

BACHELOR OF TECHNOLOGY
B.Tech (Digital Techniques for Design and Planning)
ACADEMIC REGULATIONS, COURSE STRUCTURE
AND SYLLABUS
(EFFECTIVE FROM ACADEMIC YEAR 2017-18)



SCHOOL OF PLANNING & ARCHITECTURE
JAWAHARLAL NEHRU ARCHITECTURE
AND FINE ARTS UNIVERSITY

Mahaveer Marg, Masab Tank, Hyderabad – 500 028

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JAWAHARLAL NEHRU ARCHITECTURE AND FINE ARTS UNIVERSITY

Mahaveer Marg, Masab Tank, Hyderabad – 500 028.

Academic Regulations for B.Tech (DTDP) Programs

(Under the CBCS, Effective from the Academic Year 2017-2018)

Preamble :

JNAFAU's Choice Based Credit System (CBCS) aims to provide comprehensive learning opportunities which takes into account individual interests and abilities of the students. Apart from the compulsory core courses, the students can choose from the elective courses on offer in the university or also from approved online platforms like the MHRD's SWAYAM or MOOCs.

These regulations are subject to amendments as may be decided by the Academic Council / Committee of the University from time to time. Any or all such amendments will be effective from such date and to such batches of students (including those already in the middle of the program) as may be decided by the Academic Council / Committee.

1. Glossary of Terms

- 1.1. Program: An educational program leading to award of a Degree in a discipline.
- 1.2. Course: Generally referred as a 'subject' offered under the degree program. Each course is identified by a unique course code and course title. A course may be designed to comprise lectures/ studio/ tutorials/ laboratory work/ fieldwork/ outreach activities/ project work/vocational training /seminars /term papers/ assignments/ presentations/ self-study etc. or a combination of some of these. All courses do not carry the same credits.
- 1.3. Choice Based Credit System (CBCS): In addition to the compulsory core courses in a program, CBCS provides choice for students to select from a number of elective courses offered. The term *credit* refers to the weightage given to the course and is usually the number of periods per week allotted to it.
- 1.4. Re-admission : When a student is detained in a course due to shortage of attendance or the student takes a break of study, the student has to take re- admission to continue the program.
- 1.5. Re-registration : When a student has failed in a course due to low

internal assessment marks, but has satisfactory attendance, the student can re-register to improve performance in internal assessment as well as external evaluation.

- 1.6. Re-appearance/ supplementary examinations: When a student has failed in a course and wishes to improve performance only in end semester external examination he/she can register to reappear for the supplementary examination.
- 1.7. Minimum Total Credits (MTC): These are minimum total credits to be secured by a student to be considered eligible for award of the degree. This may be different for different disciplines.
- 1.8. Director of Evaluation (DE) means the Authority of the University who is responsible for all activities of the End Semester Examinations of the University.
- 1.9. Director, Academic and Planning (DAP) means the authority of the University who is responsible for all academic activities for the implementation of relevant rules and regulations.

2. Program Structure

- 2.1. Category of Courses : The program shall have a curriculum with syllabi consisting of courses as prescribed by the Board of Studies, and broadly categorized under:
 - 2.1.1. Compulsory Core (C) are courses deemed to be the core learning required for the discipline. These courses are part of the compulsory requirement to complete the program of study. A core course cannot be substituted by any other course. A core course offered in this program may be treated as a Professional or Open Elective by other programs.
 - 2.1.2. Professional Electives (E) are courses which are elective courses relevant to the discipline. An Elective course is generally a course that can be chosen from a pool of courses on offer. Every student shall be required to opt for the electives from the list of electives offered. Students can also opt for the electives on offer from any of the other Programs, besides his / her own discipline courses, or even do online courses subject to the respective Program specific regulations.
 - 2.1.3. Open Electives (O) are chosen generally from an unrelated discipline/ subject, with an intention to seek exposure/ add generic proficiency. These may include Liberal Arts courses, Humanities and Social Science courses, etc. and essentially facilitate the student to do courses (including Core Courses or Professional Electives) offered by other departments/ programs / institutions or online. Open Electives need not be specified in the course structure and the University may approve and offer any Open Elective courses in any semester

as an option for the students.

- 2.1.4. Ability Enhancement Courses (AEC) or (A). These are mandatory courses based upon content that lead to general knowledge, ability and soft skills enhancement, such as, Environmental Studies, Communication Skills, Value Education, etc.
- 2.1.5. Non- Credit Courses / Activities mandatory for award of Degree: There are some non-credit courses / activity such as: 1) English, 2) Co- Curricular Activity / Extension Activity (EA), 2) Internship of 4 weeks or less, 3) any other as specified in the respective course structure / syllabus. A 'Satisfactory' grade in the above, is compulsory for the award of degree.
- 2.1.6. Online Courses : Students may be permitted, with the prior approval of the Department, to take online courses through SWAYAM or MOOCs or NAFU_CBCS for B.Tech. Programs, effective from 2017-18 any other approved online facility, in lieu of the Electives (both E and O) offered in the University.

2.2. Credits:

- 2.2.1. Credits are indicative of the importance of the course. In the case of core courses 1 period of direct teaching per week (Theory / Tutorial/ Studio/ Practical) = 1 credit
- 2.2.2. In the case of other courses like the Electives and the AEC courses, the credits are based on their level of importance as decided by the Board of Studies and as described in their respective course structures.
- 2.3. Pre-requisites : Some of the courses may have pre-requisites (i.e. the student may be required to have registered and attended the course specified as a pre- requisite.)

2.4. Types of Courses and Learning Sources

Types of Courses	Learning Sources
Compulsory Core (C)	Parent Department (PD)
Professional Elective (E)	PD / OD / online
Ability Enhancement Course (AEC)	PD / OD / online / Univ.
Open Elective (OE)	PD / OD / online / Univ.
Extension Activity (EA)	PD, OD, Univ.

Note: PD = Parent Department; OD = Other Departments / Institutions / Universities

3. Duration of Program

- 3.1. A student is normally expected to complete the Program in four academic years (8 Semesters) but in any case not more than 8 years (including break of study for personal reasons or suspension/ detention due to disciplinary action, etc.).
- 3.2. Each semester shall normally consist of 90 working days (excluding end semester examination days).
- 3.3. Gap Year: A student may be permitted to take a break of study for one academic year for starting an enterprise or for any personal or medical reason with prior approval. In exceptional cases, this may be extended to another year after an appraisal process approved by the State Govt. /University. In such cases also the student will be eligible for award of First Class with Distinction/ other awards. Rules of re-admission will apply to such cases.

4. Registration for choice of Electives:

- 4.1. Each student shall be deemed to have registered for all the compulsory core and other mandatory (AEC) courses of every semester that he/ she is admitted to / promoted to, on the payment of the requisite fees.
- 4.2. However, in the case of electives (as per the course structure), students shall submit their preferences from the list of electives on offer (including approved online courses), and after allotment of the elective course, register for elective courses of their choice – both professional and open electives.
- 4.3. The information on the list of all the courses offered in every department specifying the course code, course title, credits, prerequisites, the timetable slots and the registration process with the time schedules will be made available on the University website. Every student is expected to go through the above information, consult the faculty members, understand the choices and select their choice of elective courses.
- 4.4. Every student shall submit their preferences from the list of electives on offer (including approved online courses), register / re-register as per the registration process and the schedule notified.
- 4.5. The departments shall put up the list of electives allotted to the students, using their (departments') discretion based on physical and other capacities, with first preference given to the students from the parent department and later, considering a first come first and/ or SGPA basis for students from other departments. However, students who have registered for elective courses previously are allowed to re-register for courses in which they have failed.
- 4.6. In case none of the student's preferred choices is allotted, or even otherwise, the student may propose an alternative choice from among the available ones after due consultation with the respective faculty.

In any case, the students shall register (which is effected only on their choice of elective being approved) for the courses within the given schedule/ deadline.

- 4.7 After registering for a course, a student shall attend the classes, satisfy the attendance requirements, earn Internal Assessment marks and appear for the End Semester Examinations.
- 4.8 A student is permitted to cancel his/her registration for the elective courses, within two weeks of starting of the semester.
- 4.9 To enable the students to choose electives from across the departments, the DAP shall in consultation with all the departments, facilitate the announcement of a common time-slot for the elective periods in the individual time tables of the departments.
- 4.10 No elective course shall be commenced unless a minimum number of students are registered (this number may be different for different courses and Programs and may be decided by the Departments / College/ University every semester).

5. Attendance Requirements

- 5.1 A student has to put in a minimum of 75% of attendance, in aggregate of all the courses registered in the semester (excluding approved online elective courses) for becoming eligible to register for the end examinations and for acquiring credits in each semester.
- 5.2 Shortage of attendance in aggregate up to 10% (65% and above, and below 75%) in each semester may be condoned by the College Academic Committee on genuine and valid (including medical grounds), based on the student's representation with supporting evidence.
- 5.3 Condonation of shortage of attendance as stipulated above, shall not be automatic but on the merits of the case to the satisfaction of the College Academic Committee.
- 5.4 A stipulated fee shall be payable along with the application for condonation.
- 5.5 Shortage of attendance below 65% in aggregate (including medical grounds) shall in no case be condoned.
- 5.6 A student will not be promoted to the next semester unless the attendance requirement of the present semester is satisfied. In case of such detention the student is not eligible to take the End Examination of that semester and the course registration shall stand cancelled. The student shall seek re admission for that semester when offered next.
- 5.7 In the case of re-registration (clauses 10.4 to 10.7) for a course/s, the attendance requirement is not applicable.

