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ABBREVIATIONS/DEFINITIONS

- "AC" means, Academic Council of the University.
- "BOM" means, the Board of Management of the University.
- "BOS" means, the Board of Studies of the Department.
- "CAU/AUC-option" CAU/AUC means change from Credit to Audit option / change from Audit to Credit option
- "Class/Course Committee" means, the Class/Course Committee of a class/course.
- "Course" means, a specific subject usually identified by its course-number and course-title, with a specified syllabus / course-description, a set of references, taught by some teacher(s) / course- instructor(s) to a specific class (group of students) during a specific academic-semester.
- "Course Instructor" means, the teacher or the Course Instructor of a Course.
- "Curriculum" means the set of Course-Structure and Course-Contents.
- "DAA" means, the Dean of Academic Affairs.
- "DAAB" means Departmental Academic Appeals Board.
- "DEC/PEC" means Dissertation Evaluation Committee / Project Evaluation committee.
- "Department" means a group in the University devoted to a specific discipline also called a School. Department and School are used interchangeably.
- "DSA" means, Dean Student Affairs.
- "ESE" means End-Semester Examination
- "Faculty Advisor/Class Counsellor" means, the Faculty Advisor or the Panel of Faculty Advisors, in a Parent Department, for a group (admission-batch) of students. Also known as Class Counsellor.
- "Grade Card" means the detailed performance record in a programme.
- "He" means both genders "he" and "she"; similarly "his" and/or "him" includes "her" as well, in all the cases.
- "HOD" means, the Head of the Department.
- "MES" means Make-up End Semester.
- "MLC" means Mandatory Learning Course.
- "MSE" means Mid Semester Examination.
- "Parent Department" or "Degree Awarding Department" means, the department that offers the degree programme that a student undergoes.
- "Project Guide" means, the faculty who guides the Major Project of the student.
- "Regulations" means, set of Academic Regulations.
- "University" or "LU" means, Lingaya's University, Faridabad.
- "VC" means, the Vice Chancellor, Lingaya's University, Faridabad.

CODE OF CONDUCT AND ETHICS FOR STUDENTS

1. Wear decent dress respecting his/her modesty as well as that of others.
2. Expected to respect and show regard for teachers, staff and fellow students.
3. Inculcate civic sense and sensitivity for environment protection.
4. Not to resort to collection of funds for any use without written permission of VC.
5. To exhibit exemplary behaviour, discipline, diligences, and good conduct and are a role model to other students.
6. Not to indulge in offences of cognizable nature.
7. Not to practice casteism, communalism.
8. Not to indulge in any other conduct unbecoming of a professional student of the University.
9. Not to outrage the status, dignity and honour of any person.
10. Not to get involved in physical assault or threat, and use of physical force against any body.
11. Not to expose fellow students to ridicule and contempt that may affect their self esteem.
12. Not to form any kind of student's Union, etc.
13. Not to take active or passive part in any form of strikes/protests.
14. To observe all safety precautions while working.
15. Not to disfigure/damage the University property, building, furniture, machinery, library books, fixtures, fittings, etc. (Damage / loss caused shall have to be made good by the students).
16. Use of mobile/video camera phones is strictly prohibited inside the examination halls, class rooms, laboratories and other working places. LU has the right to confiscate the mobile phones in case of any violation.
17. Not to indulge in ragging/teasing, smoking, gambling, use of drugs or intoxicants, drinking alcohol, rude behavior, and use of abusive language.
18. Not to resort to violence, unruly travel in buses, bullying, threatening and coercing others for undesirable act, such as preventing from attending classes, writing exam. / tests, etc etc.
19. All the students of the LU shall be under the disciplinary control of the VC.
20. Students are deemed to be under the care and guidance of parents. It is obligatory for the former to appraise their progress (given by the CC) to the parents.
21. Fine, if ever imposed, is only to improve discipline and shall be paid promptly.
22. While on campus, students have to take care of their belongings and no responsibility for any loss or damage can be held by the University.
23. Every student shall produce the I-Card on demand, and if lost, get a duplicate issued.
24. The students must attend all lectures, tutorials and practical classes in a course punctually (The attendance will be counted course-wise).
25. To abide by the rules and regulations of the University stipulated from time to time.

IMPORTANT ACADEMIC RULES

B.Arch. Degree Programme (Regular)

GENERAL

- The Regulations may evolve and get revised/refined or updated or amended or modified or changed through approvals from the Academic Council from time to time, and shall be binding on all parties concerned, including the Students, Faculty, Staff, Departments, University Authorities and officers. Further, any legal disputes shall be limited to the legal jurisdiction determined by the location of the University and not that of any other party.
- If, at any time after admission, it is found that a candidate had not in fact fulfilled all the requirements stipulated in the offer of admission, in any form whatsoever, including possible misinformation etc., the matter will be reported to the AC, recommending revoking the admission of the candidate.
- The LU reserves the right to cancel the admission of any student at any stage of his study programme in the University on the grounds of unsatisfactory academic performance or indiscipline or any misconduct.
- Medium of Instruction shall be English.

PROGRAMME

- The minimum duration of the programme leading to B.Arch. degree will be five years and maximum would be eight years.
The total course package for a B.Arch. Degree Programme will typically consist of the following components.
 - (i) General courses (GEN)
 - (ii) Engineering Science and Technical Arts (ESTA)
 - (iii) Core Courses (DCC)
 - (iv) Elective Courses
An Elective Course can be any of the following:
 - a) Departmental Elective (DEC)
 - b) Open Elective: (OE)
 - (v) Mandatory Learning Courses (MLC)
 - (vi) Thesis (Design Project) (TH)
 - (vii) Internship (INT)
- The Minimum Credit Requirement for the B.Arch. Degree programme is 225. However the credits required for consideration for honors degree will be 230.
- The thesis topic will be assigned in fourth semester. Appropriate double-letter grade is awarded as per the evaluation scheme which will be considered for AGPA and CGPA calculations. It is recommended that atleast one external expert from industry/academia may be a member of the evaluation team of four persons (two professors, external expert and respective project guide).

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- MLC must be completed by a student at appropriate time or at his convenience. The 'S' grade is awarded for satisfactory completion of the course and 'N' grade is awarded for non-satisfactory completion of the course. In case 'N' grade is awarded, the student has to re-register for the same course if no alternative options are available. However, one can opt for other courses if provided with multiple options. The 'S' and 'N' grades do not carry grade-points and, hence, are not included in the AGPA and CGPA computations.

Courses that come under this category are the following:

- (a) Environment Science and Ecology
 - (b) Community Service Oriented Project
 - (c) Professional Development Courses
- Students admitted to the University will be required to take suitable additional Courses in Communication Skills, if found deficient.

ASSOCIATION

- Every student of the University shall be associated with Parent Department (Degree Awarding Department) offering the degree programme that the student undergoes throughout his study period, right from the very first day of admission into the programme.
- The schedule of academic activities for a semester, including the dates of registration, mid-semester examinations, End-semester examination, vacation, etc. shall be referred to as the Academic Calendar of the semester, and announced at least two weeks before the closing date of the previous semester.

PRE-REGISTRATION

- In order to facilitate proper planning of the academic activities of an semester, it is essential for the students to declare their intent to register for a course well in advance, before the actual start of the academic semester, through the process of Pre-Registration, which is mandatory for all those students of second or subsequent semester who propose to deviate from recommended scheme of studies.
- Pre-registration is an expression of intention of a student to pursue particular course(s) in the next semester. It is information for planning for next semester. Every effort will be made to arrange for a course opted by the student. However, it is not obligatory on the part of the university to offer the course(s) and no course may be offered if the number of students opting for the course is less than 15 or 25 percent of the admission strength whichever is less.
- If a student fails to pre-register it will be presumed that he will follow suggested normal scheme of studies provided that he is progressing at a normal pace. For remaining students the HOD of the parent department will plan for courses as per the convenience of the department.

REGISTRATION TO COURSES

- Every student after consulting his Faculty-Advisor is required to register for the approved courses with the HOD of parent department at the commencement of each semester on the days fixed for such registration as notified in the academic calendar.
- A student shall register for courses from amongst the courses being offered in an semester keeping in mind the minimum and maximum credits allowed for a degree and other requirements i.e. pre-requisite if any, SGPA and CGPA after consulting the Faculty Advisor. No registration will be valid without the consent of HOD of the parent department.
- A student will be permitted to register in the next semester as per the suggested normal scheme only if he fulfills the following Conditions:
 - (a) Satisfied all the Academic Requirements to continue with the programme of studies without termination.
 - (b) Cleared all university, library and hostel dues and fines (if any) of the previous semester.
 - (c) Paid all required advance payments of the university and hostel for the current semester.
 - (d) Not been debarred from registering on any specific ground by the University.
- The students will be permitted to register for course(s) being offered in an semester other than his normal suggested scheme provided that the time table permits.
- The registration in the critical cases will be done as per the priority given below:
 - (a) Fulfillment of minimum credit requirement for continuation,
 - (b) The completion of programme in minimum period needed for degree, (Those who need to improve SGPA/CGPA)
 - (c) The fulfillment of pre-requisite requirement of courses.
- Students who do not register on the day announced for the purpose may be permitted LATE REGISTRATION up to the notified day in academic calendar on payment of late fee.
- REGISTRATION IN ABSENTIA will be allowed only in exceptional cases with the approval of the DAA after the recommendation of HOD through the guardian of the student.
- Credits will be awarded in registered courses only.

CREDIT LIMITS

- A full time student of the B.Arch. degree programme must register for a minimum of 16 credits, and up to a maximum of 31 credits in a Semester. However, the minimum / maximum credit limit can be relaxed by the DAA on the recommendation of the HOD, only under exceptional circumstances.

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- Professional Development courses are one credit courses each, with multiple options, to be completed at student's convenience in each semester. Some of them may be mandatory and others two-letter grade category. However, registration has to be done for all courses.

CHANGE IN REGISTRATION

- A student has the option to ADD courses for registration till the date specified for late registration in the Academic Calendar.
- On recommendation of the Teaching Department as well as the Parent Department, a student has the option to DROP courses from registration until two weeks after the commencement of the classes in the semester, as indicated in the Academic Calendar.
- A student can register for auditing a course, or a course can be converted from credit to audit or from audit to credit, with the consent of the Faculty Advisor and Course Instructor within two weeks after the commencement of the classes in a semester as indicated in the Academic Calendar. However, core Courses shall not be available for audit.

ATTENDANCE REQUIREMENTS

- LU academic programmes are based primarily on the formal teaching-learning process. Attendance in classes, participating in classroom discussions and participating in the continuous evaluation process are the most essential requirements of any academic programme.
- Attendance will be counted for each course scheduled teaching days as per the academic calendar.
- The attendance requirement for appearing in End-semester examination shall be a minimum of 75% of the classes scheduled in each course.

