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UNIVERSITY OF MYSORE

Established: 1916

Vishwavidyanilaya Karyasoudha,
Crawford Hall, Mysore-570 005.

No.AC.2(S)/378/2020-21 Dated: 19.08.2020

NOTIFICATION

Sub: Changes in Regulation, Syllabus and Scheme of Examination etc. of B.Arch. program from the Academic Year 2020-21.

Ref: 1. Decision of Board of Studies in Architecture and Urban Design (UG & PG) meeting held on 30.12.2019.
2. Decision of the Faculty of Science & Technology Meeting held on 18.02.2020.
3. Decision of the Academic Council meeting held on 18.06.2020.

*****

The Board of Studies in Architecture and Urban Design (UG & PG) which met on 30.12.2019 has recommended to make appropriate change in Regulation, Syllabus and Scheme of Examination etc., of 1st & 2nd year (I to IV semesters) B.Arch. (CBCS) program from the Academic Year 2020-21.

follow the Choice Based Credit System (CBCS) schemes on par with other Architecture colleges which are recognized under CoA for B.Arch. and M.Arch. programs from the Academic Year 2020-21.

The Faculty of Science and Technology and Academic Council meeting held on 18.02.2020 and 18.06.2020 respectively have approved the above said proposal and the same is hereby notified.

The modified syllabus & scheme & of Examination of B.Arch. program is annexed. The contents may be downloaded from the University Website i.e. www.uni-mysore.ac.in.

Draft approved by the Registrar

Deputy Registrar(Academic)
Deputy Registrar (Academic)
University of Mysore
Mysore-570 005

To:

1. The Registrar (Evaluation), University of Mysore, Mysore.
2. The Dean, Faculty of Science & Technology, DoS in Psychology, Manasagangotri, Mysore.
3. The Chairperson, BoS in Architecture and Urban Design (UG & PG), School of Planning and Architecture, Manasagangotri, Mysore.
4. The Director, School of Planning and Architecture, Manasagangotri, Mysore.
5. The Director, College Development Council, Moulya Bhavan, Manasagangotri, Mysore.
6. The Deputy/Assistant Registrar/Superintendent, AB and EB, UOM, Mysore.
7. The P.A. to the Vice-Chancellor/Registrar/Registrar (Evaluation), UOM, Mysore.
8. Office file.

SCHOOL OF PLANNING AND ARCHITECTURE

REGULATIONS & SCHEME OF EXAMINATION FOR THE DEGREE OF BACHELOR OF ARCHITECTURE (B.Arch.)
UNDER CHOICE BASED CREDIT SYSTEM (CBCS) 2020-21 Batch

REGULATIONS & SCHEME OF EXAMINATION FOR THE DEGREE OF THE BACHELOR OF ARCHITECTURE (B.ARCH.) FOR THE BATCH OF STUDENTS ADMITTED FOR THE ACADEMIC YEAR 2020-21

DEFINITIONS OF KEY WORDS:

The following definitions/descriptions have been followed for the different terms used in the Regulations Governing B.Arch. Programme:

1. **Programme:** Is an educational Programme in a particular stream/ branch of Architecture/ branch of specialization leading to award of the Degree. It involves events/ activities / project work/ professional training / viva voce / seminars/ term papers (research papers)/ assignments / presentations/ self-study etc., or a combination of some of these.

2. **Branch:** Means specialization or discipline of study that provides specific domain knowledge in B. Arch degree Programme.

3. **Academic Year:** Two consecutive semesters (one odd + one even) shall constitute one academic year.

4. **Course:** All courses need not carry same weightage. The courses should define learning objectives and outcomes. A course may be designed to compromise comprising of lectures/ tutorials / studio projects/ field work, outreach activities/ project work / professional training/ viva voce/ seminars/ term papers (research paper) / assignment/ presentations / self-study etc., or a combination of some of these.

5. **Choice Based Credit System (CBCS):**CBCS helps in customizing the course work for a student, through Core, Electives and soft skill courses, to provide necessary support for the students to achieve their goals.

6. **Course Evaluation:** Continuous Internal Assessment (CIA) and Semester End Examination (SEE) to constitute the major evaluations prescribed for each course, with only those students maintaining a minimum standard in CIE being permitted to appear in SEE of the Course.

7. **Semester:** The B.Arch. Degree Programme to be ordinarily of 5 academic years (10 Semesters), with the year being divided into two semesters of approximately 16 weeks (90 working days) each for course work, followed by Continuous Internal Assessment (CIA) in the Semester & Semester End examination (SEE) as reforms in CBCS system for Achievement Testing.

8. **Continuous Internal Assessment (CIA):**To be normally conducted by the Course Instructor and includes mid-term/weekly class tests, assignments, problem solving, reviews/juries, group discussion, periodical submissions, quiz, mini-project & seminar throughout the semester, with weightage for the different components being flexible as decided by the subject teachers. CIA is

also termed as 'Internal Assessment (I).

9. **Semester End Examination (SEE):** Conducted at the University level covering the entire Course Syllabi. For this purpose, Syllabi to be modularized and SEE questions to be set from each module, with choice if any, to be confined to module concerned only. The questions to be comprehensive, emphasizing analysis, synthesis, design, problems & numerical quantities.

10. **Credit Based System (CBS):** Refers to quantification of Course work, after a student completes teaching – learning process, followed by passing in both CIE and SEE. Under CBS, the requirement for awarding degree is prescribed in terms of total number of credits to be earned by the students.

11. **Letter Grade:** It is an index of the performance of students in a said Course. Grades are denoted by letters S, A, B, C, D, E and F.

12. **Grading:** Grade refers to qualitative measure of achievement of a student in each Course, based on the percentage of marks secured in CIE and SEE. Grading is done by Absolute Grading. The rubric attached to each letter grades are as follows:
S – Outstanding, A – Excellent, B – Very Good, C – Good, D – Above Average,
E – Average and F – Fail.

13. **Grade Point (GP):** Refers to a numerical weightage allotted to each letter grade on a 10-point scale as under.

Letter Grade and corresponding Grade Points on a typical 10 – Point							
Letter	S	A	B	C	D	E	F
Level	Outstanding	Excellent	Very Good	Good	Above Average	Average	Fail
Grade	10 - 9.1	9 - 8.1	8 – 7.1	7 – 6.1	6 – 5.1	5 - 4	00
Score (%)	≥ 90	<90 ≥80	<80 ≥70	<70 ≥60	<60 ≥50	<50 ≥40	<40

14. **Classification of results:**
The final qualitative index is to be awarded to the students is based on CGPA secured by the candidate. (Refer above description point 10).

15. **Credit (C):** Refers to a unit by which the course work is measured. It indicates the relative importance of a course.

16. **Credit Point:** Is the product of grade point (GP) and number of credits for a Course i.e., Credit points CrP = GP × Credits for the Course

17. **Semester Grade Point Average (SGPA):** Refers to the measure of academic performance of student/s in a semester.

18. **Cumulative Grade Point Average (CGPA):**Is a measure of overall cumulative performance of a student over all semesters.

19. **Transcript or Grade Card or Certificate:** Based on the grades earned, a grade certificate shall be issued to all the registered students after every semester. The grade certificate will display the course details (Code, Title, Number of Credits and Grade secured) along with SGPA of that semester and CGPA earned till that semester.

20. **University:**
University of Mysore, Mysuru.

1. Duration of the Programme

1.1. **Program:**"Programme" means Bachelor of Architecture degree Programme (B. Arch) (10 Semesters/5 year)

1.2. **Duration:** The Programme shall be of five academic year's duration and conducted in ten semesters each having duration of 16 weeks (90 working days).

1.3. **Course:** "Course" means a theory, theory come studio or studio subject that is normally studied in semester, like history of architecture, building construction, architecture design, etc.

1.4. A candidate shall be awarded the degree in Architecture program by the University/ Institution for having earned the minimum credits as specified in the curriculum.

2. Eligibility for Admission

2.1. No candidate shall be admitted to architecture program unless she/ he has passed: An examination at the end of the 10+2 scheme of examination (State / CBSE) with aggregate of 50% marks in Physics, Chemistry and Mathematics and also 50% marks in aggregate of the 10+2 level examination.

OR

2.2. 10+3 Diploma Examination with Mathematics as compulsory subject, with at least 50% marks in aggregate.

2.3. In addition to the above, the candidate needs to qualify an Aptitude Test in Architecture (NATA) conducted by the Council or by the competent authority of the Central Government or the respective State Government.

2.4. The institutions shall give weightage of 50% marks for aptitude tests and 50% marks in the qualifying examination.

2.5. Reservation of seats and relaxation in percentage of marks obtained in the qualifying examination for admission shall be as per the reservation policy of Central Government or the respective State Governments.

2.6. Candidates coming from diploma steams shall not be entitled to any exemption of any subject at B. Arch degree Programme.

3. Attendance requirement

3.1. A candidate has to secure a minimum of 75% of the attendance in each subject for becoming eligible to register for the semester End Examinations and for acquiring credits in each semester.

3.2. In the case of a candidate who represents his/her institution/University, Karnataka State/nation in Sports/NCC/NSS/Cultural or any Official activities shortage of attendance up to a maximum of

15 days in a Semester may be condoned, based on the recommendation and prior permission of Vice Chancellor on the recommendation of Head of the Institution concerned.

3.3. A candidate failing to obtain a minimum of 75% attendance in one or more subjects shall be detained and have to re-register the particular subject in the next Academic year.

4. Definitions

4.1. L Stands for Lecture Session. P stands for Practical Session consisting participatory discussion, self-study/brief seminar presentations by students and such other interactive methods that make a student to absorb and assimilate more effectively the contents delivered in the lecture classes.

4.2. S stands for Studio sessions and it consists of Studio Hours/Hands on experience/laboratory experience /field Studies/case studies that equip students to acquire the much-required skill component.

4.3. A Subject may have either or all the three components. That means the subject could have only Lecture component, only Studio component or combination of these two or combination of all three components

4.4. The total Credits earned by the student at the end of the semester upon successfully completing the course are L+P+S. The credit pattern of the Corse is as indicated as L:P:S.

5. Medium of Instruction

The medium of instruction shall be English. A student has to write the examination in English only.

6. Maximum duration for completing the entire course

The candidate shall pass the degree within double the duration of the course i.e. in consecutive 10years.

7. Structure of the Programme

7.1. Categorization of courses

B. Arch Programme will have a curriculum with syllabi consisting of theory, theory cum studio and studio courses that shall be categorized as follows:

ARC – Architectural Core Subject
ARS – Architectural Supportive Subject
ARE – Architectural Elective.

7.2.Credit assignment

Each course is assigned certain no of credits based on the following

Contact period per week	credits
1. Lecture period	1
2. studio/Seminar periods/thesis	1
3. Practical periods	0.5

8. Assessment for architecture design studio courses, Progressive Marking Subjects, Theory subjects, Architectural Design Thesis, Practical Training.

8.1.Architectural Design:

8.1.1. For Architectural Design Studio, candidate have to secure a minimum of 50% marks in the continuous assessment (Internal Evaluation) for their eligibility to take up semester end exam.

8.1.2. If the candidate fails to secure a minimum of 50% marks in the continuous assessment then the candidate has to re-register by paying examination fee for the subject in the next semester to improve the design in consultation with the previously assigned design teacher before the last working day of semester and candidate has to appear for the semester end examinations.

8.2.Progressive Marking Subjects (PMS) with no semester end examination:

8.2.1. PMS are evaluated through continuous assessment marking system during the semester and the candidates have to score minimum of 50% marks for passing.

8.2.2. If the candidate fails to secure minimum 50% in the Internal assessment marks through continuous assessment then, the candidate is required to re-register the subject by paying examination fee in the next semester and then candidate have to re-appear for continuous assessment by securing passing marks before semester end examination.

8.3. Theory subjects:

8.3.1. Candidates have to secure a minimum of 40% marks in the continuous assessment (Test and Assignments\drawings\seminars etc.) for eligible to appear for semester end examinations.

8.3.2. If the candidate fails to secure a minimum of 40% marks in the continuous assessment, then the candidate has to improve the internal marks in the next semester by re-appearing for improvement test before the semester end examination.

8.3.3. Candidates have to secure a minimum of 40% marks in the semester end examinations. However, the candidate has to secure an aggregate of 50% of total marks put together both internal and external marks.

8.3.4. Evaluation of semester end examination of theory papers and architectural design subject will be evaluated by internal teachers and external evaluators. The external evaluators may be teachers teaching in other Architectural colleges or practicing architects. Evaluation will be assigned to internal or external evaluators depending on their availability.

8.4. Architectural Design Thesis:

8.4.1. The Architectural Design Thesis shall be prepared under the guidance of a core Faculty member.

8.4.2. The Institution shall conduct the internal evaluation at every stage for the Architectural Design Thesis with the guide as a co-assessor.

8.4.3. A jury comprising of one internal and two external examiners shall conduct the final examination (Viva-voce) of the Architectural Design Thesis.

8.4.4. Guides shall be allocated for Thesis projects by the department. Students shall carry out the thesis work under the supervision of allocated guides.

8.4.5. For architectural thesis student shall submit final thesis drawings, models and report.

8.4.6. Architectural thesis reports to be submitted to thesis coordinator/ Department 15days before the final scheduled Viva voce examination.

8.4.7. Students are expected to submit all their Design sheets a day before the scheduled Viva voce examination.

8.4.8. Students who submit their sheets a day before the scheduled Viva voce examination are only allowed to take up examination.

8.4.9. Only signed and sealed sheets by the coordinator/ Department will be allowed to pinup on the day of Viva voce examination.

8.4.10. External examiner for tenth semester Architectural Design Thesis course shall have a minimum of 10 years teaching/ professional experience.

8.5. Practical Training

8.5.1. Practical Training shall be undergone during 7th semester for a period of one semester (min 16weeks) inarchitectural firm headed by an architect registered with Council of Architecture (COA), New Delhi, having experience of not less than 5 years.

8.5.2. The commencement of professional training shall be the date of commencement of respective semester as notified by the University. The duration of professional training shall be counted from the date of commencement of the training.

8.5.3. The practical training shall be supervised and evaluated through periodic assessment by the mentoring architect and end semester examination (viva voice) as part of curricular studies.

8.5.4. Training in Foreign Country shall be done under the Registered Architect of that Country and to be approved and monitored by the Head of the Institution.

8.5.5. "Candidates who are unsuccessful in the Practical Training shall repeat the training for the prescribed weeks in the subsequent semester as a full-time student by paying full semester fee.

8.5.6. After the successful completion of the training, the student has to submit Joining letter, monthly progressive report, completion certificate, portfolio containing works done during the training period. The works to be attested by the Architect/ firm.

8.5.7. Ideally every student is required to undertake the entire duration of practical training in the seventh semester in a single architectural office. However, under unforced circumstances, if the student wishes to change his/her place of Practical Training student shall be allowed to do so only once provided the student satisfies a minimum of 30 days Practical Training in any one of the offices.

8.5.8. Students are expected to submit all their Works done during the training period 1 week before the final scheduled Viva voce examination.

9. Requirements for moving to a higher semester:

A student of the B. Arch shall move to the higher semester, if student satisfies the following conditions

Clear all the subjects of First year (Theory &Architectural Design studio)	A candidate seeking admission to 3rd year-5th Semester
Clear all the subjects of Second year (Theory &Architectural Design studio)	A candidate seeking admission to 4th year-7th Semester
Clear all the subjects of Third year (Theory &Architectural Design studio) Including 7thsemester Practical training& 8th semester architecture design.	A candidate seeking admission to 5th year-9th Semester

10. Continuous Assessment

10.1. The first component (C1) and the second component (C2) of the assessment are 25marks each which are considered as Continuous Internal Assessment (CIA). The weightage given to C1, C2, along with assignments, seminars, posters, tests, etc. are brought down to 50marks, also weightage for the different components being flexible as decided by the subject teachers. The final component of the Assessment (C3) is 50 marks in Semester End Examination.

11. Weightage of marks:

11.1. The tentative/provisional grade card will be issued by the Registrar (Evaluation) at the end of every semester indicating the papers completed successfully.

11.2. Upon successful completion of Bachelor degree, a final grade card consisting of grades of all papers/semester successfully completed by the candidate will be issued by the Registrar (Evaluation).

11.3. The grade and the grade points earned by the candidates on the subject will be as given below:

Letter Grade and corresponding Grade Points on a typical 10 – Point							
Letter	S	A	B	C	D	E	F
Level	Outstanding	Excellent	Very Good	Good	Above Average	Average	Fail
Grade	10 - 9.1	9 - 8.1	8 – 7.1	7 – 6.1	6 – 5.1	5 - 4	00
Score (%)	≥ 90	<90 ≥80	<80 ≥70	<70 ≥60	<60 ≥50	<50 ≥40	<40

12. Computation of SGPA and CGPA:

12.1. The University adopts absolute grading system wherein the marks are converted to grades, and every semester result will be declared with semester grade point average (SGPA) and Cumulative Grade Point Average (CGPA). The CGPA will be calculated for every semester, except for the first semester.

12.2. The credit index can be used further for calculating the Semester Grade Point Average (SGPA) and the Cumulative Grade Point Average (CGPA), both being important academic performance indices of the student.

12.3. SGPA is equal to the credit index for a semester divided by the total number of credits registered by the student in that semester CGPA gives the sum total of credit indices of all the previous semesters divided by the total number of credits registered in all these semesters.

12.4. Both the equations together facilitate the declaration of academic performance of a student, at the end of a semester and at the end of successive semesters respectively.

$$SGPA = \frac{\sum[Course\ Credits \times Grade\ Points]\ for\ all\ the\ Courses\ in\ that\ Semester}{\sum[Course\ Credits\ ]\ for\ all\ the\ Courses\ in\ that\ Semester}$$

$$CGPA = \frac{\sum[Course\ Credits \times Grade\ Points]\ for\ all\ Courses\ excluding\ those\ with\ F\ and\ transitional\ grades\ until\ that\ Semester}{\sum[Course\ Credits\ ]\ for\ all\ Courses\ excluding\ those\ with\ F\ grades\ until\ that\ semester}$$

13. Classification of results:

13.1. The final qualitative index is to be awarded to the student is based on CGPA secured by the candidate and is given as follows.

CGPA	Qualitative Index
5 < CGPA < 6	SECOND CLASS
6 < CGPA < 8	FIRST CLASS
8 < CGPA < 10	DISTINCTION

Overall percentage = 10*CGPA

14. Educational tour:

Candidates are entitled to undertake one Study Tour related to academics during the course. Study tour is mandatory for all the students.

15. Savings

15.1. Any other regulations which are not covered under this regulation, the University of Mysore shall enforce the regulation from time to time and is applicable.

15.2. In cases there are any issues not addressed in these regulations, the decision of vice-chancellor on the advice of the board of studies will be final. Any other issue not envisaged above shall be resolved by the vice-Chancellor in consultation with the appropriate bodies.

UNIVERSITY OF MYSORE

Regulations for B.Architecture (B. Arch)

Undergraduate Degree

2020-21

School of planning and Architecture
UNIVERSITY OF MYSORE,
Manasagangotri,
MYSORE

SCHOOL OF PLANNING AND ARCHITECTURE

UNIVERSITY OF MYSORE,
Manasagangotri, Mysuru.