6. **Assessment**

- 6.1 **Distribution of Internal Assessment and End Exam Marks :**
Performance in each course shall be evaluated as prescribed in the respective Program's course structure and syllabus. As a general pattern, 50% of the marks in a course are through internal assessment and 50% through end semester examinations. A few courses may have 100% of the assessment purely through internal assessment. The thesis, the internship courses and many of the studio courses are assessed through a jury and viva-voce for the end semester examination.
- 6.2 **Schedule for Internal Assessment :** The students shall diligently follow the given internal assessment schedule for the semester including submissions and tests.
- 6.3 **The compiled cumulative internal assessment marks and attendance of the students will be displayed periodically at least twice during the Semester, for information to the students. 50% of the marks allotted for the internal assessment courses shall be submitted before the 12th week. All internal assessment marks have to be finalized and uploaded / submitted in the prescribed format, on or before the last day of End Semester Examinations of the semester..**
- 6.4 **Assessment for Online Courses:** In case of credits earned through approved online modes, the credits and grades shall be assigned by a committee consisting of Head of the Department or a teacher nominated by the HoD and a senior faculty member nominated by the DAP/ Principal (in case the credits or grades are not included by the online course faculty).
- 6.5 **Non-Credit, Mandatory Courses / Activity : Assessment in these courses or activity will be only in terms of "Satisfactory" or "Not Satisfactory". A 'Satisfactory' grade in these listed courses/ activities is compulsory for the award of degree.**
 - 6.5.1 **English Course:** A Test will be administered to the students after admission to assess proficiency in English. Students not passing this test of proficiency will study English as a bridge course (without credits) during the First Semester. They have to acquire a "Satisfactory" grade in the course to be considered eligible for award of a degree.
 - 6.5.2 **Co-Curricular Activity / Extension Activity (EA) (for all round development) :** Every student has to participate in any one of the following activities like NCC/ NSS/ Sports/ FSAI University's Pro-bono project activity/ any national or international student camp /any other community development activity listed by the University and acquire a "Satisfactory" grade to be considered eligible for award of a degree. 6.5.2.1 The student's performance shall be examined by the faculty

in- charge of the relevant extension activity along with the Head/ Coordinator of the Department/ activity.

6.5.2.2 Physically challenged students who are unable to participate in any of the above activities shall be required to take an appropriate test in the relevant area of any one of the above activities and be graded and certified accordingly.

6.5.3 Internship of 4 weeks or less: The assessment shall be as specified in the respective Program's course structure or syllabus.

6.5.4 Any other course or activity as specified (including the mode of assessment) in the respective course structure or syllabus.

7. Award of Letter Grades

7.1 The performance of a student will be reported using letter grades, each carrying certain points as detailed below:

S. No.	% of Marks		Letter Grade	Grade Points
	Minimum	Maximum		
1.	90.00	100.00	A+	10
2.	80.00	89.99	A	9
3.	70.00	79.99	B	8
4.	60.00	69.99	C	7
5.	50.00	59.99	D	6
6.	40.00	49.99	E	5
7.	00.00	39.99	F	0
8.	Shortage of attendance and hence prevented from writing end semester examination		SA	0
8.	Absent for End semester examination		Ab	0
9.	Satisfactory *		Satisfactory	0

Note: * Satisfactory grade will be given only for the non-credit courses/ activity such as mentioned in clause 6.5. A 'Satisfactory' grade in these listed course/ activities is compulsory for the award of degree.

Example of assignment of letter grade and grade points for marks:

Course Title	Int. Marks	End Exam	Total	Grade	Grade point (GP)
Course X1	22	25	47	E	5
Course X2	39	41	80	A	9
Course X3	37	34	71	B	8
Course X4	29	30	59	D	6
Course X5	25	24	49	E	5

- 7.2. A student who earns at least an 'E' grade in a course is declared to have successfully completed the course, and is deemed to have earned the credits assigned to that course. A course successfully completed cannot be repeated.
- 7.3. Students who fail to appear for end semester examinations will be marked as 'Ab' (Absent) and should register for supplementary examination by paying the prescribed fees.
8. **Academic Requirements:** The following academic requirements have to be satisfied, in addition to the attendance requirements mentioned in clause 5.
- 8.1 A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course, **if the student secures not less than 40% marks in the semester end examination, and a minimum of 40% of marks in the sum total or aggregate of the Internal Assessment** and Semester End Examination taken together; in terms of letter grades, this implies securing 'E' grade or above in that subject/ course.
- 8.2 A student eligible to appear in the end semester examination for any course, but absent from it or failed (thereby failing to secure 'E' grade or above) may reappear for that course in the supplementary examination as and when conducted. In such cases, the internal marks obtained earlier for that course will be retained, and added to the marks obtained in the end semester supplementary examination for evaluating performance in that course.
9. **Promotion between Semesters:**
- 9.1. A student shall be promoted from odd to even semester if the minimum requirement of attendance as in clause 5 is fulfilled.
- 9.2. A student shall be promoted from even to odd semester, if the minimum requirement of attendance as in clause 5 is fulfilled and as per the other requirements specified in the following table.
- 9.3. Table indicating promotion requirements from even to odd semesters:

From 2nd sem. to 3rd sem.	If the student does not have more than three backlog courses in the 1st semester.
From 4th sem. to 5th sem.	Secured all the credits upto 2nd semester and does not have more than three backlog courses in the 3rd semester
From 6th sem. to 7th sem.	Secured all the credits upto 4th semester and does not have more than three backlog courses in the 5th semester

Note: Upto the 4th semester all the credits have to be secured and optional (only for elective courses) credits are available only from the 5th semester onwards.

10. Re-admission and Re-registration

- 10.1 A student may be detained in a semester either due to shortage of attendance, or due to having more than the permissible number of backlog courses. Students detained due to shortage of attendance may be re-admitted when the same semester is offered in the next academic year for fulfillment of academic requirements.
- 10.2 A student detained due to not having enough credits or having more than the permissible number of backlog courses, shall be promoted to the next academic semester only after fulfilling the requirements as per Table 9.3.
- 10.3 No grade allotments or SGPA/ CGPA calculations will be done for the entire semester in which student has been detained.
- 10.4 The academic regulations under which a student has been first admitted shall be applicable in all cases of re-admission.
- 10.5 If a student fails in a Professional Elective or an Open Elective, the student may re-register for the same or register afresh for any other Professional Elective or Open Elective course respectively in the subsequent semesters. In case of re-registration in the same courses, attendance is not mandatory, whereas registration for any other elective course/s requires the student to attend the classes and fulfill the attendance requirements as per Clause 5.
- 10.6 A student who fails in any course may be permitted the option of re-registering in that subject only if the internal assessment marks are less than 30%, so as to enable him to improve/redo and resubmit the work for internal evaluation. In such cases of re-registration, the student's previous performance both in the internal evaluation and end evaluation in the particular subject/s shall stand cancelled and he/she shall be required to appear for the end semester evaluation again (end examination and /or external jury as the case may be).

- 10.7 The maximum number of courses a student may be permitted for 're-registration' in a semester, is limited to three. Re- registration of any course should be done within 7 days from the date of declaration of the relevant results. A stipulated fee shall be payable towards re registration in any subject.
- 10.8 The student may attend classes in the case of the re-registered courses, if the student wishes. However, the attendance requirement is not compulsory for such courses.

11. Grade Points, SGPA and CGPA Calculation

- 11.1. After the results are declared, Grade Sheets will be issued to each student which will contain the list of courses registered during the semester and the performance in each with details of whether passing or failing, credits earned in that semester, promoted or not, grade points, etc..

- 11.2. **Grade Points** : The grade points obtained in a subject multiplied by the credits for that subject will be the weighted grade points.

$$\text{Weighted Grade Points (WGP)} = C \times GP$$

Where 'C' is the number of credits assigned for the subject and 'GP' is the Grade Point obtained as per the Table in clause 7.1 above.

- 11.3. **SGPA**: The sum of the weighted grade points divided by the total number of credits in a semester will give the Semester Grade Point Average (SGPA).

$$SGPA = \sum C_i GP_i / \sum C_i \quad i = 1 \text{ to } n$$

Where n is the number of courses the student registered for in the semester, 'C' is the number of credits allotted to each of the courses, and 'GP' is the grade-point obtained by the student in the respective courses.

An example follows :

Course Title	Credits (C)	Grade (GP)	Weighted Grade Points (WGP)
Course X1	3	7	21
Course X2	8	8	64
Course X3	8	7	56
Course X4	7	7	49
Course X5	2	6	12
Course X6	2	6	12
Total	30		214
Semester Grade Point Average (SGPA) = Total WGP/ Total credits =			7.13

- 11.4. CGPA: The Cumulative Grade Point Average (CGPA) will be computed for every student after he/she has secured the MTC (Minimum Total Credits) as:

$$CGPA = \sum C_i GP_i / \sum C_i \quad i = 1 \text{ to } m$$

Where 'm' is the number of subjects registered for in all the semesters from the 1st semester onwards. 'C' is the number of credits allotted to each of the courses, and 'GP' is the grade-point obtained by the student in the respective courses.

- 11.5. The CGPA and SGPA will be rounded off to the second decimal place and recorded as such.
- 11.6. For the purpose of computation of the CGPA, award of degree, award of the class as in clause 14, and other honours if any, including medals, the performance in the best MTC (Minimum Total Credits) only, as specified in Table in clause 12.2, will be taken into account. For calculating the 'best' MTC, the credits secured in all the Core and AEC courses (which are compulsory) shall be included. The choice of 'best' credits to be included in the calculation shall be from only those credits secured in the Electives – both Professional and Open Electives.
12. **Eligibility for the Award of Degree :** A student shall be eligible for the award of the "B.Tech." Degree in the specific discipline into which he/she was admitted, if the following academic regulations are fulfilled:
- 12.1. Has pursued the program of study for not less than four academic years and not more than eight academic years. Students, who fail to fulfill all the academic requirements for the award of the degree within eight academic years from the year of their admission, shall forfeit their seat in the program and their seat shall stand cancelled.
- 12.2. Successfully secured the Minimum Total Credits required for the respective Programs.