LEAVE OF ABSENCE

- The leave of absence must be authorized as per regulations.
- A student short of attendance in a course (less than needed after leave of absence and condonation by VC) will be awarded 'FF' grade in the course.
- All students must attend all lecture, tutorial and practical classes in a course. The attendance will be counted course wise.
- To account for approved leave of absence e.g. representing the University in sports, games or athletics; professional society activities, placement activities, NCC/NSS activities, etc. and/or any other such contingencies like medical emergencies, etc., the attendance requirement shall be a minimum of 75% of the classes scheduled in each course to appear in the examination.
- A student with less attendance in a course during a semester, in lectures, tutorials and practicals taken together as applicable, shall be awarded 'FF' grade in that course, irrespective of his academic performance, and irrespective of the nature of absence.

- If the period of leave is more than three days and less than two weeks, prior application for leave shall have to be submitted to the HOD concerned, with the recommendation of the Faculty-Advisor, stating fully the reasons for the leave requested, along with supporting documents.
- If the period of leave is two weeks or more, prior application for leave shall have to be made to the DAA with the recommendations of the Faculty-Advisor; HOD concerned stating fully the reasons for the leave requested, along with the supporting documents. The DAA may, on receipt of such application, grant leave or decide whether the student be asked to withdraw from the course for that particular semester because of long absence.
- If a student fails to apply and get sanction for absence as in above two cases, his parent/guardian may apply to the VC with reasons duly recommended by the faculty advisor, HOD and DAA and explain in person to the VC the reasons for not applying in time. The VC will consider on merit and decide to grant the leave or withdrawal from the course for that particular semester subject to any condition that he may like to impose. The decision of the VC shall be final and binding.

ABSENCE DURING EXAMINATIONS

- A student who has been absent during Mid-semester Examination due to illness and/or any exigencies may give a request for make-up examination within one week after the Mid-semester Examination to the HOD with necessary supporting documents in person. The HOD may consider such requests depending on the merits of the case, and after consultation with the course instructor, may permit the Make-up examination for the student concerned. However, no makeup examination will be permitted if the attendance in the course is less than 60% till the date of examination. This facility can be available only once in a semester.
- In case of absence from End-Semester Examination of a course(s) on Medical ground and/or other special circumstances, the student can apply for award of 'I' grade in the course(s) with necessary supporting documents and certifications by an authorized person to the HOD within one week after the End-Semester Examination. The HOD may consider the request, depending on the merit of the case, and after consultation with the Course(s) Instructor(s)/ faculty advisor may forward the case to DAA with his recommendation for the award of 'I' grade. After permission by DAA in writing, the 'I' Grade is converted into a regular double letter grade on the basis of the students' marks in Mid-Semester Examination and Class Work. However, if a student has scored 50% or more marks in Mid-Semester Examinations plus Class work his/her marks will be increased by 50% before awarding the grade. This applies to both theory and practical courses.

COURSE CREDIT ASSIGNMENT

- Every Course comprises of specific Lecture-Tutorial-Practical (L-T-P)

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Schedule. The credits for various courses are shown in the Scheme of Studies and Syllabus.

- The Academic Performance Evaluation of a Student shall be according to a Letter Grading System, based on the Class Performance Distribution.
- The double-letter grade (AA, AB, BB, BC, CC, CD, DD, FF) indicates the level of academic achievement, assessed on a decimal (0-10) scale.

Letter-Grades and Grade-Points:

LETTER-GRADE	GRADE-POINTS	REMARKS
AA	10	
AB	9	
BB	8	
BC	7	
CC	6	
CD	5	
DD	4	
EE	2	
FF	0	Fail
I	-	Incomplete
U	-	Audited
W	-	Withdrawal
S	-	Satisfactory
N	-	Unsatisfactory

DESCRIPTION OF GRADES

- An 'AA' grade stands for outstanding performance, relative to the class which may include performance with previous batches. The Course Instructor is supposed to take utmost care in awarding of this highest double-letter grade.
- The 'DD' grade stands for marginal performance and is the minimum passing double-letter grade.
- An 'EE' grade indicates that the student has attended the course but obtained less than pass marks. In this case he will earn half the credits assigned to the course.
- The 'FF' grade denotes very poor performance, i.e. failure in a course, and the Course Instructor is supposed to take utmost care while awarding this lowest double-letter grade. The 'FF' grade due to detention is denoted by 'FF*'.
A student, who obtains 'FF' grade in a core course due to detention in attendance, has to repeat (re-register) course in subsequent semesters /sessions whenever the course is offered. In other cases of 'FF' Grade, a student has three options as follows:

- a) Repeat the course,
Or
- b) Only appear in End-Semester Examination in a subsequent semester and evaluated out of 60 marks for new grade computation.
The new grade will be computed out of 100 marks as follows:
 $ESE = 60$ (against 40 marks for the regular students)
 $CW + Attendance = 30+10$, to be brought forward from the earlier semester.
Or
- c) Get the course converted into a partially dropped course to earn two grade points but earn only half the credits meant for that course. It could be termed as two letter grade 'EE'.

However, for an elective course in which 'FF' grade has been obtained, the student may overcome the deficiency either in the same course or any other elective course.

- There are four possible ways of clearing backlog courses and improvement of grades: Subsequent Semester; Summer Term; Week Ends; after University hours with the following overriding conditions – (i) There will be minimum 60% of contact hours of a regular course in a semester for doing backlog in any mode, (ii) The attendance requirement shall be a minimum of 75% of the classes scheduled in each course without any condonation.
- An 'I' grade denotes incomplete performance in any course due to absence at the End-Semester Examination (see Section "Absence during Examination").
- 'U' grade is awarded in a course that the student opts to register for audit. It is not mandatory for the student to go through the entire regular process of evaluation in an audit course. However, the student has to go through some process of minimal level of evaluation and also the minimum attendance requirement, as stipulated by the Course Instructor and approved by the corresponding BOS, for getting the 'U' grade awarded in a course, failing which that course will not be listed in the Grade Card.
- A 'W' grade is awarded when the student withdraws from the course. Withdrawal from a course is permitted only under extremely exceptional circumstances (like medical emergencies, family tragedies and/or other unavoidable contingencies) and has to be recommended by the HOD and approved by the DAA. However, no withdrawal is permitted after the finalization of the grades in the semester.
- 'S'/'N' These grades are awarded for the Mandatory Learning Courses. The 'S' grade denotes satisfactory performance and completion of a course. The 'N' grade is awarded for non-completion of course requirements and the student will have to register for the course until he obtains the 'S' grade.

FEEDBACK TO STUDENTS

- A student requires feedback on the progress of his learning. For this purpose, the Instructor will conduct three quizzes for a theory course in a semester 1st before MSE-1, 2nd between MSE-1 and MSE-2 and 3rd after MSE-2. The quizzes will form a component of class work, the other components being tutorials, home assignments or any other mode..
- For a laboratory course, the continuous assessment's feed back will be given through the laboratory records which are required to be submitted after performing the experiment in the next laboratory class.
- The continuous feedback on project/major project will be through project diary and interim report.

EVALUATION

Theory Course:

- The double-letter grade awarded to a student in a course other than a practical course i.e. 0-0-P course for which he has registered, shall be based on his performance in quizzes, tutorials, assignments etc., as applicable, in addition to two mid-semester examinations and End-semester examination. The weightage of these components of continuous evaluation may be as follows:

End-Semester Examination (ESE) (3 hrs)	:	40%
Mid-Semester Examinations (MSE) (2x10%;1 ½ hrs each)	:	20%
3Quizzes (3x5), Tutorials, Assignments, etc. (Several over the semester)	:	30%
Attendance	:	10%
Total		<hr/> 100%

Laboratory Course:

- The double letter grade awarded to the student in a practical course i.e. 0-0-P course will be based on his performance in regular conduct of experiments, viva voce, laboratory report, quizzes etc. The weightage of the components of continuous evaluation may be as follows:

Conduct of Experiments (as per syllabus)	:	50%
Lab Records	:	20%
Quizzes/Viva Voice +Attendance (10%)	:	30%
Total	:	100%

Design Project:

- The double letter grade awarded to the student in Major Project Phase-I and Phase-II i.e. 0-0-P course will be based on his performance in technical work pertaining to the solution of a problem, project report, presentation and defending in a viva-voce. The weightage of the components of continuous evaluation may be as follows:

Technical Work	:	50%
Report	:	25%
Presentation & Viva-voce	:	25%
Total	:	100%

Internship:

- The Internship-II will be treated as Major Project for evaluation purpose. The double letter grade awarded to the student in Internship-II i.e. 0-0-P course will be based on his performance in technical work pertaining to the solution of a real-life problem, project report, presentation and defending in a viva-voce. The weightage of the components of continuous evaluation may be as follows:

Technical Work	:	50%
Report	:	25%
Presentation & Viva-voce	:	25%
Total	:	100%

The continuous assessment and feedback is to be through seminars, professional diary and entering report at the place of work.

Seminar:

- The double letter grade awarded to the student in Seminar i.e. 0-0-P course will be based on his performance in oral presentation with emphasis on technical contents, presentation and ability to answer questions. The weightage of the components of continuous evaluation may be as follows:

Technical Contents	:	40%
Presentation	:	30%
Questions and answers	:	30%
Total	:	100%

Professional Development:

- These are one credit courses, with multiple options, to be completed at student's convenience in each year. Some of them may be mandatory and others two letter grade category. The evaluation process of these courses will be as per the nature, contents and delivery of these courses. Some of the common components of evaluation could be quizzes, viva-voce, practical test, group discussion, etc. Participation by students is to be given more weightage in Co-curricular courses.

SCHEME OF EXAMINATION

- The duration of examinations for a theory course will be 3 hours for End-semester examination and 1½ hours for mid-semester examination.
- The pattern of question paper/examination will be as under:

Theory Courses:

The University shall conduct the ESE for all theory courses being taught in the semester.

- i) There will be eight questions in all distributed over all the units in a course syllabus. The question paper will be in two parts with weightage 20 percent and 80 percent respectively. The paper setter must set the questions such that each question can be answered in about 35 minutes and the paper can be solved in 3 hours by an average student.
- ii) Part-A will have one question of objective types with multiple choices, covering all the units in the syllabus, which will be compulsory.
- iii) Part-B will consist of seven questions, one question from each of the seven units, and the students are required to solve any four. Out of seven any three questions will have long answers of comprehensive/derivation/description type and the remaining four questions will be of problem solving type in order to measure ability on analysis/synthesis/application.