BACHELOR OF ARCHITECTURE - Five Year Degree Programme

Detailed Syllabus of I & IV Semesters

(Admission Year 2020-21)

PROGRAM OUTCOME:

B. Arch program enables the students with enhanced knowledge related to the practice of Architecture profession all over the country and knowledge component for the same. The education in the School of Planning and Architecture (SPA), University of Mysore is grounded with effective and interactive instruction provided by dedicated and qualified faculty members. It qualifies the graduates to pursue a career in architecture along with other areas of the design and construction. Towards the end, the students who complete this program will possess the ability to:

- Implement the critical thinking method to build abstract relationship and understand the impacts of designing ideas based on study and analysis.
- Developing architectural practices, technical skills + knowledge, visual and verbal communication skills at various stages of design and delivery process.
- Students will be able to demonstrate their ability in synthesizing a wide range of integrated design solutions for varied scale design problems.
- Understanding the design philosophies and fundamental principles of multi-dimensional aspects and multi-faceted nature of architecture.
- Developing the overall personality and professional confidence in dealing with all scales of projects in the architectural and construction industry.
- Work in collaborative manner that is consistent with the accepted professional standards, ethical responsibilities and as an integral member of multi-disciplinary/inter disciplinary design and execution team in the industry.

Detailed Curriculum/Syllabus of I & IV Semesters
Admission Year 2020-21
B.ARCH. DEGREE PROGRAMME (5 YEAR)
I TO IV SEMESTERS CURRICULUM (CBCS)-2020-21

SEMESTER-I

SL. No	Course Code	Course Title	L	S	P	C	Marks			Mode of Exam
							I	E	Total	
1	ARC101	Basic Design	0	5	4	7	100	100	200	JURY(Viva Voice)
2	ARC102	Building Materials & Construction -I	1	0	6	4	100	50	150	Written (3hrs)
3	ARC103	Architectural Graphics-I	1	0	3	3	50	50	100	Written (3hrs)
4	ARC104	History of Architecture-I	3	0	0	3	50	50	100	Written (2hrs)
5	ARS105	Mechanics of Structures	3	0	0	3	50	50	100	Written (2hrs)
6	ARC106	Theory of Architecture-I	3	0	0	3	50	50	100	Written (2hrs)
7	ARS107	Workshop – I (Visual Arts)	0	0	4	2	100	-	100	Prog. Marking
TOTAL NO. OF CREDITS						**25**				

SEMESTER-II

SL. No	Course Code	Course Title	L	S	P	C	Marks			Mode of Exam
							I	E	Total	
1	ARC201	Architectural Design -I	0	7	0	7	100	100	200	JURY(Viva Voice)
2	ARC202	Building Materials & Construction -II	1	0	6	4	100	50	150	Written (3hrs)
3	ARC203	Architectural Graphics-II	0	3	0	3	50	50	100	Written (3hrs)
4	ARC204	History of Architecture-II	3	0	0	3	50	50	100	Written (2hrs)
5	ARS205	Strength of Materials	3	0	0	3	50	50	100	Written (2hrs)
6	ARC206	Theory of Architecture-II	3	0	0	3	50	50	100	Written (2hrs)
7	ARS207	Workshop - II (Model Making)	0	0	4	2	100	-	100	Prog. Marking
TOTAL NO. OF CREDITS						**25**				

SEMESTER-III

SL. No	Course Code	Course Title	L	S	P	C	Marks			Mode of Exam
							I	E	Total	
1	ARC301	Architectural Design -II	0	7	0	7	100	100	200	JURY(Viva Voice)
2	ARC302	Building Materials & Construction - III	1	0	6	4	100	50	150	Written (3hrs)
3	ARC303	History of Architecture-III	3	0	0	3	50	50	100	Written (2hrs)
4	ARS304	Structural Analysis	3	0	0	3	50	50	100	Written (2hrs)
5	ARC305	Building Services –I (Water supply, Plumbing & Sanitation)	2	0	0	2	50	50	100	Written (2hrs)
6	ARS306	Surveying, Levelling & Site Planning	2	0	0	2	50	50	100	Written (2hrs)
7	ARC307	Climatology	2	0	0	2	50	50	100	Written (2hrs)
8	ARS308	Computer Applications -I	0	0	4	2	100	-	100	Prog. Marking
		TOTAL NO. OF CREDITS				**25**				

SEMESTER –IV

SL. No	Course Code	Course Title	L	S	P	C	Marks			Mode of Exam
							I	E	Total	
1	ARC401	Architectural Design -III	0	7	0	7	100	100	200	JURY(Viva Voice)
2	ARC402	Building Materials & Construction - IV	1	0	6	4	100	50	150	Written (3hrs)
3	ARC403	History of Architecture-IV	3	0	0	3	50	50	100	Written (2hrs)
4	ARS404	Design of R.C.C. Structures -I	3	0	0	3	50	50	100	Written (3hrs)
5	ARS405	Environmental Science	2	0	0	2	50	50	100	Written (2hrs)
6	ARC406	Building Services –II (Electrical & Acoustics)	2	0	0	2	50	50	100	Written (2hrs)
7	ARS407	Computer Applications -II	0	0	4	2	100	-	100	Prog. Marking
8	ARE408	**Elective-I**	2	0	0	2	50	50	100	Written (2hrs)
		TOTAL NO. OF CREDITS				**25**				

Courses which can be chosen during semester-IV in Elective-I

Sl. No	Course Code	Course Title	L	S	P	C	Marks			Mode of Exam
							I	E	Total	
1	ARE408-1	Vernacular Architecture	2	0	0	2	50	50	100	Written (2hrs)
2	ARE408-2	Barrier Free Built Environment	2	0	0	2	50	50	100	Written (2hrs)
3	ARE408-3	Stage and Set Design	2	0	0	2	50	50	100	Written (2hrs)
4	ARE408-4	Introduction to Art & Architecture	2	0	0	2	50	50	100	Written (2hrs)

Abbreviation

L - Lecture
S - Studio
P -Practical
C - Credit
I - Internal assessment
E - External assessment
Prog. Marking - Progressive Marking

ARC – Architectural core subject
ART – Architectural Theory subject
ARS - Architectural supportive subject
ARE – Architectural Elective

DETAILED SYLLABUS

YEAR-1 SEMESTER-I

Subject: Basic Design		
Code: ARC101	**Credits: 7**	**Hours / Week: 9 hrs.**
Progressive Marks: 100	**Examination Marks: 100**	**Mode of Exam: JURY**

AIM

The course intends to introduce a creative stimulus and provide a starting point towards visual design. It provides the meaning of "design" and relates it to "architecture" through an understanding of basic elements and principles of design along with their applications.

OBJECTIVES

- To tackle students from varied backgrounds to a highly focused training in analytical abilities, visualization.
- To theoretically understand first the various elements of basic design relationship, and principles and demonstrate the same through drawing exercises.
- To understand the elements and principles of Basic Design as the building blocks of creative design through exercises that will develop the originality, expression, skill and creative thinking.
- To involve students in a number of exercises to understand the grammar of design and visual composition.
- To enable the understanding of 3D Composition by involving students in a number of exercises which will help generation of a form from a two dimensional / abstract idea.
- To enable the understanding of the relationship between the grammar of design and architecture by involving the students in seminars, workshops and simple exercises which will look at building form analytically.

COURSE CONTENT:

UNIT- I Introduction to Architectural Design through Basic Design – Elements of Design

The design exercises are aimed at understanding the role of Basic elements of design – Point, Line, Plane, Volume, Pattern, Shapes, Forms, Spaces, Color, Texture, Light, and Fenestrations, Application of Modules.

UNIT II Principles of Visual Compositions

Understanding and using principles like Movement, Direction, Gradation, Contrast, Repetition, Rhythm, Radiation, Symmetry, Asymmetry, Monotony, Harmony, Balance, Scale and Proportion, Form generation through addition & subtraction, Positive & Negative spaces, Solid and Voids.

Unit III Figure & Ground relationships
Architectural elements and their part played in modulating space- Horizontal and Vertical space-defining elements (linear or planar) and openings in them.

UNIT III 2D Compositions
Application of the principles of composition in two dimensional compositions through shapes, patterns, use of grids in creating repetitive patterns.

UNIT IV 3D Compositions
Introduction to geometry; Concepts of geometry –different three-dimensional forms, primitive forms and understanding the behavior when combined- Transformations to three dimensional forms; Explorative exercises in three dimensional compositions**;** Study of ornamentation on buildings and its types.

UNIT V
Colors - Study of classification of colors with different hues, values, and shades; color wheel and color composition, properties of color; Color and Light, Textures - Study of texture and schemes of texture both applied and stimulated and their application.
Anthropometry - Introduction to Anthropometry, Basic anthropometrics, human functions and their implications for space requirements; Minimum and optimum areas for mono functions, user's data. Movement and circulation diagrams, spatial interpretations – various activities and their relationship with spaces. Anthropometry as related to physically handicapped and elderly persons are required to be studied. Functional furniture layout, circulation, lighting and ventilation for spaces.

COURSE OUTCOME:

On successful completion of this course, the student should be able to**:**

- Define and apply basic design in Architectural design through interpretation of lines, plane, solids, voids, texture, color and proportions.
- Demonstrate 2D compositions through explorations of different patterns and 3D compositions through understanding positive and negative spaces through forms.
- Acquaint them to different model making materials to explore linear and planar forms.
- Understand human anthropometry through study of spaces
- Synthesis and manifest ideas into visual forms through presentations, sketches and drawings.

TEXT BOOKS

1. **Shibikawa, Ikuyoshi and Takahashi, Yumi.** Designers Guide to Colour.
2. **Smithies, K.W.** Principles of Design in Architecture. Chapman and Hall, 1983.
3. **Ching, Francis D.K.** Architecture: Form, Space, and Order, 2nd ed. Van Nostrand Reinhold, New York, 1996.

REFERENCES

1. **Hanks, A. David**. Decorative Designs of Frank Lloyd Wright, Dover Publications, Inc. New York, 1999.
2. **Hepler, E. Donald, Wallach, I. Paul.** Architecture Drafting and Design, 3rd ed. McGraw-Hill Book Company, New York, 1977.
3. **Itten, Johannes**. Design and Form: The basic course at the Bauhaus, Thames and Hudson Ltd., London 1997.
4. **Pipes, Alan.** Drawing for 3-Dimensional Design. Thames and Hudson Ltd., London 1990.
5. **Shibikawa, Ikuyoshi and Takahashi, Yumi.** Designers Guide to Colour.
6. **Maier Manfired** Basic Principles of Design, Vol.1, 2, 3 & 4, Van Nostrand Reinhold, NY. (1977).
7. **Lawrence Bunchy C.Acrylic** for Sculpture and Design, 450, West 33rd Street, New York, N.Y.10001, 1972.
8. **Exner V., Pressel D.,** "Basics Spatial Design", Birkhanser, 2009.

Subject: Building Materials & Construction –I		
Code: ARC102	**Credits: 4**	**Hours / Week: 6 hrs.**
Progressive Marks: 100	**Examination Marks: 50**	**Duration of Exam: 3 hrs.**

AIM

The course intends to study various construction details in co-ordination with the Building Materials and science and their applications on the field.

OBJECTIVES

- To introduce and understand the basic elements and elementary methods of building construction and materials.
- To familiarize conventional tools for drawings and introduction to construction drawings and their applications.
- To develop and understand the construction details of different types of foundation, brick walls and materials.
- To understand the functions and construction detailing of different masonry.

COURSE CONTENT:

Introduction:
Introduction to Basic components of a "building", Role of Construction in Architecture, General idea about basic building materials such as soil, stone, wood, concrete, steel etc.

Unit –I lay: Tiles, Terra-cotta-its varieties, Stoneware, earthen ware, Porcelain, ordinary, glazed, porous, polished and fine; sun dried brick

Brick: Composition of earths, standard, market and ISI. Size properties, as per ISI brick manufacturing processes.
Components of a good brick, Types and their applications, shape of bricks, properties and uses of bricks, Special types of bricks, uses and properties Different uses of brick in construction, process of manufacture, Fire clay bricks - varieties; sand lime bricks; paving bricks; Building Tiles**:** Roof, floor and wall tiles
.
Brickwork masonry: Various types of bonds-English, Flemish, Rat trap, Single, one, half thick walls for corners and T junctions, Garden wall bonding- Honey comb, Raked, Herring bone, Ornamental. Brick jallis, Ornamental brick panels, brick pavements, stopped ends, junctions, piers, jambs, footings, foundations, corbelling, damp proof course, window sills, thresholds, copings, mortar joints and pointing, stopped ends, junctions, piers, jambs, footings, corbelling, damp proof course, thresholds, copings, mortar joints and pointing.

Unit –II Stones Geological Classification of stones, stone units - khandki, rubble, black stones, stone metal, flag stones. method of quarrying of building stones, types of stone dressings defects in stone, stones for finishes- cutting and polishing, distribution and description with respect to uses in construction, aggregates, tools used, test for stones,

Uses of stones, Preservation of stone available for construction in India: granite, laterite, quartzite, marble and slates -properties and uses; deterioration of stones
Stone masonry - Types of stones, stone bonds, wall in stone masonry, window sills, plinth, and cornices, surface finishes- Random, rubble, SR, Ashlar, Masonry joints, Supervision and Precaution.

Unit – III Composite masonry
Brick backed ashlar, rubble backed ashlar, concrete backed masonry, ashlar faced concrete walls, marble faced masonry; tile faced concrete, hollow block masonry.
Cladding**:** Cladding of various materials-marble, granite, slate, tiles, metal etc.

Unit – IV Foundations
Definition, Functions of foundation, Empirical rules and thumbs rule to arrive at the depth and width of foundation, Types of foundation, Simple stone and Brick foundation, load bearing foundation

Unit – V Lintels
Lintels - Various alternatives to span an opening, Idea of a lintel, Lintels of wood, stone, brick and concrete, methods of construction.

Unit – VI Innovative rural techniques in construction and materials
Rural building materials, their properties and uses, soil stabilization, need for soil stabilization, stabilised soil blocks, bamboo, casuarina, coconut, palm, hay, coir, mud, timber, thatch, CEB (Compressed earth block) frames, Fire retardant treatment and Insect proofing.
Lime: Basic definitions, Types of binding sources of lime, various classification of lime, its properties and uses

Sessional Work:
1. The students are subjected to submit all the plates before the next exercise begins
2. Construction techniques will be supported by site visits off the studio hours
3. The students will be making miniature models after a construction technique is learnt
4. The class work and home assignments should include appropriate site visits by the students.
5. Student will maintain field observations / record books for relative consideration of construction detailing with materials and its learning through market survey

COURSE OUTCOME:

On successful completion of this course, the student should be able to**:**

- Analyze the practical applications through survey, sample collections, model making and presentations.
- Synthesis and apply the fundamental of drawings through measuring the existing building components.
- Acquaint them to hands on, site visits, construction yards to gain practical knowledge.

TEXT BOOKS

1. **WB McKay** , Building construction-Metric volume(in 4 vols), 5th edition 2013
2. **Barry** - The Construction of Buildings, volume 1, New Delhi, 1999.
3. **Roy Chudley** , Building construction technology, (vol.1 to 4)
4. **Ching Francis D.K.,** Building Construction illustrated, 4th edition 2008, Indian reprint 2012.
5. Building construction, S.C.Rangwala, revised by K.S.Rangwala & P.S.Rangwala, 32nd edition, 2014.
6. Building material Sushil Kumar, 20th edition, reprint 2015
7. Building Materials S.K.Duggal
8. Bureau of Indian Standards, National Building Code of India, 2005.

REFERENCES

1. Varghese P.C., "Building Materials", Prentice Hall of India put Ltd, New Delhi 110001, 2005.
2. Spencke R.J. and Cook S.J., "Building materials in developing countries", John Wiley and sons 1983.
3. Dunkelberg (K), "Bambus – Bamboo, Bamboo as a Building Material", Karl Kramer Verlag Stuttgart, 2000.
4. Gernot Minke and Friedemann Mahlke "Building with straw: Design and Technology of a Sustainable Architecture", Birkhauser, Publisher for Architecture Berlin, Bostan, 2005.

Subject: Architectural Graphics-I		
Code: ARC103	**Credits: 4**	**Hours / Week: 4 hrs.**
Progressive Marks: 50	**Examination Marks: 50**	**Duration of Exam: 3 hrs.**

AIM

The course introduces the fundamental techniques of architectural drawing and develops the appropriate skills for visualization and representation.

OBJECTIVES

- To introduce and familiarize with drafting tools and accessories.
- To Comprehend and Visualize the Geometric Forms.
- To introduce architectural drawing techniques and to facilitate effective visual communication.

COURSE CONTENT:

Unit I Fundamentals of Architectural Graphics
Fundamentals of drawing and its practice, introduction to drawing equipment, familiarization, use and handling. Drawing sheet sizes, title panels, legends, layouts and composition, construction of lines, line value, line types, free hand lettering.

Scale Drawing - Study of scales, their use in practice and construction of Plain and Diagonal scale. Introduction to Graphical scale. Scaled drawings of simple objects, furniture, rooms, building elements in plan, elevation and section. Application of scale to enlarge or to reduce the objects in drawing.

Unit II Geometrical Drawing: Plane and Solid Geometry
Study of points, lines, and planes leading to simple and complex solid geometrical forms. Construction and development of planar surfaces like triangles, square, rectangle, polygon and ellipse, Construction of curves like parabola, hyperbola and involutes.

Unit III Geometrical Drawing: Orthographic Projections
Orthographic Projections- Definition, Principles and Methods of projection, Planes of projection, First angle & Third angle projection, Projection of points, lines & planes, Representation of solids in Plan and Elevations, Sections of solids, true shape of solids.

UNIT IV Geometrical Drawing: Axonometric Projection
Isometric, plan oblique and elevation oblique projection of planes, solids and combination of solids etc.

UNIT V Measured Drawing
Introduction to fundamentals of measured drawing, representation format for presentation methods and technique of measuring buildings and their details. Measured drawing of simple objects like furniture, detailing in terms of construction,

ornamentation, measured drawing of building components like column, door, window, cornice, etc.

COURSE OUTCOME:

On successful completion of this course, the student should be able to**:**

- Demonstrate the construction and development of planar surfaces and simple and complex solid geometrical forms through simple exercises.
- Develop and understand orthographic projections with planes and solids.
- Analyse fundamentals of measure drawing through measuring simple building elements.

TEXT BOOKS

1. **Bhatt N.D. & Panchal V.M**., Engineering Drawing; Charotar Publishing House, Anand, 2004.
2. **Parkinson A.C**., A First year Engg. Drawing; Sir Issac Pitman and sons, London, 1958.
3. **Shah, P.J**, Engineering Graphics; S.Chand & Company, New Delhi, revised edition, 2014.
4. **Morris IH**., "Geometrical Drawing for Art Students", Orient Longman, Madras, 2004.
5. **Shah, M.G., Kale, C.M. and Patki**, S.Y. Building Drawing: with an integrated approach to built environment, 7th ed. Tata McGraw Hill Pub., Delhi, 2000.

REFERENCES

1. **Black, Earl, D**." Engg.and Technical Drawing";Van Nostrand Reinhold Company,1972.
2. **Francis D. K. Ching**, "Architectural Graphics", John Wiley and Sons, 2009.
3. **Fraser Reekie, Reekie's**, "Architectural Drawing", Edward Arnold, 1995
4. **Leslie Martin C**., "Architectural Graphics", The Macmillan Company, New York, 1978.
5. **Cooper Flouglas,** "Drawing & Perceiving", Van Nostrand Rein hold, New York 1995.
6. **Hale Robert Beverly Watson**," Drawing lessons from the Great Masters",Guptill publication New York 1964.
7. **Edward J Muller, James G Fausett, Philip A Grau**, Architectural Drawing & Light Construction – Preutice-Hall Inc.,-1993.