B.Tech. Programs and Credits

S.No.	B.Tech. Program Title	Total Credits	Minimum Total Credits (MTC)*
1	Planning	240	222
2	Facilities and Services Planning (FSP)	240	222
3	Digital Techniques for Design and Planning (DTDP)	240	222
*(refer to clause 9.3 for details)			

- 12.3. Successfully secured "Satisfactory" grades in all the mandatory non-credit courses/ activity.
- 12.4. Has secured a minimum of 5.0 CGPA

12.5. No disciplinary action is pending against the student.

13. **Withholding of the results** : The results of a student may be withheld if:

13.1. He/she has not cleared any dues to the University/Institution/ Hostel.

13.2. A case of disciplinary action against the student is pending disposal.

14. **Classification of the Degree Awarded**

After a student has satisfied the requirements prescribed for the completion of the program and is eligible for the award of the B.Tech. Degree in the Program to which he/she was admitted, he/she shall be placed in one of the four classes as shown in the Table.

First Class with Distinction	1. Have a CGPA of 8.0 and above. 2. Should have passed the examination in all the courses of all the eight semesters within five years, which includes any authorized break of study of one year (clause 3.3). 3. Should NOT have been prevented from writing end semester examination due to lack of attendance in any of the courses.
First Class	Below 8.0 but not less than 7.0 of CGPA and
Second Class	Below 7.0 CGPA but not less than 6.0
Pass Class	Below 6.0 CGPA but not less than 5.0

Note : In all the above cases CGPA shall be calculated from the Grade Points secured for the best 283 credits. For calculating the 'best' 283 credits, the credits secured in all the Core and AEC courses (which are compulsory) shall be included. The choice of 'best' credits to be included in the calculation shall be from only those credits secured in the Electives – both Professional and Open Electives.

15. **Malpractice** : If a student indulges in malpractice in any of the examinations, he/she shall be liable for punitive action as prescribed by the University from time to time.

16. **General**

16.1 In case of any doubt or ambiguity in the interpretation of the academic regulations, the decision of the Vice-Chancellor is final.

16.2 The University may from time to time revise, amend or change the Regulations, Curriculum, Syllabus and Scheme of Assessment.

TRANSITORY REGULATIONS (from Academic Year 2017-18)(Approved on 6th Feb., 2018)**Preamble:**

The CBCS regulations and courses (referred to collectively as R-17) introduced from the academic year 2017-18, have brought in significant changes in the course structures and academic regulations of the programs in the University as indicated below.

	Aspects	Remarks
1	Course Codes	All changed
2	Course Names / Titles	Some changes
3	Course Structure	Major changes – introduction of AEC courses; electives from 4th sem. onwards. Total No. of courses in a program have generally increased (Eg. B.Arch. from 53 to 62)
4	Pass Marks	Changed in BFA and BTech. programs
5	Promotional Requirements	Changed in all programs
6	Award of Degree	Changed in all programs
7	Performance Evaluation and Award of Class	Changed in all programs – is now based on a system of letter grades, SGPA and CGPA
8	Choice in terms of credits	Changed – Now available in all programs

Considering the significant changes in all the aspects as indicated above, the following transitory regulations have been approved.

The following regulations shall be applicable for the students from the pre CBCS programs (referred to as pre R17) applying for 're-admission':

- Readmission into 1st semester of R-17:** Only students readmitted into the full 1st semester of R-17 will, for all purposes be subject to the entire provisions of R-17.
- Readmission from 2nd semester onwards:**
Students readmitted from the 2nd semester onwards will be subject to the provisions of the pre R-17 in which they were first admitted. The student will be facilitated in completing the academic requirements by either permitting him/her to attend "equivalent" coursework in the R-17 (as approved by the respective Boards of Studies), wherever available, or if equivalent coursework is not available, then by special arrangement for conducting the coursework as per the regulations in which admitted.

Academic Regulations for Re-registration cases of Students admitted prior to 2017

- Students originally admitted in the pre R17 programs, may be assigned teacher/s wherever possible, to enable them to complete their internal assessment as per their pre R17 regulations. Student has to complete the courses whenever offered. Special arrangement for the course/s may be made in case it effects the time line of the student's academic engagement
- Wherever "equivalent" courses are available in the CBCS programs, reregistered students may be permitted to attend such courses if they choose to, but the academic regulations (and course codes / course titles, marks, credits, etc.) shall be as per the older regulations into which they were first admitted.
- Wherever there is a change of syllabi, end semester examinations based on the old syllabi will be conducted in order to enable the students to clear the backlogs.

NOTE :

1. The term “Prerequisites” implies having registered in the course/s specified as prerequisite/s and fulfilled the attendance requirements.
2. The term “Open” mentioned in the remarks column in the courses structure indicates the courses that are open to students from other departments or Programs. These courses which are open may be taken by students from other programs, either as professional electives or open electives.
3. Abbreviations used in the course structure :

In the case of Periods per week:

L = Lecture S = Studio

F = Fieldwork P = Practicals

T = Tutorial O = Others (including workshops, seminars, colloquiums, etc.)

In the case of type of End Semester Examination:

W = Written / Drawing J = Jury P = Practical

4. Course /Subject codes and type:

In the 9-digit alphanumeric course code:

a. the first two characters represent the Program or Department that offers the course:

- AR = Architecture
- AA = Applied Arts and Visual Communication
- AN = Animation;
- ID = Interior Design
- PL = Planning
- DT=Digital Techniques for Design and Planning
- FS = Facilities and Services
- PA = Painting
- SC = Sculpture
- PH = Photography and Visual Communication

and in the case of common courses- FA = Fine Arts; GN = General

- b. The 3rd and 4th digits denote the Academic Year of starting the course structure,
- c. The 5th character denotes the level of the course (Bachelors / Masters/ Diploma),
- d. The 6th digit denotes the semester number followed by a decimal and a number indicating the serial number of the course in that semester.
- e. The last alphabet in the course code indicates the type of course.

C = Core A = AEC E = Professional Elective

O = Open Elective.

Course Structure for DTDP

(Under the CBCS, Effective from the Academic Year 2017-2018)

Semester - I

S. No.	Course Code	Course Title	Pre Req	Periods per Week				Credits	Marks			End Exam W/J/P	Remarks
				L	S/F	P/T/O	Total		Int.	Ext.	Total		
1	DT17 B1.1C	Design & Drawing - I	Nil	0	8	0	8	8	100	100	200	J	-
2	DT17 B1.2C	Climatology for Built Environment	Nil	4	0	0	4	4	50	50	100	W	-
3	DT17 B1.3C	Materials And Constructions	Nil	4	0	0	4	4	50	50	100	W	-
4	DT17 B1.4C	C Programming and Data Structures	Nil	1	0	2	3	3	50	50	100	P	Open
5	DT17 B1.5C	Statistical Methods	Nil	3	0	0	3	3	50	50	100	W	Open
6	BT17 B1.1C	Engineering Mathematics	Nil	4	0	0	4	4	50	50	100	W	Open
7	GN17 B1.2A	Environmental studies	Nil	4	0	0	4	2	50	50	100	W	-
8	GN17 B1.3A	Computer Applications	Nil	0	0	4	4	2	50	50	100	P	-
		Total					34	30					

* Note: W- Written, P- Practical, J-Jury (all Practical and Jury semester end exams for DTDP will be followed by Viva- Voce or time problem along with viva-voce)

Semester - II

S. No.	Course Code	Course Title	Pre Req	Periods per Week				Credits	Marks			End Exam	Remarks
				L	S/F	P/T/O	Total		Int.	Ext.	Total	W/J/P	
1	DT17 B2.1C	Design & Drawing - II	DT17 B1.1C	0	8	0	8	8	100	100	200	J	-
2	DT17 B2.2C	Structural Systems	Nil	4	0	0	4	4	50	50	100	W	-
3	DT17 B2.3C	Applied Physics	Nil	4	0	0	4	4	50	50	100	W	-
4	DT17 B2.4C	Adv. Data Structures & Algorithms	DT17 B1.4C	1	0	2	3	3	50	50	100	P	Open
5	DT17 B2.5C	Worksho (IT& Design)	Nil	0	3	0	3	3	50	50	100	P	-
6	BT17 B2.1C	Mathematical Methods	Nil	4	0	0	4	4	50	50	100	W	Open
7	GN17 B2.1A	Communica- tion skills	Nil	4	0	0	4	2	50	50	100	P	-
8	GN17 B2.2A	Value Educa- tion	Nil	2	0	0	2	2	50	Nil	50	NIL	-
		Total					32	30					

***Note: For Professional elective and open elective 4 periods per week and 3 credits is assumed for totaling the period & credit in the semester.

