrying capacity, concepts and approaches for sustainable urban planning such as compact city urban form, density, landuse and accessibility systems, mixed land use, participatory and integrated approach.

Unit: IV: Assessing urban sustainability: - Scales of assessment Building or cluster, Neighborhood, City, Region, National and Global.

Unit: V: Assessment process- Identifying tools, parameters and indicators with sustainability framework, measurement systems and ranking /marking. Software tools for designing and performance evaluation of a building.

Unit: VI: Various measurement systems / framework of sustainability developed by different agencies such as: - LEED, GRIHA, BIM with case studies and best practices with rankings.

Sessional work : Assignment and case studies of above topics.

Text Books :

1. IGBC green new building rating systems, abridged reference guide September 2016 by Indian green building council.
2. An overview of green building rating systems by Raviraj Jadhav, Pritam Mali, Amit Patil, Lambard academic publishing.
3. Guide to green building rating systems by Linda Reeder, Jhon Wiley and sons limited.
4. Cities and Climate Change, OECD Publishing OECD (2010)
5. Eco-City Planning: Policies, Practice and Design, Tai-Chee Wong and Belinda Yuen, Springer
6. Guide to Sustainable Community Indicators, Hart, Maureen, North Andover, MA: Hart Environmental Data, Second Edition, 1999.
7. Sustainable Urban Planning, Joy Sen, The Energy and Resources Institute, TERI, 2012
8. Social Sustainability in Urban Areas: Communities, Connectivity and the Urban Fabri, Tony Manzi, Karen Lucas, Judith Allen, Tony Lloyd Jones, Routledge, 2010
9. Sustainable Development in India: Stocktaking in the run up to Rio+20. TERI, New Delhi, Ministry of Environment and Forests, Government of India, 2011SGBC
10. Handbook of sustainability LEED ¼ for Building Design & construction.

08ARC06 PROFESSIONAL ELECTIVE – I (4) CONSTRUCTION MANAGEMENT

Objectives:

To introduce students to fundamental principles of construction management, quality control measures and develop skills in project planning, scheduling with understanding of digital tools and their applications in construction management.

Unit I: Introduction to Construction Management:

Role and scope of construction management in architecture, Functions and responsibilities of a construction manager, Construction project lifecycle and phases, Organizational structures in construction projects, Introduction to contracts, tenders, and procurement.

Unit II: Project Planning & Scheduling:

Principles of project planning and work breakdown structures (WBS), Scheduling techniques: Gantt Charts, Bar Charts, Milestone Charts, Introduction to Critical Path Method (CPM) and Program Evaluation and Review Technique (PERT), Resource allocation and optimization in scheduling

Unit III: Construction Financial Management:

Direct and indirect costs in construction projects, Cost-time tradeoff and project crashing techniques, Financial planning, project budgeting, and cash flow management

Unit IV: Construction Methods & Equipment:

Selection of construction methods and their impact on project efficiency, Use of construction equipment: cranes, excavators, concrete mixers, scaffolding, formwork, etc.

Unit V: Quality Control & Safety Management:

Quality control techniques in construction, Inspection methods and construction defects management, Safety management: construction site hazards, safety standards, and OSHA regulations, Risk assessment and mitigation strategies in construction projects.

Unit VI: Use of Digital Tools in Construction Management

Introduction to Building Information Modeling (BIM) and its applications, Project management software: MS Project, Primavera, and Procore, Digital collaboration tools for construction teams, Use of Geographic Information Systems (GIS) in site planning and analysis, AI, automation, and data analytics in construction management

Sessional Work:

- Assignments based on case studies and real-life project management scenarios
- Hands-on exercises using software like MS Project, Primavera, or BIM tools
- Site visits and interaction with industry professionals

Recommended Text Books:

1. Dr. B. C. Punmia & K. K. Khandelwal – Project Planning and Control with PERT/CPM, Laxmi Publications.
2. Peurifoy & Schexnayder – Construction Planning, Equipment, and Methods, McGraw Hill.
3. S. Seetharaman – Construction Engineering and Management, Umesh Publications.
4. Chitkara, K. K. – Construction Project Management: Planning, Scheduling & Controlling, McGraw Hill.
5. Jha, K. N. – Construction Project Management: Theory and Practice, Pearson Education.