Subject: **HISTORY OF ARCHITECURE-I**		
Code: ARC104	**Credits: 3**	**Hours / Week: 3 hrs.**
Progressive Marks: 50	**Examination Marks: 50**	**Duration of Exam: 2 hrs.**

AIM

The course intends to study the outcomes of Physical factors like geography, climatology, location, Building Materials and available Technology and also the influence of Art, Culture and Society as reflected in the major historical periods beginning from early civilizations.

OBJECTIVES

- To provide an introduction to the culture and architecture of early civilizations
- To explain the students the evolution of architecture in relation to time with special emphasis to historical, social, religious, political and environmental factors.
- To make the students understand the developments in the construction technology in different periods.
- To gain knowledge of the development of architectural form with reference to technology, style, and character in the prehistoric work, ancient Egypt, west Asia, Greek and Rome.

COURSE CONTENT:

Unit I – Pre-Historic Architecture
Introduction to Ancient World. Primitive man, Paleolithic and Neolithic Culture – art forms and evolution of shelter and settlements. Megaliths. Study of buildings/settlements, structural development, materials of different ages used in Europe and Central Asia.

Unit II - Ancient River Valley Civilizations: Egypt
Landscape and culture of Ancient Egypt –Factors influencing the development of Egyptian civilization- (Geographical, Geological, Climatic, historical, religious, Social, Political.) Characteristic Features, - Tomb & temple Architecture. Tomb – Evolution of Pyramids, (Mastabas, stepped Pyramids, pyramids - Great Pyramid of Cheops, Gizeh.)
Temples – Mortuary and cult temple- Temple of Khons, Karnak, Great temple of Ammon, Karnak. Temple of Abu Simbel. Other architectural elements like columns, relief carving, obelisks, pylons, sphinxes.

Unit III - Ancient River Valley Civilizations: Mesopotamia
Empires of Western Asia – Urbanization in the Fertile Crescent Mesopotamian, Sumerian, Assyrian, Babylonian and Persian culture - Factors influencing architecture - Outline of architectural character – Ziggurat of Ur, Urnammu, Palace of Sargon, palace of Khorsabad - Palace at Persepolis.

Unit IV – Greek Architecture

Introduction to Greek Architecture, Factors influencing architectural character, Evolution of city states. Important construction techniques– Minoan and Mycenaean cultures – Hellenic and Hellenistic cultures – Greek character– Greek city planning – architecture in the archaic and classic periods – Domestic architecture; Public Buildings: Agora, stoas, theaters, bouletrion and stadias – Greek temple: evolution and classification. Building Examples – The Acropolis, Athens; The Parthenon, Athens; The Erectheion, Athens; The Tower of Winds, Athens; The theatre at Epidaurous, sanctuaries, Agoras & monuments. Orders in architecture: Doric, lonic, Corinthian – optical illusions and corrections in architecture.Appreciation of perfection.

Unit V – Roman Architecture

Roman Architecture: A brief account of materials, structural systems adopted and construction techniques - The Roman orders – Tuscan & Composite orders, urban planning, a short description of Roman urban spaces, temples, thermae, basilicas, theatres, pantheon amphitheatres, circuses and houses. Building Examples - The Colloseum; TheThermae of Caracalla; ThePantheon, Rome, The Circus Maximus, Aqueducts.

COURSE OUTCOME:

On successful completion of this course, the student should be able to**:**

- Demonstrate the spatial and stylistic qualities associated with the early civilizations.
- Understand the outcome of various social, political and economic upheavals, and as a response to the cultural and climate conditions.
- Analyze the importance of history in fostering appreciation for how surrounding structures affect our lives in a border cultural context.

TEXT BOOKS

1. **Sir Banister Fletcher**, "A History of Architecture", CBS Publications (Indian Edition),1999.
2. **Spiro Kostof,** "A History of Architecture:Setting and Rituals, Oxford University Press, London, 1985
3. **Francis D K Ching** "Global History of Architecture"
4. **Leland M Roth**; "Understanding Architecture: Its Elements, History and Meaning"; Craftsman House; 1994.
5. **Emily Cole** "Grammar of Architecture".

REFERENCES

1. **Pier Luigi Nervi**, General Editor, "History of World Architecture – Series", Harry N. Abrams, Inc.Pub., New York, 1972.
2. **Lloyd S. and Muller H.W**., "History of World Architecture – Series", Faber and Faber Ltd.,London, 1986.
3. **Gosta, E. Samdstrp**, "Man the Builder", Mc.Graw Hill Book Company, New York,1970.
4. **Webb and Schaeffer**; "Western Civilisation", Volume I; VNR: NY: 1962.
5. **Vincent Scully**, "Architecture – The Natural and the Manmade", Harper Collins Pub:1991.

Subject: **Mechanics of Structures**		
Code: ARS105	**Credits: 3**	**Hours / Week: 3 hrs.**
Progressive Marks: 50	**Examination Marks: 50**	**Duration of Exam: 2 hrs.**

AIM

Provides an in-depth understanding of the concept associated with different element of structures.

OBJECTIVES

- To enable a student to learn fundamentals of structural systems, functions of structural components and types of loads on the structure.
- To make students to understand the effect of action of forces on a body and the concept of equilibrium of the body through exercises.
- To study the different forms of structures, types of supports, boundary conditions, degree of freedom and exercises on determinate bodies.
- To calculate the sectional properties (centroid, moment of inertia, section modulus and radius of gyration) for various sections by working out problems.

COURSE CONTENT:

Unit 1 Introduction
Introduction to fundamentals of structural system, technical names of structures, components from foundation to roof and their functions, loads-dead, live, wind, impact and dynamic loads.

Unit 2 Basic Idealization
Basic idealization – types of forces (gravity, lateral) and its distribution on surfaces, classification of force systems, principle of physical independence, superposition, transmissibility of forces, introduction to SI units.

Unit 3 Composition of forces
Composition of forces – definition of resultant composition of coplanar-concurrent force system parallelogram law of forces, principle of resolved parts, numerical on composition of coplanar concurrent force systems. Equilibrium of forces – definition of equilibrium condition of static equilibrium for different force system, lami's theorem, numerical on equilibrium of coplanar-concurrent and non-concurrent force system.

Unit 4 Forms of structures
Forms of structures, types of supports, boundary conditions, degree of freedom and support. Concept of statically determinate and statically indeterminate structures, numerical problems on support reaction for statically determinate beams with point load and uniformly distributed load.

Unit 5 Centroid and Moment of Inertia

Centroids – introduction to the concept, centroid of line and area, centroid of basic geometrical figures, computing centroids for – T, L, I, Z and full/quadrant circular section and their built-up section. Numerical problems

Moment of inertia – introduction to the concept, radius of gyration, parallel axis theorem, perpendicular axis theorem, moment of inertia of basic planar fig. computing moment of inertia for – T, L, I, Z and full/quadrant circular section and their built up section. Numerical problems

.

COURSE OUTCOME:

On successful completion of this course, the student should be able to**:**

- Apply the concepts of action of forces on a body and should be able to apply the equilibrium concepts.
- Calculate support reaction for any type of determinate beams.
- Apply the concepts of centroid and moment of inertia of regular cross sections in structural design.

TEXT BOOKS

1. **Ramamrutham S. Engineering Mechanics**, 7th ed. Dhanpat Rai Pub. Co. Ltd., New Delhi, 2004.
2. Elements of Civil Engineering and Engineering Mechanics by **M.N. Shesha Prakash and Ganesh. B. Mogaveer**, PHI Learning, 3rd Revised edition (2014).
3. Elements of Civil Engineering IV Edition by **S.S. Bhavikatti**, New Age International Publisher, New Delhi, 3rd edition 2009.
4. Engineering mechanics by **R K Bansal**, Lakshmi publication, New Delhi 2005.
5. **Kurmi R S** Engineering Mechanics, S Chand and Co. Ltd., New Delhi, 1999.

REFERENCES

1. Engineering Mechanics by **S.Timoshenko, D.H.Young, and J.V.Rao**, TATA McGraw-Hill Book Company, New Delhi
2. **Beer FP** and **Johnson ER**, "Mechanics for Engineers- Dynamics and Statics" - 3rd SI Metric edition, Tata McGraw Hill. - 2008
3. **Shames IH**, "Engineering Mechanics – Statics & Dynamics" - PHI – 2009.
4. **Dongre AP** "Structural Engineering for Architects", third edition, Scitech Publications, India Pvt. Ltd.

Subject: **Theory of Architecture-I**		
Code: ARC106	**Credits: 3**	**Hours / Week: 3 hrs.**
Progressive Marks: 50	**Examination Marks: 50**	**Duration of Exam: 2 hrs.**

AIM

The course intends to understand the influence of form and space in architectural design, understanding the terms and techniques involved in creative thinking of architectural design.

OBJECTIVES

- To establish a strong knowledge on how architecture is a social art backed by needs how to develop a vocabulary for design process.
- To introduce the formal vocabulary of architecture as one of the ways to experience the built environment and to appreciate design and design elements.
- To understand the architectural forms and space in terms of elements and principles of designs.
- To understand the concept of Space, relation between the Form and Space.

COURSE CONTENT:

Unit -I Introduction to Architecture
Definitions of Architecture – Origin of Architecture – architecture as a discipline – context for architecture as satisfying human needs: functional, aesthetic and psychological-outline of components and aspects of architectural form-site, structure, skin, materials, services, use, circulation, expression, character, experience – Introduction to the formal vocabulary of architecture and ideas of visual perception.

Unit-II Fundamental Elements of Architecture
Understanding the fundamental elements such as point, line and linear elements, plane and planar elements, volume, shape, pattern, Color, Material, Texture, solids and voids with reference to the evolution of architectural form and space.

Unit-III Forms and Spaces of Architecture
Understanding the role of shape in defining forms – Regular and Irregular Forms. Understanding perceptual effects of specific geometric forms such as sphere, cube, pyramid, cylinder and cone and their derivations – observations- application in architectural forms. Transformation of forms – Dimensional transformation, subtractive and additive forms, concept of articulation of form in architecture.

Definition of Architectural Space, Role of Mass in the formation of form, Relation between form and space, Organization of Spaces, Exploring the relationship of spaces, Scale of Spaces, Typology and Character of Spaces, Orientation of Spaces.

Unit –IV Scale and Proportion

Proportion, its application and advantages in architecture. Application of order, Golden section, modular section with examples. Scale, its application in architecture and advantages. Application of human scale and generic scale in architecture with examples in Architecture.

Unit- V Ordering Principles

Understanding design principles like Unity, Axis, Symmetry/ Asymmetry, Rhythm, Harmony, Focus, Hierarchy, Datum, Balance, Contrast, Dominance, Climax, Emphasis – their role and application in the architectural form evolution. The use of colors in Architecture, principles of colors and their application and advantages in buildings.

COURSE OUTCOME:

On successful completion of this course, the student should be able to**:**

- Develop an understanding on the vocabulary and elements of architectural form and space.
- An exposure to the principles of architecture and application of the same in building.

TEXT BOOKS

1. **Smithies, K.W**. Principles of Design in Architecture. Chapman and Hall, 1983.
2. **Francis D.K. Ching**, "Architecture-Form, Space and Order", Van Nostrand Reinhold Company, New York, 2007.
3. **James F. Eckler**, "Language of Space and Form", Wiley, 2012.

REFERENCES

1. **Sireesh Deshpande**, "Design Dialog", COA Publication, 2013.
2. **Yatin Pandya**,"Elements of Space making", Mapin 2007.
3. **Simon Unwin**, "Analysing Architecture", Rouledge, London, 2003.
4. **Pramar V.S**., "Design Fundamentals in Architecture", Somaiya Publications Private Ltd., New Delhi, 1973.
5. **Krier, Rob**. Architectural Composition, Academy Editions, London, 1988.
6. **Leland M.Roth,** "Understanding Architecture: Its Experience History and Meaning", Craftsman house, 1994.
7. **Peter von Meiss**, "Elements of architecture – from form to place", Spon Press 1977.
8. **Rudolf Arnheim**, "The dynamics of architectural form", University of California Press, 1977.
9. **Neils Prak**, "The language of Architecture", Mounton & Co., 1968.
10. **Paul Alan Johnson**, "The Theory of Architecture – Concepts and themes", Van Nostrand Reinhold Co., New York, 1994.
11. **Helen Marie Evans and Carla David Dunneshil**, "An invitation to design", Macmillan Publishing Co. Inc., New York, 1982.

Subject: **Workshop – I (Visual Arts)**		
Code: ARS107	**Credits: 2**	**Hours / Week: 4 hrs.**
Progressive Marks: 100		

AIM

The course intends to emphasize on developing visual communication skills necessary and related to architectural presentation including drawing, imaginative thinking and creativity though a hand on working various medium and materials.

OBJECTIVES

- To familiarize the student with the various mediums and techniques of art though which artistic expression can be achieved.
- To understand free hand drawing as a means to communicate and to train the students to sketch and render natural forms, built forms and presentation drawings manually in various media.
- To involve students in a series of exercises this will look at graphic an abstract representation of art.
- Involving them in a series of exercises which will help them experiment with forms and Hands on training

COURSE CONTENT:

Materials: Pencil, Pen, Ink, Colour, Brush, charcoal and Suitable Paper.

UNIT I Drawing
Introduction to drawing skills–Scribbling, Doddles, simple hand movements, drawing form nature – Types of drawing – Visual effects of drawing —Approach to sketching.

Drawing form observations-Exercise involving Indoor and outdoor sketching – Spot sketching –Line and Shape, Tone and Texture, Form and Structure, Space and Depth, detailed study of natural and manmade elements.

Drawing from imagination – visualization- Organic and Geometric shapes - Compositions - Scale and proportion in drawing,

Unit –II Perspective
Simple Perspective Drawing for outdoor and indoor, Illustration techniques for architectural presentation, Practicing in detail Line, Dot, Tone, Texture with utilizing play of Light and Shade.

UNIT II Painting
Introduction of painting – Colour – Properties of colour – Colour schemes – Types of colours -

Application and visual effects of colour. Exercise involving Study of colour – Properties of paper, brush and other tools – Basic washes – 3D effects from still-life, nature and built environment using mono chromatic and multi-colour.

Unit –III Anatomy Sketching

Introduction of human anatomy, sketching human forms [Knowledge of anatomy] – Free hand Drawing, gesture Drawing, Rendering with Various Methods and Mediums.

Unit- IV Introduction to Model Making

Introduction to basic model making techniques using various materials such as Paper, (Paper Craft), Clay, Plaster of Paris, Thermocol, sawdust, wire, mill board and sun board, etc.

COURSE OUTCOME:

On successful completion of this course, the student should be able to**:**

- Understand the basics of 2D and 3D sketching using various media.
- Imbibe skills of free hand sketching techniques using different media.
- Use of appropriate coloring techniques for architectural drawings and enhance the building details with appropriate presentation techniques.

TEXT BOOKS

1. **Craven, C. Roy**. Indian Art a Concise History.
2. **Krier, Rob**. Element of Architecture. Academy Editions, London, 1992.
3. **Francis D.K. Ching** with **Steven P.Juroszel**, Design Drawing. USA, 1997.

REFERENCES

1. **Lang, Jon**. A Concise History of Modern Architecture in India. Permanent Black, Delhi, 2002.
2. **Magnet, Jacque**. The Asesthetic Experiences: An anthropologist looks at the Visual Art.
3. **Preble, Duame**. Art Forms.
4. **Snyder, C. James and Catanese, J. Anthony**. Introduction to Architecture.
5. **Tapert, Annette. Swid Powell**: Objects by Architects. Rizzoli, New York, 1990.
6. **Thyagarajan**. Basic practical photography.

YEAR-1 SEMESTER-II

Subject: Architectural Design –I		
Code: ARC201	**Credits: 7**	**Hours / Week: 9 hrs.**
Progressive Marks: 100	**Examination Marks: 100**	**Duration of Exam: Jury**

AIM

The course intends to introduce the student to the conception of design, Fundamentals in Architectural design and design process as a synthesis of variety of factors analyzed and studied.

OBJECTIVES

- To develop the ability to translate **abstract principles of design into architectural solutions** through simple design exercises.
- To make the students learn **the theoretical aspects of design** and understand how it could be **manifested in architectural design**
- To develop a **perception of space and a sense of visualization** with the help of tools like **sketches, drawings, models**, etc.
- To enable the presentation of **concepts through** various modes and techniques that will move constantly between **2D representation and 3D modeling**
- To involve students in a design project(s) that will involve simple space planning and the understanding of the functional aspects of design.
- To involve students in building **case study** by choosing appropriate examples to enable them to formulate their concepts and architectural program.

COURSE CONTENT:

Basic anthropometrics, human functions and their implications for space requirements.
Aesthetic and psychological experience of form and space in terms of scale, colour, light, texture, etc.
Minimum and optimum areas for mono functions, User's data, Movement and circulation diagrams, spatial interpretations – various activities and their relationship with spaces.
Anthropometry as related to physically handicapped and elderly persons are required to be studied. Functional furniture layout, circulation, lighting and ventilation for spaces.

Typology/ project

Design of simple building elements such as gate. Welcome arch, Memorial, bus shelter layout of parks, Entrance portal, Garden pavilion, Memorial, edifice, Bus shelter, snack kiosk and layout of parks.
Functional furniture layout, circulation, basic lighting and ventilation for spaces such as living, dining, bedrooms, bathroom, kitchen, shop, and exhibition pavilion, children's environment,
Any One Room enclosure could be taken to explore the implication of light, movement, transformation, scale, structure and skin.

Snack bar/cafe, petrol bunk, fire station, Residence, police station, cottage for an elderly couple, Architect's office, Doctor's clinic, Toilet for a physically handicapped person, Hostel room, Workshop etc.
Projects involving small span, single space, single use spaces with simple movement, predominantly horizontal, as well as simple function public buildings of small scale to understand integration of form and function.

COURSE OUTCOME:

On successful completion of this course, the student should be able to**:**

- Assimilate basic functional aspect of designing simple building type and its relevant spatial organization.
- Reciprocate the design or concept of the environment to reality.
- Analyze ideation of a functional space crafted by robust elements in an aesthetic manner and exploiting 3D drawings as a medium of near realistic representation of architectural intent.

TEXTBOOKS

1. **John Hanock** ,"Timesaver Standards For Architectural Design Data"
2. **Ramsey et al**, "Architectural Graphic Standards", Wiley 2000
3. **Farrely, Lorraine,Basics** Architecture 01: Representational Techniques
4. **Julius Panero, Martin Zelnik**, "Human Dimension and Interior Space", Whitney Library of Design,1975
5. **Ernst Neuferts,** "Architects Data", Blackwell 2002
6. **Joseph De Chiara, Michael J Crosbie,** "Time Saver Standards for Building Types", McGraw Hill Professional 2001.
7. **Hideaki Hareguchi**, "A Comparative analysis of 20th century houses", Academy Editions, 1988
8. **Robert Powell**, "Tropical Asian House", Select Books, 1996
9. **Terence Conran,** "The Essential House Book", Conran Octopus, 1994
10. **Sam F. Miller,** "Design Process: A Primer for Architectural and Interior Design", Van Nostrand Reinhold, 1995.

