SYLLABUS

FACULTY OF BUILDING AND ENVIRONMENT

BACHELOR OF ARCHITECTURE

REGULATIONS 2015
CHOICE BASED CREDIT SYSTEM

Effective from the academic year 2015-2016 and applicable to the students admitted to the Degree of Bachelor of Architecture (Ten Semesters).

NOMENCLATURE

Programme : Refers to the Bachelor of Architecture Stream that a student has chosen for study.

Course : Refers to the courses (Subjects) that a student would have to undergo during the study in the Institution.

Batch : Refers to the Starting and Completion year of a Programme of study. Eg. Batch of 2015 - 2020 refers to students belonging to a 5 year B.Arch Degree programme admitted in 2015 and completing in 2020.

Faculty : Each Programme and Department of the institution is grouped under various Faculties. Department of Architecture comes under Faculty of Building & Environment which offers Undergraduate and Postgraduate Programmes like B.Arch, M.Arch (Building Management), M.Arch (Sustainable Architecture).

Faculty Head : Refers to the Head of a Group of Departments under which various UG and PG Programmes are offered.

HoD : Refers to the Head of a Department (HoD) offering various UG and PG programmes. He/She will be the Head of all staff members and Students belonging to his/her Department.

COA : Refers to Council of Architecture, the governing body for Architectural education in India.

1. ELIGIBILITY FOR ADMISSION

2.1. Candidates for admission to the first semester of the ten semesters B. Arch degree programme shall be required to have passed

(i) 10+2 scheme of Senior School Certificate Examination or equivalent with Mathematics as subjects of examination at the 10+2 level with a minimum aggregate of 50%

(Or)

10+3 Diploma (any stream) recognised by Central/ State Governments with 50% aggregate marks.

(Or)

(ii) International Baccalaureate Diploma, after 10 years of schooling, with not less than 50% marks in aggregate and with Mathematics as compulsory subject of examination.

2.2 In addition, the candidate shall write an Aptitude test (NATA - NATIONAL APTITUDE TEST IN ARCHITECTURE) which shall test the aptitude of the candidate in free hand drawing, perception of colours, visualization of colours, visualization of forms, the effect of light and shade on forms and general knowledge.
2.2.1 National Aptitude Test in Architecture (NATA)

As per the Minimum Standards prescribed by Council of Architecture (COA) under the Architects Act, 1972, admission of candidates to first year of 5-year B.Arch. degree programme shall be subject to their passing an aptitude test in architecture. The admission to the first year B. Arch degree programme is on the basis of marks obtained in the National Aptitude Test in Architecture (NATA) administered by COA.

2.2.1.1 Test Content

The test is in two parts. A paper based drawing test for two hours and computer based online aesthetic sensitivity test for one hour.

The test measures aptitude of the candidate through two sections - a paper based section for drawing and computer based section for aesthetic sensitivity.

2.2.1.1.1 Drawing Test

This is a two hour paper where candidate has to attempt two questions. The drawing aptitude is judged on the following aspects:

- Ability to sketch a given object proportionately and rendering the same in visually appealing manner.
- Visualizing and drawing the effects of light on the object and shadows cast on surroundings.
- Sense of perspective drawing.
- Combining and composing given three dimensional elements to form a building or structural form.
- Creating interesting two dimensional compositions using given shapes and forms.
- Creating visual harmony using colours in given composition.
- Understanding of scale and proportions.
- Drawing from memory through pencil sketch on themes from day to day experiences.

2.2.1.1.2 Aesthetic Sensitivity Test

This is computer based test of one hour where candidate has to answer 40 multiple choice questions.

The aesthetic sensitivity test measures perception, imagination and observation, creativity and communication along with architectural awareness and comprises of

- Visualising three dimensional objects from two dimensional drawings.
- Visualising different sides of three dimensional objects.
- Identifying commonly used materials and objects based on their textural qualities.
- Analytical reasoning.
- Mental Ability.
- Imaginative comprehension and expression.
- Architectural awareness.
2.3 Weightage

The following shall be the weightage:

- Architectural Aptitude: 50% (Maximum)
- Qualifying Examination: 50% (Maximum)

Note: In order to pass an Aptitude Test in Architecture, a candidate must obtain a minimum of 40% marks.

3. STRUCTURE OF THE PROGRAMME

3.1. The B.Arch degree programme will have a curriculum with syllabi consisting of theory courses, studio oriented courses and studio courses. The course structure comprises of the following:

(i) Allied Core courses such as Mathematics, Mechanics of Structures and Building Structures are offered.

(ii) Core theory courses such as Building materials, Vernacular Architecture, Art and Aesthetics, History of Architecture, Building Services, Materials and Construction, Site Planning and Analysis, Climatology, Climatic Design, Urban Communities, Theories of Thinking, Professional Practice and Ethics, Urban Design etc.

(iii) Studio oriented courses such as Structures Studio and Construction Studios are offered.

(iv) Studio courses such as Design Studio, Architectural Drawing, Art Studio Workshop, Computer Studio, Dissertation and Thesis.

(v) Electives offered by the Department, Faculty and the Institute related to the programme of study.

(vi) Electives to be chosen from the group of courses offered, which can be chosen by any student under any programme.

(vii) Compulsory rural study in the third semester and Educational Tour in the seventh semester after the Professional Training.

(viii) Professional training in seventh semester for exposure to Architectural professional practice including office procedures.

(ix) Dissertation and Pre Thesis during ninth semester and Thesis work in the tenth semester respectively.

3.2 Each course is normally assigned certain number of credits as follows:

- Lecture Courses (Theory): 1 credit per lecture hour per week, 1 credit per tutorial hour per week
- Studio Courses: 2 credits for 3 hours of practicals per week
- Studio Oriented Courses: 1 credit for per practical hour per week
- Professional Training: 12 credits for Minimum of 18 weeks of Training with at least 90 working days of Training during seventh semester.

3.3. The medium of instruction, examinations and thesis report will be in English Language throughout the Programme.

3.4. For the award of the degree, a student has to earn the total number of minimum credits as specified in the curriculum.
4. **DURATION AND STAGES OF THE PROGRAMME**

   (i) The B.Arch degree programme shall be of a minimum duration of 5 academic Years / 10 semesters inclusive of one semester of professional training.

   (ii) The 5 years B.Arch Degree programme is conducted in two stages.
       
       a. The First stage of the programme shall be the first 3 academic years or 6 semesters of institutional academic studies.

       b. The Second stage of the programme shall be of 2 academic years/ 4 semesters including one semester of professional training during seventh semester.

   (iii) A student is normally expected to complete the B.Arch. degree Programme in 10 semesters but in any case not more than 14 consecutive semesters from the time of commencement of the programme.

   (iv) Registration of the candidates under the Architects Act, 1972, which is a mandatory requirement for the practice of Architectural profession and teaching, is possible only after successful completion of both the stages.

5. **REQUIREMENTS FOR COMPLETION OF A SEMESTER**

   A candidate who has fulfilled the following conditions shall be deemed to have satisfied the requirement for completion of a semester.

   5.1 He/she secures not less than 90% of overall attendance in that semester.

   5.2 Candidates who do not have the requisite attendance for the semester will not be permitted to write the semester Examinations.

6. **FACULTY HEAD**

   Each Faculty is headed by a Faculty Head which comprises of many Departments and Courses offered by them. The Faculty Head is responsible for all activities taking place inside the Faculty in coordination with all Department Heads and all staff members belonging to the faculty. The Faculty Head will be appointed by the Institution on rotational basis. The Faculty Head shall act as a linkage between the HoDs, faculty members and the students. The Faculty Head makes a review of all the academic activities of Staff, Students and Research on a regular time interval and takes steps to improve the morale of all staff and students.

7. **HEAD OF THE DEPARTMENT**

   Each Department offering various UG and PG programmes is headed by a Head (HoD). The HoD is responsible for allotting courses to each staff member uniformly in consultation with other HoD's and Faculty Heads. The HoD is responsible for streamlined teaching of courses to students, improvement and Assessment of Teaching Quality within the Department on a continuous basis, Assessment of staff members, transparent conduct of Continuous Assessment Examinations, Interacting with Parents, ensuring that all academic and non academic activities of staff and students are monitored and steps taken for their improvement.

8. **BATCH COORDINATOR**

   The Head of the Department shall appoint a Batch coordinator for each batch of students admitted in to a programme, throughout their period of study. The Batch coordinator shall act as a linkage between the HoD, faculty members and the students. The Batch coordinator gets information about the Syllabus coverage by the staff members, problems faced by the students academically and otherwise, attendance and progress of
the students from the respective Class Counselors. The Batch Coordinator also informs the students of the academic schedule including the dates of assessments and syllabus coverage for each assessment, weightage for each assessment, their Continuous assessment Marks and attendance % details before the commencement of End Semester examinations.

9. CLASS COUNSELOR

There shall be a class counselor for each class. The class counselor will be one among the teachers of the Department. He / She will be appointed by the HoD of the department concerned. The responsibilities for the class Counselor shall be:

- To act as the channel of communication between the HoD, Faculty Head, Batch Coordinator, Course Coordinator, staff and students of the respective class.
- To collect and maintain various statistical details of students.
- To help the Batch Coordinator in planning and conduct of the classes.
- To monitor the academic performance of the students including attendance and to inform the Batch Coordinator.
- To take care of the students’ welfare activities like industrial visits, seminars, awards etc.

10. COURSE COORDINATOR FOR EACH COURSE

- Each theory course offered to more than one class or branch or group of branches, shall have a ‘Course coordinator’ comprising all the teachers teaching the course, with one of the senior staff amongst them normally nominated as course coordinator, by the faculty head in consultation with the respective HoD’s.

- The “Course Coordinator” shall meet the teachers handling the course, as often as possible and ensure a Common Teaching Methodology is followed for the course. Study materials are prepared by the staff members and communicated to the students periodically, involving students in course based projects and assignments, common question paper for continuous assessment tests, uniform evaluation of continuous assessments Answer sheets by arriving at a common scheme of evaluation.

- The Course coordinator is responsible for preparing the Performance of the students in the Continuous Assessments and End Semester exams and analyse them to find suitable methodologies for improvement in the performance. This analysis should be submitted to the HoD and Faculty Head for suitable action.

11. EXAMINATIONS

The end semester examinations shall normally be conducted between October and December during the odd semesters and between March and May in the even semesters. The weightage of marks for each theory, studio oriented courses and studio courses (including the thesis in the tenth Semester) shall be with the following breakup.

(i) Theory Courses
   Continuous Assessment : 50 %
   End Semester Examinations : 50 %

(ii) Studio Oriented Courses
   Internal Continuous Assessment : 50 %
   End Semester Viva : 50 %
12. CONTINUOUS ASSESSMENT EXAMS

a. Theory courses

- There will be a Minimum of two Continuous Assessment Exams, for each Theory course. Each Assessment Exam will be conducted for a Maximum of 50 Marks. The total marks secured in the Two Assessment Exams out of 100, will be converted to 45 Marks. The % of attendance secured by the candidate in a course in a semester will carry a weightage of 5 Marks, which will be added to the Continuous Assessment Marks for each course.

- The Continuous assessment marks obtained by the candidate in the first appearance shall be retained and considered valid for all subsequent attempts, till the candidate secures a pass.

<table>
<thead>
<tr>
<th>Continuous Assessment I</th>
<th>Continuous Assessment II</th>
<th>Attendance</th>
<th>End Semester Viva Voce Examination</th>
<th>Total marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>25</td>
<td>5</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>45</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

b. Studio Oriented Courses

- For Studio oriented courses like Construction Studio and Structures Studio, out of 50 marks of the internal component, continuous assessment of assignments, exercises, plates, seminars, workshops etc will be evaluated for 45 marks and 5 marks for the % of attendance secured by the candidate in the studio in a semester. The remaining 50 marks of the external component will be for the final Viva-Voce examination conducted at the end of the semester.

<table>
<thead>
<tr>
<th>Continuous Assessment I</th>
<th>Continuous Assessment II</th>
<th>Attendance</th>
<th>End Semester Viva Voce Examination</th>
<th>Total marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Through assignments, plates, seminar workshops etc.</td>
<td></td>
<td>5</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>25</td>
<td>25</td>
<td>5</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>45</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

c. Studio Courses

(i) Design Studio I & II:

For design studio I & II, 200 marks will be evaluated during the continuous assessment and 200 marks through final examinations which includes 50 marks for end semester examination and 150 marks for viva voce examination conducted at the end of the semester. The 200 marks of the internal component will be evaluated through continuous assessments I & II. Each assessment carries 100 marks with the following breakup:
(ii) **Design Studio III, IV, V & VI:**

For design studio III to VI, 300 marks will be evaluated during the continuous assessment and 100 marks through viva voce examination conducted at the end of the semester. The 300 marks of the internal component includes 150 marks awarded by the concerned course faculty for the assignments, site visits, seminars, exercises drawings, models, plates etc in stages, 125 marks awarded by external experts appointed by HoD at two or three stages, and 25 marks for the % of attendance secured by the candidate in a semester.

<table>
<thead>
<tr>
<th>Continuous Assessment during the semester</th>
<th>End Semester Viva Voce Examination</th>
<th>Total marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Through assignments, exercises, site visits, plates, drawing models etc</td>
<td>Review by external experts</td>
<td>Attendance</td>
</tr>
<tr>
<td>150</td>
<td>125</td>
<td>25</td>
</tr>
<tr>
<td>300</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Design Studio VII & VIII:**

For design studio VII & VIII, 450 marks will be evaluated during the continuous assessment and 150 marks through viva voce examination conducted at the end of the semester. The 450 marks of the internal component includes 250 marks awarded by the concerned course faculty for the assignments, site visits, seminars, exercises drawings, models, plates etc in stages, 175 marks awarded by external experts appointed by HoD at two or three stages, and 25 marks for the % of attendance secured by the candidate in a semester.

<table>
<thead>
<tr>
<th>Continuous Assessment during the semester</th>
<th>End Semester Viva Voce Examination</th>
<th>Total marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Through assignments, exercises, site visits, plates, drawing models etc</td>
<td>Review by external experts</td>
<td>Attendance</td>
</tr>
<tr>
<td>250</td>
<td>175</td>
<td>25</td>
</tr>
<tr>
<td>450</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Computer Studio:**

Computer studio consists of 100 marks with 50 marks each for internal and external components. Out of 50 marks of the internal component, continuous assessment of assignments, exercises, plates, etc will be evaluated for 45 marks and 5 marks for the % of attendance secured by the candidate in the studio in a semester. The remaining 50 marks of the external component will be for the final viva voce examination conducted at the end of the semester.
Architectural Drawing / Art Studio Workshop

For Studio courses like Architectural Drawing and Art Studio Workshop, 150 marks will be evaluated through continuous assessment and 50 marks through end semester viva voce examination conducted by the Institution. The 150 marks of the internal component includes 90 marks awarded by the concerned course faculty for the assignments, plates, drawings, models, workshops etc in stages, 50 marks awarded by external experts appointed by HoD at two or three stages, and 10 marks for the % of attendance secured by the candidate in the semester.

Professional Training

Professional Training consists of 600 marks with 300 marks evaluated during the Professional Training and 300 marks through viva voce examination conducted by the Institution at the end of the semester. There will be a Minimum of three Continuous Assessments for Professional Training which will be carried out by the offices where the student undergoes Professional Training through three consecutive reports based on the performance, progress and attendance for 270 Marks and the remaining 30 marks will be awarded by the Professional Training coordinator on the basis of reports, documentation of the work of the students during Professional Training submitted prior to the final viva voce examination.

Educational Tour

Educational tour consists of 100 marks with 50 marks each for internal and external components. There will be a Minimum of two assessments namely Pre-tour and Post-tour for a total of 45 Marks awarded by the tour coordinator for the documentation that includes drawings, sketches, pictures and report, and 5 marks for the attendance in the Tour. The remaining 50 marks of the external component will be for the final viva voce examination conducted at the end of the semester.
(viii) **Dissertation and Pre-Thesis**

For Dissertation and Pre thesis, 100 marks will be awarded for the Continuous Assessment and 100 marks for the End Semester Viva Voce examination conducted by the Institution. 90 marks will be awarded by the Review committee constituted by the HoD through three Continuous Assessments reviews and 10 marks for the % of attendance secured by the candidate.

<table>
<thead>
<tr>
<th>Continuous Assessment during the semester</th>
<th>End Semester Viva Voce Examination</th>
<th>Total marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review I</td>
<td>Review II</td>
<td>Review III</td>
</tr>
<tr>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
</tbody>
</table>

**Thesis**

Thesis consists of 800 marks with 550 marks as internal and 250 marks for the final viva voce examination. There will be a minimum of four continuous assessments for Thesis session which includes assessment through periodic reviews and a pre final viva voce examination. Out of 550 marks of the internal component, 250 marks will be awarded by the external experts, 125 marks will be awarded by the internal coordinator on the basis of the performance of the student presented to the review committee constituted by the Faculty head and HoD, 125 marks by the supervisor of the concerned student based on periodic interaction and continuous progress and 50 marks for the Pre final internal viva voce examination conducted by the internal thesis coordinator appointed by the Faculty head and HoD.

<table>
<thead>
<tr>
<th>Continuous assessment during the semester</th>
<th>End Semester Viva Voce Examination</th>
<th>Total marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supervisor markings based on continuous progress</td>
<td>Reviews by internal coordinator</td>
<td>Periodic reviews by external member</td>
</tr>
<tr>
<td>125</td>
<td>125</td>
<td>250</td>
</tr>
</tbody>
</table>

13. **ELECTIVE COURSES**

Every student has the option of choosing four elective courses during the period of study. The student has to select atleast two electives offered by the respective department. The student also has the choice of selecting the other two electives from electives offered by Departments within the faculty in that semester and / or from the Institute electives which can be opted as elective by all undergraduate branches of the Institution.
14. PROFESSIONAL TRAINING

As per the norms laid by the Council of Architecture, India, a candidate has to undergo Professional Training for one semester in an approved architectural firm established not less than five years with a registered architect. A student is to undergo this Professional Training during the seventh semester. The evaluation of the performance of the students in Professional Training shall be as per the assessment procedure laid out in clause 12.c. (vi)

15. RURAL STUDY / EDUCATIONAL TOUR

The student has to participate in a rural study and an educational tour organized by the department during his/her study in the third and Seventh semester respectively. The evaluation of the performance of the students in Educational Tour shall be as per the assessment procedure laid out in clause 12.c (vii). The rural study will be evaluated as a part of Design Studio III and the educational tour will be evaluated based on the pre and post tour reports submitted by the students. The evaluation will be done by examiners appointed by the Institution. A minimum of 50% marks has to be secured to pass in the same.

In case a student is not able to participate in Educational tour due to reasons of ill health or other valid reasons, he/she will participate in the Tour with the permission of Head of the Department in the subsequent year. In case a student has not participated in Educational tour he/she will not be permitted to submit the final year Thesis.

16. GUIDELINES FOR CONDUCT OF DESIGN STUDIO

(i) For Design Studio I to VIII, the Faculty Head and HoD shall appoint a minimum of two faculty members as studio coordinators for each class and a batch coordinator who shall coordinate the Design Studio projects of the concerned semester.

(ii) The batch coordinator shall prepare the course plan which includes number of projects to be handled and weightages for the same, duration of the same and stages of work for the entire semester in the beginning of the respective semester in coordination with the studio coordinators and in consultation with the Core Design Team.

(iii) The Design studio works shall be carried out by the students under the direction and supervision of the studio coordinators of the concerned class.

(iv) The performance of the students in Design Studio will be assessed periodically as per the course planned and approved in the beginning of the semester and the same shall be displayed in the notice board.

(v) The performance of the students at two or three critical stages shall be evaluated by external experts appointed by the Faculty Head and HoD in the form of Continuous Assessment Reviews.

(vi) A candidate, who fails to secure a minimum of 50% marks in the continuous assessment which includes the assessment by external experts shall not be allowed to appear for the End Semester Viva-Voce examination and has to reregister for the respective Design Studio courses in the next academic session.

(vii) A jury comprising of one internal examiner and one or two external examiners appointed by the Institution shall conduct the final Viva-Voce examination of the respective Design Studio. The studio coordinators of the concerned design studio will be present during the viva voce examination.

(viii) A candidate shall be declared to have passed in the Design Studio if he/she secures not less than 50% in the Viva-Voce examination conducted by the Institution.
(ix) If he/she fails to secure a pass in the viva voce examination, he/she shall improve the design in the directions suggested by the Jury and resubmit the same in the subsequent semester. In such cases the continuous internal assessment marks already secured by the candidate shall remain valid. The resubmitted design shall be assessed by a jury comprising of external examiners through a Viva-Voce examination conducted by the Institution.

17. GUIDELINES FOR CONDUCT OF THESIS

(i) The Thesis will be initiated in the beginning of the ninth semester as part of the Dissertation and Pre thesis study.

(ii) The Thesis shall be prepared under the guidance of an internal supervisor / qualified professional.

(iii) There will be four continuous assessments during the semester conducted by a review committee comprising of Senior Professor, Supervisor and External experts.

(iv) In addition there will be a Pre final internal viva voce examination conducted by an internal team comprising of senior faculty members of the Department.

(v) A candidate, who fails to secure a minimum of 50% marks in the continuous assessment shall not be allowed to appear for the semester Viva-Voce examination and has to reappear for the same in the next academic thesis session, with the same or a different Thesis topic.

(vi) A jury comprising of one internal examiner and two external examiners appointed by the Institution shall conduct the final Viva-Voce examination of the Thesis at the end of the Tenth semester. The supervisor of the candidate concerned shall be present during the viva voce examination.

(vii) A candidate shall be declared to have passed in the Thesis if he/she secures not less than 50% in the Viva-Voce examination conducted by the Institution.

(viii) If he/she fails to secure a pass in the Thesis he/she shall improve the Thesis on the same topic on the lines suggested by the Jury and resubmit the same in the subsequent semester. In such cases the continuous internal assessment marks already secured by the candidate shall remain valid. The resubmitted Thesis shall be assessed by a jury comprising of external examiners through a Viva-Voce examination conducted by the Institution.

18. PASSING REQUIREMENTS

- A candidate should secure not less than 50% of total marks prescribed for the courses, subject to securing a minimum of 30% marks out of Max. Mark in End Semester Examinations. Then he / she shall be declared to have passed in the Examination.

- If a candidate fails to secure a pass in a particular course, it is mandatory that he / she shall register and reappear for the examination in that course during the next semester when examination is conducted in that course. It is mandatory that he / she should continue to register and reappear for the examination till he / she secures a pass.