08ARC07 ARCHITECTURAL DESIGN STUDIO - VIII

Sessional work:

Assignments and drawing on the above topics given in the subject 08AR01 Architectural Design Studio – VIII.

Viva Voce by external examiner at the end of Semester.

08ARC08 ADVANCE CONSTRUCTION STUDIO - II

Sessional work:

Assignments and drawing on the above topics given in the subject 08AR08 Advance construction Studio – II.

Viva Voce by external examiner at the end of Semester.

08ARC09 LANDSCAPE DESIGN STUDIO –

Objective:- To understand the basics of landscape design by studying the key elements at both small and large scale landscape, focusing on their form, function, and aesthetics through hands-on studio projects. The goal is to design outdoor spaces that are both practical and visually appealing, promoting sustainability enhancing the ecology.

Unit I: Landscape Graphics in Architectural Representation:

Landscape graphics & role in architectural assignments, especially in landscape design and site analysis. Understanding and applying landscape graphics enhances the clarity, precision, and impact of architectural projects.

Unit II: Landscape Appraisal – Analyzing existing Landscape Design with its typology & Process.

To study the methodologies and processes used in the case landscape design, with a focus on analyzing existing landscapes and evaluating their effectiveness. Application of tools and techniques for assessing landscape designs, identifying their strengths and weaknesses, and understanding how design principles have been applied in user-world scenarios.

Unit III: Understanding the Plantform Design with its Classification and Horticultural Practices in an illustrated manner. Other elements in landscape design.

Comprehensive understanding of plant classification systems in horticulture, emphasizing their role in landscape design. Students will learn how plants are categorized based on, function, ecology, and environmental factors. Further how they are applied in landscape organization. Illustration in sections and sketches. Illustration of water conserving and revenue generating landscape proposals to be applied in major design as well.

Unit IV: Site Analysis, Site Planning and Development – Understanding and Derivation of Form

To understand the process of site analysis and site planning, with a focus on how to derive design forms from site characteristics. This unit focuses on understanding and evaluating the site in its geographical, political, and functional context. It covers essential aspects for effective site development.

Unit V: Study of essential services:

To understand and integrate essential services within landscape design, emphasizing the role of utilities, infrastructure, and services that support sustainable and functional outdoor spaces. Students will explore how essential services such as water supply, sewage systems, electricity, and waste management contribute to the overall effectiveness of landscape planning and development.

Unit VI : Landscape Design Project Application and implementation of landscape elements into a design for residential areas, urban spaces, campus design at institutional & industrial level, reclaimed lands, Forest parks, Theme parks etc.

Sessional work:

Assignments and Sketches, Case Studies of contemporary period, One major Landscape Proposals for Public/ Private and institutional purpose . Assignment shall be on the above topics.

Reference Books:

1. Sylvia Crowe Sheila Haywood, The Gardens of Mughal India , Vikas Publishing House, Pvt. Ltd, India, Delhi,1973.
2. Garrett Eckbo, The Art the Home Landscaping, McGraw-hill Book Co., London, 1956.
3. Testsuro Yoshida, Gardens of Japan, Jr. Marcus G. Sims, 1963.
4. Sir Banister Fletcher, A History of Architecture, University of London, The Antholone press, 1986.
5. Percy Brown, Indian Architecture (Islamic period), Taraporevala and Sons, Bombay, 1983tt
6. Satish Grover, The Architecture of India (Buddhist and Hindu Period), Vikas Publishing Housing Pvt. Ltd., New Delhi, 1981
7. Christopher Tadgelli, The History of Architecture in India from the Dawn of Civilization to the end of Raj, Longman group, U.K.Ltd., London, 1990

Viva Voce by external examiner at the end of Semester.