REFERENCES

1. **Juhani Pallasmaa** , The Thinking Hand (Architectural Design Primer)
2. **Gaston Bachelard,** The Poetics of Space Paperback
3. **Matthew Frederick,** 101 Things I Learned in Architecture School (MIT Press)
4. **Steen Eiler Rasmussen**, Experiencing Architecture 2nd Edition
5. **Guerras Perez,** Conceptual Architecture
6. **Conceptual and Activity Diagram** ,Pyo Miyoung
7. **Simon Unwin (Routledge, 2014).**Analysing Architecture (Fourth Edition)

REFERENCE WEBSITES

1. www.design basics.com/-(on house type – Americans)
2. http://www.geosystems.gatech.edu/ - (on detail design method)
3. http://www.c.s.berkely.edu/ - (on bubble diagram builder with interaction)
4. http://www.plannet.com/resources.htme - (on resource info)

Subject: **Building Materials & Construction -II**		
Code: ARC202	**Credits: 4**	**Hours / Week: 6 hrs.**
Progressive Marks: 100	**Examination Marks: 50**	**Duration of Exam: 3 hrs.**

AIM

The course intends to acquaint the students with various methods and techniques of construction of doors and windows, stairs and partitions of a building using timber in detail.

OBJECTIVES

- To understand the elementary and simple construction methods like joinery details in wood, fixing of hardware.
- To understand timber as a material for construction with its different details and their applications.
- To familiarize the industrial and commercial modes of timber with their characteristics and uses.

COURSE CONTENT:

Unit – I

Commercial and Industrial modes of Timber: Resin bonded ply wood, types of laminates, laminated wood, insulating boards and other miscellaneous boards, veneers from different varieties of timber, their characteristics and uses MDF& HDF Boards. Types of wood, Identification of basic woods, uses in construction, Growth of Trees, Felling, Varieties, Defects and decay, Seasoning and Prevention, Fire proofing, Treatment of wood, Strength and uses of wood products, Thermal insulation.

Unit –II

Introduction to joints in carpentry: Terms defined; mitring, ploughing, grooving, rebating, veneering. Various forms of joints in wood work, such as lengthening joints, bearing joints, halving, dovetailing, housing, notching, tusk and tenon etc.

Unit- III

Doors: Definition of terms, types of doors: wooden, ledged, ledged and braced, paneled, flush door. Hinged, single and double shutters, sliding, folding, revolving, pivoted and heir construction techniques Decorative panel doors, glazed doors, Flush doors, Wire mesh door, Panelled doors, Doors with fan light.

Unit- IV

Windows: details of timber frames, shutters, fixed shutters, Windows (panneled, louvered, glazed and sliding windows) Casement, top and bottom hung, pivoted and sliding sash. Hardware: fixtures, locks, hinges, fastenings for doors and windows.

Unit- V

Wooden Roofs: Simple pitched roof, lean to, close collar; couple closes roofs with Mangalore tile, Queen post, King post.

Unit- VI

Stair cases: Introduction of stair cases, Types of staircases- Straight flight staircase, Dog legged staircase, Open well staircase, Geometrical staircase, Circular staircase, spiral, bifurcated, wooden, stone, metal staircase and elementary knowledge of RCC staircase. Timber staircase in detail.

Sessional Work:

1. The students are subjected to submit all the plates before the next exercise begins
2. Construction techniques will be supported by site visits off the studio hours
3. The students will be making miniature models after learning construction technique.
4. The class work and home assignments should include appropriate site visits by the students.
5. Student will maintain field observations / record books for relative consideration of construction detailing with materials and its learning through market survey

NOTE

Visits to study various timber and allied products available in the market under different trade names for their properties, constituents, using manufacturer's details, specifications, laying process etc.

COURSE OUTCOME:

On successful completion of this course, the student should be able to**:**

- Assimilate basic functional aspect of designing simple building type and its relevant spatial organization.
- Reciprocate the design or concept of the environment to reality.
- Analyze ideation of a functional space crafted by robust elements in an aesthetic manner and exploiting 3D drawings as a medium of near realistic representation of architectural intent.
- Analyze various techniques of timber joineries, treatment and construction detailing with their applications, uses and calculation of wood works.
- Acquaint themselves with the construction details of building elements such as doors and windows.
- Comprehend and integrate the use of different building materials and techniques in the construction of wooden roofs.

TEXT BOOKS

1. **WB McKay** , Building construction-Metric volume(in 4 vols), 5^{th} edition 2013
2. **Barry** - The Construction of Buildings, volume 1, New Delhi, 1999.
3. **Roy Chudley** , Building construction technology, (vol.1 to 4)
4. **Ching Francis D.K.,** Building Construction illustrated, 4th edition 2008, Indian reprint 2012.
5. Building construction, S.C.Rangwala, revised by K.S.Rangwala & P.S.Rangwala, 32nd edition, 2014.
6. Building material Sushil Kumar, 20th edition, reprint 2015
7. Building Materials S.K.Duggal

REFERENCES

1. Don A. Watson, “Construction Materials and Processes”, McGraw Hill, 1972.
2. W.B. McKay, “Building Construction”, Vol, 1 and 2, Longmans, UK, 1981.
3. S.C Rangwala “Building Construction”, Charotar Publishing House, India, 2000
4. S.K.Sharma, “A Text book of Building Construction”, S.Chand & Co Ltd., New Delhi, 1998.
5. American Institute of Timber Construction (AITC), “ Timber Construction Manual”, Wiley Publishers, 2004.

Subject: Architectural Graphics-II		
Code: ARC203	**Credits: 3**	**Hours / Week: 4 hrs.**
Progressive Marks: 50	**Examination Marks: 50**	**Duration of Exam: 3 hrs.**

AIM

The course intends to develop the skill of representation in advanced drawing techniques and building documentation.

OBJECTIVES

- To involve students in a number of exercises that will help them develop the skill of representation in advance drawing techniques involving perspective and sciography.
- To involve students in a number of exercises that will help to understand the measured drawing method to document buildings of architectural interest using simple and advanced techniques of representation.

COURSE CONTENT:

Unit I: Perspective: Scientific Method
Concepts and methods of perspective drawing One point and two-point perspective of simple geometrical shapes like cube, prism, combination of shapes, simple one, two and three-point perspective of building interiors and exteriors. Adding of figures, trees furniture etc., shade and shadows and applying rendering techniques.

Unit II: Perspective: Short Cut Method
Introduction to short cut perspective method; Adding of figures, trees furniture etc., shade and shadows and applying rendering techniques.

Unit 3: Sciography
Principles of shade and shadow – construction of shadow of simple geometrical shapes construction of sciography on building, shadows of architectural elements.

Unit 4: Plans & Sections of Buildings
Introduction to the basic principles of drawing – scale conversion etc. Graphical representation of plans and sections of buildings. Floor plans, elements above and below plan cut, reflected ceiling plan, site plan with contours, site sections, building elevations, section of buildings.

Unit 5: Measured Drawing
Detailed measured drawing and documentation of historic building – preparation of plans, elevations, sections, details views etc.

COURSE OUTCOME:

On successful completion of this course, the student should be able to**:**

- Acquaint themselves with the knowledge of sciography and its application.
- Construct the perspective drawings of the buildings and 3d views as well as the documentation of buildings through drawings.
- Interpret basic principles of drawings through case studies and graphically represent it in the form of plans, sections and elevations.

TEXT BOOKS

1. **John M.Holmes**, Applied Perspective, Sir Isaac, Piotman and Sons Ltd., London 1954.
2. **Robert W.Gill**, Basic Perspective, Thames and Hudson, London, 1974.
3. **C.Leslie Martin**, Architectural Graphics, the Macmillan Company, New York, 1964.
4. **Francis D K Ching,** Architectural Graphics, Van Nostrand and Reinhold Company, NY 1975.

REFERENCE BOOKS

1. **Thoms, E. French**. Graphic Science and Design, New York: MC Graw Hill.
2. **Nichols, T.B. and Keep, Norman. Geometry of Construction**, 3rd ed. Cleaver – Hume Press Ltd., London, 1959.
3. **Bhatt, N.D. and Panchal V.M. Engineering Drawing**: Plane and Solid Geometry, 42nd ed. Charotar Pub., Anand, 2000.
4. **Gill, P.S. T.B**. of Geometrical Drawing, 3rd ed. Dewan Suhil Kumar Kataria, Ludhiana, 1986
5. **Shah, M.G., Kale, C.M. and Patki,** S.Y. Building Drawing: with an integrated approach to built environment, 7th ed. Tata McGraw Hill Pub., Delhi, 2000. Claude Batley –Design Development of Indian Architecture Ernest Burden –Architectural Dilineation, Miniature, scale models.

Subject: **History of Architecture-II**		
Code: ARC204	**Credits: 3**	**Hours / Week: 3 hrs.**
Progressive Marks: 50	**Examination Marks: 50**	**Duration of Exam: 2 hrs.**

AIM

The course intends to enlighten and generate an understanding about the development of civilization and its architectural implications about development of architecture in India from river valley civilization to Indo-Aryan period.

OBJECTIVES

- To make the students understand the contributions to architecture by the river valley, Aryan and Mauryan civilizations and the kinds of building materials and techniques adopted by them.
- To enable the students to understand the influence of Buddhism and Jainism in India and architecture of buildings caves by studying specific examples.
- To study the evolution of Hindu temple during different periods with selected examples in India.
- To explain the students the evolution of architecture in relation to time with special emphasis to geographical, geological, social, religious, political, aesthetical and environmental factors.
- To make the students understand the developments in the construction technology in different periods.

COURSE CONTENT:

UNIT 1 - Ancient India

Indus Valley Civilization: culture and pattern of settlement. Origin of Early Hinduism, Impact of Aryan culture - Vedic village, culture and the rudimentary forms of bamboo and wood. Wooden construction under the Mauryan rule.

Unit 2 - Buddhist Architecture

Evolution of Buddhism - Hinayana and Mahayana Buddhism. Evolution of building typologies – The stupas, viharas and the chaitya hall. Salient features of a Chaitya hall and Vihara, Rock cut architecture in the Western and Eastern ghats - Karli, Viharas.Ideas in Northern India - Architectural Production during Ashoka's rule - Ashokan Pillar, Sarnath, Rock cut caves at Barabar, Sanchi Stupa.

UNIT 3 - Jainism

Evolution of Jainism and building typologies. Characteristic features, Examples.

UNIT 4 - Evolution of Hindu Temple Architecture

Hindu forms of worship – evolution of temple form - meaning, symbolism, ritual and social importance of temple - categories of temple - elements of temple architecture - early shrines of the Gupta and Chalukyan periods

Styles of Hindu temple Architecture

- North Indian or Indo-Aryan
- Central or Vesara
- South Indian or Dravidian

Unit 5 - Dravidian Architecture

Construction Techniques, Planning and Ornamentation of religious buildings and civic buildings of Early Chalukyan, Chola, Pandya, Later Dravidian period - Vijayanagar and Madura dynasties and later Chalukyan.

Early Chalukyans

Characteristic features, Factors responsible for development of Chalukyan Architecture, Different Materials used, Construction techniques and detailing.
Structural Temples and Rock Cut Caves
Location – Aihole, Badami and Pattadakal.
Egs:-Ladkhan Temple, Durga Temple-Study of temple Plan, Section, Elevation, View, Study of the towers/shikaras on the roof top of these structures.
Rockcut Caves at Badami, Study of Five Caves in detail. Pattadakal group of temples.

Pallavan Architecture

Structural Temples and Rock Cut temples at Mahaballipuram
Structural temple: - Shore temple, Mahaballipuram
Rock Cut temple: - Five Rathas, Mahaballipuram
Location, Detail study of Shore temple, Materials used for construction, Planning aspects, Plan, view and details.

Cholan Architecture

Characteristic features, Factors responsible for development of Cholan Architecture, Different Materials used, Construction techniques and detailing.
Eg:-Brihadeshwara temple, Tanjore, Gangaikonda Cholapuram and Darasuram temples.

Hoysalan Architecture

Characteristic features, Factors responsible for development of Hoysalan Architecture. Different Materials used, Construction techniques and detailing. Eg: Temples from Belur, Halebeed and Somanathpur. Vijayanagar style - Study of Hampi temple in detail. Madurai style - Temple towns: Madurai and Kanchipuram. Study of Meenakshi temple, Madhurai.

UNIT - 6 Indo Aryan Style

Temple architecture of Gujarat, Orissa, Madhya Pradesh and Rajasthan - their salient features Lingaraja Temple, Bhuvaneswar - Sun temple, Konarak. - Somnatha temple, Gujarat, Surya kund, Modhera Khajuraho, Madhya Pradesh - Dilwara temple, Mt. Abu.

COURSE OUTCOME:

On successful completion of this course, the student should be able to**:**

- Demonstrate the spatial and stylistic qualities associated with the different civilizations.
- Perceive the importance of history in fostering appreciation for how surrounding structures affect our lives in a broader cultural context.
- Analyze the factors that influence the evolution of early forms of temples, architectural characteristics and features of each type.
- Evaluate the socio – cultural and religious characteristics of civilization to appreciate their architectural development across timeline.

TEXT BOOKS

1. Brown, Percy. Indian Architecture: Buddhist and Hindu Periods. D.B. Taraporevala Sons and Co., Mumbai, 2003.
2. Grover, Satish. (2003). Buddhist and Hindu Architecture in India, 2nd edition. CBS publishers and distributors, New Delhi
3. Rowl, Benjamin. Art and Architecture of India.
4. Tadgell, Christopher. The History of Architecture in India: from the Dawn of
5. Civilization to the End of the Raj. Om Book Service, New Delhi, 1990. Vistara. The Architecture of India.
6. Deva, Krishna. (1995). Temples of India, vol. I and II. Aryan books international, Delhi.
7. Fergusson, James. (1997). History of Indian and Eastern Architecture, revised and edited with additions, Indian architecture by James Burgess and Eastern architecture by R. Phene Spiers, reprint, vol. I and vol. II. Low Price Publications, Delhi.
8. Fisher, Robert E. (1993). Buddhist Art and Architecture. Thames and Hudson Ltd, London.
9. George Michell, "The Hindu Temple", BI Pub., Bombay, 1977.
10. Marian Moffett, Lawrence Wodehouse and Michael Fazio. (2004). A World History of Architecture. McGraw-Hill Professional, ISBN-10: 0071417516
11. Parameswaranpillai V.R., "Temple culture of south India", Inter India Publications,
12. Stella Kramrisch, "The Hindu Temple", Motilal BanARPidass, 1976.
13. Tadgell, Christopher. The History of Architecture in India: from the Dawn of Civilization to the End of the Raj. Om Book Service, New Delhi, 1990.

REFERENCES

1. A.Volwahsen, Living Architecture - India (Buddhist and Hindu), Oxford and IBM, London, 1969.
2. George Michell Ed, "Temple Towns of Tamil Nadu", Marg Pubs, 1995.
3. George Michell, "The Hindu Temple", BI Pub., Bombay, 1977.
4. Stella Kramrisch, "The Hindu Temple", Motilal BanARPidass, 1976.
5. Roth, Leland. (2006). Understanding Architecture: Its Elements, History and Meaning. Westview Press, ISBN-10: 0813390451.

Subject: **Strength of Materials**		
Code: ARS205	**Credits: 3**	**Hours / Week: 3 hrs.**
Progressive Marks: 50	**Examination Mark: 50**	**Duration of Exam: 2 hrs.**

AIM

The course intends to give an in-depth understanding of the concept associated with different element of structures.

OBJECTIVES

- To study the stress – strain behaviors of steel and concrete due to axial loads and to determine the stresses and strains developed in solids due to external action.
- To determine the stresses in beams and strength of section by working out problems.
- To enable a student to understand the basic concept of shear force and bending moment acting on beams subjected to various loading conditions through exercises.
- To determine the internal forces induced in truss members due to external loads by working out problems.
- To study the theory of columns by working out problems.
- To enable the understanding of the different types of joints and study the efficiency and strength of joints.

COURSE CONTENT:

UNIT 1 Stress and Strain
Simple stress and strain – introduction, properties of materials, stress, strains, hook's law, poisson's ratio, stress -strain diagram for structural steel and concrete. Analysis of stress and strain in bars of varying cross-sections. Numerical problems.

UNIT 2 Bending moment and shear force
Bending moment and shear force in beams – introduction, types of beams loading and supports, shear force in beams, bending moment in beam, sign conventions, shear force and bending moment equations, shear force diagram and bending moment diagram for fixed end, simply supported and over hanging beams considering point loads, uniformly distributed loads.

UNIT 3 Short and long columns
Short and long columns – concept of elastic stability – Euler's theory – assumption and load carrying capacity of columns with different end condition – concept of effective length – slenderness ratio – limitations of Euler's theory – Rankine's formula.

UNIT 4 Trusses
Analysis of truss, loads on trusses, 2D truss analysis using method of joint.

UNIT 5 Introduction to joints

Types of joints, lap joint and butt joint, failure of riveted joint, strength of the joint, efficiency of joint, unwins formula, chain riveting and diamond riveting.

COURSE OUTCOME:

On successful completion of this course, the student should be able to**:**

- Determine the stress and strain in steel cross sections.
- Apply the concepts of determining the techniques of finding the stresses.
- Analyzing the different types of columns and determinate trusses.
- Design the steel joints for maximum efficiency and strength.

TEXT BOOKS

1. Ramamrutham S, "Strength of Materials" Dhanpatrai and Sons, New Delhi, 1990.
2. R K Bansal, "Strength of Materials" Lakshmi publication, New Delhi 2006.
3. B C Punmia, "Strength of Materials" Lakshmi publication, New Delhi 1994.
4. Rajputh R K. "Strength of Materials" 6th Ed. S Chand.
5. Basavarajaiah. "Strength of Materials" 3rd Ed.

REFERENCES

1. Nash W A, "Strength of Materials" – Schaums Series, Mc Graw Hill book company, 1989.
2. Rajput R K, "Strength of Materials", S Chand and Company Ltd, New Delhi, 1996.

Subject: **Theory of Architecture-II**		
Code: ARC206	**Credits: 3**	**Hours / Week: 3 hrs.**
Progressive Marks: 50	**Examination Marks: 50**	**Duration of Exam: 2 hrs.**

AIM

The course intends to study spatial aspects, compositions and their analysis in buildings, along with the understanding of the terms and techniques involved in creative thinking of architectural design.

OBJECTIVES

- To introduce factors that lends meaning to architecture, expression, communication.
- To introduce the concept on case studies as a tool for understanding, represent, analyze and interpret the architectural experience holistically through studying existing live built environment.
- To understand the spatial character of built forms with examples.
- To understand the generation of individual meaning in architecture through study of philosophies /theories and exemplary works of architects.

COURSE CONTENT:

Unit – I Elements of Design in Nature
Points, lines and shapes found in nature. Role of elements to emphasize the location, as landmark, for direction and dominance, etc. Patterns in nature and building design. Chaos and Order. Study: examples of nature inspired man-made design

Unit –II Circulation
Circulation - Movement with reference to the architectural form and Circulation – Types of circulation – Building Approach and entrance, Path configuration – form of circulation spaces.

Unit – III Case Study Methodology
To understand the definition of case study and its role in architectural design, case study and its importance, detailed process of case study – Selection of case study, identification and observation, understanding how case studies have used representational, analytical and interpretation tools. Understanding architecture in totality in terms of various studied in this course firsthand experience, analysis and interpretation of building.