19. PROMOTION TO HIGHER SEMESTERS

The candidate shall be promoted to the next semester only if he/she fulfills the requirements as stipulated below.
Requirements for promotion to higher semester:

<table>
<thead>
<tr>
<th>Promotion to higher Years</th>
<th>Semester</th>
<th>Requirements for promotion</th>
</tr>
</thead>
<tbody>
<tr>
<td>First stage of the programme</td>
<td></td>
<td></td>
</tr>
<tr>
<td>II Year</td>
<td>III</td>
<td>Should have secured a pass in Design Studio I and Design Studio II</td>
</tr>
<tr>
<td>III Year</td>
<td>V</td>
<td>Should have secured a pass in Design Studio III and Design Studio IV</td>
</tr>
<tr>
<td>Second stage of the programme</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IV Year</td>
<td>VII</td>
<td>Should have secured a pass in Design Studio V and Design Studio VI and all the courses offered in the first year.</td>
</tr>
<tr>
<td></td>
<td>VIII</td>
<td>Should have secured a pass in Professional Training</td>
</tr>
<tr>
<td>V Year</td>
<td>IX</td>
<td>Should have secured a pass in Design Studio VII</td>
</tr>
</tbody>
</table>

20. AWARD OF GRADES

All assessments of a course will be done on absolute marks basis. However, for the purpose of reporting the performance of a candidate, letter grades, each carrying certain number of points, will be awarded as per the range of total marks (out of 100) obtained by the candidate in each course as detailed below:

### RANGE OF MARKS FOR GRADES

<table>
<thead>
<tr>
<th>Range of Marks</th>
<th>Grade</th>
<th>Grade Points (GP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>90-100</td>
<td>A++</td>
<td>10</td>
</tr>
<tr>
<td>80-89</td>
<td>A+</td>
<td>9</td>
</tr>
<tr>
<td>70-79</td>
<td>B++</td>
<td>8</td>
</tr>
<tr>
<td>60-69</td>
<td>B+</td>
<td>7</td>
</tr>
<tr>
<td>50-59</td>
<td>C</td>
<td>6</td>
</tr>
<tr>
<td>00-49 (Reappear)</td>
<td>RA</td>
<td>0</td>
</tr>
<tr>
<td>ABSENT</td>
<td>AAA</td>
<td>0</td>
</tr>
<tr>
<td>Withdrawal</td>
<td>W</td>
<td>0</td>
</tr>
<tr>
<td>Authorised Break of Study</td>
<td>ABS</td>
<td>0</td>
</tr>
</tbody>
</table>

### CUMULATIVE GRADE POINT AVERAGE CALCULATION

Calculation of CGPA on a 10 Point scale is used to describe the overall performance of a student in all courses from first semester to the last semester. RA, AAA and W grades will be excluded for calculating GPA and CGPA.

\[
CGPA = \frac{\sum C_i GP_i}{\sum C_i}
\]

where
- \( C_i \) – Credits for the course
- \( GP_i \) – Grade Point for the course
- \( \Sigma_i \) – Sum of all courses successfully cleared during all the semesters
Final Degree is awarded based on the following:

- CGPA $\geq 9.0$ – First Class - Exemplary
- CGPA $\geq 7.50 < 9.00$ – First Class with Distinction
- CGPA $\geq 6.00 < 7.50$ – First Class
- CGPA $\geq 5.00 < 6.00$ – Second Class

Minimum requirements for award of Degree, a student should have obtained a minimum of 5.0 CGPA.

21. GRADE SHEET

After revaluation results are declared, Grade Sheets will be issued to each student which will contain the following details:

- Name of the Candidate with Date of Birth and Photograph.
- The programme and degree in which the candidate has studied.
- The list of courses enrolled during the semester and the grade secured.
- The Grade Point Average (GPA) for the semester.

22. ELIGIBILITY FOR THE AWARD OF DEGREE

A student shall be declared to be eligible for the award of the B.Arch degree, provided the student has successfully completed all the requirements of the programme, and has passed all the prescribed examinations in all the 10 semesters within the maximum period specified in clause 4.

i) Successfully gained the required number of total credits as specified in the curriculum within the stipulated time.

ii) Successfully completed the programme requirements and has passed all the courses prescribed in all the semesters within a maximum period of 7 years reckoned from the commencement of the first semester to which the candidate was admitted.

iii) Successfully completed any additional courses prescribed by the Institution.

iv) No disciplinary action pending against the student.

v) The award of Degree must have been approved by the Board of Management of the Institution.

23. CLASSIFICATION OF THE DEGREE AWARDED

1. A candidate who qualifies for the award of the Degree having passed the examination in all the courses of all the TEN semesters in his/her first appearance within a maximum of 10 consecutive semesters securing an overall CGPA of not less than 9.0 shall be declared to have passed the examination in First Class - EXEMPLARY. Authorized Break of Study vide clause 25, will be considered as an Appearance for Examinations, for award of First Class – Exemplary. Withdrawal from a course shall not be considered as an appearance for deciding the eligibility of a candidate for First Class – Exemplary.

2. A candidate who qualifies for the award of the Degree having passed the examination in all the courses of all the TEN semesters in his/her first appearance within a maximum of 10 consecutive semesters securing an overall CGPA of not less than 7.5 shall be declared to have passed the examination in First Class with Distinction. Authorized Break of Study vide Clause 25, will be considered as an Appearance for Examinations, for award of First Class with Distinction. Withdrawal shall not be considered as an appearance for deciding the eligibility of a candidate for First Class with Distinction.
3. A candidate who qualifies for the award of the Degree having passed the examination in all the courses of all the TEN semesters within a maximum period of 10 consecutive semesters after his/her commencement of study securing a overall CGPA of not less than 6.0, shall be declared to have passed the examination in First Class. Authorized break of study vide Clause 25 (if availed of) or prevention from writing End semester examination due to lack of attendance will not be considered as Appearance in Examinations. For award of First class, the extra number of semesters than can be provided (in addition to five years for Normal B.Arch will be equal to the number of semesters availed for Authorized Break of Study or Lack of Attendance. Withdrawal shall not be considered as an appearance for deciding the eligibility of a candidate for First Class.

4. All other candidates who qualify for the award of the Degree having passed the examination in all the courses of all the 10 semesters within a maximum period of 14 consecutive semesters after his/her commencement of study securing a overall CGPA of not less than 5.0, shall be declared to have passed the examination in Second Class.

5. A candidate who is absent in semester examination in a course/Thesis after having registered for the same, shall be considered to have appeared in that examination for the purpose of classification.

6. A candidate can apply for revaluation of his/her semester examination answer paper in a theory course, immediately after the declaration of results, on payment of a prescribed fee along with prescribed application to the Controller of Examinations through the Head of Department. The Controller of Examination will arrange for the revaluation and the result will be intimated to the candidate concerned through the Head of the Department. Revaluation is not permitted for Studio courses and for Thesis.

24. WITHDRAWAL FROM EXAMINATIONS

- A candidate may, for valid reasons, (medically unfit / unexpected family situations) be granted permission to withdraw from appearing for the examination in any course or courses in any one of the semester examination during the entire duration of the degree programme.

- Withdrawal application shall be valid only if the candidate is otherwise normally eligible (if he/she satisfies Attendance requirements and should not be involved in Disciplinary issues or Malpractice in Exams) to write the examination and if it is made within FIVE days before the commencement of the examination in that course or courses and also recommended by the Faculty Head through HoD.

- Notwithstanding the requirement of mandatory FIVE days notice, applications for withdrawal for special cases under extraordinary conditions will be considered based on the merit of the case.

- Withdrawal shall not be considered as an appearance for deciding the eligibility of a candidate for First Class – Exemplary, First Class with Distinction and First Class.

- Withdrawal is NOT permitted for arrears examinations of the previous semesters.

25. AUTHORISED BREAK OF STUDY

- This shall be granted by the Institute Management, only once during the full duration of study, for valid reasons for a maximum of one year during the entire period of study of the degree programme.

- A candidate is normally not permitted to temporarily break the period of study. However, if a candidate would like to discontinue the programme temporarily in the middle of duration of study for valid reasons (such as accident or hospitalization due to prolonged ill health), he / she shall apply through the Faculty Head in advance (Not later than the Reopening day of that semester) through the Head of the Department stating the reasons. He /She should also mention clearly, the Joining date and Semester for Continuation of Studies after completion
of break of Study. In such cases, he/she will attend classes along with the Junior Batches. A student who availed break of study has to rejoin only in the same semester from where he left.

- The authorized break of study will not be counted towards the duration specified for passing all the courses for the purpose of classification only for First Class.

- The total period for completion of the programme shall not exceed more than 14 consecutive semesters from the time of commencement of the course irrespective of the period of break of study in order that he/she may be eligible for the award of the degree.

- If any student is not allowed to appear for semester Examinations for not satisfying Academic requirements and Disciplinary reasons, (Except due to Lack of Attendance), the period spent in that semester shall NOT be considered as permitted ‘Break of Study’ and is NOT applicable for Approved Break of Study.

- In extraordinary situations, a candidate may apply for additional break of study not exceeding another one year by paying prescribed fee for break of study. Such extended break of study shall be counted for the purpose of classification of First Class Degree.

- If the candidate has not reported back to the department, even after the extended Break of Study, the name of the candidate shall be deleted permanently from the Institution enrollment. Such candidates are not entitled to seek readmission under any circumstances.

26. **NON CREDIT COURSES**

Every student has the opportunity to enroll in any of the following Non Credit Courses, during the programme. The student will have to register for the courses with the respective coordinator before the end of First Semester.

- National Cadet Corps (NCC)
- National Service Scheme (NSS)
- Youth Red Cross (YRC)
- SPORTS CONTRIBUTION: The student is involved in any sport and represents the Institution in Tournaments.
- PROFESSIONAL CLUBS: Any student can also involve in any of the Professional Clubs available in the Institution and contribute towards that.
- The above contribution should be completed by the end of Eighth Semester as per the requirements. The Contribution and the Performance of the candidate, will be printed in the Final Semester Grade Sheet and Consolidated Grade Sheet under the Category “NON CREDIT COURSES” indicated as SATISFACTORY or NOT SATISFACTORY.

27. **OPPORTUNITY TO GAIN EXPOSURE OUTSIDE THE INSTITUTION**

- This is facilitated by the “Centre for Academic Partnerships” of SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY consisting of a team of experienced faculty members involved in forging Partnerships with Leading Universities, Educational Institutions, Industrial and Research establishments in India and Abroad.

- A student can be selected, to get Professional Exposure in his/her area of Expertise in any Reputed Research Organization or Educational Institution of repute or any Universities in India and abroad.

- This is possible only with the List of Research Organizations, Educational Institutions in India and abroad approved by SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY.

- A student should have got a minimum of 6 CGPA without any arrears at the time of applying and at the time of undergoing such courses outside, to avail this facility.
• The student can have the option of spending not more than three to six months in the final year or pre-final year of his/her degree. During this period, the student can do his/her professional training or thesis or register for courses which will be approved by the Centre for Academic Partnerships (CAP), under the guidance of a supervisor who is employed in the organization and co-guided by a staff member from our institution.

• Applications for the above should be submitted by the students to the Centre for Academic Partnerships (CAP), in the required format, with complete details of institution, courses and equivalence details and approved by the faculty head.

• The Centre will go through the applications and select the students based on their academic performance and enthusiasm to undergo such courses. This will be communicated to the Universities Concerned by the Centre.

• The performance of the student in the courses, registered in that Institute or University will be communicated officially to Centre for Academic Partnerships (CAP).

• The students who undergo training outside the Institution (either in India or Abroad) is expected to abide by all Rules and Regulations to be followed as per Indian and the respective Country Laws, and also should take care of Financial, Travel and Accommodation expenses.

28. DISCIPLINE

Every student is required to observe disciplined and decorous behaviour both inside and outside the Institute and not to indulge in any activity which will tend to bring down the prestige of the Institution. If a student indulges in malpractice in any of the semester examinations in theory / studio courses or continuous assessment examinations, he/she shall be liable for punitive action as prescribed by the Institution from time to time.

29. REVISION OF REGULATIONS AND CURRICULUM

The Institution may from time to time revise, amend or change the regulations, scheme of examinations and syllabi if found necessary.
## PROGRAMME: B.ARCH

### ARCH ITECTU RE

#### CURRICULUM

**SEMESTER 1**

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**Total Credits** 25  **Total Marks** 1200

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**Total Credits** 26  **Total Marks** 1400

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L - LECTURE HOURS, T – TUTORIAL HOURS, P – PRACTICAL HOURS, C – CREDITS

CONT. ASST – CONTINUOUS ASSESSMENT, END SEM. EXAM – END SEMESTER EXAMINATION,

VIVA - VIVAVOCE
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**Total Credits** 25  Total Marks 1200

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**Total Credits** 25  Total Marks 1200
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**Total Credits**: 25
**Total Marks**: 1200

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**Total Credits**: 25
**Total Marks**: 1200

### SEMESTER 7

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**Total Credits**: 14
**Total Marks**: 700
## SEMESTER 8

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Total Credits 24 Total Marks 1200

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Total Credits 23 Total Marks 1200

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Total Credits 21 Total Marks 1000

Total Credits for the Programme 233
# LIST OF ELECTIVES

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SMT 1103  |  MATHEMATICS  |  L  |  T  |  P  |  Credits  |  Total Marks
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COURSE OBJECTIVE
- To develop the mathematical skills of students in solving differential equations and to study the properties of lines and planes in space, along with sphere and to provide as a tool to understand 3D material.

UNIT 1  TRIGONOMETRY, GEOMETRY AND MENSURATION  11 Hrs.
- Trigonometric (sine, cosine and tan) functions, hyperbolic functions, exponential functions, Area of plane figures, Volume of solid figures, Ratio and proportion, Golden ratio, Fibonacci sequence.

UNIT 2  BASIC STATISTICS AND PROBABILITY  13 Hrs.
- Arithmetic mean, median, mode, standard deviation and variance, regression and correlation, elementary probability theory - Conditional probability.

UNIT 3  ORDINARY DIFFERENTIAL EQUATIONS  12 Hrs.
- Second and higher order linear differential equations with constant coefficients - differential equations with variable coefficients of Euler type.

UNIT 4  FUNCTIONS OF TWO VARIABLES  12 Hrs.
- Introduction to partial derivatives, Taylor’s Theorem with remainder, Maxima and Minima (Simple Problems)

UNIT 5  INTEGRAL CALCULUS  12 Hrs.
- Integration of rational, trigonometric and irrational functions, properties of definite integrals, reduction formulae for trigonometric functions.

Max. 60 Hours

TEXT / REFERENCE BOOK

END SEMESTER EXAMINATION QUESTION PAPER PATTERN
(To be distributed uniformly among all the units)
Max. Marks : 100
PART A : 2 questions from each unit, each carrying 2 marks.
PART B : 2 questions from each unit with an internal choice, each carrying 16 marks.

Exam Duration : 3 Hrs.
10 x 02 = 20 Marks
05 x 16 = 80 Marks
COURSE OBJECTIVE
- To analyze and understand the behaviour of materials and geometric properties of structural sections.

UNIT 1 FORCES

UNIT 2 ELASTIC PROPERTIES
Definition - Stress, Strain - Tensile, Compressive & Shear - Linear & Lateral Strain - Poisson’s ratio - Stress Strain Curve for Mild Steel & High Tensile Steel - modulus of Elasticity, bulk modulus, modulus of Rigidity and their Relationships - Application to Uniform Sections. Analysis of Plane frame trusses by method of Joints.

UNIT 3 GEOMETRICAL PROPERTIES OF SECTIONS
Area - Centroid - C.G of Various Sections (Including Cutout Holes) - Moment of Inertia - Parallel & Perpendicular Axis Theorem - Moment of Inertia of Various Section - Section Modulus.

UNIT 4 SHEAR FORCE AND BENDING MOMENTS
Definition - Relation between Loading, Shear Force & Bending Moment - Simply Supported, Cantilever and Overhanging Beams Subjected to Concentrated, uniformly distributed and uniformly varying loads and their Combinations.

TEXT / REFERENCE BOOKS
4. Punmia P.C., Strength of materials and Theory of structures, Vol 1, Laxmi publications, Delhi, 1994

END SEMESTER EXAMINATION QUESTION PAPER PATTERN
(To be distributed uniformly among all the units)

Max. Marks : 100
Exam Duration : 3 Hrs.
PART A: 2 questions from each unit, each carrying 5 marks. 08 x 05 = 40 Marks
PART B: 2 questions from each unit with an internal choice, each carrying 15 marks. 04 x 12 = 60 Marks
COURSE OBJECTIVE

• To understand the procedures involved in design and reinforcement detailing of RCC structures such as beams and slabs under flexure, shear and columns under compression using Limit State Method of design.

UNIT 1    LIMIT STATE METHOD OF DESIGN AND COLLAPSE FLEXURE  10 Hrs.

Historic perspective and definition of structure-System of load transferring from various structural elements of building to ground. Principles, Characteristics of load and strength in Limit State Method of design, partial safety factor, stress block parameters—balance, under and over reinforced beams, analysis and design of singly and doubly reinforced beams, analysis and design of under reinforced flanged beams, clear cover for durability and fire resistance, reinforcement details for beams in flexure.

UNIT 2   LIMIT STATE OF COLLAPSE - SHEAR  8 Hrs.

Effect of shear, design of rectangular and flanged beams for shear-minimum shear requirement- Details of shear reinforcement as per provisions of codes.

UNIT 3    SLABS AND CONTINUOUS BEAMS  6 Hrs.

Design of simply supported one way and two way slabs-continuous one way and two way slabs-continuous rectangular beams as per provisions of IS codes.

UNIT 4    LIMIT STATE OF COLLAPSE - COMPRESSION  6 Hrs.

Design of columns for axial loading—square and rectangular sections with lateral ties, circular section with lateral and spiral ties, Design of columns for uniaxial bending, reinforcement details for columns.

Max. 30 Hours

TEXT / REFERENCE BOOKS

2. Sinha S. N., Reinforce Concrete Design, Tata McGrawHill publishing company Limited, New Delhi, 2004
5. Ramachandra, Limit state design of Concrete Structures, Scientific Publishers, 2007

IS CODES

1. IS 456:2000 Plain and Reinforced Concrete-Code of Practice
2. IS 875 (1-5) : 1987 Code of Practice for Design Loads (Other than Earthquake) for Buildings and Structures

END SEMESTER EXAMINATION QUESTION PAPER PATTERN

(To be distributed uniformly among all the units)

Max. Marks : 100
Exam Duration : 3 Hrs.
PART A : 2 questions from each unit, each carrying 5 marks.  08 x 05 = 40 Marks
PART B : 2 questions from each unit with an internal choice, each carrying 15 marks.  04 x 15 = 60 Marks
COURSE OBJECTIVE

- To understand and develop knowledge about Brick in masonry walls and piers, timber trusses, arches, floors and flooring.

UNIT 1 STRUCTURAL MATERIALS - BRICK IN MASONARY & WALLS 10 Hrs.

Introduction to masonry bearing walls: solid walls, cavity walls - Masonry units - size, wall thickness, strength of bricks - Allowable Stresses: Effective Height: slenderness ratio: net permissible stresses - Analysis and design of masonry walls for axial and eccentric loads - Design of masonry piers for axial loads only.

UNIT 2 TIMBER TRUSSES 8 Hrs.

Introduction to sloped roofs: Ridges, hips, valleys and eaves - Slope with respect to roofing materials - Wood rafter span range: roof beams parallel to slope and perpendicular to slope: Trusses - types of trusses, properties and their span ranges - analysis of truss to determine the Forces, deflection of truss - joinery details of different members of timber truss. (No Design Problem)

UNIT 3 STRUCTURAL ELEMENTS 4 Hrs.


UNIT 4 COST EFFECTIVE CONSTRUCTION TECHNIQUES 8 Hrs.

Introduction to cost effective construction techniques, need for cost effective construction techniques - Roofing Types - Ferro cement roofing system, filler slab roofs - Pre-cast roofs - Funicular shells, advanced types of flooring - steel fibre reinforced flooring, epoxy flooring, vacuum flooring, linoleum flooring, ESD flooring.

Max. 30 Hours

TEXT / REFERENCE BOOKS

2. Arya A.S., Structural design in steel, masonry & timber, Nem Chand and sons, Roorkee, 1978
5. Appropriate Building systems, Instruction manual, Building materials technology Promotion council, New Delhi, 1993

IS CODES

1. IS 883:1994 code of practice for design of structural timber in building
2. IS 1905:1987 code of practice for structural use of reinforced masonry
3. IS 2366:1983 code of practice for nail - jointed timber construction

END SEMESTER EXAMINATION QUESTION PAPER PATTERN

(To be distributed uniformly among all the units)

Max. Marks : 100
Exam Duration : 3 Hrs.

PART A : 2 questions from each unit, each carrying 5 marks. 08 x 05 = 40 Marks

PART B : 2 questions from each unit with an internal choice, each carrying 15 marks. 04 x 15 = 60 Marks
COURSE OBJECTIVE
• This course provides a proper understanding of the design and detailing procedures of RCC Staircases and foundations.

UNIT 1 STAIRCASE
Definitions - riser, tread, waist slab, floor and mid-landing slabs, Loads on staircase. Design of staircase - Design illustration for doglegged and open well staircases

UNIT 2 SHALLOW FOUNDATIONS
Definitions - Shallow foundations and deep foundations, Safe bearing capacity of soil, angle of repose, minimum depth of foundation. Types of isolated foundations - wall and column footings, design of isolated square and rectangular footing for axial loads only. Design of wall footing - Combined Footings - Analysis and design of combined rectangular footing. The Requirement and design procedure for raft foundation.

UNIT 3 PILE FOUNDATIONS AND RETAINING WALLS
Theory: types of piles: under reamed piles, bored and precast piles, Types of pile caps for columns, water tank and chimneys. (no design calculation) - Retaining walls-types, their uses. Analysis and design of cantilever RCC retaining walls - checking stability.

UNIT 4 FLAT SLABS
Definition, types of Flat slabs, advantages, concept of post-tensioned flat slab, and design of flat slab without Drop panel by direct design method.

TEXT / REFERENCE BOOKS
2. Shinha N.L., and Roy S.K., Fundamentals of Reinforced Concrete, S.Chand and company, New Delhi, 1983

IS CODES
1. IS 456:2000 Plain and Reinforced Concrete -Code of Practice
2. IS 875 (1-5) : 1987 Code of Practice for Design Loads (Other than Earthquake) for Buildings and Structures
3. SP 34: 1987 Handbook on concrete reinforcement and detailing

END SEMESTER EXAMINATION QUESTION PAPER PATTERN
(To be distributed uniformly among all the units)

Max. Marks : 100
Exam Duration : 3 Hrs.

PART A : 2 questions from each unit, each carrying 5 marks.
08 x 05 = 40 Marks

PART B : 2 questions from each unit with an internal choice, each carrying 15 marks.
04 x 15 = 60 Marks
COURSE OBJECTIVE

- This course aids in the structural understanding of steel as a material in the building industry.

UNIT 1  STEEL SECTIONS AND JOINTS  10 Hrs.
Introduction to limit state design of steel structures: concept of Limit state method of design, safety factors, types of steel sections available, Rolled steel sections, properties and uses - Types of Steel Joints: Bolted joints - Design of simple bolted joints for axial tension and compression. (no problems on eccentric joints) - Welded joints - Introduction to welded joints, types of weld- advantages of welded joints - Strength of a fillet weld, Design of simple joints under tension /compression (no problems on eccentric joints)

UNIT 2  DESIGN OF STEEL BEAMS  6 Hrs.
Introduction to Structural Steel Framing and Steel Spanning Systems - Steel section and Connections and Beams - Design of simple laterally supported beams using I - Sections and channel Section.