SEMESTER : NINTH

09ARC01 PRACTICAL TRAINING

Each candidate shall have to undertake practical training at the Architectural firm with establishment not less than 5 years and shall be headed by CoA registered Architect only. The training period shall be for 6 months with 120-150 work days to make it convenient. Candidate after successful completion shall prepare a detail report along with necessary drawing, sketches, measurement, record, reading, observations, survey analysis, log sheets and modes, if necessary on the following site aspects which are concerned with the practical training. This report shall be submitted for the Viva-Voce examination duly certified by the Principal of the College.

1. Log sheet and office certificate - A student shall fill the log sheets as a record of his every day work. While joining the Architect officestudents have to submit offer letter or Joining letter.At the end of practical training every student shall submit the training completion certificate from his/her employer.Marks (Sessional)- 25
2. Field Observation - A report on architectural use of the site conditions. For example, site characteristics, landmarks, infrastructure on and nearby site, flora & fauna, visual survey,contour survey, if required, etc. Marks (Sessional) – 10
3. Site Supervision and Practice-A detail report of any major part of a building that has been personally supervised by the candidate. It may include executing & checking site measurement preparation of a bills of Quantities, site instructions and checking of the executed work. Marks (Sessional) – 25
4. Working Drawings/ submission drawing/ presentation drawing- A student shall submit all the working details prepared by him/her during his/ her practical training along with project specification. Marks (Sessional) - 40
5. Estimate - A student shall study & prepare estimate considering the nature & requirement of project. Marks (Sess.) - 25
6. Critical appraisal - of any building that he/she-'or his/her employer has designed and executed. The building shall be used and the students may record the reactions of the users to support his/her appraisal in addition to photographs, drawing etc. Marks (Sessional) - 25

Viva-Voce- Each candidate shall be individually interviewed and questioned on any of the subject mentioned above by,Head of Department of Architecture, one or more Internal and external examiner appointed by the University as required.

Marks (External Viva Voce) -	150
Total Marks -	300
Minimum Passing Marks -	150

SEMESTER: TENTH

10AR01 PROFESSIONAL ELECTIVE – II (1) SUSTAINABLE CITIES & COMMUNITIES

Objective:

This course aims to provide students with an understanding of sustainable urban development, with a focus on designing cities and communities that promote environmental, social, and economic sustainability. The course will integrate various aspects of sustainability, including resource management, urban design, environmental protection, and social equity.

Unit I: Overview of Sustainability:

- Definition and importance of sustainability.
- Pillars of sustainability: Environmental, Economic, and Social.
- Sustainable Development Goals (SDGs) and their relevance to urban planning.

Unit II: Urban Design and Sustainability:

- Compact cities vs. sprawling cities.
- Mixed-use development and transit-oriented development.
- Human-scale design principles.

Unit III: Green Building Practices:

- Building performance and energy efficiency.
- LEED, BEAM,BREEAM,DGNB and other sustainability certification systems.

Unit IV: Urban Ecology and Environmental Impact

Ecological Footprint and Resource Management:

Measuring the environmental impact of cities.

Resource management: Water, energy, materials, and waste.

Unit V: Climate Change and Resilience

- Climate Adaptation and Mitigation in Cities:

- Climate-responsive architecture and urban planning.

- Flooding, extreme weather, and disaster resilience.

Unit VI: Social Sustainability and Community Engagement

-Social equity in urban spaces.

- Community Participation in Urban Development:

- Stakeholder engagement strategies.

- Participatory planning and co-design.

- Case studies of community-driven urban projects.

Reference Books:

1. Sustainable Urbanism: Urban Design With Nature by Douglas Farr

2. The Death and Life of Great American Cities by Jane Jacobs

3. Design with Nature by Ian McHarg

4. Ecology of Cities and Towns: A Comparative Approach by Mark J. McDonnell and Eric W. H. R.

5. Sustainable Cities: Urbanization and the Environment in India by Chander, R. and Kumar, R.

6. The Sustainable City by Steven Cohen.

10AR01 PROFESSIONAL ELECTIVE – II (2) CLIMATE RESPONSIVE ARCHITECTURE

Objective: To sensitize students about the importance and need for Climate Responsive Architecture Design concept.