Semester - III

S. No.	Course Code	Course Title	Pre Req	Periods per Week				Credits	Marks			End Exam W/J/P	Remarks
				L	S/F	P/T/O	Total		Int.	Ext.	Total		
1	DT17 B3.1C	Building Design	DT17 B2.1C	2	6	0	8	8	100	100	200	J	-
2	DT17 B3.2C	Mathematical Foundation of Computer Science	Nil	4	0	0	4	4	50	50	100	W	Open
3	DT17 B3.3C	Unix and Shell Programming	Nil	2	0	2	4	4	50	50	100	P	Open
4	DT17 B3.4C	Computer Aided Design and Drafting	Nil	2	0	2	4	4	50	50	100	P	Open
5	DT17 B3.5C	Planning Principles	Nil	4	0	0	4	4	50	50	100	W	-
6	DT17 B3.xE	Elective - I					4	3	50	50	100	W / P	-
7	xxxxx	Open Elective - I						3					-
Total							28	30					

DT17B3.Xe Elective – I Subjects

COURSE CODE	COURSE TITLE	ENDEXAM TYPE
DT17B3.1E	Human Settlements	W
DT17B3.2E	Python Programming Language	P
DT17B3.3E	Cyber Laws	W
DT17B3.4E	Digital Graphic Design	P

***Note: For Professional elective and open elective 4 periods per week and 3 credits is assumed for totaling the period & credit in the semester

Semester - IV

S. No.	Course Code	Course Title	Pre Req	Periods per Week				Credits	Marks			End Exam	Remarks
				L	S/F	P/T/O	Total		Int.	Ext.	Total	W/J/P	
1	DT17 B4.1C	Digital Methods in Design	DT17 B3.1C	2	6	0	8	8	100	100	200	J	-
2	DT17 B4.2C	Object Oriented Programming	DT17 B2.4C	2	0	2	4	4	50	50	100	P	Open
3	DT17 B4.3C	Computer Graphics	DT17 B1.4C	2	0	2	4	4	50	50	100	P	Open
4	DT17 B4.4C	GIS System (2D&3D)	Nil	2	0	2	4	4	50	50	100	P	Open
5	DT17 B4.5C	3D Modeling	Nil	2	0	2	4	4	50	50	100	P	Open
6	DT17 B4.xE	Elective-II	Nil				4	3	50	50	100	W / P	-
7	xxxxx	Open Elective-II	Nil					3					-
		Total					28	30					

DT17B4.xE Elective-II Subjects

COURSE CODE	COURSE TITLE	ENDEXAM TYPE
DT17B4.1E	Building Construction	W
DT17B4.2E	Human Computer Interaction	W
DT17B4.3E	E-Commerce	W
DT17B4.4E	Digital 2D Studio	P

***Note: For Professional elective and open elective 4 periods per week and 3 credits is assumed for totaling the period & credit in the semester

Semester - V

S. No.	Course Code	Course Title	Pre Req	Periods per Week				Credits	Marks			End Exam W/J/P	Re-marks
				L	S/F	P/T/O	Total		Int.	Ext.	Total		
1	DT17 B5.1C	Digital Methods in Planning	DT17 B4.1C	1	3	4	8	8	100	100	200	J	-
2	DT17 B5.2C	Object Oriented Analysis and Design	DT17 B4.2C	4	0	0	4	4	50	50	100	W	-
3	DT17 B5.3C	Web GIS	Nil	1	0	3	4	4	50	50	100	P	Open
4	DT17 B5.4C	Web Technologies	Nil	2	0	2	4	4	50	50	100	P	Open
5	DT17 B5.5C	Building Services	Nil	4	0	0	4	4	50	50	100	W	-
6	DT17 B5.xE	Elective-III	Nil				4	3	50	50	100	W / P	-
7	xxxxx	Open Elective-III	Nil					3					
		Total					28	30					

DT17B5.xE Elective-III Subjects

COURSE CODE	COURSE TITLE	ENDEXAM TYPE
DT17B5.1E	Working Drawings and Details	W
DT17B5.2E	Management Science	W
DT17B5.3E	Concepts of Interactive and Virtual Worlds	P
DT17B5.4E	Multimedia and Production Techniques	P

***Note: For Professional elective and open elective 4 periods per week and 3 credits is assumed for totaling the period & credit in the semester

Semester - VI

S. No.	Course Code	Course Title	Pre Req	Periods per Week				Credits	Marks			End Exam W/J/P	Re-marks
				L	S/F	P/T/O	Total		Int.	Ext.	Total		
1	DT17 B6.1C	Building Information Modeling	DT17 B5.1C	1	3	4	8	8	100	100	200	J	-
2	DT17 B6.2C	Database Management Systems	Nil	2	0	2	4	4	50	50	100	P	-
3	DT17 B6.3C	Image Processing	Nil	4	0	0	4	4	50	50	100	W	-
4	DT17 B6.4C	Introduction to Simulation and Modeling	Nil	2	0	2	4	4	50	50	100	P	Open
5	DT17 B6.5C	Energy simulation in Building Design	Nil	1	0	3	4	4	50	50	100	P	Open
6	DT17 B6.xE	Elective-IV	Nil				4	3	50	50	100	W/ P	-
7	xxxxx	Open Elective-IV	Nil					3					
							28	30					

DT17B6.xE Elective-IV Subjects

COURSE CODE	COURSE TITLE	ENDEXAM TYPE
DT17B6.1E	Building Byelaws & Legislation for Architectural and Planning	W
DT17B6.2E	Geo-informatics in Resource Management	P
DT17B6.3E	3D Visualisation	P
DT17B6.4E	Web Designing	P

***Note: For Professional elective and open elective 4 periods per week and 3 credits is assumed for totaling the period & credit in the semester

Semester - VII

S. No.	Course Code	Course Title	Pre Req	Periods per Week				Credits	Marks			End Exam W/J/P	Re-marks
				L	S/F	P/T/O	Total		Int.	Ext.	Total		
1	DT17 B7.1C	Mini Project (IT/ GIS/DESIGN/ ANIMATION)	Nil	2	4	6	12	12	100	100	200	J	
2	DT17 B7.2C	Artificial Intelligence	Nil	4	0	0	4	4	50	50	100	W	
3	DT17 B7.3C	Software project management	Nil	4	0	0	4	4	50	50	100	W	
4	DT17 B7.4C	Building Management Systems	Nil	4	0	0	4	4	50	50	100	W	
5	DT17 B7.xE	Elective-V	Nil				4	3	50	50	100	W / P	
6	DT17 B7.xE	Elective-VI	Nil				4	3	50	50	100	P	
							32	30					

DT17B7.xE Elective-V Subjects

COURSE CODE	COURSE TITLE	ENDEXAM TYPE
DT17B7.1E	Advanced Digital Design	P
DT17B7.2E	Building Construction Management	W
DT17B7.3E	Software Engineering	W
DT17B7.4E	Project Studies	P

DT17B7.xE Elective-VI Subjects

COURSE CODE	COURSE TITLE	ENDEXAM TYPE
DT17B7.5E	Digital Global positioning Systems	P
DT17B7.6E	Statistics & Programming for Geo-data	P
DT17B7.7E	Digital 3D Studio	P
DT17B7.8E	VFX & Compositing	P

Semester - VIII

S. No.	Course Code	Course Title	Pre Req	Periods per Week				Credits	Marks			End Exam W/J/P	Re-marks
				L	S/F	P/T/O	Total		Int.	Ext.	Total		
1	DT17 B8.1C	Internship (IT/GIS/DESIGN/ANIMATION)	Nil					12	150	150	300	J	
2	DT17 B8.2C	Project (IT/GIS/DESIGN/ANIMATION)	Nil					18	250	250	500	J	
								30	400	400	800		

Note: Internship is as indicated in the academic calendar, but shall be for minimum of 12 weeks.

The detail schedule of Projects and internship will be in the academic calendar.

The general schedule of project and internship is indicated below.

	1 st to 4 th weeks	5 th to 8 th weeks	9 th to 12 th Weeks	13 th to 16 th weeks	17 th to 18 th week
Project	Project review – 1 and 2	Project review – 3	Project review – 4	Project Final review	
Internship	Selecting the firms and confirmation	Internship training period 12 weeks			Internship report Submission

LIST OF PROFESSIONAL ELECTIVE SUBJECTS

COURSE CODE	COURSE TITLE	ENDEXAM TYPE
DT17B3.1E	Human Settlements	W
DT17B3.2E	Python Programming Language	P
DT17B3.3E	Cyber Laws	W
DT17B3.4E	Digital Graphic Design	P
DT17B4.1E	Building Construction	W
DT17B4.2E	Human Computer Interaction	W
DT17B4.3E	E-Commerce	W
DT17B4.4E	Digital 2D Studio	P
DT17B5.1E	Working Drawings and Details	W
DT17B5.2E	Management Science	W
DT17B5.3E	Concepts of Interactive and Virtual Worlds	P
DT17B5.4E	Multimedia and Production Techniques	P
DT17B6.1E	Building Byelaws & Legislation for Architectural and Planning	W
DT17B6.2E	Geo-informatics in Resource Management	P
DT17B6.3E	3D Visualisation	P
DT17B6.4E	Web Designing	P
DT17B7.1E	Advanced Digital Design	P
DT17B7.2E	Building Construction Management	W
DT17B7.3E	Software Engineering	W
DT17B7.4E	Project Studies	P
DT17B7.5E	Digital Global positioning Systems	P
DT17B7.6E	Statistics & Programming for Geo-data	P
DT17B7.7E	Digital 3D Studio	P
DT17B7.8E	VFX & Compositing	P

Note: The above subjects may be offered or not offered depending on the current requirement and some subjects may be included depending on the current requirement.

DTDP-CBCS-2017-SYLLABUS

SEMESTER-I

DT17B1.1C : DESIGN AND DRAWING-I

L/S/P: 8/Wk, Int: 100, End Exam: 100, Total: 200, End Exam: Jury-Viva-voce Cr: 8

The course contains two parts viz. Basic Design and Architectural Drawing and Graphics Design

Course Overview:

Basic Design provides the framework for understanding design as a new language by sensitizing students to the conceptual, visual and perceptual issues involved in the design process.

Objectives of the Course:

To impart an understanding of design process and provide knowledge of the principles of design and design elements. Exercises complement the lectures and ensure that the students learn to develop a series of compositions in two and three dimension.

Expected Skills / Knowledge Transferred:

The Course prepares ground for the students to gain an understanding into the fundamental issues in building design and develop the skill to create appropriate solutions for simple problems.

Course Contents:

Introduction to design – definitions and meaning of design, importance of design. Examples of design from nature. Fundamental elements of design in 2-D and their definitions; point, line, shape, form, space, texture, value, colour and material. Introduction to the principles of design in 2-D and 3-D -unity, balance, symmetry proportion, scale, hierarchy, rhythm, contrast, harmony, focus, etc; use of grids, creating repetitive patterns

Assignment: to compose patterns by incorporating the principles of design.