If any special instruction(s) is/are required for a particular course, it/they is/are to be specified by the concerned HOD with prior approval of DAA.

Students are allowed in the examination the use of single memory, non-programmable calculator. However, sharing of calculator is not permitted.

Laboratory Courses:

Each experiment may be considered as a unit and evaluated to assess formative and cumulative performance say each of the experiments which carries 10 marks with distribution 5+2+3. Finally, the teacher looks at attendance and total earned marks in the experiments done in a Semester/Year and awards the grades relatively.

Mid-Semester Examination:

The question paper for Mid-Semester Examination will be made by the Course Coordinator from the topics covered till then (Test-1: from start of semester till Test-1 and Test-2, from after Test-1 till Test-2). Each Mid-Semester Examination question paper should have three questions all of which are to be solved but the questions will have internal choice and at least one of these questions must be of analytical type.

Note: The Mid-Semester examination will not have multiple choice question (mcq).

TRANSPARENCY

- The answer books of all Mid-semester Examination and End-semester Examination will be shown to the students within three days of the last paper. It is the responsibility of the student to check this evaluation and affix his signature in confirmation.
- If the student finds some discrepancy, he should bring it to the notice of the Course Coordinator. The Course Coordinator will look into the complaint and remove the doubts of the student and proceed with the work of grading.
- The entire process of evaluation shall be transparent, and the course instructor shall explain to a student the marks he is awarded in various components of evaluation.

RESULT

- The final marks and grades shall be displayed on the notice board and a student can approach the Course Instructor(s) concerned for any clarification within the period stipulated in the Academic Calendar. The process of evaluation shall be transparent and the students shall be made aware of all the factors included in the evaluation. In case of any correction, the Course Instructor shall have to incorporate the same before finalization of the grades.
- The Student's Grade Card shall contain the Letter-Grade for each registered course; along with the SGPA at the end of the semester, and the CGPA at the completion of the programme.

APPEAL FOR REVIEW OF GRADE

- If a student is not satisfied with the award of the grade after the announcement of the grades, he may appeal on a Grievance Form duly filled in along with the fee receipt for this purpose to the HOD of the parent department within one week of the following semester. The HOD will forward the form along with his recommendation based on the records of the case to DAAB within the date specified in the Academic Calendar.
- The fee for such an appeal will be decided from time to time. If the appeal is upheld by DAAB, then the fee amount will be refunded to the student without interest.
- VC shall have power to quash the result of a candidate after it has been declared, if
 - (a) He is disqualified for using malpractice in the examination;
 - (b) A mistake is found in his result;
 - (c) He is found ineligible to appear in the examination

AWARD OF DIVISIONS

- The overall performance of a student will be indicated by two indices:
 - (i) **SGPA** which is the Semester Grade Point Average
 - (ii) **CGPA** which is the Cumulative Grade Point Average

SGPA for a semester is computed as follows:

$$SGPA = \frac{\sum C_i G_i}{\sum C_i}$$

Where,

C_i denotes credits assigned to i^{th} course with double-letter grade, and G_i denotes the grade point equivalent to the letter grade obtained by the student in i^{th} course with double-letter grade, including all 'FF' grades in that semester.

CGPA is computed as follows:

$$CGPA = \frac{\sum C_i G_i}{\sum C_i}$$

Where,

C_i denotes credits assigned to i^{th} course with double-letter grade, and G_i denotes the grade point equivalent to the letter grade obtained by the student in i^{th} course for all courses with double-letter grades, including all 'FF' grades in all semesters at the end of the programme.

For CGPA calculation, the following grades are to be counted:

- (i) Grades in all core courses,
 - (ii) The best grades in the remaining eligible courses to fulfill the minimum credits requirement for a programme.
- The degree will be awarded only upon compliance of all the laid down requirements for programme as under:
 - (i) There shall be University requirement of earning a minimum credits for a degree, satisfactory completion of mandatory learning courses and other activities as per the degree programme structure.
 - (ii) There shall be a minimum earned credit requirement on all Departmental core courses, Elective courses and Thesis as specified by BOS.
 - (iii) There shall be a maximum duration for complying to the degree requirement.
 - (iv) The candidate will be placed in First Division with Honours/First Division with Distinction/First Division/Second Division which will be mentioned on the degree certificate as under.

DIVISION	CONDITIONS TO BE FULFILLED
First Division with Honours	CGPA \geq 8.5 No 'FF', N or W grade in any course during the programme and total 230 credits
First Division with Distinction	CGPA \geq 8.5
First Division	CGPA \geq 6.75
Second Division	CGPA \geq 5.0 but $<$ 6.75

Note: Although, there is no direct conversion from grades to marks, however, for comparison purposes percentage of marks may be assumed to be CGPA multiplied by nine.

B. ARCH. DEGREE REQUIREMENTS

The requirements of the award of B.Arch. Degree programme are as follows:

(a) University Requirements:

- (i) Minimum Earned Credit Requirement for Degree is 225 for the programme. However the credits required for consideration for honours degree will be 230.
- (ii) Satisfactory completion of all Mandatory Learning Courses.

(b) Programme Requirements:

Minimum Earned Credit Requirements on all Core Courses, Elective Courses and Thesis and Internship as specified by the BOS.

- (c) The Maximum duration for a student for complying to the Degree Requirement is EIGHT years from date of first registration for first semester. However, first three semesters have to be completed in FIVE years.
- (d) The CGPA at the end of programme is atleast 5.0.

GRADE IMPROVEMENT

- A student may be allowed to improve the SGPA in an appropriate semester, if his SGPA falls below 5.0. Similarly, any student may be allowed to improve performance in any course provided the course is being floated and available.

TERMINATION FROM THE PROGRAMME

- A student shall be required to leave the University without the award of the Degree, under one or more of the following circumstances:
 - (a) If a student fails to earn the minimum credits specified below:

CHECK POINT	PERCENTAGE OF CREDITS** (%)
End of FIRST year	75*
End of SECOND year	75*
End of THIRD year	75
End of FOURTH year	80
End of FIFTH year	80

Note 1:

* A student may be given one more chance to cover the shortfall in the threshold at the end of first two years during the following summer terms if s/he can fulfill the requirement by doing two courses. In case s/he fails to clear the threshold even after the summer term he has to leave the course.

** If at any stage, a student fails to cross the threshold with a minimum of 5.0 SGPA in any term, he will be treated as critical case and will be advised to improve the grades.

Note 2: The period of temporary withdrawal (refer: Clause No. G8.1) is not to be counted for the above Credit Threshold.

- (b) If a student is absent for more than 4 (Four) weeks at a stretch in a Term without sanctioned leave.
- (c) Based on disciplinary action by the AC, on the recommendation of the appropriate committee.

Note: Under any circumstances of termination, the conditions specified in Permanent. Withdrawal (refer: Clause No: G8.2) shall also apply.

WITHDRAWAL FROM PROGRAMME

Temporary:

- A student who has been admitted to a degree programme of the University may be permitted to withdraw temporarily, for a period of one term or more, on the grounds of prolonged illness or grave calamity in the family, etc., provided:
 - (i) He applies to the University stating fully the reasons for withdrawal together with supporting documents and endorsement from his parent/guardian
 - (ii) There are no outstanding dues or demands, from the Departments/ University /Hostels/Library and any other centers;
 - (iii) Scholarship holders are bound by the appropriate Rules applicable to them.
 - (iv) The decision of the VC of the University regarding withdrawal of a

student is final and binding.

- Normally, a student will be permitted only one such temporary withdrawal during his tenure as a student and this withdrawal will not be counted for computing the duration of study.

Permanent:

- Any student who withdraws permanently admission before the closing date of admission for the academic semester is eligible for the refund of fee as per the University rules. Once the admission for the academic semester is closed, the following conditions govern withdrawal of admission:
- A student who wants to leave the University for good, will be permitted to do so (and take Transfer Certificate from the University, if needed), only after clearing all the dues for the remaining duration of the course.
- A student who has received any scholarship, stipend or other form of assistance from the University shall repay all such amounts, in addition, to clearing all the dues for the remaining duration of the course.
- The decision of the VC regarding all aspects of withdrawal of a student shall be final and binding.

Department of Architecture

DEGREE OBJECTIVE

Architecture can be conceived as comprising of two major stages:

- Production of architectural thought and
- The implementation of that architectural thought.

While the production of architectural thought requires an understanding of Art, Culture, Humanities, context and identity; complexities of physical and social contexts etc that shape architecture and help in the creation of “Creative innovations”, the implementation of the architectural thought requires sound technical knowledge in the field of structures, building construction, Illumination, Acoustics, Services etc essential for the implementation and execution of the project. In addition, in the digital world, architects today should be well equipped with the knowledge of computers.

The responsibilities assigned to an architect require him to be an effective manager. An architect has to be both a team player and a leader. Not only is he required to deal with his clients and ensure the best out of his design team, but also included in his list of activities is to co-ordinate between various design and technical consultants and supervise work at site. In effect, an architect is a project planner and manager.

The goal of this B.Arch. degree programme is therefore, to build a broad and balanced foundation for this knowledge and these abilities. The potential variety of an architect's practice is mirrored in the educational programme.

Scheme of Studies

B. Arch. Degree Programme (Regular) (Stage-I)

1st Year (Semester-I)

THEORY							
Course No.	Course Name	Periods	Evaluation Scheme				Cr
			Components of Evaluation with Weightage (%)				
		L-T-P	CW+ Att.	MSE (2x½ Hrs)	ESE (3 Hrs)	Total	
AR-101	Principles of Architecture - I	2-0-0	30+10	10+10	40	100	2
AR-102	History of Architecture - I	2-0-0	30+10	10+10	40	100	2
AR-103	Building Materials and Processes - I	2-0-0	30+10	10+10	40	100	2
AR-104	Architectural Psychology	2-0-0	30+10	10+10	40	100	2
CEA101	Environmental Science and Ecology***	2-0-0	30+10	10+10	40	100	2
CEA102	Structures in Architecture - I	2-0-0	30+10	10+10	40	100	2

PRACTICAL / DRAWING / DESIGN							
Course No.	Course Name	Periods	Evaluation Scheme				Cr
			Components of Evaluation With Weightage (%)				
		L-T-P	EXPT.	Lab Record	Viva+Att.	Total	
AR-155	Basic Design and Visual Arts - I	0-0-6**	50	20	30	100	3
AR-156	Architectural Drawing and Graphics - I	0-0-6**	50	20	30	100	3
AR-157	Building Construction Technology - I	0-0-6**	50	20	30	100	3
AR-158	Model Making Workshop - I	0-0-2	50	20	30	100	1
AR-159	Computer Applications in Architecture - I	0-0-2	50	20	30	100	1
PDA193	Effective Communication***	0-0-2	50	20	30	100	1
PDA191	Extra / Co-Curricular Activities						1*

TOTAL CONTACT HOURS	TOTAL CREDITS
12-0-24 (36)	24 + 1***

FINAL EVALUATION IN GRADES

(L-T-P-Cr) - Lectures-Tutorials-Practical-Credits

* One credit to be earned in Semester-II through Co-Curricular Activities outside contact hours. However, a student is to register for this course in both the Semesters of first year.