UNIT -I : Introduction to the ideas, issues and concepts of sustainable Architecture, related to types of climates.

Global Environment & Principles of Environmentally and supportive Architecture.

UNIT-II: Non- conventional Energy Systems, Solar Thermal Application for heating and cooling.

UNIT-III : Low Energy design Hybrid Systems, Integration of PV and wind systems in the buildings.

UNIT-IV : Day Light principles , Glare amount of daylight, daylight factor, orientations and sizes of opening to achieve diffused lights.

UNIT-V: Application of Climatic Principles – Evolution of Plan Form to minimize Heat Gain in Tropical Climates, Orientation of Building with respect to sun , wind, sizes of fenestration & its orientation, Use of evaporative cooling, cavity walls, topography , water bodies, vegetation. Landscape elements, cross ventilation system to achieve natural comfort level in indoor & outdoor spaces.

UNIT-VI: Planning and Design features to be considered with respect to various Climate.

Sessional work: Assignments and drawing on the above topics given in the subject.

10AR01 PROFESSIONAL ELECTIVE – II (3) TRAFFIC AWARENESS & TRANSPORT PLANNING

Objective: To introduce the concepts, principles, tools and aids or Road Safety and Civic Sense to the students of B.Arch. To acquaint them with the design and safety standards for roads. Also inculcate the practice of safe road behaviour and civic sense among them.

Unit: I: Introduction to Road Safety:

Road as an active space, Types of Users, User Behaviour, Sensory Factors like Vision and Hearing in User Behaviour.

Types of Vehicles: Heavy Vehicles, Light Motor Vehicle, Vehicle Characteristics: Dimensions, Weight, Turning Radii, Braking Distance, Lighting System, Tyres, etc. Type of Hazards: Conflicts and Accidents.

Unit: II: Typology of Roads: Components and Design:

Road Classification: National Highways, State Highways, District Roads (MDR and ODR), Village Roads Urban Road

Classification: Expressways, Arterial, Sub-Arterial, Collector, Local, Service Roads, One-Way, Two-Way etc.

Mountainous Roads. Speed Limits of the Road types.

Design of Roads: Cross-Sectional Elements- Right of Way, Carriageway, Median, Shoulders, Sidewalk, Lanes.

Unit: III: Intersections: Types of Road Intersections: Basic Forms of at-grade Junctions (T, Y, Staggered, Skewed, Cross, Scissors, Rotary, etc. Grade Separated Junctions (with or without interchange): Three-Leg, Four-Leg, Multi-Leg, etc. Design of Intersections: Design and Spatial Standards for Traffic Islands, Turns, Turning Radii, Directional lanes, Pedestrian Crossings, Median Openings, Traffic Calming Components like Speed Breakers and Table-Top Crossings etc.

Unit: IV: Pedestrian Circulation and Barrier Free Design

Requirement of Pedestrian Infrastructure: Sidewalks and Footpaths, Recommended Sidewalk Widths, Pedestrian Crossings, Pedestrian Bridges, Subways, Cycle Tracks, etc.

Barrier Free Design: Location and Design Standards for Ramps for Wheel Chair Access. Other Provisions like Tactile for Visually Challenged etc.

Safety Provisions: Pedestrian Railings, Anti-skid Flooring, Pedestrian Signal, Walk Button, etc.

Unit: V: Road Safety and Civic Sense:

Need for Road Safety, Category of Road Users and Road Safety Suggestions. Precautions for Driving in Difficult Conditions (Night, Rain, Fog, Skidding Conditions, Non-Functional Traffic Lights, etc.)

Types of Breakdowns and Mechanical Failures.