Concepts of geometry – introduction to different 3-D forms and primitive forms, shape and understand the behavior when combined. Transformations of 2-D to 3-D.

Assignment: to sketch the basic geometric forms and to analyze them based on transformation of simple to complex forms.

Principles of composition-using grids, symmetrical/asymmetrical, rule of thirds, center of interest etc.

Assignment: to compose patterns using grids and to incorporate the principles.

Colour theory, color wheel, primary, secondary, tertiary colors, color schemes, color

value and intensity. Theoretical inputs to be followed by exercises to develop the ability to translate abstract principles into compositions in 2D and 3D.

Assignment: prepare a colour wheel, and composition based on colour theory.

Study of ornament in architectural design. Different types of ornamentation in buildings. Study and evaluation of artifacts and historic examples and their applicability.

Assignment: to document artifacts historical sites and to understand them with respect to the surround environment; to incorporate them of the design aspects to present day context or usage.

Basic anthropometrics-average measurements of human body in different postures-its proportion and graphic representation, application in the design of simple household and street furniture. Role of mannequins in defining spatial parameter of design. Basic human functions and their implications for spatial planning.

Visual analysis of built forms, noted for aesthetic delight; analysis of solid and void relations. Integration of form and function in the design of bus shelter, milk booth, watchman's cabin, traffic police kiosk, flower stall, ATM Center, etc.

Note: In end-exam, which is a viva-voce, the students have to present the entire semester's work for assessment.

Reference books:

Ching, Francis D.K. Architecture: Form, Space, and Order, 2nd ed. Van Nostrand Reinhold, New York, 1996.

Hanks, A. David. Decorative Designs of Frank Lloyd Wright, Dover Publications, Inc. New York, 1999.

Hepler, E. Donald, Wallach, I. Paul. Architecture Drafting and Design, 3rd ed. McGraw-Hill Book Company, New York, 1977.

Itten, Johannes. Design and Form: The basic course at the Bauhaus, Thames and Hudson Ltd., London 1997.

Krier, Rob. Architectural Composition, Academy Editions, London, 1988.

Meiss, Pierre Von. Elements of Architecture: From form to place, E and FN Spon, London, 1992.

Pipes, Alan. Drawing for 3-Dimensional Design. Thames and Hudson Ltd., London 1990.

Shibikawa, Ikuyoshi and Takahashi, Yumi. Designers Guide to Colour.

Smithies, K.W. Principles of Design in Architecture. Chapman and Hall, 1983.

Wucius, Wong. Principles of two Dimensional Design. Van Nostrand Reinhold 1972.

Architectural Drawing and Graphics

Course Overview:

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

Objectives of the Course:

To introduce architectural drawing techniques and to facilitate effective visual communication

Expected Skills / Knowledge Transferred: Freehand, scale drawing, conventional architectural representations in drawings and graphics.

Course Contents:

Introduction: Fundamentals of drawing and its practice, introduction to drawing equipment, familiarization, use and handling.

Drawing: Drawing sheet sizes, composition, fixing. Simple exercises in drafting, point and line, line types, line weights, straight and curvilinear lines dimensioning, lettering, borders, title panels, tracing in pencil, ink, use of tracing cloth.

Architectural Symbols: Representation of building elements, openings, materials, accessories etc., terminology and abbreviations used in architectural presentation.

Measured and Drawing to Scale: Scales and construction of scales, simple objects, furniture, rooms, doors and windows etc., in plan, elevation and section. Reduction and enlargement of drawings

Building Geometry: Study of points, lines, and planes leading to simple and complex solid geometrical forms; Use of geometry in buildings, isometric, axonometric and oblique views; Exercises on Ionic volute, Entasis of column etc., working with models to facilitate visualization.

Free Hand Drawings /Sketching: Simple exercises in object drawing, light and shade of simple, natural and geometric forms. Outdoor sketching of simple building forms. Architectural representation of trees, hedges, foliage, human figures in different postures, vehicles, street furniture etc.; their integration to presentation drawings;

Note: This is a studio subject and students should be made to prepare drawings as studio exercises along with the theoretical inputs. The studio work should be supplemented with appropriate site visits.

Reference books:

Moris, I.H. Geometrical Drawing for Art Students.

Thoms, E. French. Graphic Science and Design, New York: MC Graw Hill.

Nichols, T.B. and Keep, Norman. Geometry of Construction, 3rd ed. Cleaver – Hume Press Ltd., London, 1959.

Bhatt, N.D. and Panchal V.M. Engineering Drawing: Plane and Solid Geometry, 42nd ed. Charotar Pub., Anand, 2000.

Gill, P.S. T.B. of Geometrical Drawing, 3rd ed. Dewan Suhil Kumar Kataria, Ludhiana, 1986.

Shah, M.G., Kale, C.M. and Patki, S.Y. Building Drawing: with an integrated approach to built environment, 7th ed. Tata McGraw Hill Pub., Delhi, 2000.

Bies, D. John. Architectural Drafting: Structure and Environment. Bobbs – Merrill Educational Pub., Indianapolis.

Nelson, A. John. H.B. of Architectural and Civil Drafting, Van Nostrand Reinhold, New York, 1983.

DT17B1.2C CLIMATOLOGY FOR BUILT ENVIRONMENT

L/S/P: 4/Wk, Int: 50, End Exam: 50, Total: 100, End Exam: 3 Hours Cr: 4

Course Overview :

Science (tools, data, standards, methods and principles) of building design and site planning as related to climate, particularly to tropical climates as found in India.

Objectives of the Course :

To equip the student with the basic understanding of climatic types in India, and the impact on requirements of building design and site planning; to introduce them to the basic science of building design and site planning for thermal comfort, daylighting and natural ventilation; familiarize them with the data, methods, principles, standards and tools for planning and designing for climatic comfort

Expected Skills / Knowledge Transferred :

The student should be able to 'predict' climatic conditions in a given building (simple residence) and undertake redesign for given parameters

Course Contents:

Note: The topics here to be dealt with keeping in mind Indian climatic conditions. NBC and BIS guidelines / standards have to be introduced at all relevant contexts.

Unit – I

Introduction to Building Climatology:

Climate and built form interaction. Global Climatic factors, elements of climate, graphic representation of climatic data, Mahoneys Tables, macro and micro climate; challenge of rapid, extreme environmental change

Unit – II

Tropical Climates:

Definition, classification of tropical climates, characteristics of different climatic zones, Design considerations for warm-humid, hot-dry, composite and upland climates.

Unit – III

Thermal Comfort:

Thermal comfort factors, Physiological aspects, Body heat balance, comfort range, comfort charts.

Unit – IV

Heat flow through Buildings:

Basic principles of heat transfer through buildings, performance of different materials, Periodic heat flow.

Unit – V

Sun and the Design process:

Solar geometry, Solar charts, Sun angles and shadow angles, orientation for sun, sun control, design of shading devices, building form and heat gain, basic principles of daylighting, sunlight and glare

Unit – VI

Natural Ventilation:

Air movement around and through buildings, Orientation for wind, stack effect, Induced ventilation

Unit – VII

Passive Cooling:

Passive methods of Cooling, roof pond, desiccant cooling, evaporative Cooling, and earth sheltered buildings etc.

Site Planning (including landscaping) and building planning and design considering climate factors Detailed appraisal/analysis of climatological performance of an existing residence and or a workplace; followed by redesigning or the same to improve climatological performance.

Reference books:

Koenigsberger, O.H. and Others. Manual of Tropical Housing and Building. Orient Longman, Chennai, 2003.

Konya, Allan. Design for Hot Climates.

Kukreja, C.P. Tropical Architecture. Tata McGraw-Hill Pub. Co. Ltd., New Delhi, 1978.

Markus, T.A. and Morris. E.N. Buildings, Climate and Energy. Pitman Pub. Ltd., London, 1980.

Olgyay and Olgyay. Solar Control and Shading Devices.

DT17B1.3C MATERIALS AND CONSTRUCTIONS

L/S/P: 4/Wk, Int: 50, End Exam: 50, Total: 100, End Exam: 3 Hours Cr: 4

Note: The student is expected to maintain a record book in which he / she shall record all the examples of his / her observations of the materials as found in use in buildings / development, specifying the material, building in which used, where used, how used / fixed, sourcing of the material, (also suppliers addresses,) sizes, Characteristics, costs, critical analysis of the appropriateness of its' use, etc.

List the materials used in buildings by type of building, part of building, building process and/ or in the building industry with respective physical, chemical, etc. properties effecting its supply (size, shape, thickness etc.), transportation, handling, stacking and storing, etc. Process of selecting / specifying materials. Knowledge of the relevant codes of the Bureau of Indian Standards.

Classification of stones; granite, laterite, quartzite, marble and slates -properties and uses; stone units - header, rubble, quoins, black stones, stone metal, flag stones, paving sets. Preservation of stonework, quarrying of building stones, quarry dressing, tools used. Clay bricks: constituents, harmful constituents, selection of clay, requirements and tests. Fire clay bricks - varieties; sand lime bricks;

Paving bricks; Terra-cotta - its varieties: ordinary, glazed, porous, polished and fine - uses and properties. Building Tiles: Roofing Tiles, flooring and wall tiles.

Sand: Sources, classification, functions, properties, tests for silt and organic contents, size of sand and grading.

Mortars: Types, proportioning, mixing and grinding, mortar mills. Surkhi mortar, cement mortar, methods of preparing, handling and uses of mortars, light weight mortars i.e. cinder, sawdust and fibrous plasters, gypsum plaster, composition and uses, plaster of Paris.

Portland Cement: Raw materials, functions of cement ingredients, setting action of cement, tests for strength and setting time.