UNIT 3  DESIGNS OF COLUMNS  8 Hrs.
Steel sections and Connections in Columns : Compound and Composite Columns - Column Behaviour under axial load - end conditions - slenderness Ratio, permissible stress - Design using simple section - Design of column bases.

UNIT 4  TUBULAR TRUSS AND CONSTRUCTION  6 Hrs.
Trusses - Different types of tubular trusses, steel sections used for tubular trusses - Analysis and design of individual elements of tubular truss.

Max. 30 Hours

TEXT / REFERENCE BOOKS
4. Subramanian N., Steel Structures - Design And Practice, Oxford Publications, 2010

IS CODES
1. IS : 800: 2007 Code of practice for general construction in steel
2. IS 81 6: 1969 Code of practice for use of Metal Arch Welding for general construction in Mild steel

END SEMESTER EXAMINATION QUESTION PAPER PATTERN
(To be distributed uniformly among all the units)

Max. Marks : 100
Exam Duration : 3 Hrs.
PART A : 2 questions from each unit, each carrying 5 marks.  08 x 05 = 40 Marks
PART B : 2 questions from each unit with an internal choice, each carrying 15 marks.  04 x 15 = 60 Marks
**COURSE OBJECTIVE**
- Introduction to shell structures and folded plates, types and forms.

**UNIT 1**
**HIGH RISE STRUCTURES**

- Theory and principles for structural design of high rise structures
- Different loads and forces acting on high rise structures
- Frame: types of frames, planning layout of frames for high rise buildings
- Loads to be considered for design: methods of analysis for vertical and horizontal load
- Theory of portal method, cantilever method, substitute frame method
- Analysis of single bay frame by portal method for lateral loads and substitute frame method for vertical loads
- Long span structures: design issues, construction issues
- Long span girders: launching and erection details
- Segmental Construction

**UNIT 2**
**SHELLS AND FOLDED PLATES**

- Introduction to shell structures: various forms and classification of shells
- Introduction to folded plates: types of folded plates
- Elements of folded plates: structural action on folded plates (no design problems)

**UNIT 3**
**PNEUMATIC AND TENSILE STRUCTURES**

- Introduction to cable structures: principles of cable stayed bridges
- Design principle of Masts and Trestles (no design problems)

**UNIT 4**
**PRE-STRESSED CONCRETE**

- Introduction to pre-stressed concrete, concept and principles of pre-stressing, materials, types, methods of pre-stressing, pre-stressing Systems
- Layout of pre-stressed concrete beams, manufacturing of cast-in-situ and pre-cast members
- Application: Determination of resultant stresses at top and bottom of beam sections, estimation of loss of pre-stress of PSC members

**TEXT / REFERENCE BOOKS**
2. Ramaswamy G.S., Design and Construction of Concrete shell roofs, Krieger, 1984

**IS CODES**
1. IS 1343: 1980 Design of Pre-stressed Concrete

**END SEMESTER EXAMINATION QUESTION PAPER PATTERN**

(To be distributed uniformly among all the units)

Max. Marks: 100
Exam Duration: 3 Hrs.

PART A: 2 questions from each unit, each carrying 5 marks.
08 x 05 = 40 Marks

PART B: 2 questions from each unit with an internal choice, each carrying 15 marks.
04 x 15 = 60 Marks
COURSE OBJECTIVE

- To introduce the various aspects of different social, cultural forms and built environment.

UNIT 1  CULTURE AND ARTS  6 Hrs.

Role of art, art reality, perception, representation categories of art in terms of media and technique, paintings, sculpture, film- basic characteristics and development of each field, aspects of literature, performing arts - theatre, dance, music with examples from different cultural contexts.

UNIT 2  CULTURE AND SOCIETY  8 Hrs.

Evolution of civilization and cultures, groups, society, culture, environment and time, Levels of social organization & evolution of various social groups over time, human habitat to be related with culture and various contexts with examples in different eras.

UNIT 3  CONSTRUCTION AND CULTURE  8 Hrs.

Role of intuition, innovation, inventiveness, creativity and ingenuity in construction, the origin of the Architect and the master builder, emergence of the specialist, designer and builder relationship, culture of construction workers.

UNIT 4  BUILT ENVIRONMENT  8 Hrs.

Introduction to history and theory of built forms - Geographical location, politics, religion, materials and construction techniques with examples in different contexts. Understanding human cultural development, built form and cultural context, expression of the under lying value systems and relationship with the built form.

Max. 30 Hours

TEXT / REFERENCE BOOKS

2. Donald E. Mulligan, Kraig Knutson, Construction and Culture: A Built Environment, Stipes Pub, 2004

END SEMESTER EXAMINATION QUESTION PAPER PATTERN

(To be distributed uniformly among all the units)

Max. Marks : 100
Exam Duration : 3 Hrs.

PART A : 2 questions from each unit, each carrying 5 marks.  08 x 05 = 40 Marks

PART B : 2 questions from each unit with an internal choice, each carrying 15 marks.  04 x 15 = 60 Marks
COURSE OBJECTIVE

- To expose the student to different materials of construction, components and elements of buildings, and to get exposed to various building materials their properties and uses.

UNIT 1 INTRODUCTION

Introduction to building and various building materials, Definition of building, building types and Introduction to various types of Buildings as per NBC - Types of Building Materials - Natural and Manufactured.

UNIT 2 NATURAL BUILDING MATERIALS

- Soil: Definition of soil, Types of soil, soil classification, excavation techniques, test for soil, sand and its classification.
- Stone: Classification of rocks, various types of building stones and their physical properties, Quarrying techniques, Tests for stone, Deterioration & Preservation of stone, various stone finishes and joints.
- Timber: Classification, Physical properties and uses, defects in timber, conservation, seasoning, decay and preservation of timber and treatment of timber.

UNIT 3 CLAY AND BRICK

- Clay: properties, various uses of clay products like floor types, roof tiles, hollow clay blocks
- Brick: properties and uses, manufacturing process, types of bricks.

UNIT 4 LIME AND CEMENT

- Lime: properties and uses, manufacturing process
- Cement: ingredients, properties and uses, tests for cement, varieties of cement.

Max. 30 Hours

TEXT / REFERENCE BOOKS

4. All you wanted to know about soil stabilized mud blocks, HUDCO, New Delhi, 1989
7. Sushil Kumar, Building Construction, Standard publishers and Distributors, 2010

END SEMESTER EXAMINATION QUESTION PAPER PATTERN

(To be distributed uniformly among all the units)

Max. Marks : 100

Exam Duration : 3 Hrs.

PART A : 2 questions from each unit, each carrying 5 marks.

08 x 05 = 40 Marks

PART B : 2 questions from each unit with an internal choice, each carrying 15 marks.

04 x 15 = 60 Marks
COURSE OBJECTIVE

- To understand the traditions of vernacular buildings with environment, cultural and geographical settings and their transformation in building typologies with relevance to form, function and aesthetics.

UNIT 1 UNDERSTANDING VERNACULAR ARCHITECTURE 9 Hrs.

- Definition and classification of Vernacular architecture - Determinants of Vernacular Architecture - Vernacular Architecture as a process - Survey and study of Vernacular architecture: methodology, cultural and contextual responsiveness - approaches to the study of Vernacular architecture: an overview, Aesthetic, Architectural and Anthropological studies in detail - Vernacular principles in contemporary design.

UNIT 2 VERNACULAR ARCHITECTURE IN THE TROPICS 8 Hrs.

- Geographic belt between the Tropic of Cancer and the Tropic of Capricorn - land: geography, topographical influence, forestry, presence of water, Settlement Pattern and spatial planning, Building form & orientation, cultural aspects, symbolism, colour, art, construction materials techniques of the following - The Traditional Malay House, Houses in Thailand, Traditional Architecture in Indonesia - Architecture in Kerala (Houses, Theatres & Palaces), & Tamilnadu (Houses / palaces in Chettinad region) - Evolution of the Bungalow from the traditional hut in Bangla.

UNIT 3 VERNACULAR ARCHITECTURE IN THE DESERTS 7 Hrs.

- Settlement Pattern and spatial planning, Building form & orientation, cultural aspects, symbolism, colour, art, construction materials techniques of the following - Architecture in North Africa, Arabia and Middle East Europe - Deserts of Kutch and Rajasthan; Havelis of Rajasthan and Gujarat, Bohra Houses, Subterranean Architecture of Gujarat

UNIT 4 VERNACULAR ARCHITECTURE IN THE HILLS 6 Hrs.


Max. 30 Hours

TEXT / REFERENCE BOOKS

5. Kulbhushan Jain and Minakshi Jain, Mud Architecture of the Indian Desert, Aadi Centre, Ahmedabad, 1992

END SEMESTER EXAMINATION QUESTION PAPER PATTERN

(Max. Marks : 100, Exam Duration : 3 Hrs.)

PART A : 2 questions from each unit, each carrying 5 marks. 08 x 05 = 40 Marks

PART B : 2 questions from each unit with an internal choice, each carrying 15 marks. 04 x 15 = 60 Marks
COURSE OBJECTIVE

- To introduce the basics of art and enhance a sensitivity towards aesthetics.

UNIT 1 ART
Definition of Art, Theory of origin and evolution, Different Art Forms, Elements of Art-Line, Colour, Composition, Texture, Material, Medium, Content and Style.

UNIT 2 AESTHETICS

UNIT 3 ART CRITICISM
Different art critiques, Art, Imagination and beauty, study of the powerful, recurrent ideas concerning art, critical method and the nature of representation.

UNIT 4 INDIAN ART AND AESTHETICS

TEXT / REFERENCE BOOKS
1. Malcom Gee, Art criticism since 1900, Manchester University Press, 1993
2. Peter Lamarque and Stein Haugom, Aesthetics and the philosophy of art: The analytic tradition an anthology, Blackwell publishing Ltd., 2004
4. Rathan Parimoo and Sandip Sarkar, Historical development of contemporary Indian art, 1880 - 1947, Lalit kala akademi publishers, 2009

END SEMESTER EXAMINATION QUESTION PAPER PATTERN
(To be distributed uniformly among all the units)
Max. Marks : 100
Exam Duration : 3 Hrs.
PART A : 2 questions from each unit, each carrying 5 marks. 08 x 05 = 40 Marks
PART B : 2 questions from each unit with an internal choice, each carrying 15 marks. 04 x 15 = 60 Marks
COURSE OBJECTIVE
- To provide an overview of various building components in a simple load bearing structure from foundation to roof and to introduce the construction of temporary shelters using bamboo, straw bales, reeds, stabilized earth, thatch, polycarbonate sheets, clay tiles, etc.

UNIT 1 BASIC SHELTERS

UNIT 2 SIMPLE LOAD BEARING STRUCTURES - BRICK MASONRY
General introduction of various components of building from foundation to roof- Principles of load bearing Construction - simple brick footing - principles of bonding, English and Flemish bond, rat trap bond, T-Junctions (1 and 1 1/2, 2 bricks), L - Junctions, Cross junction (2 bricks), Brick piers, Cavity walls, rat trap bond, plinth and Sill details, brick arches and lintels, compound walls.

UNIT 3 SIMPLE LOAD BEARING STRUCTURES - STONE MASONRY
Stone foundation - random rubble/ ashlar, copings, stone piers, plinth and sill details, stone arches and lintels, stone fencing, Dhajji wall construction.

UNIT 4 FLOORING
Flooring: rammed earth, Natural stones like Shahabad, Tandur, Kota, Kadappa, Marble, Granite, etc., athangudi tiles, red oxide, terracotta tiles (Laying details), brick paving, Glazed ceramic tiles, Vitrified tiles - Finishes: pointing, grouting, pavement, mud plastering, PCC.

Max. 30 Hours

TEXT / REFERENCE BOOKS
5. All you wanted to know about soil stabilized mud blocks, HUDCO, New Delhi, 1989

END SEMESTER EXAMINATION QUESTION PAPER PATTERN
(To be distributed uniformly among all the units)

Max. Marks : 100
Exam Duration : 3 Hrs.
PART A : 2 questions from each unit, each carrying 5 marks. 08 x 05 = 40 Marks
PART B : 2 questions from each unit with an internal choice, each carrying 15 marks. 04 x 15 = 60 Marks
COURSE OBJECTIVE

- To explore the diverse factors that shaped the built forms during Neolithic, bronze and Iron Age.

UNIT 1  NEOLITHIC ARCHITECTURE  

UNIT 2  BRONZE AGE  
Ancient Egypt, history, religious and funerary beliefs and practices, biomorphism, monumentality, Tomb Architecture: Evolution of the pyramid from Mastaba, Pyramids-Giza, Temple Architecture, Temple of Ammon Ra-Karnak, Temple of Abu Simbel.

UNIT 3  EARLY IRON AGE  

UNIT 4  MIDDLE IRON AGE  
Mauryan dynasty, Asokan pillar, Development of Mahayana Buddhism, Symbolism, Sanchi complex, Amaravati stupa, Chaitya halls and Viharas, Lomas Rishi Cave, Rani Gumphra- Udaigiri, Takht-i- Bahai, Chaitya halls at Karle, Baja, Ajanta and Ellora caves.

TEXT / REFERENCE BOOKS

END SEMESTER EXAMINATION QUESTION PAPER PATTERN
(To be distributed uniformly among all the units)

Max. Marks : 100
Exam Duration : 3 Hrs.

PART A : 2 questions from each unit, each carrying 5 marks.  
08 x 05 = 40 Marks

PART B : 2 questions from each unit with an internal choice, each carrying 15 marks.  
04 x 15 = 60 Marks
COURSE OBJECTIVE

To understand the basic principles of water supply and sanitation and to enable them to understand the piping system (pipe above ground and underground) for different types of buildings.

UNIT 1 WATER SUPPLY ENGINEERING

8 Hrs.


UNIT 2 PLUMBING

6 Hrs.

House Drainage, Domestic Sanitary Installations, traps, various Systems of House Plumbing, Rain water harvesting and systems, Drainage of Sub-soil water, Layout of Drainage system, connection to sewers, Standards for Sanitary Conveniences.

UNIT 3 SEWAGE TREATMENT

8 Hrs.

Primary treatment-Screens, Grit Chambers, Plain Sedimentation tanks or Skimming Tanks & Settling Tanks or Clarifiers, Secondary treatment - Filtration - Contact Beds, Intermittent & Trickling Filters and Activated Sludge Process, Disinfection, Disposal of Sewage - Disposal of sewage from isolated buildings - Septic Tanks, Disposal of sewage in Villages - water recycling.

UNIT 4 ENVIRONMENTAL SANITATION

8 Hrs.

Environmental sanitation - the importance of sanitation classification of waste, disposal of refuse, composition, collection, conveyance of refuse disposal systems in towns & recovery of refuse Sewerage system - sewage - definitions and importance of quantity of sewage, storm water and design of sewers-systems of sewerage-dry and water carriage systems, patterns of collection, sewers - materials used, shapes of sewers, construction & maintenance of sewers, sewer joints, sewer appurtenances.

Max. 30 Hours

TEXT / REFERENCE BOOKS


END SEMESTER EXAMINATION QUESTION PAPER PATTERN

(To be distributed uniformly among all the units)

Max. Marks : 100

PART A : 2 questions from each unit, each carrying 5 marks.

PART B : 2 questions from each unit with an internal choice, each carrying 15 marks.

Exam Duration : 3 Hrs.

08 x 05 = 40 Marks

04 x 15 = 60 Marks
COURSE OBJECTIVE
- To establish the process involved in analyzing a site and its parameters in evolving a site responsive design.

UNIT 1 PRINCIPLES OF SITE PLANNING 8 Hrs.
Definition of plot, site, region, site planning, units of measurements-Factors influencing a site-Onsite and offsite factors-Topography, hydrology, soils, vegetation, climate, surface drainage, accessibility, size and shape, infrastructures available- sources of water supply and means of disposal system-Organization of vehicular and pedestrian circulation, types of roads, hierarchy of roads, networks, patterns, road widths, turning radii, street intersections- movement material, design consideration- Site zoning regulations- Land use regulations-Development control rules of local bodies- building setbacks- FSI- FAR-plot coverage- OSR- parking regulations and standards.

UNIT 2 SITE SELECTION AND ANALYSIS 8 Hrs.
Study of microclimate: Influence of vegetation, wind, landforms and water as modifier of microclimate-Site selection process- Site selection criteria for housing development, commercial and institutional projects- Importance of site analysis- systemic process of site analysis- site suitability analysis- Analysis of natural, cultural, aesthetic factors and visual characteristics- Site analysis diagram- matrix analysis, composite analysis- Grading Contours-contour maps using GIS- slope Analysis, grading process, grading criteria.

UNIT 3 SITE DESIGN AND SITE DEVELOPMENT 8 Hrs.
Site context- contextual analysis responding to programmatic, functional, environmental, aesthetic factors. Integrated approach to design of building and open spaces-relationship of space and mass, enclosure and spatial perception, spatial enclosure- Sense of space- Introduction to land use mapping, existing master plans- types of plans-site layout- Development of Master plan- Site plan.

UNIT 4 CASE STUDIES 6 Hrs.
Data Collection- Detailed analysis of various factors influencing the site- Preparation of Site Analysis diagram-Analysis of built and open space relationship- concept development- circulation network analysis- Site Development Plan for projects in hilly areas, Housing development, Commercial, institutional spaces and factory buildings.

Max. 30 Hours

TEXT / REFERENCE BOOKS
2. Edward T.White, Site Analysis: Diagramming information for Architectural design, 1983
5. Punmia B.C, Surveying, Volume1, Standard Book House, New Delhi, 1983

END SEMESTER EXAMINATION QUESTION PAPER PATTERN
(To be distributed uniformly among all the units)
Max. Marks : 100
Exam Duration : 3 Hrs.
PART A : 2 questions from each unit, each carrying 5 marks.
PART B : 2 questions from each unit with an internal choice, each carrying 15 marks.
08 x 05 = 40 Marks
04 x 15 = 60 Marks
COURSE OBJECTIVE
- To comprehend the role of climate in shaping a climate responsive built form.

UNIT 1 CLIMATE AND COMFORT 6 Hrs.

UNIT 2 CLASSIFICATION OF CLIMATE 7 Hrs.
Koppen Climate Classification System - Atkinson climate classification - characteristics of tropical climates - warm humid climate, warm humid island climate, hot dry desert climate, hot dry maritime desert climate, composite / monsoon climate, tropical upland climate, climate graph.

UNIT 3 THERMAL PROPERTY OF BUILDING ENVELOPE 10 Hrs.

UNIT 4 VENTILATION AND DAYLIGHTING 7 Hrs.
Functions of ventilation - stack effect due to the thermal forces, wind velocity - wind rose, wind pressure - Air movement through buildings - Air movement around buildings - factors affecting air flow, Wind shadow etc. - Thermally induced air currents.

Max. 30 Hours

TEXT / REFERENCE BOOKS
2. BIS, SP 41: Handbook on Functional Requirements of Buildings (Other than Industrial Buildings), 1987

WEBSITES
1. http://koeppen-geiger.vu-wien.ac.at

END SEMESTER EXAMINATION QUESTION PAPER PATTERN
(To be distributed uniformly among all the units)
Max. Marks : 100
Exam Duration : 3 Hrs.
PART A : 2 questions from each unit, each carrying 5 marks. 08 x 05 = 40 Marks
PART B : 2 questions from each unit with an internal choice, each carrying 15 marks. 04 x 15 = 60 Marks

B.Arch 16 REGULATIONS 2015
COURSE OBJECTIVE
- To introduce the students to various assembly systems such as doors, windows and ventilators and to explore various possibilities in joineries through carpentry workshops.

UNIT 1  MANUFACTURED BUILDING MATERIALS  8 Hrs.
   Classification of glass - Composition of glass, its properties and uses - Various types of glass e.g. plate glass, figured glass, float glass (toughened glass, laminated glass), tinted glass, reflective glass, wired glass, foam glass, glass block, fiber glass, float glass, obscured glass etc - Decorative glass, insulated glass ( sound, heat ) - properties and application in building industry, glazing and energy conservation measures.

UNIT 2  TIMBER IN CONSTRUCTION  6 Hrs.
   Timbers -Methods of construction using natural timber in joinery works including methods of fixing and options for finishing - Exercises involving the above through drawings - Introduction to simple trusses - Mangalore tiles, madras terrace roofing, - fixing details.

UNIT 3  TIMBER JOINERIES  12 Hrs.
   Different types and methods of fixing - Windows (panelled, louvered, glazed, pivoted and sliding windows) - Doors (panelled, glazed, sliding, folding, louvered and pivoted) - Ventilators (top hung, louvered, and glazed) - Hardware for doors, windows and ventilators and application for a simple structure with schedule of joinery.

UNIT 4  PROTECTIVE COATINGS  4 Hrs.
   Paints and Varnishes - Composition, manufacture and properties and uses of ordinary paints, enamels, distemper, plastic emulsion, special paints- fire retardant, luminous and bituminous paints, defects in paints-Varnishes and wood preservatives, method of distempering wall surfaces, painting of timber and iron work. Composition, characteristics, preparation, Primer, Painting different surfaces.

Max. 30 Hours

TEXT / REFERENCE BOOKS

END SEMESTER EXAMINATION QUESTION PAPER PATTERN
(To be distributed uniformly among all the units)
Max. Marks : 100
Exam Duration : 3 Hrs.
PART A : 2 questions from each unit, each carrying 5 marks. 08 x 05 = 40 Marks
PART B : 2 questions from each unit with an internal choice, each carrying 15 marks. 04 x 15 = 60 Marks
COURSE OBJECTIVE

- To understand the development of Architecture during the late Iron Age and medieval period.

UNIT 1   LATE IRON AGE
Republic and empire, Roman religion, Urban planning, Art and Architecture, Forums and Basilicas, principles of reuse in construction, Enclosure, orders and Manipulation of space Examples- Forum Romanum, Pantheon, Colosseum, Circus Maximus, Thermae of Caracalla.

UNIT 2   EARLY MIDDLE AGE

UNIT 3   MIDDLE AGE

UNIT 4   LATE MIDDLE AGE

Max. 30 Hours

TEXT / REFERENCE BOOKS
6. Percy Brown, Indian Architecture (Hindu Period), Taraporevala and Sons, Bombay, 1983

END SEMESTER EXAMINATION QUESTION PAPER PATTERN
(To be distributed uniformly among all the units)

Max. Marks : 100
Exam Duration : 3 Hrs.
PART A : 2 questions from each unit, each carrying 5 marks. 08 x 05 = 40 Marks
PART B : 2 questions from each unit with an internal choice, each carrying 15 marks. 04 x 15 = 60 Marks
COURSE OBJECTIVE
- To understand the basic principles of physics of electricity and light and to enable them to understand the electrical layout with appropriate cross section of wires and luminance.