Unit –IV Works of Architects
Identify and Explore the theoretical concepts learn on form and space in various architects works – role of architects in the generation of architectural form, exemplary works, architectural inspirations, philosophies, ideologies and theories of architects. Understanding of formative ideas, organization concepts, and spatial characteristics, - Massing and circulation in design analysis of the following buildings: Falling water house, & Guggenheim museum by F. L. Wright –Villa, Savoye & Chapel of Notredame

DuHaut by Le Corbusier, British Council, New Delhi by Charles Correa, Indian National Science Academy and Parliament Library by Raj Rewal, National Science Centre Museum by Achyut Kanvinde. (Reduce the description)

Unit-V Perception in Architecture

Experience of architecture in basic psychological and physiological terms. Way in which human minds and bodies respond to space, light, texture, color, and other architectural elements.

COURSE OUTCOME:

On successful completion of this course, the student should be able to**:**

- Articulate the concepts of Form and Space in the design process.
- Incorporate and analyse the circulation pattern of simple buildings like residence, restaurants, office, etc.
- Analyze and experience architecture through case studies of various architect's works.

TEXT BOOKS

1. Transfers and Transformation by **Charles Correa**
2. **Ching, Francis D.K**. Architecture: Form, Space, and Order, 2nd ed. Van Nostrand Reinhold, New York, 1996.
3. **Ching, Francis D.K, Francis** D. K. Ching, James F. Eckler, Introduction to Architecture, New York, 2012 Edition.
4. **SimonUnwin**, "Analyzing Architecture", Routledge 2003.
5. **Yatin Pandya**, "Elements of Space making", Mapin 2007.
6. **Pramar V.S**., "Design Fundamentals in Architecture", Somaiya Publications Private Ltd., New Delhi, 1973.

REFERENCES

1. **James C. Snyder**, Introduction to Architecture, New York: Mc Graw Hill.
2. **Christopher Alexander, Pattern Language**, New York: Oxford University Press
3. **Thomas Mitchell, Redefining Designing**: From to Experience, James snyder and Anthony Y catanse, Introduction to Architecture, Mc Graw-Hill Book company, New York, 1979.
4. **Anthony Antoniades**, "Poetics of architecture: Theory of design, Wiley 2008
5. **Steen Eiler Rasmussen**, "Experiencing Architecture", MIT Press 1964
6. **Peter von Meiss,** "Elements of Architecture - From Form to Place", Span Press, 1992
7. **Bryan Lawson**, "How Designers Think", Architectural Press Ltd" London, 1980.
8. **Hanno Rauterberg**, "Talking Architecture, Interview with Architects", Prestel 12008 The A-Z of Modern Architecture-Taschen 2007.
9. **Geoffrey Broadbent** - Design in Architecture - Architecture and the human sciences - John Wiley & Sons, New York, 1981
10. **Paul Alan Johnson** – The Theory of Architecture – Concepts and themes, Van Nostrand Reinhold Co., New York, 1994.
11. V.S.**Pramar,** Design Fundamentals in Architecture, Somaiya Publications Private Ltd., New Delhi, 1973.

Subject: **Workshop - II (Model Making)**		
Code: ARS207	**Credits: 2**	**Hours / Week: 4 hrs.**
Progressive Marks: 100		

AIM

The course intends to build confidence and inculcate various soft skills and to help Students to identify and achieve their personal potential and provides the foundation and capability to represent the concepts three dimensionally.

OBJECTIVES

- To help the students achieve effectiveness in their professional activities, harness skills and develop qualities suited for the profession.
- To elaborate upon the importance of model making.
- To acquire the skills in constructing three dimensional forms using different model making materials and equipment, using different scale.
- To introduce various fabrication skills and techniques necessary to produce scale models and to encourage preparation of models as an essential phase in design development and evaluation.

COURSE CONTENT:

Unit I- Communication Skills
Verbal communication, Body language, Vocabulary building, Public speaking and extempore speech skills, Presentation skills, Panel discussions. Written communication-Letters, reports etc. Conflict Management, Assertiveness, Time management.

Unit – II Introduction to Model Making
Introduction to model-making: Need; role of scale-models in design; general practices; Essentials of model-making: understanding of various tools and machines employed, best practices involved in operating the tools and the techniques**.**

Unit-III Materials for Model Making
Various materials available for model making such as mill board foam board, wood, plastics, Plaster of Paris, acrylic, Styrofoam, FRP, cane, bamboo, using materials like mount boards, snow whiteboards, paper pulp, fiber glass, sand, saw dust, stone chips etc. Making details models which include the representation of various building elements like walls, column, steps, window/glazing, sun shadow, handrails, etc...

Unit- IV
Carpentry: Introduction to the use of different types of tools and different types of joints used in carpentry. Joinery details which are commonly used in timber construction. Joints: Different types of joints, joinery details (which are commonly used in timber construction.

Unit- V

Clay-I: - Generation of basic forms – cube, cone, dome and arch
Clay-II: - Walls, corbel/free forms and surface finishes
Bricks I: - Types of Joints, tools used & model generation - walls (types – linear, curved, zig-zag etc) corbel
Bricks II: - Form Generation-dome, arches, free forms.

Unit- VI

Photography in built models, using lighting and natural background.

COURSE OUTCOME:

On successful completion of this course, the student should be able to**:**

- Prepare Scale model for architectural built forms and elements.
- Use various tools and machines employed and best practices involved in operating the tools and the techniques for model making
- Represent various surface finishes like Brick, Stone, Stucco finish etc
- Various site elements contours representation, Roads/Pavements, Trees/Shrubs, Lawn, Water bodies, Street furniture, Fencing etc.

REFERENCES

1. Developing Communication Skills, Krishna Mohan & Meera Banerji Macmillan India
2. Principles of Public Relations, C S Rayudu, Himalaya Publishing House.
3. Ching Francis, Drawing a creative process, Van Nostrand Reinhold , New York,1992.
4. Alan Swann, Graphic Design School, Harper Collins,1991
5. Molva Hunty, The Artist drawing book, David & Charles, U.K., 1994.
6. John Harmilton, The complete Book of Sketching, Chancellor Press, 2003.
7. Jannsen, Constructional Drawings & Architectural models, Kari Kramer Verlag Stuttgart, 1973.
8. Harry W.Smith, The art of making furniture in miniature, E.P.Duttor Inc., New York, 1982.
9. Thames and Hudson Manual of Rendering with Pen and Ink-Robert W Gill.
10. Model building for Architects & Engineers by John Taylor.
11. Architectural Models by Rolf Janke.
12. Architectural Graphics by Ching Frank.
13. Geometrical & Building Drawing by Kelsey W.E.
14. Architectural Graphics by Martin C. Leslie.
15. Rendering with pen and ink by Gill Robert.

YEAR-II SEMESTER-III

Subject: ARCHITECTURAL DESIGN II		
Code: ARC301	**Credits: 7**	**Hours / Week: 9 hrs.**
Progressive Marks: 100	**Examination Marks: 100**	**Mode of Exam: Jury**

AIM:

This course is intended to provide skills for designing a single use, small span and single-storey buildings.

OBJECTIVE:

- To develop design abilities in the context of user requirements.
- To train the student to gather knowledge on the given design project based on books / literature and websites.
- To understand the salient features of functions such as movement, climate, acoustics, structure and services into the building.
- To evolve a design with their aesthetic appeal.

COURSE CONTENT:

The study of design shall continue with further progress and complexity in aesthetic qualities but with more emphasis on architectural and functional aspects like:

a) Complexity in circulation- and pattern of horizontals as well as vertical movement.
b) Integration in terms of facilitation, platform, volume, concept and space organization.
c) Application of basic building materials to evolve a design with their aesthetic appeal, functional quality and elementary structural concepts to evolve specific form.
d) Climatic consideration for the design, orientation of building on site, simple concepts of sun shading devices, their application in elevations as functional / aesthetic solutions.
e) Landscape Detail like Importance, exploring & understanding the essence; Detailing process; User analysis; Elements; Functionality & aesthetics; Materials.

TYPOLOGY:

Art Gallery, Library, Motel, Cultural Centre, Nursery, Kindergarten, Recreational Club, Guest House, Balwadi, Kindergarten School, Primary Health Centre, Doctor's Clinic, small Cafeteria, Highway Restaurant, Village Post Office, Bank extension counter, Police Station, Architect's Office, Departmental Store, School Gymkhana and Youth Club etc. Site Extent - sloping site upto 8000 m^2; Topography - average slope ranging from 1:5 to1:8.

NOTE:
At least two major exercises and one minor design/time problem should be given.
The final submission shall necessarily include a model for at least one of the two main problems. In end exam which is a viva-voce the students have to present the entire semester work for assessment

COURSE OUTCOME:

On successful competition of the course the students will be able to:

- Develop understanding of the standards, handling of spaces.
- Exhibit the architectural expression, its relation between form and structure through relevant case studies.
- Exploring & understanding the essence of basic building materials and climatic responsive design.
- Understanding and application of circulation pattern in building design

REFERENCES:

1. Chiara Joseph de and others. Time Savers Standards of Building Types. McGraw – Hill, 1980.
2. Kirk, Paul Hayden and Sternberg, D. Eugene. Doctors Offices and Clinics, 2nd ed. Reinhold Pub., USA, 1960.
3. Neufert, Ernst. Ernst Neufert Architects Data, Granada Pub. Ltd., London, 1970.
4. Pevsner, Nikolaus. A History of Building Types. Thames and Hudson, London, 1976.
5. Shah, S. Charanjit. Architects Hand Book Ready Reckoner. Galogotia Pub. Co., New Delhi, 1996.

Subject: BUILDING MATERIALS AND CONSTRUCTION - III		
Code: ARC302	**Credits: 4**	**Hours / Week: 6 hrs.**
Progressive Marks: 100	**Examination Marks: 50**	**Duration of Exam: 3 hrs.**

AIM:

The course intends to introduce the methods and techniques of construction of doors, windows, stairs and foundation of a building using different materials

OBJECTIVES:

- To understand in detail the methods and techniques of construction of doors and windows using steel and aluminum.
- To introduce construction of building components in Reinforced Cement Concrete and practices pertaining to foundations and staircases.
- To develop an understanding of construction details of staircases with the application of different materials.
- To highlight the current trends and innovations in the usage of glass as a building material.

COURSE CONTENT:

UNIT-I: GLASS AND METALS

Glass various types of glass (plate glass, tinted, decorative, reinforced, laminated glass block, glass murals, partially colored glass etc.). The properties of glass, fabrication techniques, etching, its applications for exteriors & interiors. Fiber reinforced composite materials and products.

Metals

i **Ferrous metals** – Characteristics and uses of Wrought Iron, Cast Iron, pig iron, mild steel, stainless steel and casting. Steel-treatment, steel tempering, annealing, normalizing, and case hardening, their objectives and effect on alloy steels. Galvanizing, oxidation and casting of metallic products, corrosion of iron and their prevention. Metallic protective coatings.

ii **Non-ferrous metals** – Basic idea of important ores, properties and uses of Aluminum, Zinc, Copper, Tin and Lead.

UNIT-II: DOORS AND WINDOWS

Mild steel -doors and windows, Rolling shutters, collapsible doors, revolving doors
Aluminum- doors and windows, sliding door, folding door, sliding and folding door, sliding window, double glazing. PVC & FRP- doors and windows

UNIT-III: RCC CONSTRUCTION

Concrete -Types of Concrete and its ingredients, grades of concrete, additives and admixtures, sampling and testing, Grading: importance, fineness modulus, combined aggregate, water cement ratio. Mixing and Curing

Understanding the properties and characteristics of RCC. Its advantages and disadvantages. Cast-in-situ and pre-cast constructional methods in RCC. Understanding the structural components of a typical RCC frame structure with reference to their location, junctions, load transfer and design

Substructure: Detailing of RCC foundations and footings in simple framed buildings – Isolated and combined footing, Raft, pile, matt and grillage foundations.

UNIT-IV: STAIRCASES

RCC staircases, Metal staircases and Composite staircases.

UNIT-V: ARCHES, VAULTS AND DOMES

Construction of arches in brick, stone and concrete. Brief study on domes and vaults

COURSE OUTCOME:

On successful competition of the course the students will be able to:

- Enable knowledge to understand the different construction practices adopted for the various components with respect to material properties.
- Provide base knowledge on market surveys, sample collections, model making and presentations.
- Familiarise the fundamentals of drawing through measuring the existing building components.

TEXT BOOKS:

1. Chudley R. (1998). Construction technology. ELBS England.
2. McKay, G.B. (1972). Building Construction (Metric). Longman, London.
3. Barry, R. The Construction of Buildings Vol.2, 5th ed. East-West Press. New Delhi, 1999.
4. Francis D.K Ching "Building Construction" illustrated, John Willey & Sons, 2008.
5. Alan Blanc, "Stairs, Steps and Ramps", Butterworth, Heinemann Ltd., 1999.

REFERENCES:

1. Bindra, S P. and Arora, S P. Building Construction: Planning Techniques and Methods of Construction, 19th ed. Dhanpat Rai Pub. New Delhi, 2000.
2. Moxley, R. Mitchell's Elementary Building Construction, Technical Press Ltd.
3. Rangwala, S.C. Building Construction, 22nd ed. Charotar Pub. House, Anand, 2004.
4. Sushil Kumar. T.B. of Building Construction, 19th ed. Standard Pub, Delhi, 2003.
5. Gurucharan Singh. (1981). Building Construction Engineering. Standard Book House, New Delhi.
6. Foster, Stroud. (1963). Mitchell's Advanced Building Construction. Allied Publishers Private Limited, Bombay.
7. Dr.T.S.Balagopal Prabhu. (1987). Building Drawing and Detailing. Spades Publishers Pvt. Ltd., Calicut

Subject: HISTORY OF ARCHITECURE – III		
Code: ARC303	**Credits: 3**	**Hours / Week: 3 hrs.**
Progressive Marks: 50	**Examination Marks: 50**	**Duration of Exam: 2 hrs.**

AIM:

The course intends to provide an understanding of the evolution of Early Christian, Byzantine, Romanesque, Gothic and Renaissance Architecture in their various stylistic modes characterized by technology, ornamentation and planning practices.

OBJECTIVES:

- To enlighten the students the evolution of architecture in relation to time with special emphasis to historical, social, religious, political and environmental factors.
- To create an awareness about the planning, construction, function and aesthetics of historical buildings and an appreciation of architectural style as a product of the time, place and culture in the western world.
- To study the building typologies and make the students understand the developments in the construction technology in different periods.
- To gain knowledge of the development of architectural form with reference to technology, style, and character in the Early Christian, Byzantine, Romanesque, Gothic and Renaissance Architecture.

COURSE CONTENT:

UNIT-I: EARLY CHRISTIAN ARCHITECTURE

Introduction to Early Christian Architecture, Factors influencing the development of Early Christian Architecture - Geographical, Geological, Climatic, historical, religious, social, political. Characteristic Features, Example: Basilican Churches - St. Clemente, Rome. France and England - Examples: Pisa group, Italy; Abbaye aux Hommes, Caen; Tower of London.

UNIT-II: BYZANTINE ARCHITECTURE

Introduction to Early Byzantine Architecture, Factors influencing the development of Byzantine Architecture - Geographical, Geological, Climatic, historical, religious, social, political. Characteristic Features, Examples: St.Sophia, Constantinople.

UNIT-III: ROMANESQUE ARCHITECTURE

Introduction to Romanesque Architecture, Factors influencing the development of Romanesque architecture - Geographical, Geological, Climatic, historical, religious, social. Characteristic Features, Examples - Pisa Cathedral, Italy, The Abbey Church, Cluny.

UNIT-IV: GOTHIC ARCHITECTURE

Formation and Development of Gothic Architecture, Characteristic Features, Examples - Cathedrals and churches.

French gothic - Religious and social influences - Evolution of vaulting and development of structural systems, Examples: Notre Dame, Paris.

English gothic - Examples: Westminister Abbey, Hampton Court Palace, London; Doges Palace, Venice; Milan Cathedral.

UNIT-V: RENAISSANCE ARCHITECTURE

Formation and Development of Renaissance Architecture, Characteristic Features
Italian Renaissance - The idea of rebirth and revival of art - Outline of the Architecture during the early Renaissance, High Renaissance and Baroque Periods - Features of a typical Renaissance palace, Example:- Palazzo Ricardi, Study of the contribution of the following architects: Brunelleschi, Michaelangelo, Andrea Palladio, Example - St. Peter Rome, Villa capra in Vicenza. French and English Renaissance - architectural character in the classical & Rococo period - Example – Chateau de Chambord, Louvre, Paris – Domestic British architecture- Study of the works Sir Christopher Wren & Inigo Jones, Example - St. Paul's Cathedral, London. Banqueting House, Whitehall.

COURSE OUTCOME:

On successful competition of the course the students will be able to:

- Understand the architecture as an outcome of various social, political and economic upheavals.
- Understand various architectural styles and movements through historical analysis.
- Gain knowledge of the development of architectural form with reference to technology, style, and character in the western world.

TEXT BOOKS:

1. Sir Banister Fletcher, "A History of Architecture", CBS Publications (Indian Edition) 1999.
2. David Watkin "A History of Western Architecture".
3. G.K.Hiraskar, "Great Ages of World Architecture", Dhanpat Rai & Sons, Delhi.
4. Spiro Kostof, "A History of Architecture: Setting and Rituals, Oxford University Press, London, 1985
5. Francis D K Ching "Global History of Architecture"
6. Leland M Roth; "Understanding Architecture: Its Elements, History and Meaning"; Craftsman House; 1994.
7. Emily Cole "Grammar of Architecture".

REFERENCES:

1. Yarwood, Doreen. A Chronology of Western Architecture. B.T. Batsford Ltd., London, 1987.
2. Schulz, Christian Norberg. Meaning in Western Architecture, 2nd ed. Rizzoli Intl. Pub., New York, 1981.
3. Copplistone, Trewin and Others. World Architecture: An Illustrated History, 11th ed. Hamlyn, London, 1979.
4. Bindoo. D.D, History of Architecture, Milind P Lakshana, Hyderabad – 2006.
5. Wittkaner R Architectural Principles in the Age of Humanism, Chichester :Academy Editions 1998
6. Pier Liugi Nervi, General Editor – History of World Architecture – Series, HARRY N.Abrams, Inc. Pub,New York, 1972.
7. S.Lloyd and H.W.Muller, History of World Architecture Series, Faber and Faber Ltd., London, 1986.
8. Spiro Kostof – History of Architecture – Setting and Rituals, Oxford University Press, London, 1985.
9. Gosta, E.Sandsform, Man the Builder, McGraw Hill Book Company, New York, 1980.

Subject: STRUCTURAL ANALYSIS		
Code: ARS304	**Credits: 3**	**Hours / Week: 3 hrs.**
Progressive Marks: 50	**Examination Marks: 50**	**Duration of Exam: 2 hrs.**

AIM:

The course intends to impart sound knowledge of strength, behavior of various materials and techniques in the analysis of structures.

OBJECTIVE:

- To determine the stresses in beams and strength of sections by working out problems.
- To understand slopes and deflection in beams.
- To understand the concept of indeterminate structure and its analysis.
- To analyze the different types of Arches.
- To introduce to the different types of concrete and their properties.

COURSE CONTENT:

UNIT-I: BENDING STRESSES IN BEAMS.

Theory of simple bending, neutral axis, moment of resistance, Section modules. Shear stresses in beams in cross sections.

UNIT-II: DEFLECTION OF BEAMS.

Introduction of slope and deflection. Slope and deflection for simply supported and cantilever beam with point load and UDL using double integration method and moment area method.

UNIT-III: ANALYSIS OF INDETERMINATE STRUCTURES.
Analysis of fixed beams and portal frames with different loading conditions by moment distribution and kani's method.