** One hour for explanation/demonstration

*** CEA101 and PDA193 are Mandatory Learning Courses

Scheme of Studies

B. Arch. Degree Programme (Regular) (Stage-I)

1st Year (Semester-II)

THEORY								
Course No.	Course Name	Periods	Evaluation Scheme				Cr	
			Components of Evaluation with Weightage (%)					
		L-T-P	CW+ Att.	MSE (2x½ Hrs)	ESE (3 Hrs)	Total		
AR-110	Principles of Architecture - II	2-0-0	30+10	10+10	40	100	2	
AR-111	History of Architecture - II	2-0-0	30+10	10+10	40	100	2	
AR-112	Building Materials and Processes- II	2-0-0	30+10	10+10	40	100	2	
AR-113	Sociology in Architecture	2-0-0	30+10	10+10	40	100	2	
CEA103	Structures in Architecture - II	2-0-0	30+10	10+10	40	100	2	

PRACTICAL / DRAWING / DESIGN								
Course No.	Course Name	Periods	Evaluation Scheme				Cr	
			Components of Evaluation With Weightage (%)					
		L-T-P	CW+ Att.	MSE (2x½ Hrs)	ESE (3 Hrs)	Total		
AR-164	Basic Design and Visual Arts - II	0-0-6**	50	20	30	100	3	
AR-165	Architectural Drawing and Graphics - II	0-0-6**	50	20	30	100	3	
AR-166	Building Construction Technology - II	0-0-6**	50	20	30	100	3	
AR-167	Model Making Workshop - II	0-0-3	50	20	30	100	2	
AR-168	Computer Applications in Architecture - II	0-0-3	50	20	30	100	2	
PDA192	Personality Development Skills	0-0-2	50	20	30	100	1	
PDA191	Extra / Co-Curricular Activities						1*	

TOTAL CONTACT HOURS	TOTAL CREDITS
10-0-26 (36)	24 + 1*

FINAL EVALUATION IN GRADES

(L-T-P-Cr) - Lectures-Tutorials-Practical-Credits

* One credit to be earned in Semester-II through Co-Curricular Activities outside contact hours. However, a student is to register for this course in both the Semesters of first year.

** One hour for explanation/demonstration.

DETAILED SYLLABUS

AR-101	PRINCIPLES OF ARCHITECTURE-I	L T P	Cr
		2 0 0	2

OBJECTIVE

To introduce the student to the world of architecture and establish the key elements involved in the creation of aesthetically appealing and practically appropriate architecture. The subject is designed to provide an insight into the principles and processes that underpin the discipline of architecture. It is aimed to teach students the key practical and theoretical influences that inform architectural practice enabling students to understand and analyze architecture.

- 1. INTRODUCTION TO ARCHITECTURE:** Description of architecture; architecture compared to visual and temporal arts; architecture and science and technology; Architecture and social science; the work of an architect compared to that of an artist, technologist and a designer/craftsman, scope of architecture; definition and concepts of architecture.
- 2. ARCHITECTURE AS AN OCCUPATION:** Types of architectural projects, career opportunities in the field of architecture, role, responsibilities and duties of an architect in a building project.
- 3. ELEMENTS OF DESIGN - FUNCTIONAL:** Study of functional, aesthetic and structural components of architecture: parameters of design; anthropometrics; human activity and the use of spaces; spaces – their relation, interaction and information in a structure.
- 4. ELEMENTS OF DESIGN - AESTHETIC:** Elements and principles of visual composition, forms; functions of spaces and their flexibility; natural forms and shapes and their relation in designing; problems related to the understanding of the elements of architectural design; concepts of space and form and their perception; ordering principles.
- 5. ELEMENTS OF DESIGN – STRUCTURAL:** Elements of structure; elements of construction and their thoughtful use to enhance designs;
- 6. ANALYSIS OF BUILDINGS:** Analysis of architectural buildings through literature reviews and case studies, based on the functional, aesthetic and structural parameters.
- 7. DESIGN PROCESS:** Integration of aesthetics and function; understanding of formative ideas, organization concepts, spatial characteristics; massing and circulation in design analysis.

TEXT BOOK

Parmar, V. S. "Design Fundamentals in Architecture", Somaiya Publications Pvt Ltd, 1973.

REFERENCE BOOKS

1. Snyder, J and Catanese, A, "Introduction to Architecture", McGraw-Hill, 1979
2. Farrelly, Lorraine, "The Fundamentals of Architecture", Ava Publishing, 2007
3. Voordt and Wegen, "Architecture in Use", Architectural Press, 2005
4. Smithies, K.W., "Principles of Design in Architecture", Van Nostrand Reinhold Co, 1981
5. Roger H. Clark and Michael Pause, "Precedents in Architecture", Van Nostrand Reinhold Co, 1996

AR-102	HISTORY OF ARCHITECTURE - I	L T P	Cr
		2 0 0	2

OBJECTIVE

History of Architecture provides the connection, context, and roots central for the identity of who we were, who we are, and who we might be. Since architecture is a coherent chain of events, styles, tendencies, beliefs and techniques, studying history of architecture enables the student to gain a direct understanding of how and why architecture is made today, and clues to how architecture can be tomorrow.

1. **INTRODUCTION TO ANCIENT WORLD ARCHITECTURE:** Art and culture of pre-historic man; stone henge; a brief outline of the Neolithic revolution and its impact on built forms– brief study of a few ancient settlements – Jericho, Catal Huyuk, Hassuna, Koln-Lindenthal & Skara Brae.
2. **ART AND ARCHITECTURE OF EGYPT:** Evolution of Egyptian architecture-factors affecting development; spatial planning and characteristic features; tombs- mastabas, pyramids; temples; sphinx, obelisks etc
3. **ART AND ARCHITECTURE OF MESOPOTAMIA:** Factors affecting the development of art and architecture of Mesopotamia; spatial planning and characteristic features of the architecture of Sumerian, Babylonian, Assyrian and Persian periods; Ziggurats etc
4. **ART AND ARCHITECTURE OF GREECE:** Evolution of Greek architecture-factors affecting development; characteristic features of Aegean and Helladic architecture; Hellenic and Hellenistic periods; Greek classic orders; agora and other important public buildings/ spaces.
5. **ART AND ARCHITECTURE OF ROME:** Evolution of Roman architecture-factors affecting development; characteristic features of Etruscan architecture and the Roman period; Roman classic orders; forums; basilicas; coliseum and other important public buildings/ spaces.
6. **EARLY CHRISTIAN ARCHITECTURE:** Factors affecting evolution and development of early Christian and Byzantine, characteristic features and

typical examples; spatial planning, construction and other features of basilican church typology; centralized church typology.

7. **ROMANESQUE AND GOTHIC ARCHITECTURE:** Factors affecting evolution and development of Romanesque and Gothic architecture, characteristic features and typical examples, spatial planning, construction and other features- rib and panel vaulting etc; church and the precinct, cathedrals, monastic establishments, parish churches; elements of special attributes. English and French church planning; secular architecture- manor houses, castles; town planning principles.

TEXT BOOK

Hiraskar, G.K., "The Great Ages of World Architecture (with Introduction to Landscape Architecture)", Dhanpat Rai Publications (P) Ltd, 2009

REFERENCE BOOKS

1. Cruickshank, D., Fletcher, B., Saint A., "Banister Fletcher's - A History of Architecture", Architectural Press, 1996.
2. Risebero, Bill, "The Story of Western Architecture", MIT Press, 2001
3. Ching Francis D.K., Jarzombek, Mark M., Prakash, Vikramaditya, "A Global History of Architecture", Wiley, 2006.

AR-103	BUILDING MATERIALS AND PROCESSES-I	L T P	Cr
		2 0 0	2

OBJECTIVE

The course is designed to expose the students to both vernacular and contemporary construction methods and materials, their properties, testing and uses.

1. **SOILS:** Formation – index property, specific gravity, grain size distribution, plasticity, characteristics and phase relationship, identification and local names; ISI classification; sources and uses of sand; fineness modulus;
2. **CLAY AND CLAY MATERIALS:** Bricks, terracotta, tiles etc; Bricks: types of bricks; study of properties of constituent components, manufacturing process, quality test of bricks.
3. **RURAL AND TRADITIONAL MATERIALS:** Mud: mud as a building material; soil stabilization: need for soil stabilization, stabilized soil blocks; rural materials: bamboo, casuarina, coconut, palm, hay, coir – properties and uses; fire retardant treatment and insect proofing;
4. **STONES:** Types of stones; study of properties of constituent components; methods of quarrying of stones; properties and uses of principal building stones.

B. Arch.

5. **TIMBER:** Study of properties of timber, uses, seasoning process, quality tests; types of timber and defects in timber; protection from termites; techniques of preserving and finishing of timber; plywood, particle boards, block boards, PVC, laminates etc.
6. **LIME, CEMENT AND CEMENT PRODUCTS:** Lime: fat and hydraulic lime, their uses and properties; manufacture of lime; preparation of lime mortar; functions and requirements of a good mortar; mix properties for various works; Concrete: study of properties of constituent components, manufacturing process, quality tests of cement, lime, sand, aggregates, concrete and mortar.
7. **METALS:** Study of properties of constituent components, manufacturing process, quality test of ferrous and non-ferrous metals (lead, copper, zinc, tin); weathering effects on such metals, preventive measures.

TEXT BOOK

Rangwala, S. C., "Engineering Materials (Material Science)", Charotar Publishing House, 2007.

REFERENCE BOOKS

1. Farrelly, Lorraine, "Basic Architecture 02: Construction + Materiality", Ava Publishing, 2008
2. Watson, Donald, "Time-saver Standards for Building Materials and Systems", Tata McGraw Hill, 2010.

AR-104	ARCHITECTURAL PSYCHOLOGY	LTP	Cr
		200	2

OBJECTIVE

This course is aimed at helping the student understand the built environment by providing a look at architecture within the framework of human sciences: how does human psychology and society influence and inform architecture and how in turn architecture affects our lives. Students develop critical observation skills and investigate buildings as manifestations of religious, social, and personal values.