UNIT 1  INTRODUCTION TO ELECTRICITY  8 Hrs.
Electrical supply system, Supply voltages & classification, voltage tolerance, cables, voltage drop-Electric installations: Relationship between phase & line, voltage and currents. Electrical installation: Principles & practices, Distribution, circuits, building Wiring, use of single phase, two phase, three phase etc. System of connection of appliances & accessories, service connections, generators, invertors - Case studies on electric core.

UNIT 2  ELECTRICITY IN BUILDINGS  8 Hrs.
Main Boards & sub distribution boards for multi storied buildings, Standby power supply distribution, transformers, safety methods, principles and practices- Earthling: definition, types, lighting arrestor and I.S.I specifications planning electrical layout and wiring for buildings. Communication networking and electrical layout for special buildings like Exhibitions, theatres and stadiums - Designing the electrical layout for a building, layout, factors and constraints.

UNIT 3  INTRODUCTION TO LIGHTING  6 Hrs.
Characteristics of light, visual task, factors affecting visual task, synthesis of light, sources Measurements of lighting, Intensity, flux, Work surface, laws of illumination, MSCP, MHCP, colour temperature, colour rendering, space height ratio, depreciation factor, utilization factor day light factor, Natural lighting in architecture.

UNIT 4  LIGHTING  8 Hrs.
Artificial Lighting: Requirements & design, type of lamps, fixtures, preparing a lighting scheme with legend, glare, lighting schemes, types of lighting arrangements, Lumen’s method of lighting, luminaire arrangement-Specific Lighting: Flood Lighting, concealed lighting, outdoor lighting, mood lighting, accent lighting, LEDs-Lighting for stores, offices, residences, minimum level of illumination required for physically challenged and visually challenged.

Max. 30 Hours

TEXT / REFERENCE BOOKS

END SEMESTER EXAMINATION QUESTION PAPER PATTERN
(To be distributed uniformly among all the units)
Max. Marks : 100
Exam Duration : 3 Hrs.
PART A : 2 questions from each unit, each carrying 5 marks. 08 x 05 = 40 Marks
PART B : 2 questions from each unit with an internal choice, each carrying 15 marks. 04 x 15 = 60 Marks

B.Arch  19  REGULATIONS 2015
COURSE OBJECTIVE

- To integrate the climate data in the design of built environment.

UNIT 1  SOLAR CHARTS AND SHADING DEVICES  10 Hrs.
- Introduction to Sun path diagrams - Angles of Incidence - Horizontal and Vertical Shadow angles - Shadow Mask
- Exercises on plotting shadow angles on sun-path diagrams, Design of solar shading devices for different orientations.

UNIT 2  DESIGN STRATEGY FOR FLOORS, WALLS AND ROOFS  6 Hrs.
- Building skin thickness - mass surface absorptance - daylight reflecting surfaces - exterior surface colour - floors, walls and roofs - size and orientation, location, materials, shape and colours and layers (windows) - insulation outside - external and internal shading - glass types.

UNIT 3  PASSIVE DESIGN STRATEGIES  7 Hrs.

UNIT 4  DESIGN WITH CLIMATE  7 Hrs.
- Climate data analysis for various zones - hot and dry - hot and humid - warm and humid - moderate - cold and cloudy - cold and dry - composite - climatic context - landscape and vegetation - solar radiation - mean temperature - relative humidity - precipitation - winds - sky conditions - miscellaneous.

Max. 30 Hours

TEXT / REFERENCE BOOKS

WEBSITES

END SEMESTER EXAMINATION QUESTION PAPER PATTERN

(To be distributed uniformly among all the units)

Max. Marks : 100
Exam Duration : 3 Hrs.
PART A : 2 questions from each unit, each carrying 5 marks. 08 x 05 = 40 Marks
PART B : 2 questions from each unit with an internal choice, each carrying 15 marks. 04 x 15 = 60 Marks
COURSE OBJECTIVE

- To expose the students to framed RCC structures and their construction techniques including the damp and water proofing methods.

UNIT 1 CONCRETE AND ITS APPLICATIONS 8 Hrs.

Introduction to reinforced cement concrete, suitability requirements for aggregates, grading of aggregates, reinforcement, admixture - Mix proportioning, batching, mixing, transporting, placing, compaction, Ready Mix Concrete, curing formwork - Quality control, tests for concrete, joints in concrete including role of expansion joint, vacuum dewatering, concrete finishes, Centring, Scaffolding, formwork.

UNIT 2 FRAMED STRUCTURES 10 Hrs.

RCC Columns and Foundations - Different Types of foundations - Detailing of columns - Shallow (Mat and Raft foundation), spread (Square, rectangle, circle, combined, strip and ring foundation), deep (pile, piers, caissons) - Super Structure - Beams, sill level, detailing of apertures (lintels, sunshades, arches etc.) - Roofs (one way slabs, 2-wayslab, continuous, flat slab, cofier slab etc.) – Staircases.

UNIT 3 DAMP AND WATER PROOFING OF CONCRETE STRUCTURES 6 Hrs.

Construction methods for damp-proofing and water proofing for walls, roofs, basements, retaining walls, swimming pools, sump, terrace floor details - Water tanks, terrace gardening, etc. - Exercises of the above through case studies and drawings. Emulsified asphalt, vinyl, epoxy resins, chemical admixtures, bentonite clay etc. - Properties.

UNIT 4 SPECIAL CONCRETE AND ITS APPLICATIONS 6 Hrs.

Construction methods for different types of Special Concrete like Pre and post tensioning and precast concrete - Ferro cement, Lightweight concrete, high density, fiber reinforced polymer concrete. Detailing of Ferro cement water tanks, toilet units, slabs, waffle slab, filler slab, funicular shell, and other precast systems. Design and detailing of building materials and components developed by research organizations like CBRI, SERC, NBO, and BMTPC.

Max. 30 Hours

TEXT / REFERENCE BOOKS

6. Shetty M.S, Concrete Technology, S. Chand and company, New Delhi, 1986

END SEMESTER EXAMINATION QUESTION PAPER PATTERN

(To be distributed uniformly among all the units)

Max. Marks : 100
Exam Duration : 3 Hrs.
PART A : 2 questions from each unit, each carrying 5 marks.
08 x 05 = 40 Marks
PART B : 2 questions from each unit with an internal choice, each carrying 15 marks.
04 x 15 = 60 Marks
COURSE OBJECTIVE
- To study the Architectural development and character of Indo Islamic and renaissance period.

UNIT 1  EARLY INDO ISLAMIC PERIOD  8 Hrs.
Advent of Islam in Indian subcontinent, Overview of Development based on political history, Establishment of Delhi Sultanate, Evolution of Architecture under Slave, Khalji, Tughlaq, Sayyed and Lodi dynasties with important examples. Shift of power to the provinces and evolution of Regional Architecture with Examples- Bengal, Gujarat and Malwa, Deccan- Bijapur and Gulbarga with examples.

UNIT 2  INDO ISLAMIC PERIOD  6 Hrs.
Mughals in India, Evolution of Architecture and Outline of Mughal cities, gardens, shape grammar and fractals, Babur, Humayun, Akbar, Jahangir, Shahjahan, Aurangazeb- Important examples, Decline of Mughal Empire - Cross cultural influences across India and Secular Architecture of the princely states like Oudh and Vijayanagar.

UNIT 3  RENAISSANCE  8 Hrs.

UNIT 4  RENAISSANCE CLASSICISM  8 Hrs.
Outline the Renaissance in transition, Works of Michael Angelo - Laurentian Library (St Lorenzo, Florence); St. Peter's, Rome Outline the Architectural character - St. Paul's Cathedral, Chateau De Chambord; The Louvre, Paris-Study of the life and contribution of Sir Christopher Wren - Sheldonian Theatre (Oxford); St. Paul’s Cathedral (London)- rococo Architecture - interiors – hotels.

Max. 30 Hours

TEXT / REFERENCE BOOKS
3. Percy Brown, Indian Architecture (Islamic Period), Taraporevala and Sons, Bombay, 1983
5. Volwahsen, Living Architecture, India (Islamic Period), Macdonald & Co, 1969

END SEMESTER EXAMINATION QUESTION PAPER PATTERN
(To be distributed uniformly among all the units)
Max. Marks : 100
Exam Duration : 3 Hrs.
PART A : 2 questions from each unit, each carrying 5 marks. 08 x 05 = 40 Marks
PART B : 2 questions from each unit with an internal choice, each carrying 15 marks. 04 x 15 = 60 Marks
COURSE OBJECTIVE

- To understand the basic principles of physics of sound and enable them to apply the knowledge in various buildings and to explore the means of vertical transportation systems in high rise buildings.

UNIT 1 INTRODUCTION 8 Hrs.
Characteristics of sound-reflection, transmission, diffraction, absorption coefficient, reverberation time, geometric acoustics, free field, octave band, Sabine's formula, reverberation time calculation - Sound Absorption - acoustic materials & the properties, variable sound absorbers, prefabricated sound absorbing panels, suspended sound absorbers.

UNIT 2 ACOUSTICS 6 Hrs.
Outdoor noise - built form, orientation, earth berms, sound shadow region-Indoor noise-measures to prevent sound transmission, leak, impact noise, false ceiling integrated systems & sound isolation.

UNIT 3 DESIGN OF PERFORMING SPACES 8 Hrs.
Design of auditoriums: placing auditorium floors and balcony, stage house details, rear wall treatment, orchestra pit, acoustical defects, sound amplifying systems, Design of Concert halls, open air theatre and Broadcasting studios.

UNIT 4 ELEVATORS AND ESCALATORS 8 Hrs.
Types of Lifts - Basic dimension, Traffic analysis, Roundtrip time, lift pit, machine room, types, lift operation, arrangement of lifts, quality & quantity of service - Escalators - basic dimension, Characteristics, arrangement and disposition-Conveyors and Walk ways.

Max. 30 Hours

TEXT / REFERENCE BOOKS

END SEMESTER EXAMINATION QUESTION PAPER PATTERN

(To be distributed uniformly among all the units)

Max. Marks : 100
Exam Duration : 3 Hrs.

PART A : 2 questions from each unit, each carrying 5 marks.
08 x 05 = 40 Marks

PART B : 2 questions from each unit with an internal choice, each carrying 15 marks.
04 x 15 = 60 Marks
COURSE OBJECTIVE
- To expose the basic concepts / theories of psychology relevant to architecture and the relationship between man and the environment.

UNIT 1 INTRODUCTION
Different perspectives on Urban Society - The concept of community, function and types. History of Urban Communities, Development, The fall of Urban Society. Introduction to environmental psychology, its importance in the field of architecture, understanding the principles of psychology, the roots and edges of environmental psychology- Theories and approaches in environmental psychology.

UNIT 2 URBAN METROPOLITAN SOCIETY
Development of Urban Metropolitan Society, Projections of Urban population, Growth of Urban Areas, Dynamics of Metropolitan population growth, Contemporary Urban location theories, Lifestyle in city and suburbs, Urban Politics. The city, urban morphology, movement as motivating factor in design, monuments and dwelling, genius loci, street and square, urban conservation, responsive environments, pedestrian spaces and plazas, social life of small urban spaces, new urbanism, landscape urbanism, sustainable urban form.

UNIT 3 COMMUNAL FUNCTIONS - HOUSING, TRANSPORTATION AND HEALTH

UNIT 4 PHYSICAL ENVIRONMENT AND HUMAN BEHAVIOUR

Max.30 Hours

TEXT / REFERENCE BOOKS
2. Robert G., Environmental Psychology: Principles and Practice, Optimal books, 2002
7. Amos Rapoport, Human aspects of urban form: Towards a Man - Environment approach to urban form and design, Oxford Pergamon press, 1997

END SEMESTER EXAMINATION QUESTION PAPER PATTERN
(To be distributed uniformly among all the units)
Max. Marks : 100
Exam Duration : 3 Hrs.
PART A : 2 questions from each unit, each carrying 5 marks. 08 x 05 = 40 Marks
PART B : 2 questions from each unit with an internal choice, each carrying 15 marks. 04 x 15 = 60 Marks
COURSE OBJECTIVE
To introduce the methods of construction of building components in the interiors with regards to partitioning and panelling, thermal and sound insulation, and non-structural internal staircases.

UNIT 1 MANUFACTURED BUILDING MATERIALS 8 Hrs.
Plastic: Properties, types and uses as building material - Polymerisation, thermoplastics, thermostetting plastics, elastomers.- Plastics in construction (polythene, poly propylene, polyvinyl chloride, PVC poly-structure, Poly ethylene (Low density and high density), polycarbonate, acrylic flooring, PVC tiles), roof lights, domes, and handrails. Timber: Man-made timber products such as plywood, block boards, engineered wood etc. - Non Ferrous Metals - Different uses of Aluminium - Properties, Finishes (powder coating and anodizing) - Copper Alloys: Properties and uses of Brass & Bronze.

UNIT 2 JOINERY USING ALUMINIUM AND UPVC 6 Hrs.
Aluminium, and UPVC doors, windows and ventilators - Methods of construction - typical details showing fixing of framing members, glass panes, roller position (in case of sliding window), hinge arrangement (in casement window), locking arrangement and related hardware. Cladding - Construction methods using Aluminium cladding (includes other ACP materials), shop front handrails - Structural Glazing, curtain walls.

UNIT 3 PARTITIONS AND PANELLING 8 Hrs.
Partitions And Panelling (Timber, Aluminium, UPVC) - fixed partitions, sliding/folding partitions, wall panelling - Exercises of the above through drawings and case studies. Thermal Insulation- Heat transfer and heat gain by materials -vapour barriers and rigid insulation. Blanket, poured and reflective insulation - properties and uses of (spun glass, foamed glass, vegetable fibers, mineral fibers, foamed plastics, and vermiculite and glass fibres) - Cold Storage. Sound insulating and isolating materials, its types and properties - treatment for interior surfaces (Wall, Floor and ceiling) in Auditorium and other sound sensitive spaces.

UNIT 4 FALSE CEILING AND STAIRCASES (COMPOSITE MATERIALS) 8 Hrs.
False Ceiling - terminology and details - soft boards, acoustic boards, Gypsum (manufacture, properties and uses, hybrid gypsum) on timber and steel or aluminium frame work, details of lighting and air conditioning grid panels, concealed lighting - under deck insulation Staircase - Methods of construction of staircases (timber, steel, glass, composite materials) - basic principles, finishes for staircases.

Max. 30 Hours

TEXT / REFERENCE BOOKS

END SEMESTER EXAMINATION QUESTION PAPER PATTERN
(To be distributed uniformly among all the units)
Max. Marks : 100
Exam Duration : 3 Hrs.

PART A : 2 questions from each unit, each carrying 5 marks. 08 x 05 = 40 Marks
PART B : 2 questions from each unit with an internal choice, each carrying 15 marks. 04 x 15 = 60 Marks
COURSE OBJECTIVE
- To introduce the various movements and philosophies which shaped the early modern architecture and the various concepts of architects.

UNIT 1  ARCHITECTURE IN COLONIAL INDIA  8 Hrs.

UNIT 2  EARLY MODERN ERA  6 Hrs.

UNIT 3  MODERN ERA  8 Hrs.
   Arts and Crafts Movement - Art Nouveau and the works of Gaudi, Horta, Guimard, Macintosh, City Beautiful movement, Garden City movement, Skyscrapers, Bauhaus, CIAM, Cubism, Constructivism and its influence on Architecture, Adolf Loos and the Arguments on Ornamentation, Futurist Movement, Manifestos and the works of Sant'Elia Expressionism and the works of Mendelson, Taut, Polzeig, Destijl: Ideas and works, Utopian ideas of Paulo soleri.

UNIT 4  INSTITUTIONS, PHILOSOPHIES AND THE MASTERS  8 Hrs.

TEXT / REFERENCE BOOKS
3. Manfred Taferli / Francesco Dal co., Modern Architecture, Faber and Faber, Electa, 1980

END SEMESTER EXAMINATION QUESTION PAPER PATTERN
(To be distributed uniformly among all the units)
Max. Marks : 100
Exam Duration : 3 Hrs.
PART A : 2 questions from each unit, each carrying 5 marks. 08 x 05 = 40 Marks
PART B : 2 questions from each unit with an internal choice, each carrying 15 marks. 04 x 15 = 60 Marks
COURSE OBJECTIVE

- To develop an understanding of the advanced building services such as Air conditioning and fire safety and their application in the design of multi-storey buildings.

UNIT 1 INTRODUCTION TO AIR CONDITIONING SYSTEMS

Introduction to A/C conditions, basic of refrigeration systems, components of refrigeration system, compressor, condenser, control devices, evaporator, filters cooling tower. Vapour compression cycle. Concepts of cooling load, calculation of cooling load-conductivity, transmission heat load, internal heat gain, concepts of zoning, room air distribution-types of outlets.

UNIT 2 AIR CONDITIONING SYSTEMS

Types of window and split a/c. Package units, Factory made and split units, centralized plants and chilled water plants. Comparison of various systems-Space requirements for A/c units, AHU’s & a/c plant, ducting, testing and maintenance on ducts and pipes-Designing the Built Environment and selecting the materials and elements for energy efficient Air Conditioning, Protection of Ozone Layer.

UNIT 3 FIRE AND SERVICE CORES

Introduction, fire triangle, methods of fighting fire, Classifying fire, objectives of fire safety, Fire Hazards, fire load, Fire resistance grading, Grading for buildings, fire safety decision tree, Protection for structural components-Firefighting equipment - alarms, detectors, suppression systems, fire point ,hydrant & hoses - Firefighting services-Site planning, Fire protection concepts in buildings, design of fire escape routes, design of egress, Requirements for fighting fire in high rise buildings - staircase enclosure, lifts & lifts enclosures, fire lift, basements, air conditioning, dampers. Service cores - Definition, design approach, functions of service core, service core types and placements-Service cores-toilets, elevator, electrical, air conditioning, staircases, exits & life safety considerations.

UNIT 4 SERVICE INTEGRATION

Integration of services - Water pump monitoring & control Electrical - power monitoring - fire alarm system - firefighting system and monitoring - safety and security systems - FAS, PAS - access control system - firefighter telephone system - CCTV surveillance system - Control of Computerized HVAC Systems - IBMS system and its components.

TEXT / REFERENCE BOOKS

1. Thomas D.Eastop and William Edward Watson, Mechanical services for buildings, Longman scientific and technical publisher, 1992
2. Paul Lang, Principles of Air Conditioning, Delmar publisher, 1995

END SEMESTER EXAMINATION QUESTION PAPER PATTERN

(To be distributed uniformly among all the units)

Max. Marks : 100
Exam Duration : 3 Hrs.
PART A : 2 questions from each unit, each carrying 5 marks. 08 x 05 = 40 Marks
PART B : 2 questions from each unit with an internal choice, each carrying 15 marks. 04 x 15 = 60 Marks

B.Arch 27 REGULATIONS 2015
COURSE OBJECTIVE
- To introduce the idea of Architecture as enmeshed in the society and a product of larger socio-cultural issues and practices.

UNIT 1 INTRODUCTION TO DESIGN 6 Hrs.
Definition of Design, Understanding of Design, Purpose and nature of good design, evaluation of design, types of Design, classification, role of designer, Context for Architectural design problems, design process, stages in the design processes, from different considerations - Broadbent, Christopher Alexander, Wade.

UNIT 2 DESIGN PROBLEMS AND DIRECTIONS 8 Hrs.
Context for the rise of the Design Methodology Movement, Different approaches in design, problem solving or intuitive, formulation of problems, nature of creative design problems, goals in design, different types of designs and the thrust given to the various solutions.

UNIT 3 DESIGN THINKING 8 Hrs.
Understanding the terms creativity, imagination etc. Theories on thinking, convergent & divergent thinking, lateral & vertical thinking, six hat thinking by Edward de Buno. Creative techniques like checklists, brainstorming etc, design puzzles & traps, blocks in creative thinking. Introduction to various theories in Architecture such as aesthetic theory, proxemic theory. Theory related to human behaviour and environmental design.

UNIT 4 CHANNELS TO CREATIVITY 8 Hrs.
Types of concepts, process of creativity, tangible and intangible channels to creativity in Architecture - the obscure, metaphors, transformation, paradox, precedents, nature, association with other arts, literal interpretation, materials, geometry, origami, literature and poetry etc. philosophies of famous architects.

Max. 30 Hours

TEXT / REFERENCE BOOKS
1. Christopher Alexander, Pattern Language, Oxford University Press, 1977

END SEMESTER EXAMINATION QUESTION PAPER PATTERN
(To be distributed uniformly among all the units)
Max. Marks : 100 Exam Duration : 3 Hrs.
PART A : 2 questions from each unit, each carrying 5 marks. 08 x 05 = 40 Marks
PART B : 2 questions from each unit with an internal choice, each carrying 15 marks. 04 x 15 = 60 Marks
COURSE OBJECTIVE
- To introduce the role of steel in Architectural Construction and to understand Architectonic features of long span structures

UNIT 1  MANUFACTURED BUILDING MATERIALS - STEEL  6 Hrs.
Iron: brief study on manufacture, composition, properties and uses of cast iron, wrought iron, pig iron - Steel: Composition, Properties, anticorrosive measures, mechanical and heat treatment of steel - Market forms of steel: Steel for Reinforcement - Hot rolled bars, CTD Bars, TMT bars, Welded wire fabrics; Steel for Pre stressed concrete; Structural steel; Stainless steel, steel alloys, current developments.

UNIT 2  STEEL DOORS/ WINDOWS/ VENTILATORS & TRUSSES  8 Hrs.
Different types of doors and windows (open able, sliding etc., methods of construction using steel)- Design and detailing of steel rolling shutter. Design and detailing of steel roof trusses (north-light, tubular, butterfly truss etc.,) including construction methods for roof covering using steel, FRP, polycarbonate, cement fibre sheets etc. Visit to steel structure fabrication site.

UNIT 3  LONG SPAN STRUCTURES  8 Hrs.
Long span roofs using different types and materials (stadium and auditoriums) .Methods of construction using cable structure-principle of cable stayed bridges -space frame structures. Methods of construction using Shell structures and folded plates - various forms and classification of shells and types of folded plates.

UNIT 4  ARCHITECTURAL DETAILING - LARGE GATHERING SPACES  8 Hrs.

TEXT / REFERENCE BOOKS
3. Ramaswamy G.S., Design and Construction of Concrete shell roofs, Krieger, 1984

END SEMESTER EXAMINATION QUESTION PAPER PATTERN
(To be distributed uniformly among all the units)
Max. Marks : 100
Exam Duration : 3 Hrs.
PART A : 2 questions from each unit, each carrying 5 marks. 08 x 05 = 40 Marks
PART B : 2 questions from each unit with an internal choice, each carrying 15 marks. 04 x 15 = 60 Marks
COURSE OBJECTIVE
- To introduce the various elements and principles of landscape design, landscape planning and construction techniques to the students thereby make them understanding the application of landscape concepts into design.