Unit: VI: Traffic Regulations, Laws & Legislations:

Indian Motor Vehicles Act (Chapter VIII: Control of Traffic to be discussed in detail) Regulations Concerning Traffic: Cycles, Motor Cycles and Scooters, Rules for Pedestrian Traffic, Keep to the Left Rule, Overtaking Rules, Turning Rules, Priority Rules, Hand Signals, etc. Speed and Hazard Management. Penal Provisions. National Road Safety Policy, Central Motor Vehicle Rules, State Motor Vehicle Rules Introduction to Good Practices.

Assignments: Tutorials and Case Studies on above topic.

Reference Books:

1. Introduction to Traffic Engineering, R Srinivasa Kumar
2. Traffic Engineering and Transport Planning, Kadiyali.
3. Book on Road Safety Signage and Signs, Ministry of Road Transport and Highways, Government of India
4. MORT&H Pocketbook for Highway Engineers, 2019 (Third Revision)
5. Publications by UTTIPEC namely, Street Design Guidelines, UTTIPEC Guideline for Road Markings, UTTIPEC Guideline and Specification for Crash Barriers, Pedestrian Railing and dividers, UTTIPEC Standard Typical Crossing Design.
6. Street Design Standards as provided in Time ÉSavers, Neuferts etc. Publications by Indian Road Congress.

10AR02 ARCHITECTURAL PROJECT / THESIS

Objective:

Develop any chosen architectural design project, emphasis being on integration of all technical, the topic would be selected by students, subject to approval by the department & supervisor. The topic selected may be a live design project or research oriented but essentially concluding in its application in architectural design project. The work progress evaluation would also be based on intermediate reviews of the study in presence of panel of teachers and experts from professional field.

The Viva-voce would be in the form of final Review on the basis of sessional & final submission in presence one or more external examiner appointed by the University as required. The H.O.D. Department of Architecture and student's teacher Guide would act as Internal Examiners.

The students would be required to explain and defend their study and design. The submission would consist of proper Presentation of Drawings, Dissertation Report, 3D Model & walkthrough.

The candidate shall carry out thesis considering the following aspect – Research analysis and data collection, site selection & justification, user requirements & justification, climatic conditions, socio-economic problems, communication, Transportation, Landscape & Urban Planning.

10ARC03 RESEARCH METHODOLOGY & WRITING

Course Objectives:

1. To introduce students to various research methodologies in architecture.
2. To equip students with skills in writing research papers and dissertations.
3. To familiarize students with data analysis and presentation techniques.
4. To develop abilities for publishing and presenting research effectively.

Unit I: Introduction to Research Methodology and its relevance in Architecture (Weeks 1-3)

- Definition, scope, and importance of research in architecture.
- Types of research:
 - Qualitative, Quantitative, and Mixed Methods.
 - Descriptive, Exploratory, Analytical, and Experimental Research.
- Research process: Identifying research problems, formulating objectives, and reviewing literature.
- Ethics in research: Plagiarism, authenticity, and responsible research practices.

Activities:

- Group discussion on different types of research in architecture.
 - Case study analysis of published research papers.
-

Unit II: Research Paper Writing and Publication (Weeks 4-6)

- Structure of a research paper:
 - Abstract, Introduction, Methodology, Results, Discussion, Conclusion, and References.
- Writing strategies: Clarity, coherence, and academic tone.
- Referencing and citation styles: APA, MLA, Chicago.
- Understanding peer review and the process of publishing in journals/conferences.
- Avoiding plagiarism and using research tools (Zotero, Mendeley).

Activities:

- Workshop on writing an abstract and introduction.
- Peer review of students' research paper drafts.

Unit III: Research/Project Report Writing (Dissertation) (Weeks 7-9)

- Structure of a dissertation:
 - Title Page, Abstract, Introduction, Literature Review, Methodology, Data Analysis, Conclusion, and Bibliography.
- Writing techniques for effective research communication.
- Formatting and structuring dissertations.
- Case study approach and application of research findings.