References:

1. Engineering Materials - by G.J.Kulkarni
2. Building Materials - by Deshapande
3. Engineering Materials - by Roy Chowdary
4. Building Materials Practice - by Ragsdale & Raynham
5. Engineering Materials - by S.c. Rangwalla

Elementary and simple construction methods explaining basic principles and considerations in the construction of one roomed rectilinear buildings with verandah: Foundations and footings using CRS, cement concrete, mortar (cement, lime, surkhi)

Walls:

Stone walls: rubblework, joints, plinths, and lintels Brick walls: brickwork - English and Flemish brick bonds, stopped ends, quoins, piers, jambs, mortar joints. Openings: wooden doors and casement windows with simple and basic hardware.

Lintels and Arches: lintels of wood, stone, brick; arches: terms defined, forms of arches, i.e. segmental, semi-circular, elliptical, three-centered, flat and relieving arch etc. rough and gauged arch.

Roofs: RCC roof - simply supported, single way reinforced. The mode of teaching shall be through (graphic) basic models of 'standard' construction details incorporating a maximum of three alternative variations in the building components and how these interact or impact on each other in terms of jointing, dimensional coordination, resolving differential characteristics, etc.

The class and assignment work should include appropriate site visits by the students, and students will have to maintain field observation/record books.

DT17B1.4C: C' PROGRAMMING AND DATA STRUCTURES

L/S/P: 3/Wk, Int: 50, End Exam: 50, Total: 100, End Exam: Practical & Viva-voce Cr: 3

Software's: Turbo C, Turbo C++, ANSI C

UNIT – I

Algorithm / pseudo code, flowchart, program development steps, structure of C program, A Simple C program, identifiers, basic data types and sizes, Constants, variables, arithmetic, relational and logical operators, increment and decrement operators, conditional operator, bit-wise operators, assignment operators, expressions, type conversions, conditional expressions, precedence and order of evaluation. Input-output statements, statements and blocks, if and switch statements, loops- while, do- while and for statements, break, continue, goto and labels, programming examples.

UNIT - II

Designing structured programs, Functions, basics, parameter passing, storage classes- extern, auto, register, static, scope rules, block structure, user defined functions, standard library functions, recursive functions, header files, C preprocessor, example c programs.

UNIT - III

Arrays- concepts, declaration, definition, accessing elements, storing elements, arrays and functions, two dimensional and multi-dimensional arrays, applications of arrays. pointers- concepts, initialization of pointer variables, pointers and function arguments, address arithmetic, Character pointers and functions, pointers to pointers, pointers and multidimensional arrays, dynamic memory managements functions, command line arguments, c program examples.

UNIT - IV

Derived types- structures- declaration, definition and initialization of structures, accessing structures, nested structures, arrays of structures, structures and functions, pointers to structures, self referential structures, unions, typedef, bitfields, C program examples.

UNIT - V

Input and output – concept of a file, text files and binary files, streams, standard I/o, Formatted I/o, file I/o operations, error handling, C program examples.

UNIT - VI

Searching – Linear and binary search methods, sorting – Bubble sort, selection sort, Insertion sort, Quicksort, merge sort.

UNIT – VII

Introduction to data structures, singly linked lists, doubly linked lists, circular list, representing stacks and queues in C using arrays and linked lists, infix to post fix conversion, postfix expression evaluation.

UNIT - VIII

Trees- Binary trees, terminology, representation, traversals, graphs- terminology, representation, graph Traversals (dfs & bfs)

TEXT BOOKS:

1. Computer science - A structured programming approach using C, B.A. Forouzan and R.F. Gilberg, Third edition, Thomson.
2. Data Structures Using C – A.S.Tanenbaum, Y. Langsam, and M.J. Augenstein, PHI/Pearson education.

REFERENCES :

1. C & Data structures – P. Padmanabham, B.S. Publications.
2. The C Programming Language - B.W. Kernighan, Dennis M. Ritchie, PHI/Pearson Education
3. C Programming with problem solving - J.A. Jones & K. Harrow, dreamtech Press
4. Programming in C – Stephen G. Kochan, III Edition, Pearson Education.

PRACTICAL KNOWLEDGE:

- 1) Execution of simple C program.
- 2) Execution of programs on different data types and their sizes.
- 3) Execution of programs on different types of constants.

- 4) Execution of programs on arithmetic operators.
- 5) Execution of programs on relational operators.
- 6) Execution of programs on logical operators.
- 7) Execution of programs on bitwise operators.
- 8) Execution of programs on jumping statements.
- 9) Execution of programs on looping statements.
- 10) Execution of programs on type casting.
- 11) Execution of programs on precedence and order of evaluation.
- 12) Execution of programs on input and output statements.
- 13) Execution of programs on different types of arrays.
- 14) Execution of programs on different types of functions.
- 15) Execution of programs on structures.
- 16) Execution of programs on unions.
- 17) Execution of programs on pointers.
- 18) Execution of programs on different types of file operations.
- 19) Execution of programs on different linked lists.
- 20) Execution of programs on stacks.
- 21) Execution of programs on ADT's.
- 22) Execution of programs on different queues.
- 23) Execution of programs on different types of expressions (post fix, infix, pre fix).
- 24) Execution of programs on different sorting techniques.
- 25) Execution of programs on different types of trees.
- 26) Execution of programs on different traversal techniques.
- 27) Execution of programs on depth first search.
- 28) Execution of programs on breadth first search.
- 29) Execution of programs on graphs.
- 30) Execution of programs on different graph traversals.

DT17B1.5C -- STATISTICAL METHODS

L/S/P: 3/Wk, Int: 50, End Exam: 50, Total: 100, End Exam: 3 Hours Cr: 3

Unit –I

Importance and need of statistical methods and its applications in Design Technologies with reference to spatial planning and Architecture

Introduction of statistics : scope, functions ,analysis and presentation methods and its applications to spatial planning and Architecture

Unit-II

Data collection methods : types of data, sources of data, methods of data collection such as case study, interview method, questionnaire method; objectives , difference between survey and lab/experimental methods; self report method; observational method; critical examination of all the methods; flow charts;

Unit-III

Importance of designs and sampling : Properties of a Research Design, types of designs in brief ;sampling designs : significance of sampling, census vs. sampling, fundamentals of sampling; sample size, criteria for sampling design and its limitations, sampling methods (Probability and non-probability sampling); application of sampling techniques for different situations;

Unit- IV

Data processing and presentation : editing the data, coding the data for computerisation, selection of the variables as per objectives ; classification and tabulation of data ; graphical presentation of qualitative and quantitative data methods and its choice pertaining to design technologies data

Unit -V

Analysis of data techniques : Preparation of data for data processing, Measures of averages, measures of dispersion, correlation and regression, Index numbers and time series basics;

Probability and its distributions: Probability and its types and laws (only definitions); Binomial distribution, Poisson distribution, Normal distribution ; t-distribution, Chi-square distribution

Decision making models : Testing of hypothesis with small and large sample distributions ;Linear Programming models, queuing theory, transportation problems

Expected outputs and assignments : The students will be exposed and explored to the framing of sampling methods in data collection, presentation of slides/charts on a small project for their future use to test their statistical knowledge as a pilot study for their future project work.

Suggested books for reading:

1. S.P. Gupta ----Statistical methods
2. Ram Ahuja ---Research methods
3. An introduction to statistical methods and data Analysis –R. Lyman Ott
4. MS- Excel for data analysis
5. Statistical packages such as SPSS, Minitab, Mat lab; SAS
6. Marketing Research ---An applied orientation—Naresh K. Malhotra

BT17B1.1C: ENGINEERING MATHEMATICS

L/S/P: 4/Wk, Int: 50, End Exam: 50, Total: 100, End Exam: 3 Hours Cr: 4

UNIT – I

Differential equations of first order and first degree, Law of natural growth and decay, orthogonal trajectories.

UNIT – II

Non-homogeneous linear differential equations of second and higher order with constant coefficients with RHS term of the type e , $\sin ax$, $\cos ax$, polynomials in x , $e^{V(x)}$, $xV(x)$, method of variation of parameters.

UNIT – III

Rolle's Theorem – Lagrange's Mean Value Theorem – Cauchy's mean value Theorem – Generalized Mean Value theorem (all theorems without proof) Functions of several variables – Functional dependence- Jacobian- Maxima and Minima of functions of two variables with constraints and without constraints

UNIT – IV

Radius, Centre and Circle of Curvature – Evolutes and Envelopes Curve tracing – Cartesian, polar and Parametric curves.

UNIT – V

Applications of integration to lengths, volumes and surface areas in Cartesian and polar coordinates multiple integrals - double and triple integrals – change of variables – change of order of integration.

UNIT – VI

Sequences – series – Convergences and divergence – Ratio test – Comparison test – Integral test – Cauchy's root test – Raabe's test – Absolute and conditional convergence

UNIT –VII

Vector Calculus: Gradient- Divergence- Curl and their related properties of sums-products- Laplacian and second order operators

UNIT-VIII

Vector Integration - Line integral – work done – Potential function – area- surface and volume integrals Vector integral theorems: Green's theorem-Stoke's and Gauss's Divergence Theorem (without proof). Verification of Green's - Stoke's and Gauss's Theorems.

Text Books:

1. A text Book of Engineering Mathematics, Vol-1 T. K. V. Iyengar, B. Krishna Gandhi and Others, S. Chand & Company.
2. A text Book of Engineering Mathematics, C. Sankaraiah, V. G. S. Book Links.
3. A text Book of Engineering Mathematics, Shahnaz Bathul, Right Publishers.
4. A text Book of Engineering Mathematics, P. Nageshwara Rao, Y. Narasimhulu & N.Prabhakar Rao, Deepthi Publications.

References:

1. A text Book of Engineering Mathematics, B. V. Raman, Tata Mc Graw Hill.
2. Advanced Engineering Mathematics, Irvin Kreyszig, Wiley India Pvt. Ltd.
3. A text Book of Engineering Mathematics, Thomson Book Collection.