UNIT-IV: ANALYSIS OF ARCHES.
Determination of horizontal thrust, bending moment and radial shear for three hinged parabolic and segmental arches with supports at same level and different levels.

UNIT-V: CONCRETE TECHNOLOGY.
Different types of cements and concrete, Properties of concrete ingredients, Properties of hardened concrete – Durability of Concrete - High Strength Concrete, High Performance Concrete, Self Compacting Concrete, Fiber Reinforced, Polymer Concrete, Admixtures. Concrete mix design using IS 10262: 2009.

COURSE OUTCOME:

On successful completion of this course, the student will be able:

- To apply the concepts of determining the techniques of finding the bending stresses.
- To analyze the different types of indeterminate beams and arches
- To identify the different types of concrete and their properties.

TEXT BOOKS:

1. A.K.Jain and B C Punmia. Strength of Materials
2. Ramamrutham, S. Theory of Structures, 17th ed. Danpat Rai Pub. Co. Ltd., New Delhi, 2005.
3. Reddy, C.S. Basic Structural Analysis, 18th ed. Tata McGraw Hill Pub.Co.Ltd., New Delhi, 1991.
4. R.K. Bansal, "A Text Book on Strength of Materials", Laxmi Publications, New Delhi, 2006.

REFERENCES:

1. M.M. Ratwani & V.N. Vazirani, "Analysis of Structures", Vol. 1, Khanna Publishers, Delhi, 2012.
2. Timoshenko, S.P. and D.H. Young, "Elements of Strength of Materials", Fifth edition, East West Press, 1993.
3. A.R. Jain and B.K.Jain, "Theory and analysis of structures", Vol. 1, Nemchand and Bros, Roorkee, 1987.
4. R.K. Rajput. "Strength of Materials", S.Chand, 2006.

Subject: BUILDING SERVICES – I (Water Supply, Plumbing & Sanitation)		
Code: ARC305	**Credits: 2**	**Hours / Week: 3 hrs.**
Progressive Marks: 50	**Examination Marks: 50**	**Duration of Exam: 2 hrs.**

AIM:

Understanding the significance, design and functioning of water and sewerage systems as essential components in building design and site planning.

OBJECTIVE:

- Introduce and gain practical knowledge on the various ways of providing information on water supply and sanitation system principles.
- To gain knowledge on disposal system and need for recycling
- Defining on domestic services, utilsation and its approach.

COURSE CONTENT:

UNIT-I: SOURCES AND TREATMENT OF WATER
Types of sources, surface sources, underground sources, types of well construction, yield of a well, spacing of wells, sanitary protection of wells. Principles involved in water treatment.

UNIT-II: DISTRIBUTION SYSTEM OF WATER
Methods of distribution, service reservoirs, systems of supply of water, methods of layout of distribution pipes, Pipe appurtenances, air valves, reflux valves, relief valves, relief valves, scour valves, sluice valves, slop cocks, use of pumps in water supply systems.

UNIT-III: DOMESTIC UTILISATION
Principles of house drainage, traps, sanitary fittings, system of plumbing, drainage plans, testing of drains and pipes, maintenance of house drainage system. Domestic Water demand, Over Head and underground (sump) Water tanks. Cold and hot water distribution within the buildings. House/service connection. Layout of water supply lines in a domestic house. Types of fittings like taps, bathtubs, showers, jets, cocks, valves, electrical fixtures, etc. Faucets for kitchens, bathrooms and toilets. Check valves, foot valves, sump pump check valves, and pressure test gauges. Rain Water Harvesting

UNIT-IV: SANITATION
Basic principles of sanitation and disposal of waste matter from building. Brief description of various systems of sewage disposal and their principles. Conventional water treatment – sedimentation, coagulation, filtration and disinfection. Distribution system, sanitary, storm and combined sewerage system. Design of sewerage systems, Location of sewage systems, conventional wastewater treatment, activated sludge, trickling filters etc.

UNIT-V: DISPOSAL SYSTEMS

Waste-water disposal systems, septic tank and its design, soil absorption system, alternatives, solid wastes collection and removal from buildings. On-site processing and disposal methods. Aerobic and Anaerobic decomposition, purifying capacity of water bodies. Biochemical Oxygen Demand.

UNIT-VI: ROADS AND PAVEMENTS

Different types, water bound macadam, tar bitumen, asphalt and Cement concrete roads, soil stabilization, types of paving-murram, brick, and stone paving. Drainage of roads, sub-drains, culverts, ditches and gutters.

Design considerations on drainage scheme:

Types of fixtures and materials- wash basins, water closets, urinals, bidets, sinks etc. Conditions of flow in building drainage pipes, traps, vents and their material specifications. Over-head and under-ground reservoirs. Details study of Independent House and Apartment

Design of drainage and vent pipes, system for low-rise and high-rise buildings,building drains, sewers, gullies, inspection chambers, manholes, connection topublic sewer, cross connections, ferrule, water meters, stopcocks, bib cocks etc. Modern techniques in Re-Use of the Grey water like DEWARTS

COURSE OUTCOME:

On successful completion of this course, the student will be able:

- To understand designing of layout of water supply and sanitation.
- To understand the various systems of sewage disposal and their principles.
- To apply various sanitary fittings through Market survey.

REFERENCES:

1. **S**.C. Rangwala. Water Supply and Sanitary Engineering.
2. Birdie J.S. and Birdie G.S. (1998). *Water Supply and Sanitary Engineering*. Dhanpathray Publishing Company, New Delhi.
3. Burke, Ken. (1982).*Basic Plumbing Techniques*. Ortho Books, Chevron Chemical Company, San Ramon, Canada.
4. Kshirsagar, S.R. Water Supply Engineering, 6th ed. Roorkee Pub., Roorkee, 1980.
5. Husain, S.K. T.B. of Water Supply and Sanitary Engineering, 3rd ed. Oxford and IBH Pub. Ltd., New Delhi, 1994.

Subject: SURVEYING & LEVELLING		
Code: ARS306	**Credits: 2**	**Hours / Week: 3 hrs.**
Progressive Marks: 50	**Examination Marks: 50**	**Duration of Exam: 2 hrs.**

AIM:

The course intends to give knowledge about different instruments and techniques used in surveying of land tacks.

OBJECTIVES:

- Understand the basic principles of Surveying.
- Learn Linear and Angular measurements to arrive at solutions to basic surveying problems.
- Employ conventional surveying data capturing techniques and process the data for computations.
- Analyze the obtained spatial data to compute areas and volumes and draw contours to represent 3D data on plane figures.

COURSE CONTENT:

UNIT-I: INTRODUCTION
Introduction to surveying, understanding land topography and its relevance in Architecture. Types of surveys in practice, Introduction to survey equipments

UNIT-II: CHAIN SURVEYING
Chain surveying - Principles of survey, equipment required, selection of station, methods of taking offsets. Booking the field notes, obstacles in chaining, errors in chaining, chaining on sloping ground and reciprocal ranging.

UNIT-III: COMPASS SURVEYING AND THEODOLITE SURVEYING
The prismatic compass, its construction and uses. Other types of compasses. Reduced and whole circle bearing, magnetic declamation, effects of local attraction. Compass traverse and balancing the closing error. Theodolite, its temporary and permanent adjustment, measuring of magnetic bearings, horizontal and vertical angles. Theodolite traverse and balancing the closing error.

UNIT-IV: LEVELING
Different types of levels, their temporary and permanent adjustment, leveling staff. Book of the readings and reduction of levels. Errors in leveling. Curvature and refraction reciprocal leveling profile, leveling cross sections.

UNIT-V: PLANE TABLING AND CONTOURING

Plane Tabling - Equipment and methods two points and three point's problems. Contouring - Characteristics of contour lines, direct and indirect methods of contouring and interpolation of contours. Interpretation and preparation of contour maps. Site modeling with total station. Exercises in setting out of building works

PRACTICALS:

1. Linear measurement using chain and tape by ranging
2. Setting out different geometric shape in site by using compass
3. Conducting profile leveling
4. Difference in elevation
5. Laying of centerline of a building

COURSE OUTCOME:

On successful completion of this course, the student will be able:

- To possess a sound knowledge of fundamental principles and analysis of Geodetics
- To measure of vertical and horizontal plane, linear and angular dimensions to arrive at solutions to basic surveying problems.
- To analyze the obtained spatial data and compute areas and volumes and interpret as drawings

TEXT BOOKS:

1. B.C. Punmia, "Surveying Vol.1", Laxmi Publications pvt. Ltd., New Delhi – 2009.
2. Kanetkar T P and S V Kulkarni, Surveying and Leveling Part I, Pune Vidyarthi Griha Prakashan, 1988.

REFERENCES:

1. S.K. Duggal, "Surveying Vol.1", Tata McGraw Hill Publishing Co. Ltd. New Delhi. – 2009.
2. K.R. Arora, "Surveying Vol. 1" Standard Book House, New Delhi. – 2010
3. R Subramanian, Surveying and Leveling, Second edition, Oxford University Press, New Delhi.

Subject: CLIMATOLOGY		
Code: ARC307	**Credits: 2**	**Hours / Week: 3 hrs.**
Progressive Marks: 50	**Examination Marks: 50**	**Duration of Exam: 2 hrs.**

AIM:

The course intends to create awareness that architecture also has influence of climate, by exposing the students to factors of climate, the various climatic zones, heat flow through materials in building envelope for design Considerations.

OBJECTIVES:

- To study global climatic factors and its effect on human comfort.
- To familiarize students with the factors influencing temperature, design and its impact on architectural design.
- To understand the air pattern around buildings and the effect of wind on the building.
- To study on various design strategies for building in different types of climatic zones in the world.

COURSE CONTENT:

UNIT-I: INTRODUCTION
Introduction to the global climatic factors and its effect on human comfort. Macro climate, micro climate, climate and weather, Study of world climatic zones, tropical climate, characteristics of different climatic zones and elements of climate.

UNIT-II: THERMAL COMFORT
Thermal comfort factors, heat exchange of buildings, bio climatic chart. The transfer of heat through building, Definitions – Conductivity, Resistivity, Specific heat, Conductance, Resistance and Thermal capacity – Surface resistance and air cavities – Air to air transmittance (U value) – Time lag and decrement factor.

UNIT-III: SOLAR GEOMETRY AND SHADING DEVICES
Solar geometry, Solar charts, Locating the position of sun – Sun path diagram – Overhead period–Solar shading–Shadow angles – Design of appropriate shading devices, orientation of window, internal blinds and curtains, Special glasses, external shading devices Methods of controlling solar heat gain, building form and heat gain, thermal insulation. Structural controls: Site analysis, Building Orientation and Placement, Effects of Landscaping element on micro climate.

UNIT-IV: DAY LIGHTING
Sky as the source of internal light, day light factor, components of day light factor, the sky component, the external reflected component and internal reflected component, glare, recommended levels of illumination for different types of buildings (ref. Relevant IS code)

UNIT-V: VENTILATION AND AIR MOVEMENT

Macro and micro climatic wind pattern and air flow, types of ventilation, principles and functions of natural ventilation, air changes, wind flow around buildings and air flow pattern inside the buildings. Window sizes, Stack Effect and thermally induced air currents.

UNIT-VI: SHELTER FOR DIFFERENT CLIMATES

Design strategies in Hot-dry, warm-humid, composite and tropical upland climate, and Climate responsive design exercises in Indian context.

COURSE OUTCOME:

On successful competition of the course the students will be able to:

- Understanding of Thermal balance in Human beings.
- Analysis of Air flow in Buildings.
- Application and designing of shaded devices.
- Designing climate responsive structure.

TEXT BOOKS:

1. O.H. Koenigsberger and Others, "Manual of Tropical Housing and Building" – Part I - Climate design, Orient Longman, Madras, India, 2010.
2. Kukreja, C.P. Tropical Architecture. Tata McGraw-Hill Pub. Co. Ltd., New Delhi, 1978.
3. Olgyay and Olgyay. Solar Control and Shading Devices.
4. G.Z Brown and Mark Dekay "Sun,wind and light" Architectural Design Strategies
5. Konya, Allan. Design for Hot Climates.
6. Victor Olgyay "Design with climate".
7. Manual on Solar Passive Architecture, IIT Mumbai and Mines New Delhi, 1999.

REFERENCES:

1. Martin Evans, "Housing Climate and Comfort", Architectural Press, London, 1980
2. B. Givoni, "Man, Climate and Architecture", Architectural Sciences Series – Applied Science
3. Publishers Ltd., London, 1981.
4. B. Givoni, "Passive and Low Energy Cooling of building", Van Nortrand Reinhold New York, USA, 1994.
5. Galloe, Salam and Sayigh A.M.M., "Architecture, Comfort and Energy", Elsivier Science Ltd., Oxford, U.K., 1998.
6. Bureau of Indian Standards IS 3792, "Hand book on Functional requirements of buildingsother than industrial buildings", 1987.

Subject: COMPUTER APPLICATION – I		
Code: ARS308	**Credits: 2**	**Hours / Week: 3hrs.**
Progressive Marks: 100		

AIM:

To orient the student to create two and three-dimensional objects in space with special emphasis on presentation and visualization of interiors and exteriors of building using different rendering techniques using CAD and sketch up.

OBJECTIVES:

- To explore computer modeling techniques using CAD and sketch up.
- To learn basic skills of modeling, rendering in CAD, and to exercise methods of interface within CAD and sketch up.
- Perceive the basic Cad commands with respect to drawing properties.

COURSE CONTENT:

UNIT – I: STARTING AUTO CAD

Introduction to the menu, starting drawings from scratch, Creating and using templates-starting drawings with setup wizards. Saving and closing a file. Using co-ordinate system: The UCS, Working with Cartesian and polar co-ordinate systems, using displays with key shortcuts.

UNIT – II: SETTING UP THE DRAWING ENVIRONMENT

Setting the paper size, setting units, setting grid limits, drawing limits, Snap controls, Use of paper space and model space.

Basic commands dealing with drawing properties: Layer control, change properties, line weight control, etc. Inquiry methods: Using database information for objects, calculating distance and angle, areas etc.

UNIT – III: DIMENSIONING COMMANDS AND BLOCKS

Dimensioning the objects in linear, angular fashions along with quick time dimensioning etc. Creating and working with blocks, creating symbols, use of blocks in creating a layout of a residential area- one exercise to be done as lab assignment. Plotting, plot styles and printing with the help of layers.

Introduction to 3D modelling, rendering and setting: Create 3D sculpture using 3D primitives (cubes, spheres etc.)

UNIT – IV: INTRODUCTION TO SKETCH UP

a) Using various drawing, editing and dimensioning tools.

b) Using various 3d tools eg: follow me, mirror, rotate. Using layers, sandbox, shadows, and styles.

c) Creating groups, components and using solid tools.

UNIT – V: CREATING WALK THROUGH, 3D RENDERING

Using interfaces such as V-ray, lumion. Application of the above learning in a selected design project done in the previous semester

COURSE OUTCOME:

On successful competition of the course the students will be able to:

- Understand the auto cad tools and creating two dimensional forms.
- Explore various CAD blocks and its usage in creating layout.
- Synthesize and apply three-dimensional forms of building using sketch up.
- Create walk through and rendering of architectural spaces

REFERENCES:

1. Teyapoovan, T. Engineering Drawing with Auto CAD 2000. Vikas Pub. House Pvt. Ltd., New Delhi, 2000.
2. Parker, Daniel and Rice, Habert. Inside Auto CAD Daniel. 1987.
3. Georgeomura, Auto CAD Release 2000.
4. AutoCAD 2010 Textbook-AutoCAD 2010: A Problem-Solving Approach-Customizing AutoCAD 2010
5. Beginning AutoCAD 2007- By Bob McFarlane, Robert McFarlane.
6. Ralph Grabowski, "The Illustrated AutoCAD 2002 Quick Reference", 1st edition, Cengage Learing, 2001
7. Sham tikoo, "Autocad 2000: A Problem-Solving Approach",.Delmar Cengage Learning, 1999.
8. Fiorello. J. A., "CAD for Interiors beyond the basics", Wiley publications, 2011.
9. Aidan chopra: "Google sketch up for dummies".
10. Chrisgrover, Google sketch up: "The missing manul".

YEAR II SEMESTER – IV

Subject: ARCHITECTURAL DESIGN - III		
Code: ARC401	**Credits: 7**	**Hours / Week: 9 hrs.**
Progressive Marks: 100	**Examination Marks: 100**	**Mode of Exam: Jury**

AIM:

This course intends to study of the physical, socioeconomic, climatic and cultural aspects of a selected **village** by conducting various surveys to understand the settlement pattern, housing stock and amenities that exist or required

OBJECTIVE:

- To emphasis on the design of simple community-oriented buildings by understanding the vernacular / traditional architecture which involves local materials and construction techniques.
- To consider interrelationship between occupation, social structure and religious beliefs and its physical manifestation in the form of the settlement.
- To develop and design the built forms and open spaces that meets the aspirations of the community.
- Presentation of concepts through 2D ,3D sketches and physical model.

COURSE CONTENT:

Scale and Complexity: Projects involving public and community-oriented buildings - Design of housing prototypes for a particular community / occupation using rural building materials & cost-effective technology with comprehensive analysis of rural settlement in a hierarchical manner. Suggestive Typologies/ projects: Rural projects that involve studies and design at settlement and building level- noon meal centre, market, primary health center; departmental store, higher, secondary school, students center at campus level.

COURSE OUTCOME:

On successful competition of the course the students will be able to:

- Understand the concept of community, settlement evolution and the built environment as influenced by socio-economic, cultural, climatic, religious and environmental factors.
- Develop understanding the standards of public and community-oriented buildings.
- Understand the settlement pattern, housing stock and amenities through village documentation.

REFERENCES:

1. Joseph De Chiara, Michael J Crosbie, “Time Saver Standards for Building Types”, McGraw Hill Professional 2001.
2. Julius Panero, Martin Zelnik, “Human Dimension and Interior Space”, Whitney Library of Design, 1975.
3. Joseph De Chiara, Julius Panero, Martin Zelnik, “Time Saver Standards for Interior Design and Space Planning”, McGraw Hill, 2001.
4. Ernst Neufert “Architects Data”, Blackwell 2002
5. Ramsey et al, “Architectural Graphic Standards”, Wiley, 2000.
6. Richard P. Dober, “Campus Planning”, Society for College and University Planning, 1996.
7. Kanvinde, “Campus design in India”, American year Book, 1969
8. Kevin Lynch, “Site planning”, MIT Press, Cambridge, 1984.
9. Sam F. Miller, “Design Process: A Primer for Architectural and Interior Design”, Van Nostrand Reinhold, 1995

Subject: BUILDING MATERIALS&CONSTRUCTION - IV		
Code: ARC402	**Credits: 4**	**Hours / Week: 6 hrs.**
Progressive Marks: 100	**Examination Marks: 50**	**Duration of Exam: 3 hrs.**

AIM:

This course intends to study and understand the construction techniques in RCC framed structures and various properties of material in flooring, plastering and painting.

OBJECTIVE:

- To examine the constructional practice pertaining to different types of RCC floors and roofs with different materials.
- To develop an understanding of design and detailed issues of RCC constructions.
- To gain knowledge about advanced RCC elements**.**
- To familiarize on various materials for water proofing and anti-termite protection systems and their methods of construction.

COURSE CONTENT:

UNIT-I: MATERIALS

Plastering: Plastering-internal, external surfaces, pointing.

Painting: constituents of paints**,** types, characteristics, method of application**,** selection of paints, and storage of paints.

Types varnishes (oil and spirit): characteristics and uses of varnishes. French polish, anti corrosive paint, damp proofing finishes.