1. **ENVIRONMENTAL PSYCHOLOGY:** Relation to architecture and planning; meaning of environment; measurement of environmental stimuli from psychological aspect; behavioral effects of environmental conditions: physical - noise, temperature and air pollution; social- overcrowding and isolation; extra ordinary- catastrophe.
2. **PERCEPTION:** Perceptual factors of environment- spatial perception: perception of distance, size and movement; meaning of colour and form; depth perception; visual illusions in architecture; spatial thinking- social and cultural influences on environmental perception.

- TERRITORIAL BEHAVIOUR AND PERSONAL SPACE:** Concept of personal space and territoriality, individual and situational as determinants of personal space; consequences of too much or too little of personal space; personal space and environmental space as implications for design aspects; adaptation to environment - behavioral aspects of adaptation to familiar and unfamiliar environment; spatial experience; living requirements and satisfaction, etc.
- ARCHITECTURAL PSYCHOLOGY:** Psychological effects of various architectural means: line, form, space, textures, colour, light, scale etc; case studies.
- PSYCHOLOGICAL AESTHETICS:** Measurement of communication through art and architecture; signs and symbols in architecture; determination of pleasantness and unpleasantness as psychological factors in environmental design.
- ENVIRONMENTAL SETTINGS:** Nature and effects of home, work, educational or institutional (e.g. nursing home, hospital, prison, etc.) environments as they affect human health and cognitive functioning; restorative effects of natural environments
- LOCAL IDENTITY:** Concept of local identity, globalization and identity, maintaining a distinct identity in a globalised world etc

TEXT BOOK

Parmar, V. S., "Design Fundamentals in Architecture", Somaiya Publications Pvt. Ltd., 1973.

REFERENCE BOOKS

- Bell, P.A., Greene, T.C., Fisher, J.D., & Baum, A. "Environmental Psychology", 5th edition, Harcourt, Inc.: Fort Worth, TX, 2001.
- Gallagher, W., "The Power of Place", Harper Perennial, New York, 1994.
- Rapoport, Amos, "House Form and Culture", Prentice Hall, 1969.
- Broadbent, Geoffrey. "Design in Architecture: Architecture and the Human Sciences", John Wiley and Sons, 1973.

AR-110	PRINCIPLES OF ARCHITECTURE - II	L T P	Cr
		2 0 0	2

OBJECTIVE

To introduce the student to the world of architecture and establish the key elements involved in the creation of aesthetically appealing and practically appropriate architecture. The subject is designed to provide an insight into the principles and processes that underpin the discipline of architecture. It is aimed to teach students the key practical and theoretical influences that inform architectural practice enabling students to understand and analyze architecture.

B. Arch.

1. **FACTORS INFLUENCING ARCHITECTURE:** Climate, topography, materials, economics, socio-cultural and technological influences etc
2. **ARCHITECTS THROUGH THE AGES:** Brief introduction to the styles propagated by architects from antiquity to modernism.
3. **THEORIES ON ARCHITECTURE:** Philosophy of architecture as propagated by some leading architects; study of selected writings and buildings.
4. **ARCHITECTURE CRITICISM:** Introduction and need for architecture criticism in the academy of architects; criticism in day - to - day transaction, architecture criticism a societal perspective; types and characteristics, crux of normative criticism, interpretive criticism, description criticism, peer criticism.
5. **VERNACULAR AND RURAL ARCHITECTURE:** Introduction to vernacular and rural architecture and its characteristics; rural environment and its architectural considerations; study of exemplary cases.
6. **CASE STUDIES:** Case studies of some old and new classical architectural projects from India and abroad with special focus on the above mentioned points.
7. **ANALYSIS OF BUILDINGS:** Analysis of architectural projects of various scales and types based on the above mentioned points.

Note:

Assignments could be in the form of seminars on case studies of architectural projects.

TEXT BOOK

Parmar, V. S. "Design Fundamentals in Architecture", Somaiya Publications Pvt Ltd, 1973.

REFERENCE BOOKS

1. Snyder, J and Catanese, A, "Introduction to Architecture", McGraw-Hill, 1979
2. Farrelly, Lorraine, "The Fundamentals of Architecture", Ava Publishing, 2007
3. Voordt and Wegen, "Architecture in Use", Architectural Press, 2005
4. Smithies, K.W., "Principles of Design in Architecture", Van Nostrand Reinhold Co, 1981
5. Roger H. Clark and Michael Pause, "Precedents in Architecture", Van Nostrand Reinhold Co, 1996
6. Pevsner Nikolaus, "Canons of Criticism", Penguin, Harmonds worth, 1971

AR-111	HISTORY OF ARCHITECTURE - II	L T P	Cr
		2 0 0	2

OBJECTIVE

History of Architecture provides the connection, context, and roots central for the identity of who we were, who we are, and who we might be. Since architecture is a coherent chain of events, styles, tendencies, beliefs and techniques, studying history of architecture enables the student to gain a direct understanding of how and why architecture is made today, and clues to how architecture can be tomorrow.

1. **ANCIENT ARCHITECTURE:** Early Indian architecture up to 3rd century A.D; Indus valley civilization; study of Mohenjodaro and Harrapan architecture and planning; Vedic architecture of India; Vastu purush mandala and other canons of Hindu architecture.
2. **INDIAN TEMPLE ARCHITECTURE:** Temples: spatial arrangements, construction, ornamentation; elements of special attributes: columns, shikharas; temple complex etc
3. **INDO-ARYAN TEMPLE ARCHITECTURE:** Characteristic features and typical examples of Indo-Aryan temple architecture- temples of Orissa, Kashmir, M.P, Gujarat etc;
4. **CENTRAL HINDU TEMPLE ARCHITECTURE:** Early chalukyan architecture, the Rashtrakuta style and the Hoysala architecture – salient features and typical examples.
5. **DRAVIDIAN ARCHITECTURE:** Characteristic features and typical examples of Pallava, Pandava, Chola, Vijayanagar and Madura styles.
6. **BUDDHIST ARCHITECTURE IN INDIA:** Development and characteristic features; stupas; Buddhist order- Ashoka pillars; Chaityas; rock cut architecture; Viharas etc
7. **JAIN ARCHITECTURE IN INDIA:** Development and characteristic features; Jain temple architecture etc

Note: An educational tour/ study tour to the places of architectural interest / building appraisal shall be organized as per the programme. The documentation shall be done in the form of photographs / slides and sketches presented in form of a seminar and written report immediately after the tour / building appraisal.

TEXT BOOK

Hiraskar, G.K., "The Great Ages of World Architecture (with Introduction to Landscape Architecture)", Dhanpat Rai Publications (P) Ltd, 2009

REFERENCE BOOKS

1. Brown, Percy, "Indian Architecture – Vol I and II", Apt Books, 1990.

B. Arch.

2. Grover, S. K., "Buddhist and Hindu Architecture in India", CBS, 2008.
3. Thapar, B., "Introduction to Indian Architecture", Periplus Editions, 2005.
4. Surendra S., " Indian Architecture : Hindu, Buddhist and Jain", Ajanta Offset and Packaging Ltd., 2006
5. Maheshwari and Garg, "Ancient Indian Architecture", CBS, 2003.

AR-112	BUILDING MATERIALS AND PROCESSES – II	L T P	Cr
		2 0 0	2

OBJECTIVE

The course is designed to expose the students to both vernacular and contemporary construction methods and materials, their properties, testing and uses.

1. **GLASS:** Types of glass (plate, tinted, heat absorbing etc); structural glass bricks and glasscrete; fiber glass and glass wool etc; properties, varieties and uses.
2. **PLASTICS:** Properties, varieties and uses of plastics in the building industry; Thermoplastics and thermosetting plastics: properties and architectural uses of plastics; structural plastics; Reinforced plastics and decorative laminates-plastic coatings, adhesives and sealants; modifiers and plasticizers; fabrications of plastics; primary plastic building products for walls, roof and partitions. Secondary building products for rooms, windows, roof lights, domes, gutters and handrails.
3. **PAINTS, VARNISHES AND DISTEMPERS:** Constituents of oil paint, characteristics of a good paint; types of paint; process of painting different surfaces; types of varnish; methods of applying varnish; French polish; dry distemper; oil bound distemper; wax polishing, putty.
4. **MATERIALS FOR FLOORING:** Different flooring & paving materials and types that are cast-in-situ viz. Mud flooring, Brick flooring, Indian Patent Stone finish, Terrazzo flooring, red oxide flooring etc. and readymade tiles available in market viz. natural stone tiles / slabs, plain & mosaic cement tiles / blocks, ceramic tiles, vitrified tiles and other modern materials, including the process of providing or laying the flooring or pavement; floor finishes of various materials viz. carpet, linoleum, rubber, PVC etc.
5. **MATERIALS FOR ROOFING:** Mangalore tile, pan tiles, slate, corrugated asbestos sheet etc.
6. **DAMP PROOFING AND WATER PROOFING:** Hot applied and cold applied; emulsified asphalt, bentonite clay, butyl rubber, silicones, vinyls, epoxy resins and metallic water proofing materials, their properties and uses; water proofing membranes such as rag, asbestos, glass felt, plastic and synthetic rubber- vinyl, butyl rubber, neoprene, polyvinyl chloride; prefabricated membranes sheet lead, asphalt their properties and uses.

7. **MISCELLANEOUS:** Anti termite treatment to foundations, masonry and wood work; sound insulating materials- gypsum; recent advances in building materials.

Note: Assignments could be in the form of market surveys for building materials and study of latest building materials in the building construction industry. Students are also required to do case studies of architectural and interior projects where the above-mentioned materials have been innovatively used.

TEXT BOOK

Rangwala, S. C., "Engineering Materials (Material Science)", Charotar Publishing House, 2007.

REFERENCE BOOKS

1. Farrelly, Lorraine, "Basic Architecture 02: Construction + Materiality", Ava Publishing, 2008
2. Watson, Donald, "Time-saver Standards for Building Materials and Systems", Tata McGraw Hill, 2010.

AR -113	SOCIOLOGY IN ARCHITECTURE	L T P	Cr
		2 0 0	2

OBJECTIVE

A large proportion of our human experience and social interaction occurs in the buildings in which we live and work. This course examines how architectural forms both influence and react to socio-cultural phenomena. Also, sociology informs architecture in all phases of the design process, including the pre-design and programming, design, construction, and post-construction phases. Therefore, students of architecture can use this sociological perspective to enhance building design.