UNIT 1 INTRODUCTION TO LANDSCAPE ARCHITECTURE
- Introduction to Landscape Architecture - its scope and role in Architecture and Planning-Landscape Interpretation-Landscape as nature, habitat, Artefact, system, problem, wealth, ideology, history, place and aesthetic-Hard and soft landscape elements-Functional and aesthetic consideration in design-Landscape Planning, Landscape Conservation, Urban Landscape.

UNIT 2 HISTORY OF LANDSCAPE ARCHITECTURE

UNIT 3 LANDSCAPE DESIGN AND CONSTRUCTION
- Basic principles of Landscape Design and the Visual composition-Plant selection-Structural characteristics of plants-Creating spaces with plants-Identification of native trees and Indian shrubs-Elements in Landscape design-Landscape engineering-Cutting and filling-Grading-preserving walls-Building of verticals, walls, fencing, pools etc-pavements-ponds-fountains-sculpture-steps-ramps-underwater construction-precautions to river bank and coastal constructions.

UNIT 4 URBAN LANDSCAPE
- Lighting in garden and ponds-Avenue lighting-Terrace gardens-Terrace pool-Rock garden-Landscaping for Residential areas, Children park and Institutional building-Landscape design for water front as road landscaping-aveneues, Roof gardens-Landscape design of small project of dwelling level and neighbourhood level including paving and street furniture design (area of 2000 to 3000 sq. metres).

Max. 30 Hours

TEXT / REFERENCE BOOKS
1. Geoffrey and Susan Jellicoe, The landscape of Man, Thames and Hudson, 1987

END SEMESTER EXAMINATION QUESTION PAPER PATTERN
(To be distributed uniformly among all the units)

Max. Marks : 100
Exam Duration : 3 Hrs.
PART A : 2 questions from each unit, each carrying 5 marks. 08 x 05 = 40 Marks
PART B : 2 questions from each unit with an internal choice, each carrying 15 marks. 04 x 15 = 60 Marks
COURSE OBJECTIVE
- To introduce the importance of specification for quality control in design and construction. Helping the students in preparation of bill of quantities for the quantity estimate in construction, the calculation of rough and detailed estimation for the budgeting in construction projects.

UNIT 1  SPECIFICATION AND SPECIFICATION WRITING  6 Hrs.
Necessity & importance of specification, Types of Specification - Specification writing, Principles of Specification writing - Important aspects of the design of specification - sources of information - Classification of Specification - Brief Specification for 1st class, 2nd class, 3rd class building - Detailed specification for earthwork excavation, plain cement concrete, Reinforced concrete, first class and second class brickwork, Damp proof course, ceramic tiles/marble flooring and dado, woodwork for doors, windows frames and shutters, cement plastering, painting & weathering course in terrace.

UNIT 2  ESTIMATION  10 Hrs.
Types & purpose of estimation - Approximate estimate of buildings - Bill of quantities - Factors to be considered - Principles of measurement and billing, contingencies, measurement of basic materials like brick, wood, concrete and unit of measurement for various items of work - abstract of an estimate - Deriving detailed quantity estimates for various items of work of a building like earthwork excavation, brick work, plain cement concrete, Reinforced cement concrete works, wood work, iron works, plastering, painting, flooring, weathering course for a single storied building.

UNIT 3  RATE ANALYSIS  8 Hrs.
Analysis of rates for main items of work using current market rates for materials, labour, plants, tools and equipment, transportation, handling, storage and contractor’s profit - Preparing rate analysis for P.C.C, R.C.C, brick work, stone work, plastering and finishes.

UNIT 4  ECONOMICS AND ARCHITECTURE  6 Hrs.

Max. 30 Hours

TEXT / REFERENCE BOOKS
5. Tamilnadu Building Practice, Volume I, Government Publication

END SEMESTER EXAMINATION QUESTION PAPER PATTERN
(To be distributed uniformly among all the units)

Max. Marks : 100
Exam Duration : 3 Hrs.
PART A : 2 questions from each unit, each carrying 5 marks. 08 x 05 = 40 Marks
PART B : 2 questions from each unit with an internal choice, each carrying 15 marks. 04 x 15 = 60 Marks
COURSE OBJECTIVE
- To introduce the determinants of urban form with relevant theories, case studies and urban policy framework.

UNIT 1 INTRODUCTION AND HISTORY OF URBAN FORM 8 Hrs.
Relationship between Architecture, Urban Design and City planning, Evolution of cities-prehistoric, classical, medieval, renaissance, industrial, modern, colonial & postcolonial and post-world war II urban projects, zoned city and its critics, inclusive urbanism, contemporary urban form, Comparative analysis of public spaces, their organization, location, distribution in towns.

UNIT 2 URBAN DESIGN THEORY 7 Hrs.
The city, urban morphology, movement as motivating factor in design, Urban Design theories - monuments and dwelling, genius loci, street and square, urban conservation, collage city, responsive environments, checklist for pedestrian spaces and plazas, social life of small urban spaces, new urbanism, landscape urbanism, sustainable urban form and transit oriented development.

UNIT 3 PRACTICE THEORY 7 Hrs.
Urban design as public policy, Case studies of contemporary cities, new towns, new urbanist settlements, transit villages, urban infill projects, public place making projects, eco and sustainable projects, brown field and adaptive reuse developments.

UNIT 4 URBAN DESIGN POLICY 8 Hrs.
Urban renewal policy, scope and challenges-Role of planning agencies, Government and quasi government agencies, urban project finance corporations and their role- existing legal framework for urban growth in residential, commercial, recreational and mixed use sectors, opportunities and limitations- urban design charrettes - public participation in urban design - Emerging global policy practices for sustainable, equitable urbanism.

Max. 30 Hours

TEXT / REFERENCE BOOKS

END SEMESTER EXAMINATION QUESTION PAPER PATTERN
(To be distributed uniformly among all the units)
Max. Marks : 100
Exam Duration : 3 Hrs.
PART A : 2 questions from each unit, each carrying 5 marks.
PART B : 2 questions from each unit with an internal choice, each carrying 15 marks.

B.Arch 32 REGULATIONS 2015
COURSE OBJECTIVE
- To introduce the principles, and techniques of construction management and its significance in construction management planning, scheduling and project costing. The study on management principles relating to Quality, Resource and Safety in construction of projects.

UNIT 1 CONSTRUCTION MANAGEMENT AND STAKEHOLDERS 6 Hrs.

UNIT 2 SCHEDULING AND PROJECT COSTING 8 Hrs.
Project work break down - development of schedule - time control tools and techniques- CPM, PERT network analysis - precedence network analysis - line of balance. Project Finance - Sources of finance - Cost benefit analysis - computer based planning.

UNIT 3 QUALITY AND RESOURCE MANAGEMENT 8 Hrs.

UNIT 4 SAFETY PLANNING AND MANAGEMENT 8 Hrs.
Meaning and objective of safety planning, Construction accidents and their causes-Human factors in construction safety- common hazards-safety check list at construction site, alteration and demolition works-life saving equipment's. Safety culture- Job site Safety -Role of supervisors in safety measures-Safety and Middle Managers-Project Coordination and Safety Procedures and training - material and machinery handling safety - Workers Compensation.

Max. 30 Hours

TEXT / REFERENCE BOOKS
3. Willis E.M., Scheduling Construction projects, John Wiley and Sons 1986

END SEMESTER EXAMINATION QUESTION PAPER PATTERN
(To be distributed uniformly among all the units)
Max. Marks : 100
Exam Duration : 3 Hrs.
PART A : 2 questions from each unit, each carrying 5 marks. 08 x 05 = 40 Marks
PART B : 2 questions from each unit with an internal choice, each carrying 15 marks. 04 x 15 = 60 Marks
COURSE OBJECTIVE

- To introduce the various theories, philosophies and design processes characterizing the works of contemporary masters.

UNIT 1 CRITIQUING MODERNISM 6 Hrs.
  Brutalism - Archigram, Constructivism, Deconstructivism, Writings of Jane Jacobs - Kenneth Frampton, Robert Venturi - Christopher Alexander, Charles Jencks.

UNIT 2 WORKS OF THE MASTERS IN INDIA 7 Hrs.

UNIT 3 CONTEMPORARY TRENDS IN INDIAN CONTEXT 7 Hrs.
  Works and ideas: CNT, Sen Kapadia, Gerard da Cunha, Mistry Architects, Sanjay Mohe, Rahul Mehrotra, Chitra Vishwanath, Yatin Pandya, Satprem Maini, Ashok B Lall, Aravind Krishnan, Dean d' Cruz, Manit Rastogi.

UNIT 4 SUSTAINABLE LOGICS AND DESIGN PROCESSES 10 Hrs.

TEXT / REFERENCE BOOKS
2. Christopher Alexander, Sara Ishikawa and Murray Silverstein, A Pattern Language, Oxford University Press,1977

END SEMESTER EXAMINATION QUESTION PAPER PATTERN
(To be distributed uniformly among all the units)

Max. Marks : 100
Exam Duration : 3 Hrs.
PART A : 2 questions from each unit, each carrying 5 marks. 08 x 05 = 40 Marks
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COURSE OBJECTIVE

- To expose of the important legal aspects and legislations practice and profession. To make students to understand the important laws and act relevant to architecture.

UNIT I INTRODUCTION TO ARCHITECTURAL PROFESSION 8 Hrs.
- Importance of Architectural Profession
- Role of Architects in Society
- Career options open for Architects
- Prerequisites for Private Practice
- Types of practices (Partnership/ Proprietary Concern /Associate - Architect’s office and its management - Location, Infrastructure requirement - organizational structure, Basic accounts - Legal requirements, Registration of Firm, Tax Liabilities, Relationship with clients, contractors, Associate consultants and product Manufacturers.

UNIT 2 CODE OF CONDUCT AND ETHICS 8 Hrs.
- Role of Professional Body (The Indian Institute of Architects) History, Objectives, its relevance
- Architects Act 1972 (Background, intent, objectives)- Council of Architecture (role and function with regard to Architectural practice) - Registration of Architects - Importance of Ethics - guidelines prescribed for professional code of conduct - punitive action for professional misconduct.

UNIT 3 STATUTORY PROVISIONS GOVERNING ARCHITECTURAL PROVISIONS 8 Hrs.

UNIT 4 EMERGING TRENDS 6 Hrs.

TEXT / REFERENCE BOOKS
1. Handbook of Professional Practice, IIA Publications, India
2. Roshan Namavati, Professional practice, Lakhani Book Depot, Mumbai 1984
4. CMDA, Second Master Plan, 2026, CMDA Publications, 2008

END SEMESTER EXAMINATION QUESTION PAPER PATTERN
(To be distributed uniformly among all the units)

Max. Marks : 100
Exam Duration : 3 Hrs.

PART A : 2 questions from each unit, each carrying 5 marks. 08 x 05 = 40 Marks
PART B : 2 questions from each unit with an internal choice, each carrying 15 marks. 04 x 15 = 60 Marks
COURSE OBJECTIVE
- To introduce the principles and practices of heritage conservation and an overview of best practices in conservation charters through conservation processes and techniques with case studies.

UNIT 1 INTRODUCTION TO CONSERVATION 6 Hrs.
Definitions of conservation, Need for Conservation, Approaches, Indian context - history and principles of conservation - Role of Conservation architect, ethics and values of Conservation.

UNIT 2 CONSERVATION LEGISLATION 8 Hrs.

UNIT 3 CONSERVATION OF HISTORIC BUILDINGS 8 Hrs.

UNIT 4 CASE STUDIES 8 Hrs.
Indian Case studies - analysis, methodology and proposals , Tajmahal- Agra, Senate House, Chennai, Ruins of Hampi, Conservation methods adopted in Mamallapuram, Kanchipuram, Case studies in urban settings-Ahmedabad, Hyderabad, Champaner, Madurai, Puducherry. International Case studies - Conservation methods adopted for leaning tower of Pisa, World Heritage sites, UNESCO etc.

TEXT / REFERENCE BOOKS
5. Shyam Chainani, Heritage Conservation: Legislative & Organizational Policies for India, INTACH, 2012

END SEMESTER EXAMINATION QUESTION PAPER PATTERN
(To be distributed uniformly among all the units)
Max. Marks : 100
Exam Duration : 3 Hrs.
PART A : 2 questions from each unit, each carrying 5 marks. 08 x 05 = 40 Marks
PART B : 2 questions from each unit with an internal choice, each carrying 15 marks. 04 x 15 = 60 Marks
COURSE OBJECTIVE

- To introduce the concepts of different regional and infrastructure planning.

UNIT 1 REGIONAL PLANNING 6 Hrs.

Types of Region - Regional Policies - Principles & Methodologies of Regional Planning - Constraints & factors for consideration for regional plans - Need for regional planning - delineation of planning regions by various techniques.

UNIT 2 REGIONAL PLANNING TECHNIQUES 10 Hrs.


UNIT 3 URBAN PLANNING 6 Hrs.


UNIT 4 REGIONAL PLANNING IN INDIA AND PLANNING NORMS 8 Hrs.

Regional planning in India - Multi level planning District planning, special area, Development Programme and schemes, Regional planning as a tool to integrate rural and urban areas - Planning norms and development norms for urban and Regional approaches techniques of development for existing areas, renewal schemes and development. Detailed survey and preparation of questionnaire for land use, socio economic, Transportation planning etc.

Max. 30 Hours

TEXT / REFERENCE BOOKS

6. Rame Gowde K.S., Urban & Regional Planning, Prasarak University of Mysore, 1972

END SEMESTER EXAMINATION QUESTION PAPER PATTERN

(To be distributed uniformly among all the units)

Max. Marks : 100

Exam Duration : 3 Hrs.

PART A : 2 questions from each unit, each carrying 5 marks. 08 x 05 = 40 Marks

PART B : 2 questions from each unit with an internal choice, each carrying 15 marks. 04 x 15 = 60 Marks
SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY

FACULTY OF BUILDING AND ENVIRONMENT

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COURSE OBJECTIVE
- To introduce the guidelines relating to architectural competitions, easements, tender, contract and procedure for arbitration.

UNIT 1 ARCHITECTURAL COMPETITIONS 6 Hrs.
- Importance of Architectural competitions - Types of competitions (open, limited, ideas competition) - Single and two stage competitions - Council of Architecture guidelines for conducting Architectural competitions - Code of Conduct for Assessors and Participants - Case studies.

UNIT 2 EASEMENTS AND TENDER 8 Hrs.
- Easements - meaning, types of easements, bearing of easements in architectural design - acquisition, extinction and protection of easements. Tender - Definition - Types of Tenders - Open and closed tenders - Conditions of tender - Tender Notice - Tender documents - Concept of EMD - Submission of tender - Tender scrutiny - Tender analysis - Recommendations - Work order - E-tendering (Advantages, procedure, conditions).

UNIT 3 CONTRACT AND CERTIFICATES 8 Hrs.

UNIT 4 LIABILITY, ARBITRATION AND NEW TRENDS IN PROJECT EXECUTION 8 Hrs.
- Types of Liability, Professional Duties and Conduct of architects as per Council of Architecture, Professional Negligence, Deficient service and Exceptions, Insurance, Examples of Cases, Arbitration (Definition, Advantages of arbitration, Sole and joint arbitrators, Role of umpires, Award, Conduct of arbitration proceedings) - Arbitration clause in contract agreement (role of architect, excepted matters). New trends in Project Execution - Understanding of BOT, BOLT, DBOT, BOOT - Role of project Managers - charging role of architect in large projects.

Max. 30 Hours

TEXT / REFERENCE BOOKS
1. Handbook of Professional Practice, IIA Publications, India
2. Roshan Namavati, Professional practice, Lakhani Book Depot, Mumbai 1984
4. CMDA, Second Master Plan, 2026, CMDA Publications, 2008

END SEMESTER EXAMINATION QUESTION PAPER PATTERN
(To be distributed uniformly among all the units)

Max. Marks : 100
Exam Duration : 3 Hrs.
PART A : 2 questions from each unit, each carrying 5 marks.  08 x 05 = 40 Marks
PART B : 2 questions from each unit with an internal choice, each carrying 15 marks.  04 x 15 = 60 Marks
SCI 1801  STRUCTURES STUDIO I

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STUDIO WORK

Drafting exercises on reinforcement detailing of simply supported rectangular beams - Flanged beams, lintels and sunshades - Detailing of shear reinforcement for simply supported rectangular and flanged beams.- Simply supported one way and two way slabs, continuous one way and two way slabs and continuous rectangular beams - Reinforcement detailing of square and rectangular sections with lateral ties, reinforcement detailing of circular sections with lateral and helical ties.

Max. 30 Hours

SCI 1802  STRUCTURES STUDIO II

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STUDIO WORK

Drawing on types of trusses, joinery details of different members of timber truss - Cost effective construction Techniques.

Max. 30 Hours

SCI 1803  STRUCTURES STUDIO III

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STUDIO WORK

Drawings of doglegged and open well staircases - Drafting exercises on types of footing, details of reinforcement for isolated square and rectangular footings - Combined and raft foundation - reinforcement detailing for combined rectangular footing - Under reamed pile with single and double bulb. Pile caps for 2 to 9 group of piles, Types of retaining walls- cantilever and counter type - Drop panel, column capital and PT slab.

Max. 30 Hours

SCI 1804  STRUCTURES STUDIO IV

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STUDIO WORK

Drawings on types of bolted joints, designed bolted joint - Types of weld and welded joint - Steel in foundation, beams, and columns with column base. - Types of tubular Trusses, connections of various members of tubular Truss - tubular constructions.

Max. 30 Hours
STUDIO WORK

Drawings on types of frames, planning layout of frames for high rise - Long span structures Structural – Long span girders - various forms and classification of shells - types of folded plates - Layout of pre-stressed concrete beams.

Max. 30 Hours

STUDIO WORK

Drawing Exercises on openings in temporary shelters - articulation of openings, doors and window - openings with brick jalli, bamboo split & mat finishes - Roof in temporary shelters - Thatch roof, pan tiles -Fixing details - fencing - simple brick footing - principles of bonding, English and Flemish bond, rat trap bond, T-Junctions (1 and 1 1/2, 2 bricks), L -Junctions, Cross junction (2 bricks), Brick piers, Cavity walls, rat trap bond, plinth and Sill details, brick arches and lintels, compound walls - Stone foundation - random rubble / ashlar, copings, stone piers, plinth and sill details, stone arches and lintels, stone fencing, Dhajji wall construction.

Max. 30 Hours

STUDIO WORK

Drawings on Methods of construction using natural timber in joinery works including methods of fixing and options for finishing - Exercises involving the above through drawings - Mangalore tiles, madras terrace roofing, - fixing details - Different types and methods of fixing - Windows (panelled, louvered, glazed, pivoted and sliding windows) - Doors (panelled, glazed, sliding, folding, louvered and pivoted) - Ventilators (top hung, louvered, and glazed) - Hardware for doors, windows and ventilators and application for a simple structure with schedule of joinery.

Max. 30 Hours
STUDIO WORK

**SAR 1803  CONSTRUCTION STUDIO III**

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**STUDIO WORK**

Different Types of foundations- Detailing of columns - Shallow (Mat and Raft foundation), spread (Square spread, rectangle, circle, combined, strip and ring foundation), deep (pile, piers, caissons). Super Structure - Beams, sill level, detailing of apertures (lintels, sunshades, arches etc.) - Roofs (one way slabs, 2-wayslab, continuous, flat slab, coffer slab etc.) - Staircases, Exercises of the above through case studies and drawings of selected building types - exercise on dam-proofing and water proofing for walls, roofs, basements, retaining walls, swimming pools, sump, terrace floor details - Water tanks, terrace gardening, etc.

Max. 30 Hours

**SAR 1804  CONSTRUCTION STUDIO IV**

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**STUDIO WORK**

Typical details showing fixing of framing members, glass panes, roller position (in case of sliding window), hinge arrangement (in casement window), locking arrangement and related hardware. Cladding - Construction methods using Aluminium cladding (includes other ACP materials), shop front handrails - Structural Glazing, curtain walls. Exercises of the above through case studies and drawings - Partitions And Paneling (Timber, Aluminium, UPVC) - fixed partitions, sliding/folding partitions, wall panelling Thermal Insulation - Heat transfer and heat gain by materials -vapour barriers and rigid insulation.- Cold Storage - Sound insulating and isolating - treatment for interior surfaces (Wall, Floor and ceiling) in Auditorium and other sound sensitive spaces.

Max. 30 Hours

**SAR 1805  CONSTRUCTION STUDIO V**

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**STUDIO WORK**

Drafting exercise on different types of doors and windows (open able, sliding etc., methods of construction using steel) - Design and detailing of steel rolling shutter. Design and detailing of steel roof trusses (north-light, tubular, butterfly truss etc.,) including construction methods for roof covering using steel, FRP, polycarbonate, cement fibre sheets etc. Visit to steel structure fabrication site. Exercises of the above through case studies and drawings - space frame structures. Methods of construction using Shell structures and folded plates - various forms and classification of shells and types of folded plates-Exercises involving the above through case studies and drawing - Architectural Detailing in public spaces - Fundamentals Geometry Simple Types: Complex Types: Natural Lighting Envelope Landscaping Thermal Control Thermal Control Pressurization and Air Balance Fire Protection/Smoke Control.

Max. 30 Hours
COURSE OBJECTIVE
The studio aims at liberating the mind from the set pattern and initiates the process of creativity and appreciation for creative thinking. The studio promotes a workshop-based environment that will improve the investigative abilities, visualization, Communication and graphical skills.

MODULE I SHAPE AND ITS MANIPULATION
36 Hrs.
Shape - Primary shapes or circle, triangle and square- Family of shapes - Developing shapes from given geometric shape and working out compositions from them - Understanding colour - use of colour - its application - symbolism using colours - Texture - study of textures Colour - The design exercises shall be aimed at developing the skills to create visually pleasing colour schemes based on principles of colour theory, colour symbolism, harmony and contrast, Impact of light in modulating colours.

MODULE II PRINCIPLES OF DESIGN - ORDERING PRINCIPLES AND SCALE/PROPORTION
42 Hrs.
Ordering principles - Axis, Symmetry, Hierarchy, Datum, Rhythm, Repetition, Transformation, Balance, Contrast, and Pattern - Application of various ordering principles of design in two dimensions. Human & Dramatic Scale - Definition - Means by which they can be achieved with suitable example- Anthropometrics - Anthropological studies and important dimension of man at different activities and reach. Proportioning systems - Classical orders, Golden Section - Type of proportion with suitable example - Form Derived using Proportions – silhouette.

MODULE III FORM - ITS COMPONENTS AND DERIVATION
42 Hrs.
Articulation and its role as a form modifier - edges and corners, surfaces-The properties of form:-Transformation of form- dimensional, subtractive and additive- centralized, linear, radial, clustered and grid forms for arriving at new shapes and compositions. Interlocking of forms- interlock of forms differing in geometry (circle, square or triangle) or orientation (rotated grid).