Floorings : Introduction, essential requirements of a floor, factors affecting selection of flooring material, Various natural as well as artificial flooring materials like brick, flag stone ,tiled ,cement concrete, granolithic, terrazzo, marble, shah bad stones timber flooring, timber floor supported on RSJ ,flag stone floor resting on RSJ, vitrified tiles, ceramic tiles, , Mosaic, rubber, Linoleum, and PVC and PVA flooring

UNIT-II: FLAT ROOFS/FLOORS

Different Types of Roof / Floor: Brick jack arch, madras terrace, ordinary flat brick floor (used in North India)

RCC SLABS-One way discontinuous and continuous slab -- Two way discontinuous and continuous slab, Cantilever slab, Flat slab, Waffle, Coffer slabs, Ribbed slabs, Filler Slabs

UNIT-III: RCC COLUMNS AND BEAMS

RCC columns –different shapes, different combinations, loading conditions (axial, bending, non axial) and slenderness factor. RCC beams - Single and doubly reinforced beams, T and L beams, continuous beams, lintels and brackets, Retaining wall.

UNIT-IV: TEMPORARY CONSTRUCTIONS

Timbering for trenches – shoring – underpinning – scaffolding - form-work for RCC column and beam, slab, stairs. Formwork-simple shuttering (wooden and metal/sheet) methods for RCC columns, beams, slabs, staircases, Pile cantering / scaffolding.

UNIT-V: **SKYLIGHTS**
Construction – skylight, roof lights, dormer windows in sloped and flat roofs

UNIT-VI: DAMP PROOFING, WATER PROOFING AND ANTITERMITE TREATMENT
Materials for Special Treatments: damp proofing, Water proofing materials and Anti-termite treatment materials.
Construction methods for water-proofing and damp proofing for walls, roofs, basements, retaining walls, toilets, terrace gardens, balconies, swimming pools etc. -Exercises of the above through case studies and drawings**.** Anti-termite treatment to foundation and masonry walls.

COURSE OUTCOME:

On successful competition of the course the students will be able to:

- Acquaint knowledge on different constructional practice pertaining to different types of RCC floors and roofs
- Familiarize techniques of construction of skylights, temporary constructions and types of RCC columns and beams.
- Apply techniques of anti-termite treatment, damp proofing, water proofing, flooring, plastering and painting.

TEXT BOOKS:

1. Chudley R. (1998). Construction technology. ELBS England.
2. McKay, G.B. (1972). Building Construction (Metric). Longman, London.
3. Barry, R. The Construction of Buildings Vol. 2, 5th ed. East-West Press. New Delhi, 1999.

REFERENCES:

1. Bindra, S P. and Arora, S P. Building Construction: Planning Techniques and Methods of Construction, 19th ed. Dhanpat Rai Pub. New Delhi, 2000.
2. Moxley, R. Mitchell's Elementary Building Construction, Technical Press Ltd.
3. Rangwala, S.C. Building Construction, 22nd ed. Charotar Pub. House, Anand, 2004.
4. Sushil Kumar. T.B. of Building Construction, 19th ed. Standard Pub, Delhi, 2003.
5. Gurucharan Singh. (1981). Building Construction Engineering. Standard Book House, New Delhi.
6. Foster, Stroud. (1963). Mitchell's Advanced Building Construction. Allied Publishers Private Limited, Bombay.
7. Dr.T.S.Balagopal Prabhu. (1987). Building Drawing and Detailing. Spades Publishers Pvt. Ltd., Calicut.

Subject: HISTORY OF ARCHITECTURE– IV		
Code: ARC403	**Credits: 3**	**Hours / Week: 3 hrs.**
Progressive Marks: 50	**Examination Marks: 50**	**Duration of Exam: 2 hrs.**

AIM:

The course intends to provide an understanding of the evolution of Islamic and Colonial Architecture in India in their various stylistic modes characterized by technology, ornamentation and planning practices

OBJECTIVES:

- To make the students understand contributions to architecture by the Islamic and Colonial period and the varieties of building materials and techniques adopted by them.
- To study the development of Islamic architecture in the west. The advent of Islam into India, Architecture of early Islamic Delhi and the regional variations. Influences of Islamic ideas on secular and religious architecture in India and the Mughal period in India.
- To enable the students to understand the influence of Religion in India and architecture of buildings by studying specific examples.
- To study the evolution of building typologies during different periods with selected examples in India.
- To explain the students the evolution of architecture in relation to time with special emphasis to geographical, geological, social, religious, political, aesthetical and environmental factors.
- To make the students understand the developments in the construction technology in different periods.

COURSE CONTENT:

UNIT-I: INTRODUCTION TO ISLAMIC ARCHITECTURE

Formation and Development of Islamic Architecture - Characteristic Features, History of Islam: birth, spread and principles - Islamic architecture as rising from Islam as a socio cultural and political phenomenon- evolution of building types in terms of forms and functions: Islam and its philosophy, its implementation in various building types such as mosque, tomb, madarasa, palace, caravanserai, market, fort and their elements like domes, minarets, arch etc. Character of Islamic architecture: principles, structure, materials and methods of construction, elements of decoration, colour, geometry, light.

UNIT-II: ISLAMIC ARCHITECTURE IN INDIA - IMPERIAL STYLE

Formation and Development of Islamic Architecture in India - Characteristic Features of Imperial style. Brief reference to religion and culture of Muslim period in India. Salient features of an Indian mosqueand Evolution of the Islamic Arch. Advent of Islam into the Indian subcontinent and its impact including the change in the architectural scene- overview of development based on political history and the corresponding classification of architecture - Islamic architecture in India: sources and influences establishment of the Delhi Sultanate- evolution of architecture under the Slave, Khilji, Tughlaq, Sayyid, Bahamani, Moghaland Lodhi Dynasties – tombs in Punjab- important examples for each period. Examples – Qutb Minar, Delhi. Varieties of squinch – Alai Darwaza, Delhi - Tomb of Ghiasuddin Tughlaq & Khirki Masjid – Shish gumbad & Purana Quila, Delhi.

UNIT-III: **ISLAMIC ARCHITECTURE IN THE PROVINCES -PROVINCIAL STYLES**

Development of the provincial styles in different regions. Shift of power to the provinces and evolution of regional architecture with their own unique influences: geographic, cultural, political, etc. Example of Punjab style – Tomb of shah Rukni Alam – Example of Bengal style – Chotasona masjid. Gaur – Example of Jaunpur style – Atala masjid – Example of Gujarat style – Jami Masjid, Ahmedabad and Rajasthan – Examples of Deccan style – Golgumbaz, Bijapur, & Charminar, Hyderabad.

UNIT-IV: THE MUGHAL PERIOD IN INDIA

Development of the Mughal style. Mughals in India- political and cultural history-synthesis of Hindu-Muslim culture, Sufi movement -evolution of architecture and outline of Mughal cities and gardens under the Mughal rulers: Babur, Humayun, Akbar, Jahangir, Shahjahan, Aurangazeb- important examples- decline of the Mughal empire. Important examples –Humayuns Tomb, Delhi, Fatehpur Sikhri (lay out, Buland darwaza, Diwani Khas, Tomb of Salim Chisti & Jami masjid) Akbars Tomb at Sikandara – The Taj Mahal, Agra – Red Fort, Delhi (Diwan-i-Am, Rang Mahal).

UNIT-V: ARCHITECTURE IN COLONIAL INDIA

Arrival of British – Early Colonial period, Monumental buildings of Early colonial period – Examples – St.Pauls Cathedral, Calcatta & Bombay Town hall –Architectural character of Indo-Saracenic and Classical revival –University of Madras Senate House & Victoria Memorial hall, Calcatta – Later Colonial period – Contribution of Edwin Lutyens & Herbert Baker to the lay-out and Architecture of New Delhi – Rashtrapathi Bhavan & Parliament House.

COURSE OUTCOME:

On successful competition of the course the students will be able to:

- Understand the evolution of building typologies during different periods
- Gain perspective of geographical, geological, social, religious, political, aesthetical and environmental factors on development of the provincial styles
- Exhibit the various architectural styles and its construction details.

TEXT BOOKS:

1. Sir Banister Fletcher, “A History of Architecture”, CBS Publications (Indian Edition),1999.
2. G. K. Hiraskar, “Great Ages of World Architecture”, Dhanpat Rai & Sons, Delhi.
3. Spiro Kostof, “A History of Architecture: Setting and Rituals, Oxford University Press, London, 1985
4. Francis D K Ching “Global History of Architecture”.
5. Leland M Roth; “Understanding Architecture: Its Elements, History and Meaning”; Craftsman House; 1994.
6. Emily Cole “Grammar of Architecture”.
7. George Mitchell, “Architecture of the Islamic World - Its History and Social meaning”,
8. Thames and Hudson, London 1978.

9. Robert Hillenbrand, “Islamic Architecture- Form, Function and Meaning”, Edinburgh University Press 1994.
10. Brown Percy, “Indian Architecture (Islamic Period)”, Taraporevala and Sons, Bombay, 1983.
11. Satish Grover, “Islamic Architecture in India”, CBS Pub, New Delhi, 2002.

REFERENCES:

1. Rowl, Benjamin. Art and Architecture of India.
2. Tadgell, Christopher. The History of Architecture in India: from the Dawn of Civilization to the End of the Raj. Om Book Service, New Delhi, 1990.
3. Vistara. The Architecture of India
4. Rustam J Mehta “Master Pieces of Indo-Islamic Architecture”.
5. Thames and Hudson “Architecture of the Islamic World”
6. Rupinder & Reeta Khullar “Delhi, Agra and Jaipur”
7. Henry Stierlin “Islam”
8. Emily Cole “The Grammar of Architecture”.
9. David Watkin “A History of Western Architecture
10. Benevolo, Leonardo. History of Modern Architecture: the tradition of modern architecture Vol.1. Routledge and Kegan Paul, London, 1971.
11. Frampton Kenneth “Modern Architecture”: A Critical History London: Thomes & Hudson, 1980.
12. Curtis, J.R. William. Modern Architecture since 1900. Prentice-Hall, Inc., New Jersey, 2002.
13. Giedion, Sigfried, Space, Time and Architecture: the growth of a new tradition, 4th ed. Harvard Universtiy Press, Cambridge, 1962.
14. Hilberseimer, L. Contemporary Architecture: Its roots and trends. Paul theobald, Chicago, 1964.
15. Pevsner, Nicolaus Oersonem: Pioneers of Modern Design from William Morris to Walter Gropius-.
16. Sharp, Dennis. Twentieth Century Architecture: A Visual History, Facts on File. New York, 1991
17. Norbergschul C., Principles of Modern Architecture, London Andreas papadakes,2000.
18. R.Nath, “History of Mughal Architecture”, Vols I to III - Abhinav Publications, New Delhi, 1985.
19. Catherine Asher, “Architecture of Mughal India”, Cambridge University Press, 2001
20. Monica Juneja, “Architecture in Medieval India: Forms, Contexts, Histories”, New Delhi, Permanent Black, 2001.

Subject: DESIGN OF RCC STRUCTURES – I		
Code: ARS404	**Credits: 3**	**Hours / Week: 3 hrs.**
Progressive Marks: 50	**Examination Marks: 50**	**Duration of Exam: 3 hrs.**

AIM:

The course intends to give an in-depth understanding of concept associated with design of different elements of structures

OBJECTIVES:

- To develop an understanding about the design thro.ugh working stress and limit state methods.
- To apply the above two methods for the design of Concrete beams and slabs under various conditions.

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COURSE CONTENT:

UNIT-I: CONCEPT OF RCC DESIGN
Introduction to RCC design, design philosophies: working stress and limit state method of RCC design. Use of design Aids - IS 456:2000 design consideration

UNIT-II: DESIGN OF BEAMS
Design of simply supported singly and doubly reinforced rectangular and continuous beams

UNIT-III: DESIGN OF BEAMS
Design of T-beams, cantilever beams, lintels

UNIT-IV: DESIGN OF SLABS
Behavior of one way and two-way slab. Design of one way, two-way slabs and continuous slab with different end conditions

UNIT-V: DESIGN OF FLAT SLABS
Behavior of flat slab and flat plate, Advantages of flat slab construction – Components of flat slab. Design of flat slab and flat plate

COURSE OUTCOME:

On successful completion of this course, the student will be able to:

- Understand the different concepts of WSM and LSD methods using the IS codes.
- Design RCC beams and slabs.
- Acquaint knowledge on RCC members through site visits.

TEXT BOOKS:

1. A.K.Jain. Reinforced Concrete: Limit State Design, 5th ed. New Chand and Bros., Roorkee, 1999.
2. Ramamrutham. S. and Narayan, R. Design of RCC Structures, 12th ed. Dhanpat Rai Pub. Co. Pvt. Ltd., Delhi, 1998.

3. S.N. Sinha, “Reinforced Concrete Design”, Tata McGraw Hill Publishing Co. Ltd, New Delhi, 1998.
4. Shah, “Reinforced Concrete”, Vol. 1 and 2, Charotar Publishing House, Anand, 1998.

REFERENCES:

1. P.Dayaratnam, “Design of Reinforced Concrete Structures”, Oxford and IBH Publishing Co., 1983.
2. C. Sinha and S.K. Roy, “Fundamentals of Reinforced Concrete”, S.Chand & Co., New Delhi, 1983.
3. Dr. B.C. Punmia, “Reinforced Concrete Structures”, Vol, 1 & 2 Laxmi publication, Delhi, 2004.
4. IS 456 “Indian Standard, Plain and Reinforced Concrete, Code of Practice, Bureau of Indian Standards, 2000.
5. S.Unnikrishnan Pillai and Devados Menon, “ Reinforced Concrete Design” – Tata McGraw Hill Publishing Co. Ltd., New Delhi, 1999.

Subject: ENVIRONMENTAL SCIENCE		
Code: ARC405	**Credits: 2**	**Hours / Week: 3 hrs.**
Progressive Marks: 50	**Examination Marks: 50**	**Duration of Exam: 2 hrs.**

AIM:

The course intends to sensitize students towards sustainable environment.

OBJECTIVE:

- To identify the major challenges in environmental issues and evaluate possible solutions to assist the sustainable development.
- To give students a comprehensive analytical skill, critical thinking and demonstrate socio-economic skills.
- To analyze an overall impact of specific issues and develop environmental management plan.

COURSE CONTENT:

UNIT-I: INTRODUCTION
Environment - Components of Environment Ecosystem: Types & Structure of Ecosystem, Balanced ecosystem Human Activities – Food, Shelter, And Economic & Social Security. Impacts of Agriculture & Housing Impacts of Industry, Mining & Transportation Environmental Impact Assessment, Sustainable Development

UNIT-II: NATURAL RESOURCES
Water resources – Availability & Quality aspects, Water borne diseases & water induced diseases, Fluoride problem in drinking water Mineral resources, Forest Wealth Material Cycles – Carbon Cycle, Nitrogen Cycle & Sulphur Cycle. Energy – Different types of energy, Conventional sources & Non-Conventional sources of energy solar energy, Hydro electric energy, Wind Energy, Nuclear energy, Biomass & Biogas Fossil Fuels, Hydrogen as an alternative energy.

UNIT-III: ENVIRONMENTAL POLLUTION
Water Pollution, Noise pollution, Land Pollution, Public Health Aspects, Global Environmental Issues: Population Growth, Urbanization, Land Management, Water & Waste Water Management.

UNIT-IV: AIR POLLUTION & AUTOMOBILE POLLUTION
Definition, Effects – Global Warming, Acid rain & Ozone layer depletion, controlling measures. Solid Waste Management, E - Waste Management & Biomedical Waste Management - Sources, Characteristics & Disposal methods

UNIT-V: INTRODUCTION TO GIS & REMOTE SENSING
Applications of GIS & Remote Sensing in Environmental Engineering Practices. Environmental Acts & Regulations, Role of government, Legal aspects, Role of Non-governmental Organizations (NGOs), Environmental Education & Women Education.

COURSE OUTCOME:

On successful competition of the course the students will be able to:

- Familiarize with the principles of ecology and environmental issues on a global scale.
- Analyze an overall impact of specific issues and develop environmental management plan with reference to Environmental Acts & Regulations
- Demonstrate ecology knowledge of a complex relationship between biotic and abiotic components.
- Acquaint knowledge of applications of GIS & Remote Sensing in Environmental Engineering Practices.

TEXT BOOKS:

1. Benny Joseph (2005), "Environmental Studies", Tata McGraw – Hill Publishing Company Limited.
2. R.J.Ranjit Daniels and Jagadish Krishnaswamy, (2009), "Environmental Studies", Wiley India Private Ltd., New Delhi.
3. R Rajagopalan, "Environmental Studies – From Crisis to Cure", Oxford University Press, 2005.
4. Aloka Debi, "Environmental Science and Engineering", Universities Press (India) Pvt. Ltd. 2012.

REFERENCES:

1. Raman Sivakumar, "Principals of Environmental Science and Engineering", Second Edition, Cengage learning Singapore, 2005
2. P. Meenakshi, "Elements of Environmental Science and Engineering", Prentice Hall of India Private Limited, New Delhi, 2006
3. S.M. Prakash, "Environmental Studies", Elite Publishers Mangalore, 2007
4. Erach Bharucha, "Text Book of Environmental Studies", for UGC, University press, 2005
5. G.Tyler Miller Jr., "Environmental Science – working with the Earth", Tenth Edition, Thomson Brooks /Cole, 2004
6. G.Tyler Miller Jr., "Environmental Science – working with the Earth", Eleventh Edition, Thomson Brooks /Cole, 2006
7. Dr.Pratiba Sing, Dr.AnoopSingh and Dr.Piyush Malaviya, "Text Book of Environmental and Ecology", Acme Learning Pvt. Ltd. New Delhi.

Subject: BUILDING SERVICES – II (Electrical & Acoustics)		
Code: ARC406	**Credits: 2**	**Hours / Week: 3 hrs.**
Progressive Marks: 50	**Examination Marks: 50**	**Duration of Exam: 2 hrs.**

AIM:

The main aim of this course is to understand the utilization of various types of lights indoor and outdoor and also to understand the application of acoustics principles in and around buildings.

OBJECTIVE:

- To list and explain the various components required in electricity distribution system in campus
- To identify the various types of light requirement for different purpose and lighting scheme for interiors spaces.
- To explain the various characteristics of sound including origin, propagation and auditory sensation of sound.
- To distinguish the behavior of sound for enclosed spaces and open spaces.
- To examine acoustical design criteria for theatres, cinema halls, auditorium, conference halls etc.

COURSE CONTENT:

UNIT-I: BASICS OF ELECTRICALS

Sources of Electricity, Electricity generation, Basic Electrical Distribution System – Substation, transformer, overhead line, underground line. Three phase supply. Electrical distribution in campus

Domestic wiring system, Material, classification, merits and demerits, Electrical accessories, Symbols and representation in architectural layout drawings, Single line-wiring diagram, Safety aspects, protection of buildings against lightning, NBC Recommendations, Earthing, Short circuit and overloading, Preliminary Estimation of Electrical & illumination works

UNIT-II: LIGHTING

Fundamentals of light. Application of lighting and illumination in Architecture. Artificial sources of light; Lamps and their characteristics: Incandescent lamp, Fluorescent lamp, Gas filled lamp, HID lamp. Neon lamp and LED lamp.

UNIT–III: ILLUMINATION

Definition of Light power, light flux Light intensity, Laws of Illumination: inverse square law and Lambert's Cosine law. Application of law of illumination. General formula for illumination.