GN17B1.2A ENVIRONMENTAL STUDIES

L/S/P: 4/Wk, Int: 50, End Exam: 50, Total: 100, End Exam: 3 Hours Cr: 2

Course Overview: A compulsory subject for all the undergraduate students of various discipline highlights significance of maintaining balance and sustainability of various components of the environment.

Objectives of the Course : To sensitize the students towards sustainable environment.

Course Contents:**Unit – I**

Environmental studies – Introduction: - Definition, scope and importance, Measuring and defining environmental development indicators.

Unit – II

Environmental and Natural Resources: Renewable and non-renewable resources - Natural resources and associated problems - Forest resources - Use and over - exploitation, deforestation, case studies - Timber extraction - Mining, dams and other effects on forest and tribal people - Water resources - Use and over utilization of surface and ground water - Floods, drought, conflicts over water, dams-benefits and problems - Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies. - Food resources:

World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies. - Energy resources: Growing energy needs, renewable and non-renewable energy sources use of alternate energy sources. Case studies. Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.

Unit - III

Basic Principles of Ecosystems Functioning: 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. Introduction, types, characteristic features, structure and function of the following ecosystem:

- a. Forest ecosystem
- b. Grassland ecosystem
- c. Desert ecosystem
- d. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries).

Unit - IV

Biodiversity and its conservation: Introduction - Definition: genetic, species and ecosystem diversity. Bio-geographical classification of India - Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values - Biodiversity at global, National and local levels. - India as a mega-diversity nation - Hot-spots of biodiversity - Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts. - Endangered and endemic species of India - Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

Unit - V

Environmental Pollution: Definition, Cause, effects and control measures of:

- a. Air pollution b. Water pollution c. Soil pollution d. Marine pollution e. Noise pollution f. Thermal pollution g. Nuclear hazards

Solid waste Management: Causes, effects and control measures of urban and industrial wastes. - Role of an individual in prevention of pollution. - Pollution case studies. - Disaster management: floods, earthquake, cyclone and landslides.

Unit - VI

Social Issues and the Environment: From unsustainable to sustainable development -Urban problems related to energy -Water conservation, rain water harvesting, and watershed management -Resettlement and rehabilitation of people; its problems and concerns. Case Studies -Environmental ethics: Issues and possible solutions. -Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case Studies. -Wasteland reclamation. - Consumerism and waste products. -Environment Protection Act. -Air (Prevention

and Control of Pollution) Act. -Water (Prevention and control of Pollution) Act - Wildlife Protection Act -Forest Conservation Act -Issues involved in enforcement of environmental legislation. -Public awareness.

Unit - VII

Human Population and the Environment: Population growth, variation among nations. Population explosion - Family Welfare Programme. -Environment and human health. -Human Rights. -Value Education. -HIV/AIDS. -Women and Child Welfare. -Role of information Technology in Environment and human health. -Case Studies.

Unit - VIII

Field work: Visit to a local area to document environmental assets River /forest grassland/hill/mountain -Visit to a local polluted site-Urban/Rural/industrial/ Agricultural Study of common plants, insects, birds. -Study of simple ecosystems - pond, river, hill slopes, etc.

TEXT BOOK:

ErachBharucha, A Text Book of Environmental Studies for Undergraduate Courses, University Grants Commission.

GN17B1.3A COMPUTER APPLICATIONS

L/S/P: 4/Wk, Int: 50, End Exam: 50, Total: 100, End Exam: Practical& Viva-voce Cr: 2

Software's: MS-Word, MS.Excel, Access, Photoshop, Corel Draw.

UNIT I

Introduction and history of computer, software & hardware concepts - bits, bytes - types of languages –Operating systems (windows, DOS, Linux).

Introduction to Word Processing Package (like MS office), toolbar, creating a new document, formatting text, inserting tables, pictures, page numbers and date/ time, spelling and grammar checking, taking printouts.

UNIT II

Spread Sheets

Introduction to spread sheets (like MS Excel), creating formulae, order of operations, borders and shading, inserting chart, taking print outs.

UNIT-III

Multi-media Presentations

Introduction to multi-media presentation (like MS Power Point), creating a presentation, opening an existing presentation, creating a blank presentation, different Power Point views, slide manipulation, slide animation, slide transitions, view slide show, navigating while in slideshow, hyper linking to various other media/

application outputs, scanning of different media in different formats, setting of options, resolution settings, management of file size, integrating partial scans of large documents, pack up a presentation for use on another computer, taking print outs.

UNIT IV

Exploring Microsoft Access Introduction, creating new and opening existing databases, creating a database using a wizard, creating a database without using a wizard, tables - what they are and how they work, create a table from scratch in design view, primary keys, switching views, entering data, manipulating data, advanced table feature examples. Relationships - how to link multiple tables together, forms - what they are and how they work, creating a form using a wizard, reports - what they are & how they work, creating report & mail merge labels using wizard.

UNIT V

Graphical Concepts-I

Photo editing and Desktop publishing (application) software Introduction, software & system requirements, preferences, workspace, graphics terminology, image depth, resolution and image size, up sampling and down sampling, image sources, straightening an image, cropping an image, basic image correction, printing photo edited documents, selections, choosing foreground and background colors, filling with color, options & preferences revisited, file browser, stepping back in time, use ram efficiently, sharpening images, working with layers, painting in photo editing software, color theory, image modes, channels, more advanced adjustment commands, file format categories.

UNIT VI

Internet concepts, Introduction to Internet, Hyper Text Mark-up Language, introduction to basic features and uses of Java, VB.

UNIT VII

Graphical concepts-II

Photo editing and Desktop publishing (application) software

Import and export of photo edited files, Objects in photo editing, fills, outlines, total text control, basic toolbox of photo editing software (like CorelDraw), color management tools, starting your page right.

PRACTICAL KNOWLEDGE:

1. The internal assessment to be carried out through practicals and periodic tests on the mentioned topics.
2. The internal assessment to be in the form of term papers and practicals on above mentioned topics.

Text/Reference books:

Microsoft Office 2000- Leon Hard Woody, New Delhi, Prentice hall of India.
Microsoft Office for Windows –Sagman India Addison Wesley, 1999.

Adobe Photoshop CS Classroom in a Book (Classroom in a Book) by Adobe Creative Team (Paperback - December 1, 2003).Fundamental Photoshop: A Complete Introduction by Adele Droblas- Greenberg.

SEMESTER II

DT17B2.1C DESIGN & DRAWING-II

L/S/P: 8/Wk, Int: 100, End Exam: 100, Total: 200, End Exam: Jury & Viva-voce Cr: 8

Course Overview:

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

Objectives of the Course:

To develop abilities in design in the context of user requirements.

Expected Skills / Knowledge Transferred: use of standards, handling of space, and application of knowledge gained from other subjects in design.

Course Contents:

The design issues to be addressed:

- Various functions and their spatial implications.
- Formulations of concept.
- Anthropometry and furniture layout
- Horizontal circulation
- Interior volumes and space articulation through different materials.
- Integration of form and function.

The list of suggested topics to be covered as design problems:

Balwadi, Kindergarten School, Primary Health Centre, Doctor's Clinic, small Cafeteria, Highway Restaurant, Village Post Office, Bank extension counter, Police Station, Architect's Office, Departmental Store, School Gymkhana and Youth Club etc. Necessary theoretical inputs to be given highlighting the norms and design issues. The topics not covered as design problems will have to be covered by the Studio faculty members through lecture/slide show sessions and site visits.

Course Contents:

Unit – I

Introduction to Sciagraphy:

Simple and composite forms, shadows on horizontal, vertical planes and on their own surfaces. Study of shade and shadows of simple geometrical solids of various forms and groups of forms.

Unit – II

Advanced Sciagraphy:

Shade and shadow techniques leading to advanced practical examples: shades and shadows on buildings or parts of buildings. Relative changes in building shades and shadows with sun angle, time, building height etc.

Unit – III

Perspective:

Characteristics of perspective drawings: perspectives of simple geometric solids and spaces and complex geometries. Advanced examples in one point or parallel perspective, two point or angular perspective, introduction to three point perspective.

Unit – IV

Introduction to Rendering:

Introduction to surfaces and media, observation, recording and basic representation techniques in different media through drawing pencil, pen, brush, charcoal, crayons etc

Reference books :

Perspective Drawing - Harry Meritt

Rendering in Pen and Ink : The Classic on Pen and Ink Techniques for Artists, Illustrators, Architects and Designers.

DT17B2.2C STRUCTURAL SYSTEMS

L/S/P: 4/Wk, Int: 50, End Exam: 50, Total: 100, End Exam: 3 Hours Cr: 4

UNIT I

Introduction to built elements

Study of built elements in settlements with respect to materials used, basic construction methods and general specifications. General types & classifications of buildings; overview of different functional, structural and architectural elements.

UNIT II

Fundamentals of Structures

Introduction to basic structural systems, elements of structure, their functions & behaviour, beams, slabs, columns, walls, foundations, bearing wall systems, trusses, rigid frames, linear and curved elements; simply supported, cantilever and overhanging beams for various loads; effect of simple geometric forms on the overall structural behaviour.

UNIT III

Fundamentals of Forces

Primary and secondary forces acting on structures dead loads, live load, wind, seismic forces, distribution of loads through the elements of the system.

Basic fundamentals in force systems, stresses and strains, temperature variation and resultant stresses, relation between E, N, and K; relation between bending moment and shear force, BM and SF diagrams.

Moment of inertia and section modulus for various structural shapes. Theory of simple bending, Columns and struts, failure of columns, Arches.

UNIT IV

Materials and finishes

Structural properties of basic materials like masonry, timber, concrete and steel, bricks, stone, timber, steel, plastics, composites, sand and aggregates, cement, types of paints and varnishes, claddings, finishes; uses, advantages and disadvantages.