MODULE IV CONCEPTS OF SPACE - SPATIAL RELATIONSHIPS & ORGANIZATION
45 Hrs.
Concepts of space- form- space relationships- Visual & Emotional effects of geometrical forms& their derivatives - Spatial relationships - Space within a space, interlocking spaces, adjacent spaces and spaces linked by a common space, Spatial organization centralised, linear, radial, clustered, grid.

Max. 165 Hours

TEXT / REFERENCE BOOKS
2. Carolyn M. Bloomer, Principles of visual perception,Van Nostrand Reinhold,1976

END SEMESTER EXAMINATION QUESTION PAPER PATTERN
(To be distributed uniformly among all the units)

Max. Marks : 100
Exam Duration : 3 Hrs.

PART A : 2 questions from each module, each carrying 5 marks. 08 x 05 = 40 Marks
PART B : 2 questions from each module with an internal choice, each carrying 15 marks. 04 x 15 = 60 Marks
COURSE OBJECTIVE

To introduce the students the basics of architectural graphics in terms of both two dimensional and three dimensional drawing which helps to enhance skills to express more complex objects through graphical presentation and to involve students in a number of exercises to understand the representation of Dimensional forms through isometric and axonometric drawings.

UNIT 1 INTRODUCTION - GEOMETRIC DRAWING

Introduction to fundamentals of drawing/ drafting: Construction of lines, line value, line types, lettering, dimensioning, format for presentation etc, Construction of angles, use of scales, Construction of circles, tangents, curves.

UNIT 2 GEOMETRICAL DRAWING - PLANE GEOMETRY

Construction and development of planar surface - square, rectangle, polygon, etc. Introduction of multi-view projection- projection of points, lines and planes, Description of Plane Curves: Ellipse, Parabola and Hyperbola.

UNIT 3 GEOMETRICAL DRAWING - SOLID GEOMETRY

Multi-view projection of solids -cube, prism, pyramids, cones, cylinders etc.; Sections of solids, true shape of solids.

UNIT 4 GEOMETRICAL DRAWING: AXONOMETRIC PROJECTION

Axonometric, Isometric, plan oblique and elevation oblique projection of planes, solids and combination of solids, introduction to scales.

Note: Exercises on projections will be integrated with models done in art studio I.

Max. 60 Hours

TEXT / REFERENCE BOOKS

2. Fraser Reekie & Tony McCarthy, Reekie’s Architectural Drawing, Architectural Press, 1995
### COURSE OBJECTIVE

The studio aims at inducing soft skills, visual expression and representation, imaginative thinking and creativity through hands on workshops. To familiarize students with the grammar of art by involving them in a series of freehand exercises both indoor and outdoor to understand form, proportion, scale, etc. and to introduce elements of Art - Line, Form, Colour, Composition, Texture etc.

### WORKSHOP I 15 Hrs.
Introduction to art- Elements and principles of Art -Types of Art & Painting-Visual effects of drawing-Composition-Approach to sketching- Study of light and shadow.

### WORKSHOP II 15 Hrs.
Drawing Skills - Freehand exercise on artistic expression through One Point Perspective, Two Point Perspective and Three Point Perspective- Both Interior & Exterior of the buildings and Nature-Scale drawing.

### WORKSHOP III (ELECTIVE)
- Sketching
- Rendering, Outdoor sketching
- Drawing from imagination
- Watercolours

### ADVANCED HANDSKILL
- Memory drawing and Creative sketching
- Methods and techniques use Pencil, Pen and Ink to prepare drawings in Outdoor areas
- Exercises for gaining confidence and enhancing the creativity
- Painting method in which the paints are made of pigments

### WORKSHOP IV (ELECTIVE)
- Paper Model
- Origami
- Paper masks
- Quilling

### PAPER CRAFT
- Paper collage & conceptual portrayal of abstract forms
- Forms made by cuts and folds for better understanding of sculpting techniques
- The Art of coloring to express their thoughts and ideas in better
- The Art of rolled paper to investigate patterns and forms found in nature

### TEXT/REFERENCE BOOKS
COURSE OBJECTIVE

- The studio aims at widening the avenues of creativity and allows inquiring more on lateral thinking. The emphasis is on understanding the process of design as a proactive and analytical tool toward generating alternatives which forms the foundation for future design by designing a meaningful space.

MODULE I PRINCIPLES OF COMPOSITION

Qualities of - Dominance, Unity, Harmony, Punctuating Effect, Dramatic Effect, Climax, Contrast, Accentuation, Fluidity.

MODULE II DETERMINANTS IN ARCHITECTURE

Socio cultural determinants - Climate as determinant- climate shaping form with examples from history-Structure & Building materials as determinants--Culture temporal & regional influences as determinant in Architecture - Beliefs, Aspiration, values of the user-Definition of personal space, territory, etc., examples from past and modern era.

MODULE III ANALYZING ARCHITECTURE

Articulation and its role as a form modifier - edges and corners, surfaces-The properties of form - Transformation of form- dimensional, subtractive and additive - centralized, linear, radial, clustered and grid forms for arriving at new shapes and compositions. Interlocking of forms - interlock of forms differing in geometry (circle, square or triangle) or orientation (rotated grid).

MODULE IV EXPLORING ARCHITECTURE

The Art of Space Making - Analyzing spatial qualities - spatial in quest of a pavilion Design (e.g. Gazebo, Kiosk, Shop, Security Cabin, a Police Booth - developing the Tectonic Vocabulary.

Max. 150 Hours

TEXT / REFERENCE BOOKS

4. Francis D K Ching, Form - Space - order - Van Nostrand Reinhold company, Newyork, 1979

END SEMESTER EXAMINATION QUESTION PAPER PATTERN

(To be distributed uniformly among all the units)

Max. Marks : 100
Exam Duration : 3 Hrs.
PART A : 2 questions from each module, each carrying 5 marks. 08 x 05 = 40 Marks
PART B : 2 questions from each module with an internal choice, each carrying 15 marks. 04 x 15 = 60 Marks
COURSE OBJECTIVE
- To train the Students in the concept of measured drawing, documentation, Perspective Drawing, Sciography, Representation skills, and Techniques for Construction, as a Tool towards effective visualization and presentation.

UNIT 1
MEASURED DRAWING
15 Hrs.
Introduction to fundamentals of architectural scales and drawings, line value, lettering, drawing representation, format for presentation methods and technique of measuring buildings and their details. Measured drawing of simple objects like furniture, door, windows, column etc.

UNIT 2
PERSPECTIVE
15 Hrs.
Characteristic of perspective drawing. Concepts and methods of perspective drawing. One point and two point perspective of simple geometrical forms like cube, prism. One, two and three-point perspective of building interiors and exteriors. Introduction to shortcut perspective method.

UNIT 3
SCIOGRAPHY
12 Hrs.
Principles of shade and shadow- construction of shadow of simple geometrical shapes - point, line and planes. Construction of sciography on building shadows of architectural elements.

UNIT 4
DOCUMENTATION
18 Hrs.
Documentation of a small scaled building of unique architectural character like kiosks, coffee shops, and Parlour etc.
Max. 60 Hours

TEXT / REFERENCE BOOKS
2. Claude Batley, Indian Architecture, D.B. Taraporevale Sons and Co. Ltd., Bombay
COURSE OBJECTIVE

- The studio will encourage the student to gain an ability to integrate all the technical aspects of sculpture, modelling, and storytelling as means to realize his creative ideas to shape in to concrete and significant art form.

WORKSHOP I PAINTING  15 Hrs.

Studies from life and environment through direct experiences, the students will be expected to put down the visual observation and reactions with competence. Knowledge of forms, the structures of forms, light & shade, texture, colour variation, perspective etc.

WORKSHOP II (ELECTIVE)  CRAFT WORK  10 Hrs.

- Bamboo craft
  - It is a type of work where useful and decorative devices are made completely by Hand or a Simple tool.
- Tile making
  - Create expressive, unified and cohesive three dimensional forms.
- Pottery making
  - Wonder of creation as they learn the art of pottery.
- Art out of Waste
  - Creating crafts out of Waste materials.

WORKSHOP II (ELECTIVE)  SCULPTURE  15 Hrs.

- Ceramic work
  - Sculpting techniques on a plane surface.
- Soap and wax
  - The cutting of material such as soap or wax to form a figure or design.
- Clay modelling
  - Clay modelling will be able to sculpt or make any kind of a model.
- Moulding process
  - Making of creative shape

WORKSHOP III (ELECTIVE)  VISUALIZATION TECHNIQUE  10 Hrs.

- Concept
  - A theoretical and practical approach in understanding an abstract or generic idea from Particular instances.
- Storyboard/ Cartoon making
  - Graphical representation in the form of illustrations or images displayed in sequence for the purpose of pre-visualizing the area of student's interest. A series of drawings that tells a story.

WORKSHOP III (ELECTIVE)  VISUAL LITERACY  10 Hrs.

- Photography
  - Representation of concept through images will be learnt by the students. The effect of light, shade and shadow can be learnt with easy understanding by the students.
- Short film
  - It is a hands-on class for the students to introduce the art and craft of filmmaking. Students can learn different types of concepts through film making.
- Set Design
  - Sample model by using different materials and techniques.

Max. 60 Hours

TEXT/ REFERENCE BOOKS

2. Jerry Yamell, Painting Techniques, North Light Books, Cincinnati, Ohio, 2002
SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY

FACULTY OF BUILDING AND ENVIRONMENT

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COURSE OBJECTIVE

- To study the role of anthropological issues that manifest itself in to creation of a community through a detailed investigation of a generic settlement at micro, Meso and Macro level. It sensitizes the mind about the symbiotic relationship between human need and built environment.

FOCUS

- Documenting a settlement with strong cohesive character and map various parameters through illustrative diagrams followed by a detailed analysis to identify logical conclusions.

METHODOLOGY PROPOSED

- The studio consist of four phase
  - Phase I : Workshop on physical and social surveying
  - Phase II : The students should go for an onsite study of the identified settlement, observe, document and record information. The students should transfer field data in to graphical representation which helps in understanding the settlement holistically.
  - Phase III : The students map the onsite work in the studio and discreetly analyse the available data to understand the physical, social, visual and Architectonic pattern.
  - Phase IV : To propose logical solution for the perceived problems the settlement faces with high degree of sensitivity to the documented information.

DESIGN INTEGRATION

- The knowledge students acquire from Vernacular Architecture course would act as a catalyst for initiating the contemplation process.

Max. 210 Hours

TEXT / REFERENCE BOOKS

SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY  
FACULTY OF BUILDING AND ENVIRONMENT

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COURSE OBJECTIVE

- To apply the learning on function and aesthetics acquired during the previous semester. The studio helps to develop an Architectural expression which is responsive to the people and environment.

FOCUS

To understand relationship between spaces for a given program and solve the psychological requirements of a small multi room space.

METHODOLOGY PROPOSED

The studio consist of three phases

- **Phase I**: Critical analysis of existing designs, along with review of literature will give the students the buoyancy to solve the given program.

- **Phase II**: Design Projects will challenge students to explore by experimentation and three dimensional composition of primarily abstract compositions. These activities will make use of a variety of materials and techniques to build a solid base of skills

- **Phase III**: The creation of workable plans and the art of realizing. Legible drawings are made to communicate the vision.

DESIGN INTEGRATION

The knowledge students acquire from Vernacular Architecture course would act as a catalyst for initiating the contemplation process.

Max. 195 Hours

TEXT / REFERENCE BOOKS

5. Moneo Rafael, Theoretical Anxiety and Design Strategies in the Work of Eight Contemporary Architects, MIT Press, 2005
COURSE OBJECTIVE
- The studio will expose the students to various aspects of computer applications into Architectural Design and Construction. It will open up the horizons of technical advances and advantages of computational technologies through the use of computer modelling, rendering and digital fabrication. Focus on the exploration of space and place making through the use of computer modelling and design construction.

UNIT 1  INTRODUCTION TO IMAGE EDITING  12 Hrs.
Basic Tools for Editing and Creating Graphics in ADOBE PHOTOSHOP - Layers (layer styles opacity-adjustment layers)  Basic Retouching (Colour, manipulations, Levels, Curves, Seeing Colour accurately, Patch tool, Cropping, Reading palettes, Dust and scratches) - Advanced Retouching (smoothing skin, smoothing wrinkles, special colour effects: black and white, sepia, grainy).

UNIT 2  INTRODUCTION TO GOOGLE SKETCH UP & LUMION  12 Hrs.

UNIT 3  INTRODUCTION TO VISUAL COMPOSITION USING COMPUTER TOOLS  14 Hrs.
Understanding the drawing unit's settings, scales, limits, drawing tools, drawing objects, object editing and text, dimensioning in ACAD.

UNIT 4  PRODUCTIVE TECHNIQUES & DRAWING OUTPUT  7 Hrs.
Transparent overlays, hatching utilities, line type, line weight and colour, Multiline, Polyline, etc. Styles, blocks and symbol library in ACAD, File management, retrieving data, attributes, Layout and plotting.

Max. 45 Hours

TEXT / REFERENCE BOOKS
5. Ralph Grabowski, The Illustrated AutoCAD 2002 Quick Reference
COURSE OBJECTIVE

- To expose the students on services and facilities to be provided to urban communities and train them to deal with the challenges posed in the design of multi-functional public community building in an urban setting.

FOCUS

Design of simple medium rise buildings in smaller sites with exploration of form integrated with function incorporating barrier free environment principles.

METHODOLOGY PROPOSED

To expose the students to the issues involved through visits to similar typologies / special lectures / orientation on urban challenges (limitation of land / regulations). Students will be encouraged to approach the problem with a three dimensional approach using study models, 3d sketches, etc. Students will work on manual presentations only.

DESIGN INTEGRATION

Students would be exposed to deal with different projects.

SUGGESTED TYPOLOGIES:

- Shopping arcades / malls / bazaar
- Auditorium / performing centres / museums / gaming parlour / club house
- Marriage halls / community halls / memorial complexes

Max. 195 Hours

TEXT / REFERENCE BOOKS

4. Ernst and Peter, Neufert’s Architect’s Data, Blackwell publishing professional, 2002
COURSE OBJECTIVE
- Introduction to REVIT ARCHITECTURE into Architectural Design and Construction. Focus on the exploration of space and place making through the use of computer modelling and design construction.

UNIT 1  INTRODUCTION TO REVIT ARCHITECTURE  9 Hrs.

UNIT 2  MODIFYING TOOLS  12 Hrs.

UNIT 3  COMPONENT TOOLS  12 Hrs.

UNIT 4  DIMENSIONING & TEXTING  12 Hrs.

Max. 45 Hours

TEXT / REFERENCE BOOKS
2. Phil Read, Mastering Autodesk Revit Architecture 2013

WEBSITES
SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY

FACULTY OF BUILDING AND ENVIRONMENT

COURSE OBJECTIVE

• To train the students on the challenges posed in the designing group of buildings in large site and the importance of structure and service integration in architectural creations.

FOCUS

Design of medium rise large buildings with reasonable complexities in site which are large involving macro level planning and the students will be exposed to the importance of architectural working drawings.

METHODOLOGY PROPOSED

To train the students on the various planning and infra-structure aspects of planning large sites through seminar / special lecture and visits to site.

DESIGN INTEGRATION

Steel & Glass Technology - the previous semesters Building Construction techniques will complement their design.

HVAC & Fire safety measures as per NBC - shall be integrated with the design.

Students would be exposed to a project of a bigger scale with two different stages.

SUGGESTED TYPOLOGIES

• Campus Planning for Institutions of higher learning
• Integrated Townships with residential / Community spaces and work spaces
• Large commercial complexes

Max. 210 Hours

TEXT / REFERENCE BOOKS

2. Watson, Donald & Crosbie, Time Saver Standards for Architectural Design, MGH, 2005
4. Ernst and Peter, Neufert’s Architect’s Data, Blackwell publishing professional, 2005
7. Thompson, Arthur, Introduction To Construction Drawing, Edward Arnold, 2005
8. Donald Watson and Michael J., Time-Saver Standards For Architectural Design Data, MGH, 2005
### FOCUS

As per the norms laid by the Council of Architecture, India, a candidate has to undergo Professional Training for one semester in an approved architectural firm established not less than five years with a registered architect. A student is to undergo this Professional Training during the seventh semester. The evaluation of the performance of the students in Professional Training shall be as per the assessment procedure laid out in clause 12c (vi) in the regulations.

### METHODOLOGY PROPOSED

- Procedure for practical training and evaluation mechanism has been evolved in consultation with practicing architects and the feedbacks received.
- Monthly report & Final training report - 50% marks final Viva Voce - 50% marks

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#### FOCUS

- An educational tour to the places of architectural interest / building appraisal shall be organized as per the itinerary approved by the department. The documentation shall be done in the form of photographs / slides and sketches, presented in the form of a seminar and written report immediately after the tour / building appraisal. The students will be instructed to submit a Pre Tour and Post Tour report of the selected zone. The tour will be in the form of choice based anyone state for a group of forty.

- There will be a Minimum of two Assessments (pre tour and post tour) for the Educational Tour which carries a total of 50 Marks. Of this 45 marks will be awarded through assignments, documentation which includes drawings, sketches, pictures and report by the tour coordinator. The % of attendance secured by the candidate will carry a weightage of 5 Marks, which will be added to the internal assessment Marks of 45 thus making the total of 50 marks. Refer clause 12c (vii) in the regulations for assessment procedure.

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SATHYABA MA INSTITUTE OF SCIENCE AND TECHNOLOGY

FACULTY OF BUILDING AND ENVIRONMENT

B.Arch 55 REGULATIONS 2015

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- Continuous Assessment: 450
- Univ Viva: 150
- Min Pass Marks: 300

COURSE OBJECTIVE
- To expose the students to issues, challenges in the design of Industrial buildings and large built forms involving alternative construction materials and technology. To orient the students on the need for creating sustainable urban environment through sound Green building Principles.

FOCUS
- Exploration of architectural design and form using alternative materials / technologies and Green Building Techniques.

METHODOLOGY PROPOSED
- To conduct workshop on sustainable architecture.
- To organize site visits where Green Building Principles are consciously adopted.
- Visit to Industrial complexes.

DESIGN INTEGRATION
- Experience gained through Practical Training

SUGGESTED TYPOLOGIES
- Industrial Complexes
- Sports Complex involving Stadium Buildings
- Cost effective Housing

Max. 270 Hours

TEXT / REFERENCE BOOKS
3. Joseph DeChiara; Julius, Time-Saver Standards for Housing And Residential Development, MGH, 2005
5. Ernst and Peter, Neufert’s Architect’s Data, Blackwell publishing professional, 2005
8. James B., Fundamentals of Landscaping and Site Planning, the Avi Publications, 2005
COURSE OBJECTIVE

- To orient the students towards a wide range of issues which are determinant in urban context and to strengthen their creative ability in a holistic manner.

FOCUS

Urban Design factors which have an influencing effect on Architecture and the impact of construction technology on urban context will be the focus.

METHODOLOGY PROPOSED

- To conduct a joint studio with institutions willing to partner.
- Special lectures from Urban Designers/ Planners, Practitioners / Construction Technology Experts

DESIGN INTEGRATION

All services for high rise building along with the structure shall be integrated with the design. All Urban planning principles shall be integrated with any selected urban context for renewal.

SUGGESTED TYPOLOGIES:

- Design of High rise / High density buildings
- Detailed investigation of a part of an urban area

Max. 270 Hours

TEXT / REFERENCE BOOKS

3. Joseph De Chiara, Julius, Time-Saver Standards for Housing And Residential Development, MGH, 2005
5. Ernst and Peter, Neufert's Architect's Data, Blackwell publishing professional, 2005
9. Ken Yeang, Service Cores: Detail in Building, Wiley - Academy, 2005
17. Donald Watson, Alan Plattus, Time-Saver Standards For Urban Design, MGH, 2005
18. Francisco Asensio Cerver, Urbanismo - Urban Spaces, Axis Books, 2005
COURSE OBJECTIVE

• To inculcate the need for undertaking research and to strengthen the theoretical understanding through literature and case studies for the dissertation. The students need to understand and identify the area of design interest and select the topic for their thesis.

FOCUS

Research and documentation of different aspects of architectural program - Method of construction, advance technology (concrete and steel), advances building services, climatology, theory of structures studied till the previous semester.

METHODOLOGY PROPOSED

1. Dissertation on a topic (project) will be approved for each student and each student shall carry out dissertation considering the following aspect: Method of construction, advance technology (concrete and steel), advances in building services, climatology, theory of structures studied till the previous semester.

2. Students shall submit the choices of their topic (three topics to be given by the Student) for dissertation in consultation with the Coordinator.

3. An internal guide to each student will be allotted for supervising His/ Her dissertation work. The students with the approval of the guide may commence their dissertation work during this semester. The Schedule / Mode of presentation of their work at Preliminary, Intermediate and Final stage with the split-up of Continuous assessment marks pertaining to each stage shall be published. The students under the guidance of their respective guides shall independently carry out their dissertation.

4. The Pre thesis study may also be in continuation of the Dissertation done or a new topic approved from the selected list of synopsis submitted by the student through the review panel.

5. The study shall be derived from a Book review, Special study, Literature Study, Case Study & Standards Study, Architect’s interview, etc.

6. The students need to do detailed analysis and inference of different design approaches by various Architects in different contexts.

7. The final Design Program for the Thesis need to be finalized along with the Site Analysis. The concise report (A3 sheets - max of 25 sheets spiral bounded) need to be submitted. This would be reviewed and evaluated by examiners appointed by the Institution.

8. For detail split up of marks refer clause 12c (viii) in the regulations.

Max. 60 Hours
COURSE OBJECTIVE

- To evaluate the students to demonstrate the comprehensive understanding and knowledge gained through various semesters in an Architectural project. Students shall be permitted to undertake any live/competition/Government projects, which was approved as the pre thesis topic in the previous semester.

FOCUS

To deal the design problem in a real life like situation.

METHODOLOGY PROPOSED

- Students will be encouraged to approach the design problem identified by him/her in a systematic way with guidance from a Supervisor on a one to one basis.

- There shall be five continuous assessments during the semester by the review committee comprising of The Internal thesis coordinator, internal guide and External guide. The stages are:
  1. Concept and Site Zoning along with the previous semester Pre Thesis report and study sheets to be presented.
  2. Conceptual sketches, models, plans, sections, elevations.
  3. Scheme I of the Architectural Drawings
  4. Scheme II of the Architectural Drawings
  5. Pre- Final stage
  6. Final University Viva Voce

- The review marks obtained in the five assessments shall be taken into account for the internal marks. A jury comprising of internal and external examiners shall conduct the final Viva-Voce examination of the Architectural Thesis/Project in the institution at the end of the Tenth semester as a final Viva Voice. The total marks scored shall be the sum of marks secured in the continuous assessments and the final university viva-voce examination. For detail split up of marks refer clause 12c (ix) in the regulations.

- Each student is required to submit two hard copies of the report along with a soft copy of the report and sheets. The report shall be based on the literature review, Case Study analysis and inferences, Standards, Site Analysis, Requirements and area statements along with the concepts, design processes and the final design.
COURSE OBJECTIVE
- To introduce the skills and knowledge relevant to the practice of professional journalism.