Activities:

- Drafting a dissertation proposal.
- Peer review session on literature review and methodology sections.

Unit IV: Research Presentation Techniques (Weeks 10-12)

- Various techniques for presenting research findings:
 - Case studies, reports, infographics, slides, and posters.
 - Graphical representation: Tables, charts, pie diagrams, bar charts, and mapping techniques.
- Research tools for data visualization: Excel, GIS, SPSS, AutoCAD, and Sketch Up.
- Effective PowerPoint and poster presentation techniques.
- Communication and audience engagement strategies.

Activities:

- Workshop on creating data visualizations.
- Research poster and PowerPoint presentation by students.

Unit V: Data Collection, Analysis, and Interpretation (Weeks 13-14)

- Primary vs. secondary data sources in architecture.
- Methods of data collection: Surveys, interviews, observations, and archival research.
- Qualitative vs. quantitative data analysis.
- Introduction to basic statistical tools for architectural research.
- Software for data management and analysis (Excel, SPSS, NVivo).

Activities:

- Fieldwork: Conducting surveys and interviews on an architectural topic.
- Data analysis exercise using real-world datasets.

Unit VI: Case Studies and Application of Research in Architecture (Weeks 15-16)

- Review of significant architectural research projects.
- Application of research in:
 - Sustainable architecture and materials.
 - Urban studies and smart cities.
 - Climate-responsive design and energy efficiency.
- Emerging trends in architectural research: Artificial intelligence, Digital Fabrication, and Parametric Design.

Activities:

- Presentation of individual research projects or case studies.
- Discussion on current research trends in architecture.

Assessment Breakdown:

1. Literature Review Assignment – 15%
2. Research Paper Draft – 20%
3. Dissertation Proposal – 25%
4. Data Analysis & Visualization – 20%
5. Research Presentation (Poster & Oral) – 20%

References:

1. Groat, L., & Wang, D. (2013). *Architectural Research Methods*. Wiley.
2. Creswell, J. W. (2017). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. Sage Publications.
3. Zeisel, J. (2006). *Inquiry by Design*. W. W. Norton & Company.
4. Kumar, R. (2018). *Research Methodology: A Step-by-Step Guide for Beginners*. Sage Publications.
5. Kothari, C. R. (2004). *Research Methodology: Methods and Techniques*. New Age International.

6. Babbie, E. (2020). The Practice of Social Research. Cengage Learning.
7. Oliver, P. (2006). Built to Meet Needs: Cultural Issues in Vernacular Architecture. Routledge.
8. Journals: Journal of Architectural Education (JAE), Architectural Science Review, Building and Environment.
9. Zeisel, J. (2006). Inquiry by Design: Environment/Behavior/Neuroscience in Architecture, Interiors, Landscape, and Planning. W. W. Norton & Company.
10. Yin, R. K. (2017). Case Study Research and Applications: Design and Methods. Sage Publications.
11. Day, R. A., & Gastel, B. (2011). How to Write and Publish a Scientific Paper. Cambridge University Press.
12. Frampton, K. (2020). Modern Architecture: A Critical History. Thames & Hudson.

10ARC04 SEMINAR

Objective: Seminar is intended to evaluate the student's ability to explore in the field of architecture and make in depth investigation in the chosen area.

The students are expected to choose topics which are of special interest to them and prepare a Report and Drawings to show analysis of investigation. The Review of work would be done in presence of H.O.D. Department of Architecture, and nominated teacher guide, and other teachers.

The Viva-voce would be in the form of proper presentation of the Drawings, Information/ Data, data interpretation and Report. The Viva-voce would be in presence of External Examiner. The H.O.D. Department of Architecture, and student's teacher Guide would act as internal examiners.

The Seminar topic can be related to any of the following subject – Architectural theory , history, design determinates, design language, design evaluation, building types, urban planning and design, housing, interior design, landscape design, building technology and environmental sciences, professional practice and any other related field, accepted and approved by the Department.