1. **INTRODUCTION TO SOCIOLOGY:** Man and his social and physical environment; social groups and social structure; utility and relation with architecture;
2. **CULTURE AND SOCIETY:** Meaning of culture and society, influence of socio-cultural patterns on architecture, case studies.
3. **INDIAN COMMUNITIES:** Rural and urban communities; their social structures and problems; cultural heritage; rituals and community gathering etc.
4. **URBANIZATION:** Trend and characteristics; dynamics of urban growth and social change; urban attitude, value and behavior; patterns of urbanization in India; migration studies; problems arising out of urbanization etc.

B. Arch.

5. **COMPARISON OF URBANIZATION:** Comparison of urbanization in underdeveloped countries with that in the west – salient features and characteristics.
6. **SOCIAL ASPECT OF PHYSICAL ENVIRONMENT:** Its implications and limitations in buildings; neighborhood planning; slum improvements and city fabric.
7. **COMMUNITY PARTICIPATION:** Significance of public opinion and participation.

Note: Assignments would be in the form of case studies comprising the sociological study of communities with their habitat and built environment

TEXT BOOK

Madan, G. R., "Indian Social Problems: Vol - 1 and 2", Allied Publishers Pvt Ltd, 2003.

REFERENCE BOOKS

1. Rapoport, Amos, "House Form and Culture", Prentice Hall, 1969
2. Broadbent, Geoffrey. "Design in Architecture: Architecture and the Human Sciences", John Wiley and Sons, 1973
3. Prakasa Rao, VLS, "Urbanisation in India", Concept Publishing Company, New Delhi, 1983.
4. Desai A.R., "Rural Sociology", Popular Prakashan, Bombay, 1984.
5. Smelsa, "Sociology", Prentice Hall, New Jersey, 1981.

AR-155	BASIC DESIGN AND VISUAL ARTS - I	L T P	Cr
		0 0 6	3

OBJECTIVE

The course Basic design is aimed at imparting a good base in design through thoughtful designing of simple two dimensional and three dimensional compositions. Also, the Visual Arts component intends to acquaint the students with various drawing principles and artistic techniques; how to sketch and draw at all stages of the design process.

EXERCISES

PART-I: BASIC DESIGN

1. To study the elements of visual composition.
2. To study the principles of visual composition.
3. To study the Ordering principles.

4. To study the colour wheel, colour schemes and its application on architectural forms and spaces; principles of harmony and contrast and degree of chromatism.
5. To study textures and textures schemes.
6. To study and demonstrate the application of basic design in architecture: Adopt compositions, murals and sculptures for semi recreational and semi functional architectural spaces.

PART-II: VISUAL ARTS

1. To study the basic elements of free hand sketching.
2. To learn the various sketching techniques and mediums in pencil and ink.
3. To learn how to build a sketch - composing a view, establishing structure, scale, layering tonal values, adding details; achieving spatial depth in drawings; sighting techniques.
4. Free hand Sketching of furniture pieces, parts of building in relation with human scale and proportions.
5. Free hand Sketching of architectural elements and landscapes.

TEXT BOOK

Ching, Francis D. K., "Architecture: Form, Space, and Order", Wiley and Sons, 2007.

REFERENCE BOOKS

1. Wallschlaeger, C and Snyder, S.B., "Basic Visual Concepts and Principles for Artists, Architects and Designers", McGraw Hill, 1992.
2. Laseau, P, "Graphic Thinking For Architects and Designers", John Wiley and Sons, 2001
3. Ching, Francis D. K., "Drawing: A Creative Process", Wiley and Sons, 1989
4. Farrelly Lorraine, "Basic Architecture 01: Representational Techniques", Ava Publishing, 2008.
5. Evans, Ray, "Drawing and Painting Architecture", Van Nostrand Reinhold Company, 1983.

AR-156	ARCHITECTURAL DRAWING AND GRAPHICS-I	L T P	Cr
		0 0 6	3

OBJECTIVE

Architectural drawing and graphics is the primary medium for development and communicating design concepts. Through this course the students are trained to develop imaginative and three dimensional spatial capabilities and acquire the skill of reading plans, sections and elevations and understanding the drawing conventions and symbols used in them.

EXERCISES

1. To understand and learn about the various drafting tools required in architectural drafting - pencils, grades of graphite leads, technical pens etc.
2. To study the various drafting techniques, line quality etc.
3. To learn about the drafting procedure and exercises on architectural letterings.
4. To construct architectural scales and apply them to real object and drawings (Plain scale, diagonal scale, comparative scales).
5. To introduce the principles of orthographic projections and prepare drawings on orthographic projection of simple regular two dimension shapes.
6. To prepare drawings on orthographic projection of complex solids, hollow object and sections.
7. To study the principles and techniques of axonometric, oblique and isometric views and construct three dimensional views of basic and complex geometrical shapes.
8. To study the interpenetration of solids.
9. To study the development of surfaces.
10. To study the sections of solids.

REFERENCE BOOKS

1. Bhatt, N.D., "Engineering Drawing: Plane and Solid Geometry", Charotar Publishing House, 2006
2. Leslie, Martin C., "Architectural Graphics", Macmillan Pub Co, 1970.
3. Parkinson, A.C., "A First Year Engg. Drawing", Sir Issac Pitman and Sons.
4. Black, Earl D., "Engineering and Technical Drawing", Van Nostrand Reinhold Co., 1972.
5. Ching, Francis D. K., "Architectural Graphics", Van Nostrand Reinhold, 2003.

AR-157	BUILDING CONSTRUCTION TECHNOLOGY - I	L T P	Cr
		0 0 6	3

OBJECTIVE

To give an introduction to building elements and expose the student to the process of building construction.

EXERCISES

1. To introduce the various terminology used in brick masonry works.
2. To study and prepare drawings of bonds in brick masonry; bonds in columns, corners and junctions, jointing and pointing; buttresses; sills; jambs; corbels; copings;
3. To study and prepare drawings of cavity walls and reinforced brickwork.
4. To study the various tools used in brick masonry works.

5. To study the defects in brick masonry: cracking in brick walls etc; supervising brick masonry works.
6. To study and prepare drawings on various stone masonry works: Rubble masonry, Ashlar masonry etc.
7. To study the type of walling and joints, dressing of stone surfaces; coping; supervising stone masonry works.
8. To study various types of composite masonry.
9. To demonstrate various quality test of bricks, stones and timber.
10. To study and prepare drawings on simple foundation for masonry load bearing walls and piers.

Note:

Sessionals will be in the form of reports, drawings and models. There shall be regular visits to construction sites.

REFERENCE BOOKS

1. Rangwala, S. C., "Building Construction", Charotar Publishing House, 2007
2. McKay, W.B., "Building Construction Volume I, II, III and IV", Longmans, 1955
3. Ching, Francis D. K. and Adams, Cassandra, "Building Construction Illustrated", Wiley and Sons, 2000
4. Barry, R, "The Construction of Buildings", the English Language Book Society and Crosby Lockwood, 1976
5. Chudley, Roy, "Construction Technology", Longman, 2005
6. Arora, S.P. and Bindra, S.P., "The Text book of Building Construction", Dhanpat Rai Publications, 2009

AR -158	MODEL MAKING WORKSHOP-I	L T P	Cr
		0 0 2	1

OBJECTIVE

Modeling allows an architect to explore an idea in a three dimensional form, allowing communication of the idea in an accessible way.

EXERCISES

1. To introduce the carpentry tools, processes, joints and wood working machines.
2. To prepare simple three dimensional objects like cubes, pyramids etc.
3. To create complex three dimensional forms for models using carpentry methods.

B. Arch.

4. To demonstrate the use of carpentry tools in making joints such as dovetail joint, mortise and tenon joint, lap joint, butt joint etc to be used for making furniture
5. To demonstrate fixing of plywood, blockboards, commercial boards etc.
6. To study the application of plywood, blockboards, commercial boards etc. in furniture.
7. To introduce the various welding equipments, processes and its applications.
8. To introduce to metallic sections, joinery tools, joinery processes and working with them.
9. To prepare joints (Lap and butt) by metal arc welding.
10. To learn and use various painting methods-brush, spray, hot spray etc.

REFERENCE BOOKS

1. Raghuwanshi, B.S., "A Course in Workshop Technology - Vol. I and II", Dhanpat Rai and Co, 2001.
2. Hazra and Chaudhary, "Workshop Technology - Vol. I and II", Asian Book Comp, 1998.

AR-159	COMPUTER APPLICATIONS IN ARCHITECTURE- I	L T P	Cr
		0 0 2	1

OBJECTIVE

This course will enable the students to understand the basics of computer and to know the basics of MSOffice, enabling the student prepare simple and interactive presentations using computers.

EXERCISES

1. To introduce and study about the basics of computer hardware and software components; computer terminology.
2. To introduce and study about windows and its applications.
3. To learn the concepts of Internet, server types, connectivity; applications of internet- using e-mail, browsing etc.
4. To understand the concepts of e-commerce.
5. To study in detail Microsoft Word; To Create a document with all formatting effects.
6. Exercises on document preparation using MS Word
7. Create a document with tables, labels in MS word and to create a document to send mails using mail merge option.
8. To learn about the concept of spreadsheet/ worksheets, charts, formulas, functions etc using MS Excel.

- To Create an Excel File to analyze the student's performance. Create a chart for the above data to depict it diagrammatically.
- Create Excel sheet to use built-in-function.
- To prepare slide shows and presentations using MS PowerPoint;
- To create architectural presentations using computers: communicating information, presentation sequence, symbols, lettering and presentation formats etc.
- To Create a Power Point presentation with varying animation effects with timer.

REFERENCE BOOKS

- Wallace, Wang, "Office 2010 for Dummies", Wiley, 2010
- Rajaraman, V., "Fundamentals of Computer", Prentice Hall, 2004
- Icon, Alexis and Leon, Mathew, "Internet for Everyone" Leon Techworld, 1997
- Press, Barry and Press, Marcia, "Teach Yourself all about Computers", IDG Books India, 2000.
- Mansfield, R., "The Compact Guide to Microsoft Office", BPB Publishers, 1994

AR-164	BASIC DESIGN AND VISUAL ARTS - II	L T P	Cr
		0 0 6	3

OBJECTIVE

The course Basic design is aimed at imparting a good base in design through thoughtful designing of simple two dimensional and three dimensional compositions. Also, the Visual Arts component intends to acquaint the students with various drawing principles and artistic techniques; how to sketch and draw at all stages of the design process.

EXERCISES

PART-I: BASIC DESIGN

- To study various linear forms for outdoor and indoor architectural spaces
- To study planer forms and explore the adoptability of these sculptures to architectural functions.
- To Study solids and voids: creation of abstract and semi abstract symbolic sculptural forms and spaces.
- To study the Transformation of forms - dimensional transformation, subtractive, additive forms, organization of additive forms.
- To study the Articulation of forms- analytical study of the sculptural building forms and its critical appraisal of visual character.
- To study architectural spaces: Elements defining spaces; factors affecting qualities of architectural spaces; spatial relationships and spatial organizations; movement through space.