UNIT 1  INTRODUCTION  6 Hrs.
Introduction to journalism, Subfields within Journalism, Key concepts and objectives of Journalism - Introduction to architectural journalism, skills needed, reporting, writing, editing, photography, columnists, public relationships, criticism.

UNIT 2  TECHNOLOGIES IN JOURNALISM  8 Hrs.
Environment, Social Change, Persuasion Interviewing techniques, Argument and debate as a technique in the investigation of social problems; evidence, proof, refutation, persuasion; training in argumentative speaking, theories of journalism, Introduction to architectural software needed in journalism and photography, Video coverage, walk through of buildings, production of contemporary architectural journalism. Understanding the individual demands in the context of newspapers, radio, film, and television.

UNIT 3  PRESENTATION TECHNIQUES  8 Hrs.
Text preparations, Mode of presentation, Standards and Guidelines for documentation, Code of ethics, Basic knowledge on Press laws, Press Council of India, Public Debate. Navigating Information Networks for Mass Media with relevance to searches on Architectural topics, User generated contents for analysis of various issues on Architecture, creating an online forum and platform for exchange of ideas and information, to critically contrast outputs of selected individual pieces of journalism.

UNIT 4  IMPLICATIONS FOR ARCHITECTURAL DESIGN  8 Hrs.
Regional, National and International discussion forums, Changes in contemporary and historical design practices, Discussions on topics needed in an architectural journal and current issues- types of journals, works of key architectural journalists, Public Discourse on the Internet, Mass Media and Public Opinion critically appraise selected individual pieces of journalism.

Max. 30 Hours

TEXT / REFERENCE BOOKS
2. Stephen Leacock, How to write, Dodd Newyork, 1943
4. Mohammad al-Asad w/ Majd Musa , Architectural Criticism and Journalism, Umberto Allemandi, 2007

END SEMESTER EXAMINATION QUESTION PAPER PATTERN
(To be distributed uniformly among all the units)
Max. Marks : 100
Exam Duration : 3 Hrs.
PART A : 2 questions from each unit, each carrying 5 marks. 08 x 05 = 40 Marks
PART B : 2 questions from each unit with an internal choice, each carrying 15 marks. 04 x 15 = 60 Marks
SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY

FACULTY OF BUILDING AND ENVIRONMENT

B.Arch

60

REGULATIONS 2015

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<th>SAR 1602</th>
<th>ARCHITECTURAL PHOTOGRAPHY</th>
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COURSE OBJECTIVE
- To introduce the fundamentals of Architectural photography.

UNIT 1 INTRODUCTION
Introduction to architectural photography, interpretation and creation. Recording mediums - film and digital, specialist hard ware for image capture, black and white, colour photography, basics of composition.

UNIT 2 FUNDAMENTAL OF PHOTOGRAPHY
Fundamentals - focal length, aperture, exposure, aperture, shutter speed, recording medium, exposure meters, automatic & Techniques, film speed, contrast, Characteristics of lenses-viewing angle, Types of lens, depth of field, resolution and distortion, multiple exposures.

UNIT 3 EXTERNAL LIGHTING
Understanding light and photography, External lighting- Direction of lighting - front, side, back, shadows, texture, and effects of clouds, light modification, psychological effects, and types of artificial lighting, combined daylight and flash.

UNIT 4 FRAMING VIEWS
Single point and two point perspective- examples, distortions, emphasizing architectural elements, effect of camera to subject distance, oblique angles, three point perspective- applications in interiors and exteriors - composition, symmetric composition, applying the law of thirds - examples, image capture to publication.

Max. 30 Hours

TEXT / REFERENCE BOOKS
3. Michael G. Harris, Professional Architectural Photography, Taylor & Francis, 2002

END SEMESTER EXAMINATION QUESTION PAPER PATTERN
(To be distributed uniformly among all the units)

Max. Marks : 100
Exam Duration : 3 Hrs.

PART A : 2 questions from each unit, each carrying 5 marks.
08 x 05 = 40 Marks

PART B : 2 questions from each unit with an internal choice, each carrying 15 marks.
04 x 15 = 60 Marks
COURSE OBJECTIVE
To introduce the fundamentals of art direction and the creation of sets.

UNIT 1 ELEMENTS OF A SET
Elements of Image Making - stage craft, Accessories, Props, Design of Space - elements of Form, Colour, Light, Sound, Time, Graphic, Location, themes and materials, graphics design, reuse and set design.

UNIT 2 THEORY OF ART DIRECTION
Drawing and Design, Theory for Art Direction, Relations between Scene vs Characters, Scene vs Painting, Scene vs Script, Scene vs Drama, translation from 2D to 3D.

UNIT 3 PROCESS OF DESIGNING AND CREATING A SET
Analyze scripts to determine theme, concept, mood, location, style, period, special needs, Character, setting of the drama/movie, initial sketches of the design, materials and construction of the set and execution.

UNIT 4 CASE STUDIES
Diverse concepts, philosophies and set designs of known art directors, movie reviews, case studies of different film cities in different contexts.

TEXT / REFERENCE BOOKS
1. Neumann D., Film Architecture: Set Designs from Metropolis to Blade Runner, Prestel, 1997
4. Nystorm H., Creativity and Innovation, John Wiley & Sons, 1979

END SEMESTER EXAMINATION QUESTION PAPER PATTERN
(To be distributed uniformly among all the units)

Max. Marks : 100
Exam Duration : 3 Hrs.

PART A : 2 questions from each unit, each carrying 5 marks. 08 x 05 = 40 Marks
PART B : 2 questions from each unit with an internal choice, each carrying 15 marks. 04 x 15 = 60 Marks
COURSE OBJECTIVE

- To expose the students to the new concept by understanding and recognizing the relation between nature and human thereby developing nature based solution to the architecture problems influenced by biomimetics.

UNIT 1  INTRODUCTION

Introduction- what is biomimicry - bionics - biomimetics - origins of biomimicry - nature's laws, strategies, and principles - Nature as a model, measure and mentor, changing metaphor and approach organic architecture - animal architecture - complexity of natural organisms and systems - Relationship between nature and architecture.

UNIT 2  BIOMIMICRY CONCEPTS


UNIT 3  BIOMIMICRY IN ARCHITECTURE

Biomimicry in architecture - overlap between biology and architecture - living building - emerging biomimetics - technologies - biomimetics concepts in structural efficiency - material manufacture systems -zero-waste systems-energy generation - the thermal environment - nanotechnology in architecture - biomimetics products.

UNIT 4 CASE STUDIES


Max. 30 Hours

TEXT / REFERENCE BOOKS


WEBSITES

1. www.biomimicry.org
2. www.biomimicryinstitute.org

END SEMESTER EXAMINATION QUESTION PAPER PATTERN

(To be distributed uniformly among all the units)

Max. Marks : 100
Exam Duration : 3 Hrs.

PART A : 2 questions from each unit, each carrying 5 marks. 08 x 05 = 40 Marks
PART B : 2 questions from each unit with an internal choice, each carrying 15 marks. 04 x 15 = 60 Marks
COURSE OBJECTIVE

- To understand the process of Interior Design, starting from client discussion to execution at site. To study the various elements of interior spaces, their varied treatments and the impact of elements like color, light, furniture and accessories on the quality of space.

UNIT 1  INTRODUCTION TO INTERIOR DESIGN  6 Hrs.

Interior Design - definition and process. Introduction to Interior Design in terms of typology, function, themes and concepts. Study of Color and color schemes and their psychological and physical impact on space.

UNIT 2  HISTORY OF INTERIOR DESIGN  8 Hrs.

Brief history of Interior Design through ages relating to historical and regional context. Design movements such as minimalism, post and late Modernism, De Constructivism etc. Documentation of any Art/Craft relevant to the context of Interior Design in terms of processes and material from anywhere in India.

UNIT 3  MATERIAL, CONSTRUCTION AND FINISHES  8 Hrs.

Introduction to various finishes of walls, floors, ceilings and openings. Paint - Enamels, distempers, plastic emulsions, cement based paint - properties, uses and applications. Painting on different surfaces - defects in paintings. Clear coatings and stains - properties, uses and applications. Wallpaper finishes and special purpose paints. Installation detail for false ceilings.

UNIT 4  ELEMENTS OF INTERIOR DESIGN  8 Hrs.

Study of Interior Lighting, their effects, types of lighting fixtures. Accessories used for enhancement of interiors - paintings, objects de art, etc. Interior Landscaping - elements like rocks, plants, water, flowers, fountains, paving, artefacts etc. Furniture Design - Study of relationship of furniture to spaces and human movements, human comfort, function, materials. Case studies and projects on Furniture design. Interior Service Elements - HVAC, Water Supply and Sanitation, Electricity and Acoustics.

Max. 30 Hours

TEXT / REFERENCE BOOKS

3. Kathryn B. Hiesinger and Marcus H., Landmarks of twentieth Century Design; Abbey Ville Press, 1993
5. Massey, World of Art, Interior Design of 20th century, 2005
6. Archi World, Interior Furniture and Lighting Style 1, 2005

END SEMESTER EXAMINATION QUESTION PAPER PATTERN

(To be distributed uniformly among all the units)

Max. Marks : 100

Exam Duration : 3 Hrs.

PART A : 2 questions from each unit, each carrying 5 marks.  08 x 05 = 40 Marks

PART B : 2 questions from each unit with an internal choice, each carrying 15 marks.  04 x 15 = 60 Marks
COURSE OBJECTIVE
To introduce the idea of Architecture as enmeshed in the society and a product of larger socio-cultural issues and practices.

UNIT 1 INTRODUCTION 6 Hrs.

UNIT 2 POWER AND BUILT ENVIRONMENT 8 Hrs.
Definition of power - Forms of power - Power in the built environment at various scales - ideas of power and society, power and knowledge - Colonialism in India as a form of dominance - Production of Indo-Saracenic Architecture - New Delhi as a part of imperial vision - Idea of Ghetto, segregation, surveillance and control in colonial towns and contemporary cities.

UNIT 3 PLACE AND ARCHITECTURE 8 Hrs.
Critical reactions to modernity/ modernism with reference to the concept of context/ place - Critical Regionalism and Architectures of resistance - Place and phenomenology in Architecture - Semiotics and Deconstruction as a critical tool.

UNIT 4 ISSUES IN ARCHITECTURE 8 Hrs.
Architecture, Gender and space - Domestic Architecture-Convent Architecture, heritage sites and monuments, museums, galleries as narratives of national identity, City as congested geography, Technology and Architecture.

Max. 30 Hours

TEXT / REFERENCE BOOKS
2. Lawrence Vale, Architecture and Nationalism and identity, Yale University Press, 1992
4. Edited by Nazzar Al Sayaad, Forms of Dominance, Avebury, 1992
5. Edited by Neil Leach, Rethinking Architecture, Routledge, 2000

END SEMESTER EXAMINATION QUESTION PAPER PATTERN
(To be distributed uniformly among all the units)
Max. Marks : 100
Exam Duration : 3 Hrs.
PART A : 2 questions from each unit, each carrying 5 marks. 08 x 05 = 40 Marks
PART B : 2 questions from each unit with an internal choice, each carrying 15 marks. 04 x 15 = 60 Marks
COURSE OBJECTIVE

- To investigate the contemporary theories of media and their influence on the perception of space and architecture
- To provide an overview of various Contemporary design processes and its relation to computation.

UNIT 1 INTRODUCTION

Investigation of contemporary theories of media and their influence on the perception of space and architecture. Technology and Art - Technology and Architecture - Technology as Rhetoric - Digital Technology and Architecture.

UNIT 2 ASPECT OF DIGITAL ARCHITECTURE


UNIT 3 CONTEMPORARY PROCESS


UNIT 4 GEOMETRIES AND SURFACES

Geometry and their properties - Architectural applications - Works of Zvi Hecker - Shape Grammar - Shapes, rules and Label - Shape Grammar as analytical and synthetic tools - Combining Shape grammar and Genetic algorithm to optimize architectural solutions - Hyper Surface - Introduction to Hyper surface and concepts of Liquid Architecture.

TEXT / REFERENCE BOOKS

1. Peter Eisenmann, Diagram: An Original Scene of Writing, Diagram Diaries MOVE, UN Studio

END SEMESTER EXAMINATION QUESTION PAPER PATTERN

(To be distributed uniformly among all the units)

Max. Marks : 100
Exam Duration : 3 Hrs.

PART A : 2 questions from each unit, each carrying 5 marks.
08 x 05 = 40 Marks

PART B : 2 questions from each unit with an internal choice, each carrying 15 marks.
04 x 15 = 60 Marks
COURSE OBJECTIVE
- To introduce the need for facilities planning in construction projects and its importance of management in entire project life cycle from initiation till its operation.

UNIT 1  
FUNDAMENTALS OF FACILITIES PLANNING  
8 Hrs.
Principle duties of a facility manager - Diverse responsibilities and decision-making processes from building infrastructure to fleet services - Architectural Programming - Difference between primary data & Secondary data, various stages involved in planning viz., goal/objective setting, surveys & Studies, analysis, findings & recommendations, implementation, monitoring & evaluation and feedback - Various sources of information - Project scheduling and phasing.

UNIT 2  
FACILITIES DESIGN AND SPACE PLANNING  
6 Hrs.
Applications of facilities design - Lifespan documentation of buildings - Understanding the Project Development process - Flexibility and facilities planning - Optimal space planning and cost minimization through facility layout - Study of design sources - Factors, affecting and influencing the site - Process of site analysis.

UNIT 3  
FACILITY PLANNING FOR THE CONSTRUCTION PHASE  
8 Hrs.
Functionality of Building Automation systems - Wear & tear of Technical installations - Recording operating costs, safety concepts, energy supply & waste management - Knowledge based facility planning and decision support system - Artificial intelligence - Simulation in facility planning and efficiency analysis - Real estate values, Items of work/ Items of development budget. Architect's budget overlay construction cost: site development, building material, labour, on-site work etc.

UNIT 4  
FACILITY PLANNING FOR HANDOVER AND FACILITY PLANNING OPTIONS  
8 Hrs.
Delivery of the project - Data transfer, user satisfaction, Planning options - Owner management, Outsourced management, owner management with outsourced labour & purchase of separate management, labour services-Tendering & contracts, evaluating offers - Ensuring functionality & value appreciation - Preplanning & Proposal phase, programming phase, Schematic design Phase, Design development phase construction phase & handover with project scheduling and phasing.

Max. 30 Hours

TEXT / REFERENCE BOOKS

END SEMESTER EXAMINATION QUESTION PAPER PATTERN
(To be distributed uniformly among all the units)
Max. Marks : 100
Exam Duration : 3 Hrs.
PART A : 2 questions from each unit, each carrying 5 marks. 08 x 05 = 40 Marks
PART B : 2 questions from each unit with an internal choice, each carrying 15 marks. 04 x 15 = 60 Marks
COURSE OBJECTIVE
To make the students understand the importance of energy efficiency in the built environment through the basic energy efficiency principles, building materials, technologies and policies.

UNIT 1 ENERGY EFFICIENCY IN BUILDINGS 6 Hrs.
Introduction and need for energy efficiency - Historic buildings, preindustrial, post-industrial, and modern architecture - Basic Principles - land form, vegetation type, and pattern, water bodies, open spaces, and built form, colour, texture, openings, and design strategies - passive techniques.

UNIT 2 SUSTAINABILITY AND MATERIALS 8 Hrs.
Various building materials and techniques used for energy efficiency. Building materials role in improving energy efficiency. Embodied energy of materials - Reduce, reuse, and recycling of materials - “e” labelling of materials like energy star etc.

UNIT 3 TECHNOLOGIES FOR ENERGY EFFICIENT BUILDINGS 8 Hrs.
Renewable energy systems. - Solar active, thermal and photovoltaic systems, wind, tidal, biomass, biogas, Ventilation and day lighting techniques - cross ventilation, stack effect, courtyard effect and shading principles, HVAC technologies, building automation system.

UNIT 4 ENERGY POLICY AND BUILDING ENERGY STANDARDS 8 Hrs.
Green buildings - before and after rating systems - LEED, BREEAM, BEPAC, LEED INDIA etc -Concepts of green buildings-.sustainable site, water efficiency, materials and resources, energy and atmosphere, indoor environmental quality, and innovation in design- case studies and examples.

Max. 30 Hours

TEXT / REFERENCE BOOKS
4. LEED GREEN BUILDING Rating System version 2.1, June 2001

END SEMESTER EXAMINATION QUESTION PAPER PATTERN
(To be distributed uniformly among all the units)
Max. Marks : 100
Exam Duration : 3 Hrs.
PART A : 2 questions from each unit, each carrying 5 marks. 08 x 05 = 40 Marks
PART B : 2 questions from each unit with an internal choice, each carrying 15 marks. 04 x 15 = 60 Marks
COURSE OBJECTIVE
- To introduce modular and fabricated systems and new innovative materials.

UNIT 1    DEVELOPMENT OF MODULAR ARCHITECTURE  6 Hrs.
          Modular architecture - definition - Approach - Development of theories of modular architecture - Advantages, scope and limitations of modular architecture.

UNIT 2    INTRODUCTION TO MODULAR SYSTEMS  8 Hrs.
          Various elements of buildings - modular walls, roofs, doors and windows, partitions, etc., Various materials used in modular architecture, Pre-stressed and post-tensioned modular systems.

UNIT 3    MODULAR ARCHITECTURE AND CO-ORDINATION  10 Hrs.
          Basic management policies in modular co-ordination. Prefabricated structures: their uses with examples and techniques of constructions. Equipment for materials handling, transportation and erection. Uses of the following: Tractors, bulldozers, shovels drag lings, cableways and belt conveyors, batching plants - Transit mixers and agitator trucks used for ready mix concrete pumps. Guniting equipment - Air compressors - welding equipment - cranes and other lifting devices Choice of construction equipment for different types of works.

UNIT 4    NEW EMERGING MATERIALS  6 Hrs.
          Properties, Application, specification and standards (Indian and International) Teflon, special glasses, aluminium composite panel etc - Nano technology applications in construction.

Max. 30 Hours

TEXT / REFERENCE BOOKS

END SEMESTER EXAMINATION QUESTION PAPER PATTERN
(To be distributed uniformly among all the units)

Max. Marks : 100
Exam Duration : 3 Hrs.
PART A : 2 questions from each unit, each carrying 5 marks. 08 x 05 = 40 Marks
PART B : 2 questions from each unit with an internal choice, each carrying 15 marks. 04 x 15 = 60 Marks
COURSE OBJECTIVE
- To understand traditional management system, management skills, project programming, network techniques and to establish relationship between the project planning and project cost and application of software in planning of simple projects.

UNIT 1 TRADITIONAL APPROACH AND NETWORK ANALYSIS 8 Hrs.

UNIT 2 PROBABILITY ANALYSIS 6 Hrs.
PERT Network - Introduction to theory of probability and statistics - Probabilistic time estimates of activities - Analysis of PERT network.

UNIT 3 PROJECT COST AND RESOURCE ALLOCATION 8 Hrs.

UNIT 4 SOFTWARE APPLICATIONS 8 Hrs.
Introduction to Project Management software's - Applications - Detailed planning of a simple project - Scheduling using M.S. project and Primavera.

Max. 30 Hours

TEXT / REFERENCE BOOKS
2. Mukhopadhyay, Project Management for Architects and Civil Engineers, IIT, Kharagpur, 1974
5. Punmiya B.C. and Khandelwal K.K., Project Planning and Control with PERT/CPM, Laxmi Publications, New Delhi, 1989

END SEMESTER EXAMINATION QUESTION PAPER PATTERN
(To be distributed uniformly among all the units)
Max. Marks : 100
Exam Duration : 3 Hrs.

PART A : 2 questions from each unit, each carrying 5 marks. 08 x 05 = 40 Marks
PART B : 2 questions from each unit with an internal choice, each carrying 15 marks. 04 x 15 = 60 Marks
COURSE OBJECTIVE
To learn about smart materials measuring techniques and structures.

UNIT 1 INTRODUCTION
Introduction to Smart Materials and Structures - Instrumented structures functions and response - Sensing systems - Self diagnosis - Signal processing consideration - Actuation systems and effectors.

UNIT 2 MEASURING TECHNIQUES

UNIT 3 SENSORS
Sensing Technology - Types of Sensors - Physical Measurement using Piezo Electric Strain measurement Inductively Read Transducers - The LVOT - Fiber optic Techniques. Chemical and Bio-Chemical sensing in structural Assessment - Absorptive chemical sensors - Spectroscopes - Fibre Optic Chemical Sensing Systems and Distributed measurement.

UNIT 4 ACTUATORS

UNIT 5 SIGNAL PROCESSING AND CONTROL SYSTEMS
Data Acquisition and Processing - Signal Processing and Control for Smart Structures - Sensors as Geometrical Processors - Signal Processing - Control System - Linear and Non-Linear.

Max. 45 Hours

TEXT / REFERENCE BOOKS

END SEMESTER EXAM QUESTION PAPER PATTERN
Max. Marks : 100
Exam Duration : 3 Hrs.

PART A : 2 questions from each unit, each carrying 2 marks
10 x 02 = 20 Marks

PART B : 2 questions from each unit with an internal choice, each carrying 16 marks
05 x 16 = 80 Marks
COURSE OBJECTIVE

To introduce the students to the basic concepts and principles of various components of remote sensing and to provide an exposure to GIS and its practical applications in civil engineering.

UNIT 1  REMOTE SENSING AND EMR INTERACTION  9 Hrs.

UNIT 2  PLATFORMS AND SENSORS  9 Hrs.
Platforms - Aerial & Space platforms - Passive and Active sensors - Orbit types, Sun synchronous and Geosynchronous - Across track and along track scanning systems - Types of sensor resolutions (Spatial, Spectral, Radiometric and Temporal resolution) - Multispectral and thermal scanners - Characteristics of Remote sensing satellites and sensors (IRS, Landsat, SPOT, IKONOS, QUICKBIRD - Radar, LIDAR, SAR, SLAR MODIS, AMSRE)

UNIT 3  IMAGE INTERPRETATION, ANALYSIS AND DIGITAL IMAGE PROCESSING  9 Hrs.

UNIT 4  GEOGRAPHIC INFORMATION SYSTEMS  10 Hrs.
Introduction - Maps - Definitions - Map projections - Types of map projections - Map Analysis GIS - Definition, Spatial and attribute data, Components of GIS, GIS Data Models - Spatial data structure (Raster and Vector) - Merits and demerits of raster and vector structures - Sources of GIS data - Data input techniques and data editing - updating and query - Spatial data analysis (Extraction, Overlay, Neighbourhood, Spatial interpolation, Proximity, Network) - Data quality and errors in GIS.

UNIT 5  APPLICATIONS OF REMOTE SENSING AND GIS  8 Hrs.

Max. 45 Hours

TEXT / REFERENCE BOOKS

END SEMESTER EXAM QUESTION PAPER PATTERN Max.