Standard level of illuminations for various tasks, Basic lighting design, Direct, Indirect and semi-direct lighting. General and local lighting, Glare and glare control.

Lighting design of: Residential units, Shops & Restaurants, general office, conference hall, Art – gallery and Museum Parks & playgrounds Road/area lighting and Landscape Lighting.

UNIT–IV: BASICS OF ACOUSTICS

Introduction to architectural acoustics - Characteristic and measurement of sound, frequency, intensity, decibel scale, auditory range, effects of sound on humans, loudness. Acoustics and acoustical environment, Behaviour of sound in an enclosed space. Principle of geometrical acoustics, Different acoustical defects in auditorium and its solution, reverberation and reverberation time calculations – Sabine's formula and its interpretation, dead and live room.

UNIT–V: DESIGN OF AUDITORIUM

Size, shape, sitting arrangement design criteria for speech and music, acoustical correction design and modification techniques, broadcasting studio, television studio, classroom, lecture hall, church and Cathedral. Electro-acoustical systems, Unidirectional and Stereophonic sound system, Digital and Surround-sound systems, Design criteria for Theatres, Motion picture halls, Multiplexes and Multipurpose Auditoriums. Design of open-air theatre and planning of building.

UNIT-VI: NOISE CONTROL & ACOUSTICAL MATERIALS

Noise sources, air borne and structure borne sound, NC curve, Propagation of noise of mechanical operation and impact noise, sound transmission through wall and partition, Vibration isolation – control of mechanical noise, floor, wall, ceiling treatment. Design Principles- reduction of noise at the source, Reduction of noise near the source. Application of sound absorption material, Reduction of noise by Structural Defense. Planning and analysis of problem. Reduction of noise by Town Planning and Regional Planning consideration. General description of acoustical materials - acoustical tiles, fibreboard, resonator absorption unit absorber, carpets, acoustical plaster, resilient packing composite materials, etc. – Their use, selection criteria and construction.

COURSE OUTCOME:

On successful competition of the course the students will be able to:

- Apply principles of lighting and illumination in Architecture.
- Master the electrical layouts and acoustic design for different building typologies.
- Understand on various systems of noise control & acoustical materials.
- Familiarize with various Electrical and acoustical materials through market survey.

REFERENCES:

1. Duncan Templeton; *Acoustics in The Built Environment*.
2. J E Moore; *Design for good Acoustics and noise control.*
3. Derek Philips; Lighting in Architectural Design.
4. G.K.Lal, Elements of Lighting, 3-D Publishers.
5. R.G. Hopkinson and J.D.Kay, The lighting of buildings, Faber and Faber, London, 1969.
6. Philips Lighting in Architectural Design, McGraw Hill, New York, 1964.
7. Burris, Harlod. Acoustics for the Architect.
8. Lord, Peter and Templetion, Duncan. The Architecture of Sound: Designing
9. Egan, David. Architectural Acoustics, MC Graw-Hill Book Ccompany, New York, 1988.

Subject: COMPUTER APPLICATIONS – II		
Code: ARS407	**Credits: 2**	**Hours / Week: 3 hrs.**
Progressive Marks: 100		

AIM:

To orient the student to create three-dimensional objects in space with special emphasis on presentation and visualization of interiors and exteriors of building using different rendering techniques using software's like Revit Architecture, ArchiCAD, 3Ds max, Lumion.

OBJECTIVE:

- To explore computer modeling techniques using Revit and 3Ds max.
- To learn basic skills of modeling, rendering in 3Ds max, Lumion and to exercise methods of interface within Revit Architecture and 3Ds max.
- Perceive the basic software commands with respect to drawing properties.

COURSE CONTENT:

UNIT–I: INTRODUCTION

To digital theory and this unit equips students with an understanding of the territory of computational design through its theoretical vocabulary and relevant histories.

3d modeling and different types of methods in 3 modeling like polygonal modeling , NURBS modeling ,subdivision surface modeling and building information modeling etc to design and test Architectural built environments virtually.

UNIT–II: SCENE SETUP

involves arranging virtual objects, lights, cameras and other entities on a scene which will later be used to produce a still image or an animation. Image processing and video editing to create Architectural walkthroughs, Digital solar studies

UNIT–III: BUILDING INFORMATION MODELING

3dimensional, real-time, dynamic building modeling software to increase productivity in building design and construction. The process produces the Building Information Model (also abbreviated BIM), which encompasses building geometry, spatial relationships, geographic information, and quantities and properties of building components.

Design and documentation using building information modeling application like Revit Architecture, ArchiCAD, 3Ds max, Lumion

Unit–IV: INTRODUCTION TO PHOTOSHOP

Introduction to the Photoshop tools, working in layers, Rendering and scene setting to create a photo realistic picture, Presentation skills are taught to the students to render plans, sections and views photomontage

COURSE OUTCOME:

On successful competition of the course the students will be able to:

- Understand the Various 3D tool of the software and creating 3dimensional building forms using softwares like Revit architecture, 3ds max, etc .
- Gain knowledge on using software interfaces in design projects and presentation.
- Learn the rendering techniques using V-ray, Photoshop and Lumion.
- Learn application of Building Information Modelling in architectural projects.

REFERENCE BOOKS:

1. Catalytic Formations: Architecture and Digital Design. Ali Rahim.
2. BIM Handbook: A Guide to Building Information Modeling for Owners,
3. Managers, Designers, Engineers and Contractors- Chuck Eastman
4. Building Information Modeling – Willem Kymmell
5. Deke McClelland, "Photoshop 7 Bible Professional Edition", Wiley John & Son INC, New York, 2000.
6. A. Watt, "Fundamentals of Three-Dimensional Computer Graphics", Addison Wesley, Massachusetts, 1989.
7. Aouad, "Computer Aided Design guide for Architecture, Engineering and construction", Spon process, 2012.

ELECTIVE – I

Subject: VERNACULAR ARCHITECTURE		
Code: ARE408-1	**Credits: 2**	**Hours / Week: 3 hrs**
Progressive Marks: 50	**Examination Marks: 50**	**Duration of Exam: 2 hrs**

AIM:

This course intends to explore importance of Indian vernacular architecture which serves in creating a balance between nature and socio –economic needs of the society.

OBJECTIVES:

- To introduce the study of vernacular architecture as a process and not a product.
- To provide an overview of the various approaches and concepts to the study of vernacular architecture.
- To study the various vernacular architecture forms in the various regions of the country.
- To look at the impact of Colonial rule on the vernacular architecture of India.
- To understand and inculcate the appropriateness in design to the local context in vernacular architecture.

COURSE CONTENT:

UNIT-I: INTRODUCTION
Definition and classification of Vernacular architecture – Vernacular architecture as a process – Survey and study of vernacular architecture: methodology – Sense of Identity, Continuity, Socio-Cultural and Contextual responsiveness of vernacular architecture: an overview.

UNIT-II: APPROACHES AND CONCEPTS
Different approaches and concepts to the study of vernacular architecture: an over view of historical outline, religious context, and social customs aesthetic, architectural, temporal, political and anthropological studies in detail. Vernacular tradition in building serves in creating a balance between nature and society, optimal utilization of natural resources and of local skills and craftsmanship.

UNIT-III: VERNACULAR ARCHITECTURE OF THE WESTERN AND NORTHERN REGIONS OF INDIA
Forms spatial planning, cultural aspects, symbolism, colour, and art, materials of construction and construction technique of the vernacular architecture of the following: Deserts of Kutch and Rajasthan; Havelis of Rajasthan, Rural and urban Gujarat; wooden mansions (havelis); Havelis of the Bohra Muslims, Geographical regions of Kashmir; house boats.

UNIT-IV: VERNACULAR ARCHITECTURE OF SOUTH INDIA
Forms, spatial planning, cultural aspects, symbolism, art, colour, materials of

construction and construction technique, proportioning systems, religious beliefs and practices in the vernacular architecture of the following:

- Kerala: Houses of the Nair & Namboothri community; Koothambalam, Padmanabhapuram palace etc.
- Tamil Nadu: Houses and palaces of the Chettinad region; Agraharams etc.
- Karnataka: Houses of Melkote, Madikere etc.
- Andhra Pradesh – Iktas houses in Nalgonda etc.

UNIT-V: WESTERN INFLUENCES ON VERNACULAR ARCHITECTURE OF INDIA

Colonial influences on the Tradition Goan house - Evolution of the Bungalow from the traditional bungalow, Victoria Villas – Planning principles and materials and methods of construction. Settlement pattern and housing typologies in Pondicherry and Cochin.

COURSE OUTCOME:

On successful competition of the course the students will be able to:

- Gain insight on various approaches and concepts to the study of vernacular architecture and documentation.
- Acquaint with knowledge on forms, spatial planning, cultural aspects, symbolism, art, colour, materials of construction and construction techniques of various regions of India.
- Familiarize principles of optimal utilization of natural resources through local skills and craftsmanship in vernacular architecture.

TEXT BOOKS:

1. Oliver, Paul Encyclopedia of Vernacular Architecture of the World, vol. 1-11. Cambridge University Press, Cambridge.1997.
2. Madavi Desai, Traditional Architecture: House Form of Islamic Community in Bohras in Gujarat.
3. Amos Rapoport, House, Form & Culture, Prentice Hall Inc. 1969.
4. Amos Rapoport, The meaning of the Built Environment, Sage Publications, New Delhi, 1982.
5. R W Brunskill: Illustrated Handbook on Vernacular Architecture, 1987.

REFERENCES:

1. V.S. Pramar, Haveli – Wooden Houses and Mansions of Gujarat, Mapin Publishing Pvt. Ltd.,Ahmedabad, 1989.
2. Kulbushanshan Jain and Minakshi Jain – Mud Architecture of the Indian Desert, Aadi Centre,Ahmedabad 1992.
3. Acharya Prasanna K, Indian Architecture according to Manasara Silpasastra, Indian, India, Patna: 1979 (Reprint of 1928 ed.).
4. G.H.R. Tillotsum – The tradition of Indian Architecture Continuity, Controversy – Changesince 1850, Oxford University Press, Delhi, 1989.
5. Carmen Kagal, VISTARA – The Architecture of India, Pub: The Festival of India, 1986.
6. S. Muthiah and others: The Chettiar Heritage; Chettiar Heritage 2000.

Subject: BARRIER FREE BUILT ENVIRONMENT		
Code: ARE408-2	**Credits: 2**	**Hours / Week: 3 hrs.**
Progressive Marks : 50	**Examination Marks : 50**	**Duration of Exam : 2 hrs**

AIM:

This course intends to inculcate skills required for designing for barrier free built environments for physically challenged persons and techniques involved in making such design provisions.

OBJECTIVE:

- Indian Disabilities Act, is promulgated in 1995 for the purpose of ensuring equal opportunities to persons with disabilities in society for their development through education, training and rehabilitation services.
- The principle objective is to ensure their full participation by preventing discrimination and integrating them into the mainstream of society.
- An Architect plays a very crucial role in this endeavor by designing the needed barrier free environment.
- The objective of this course is to familiarize the students of architecture regarding the various provisions and design issues.

COURSE CONTENT:

UNIT–I: INTRODUCTION

Definition of Barrier free built environment, Introduction to Barrier free built environment terms, Definition of Disability. Type of disabilities - Non-Ambulatory, Semi-Ambulatory, Sight, Hearing. Four major Categories of target group to provide fundamental needs: People with impaired mobility, People with visual impairment, People with hearing impairment, People with Learning Disabilities and Mental Retardation.

UNIT-II: BARRIER FREE BASIC ANTHROPOMETRICS AND MOBILITY DEVICES

Study of dimensions that can be used for guidance when designing facilities and equipment to be used by persons with disabilities like Reach Ranges- Forward Reach, Side Reach, White Cane Range, Common Reach Zone, Circulation Dimensions - Wheelchair Dimensions, Walkway Width for Crutch Users, Vision Cone, Heights of People, and Lighting.

UNIT-III: STUDY OF BARRIER FREE DESIGN ELEMENTS

Minimum access provisions required in various types of buildings. Space Allowances – Minimum access provisions, general allowances; Clear or Ground space for wheel chairs; Physical Parameters; Protruding Objects; Ground and Floor Surfaces.

Building Elements like Corridors, Doors and Windows, Stair ways, Elevators, Platform Lifts, Wheel chair lifts, Handrail Requirements, Washrooms, Bathrooms, Shower areas, Controls and operating measures and other facilities – Counter, Water Fountain, Telephone, Mailbox, and Vending Machine.

Provisions in Public spaces and Site Planning - Building vehicular -Parking and Passenger Loading Zones, Curb Ramps, Walks and Paths, Approach to Plinth Level - Ramped Approach Stepped Approach, Entrance Landing, Entrance and Exit doors, etc.

UNIT-IV: SIGNAGE

Types of Signage, signage requirements, Signage Specifications - Character Proportion, Character Height, Raised / Brailled Characters and Pictogram, Finish and Contrast, Mounting Location and Height, Symbols of Accessibility, Illumination Levels. Signage Design- Language, Sign Typeface, Suggested Sizes for Letters and Symbols, Text Design, Colour and Contrast. Sign Installation -Illumination, Sign positioning.

UNIT-V: DISABILITY ACTS AND NATIONAL POLICIES

Introduction to Provisions of persons with Disabilities (Equal opportunities, Protection of Rights and Full Participation) Act, 1995, National Policy for provisions for elderly persons, Concept of equal opportunity, human rights, social justice and empowerment of physically challenged persons. Introduction to similar efforts in other countries. Initiatives at global and International level for protection of rights of disabled and also elderly person. American disabilities Act 1990

Information on various types of national Institutes, agencies and professional bodies involved in disabled welfare, associated norms and standards thereof. The role of NGO's, professional and outreach.

COURSE OUTCOME:

On successful competition of the course the students will be able to:

- Gain insight on barrier free environment in different building typologies and campuses.
- Acquaint with knowledge on Standards, guidelines and Act on barrier free spaces for Differently-abled persons
- Familiarize principles in Architecture for creating environment friendly for various types of physically challenged persons and elderly aged group

.

REFERENCES:

1. Ministry of Urban Affairs and Employment. Central Public Works Department, India, "Handbook on Barrier Free and Accessibility", 2014.
2. Unnati. Team "Design Manual for a Barrier – Free Built Environment", Handicap International, December, 2004.
3. ADA Accessibility Guidelines for Buildings and Facilities (ADAAG) US: American Disabilities Act.
4. The National Building Code of India, 2005.
5. Micheal J. Bednar. "Barrier Free Environments", Dowden, Hutchinson and Ross, Ive 1977.
6. Ministry of Urban Affairs and Employment. Central Public Works Department, India, "Guidelines and Space Standards for Barrier Free Environment for Disabled and Elderly Person, 1998.

Subject: Stage and Set Design		
Code: ARE408-3	**Credits: 2**	**Hours / Week: 3 hrs.**
Progressive Marks: 50	**Examination Marks: 50**	**Mode of Exam: NIL**

AIM:

This particular exercise will highlight the role of the designer in the field of backdrop, set design theme Based Design Strategies and Technology Applications.

OBJECTIVE:

- Creating an environment to establish intimacy between the performers and the audience in relation to the theatre and cinemas.
- Examine on the evolution, terminology and theory of stage design.
- Demonstrating on computerized animation, editing, costing and final presentation.

COURSE CONTENT:

UNIT-I: DANCE/ DRAMA/ LECTURE/ THEATRE

Historical Evolution of the stage, degree of encirclement in various types of stage designs such as open air, arena, thrust in and proscenium stages, Script and story board, Terminology and Theory of Stage Design, Technical aspects like Sound, Lighting and Colour scheme, Visualization of and creation of sets e.g. with backdrops and scenery, Set design with appropriate props, Costume design and make up, Expenses.

UNIT-II: FILM SET DESIGN

Film set designs with response to camera positioning and movement**,** Indoor and outdoor shooting, Film sets as a creation of virtual environment appropriate for the scenery and shots, Support structure for film set erection for indoor and outdoor shooting, Architects role in cinematography: visualization, story board frames, Proportions, Computer generated stage set up: Mixing and editing, Exploring various materials of stage props, Budget.

UNIT-III: TABLE TOP SET UP

Stop motion Animation and computerized animation, Concepts or story, Table top miniature box model, Lighting and special effects, Voice over, music and mixing, Overall editing and final presentation, Costing.

UNIT-IV: EVENT STAGE

Concept and design, Ambience lighting and special effect, Stage props: Video wall presentation, sound and acoustics, Cost and estimation.

COURSE OUTCOME:

On successful competition of the course the students will be able to:

- Understand practical application and presentation. the evolution, terminology and theory of stage design.
- Gain the skill to design the ambience lighting, support structure for film set erection and various materials of stage props.
- Acquaint with knowledge base of Historical Evolution, Costume design and architect's role in cinematography.

REFERENCES:

1. Stage Design: A Practical Guide by Gary Thorne.
2. Theatre Design: Behind the Scenes with the Top Set, Lighting, and Costume Designers by Babak A. Ebrahimia

Subject: INTRODUCTION TO ART AND ARCHITECTURE		
Code: ARE408-4	**Credits: 2**	**Hours / Week: 3 hrs.**
Progressive Marks: 50	**Examination Marks: 50**	**Duration of Exam: 2 hrs.**

AIM

The course intends to provide knowledge on exploring art forms, incorporate art forms into architecture.

OBJECTIVE

- To analyze various art forms, and understand the techniques involved in creative thinking.
- To exhibit the study of traditional and contemporary art forms.
- Produce creative works that demonstrate innovation in concepts, language and materials.

COURSE CONTENT:

UNIT-I
Purpose and relevance of art

UNIT-II
Development of art; A survey of history of art forms; pre-historic period to the present times; Changing nature of art through time in terms of content; form and material;

UNIT-III
Exploration of art forms - study of traditional and contemporary art forms - painting sculpture, architecture, decorative arts, design arts, digital art. Relationship between art and architecture from earliest times.

UNIT–IV
Definitions and general understanding of architecture, role of architect in a building project. The changing role of architects, his relation with other consultants, contractors and client, technical knowledge and other skills required as inputs. Various subjects to be learnt by architecture students, their relevance to practice.

UNIT–V
Various factors influencing the architecture of a region, architecture as a response to social, technological and environment forces. Evolution of shelter forms in regions of the world and examples of vernacular architecture in the world, with particular reference to India.

COURSE OUTCOME:

On successful competition of the course the students will be able to:

- Understand traditional and contemporary art forms and relationship between art and architecture from earliest times.
- Acquaint with knowledge on the changing nature of art through time in terms of content; form and material Developing creative products
- Familiarize with the changing role of architects, his relation with other consultants, contractors and client, technical knowledge and other skills.

REFERENCES:

1. Craven, C. Roy. Indian Art a Concise History.
2. Kumar, Raj (Ed.). Essays on Indian Art and Architecture. Discovery Pub., New Delhi, 2003.
3. Fisher, E. Robert. Buddhist Art and Architecture. Thames and Hudson, London, 1993.
4. Ghosh, A (Ed.). Jain Art and Architecture Vol. 1-3. Bharatiya Jnanpith, New Delhi.
5. James C. Snyder, Introduction to Architecture, New York: Mc Graw Hill.
6. Christopher Alexander, Pattern Language, New York: Oxford University Press.
7. Thomas Mitchell, Redefining Designing: From to Experience,
8. James snyder and Anthony Y catanse, Introduction to Architecture, Mc Graw-Hill Book Company, New York, 1979.
9. Rapoport, Amos, House form & Culture.