B. Arch.

7. To study and demonstrate the application of basic design in architecture: Adopt compositions, murals and sculptures for semi recreational and semi functional architectural spaces.

PART-II: VISUAL ARTS

1. To study the effects and techniques of creating tonal values – hatching, cross hatching, scribbling, stippling; visual texture and grain.
2. To study the interaction of light with objects and surfaces; shade and shadows; modeling form.
3. To demonstrate the use of tonal values in architectural drawings.
4. To understand the application of free hand sketching in the design process: conceptual sketches, analytical sketches, observational sketches, contour drawings; parti diagrams; serial views; travel sketching; diagramming.
5. To study the importance of context in architectural drawings: importance of context in views and drawings; elements of context – drawing human figures; furniture and furnishings; vehicles; landscape elements.

REFERENCE BOOKS

1. Ching, Francis D. K., “Architecture: Form, Space, and Order”, Wiley and Sons, 2007.
2. Wallschlaeger, C and Snyder, S.B., “Basic Visual Concepts and Principles for Artists, Architects and Designers”, McGraw Hill, 1992.
3. Laseau, P, “Graphic Thinking For Architects and Designers”, John Wiley and Sons, 2001
4. Ching, Francis D. K., “Drawing: A Creative Process”, Wiley and Sons, 1989
5. Farrelly Lorraine, “Basic Architecture 01: Representational Techniques”, Ava Publishing, 2008.
6. Ching, Francis D. K., “Architectural Graphics”, Van Nostrand Reinhold, 2003

AR-165	ARCHITECTURAL DRAWING AND GRAPHICS - II	L T P	Cr
		0 0 6	3

OBJECTIVE

Architectural drawing and graphics is the primary medium for development and communicating design concepts. Through this course the students are trained to develop imaginative and three dimensional spatial capabilities and acquire the skill of reading plans, sections and elevations and understanding the drawing conventions and symbols used in them.

EXERCISES

1. To study the basic terms, principles, types and techniques of geometrical perspective drawing; linear perspectives: one, two and three point perspective.

2. To prepare perspective by measuring point method, angular and parallel perspective.
3. To prepare drawings on the presentation of interior and exterior views in one point perspective and section perspectives.
4. To prepare drawings using two point perspectives for simple objects, inclined planes, cylindrical objects, arches and other circular forms etc.
5. To introduce the basic principles of sciography and its application to the field of architecture.
6. To prepare drawings demonstrating sciography of two dimensional objects in plan and elevation.
7. To prepare drawings demonstrating sciography of three dimensional objects in plan, elevation and views (Isometric and perspective).
8. To study the various graphics codes and symbols used in architectural drawings: graphic conventions for scale, orientation, materials, line thicknesses and line types, symbols representing doors and windows, staircases, centerlines, property lines etc.
9. To study the different types of plans used in architectural drawings: site plan, location plan, floor plans, roof/ terrace plan, reflected ceiling plan; sections - design and construction; elevations.
10. To introduce the various types of architectural drawings – feasibility study drawings; conceptual drawings; presentation drawings; working drawings; specialized drawings.

REFERENCE BOOKS

1. Gill, Robert W., "Basic Perspective", Thames and Hudson, 1974
2. Malik, Shankar, "Perspective and Sciography", Allied Publishers, 1994
3. Leslie, Martin C., "Architectural Graphics", Macmillan Pub Co, 1970
4. Ching, Francis D. K., "Architectural Graphics", Van Nostrand Reinhold, 2003

AR-166	BUILDING CONSTRUCTION TECHNOLOGY - II	LTP	Cr
		0 0 6	3

OBJECTIVE

To give an introduction to building elements and expose the student to the process of building construction.

EXERCISES

1. To study and prepare drawings on various types of joinery used in carpentry.
2. To study various types of wooden doors: ledged, braced and battened, paneled, glazed, flush, sliding doors, revolving; doors with and without fanlight etc;

B. Arch.

3. To study various types of wooden windows: fixed, side and top hung, casement, pivoted, louvered, bay, dormer, ventilators and fanlights etc.
4. To study and prepare drawings of the various types of metal (pressed steel and z-section) doors and windows.
5. To study methods of mosquito proofing of doors and windows.
6. To study and prepare drawings of the various fixtures and fastenings commonly used in doors and windows.
7. To introduce the various terminology of arches.
8. To prepare drawings on the various type of arches.
9. To study the procedure of centering of arches.
10. To study and prepare drawings on the types of lintels and sunshades.

Note: Sessionals will be in the form of reports, drawings and models. There shall be regular visits to construction sites.

TEXT BOOK

Rangwala, S. C., "Building Construction", Charotar Publishing House, 2007

REFERENCE BOOKS

1. McKay, W.B., "Building Construction Volume I, II, III and IV", Longmans, 1955
2. Ching, Francis D. K. and Adams, Cassandra, "Building Construction Illustrated", Wiley and Sons, 2000
3. Barry, R, "The Construction of Buildings", The English Language Book Society and Crosby Lockwood, 1976
4. Chudley, Roy, "Construction Technology", Longman, 2005
5. Arora, S.P. and Bindra, S.P., "The Text book of Building Construction", Dhanpat Rai Publications, 2009.

AR -167	MODEL MAKING WORKSHOP - II	L T P	Cr
		0 0 3	2

OBJECTIVE

Modeling allows an architect to explore an idea in a three dimensional form, allowing communication of the idea in an accessible way.

EXERCISES

1. To introduce the various materials used in architectural model making.
2. To introduce the various techniques of model making.
3. To model with paper, card board, mount board, thermocol, styrofoam, softwood, acrylic sheets and wire.

4. To study the development of simple and composite form, experiments on three dimensional forms such as cubes, pyramids, tetrahedron and forms to understand the spaces conceived by them.
5. To create organic forms by using clay, plaster of paris, metal scrap, jute fiber etc. for study of forms.
6. To study about murals.
7. To introduce and make various types of architectural models – concept models; development models etc.
8. To introduce the concept of illuminated models.
9. To work on sectional models.
10. To study and make presentation models using various materials etc.

Note: Students are required to prepare block models of groups of buildings including roads and landscaped open spaces and detailed models of buildings from given set of drawings.

REFERENCE BOOKS

1. Morris, M., "Architecture and the Miniature: Models", John Wiley and Sons, 2000
2. Sutherland, Martha, " Model Making: A Basic Guide", W.W. Norton and Co, 1999
3. Mills, Criss B., "Designing with Models : A Studio Guide to Making and Using Architectural Models", Thomson and Wadsworth, 2000

AR-168	COMPUTER APPLICATIONS IN ARCHITECTURE- II	L T P	Cr
		0 0 3	2

OBJECTIVE

Communicating design concepts and project status to clients, regulators, and colleagues can be challenging. This course will enable the students to understand the basics of Photoshop, the professional image-editing standard, permitting the student groundbreaking new creative options to realize their vision and an unprecedented level of customization to streamline their workflow.

EXERCISES

1. To study the basics of Adobe Photoshop; Selection, Slice, Painting tools
2. To scan an image into Photoshop CS3; check the scan quality and resolution; crop the image to final size and orientation.
3. To adjust the brightness, contrast and tonal range of the image; sharpen the overall focus of the image etc
4. To learn working with Layers and use layers to create a logo or collage for a PowerPoint presentation.

B. Arch.

5. Exercises on Basic and Advanced Retouching: - Color manipulations, - levels, curves, patch tool, cropping, special color effects: black and white, sepia, grainy
6. Exercises on designing simple Web Pages by using Slice Tool.
7. Exercises involving the designing of Logos by using Texts and Paints professionally.
8. To transfer CAD drawings into Photoshop while preserving graphic scale.
9. To enhance drawings using patterns, strokes, color overlays, fill layers, inner and drop shadows, clipping groups, adjustment layers etc
10. Exercises on rendering plans, elevation and sections using Photoshop
11. To render elements from 3ds Max as layers in Photoshop and learn how to create realistic auto-blending color-matched skies, greenery, trees etc
12. Exercises on rendering 3D views using Photoshop.
13. Presentation techniques for portfolio, design sheets etc using Photoshop

REFERENCE BOOKS

1. Galer, M. & Andrews, P., "Photoshop CS3 Essential Skills", Elsevier, 2007
2. Sondermann, H., "Photoshop in Architectural Graphics", Springer, 2009
3. Alten, "Adobe Photoshop CS3: Classroom in a Book", Peachpit Press, 2007

CE-101	ENVIRONMENTAL SCIENCE AND ECOLOGY	L T P	Cr
		2 0 0	2

OBJECTIVE

Environmental Studies is a multidisciplinary area, the issues of which everyone should know. The aim of the course is to make everyone aware of environmental issues like continuing problems of pollution, loss of forest, solid waste disposal, and degradation of environment. Issues like economic productivity and national security, global warming, the depletion of ozone layer and loss of biodiversity are other serious concerns before mankind.

1. **THE MULTIDISCIPLINARY NATURE OF ENVIRONMENTAL STUDIES:** Basic definitions related to environment; scope, vis-à-vis environmental science and environmental engineering; causes of environmental degradation, atmospheric composition and associated spheres, habitat and climate; objective, goals and principles involved in environmental education, environmental awareness, environmental ethics, environmental organization and their involvement.
2. **NATURAL RESOURCES:** Renewable and non-renewable resources; forest resources, over-exploitation, and deforestation / afforestation; water resources, impact of over-utilization of surface and ground water, floods, drought, conflicts

over water, dams; mineral resources: dereliction of mines, environmental effects of extracting and using mineral resources; food resources, modern agriculture and its impact, problem associated with fertilizer and pesticide, water logging, salinity ; energy resources, renewable, non-renewable energy sources, solar energy, wind energy, hydro energy, biomass energy, geothermal energy, nuclear energy and its associated hazards; land as a resource, land degradation, man induced landslides, soil erosion and desertification.