Marks : 100
Exam Duration: 3 Hrs.
PART A : 2 questions from each unit, each carrying 2 marks 10 x 02 = 20 Marks
PART B : 2 questions from each unit with an internal choice, each carrying 16 marks 05 x 16 = 80 Marks
100% Theory Questions may be asked
COURSE OBJECTIVE
To study the behavior, analysis and design of tall structures.

UNIT 1 DESIGN CRITERIA
Design philosophy, loading, sequential loading, materials, high performance concrete - Fiber reinforced concrete - High strength concrete - Light weight concrete - design mixes

UNIT 2 LOADING AND MOVEMENT
Wind Loading - Static and dynamic approach - Earth quake loading - Equivalent lateral force - Introduction to working stress design - limit state design, plastic design.

UNIT 3 BEHAVIOR OF VARIOUS STRUCTURAL SYSTEMS
Factors affecting growth, Height and structural form - High rise behavior, rigid frames - braced forms - infilled frames, shear walls, coupled shear walls, wall frames, tubular, cores, futriger - braced and hybrid mega systems.

UNIT 4 ANALYSIS AND DESIGN
Modeling for approximate analysis, Accurate analysis and reduction techniques, Analysis of a building as total structural system considering overall integrity and major sub system interaction
Structural elements - Sectional shapes, properties and resisting capacities, design, deflection, cracking, prestressing.

UNIT 5 CONSTRUCTION TECHNOLOGY FOR TALL BUILDINGS
Assembly of buildings, Safety Policy, Stages of Site investigation, On site tests, Foundation, Basement construction and Water proofing, Materials, Selection & handling, Wall & Floor construction, Roof Construction.

Max. 45 Hours

TEXT / REFERENCE BOOKS

END SEMESTER EXAM QUESTION PAPER PATTERN
Max. Marks : 100
Exam Duration : 3 Hrs.

PART A : 2 questions from each unit, each carrying 2 marks
10 x 02 = 20 Marks

PART B : 2 questions from each unit with an internal choice, each carrying 16 marks
05 x 16 = 80 Marks
COURSE OBJECTIVE

To provide a holistic understanding of the basic principles and concepts of sustainability, a contextual understanding of various components in the Green Building including usage of materials, construction techniques, etc.

UNIT 1 CONCEPTS AND STRATEGIES OF SUSTAINABLE ARCHITECTURE 8 Hrs.

Definition of Sustainability, Types of Sustainability - Social, Economic, Political, Built environment. Sustainability in the built environment - ideas, concepts and current practices. Climate and built form, Sustainability in vernacular architecture of India.

UNIT 2 SUSTAINABLE CONSTRUCTION TECHNIQUES AND MATERIALS 13 Hrs.

Passive design with respect to various climatic types including hot dry, warm humid, cold, temperate and composite. Modern sustainable construction techniques such as Pre-Fab, etc. Introduction to green materials - Local material and their significance, Recycled materials, Reused materials, salvaged materials, etc.

UNIT 3 GREEN CONSERVATION PRACTICES 12 Hrs.

Water use reduction, water conservation, Rainwater harvesting, waste water treatment and reuse - Solid waste management, organic waste management. Energy conservation - Direct and Indirect means - HVAC systems and Lighting systems

UNIT 4 EMERGING TRENDS IN SUSTAINABLE ARCHITECTURE 12 Hrs.

Introduction to various Renewable power systems, concepts of life cycle analysis, carbon footprint reduction. Emerging ideas of Green Buildings including Net Zero Energy, Net zero water, Earth ships, etc. Green Building rating systems such as LEED, GRIHA, IGBC. Case Studies of various Green Building Projects across India.

Max. 45 Hours

TEXT / REFERENCE BOOKS

1. Cooper, Ilay & Dawson, Barry, Traditional buildings of India, Thames & Hudson, 1998

WEBSITES


END SEMESTER EXAM QUESTION PAPER PATTERN

Max. Marks : 100

Exam Duration : 3 Hrs.

PART A : 2 questions from each unit, each carrying 5 marks

08 x 05 = 40 Marks

PART B : 2 questions from each unit with an internal choice, each carrying 15 marks

04 x 15 = 60 Marks
SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY
FACULTY OF BUILDING AND ENVIRONMENT

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COURSE OBJECTIVE
To have an understanding of the properties, characteristics, strength, manufacture, processing, application and use of steel in large span structures and to develop the sense of structural aesthetics, To familiarize with innovations in steel industry, standards and accepted industrial practices.

UNIT 1 STEEL STRUCTURE 13 Hrs.
Standard structural steel - thermal properties - Fireproofing Methods - Steel Sheeting - Types of Sheeting Light roofing materials (Recent trends in roofing materials like Corrugated GI Sheets, Pre-coated metal sheets, Polycarbonate sheeting, Teflon coated sheets, PTFE Steel alloys properties and uses) - Long span structures using steel - Steel Roofing namely cable structures - Cable suspended roof, Hyperbolic paraboloid roof, Catenary, Pneumatic & Membrane roof - mention their Concept, Development, Laws of formation, Merits and Demerits - Vertical, Horizontal & Hexagonal joints.

UNIT 2 COMPOSITE CONSTRUCTION USING STRUCTURAL STEEL 8 Hrs.
Concept of Composite materials - structural engineering & Material properties - Flitch Beam - Lightweight construction Foam Concrete - Ferro Cement - Fibre Reinforced Concrete Other composite construction materials.

UNIT 3 DESIGN, APPLICATIONS AND CONSTRUCTION OF STEEL BUILDINGS 12 Hrs.
Steel buildings design - Study of innovations in steel industry - Design and construction parameters developed by INSDAG.-Concept of Recycled Steel - manufacture and assemble steel framed buildings - factories - multi-storey buildings and car parks - commercial buildings - Industrial and agricultural buildings - Bridges and multi-storey steel framed structures - The Case Studies include KCR Terminal at Hung Hom, Hong Kong, B3 Offices in Stockley Park, Renault Centre and Swindon By Normal Foster, Inmos Microchip Factory, Bridges and Public Bus Stop in St. Gallen, IBM Traveling Exhibition Pavilion

UNIT 4 DOCUMENTATIONS, SEMINARS, WORKSHOP ON INNOVATIVE TECHNOLOGIES 12 Hrs.
Documentation - Innovative Steel Buildings - International & Indian Context - Construction Methods & Techniques - Seminar to present a study of architectural form and structural expression through selected case studies which will aid understanding of structural philosophy and analysis, building envelope and services and construction sequence - work shop on steel to be organized to give students hands on experience.

Max. 45 Hours

TEXT / REFERENCE BOOKS
2. Roger Brockenbrough, Frederick Merritt, Merritt Frederick, Structural Steel Designer's Handbook, McGraw Hill Companies, Inc. 1999
3. Michael Barnes, Michael Dickson, Widespan roof structures, Thomas Telford, 2000

WEBSITE
1. www.steel-insdag.org

END SEMESTER EXAM QUESTION PAPER PATTERN
Max Marks : 100
Exam Duration : 3 Hrs.
PART A : 2 questions from each unit, each carrying 5 marks
08 x 05 = 40 Marks
PART B : 2 questions from each unit with an internal choice, each carrying 15 marks
04 x 15 = 60 Marks

B.Arch 74 REGULATIONS 2015
COURSE OBJECTIVE
To introduce the students to environmental impact assessment and legislation, planning and evaluation techniques and indoor environmental design

UNIT 1 INTRODUCTION 12 Hrs.
Introduction to Ecology; Ecosystem, Ecological balance, Biospheres, renewable energy and non renewable energy, resource identification and its implications for development - soil, water, land, plants - Elements of environmental planning - Area of environmental planning assessment - Sustainable human development. Main spheres of environmental planning ie, bio physical environment, socio economic environment and built environment etc.

UNIT 2 ENVIRONMENTAL IMPACT ASSESSMENT AND LEGISLATION 12 Hrs.

UNIT 3 PLANNING AND EVALUATION TECHNIQUES 12 Hrs.
Essence of good planning, integration of environmental assessment and planning options, priorities and strategies for development on urban, coastal and hilly ecosystem- Cost benefit analysis, planning balance sheet and goal achievement matrix.

UNIT 4 ENVIRONMENTAL QUALITY AND DESIGN 9 Hrs.
Parameters for indoor environmental design- indoor air quality, lighting for Residential spaces.- Evaluation of factors, planning measures and legal tools to control: Air pollution, Water pollution, land Pollution, Noise pollution, etc

Max. 45 Hours

TEXT / REFERENCE BOOKS

END SEMESTER EXAM QUESTION PAPER PATTERN
Max. Marks : 100 Exam Duration : 3 Hrs.
PART A : 2 questions from each unit, each carrying 5 marks 08 x 05 = 40 Marks
PART B : 2 questions from each unit with an internal choice, each carrying 15 marks 04 x 15 = 60 Marks
COURSE OBJECTIVE

Intelligent Buildings provide stimulating environments for people to work and live in and operate with systems that provide communications and conveniences for various functions to take place, however society and building owners or tenants demand more than this. Buildings are long-term assets so need to be economical, durable, flexible, adaptable and sustainable.

UNIT 1 INTRODUCTION


UNIT 2 ENERGY MANAGEMENT AND SERVICES

Demands on building and services, Control systems, Study of development of Computer Integrated Building from single function systemsto integrated solutions. Use of building intelligence in energy management. Factors that affect energy use in buildings - functional factors, environmental factors, envelope factors, air-conditioning systems factors, energy source factors and electrical systems factors. Fenestration design for optimal daylighting.

UNIT 3 KEY ISSUES FOR INTELLIGENT BUILDINGS

Multiple activity settings, Generic analysis of space utilization. Models for shared space use. The development of briefing process including design activity and building elements, life cycles, Coordination between life cycle, building technologies. Study of issues related to site, shell, skin, services and technology.

UNIT 4 INTELLIGENT DESIGN AND CONSTRUCTION

Effective Space utilisation, Energy conservation through site selection, sitting & orientation. Energy conservation through integration of building and site, site planning & site design. Expectations of user, effective communication of architectural concepts to user, Locating people and information, Introduction to building efficiency with respect to life cycle costs.

Max. 45 Hours

TEXT / REFERENCE BOOKS


END SEMESTER EXAM QUESTION PAPER PATTERN

Max. Marks : 100
Exam Duration : 3 Hrs.
PART A : 2 questions from each unit, each carrying 5 marks
08 x 05 = 40 Marks
PART B : 2 questions from each unit with an internal choice, each carrying 15 marks
04 x 15 = 60 Marks
COURSE OBJECTIVE

• To create an awareness towards natural and man-made disasters, disaster preparedness and disaster management

UNIT 1 INTRODUCTION TO DISASTERS

UNIT 2 DISASTER PREPAREDNESS
Disaster management, mitigation and preparedness: Disaster Preparedness for People and Infrastructure, Community based Disaster Preparedness Plan - Roles & Responsibilities of Different Agencies and Government: Education, Communication & Training, Central, State, District and local administration, Armed Forces, Police, Para Military Forces, International Agencies, and NGO’s - Disaster Mitigation: Strategies, Emerging Trends, Mitigation management and Role of Team and Coordination.

UNIT 3 REHABILITATION, RECONSTRUCTION & RECOVERY
Damage assessment – Development of Physical and Economic Infrastructure - Nature of Damage to Houses and Infrastructure due to Disasters - Funding Arrangements for Reconstruction - Monitoring and Evaluation of Rehabilitation Work: Training, Rescue and planning the rescue activities and rehabilitations - Role of Government and NGO’s - Participative Rehabilitation Process: Case Studies

UNIT 4 DISASTER RESPONSE AND DISASTER MANAGEMENT

UNIT 5 RISK ASSESSMENT AND VULNERABILITY ANALYSIS

TEXT / REFERENCE BOOKS
4. Sahni, Pardeep et.al. (eds.), Disaster Mitigation Experiences and Reflections, Prentice Hall of India, New Delhi, 2002
8. NOAA Coastal Services Center, Linking People Information and Technology,

END SEMESTER EXAM QUESTION PAPER PATTERN

Max. Marks : 100
Exam Duration : 3 Hrs.
PART A : 2 questions from each unit, each carrying 2 marks 10 x 02 = 20 Marks
PART B : 2 questions from each unit with an internal choice, each carrying 16 marks 05 x 16 = 80 Marks
Course Objective:
- The course provides an intriguing insight in chemistry, engineering, biology and medicine that has a significant impact on biomaterials.
- It highlights the way in which modern biology and medicine is inextricably linked to scientific discipline and helping us to understand the complex world of biomaterials.

Unit 1 Introduction and Metals
- Biomaterials – Overview, Classification of biomaterials, Interfacial Phenomena and tissue response to biomaterials, Metals and alloys for orthopedic implants-Stainless steel, Cobalt chromium alloy, Titanium and its alloys, Precious metal alloys, Other metal alloys. Dental implants – materials, types and designs

Unit 2 Replacement and Fixation Devices

Unit 3 Polymers and Applications
- Polymers in biomedical use, Hydrogels, silicone rubber, biodegradable polymers, Polymer Sterilization, Deterioration of polymers

Unit 4 Bioceramics and Composites
- Bioceramics, types and – bioactive resorbable, non – resorbable, bioceramic coatings on metallic and implants and bone bonding reactions on implantation. Hydroxyapatite – properties and applications. Composites – Types and Applications, Bioglass

Unit 5 Ophthalmology, Corrosion and Tests

Max. 45 Hours

Text / Reference Books

End Semester Exam Question Paper Pattern
- Max. Marks : 100
- Exam Duration : 3 Hrs.
- Part A: 2 questions from each unit, each carrying 2 marks
- Part B: 2 questions from each unit with an internal choice, each carrying 16 marks
COURSE OBJECTIVES

- The paper provides opportunities for training and research in all aspects of hospital / health administration. It helps promote scientific management of hospital and advancement of health care systems so as to make it rational, responsive and cost efficient.
- The student is thus educated in the development of high quality of hospital care in the community and the country so as to provide a satisfactory environment to the patient and clinical research.

UNIT 1

STANDARD OF HOSPITAL
9 Hrs.
- Concept of Hospital Management – Role of Administrator – Responsibilities of Administrator – Hospital Design – Outlines for establishing Departmental Zones – Hospital Engineering

UNIT 2

HOSPITAL ORGANIZATION
9 Hrs.
- Organization of Out-Patient Services – Problems encountered in functioning of O.P Department – Organization of In- Patient Services – Casualty & Emergency Services - Organization and management of Operation theatres

UNIT 3

SERVICES IN HOSPITAL
9 Hrs.
- Organization of Ancillary Services: Lab Services – Department of Physiotherapy & Occupational Therapy – Organization of Blood Transfusion Services – Department of Radio – diagnosis – Hospital Pharmacy

UNIT 4

STERILIZATION AND HOSPITAL SAFETY
9 Hrs.
- Disease transmission, Sterilization and disinfection methods, Hospital safety – Radiation Safety, hazardous safety, safety disposal of biological waste - Maintenance of Equipments & Instruments.

UNIT 5

SUPPORTIVE SERVICES IN HOSPITAL
9 Hrs.
- Organization and management of Nursing services and Dietary Services in hospital – House-keeping and maintenance – Medical Records - Staffing the hospital - Human resources management in hospital - Management Assisted by Computers: Reservation, Admission, Registration & Discharge Module

Max. 45 Hours

TEXT / REFERENCE BOOKS
1. Dr. L.L. Rao, Hospital Management.

END SEMESTER EXAM QUESTION PAPER PATTERN

Max. Marks : 100

Part A:
2 questions from each unit, each carrying 2 marks
10 x 02 = 20 Marks

Part B:
2 questions from each unit with an internal choice, each carrying 16 marks
05 x 16 = 80 Marks

Exam Duration : 3 Hrs.
COURSE OBJECTIVE
• To provide a basic understanding of the EIA process as it is used for research, planning, project or program evaluation, monitoring, and regulatory enforcement and to introduce students to the legal, economic, administrative and technical process of preparing and/or evaluating environmental impact documents.

UNIT 1 INTRODUCTION
9 Hrs.
Historical development of Environmental Impact Assessment (EIA). EIA in Project Cycle. Legal and Regulatory aspects in India. Types and Limitations of EIA, Cross sectoral issues and terms of reference in EIA Public Participation in EIA. EIA process.

UNIT 2 METHODS FOR EIA
9 Hrs.
Methods of EIA – Check lists – Matrices – Networks – Cost-benefit analysis – Analysis of alternatives.

UNIT 3 PREDICTION AND ASSESSMENT
9 Hrs.
Assessment of Impact on land, water, air, social & cultural activities and on flora & fauna- Mathematical models- Public participation – Rapid EIA.

UNIT 4 ENVIRONMENTAL MANAGEMENT PLAN
9 Hrs.

UNIT 5 LIFE CYCLE ASSESSMENT & EXECUTIVE SUMMARY
9 Hrs.

TEXT / REFERENCE BOOKS

END SEMESTER EXAM QUESTION PAPER PATTERN

Max. Marks : 100
Exam Duration : 3 Hrs.
PART A : 2 questions from each unit, each carrying 2 marks 10 x 02 = 20 Marks
PART B : 2 questions from each unit with an internal choice, each carrying 16 marks 05 x 16 = 80 Marks
COURSE OBJECTIVE

- To know the various sources of energy available and to face the future challenges arising due to energy crisis.

UNIT 1      GLOBAL AND INDIAN ENERGY SCENARIO 9 Hrs.

UNIT 2      HYDROGEN ENERGY 9 Hrs.

UNIT 3      ELECROCHEMICAL ENERGY 9 Hrs.

UNIT 4      BIOENERGY 9 Hrs.

UNIT 5      NUCLEAR ENERGY 9 Hrs.

Max. 45 Hours

TEXT / REFERENCE BOOKS


END SEMESTER EXAM QUESTION PAPER PATTERN

Max. Marks : 100  Exam Duration : 3 Hrs.
PART A : 2 questions from each unit, each carrying 2 marks 10 x 02 = 20 Marks
PART B : 2 questions from each unit with an internal choice, each carrying 16 marks (10% problems may be asked) 05 x 16 = 80 Marks
COURSE OBJECTIVE
• To expose the students to the basic principles of energy conversions, materials for energy conversion and energy storage devices.

UNIT 1 ENERGY AND THERMODYNAMICS 9 Hrs.

UNIT 2 ENERGY CONVERSION MATERIALS 9 Hrs.
Single, poly – and amorphous silicon, GaAs, CdS, Cu2S, CulnSe2, CdTe etc. technologies for fabrication of single and polycrystalline silicon solar cells, amorphous silicon solar cells and tandem cells, solar cell modules, photovoltaic systems, space quality solar cells

UNIT 3 PHOTOVOLTAIC CONVERTORS 9 Hrs.
Introduction- Photovoltaic effect-conversion of solar energy into electrical energy- behaviour of solar cells-basic structure and characteristics of solar cells-single, multi and thin film silicon solar cells-solar cell arrays- PV modules, generators-interfacing PV modules to loads, direct connection of load to PV modules and connection of PV modules to a battery and load together-energy storage alternatives to PV systems.

UNIT 4 THERMOELECTRIC CONVERTERS 9 Hrs.
Thermoelectric effects, solid state description of thermoelectric effect, Kelvin’s thermodynamic relations, analysis of thermoelectric generators, basic assumptions, temperature distribution and thermal energy transfer for generator, co-efficient of performance for thermoelectric cooling.

UNIT 5 ENERGY STORAGE DEVICES 9 Hrs.
Cuprates and MgB2 superconductors and their properties, superconducting wires, Role of superconductor in Electric generator, Magnetic energy storage devices and power transmission. Energy storage systems, Faradaic and non-Faradaic processes, Types of capacitors and batteries, Comparison of capacitor and battery, Charge-discharge cycles, experimental evaluation using Cyclic voltammetry, and other techniques.

TEXT / REFERENCE BOOKS

Exam Duration : 3 Hrs.
PART A : 2 questions from each unit, each carrying 2 marks 10 x 02 = 20 Marks
PART B : 2 questions from each unit with an internal choice, each carrying 16 marks 05 x 16 = 80 Marks
(10% problems may be asked)
COURSE OBJECTIVES
- To provide introductions to event driven programming, game engine scripting, game engine class structures.
- Learning to plan and to report on a significant programming project.
- Learn to work in programming in teams, and learn to use standard game development environments, in particular the Unity3d development platform.

UNIT 1 3D GRAPHICS FOR GAME PROGRAMMING 9 Hrs.
- Coordinate Systems, Ray Tracing, Modelling in Game Production, Vertex Processing, Rasterization, Fragment Processing and Output Merging, Illumination and Shaders, Parametric Curves and Surfaces, Shader Models, Image Texturing, Bump Mapping, Advanced Texturing, Character Animation, Physics-based Simulation

UNIT 2 GAME DESIGN PRINCIPLES 9 Hrs.
- Character development, Story Telling, Narration, Game Balancing, Core mechanics, Principles of level design, Genres of Games, Collision Detection, Game Logic, Game AI, Path Finding.

UNIT 3 GAMING ENGINE DESIGN 9 Hrs.
- Renderers, Software Rendering, Hardware Rendering, and Controller based animation, Spatial Sorting, Level of detail, collision detection, standard objects, and physics

UNIT 4 GAMING PLATFORMS AND FRAMEWORKS 9 Hrs.
- Flash, DirectX, OpenGL, Java, Python, XNA with Visual Studio, Mobile Gaming for the Android, IOS, Game engines - Adventure Game Studio, DXStudio, Unity.

UNIT 5 GAME DEVELOPMENT 9 Hrs.
- Developing 2D and 3D interactive games using OpenGL, DirectX – Isometric and Tile Based Games, Puzzle games, Single Player games, Multi-Player games.

Max. 45 Hours

TEXT REFERENCE BOOKS

END SEMESTER QUESTION PAPER PATTERN
Max. Marks : 100
Exam Duration : 3 Hrs.
PART A : 2 questions from each unit, each carrying 2 marks 10 x 02 = 20 Marks
PART B : 2 questions from each unit with an internal choice, each carrying 16 marks 05 x 16 = 80 Marks
COURSE OBJECTIVES
- To gain knowledge to develop, design and implement two and three dimensional graphical structures
- To enable students to acquire knowledge of Multimedia compression and animations.
- To learn creation, Management and Transmission of Multimedia objects.

UNIT 1  BASICS OF COMPUTER GRAPHICS 9 Hrs.

UNIT 2  2D TRANSFORMATIONS AND VIEWING 8 Hrs.

UNIT 3  3D CONCEPTS AND CURVES 10 Hrs.

UNIT 4  METHODS AND MODELS 8 Hrs.

UNIT 5  MULTIMEDIA BASICS AND TOOLS 10 Hrs.

Max. 45 Hours

TEXT / REFERENCE BOOKS

END SEMESTER QUESTION PAPER PATTERN
Max. Marks : 100
Exam Duration : 3 Hrs.
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PART B : 2 questions from each unit with an internal choice, each carrying 16 marks 05 x 16 = 80 Marks