3. **ECOSYSTEMS:** Concept of an ecosystem, structure and function of an ecosystem, producers, consumers and decomposers, energy flow in the ecosystem, ecological succession, food chains, food webs and ecological pyramids; characteristic features, structure and function of the following ecosystem - forest ecosystem, grassland ecosystem desert ecosystem and aquatic ecosystems.
4. **BIODIVERSITY AND ITS CONSERVATION:** Bio-geographical classification of India; biodiversity at global, national and local levels, India as a mega-diversity nation, hot-spots of biodiversity; value of biodiversity-consumptive use, productive use, social, ethical aesthetic and option values; threats to biodiversity; conservation of biodiversity: in-situ and ex-situ conservation of biodiversity.
5. **ENVIRONMENTAL POLLUTION:** Causes, effects and control measures of air pollution, water pollution, soil pollution, marine pollution, noise pollution, thermal pollution, solid waste management, e-waste management; disaster management – floods, earthquake, cyclone and landslides.
6. **SOCIAL ISSUES AND THE ENVIRONMENT:** Water conservation, rain water harvesting, watershed management; climate change, global warming, acid rain, ozone layer depletion; Environmental Protection Act, Air (Prevention and Control of Pollution) Act, Water (Prevention and Control of Pollution) Act, Wildlife Protection Act, Forest Conservation Act.
7. **HUMAN POPULATION AND THE ENVIRONMENT:** Population growth, population explosion – family welfare programmes; role of information technology in environment and human health; case studies, Chipko movement, Saradar Sarovar dam, mining and quarrying in Udaipur, salinity and water logging in Punjab, Haryana and Rajasthan, Bhopal gas tragedy, Chernobyl nuclear disaster, arsenic pollution in ground water.

TEXT BOOK

Kaushik, Anubha, and Kaushik, C.P., "Perspectives in Environmental Studies", New Age International Publishers, 2004.

REFERENCE BOOKS

1. Agarwal, K. C., "Environmental Biology", Nidi Publ. Ltd., 2001
2. Brunner R. C., "Hazardous Waste Incineration", McGraw Hill, 1989.
3. Cunningham, W.P., Cooper, T.H. Gorhani, E. and Hepworth, M.T., "Environmental Encyclopedia", Jaico Publ. House, 2001.

B. Arch.

4. Jadhav, H. and Bhosale, V.M., "Environmental Protection and Laws", Himalaya Pub. House, 1995.
5. Mckinney, M.L. and Schocl. R.M., "Environmental Science Systems and Solutions", Web enhanced edition, 1996.

CE-102	STRUCTURES IN ARCHITECTURE - I	LTP	Cr
		200	2

OBJECTIVE

To introduce the basic concept of structures and enable the students to analyze, understand the fundamentals and working of various parts of different structural systems.

1. **INTRODUCTION:** Aims, objects and scope of study of structures for architects; technical names and function of various structural components from foundation to roof; fundamentals of mechanics; S. I. system units.
2. **LOADS ON STRUCTURES:** Various types of loads such as dead, live, wind, impact, earthquake etc. and their effect on structures; I.S. specifications on imposed loads.
3. **STRUCTURAL MATERIALS:** Properties of Structural Materials – advantages and disadvantages of structural Materials; choice of structural material for domestic buildings, industrial buildings, tall Buildings and long span buildings
4. **STRESS AND STRAIN:** Concept, definition and kinds of stresses; stress-strain diagram; compressive and shear stress; Young's Modulus, shear modulus, bulk modulus and relation between them; linear and lateral strain, modulus of elasticity; Poisson's ratio, elastic limit, yield point, breaking stress, factor of safety; safe stress values for materials; temperature stresses, illustrative examples.
5. **FORCE AND MOMENTS:** Definition, cause, effect, units, force as vector; resolution of forces by graphical and analytical methods; types of forces – coplanar, non- coplanar, concurrent, non-concurrent and parallel forces; triangle of forces, parallelogram of forces, equilibrium of forces; concept of resultant and equilibrium of forces; conditions of equilibrium by analytical and graphical methods; beam reactions graphically and analytically, statically equilibrium, illustrative examples.
6. **TENSION AND COMPRESSION MEMBERS:** Introduction to the concepts of various structural systems – cables, trusses, arches, cable roofs, space frames, flat slabs.
7. **CURVED STRUCTURES AND LONG SPAN BUILDINGS:** Introduction to the theory of vaults and domes – construction of masonry vaults and domes, concepts of reinforced concrete shells, domes and vaults, folded plate roofs, tensile structures.

TEXT BOOK

Ramamrutham S. and Narayan R., "Strength of Materials", Dhanpat Rai and Sons, 2010

REFERENCE BOOKS

1. Salvadori & Heller, "Structure in Architecture", Prentice International Series in Architecture, New Jersey, 1963.
2. Cowan & Wilson, "Structural Systems", Van Nostrand Reinhold Company, New York
3. Khurmi, R.S., "Theory of Structures", S.Chand and Company, 2005
4. Punmia, B.C., "Strength of Materials and Mechanics of Structure", Standard Publishers and Distributors, 1971

CE-103	STRUCTURES IN ARCHITECTURE - II	L T P	Cr
		2 0 0	2

OBJECTIVE

To introduce the basic concept of structures and enable the students to analyze, understand the fundamentals and working of various parts of different structural systems.

1. **BENDING STRESSES IN BEAM:** Introduction, Theory of Simple bending, assumptions in the theory, illustrative examples.
2. **CENTROIDS AND MOMENTS OF INERTIA:** Centre of gravity by graphical and analytical methods; moment of inertia, parallel axis theorem, modulus of section, radius of gyration, illustrative examples.
3. **DEFLECTION OF BEAMS:** Deflection in simply supported beams and cantilever beams; double integration method and area moment method, illustrative examples.
4. **ANALYSIS OF STRESS:** Introduction, principal stresses and principal planes, maximum shear stress, circular diagram for stresses, Mohr's circle, illustrative examples.
5. **ANALYSIS OF STRAIN:** Longitudinal and lateral strains, principal strains in three dimensions, maximum shear strains, Mohr's circle for plane stress, illustrative examples.
6. **SHEAR FORCE AND BENDING MOMENT :** Types of supports, relationship between bending moment, shear force and load; shear force and bending moment diagrams in case of simply supported beams and cantilevers with distributed and point loads; simply supported beams with overhangs, moments applied to cantilevers and beams, illustrative examples.

B. Arch.

7. **COLUMNS:** Introduction, modes of failure, elastic instability, Euler's theory, End conditions and effective length, radius of gyration, slenderness ratio, strut and column, long column under eccentric loading, , illustrative examples.

TEXT BOOK

Ramamrutham S. and Narayan R., "Strength of Materials", Dhanpat Rai and Sons, 2010

REFERENCE BOOKS

1. Khurmi, R.S., "Theory of Structures", S. Chand and Company, New Delhi, 2005
2. Khurmi, R.S. "Strength of Materials", S. Chand and Company, New Delhi, 2010
3. Punmia, B.C., "Strength of Materials and Mechanics of Structure", Standard Publishers and Distributors, 1971

PDA191	EXTRA / CO-CURRICULAR ACTIVITIES	L-T-P	Cr
			1

OBJECTIVE

To help the students in their all round growth and acquire attributes like team spirit, organizational ability, leadership qualities, etc.

OPERATION

1. The students are to take part in Extra / Co-curricular activities, National Association for Students of Architecture (NASA) outside contact hours through clubs / societies etc
2. The students' performance will be evaluated in the second year.
3. Students are required to register in each year for this course.

PDA192	PERSONALITY DEVELOPMENT SKILLS	L T P	Cr
		0 0 2	1

OBJECTIVE

To equip the students with the understanding of human behavior, develop time management skills, and enhance personality.

1. **TRANSACTIONAL ANALYSIS:** Winners and losers; ego states; OK states; positive and negative strokes; life scripts; exercises.
2. **CREATIVE THINKING:** What is creativity; 6 thinking hats; mental blocks; exercises.

3. **SELF DISCOVERY:** Importance of knowing yourself; SWOT analysis; benefits; strengths and weaknesses; exercises.
4. **DEVELOPING POSITIVE ATTITUDE:** Meaning; changing attitudes; power of positive thinking; overcoming negative attitude; exercises.
5. **TIME MANAGEMENT:** Features, time management matrix; tips for time management; effective scheduling; time wasters; time savers; exercises and time bound tasks.
6. **STRESS MANAGEMENT:** What is stress; causes; positive and negative stress; effects; signs; tips to overcome stress; stress busters; exercises
7. **DECISION MAKING:** Definition; models and types; skills and techniques; courses of action; steps involved in decision making; individual decision making and group decision making; exercises

REFERENCE BOOKS

1. Muriel, James and Jongeward, Dorothy, "Born to Win", Signet Publishers, 1978
2. Harris, Thomas Anthony, "I'm OK, You're OK", Galahad Books, 2004
3. Dr. Alex, K., "Soft Skills", 2009, S. Chand, 2009
4. Adams Scott , "Positive Attitude", Andrews Mcbeel Publishing, 2004
5. Newton Tim, "Managing Stress – Emotion and Power at Work", Sage Publications Ltd., 1995

NOTE: One trainer per lecture and two trainers per practical session. Classroom with board/projector for PPT and video clips will be required.

PDA193	EFFECTIVE COMMUNICATION	L T P	Cr
		0 0 2	1

OBJECTIVE

To acquaint the students with the basics of effective spoken and written English and enhance their reading, listening, and communication skills.

1. **COMMUNICATION:** Importance; barriers and types of communication; methods to develop effective communication skills.
2. **GRAMMAR:** Parts of speech; subject/verb agreement; tenses; error correction; business idioms; Indianism in English; frequently mispronounced words; exercises.
3. **SPOKEN ENGLISH:** Vowel and consonant sounds; syllables and syllabic stress; conversational skills; extempore; JAM.
4. **READING & LISTENING SKILLS:** Reading with comprehension; story reading; passage reading; newspaper reading; listening and active listening; barriers to listening; effective listening and types of listening; exercises.

B. Arch.

5. **WRITING SKILLS:** Importance of writing skills; how to develop writing skills; writing exercises i.e., essay writing, reviews, reports, etc.
6. **NON VERBAL COMMUNICATION:** History; kinesics; postures; gestures; functions; importance and challenges of non verbal communication.
7. **BUSINESS COMMUNICATION:** Business letters and messages; business reports; presentation skills; do's & don'ts; personal journal.

REFERENCE BOOKS

1. Wren and Martin, "High School Grammar", Paperback, 2000
2. Condill Jo, & Bough, Bennie, "101 Ways to Improve Your Communication Skills Instantly", 4th Edition, Paperback, 2005
3. Rai S. M., Rai Urmila, "Communication Skills", Students Edition, Himalaya, 2007.
4. Connor J. D. O, "Better English Pronunciation" Cambridge. 2nd Edition, Paperback, Cambridge University Press, 2008
5. Raina Arjun, "Speak Easy Voice And Accent Training Manual", Paperback (Special India Edition, Full Circle

NOTE: One trainer per lecture and two trainers per practical session. Classroom with board/projector for PPT and video clips will be required.