Scope of the subject is limited only to understanding/ appreciating applications of above concepts/ principles in:

Infrastructure - roads, kerbs, paving, medians/ traffic islands, drainage channels, pipes, culverts, bridges, street furniture, lampposts, distribution poles.

Buildings- structural and functional typologies such as high-rise, large span, cantilevers, basements and cellars, ramps and elevators.

Expected Outputs & Assignment

Students to make documentation of different built elements and their aspects mentioned above. Structural/ study models of different structures such as arches; truss etc. shall be made along with short notes on the same.

References:

Rowland J. Mainstone: Development of Structural Form

Rangwala: Engineering Materials

S. P. Bindra, S. P. Arora: Building Construction

B.C. Punmia: Strength of Materials vol – I

DT17B2.3C APPLIED PHYSICS

L/S/P: 4/Wk, Int: 50, End Exam: 50, Total: 100, End Exam: 3 Hours Cr: 4

UNIT I

BONDING IN SOLIDS : Introduction - Types of bonding in solids - Estimation of cohesive energy – Madelung constant.

CRYSTAL STRUCTURES AND X-RAY DIFFRACTION: Introduction -Space lattice - Basis - Unit cell - Lattice parameter - Bravais lattices – Crystal systems - Structure and packing fractions of Simple cubic - Body centered cubic – Face centered cubic crystals - Directions and planes in crystals – Miller indices - Separation between successive [h k l] planes - Diffraction of X-rays by crystal planes - Bragg's law - Laue method - Powder method.

UNIT II

PRINCIPLES OF QUANTUM MECHANICS: Waves and particles - Planck's quantum theory – de Broglie hypothesis – Matter waves - Davisson and Germer

experiment – G. P. Thomson experiment – Heisenberg uncertainty principle - Schrödinger's time independent wave equation - Physical significance of the wave function - Particle in one dimensional potential box.

UNIT III

ELECTRON THEORY OF METALS: Classical free electron theory - Mean free path - Relaxation time and drift velocity - Quantum free electron theory - Fermi-Dirac distribution (analytical) and its dependence on temperature – Fermi energy – Electron scattering and resistance.

BAND THEORY OF SOLIDS: Bloch theorem - Kronig-Penney model (qualitative treatment) - Origin of energy band formation in solids – Classification of materials into conductors, semi conductors & insulators - Concept of effective mass of an electron.

UNIT IV

DIELECTRIC PROPERTIES: Introduction - Dielectric constant - Electronic, ionic and orientational polarizations - Internal fields in solids – Clausius - Mossotti equation – Dielectrics in alternating fields – Frequency dependence of the polarizability - Ferro and Piezo electricity.

MAGNETIC PROPERTIES : Permeability - Magnetization - Origin of magnetic moment – Classification of magnetic materials - Dia, para and ferro magnetism - Hysteresis curve - Soft and hard magnetic materials.

UNIT V

SEMICONDUCTORS : Introduction - Intrinsic semiconductor and carrier concentration – Equation for conductivity - Extrinsic semiconductor and carrier concentration - Drift and diffusion - Einstein's equation - Hall effect – Direct & indirect band gap semiconductors.

SUPERCONDUCTIVITY: General properties - Meissner effect - Penetration depth - Type I and Type II superconductors - Flux quantization – DC and AC Josephson effect –BCS Theory - Applications of superconductors.

UNIT VI

LASERS: Introduction - Characteristics of Lasers - Spontaneous and stimulated emission of radiation - Einstein's coefficients - Population inversion - Ruby laser - Helium-Neon Laser – CO₂ laser -Semiconductor Laser – Applications of lasers.

UNIT VII

FIBER OPTICS AND HOLOGRAPHY: Introduction - Principle of optical fiber - Acceptance angle and acceptance cone - Numerical aperture – Types of optical fibers and refractive index profiles – Attenuation in optical fibers - Application of optical fibers – Basic principles of holography – Construction and reconstruction of image on hologram – Applications of holography.

UNIT VIII

SCIENCE & TECHNOLOGY OF NANOMATERIALS: Introduction to Nano materials - Basic principles of Nanoscience & Technology – Fabrication of nano materials – Physical & chemical properties of nanomaterials – Carbon nanotubes – Applications of nanotechnology.

TEXTBOOKS:

1. Applied Physics 2nd edition by Dr. P. Appala Naidu & Dr. M. Chandra Shekar, V.G.S. Book links.
2. Introduction to Solid State Physics by C. Kittel ; Wiley Eastern Ltd.
3. Nanotechnology by Mark Ratner and Daniel Ratner; Pearson Education.

REFERENCES:

1. Materials Science and Engineering by V. Raghavan; Prentice-Hall India.
2. Materials Science by M. Arumugam; Anuradha Agencies.
3. Solid State Physics by N.W. Ashcroft & N. David Merwin; Thomson Learning.
4. Materials Science by M.S.Vijaya & G. Rangarajan; Tata McGraw Hill.
5. Solid State Physics by P.K. Palanisamy; Scitech Publications (India) Pvt. Ltd.
6. Nano Materials by A.K. Bandyopadhyay, New Age International Publishers.
7. Applied Physics by P.K.Mittal; I.K. International.
8. Applied Physics by K. Vijay Kumar & T. Sreekanth; S. Chand & Company Ltd.

DT17B2.4C ADVANCED DATA STRUCTURES & ALGORITHMS

L/S/P: 3/Wk, Int: 50, End Exam: 50, Total: 100, End Exam: Practical & Viva-voce Cr: 3

Software's: Turbo C++

Unit I

C++ Class Overview- Class Definition, Objects, Class Members, Access Control, Class Scope, Constructors and destructors, parameter passing methods, Inline functions, static class members, this pointer, friend functions, dynamic memory allocation and deallocation (new and delete), exception handling.

Unit II

Function Overloading, Operator Overloading, Generic Programming- Function and class templates, Inheritance basics, base and derived classes, inheritance types, base class access control, runtime polymorphism using virtual functions, abstract classes, streams I/O.

Unit III

Algorithms, performance analysis-time complexity and space complexity, O-notation, Omega notation and Theta notation, Review of basic data structures - the list ADT, stack ADT, queue ADT, implementation using template classes in C++, sparse matrix representation.

Unit IV

Dictionaries, linear list representation, skip list representation, operations- insertion, deletion and searching, hash table representation, hash functions, collision resolution-separate chaining, open addressing-linear probing, quadratic probing, double hashing, rehashing, extendible hashing, comparison of hashing and skip lists.

Unit V

Priority Queues – Definition, ADT, Realizing a Priority Queue using Heaps, Definition, insertion, Deletion, Application-Heap Sort, External Sorting- Model for external sorting, Multiway merge, Polyphase merge.

Unit VI

Search trees (part I) : Binary search trees, definition, ADT, implementation, operations- searching, insertion and deletion, Balanced search trees- AVL trees, definition, height of an AVL tree, representation, operations-insertion, deletion and searching.

Search trees (part II): Introduction to Red –Black trees and Splay Trees, B-Trees-B-Tree of order m, height of a B-Tree, insertion, deletion and searching, Comparison of Search Trees.

Unit VII

Divide and Conquer- General method, applications – Binary search, merge sort, quick sort, Strassen's matrix multiplication Efficient non recursive tree traversal algorithms, Biconnected components. Disjoint set operations, union and find algorithms.

Unit VIII

Greedy method and Dynamic programming : General method (Greedy), Minimum cost spanning trees, Job sequencing with deadlines, General method (Dynamic Programming), Optimal binary search trees, 0/1 knapsack problem, Ordering Matrix Multiplications

TEXT BOOKS :

1. Data Structures and Algorithm Analysis in C++ - Mark Allen Weiss, Pearson Education, second edition.
2. Data structures, Algorithms and Applications in C++ -S.Sahni,University press (India) pvt ltd, 2nd edition, Orient Longman pvt.ltd.
3. Data Structures and Algorithms in C++ - Third Edition, Adam Drozdek, Thomson.

4. Data Structures using C++ - D.S. Malik, Thomson

REFERENCE:

1. Data structures and Algorithms in C++ - Michael T.Goodrich, R.Tamassia and D.Mount, Seventh Edition Wiley student edition, John Wiley and Sons.
2. Data Structures and Algorithms in C++ - Third Edition, Adam Drozdek, Thomson
3. Problem solving with C++ - The OOP, Fourth edition, W.Savitch, Pearson education.
4. C++, The Complete Reference - 4th Edition, Herbert Schildt, TMH.

PRACTICAL KNOWLEDGE:

1. Execution of simple c++ program.
2. Execution of programs on different data types and their sizes.
3. Execution of programs on different types of operators and statements.
4. Execution of programs on class concepts.
5. Execution of programs on creation of objects to the classes.
6. Execution of programs on different constructors.
7. Execution of programs on destructors.
8. Execution of programs on parameter passing methods.
9. Execution of programs on different types of functions.
10. Execution of programs on friend function.
11. Execution of programs on exception handling.
12. Execution of programs on function over loading.
13. Execution of programs on operator over loading.
14. Execution of programs on overriding.
15. Execution of programs on different types of inheritances.
16. of programs on different types of polymorphisms.
17. Execution of programs on data abstraction.
18. Execution of programs on different types of ADT's.
19. Execution of programs on different types of lists.
20. Execution of programs on different types of stacks.
21. Execution of programs on different types of queues.
22. Execution of programs on AVL trees.
23. Execution of programs on red black trees.
24. Execution of programs on B trees and B+ trees.
25. Execution of programs on different hash functions and hash tables.
26. Execution of programs on splay trees.
27. Execution of programs on quick sort.

28. Execution of programs on merge sort.
29. Execution of programs on heap sort.
30. Execution of programs on different graph traversals

DT17B2.5C WORKSHOP (IT & DESIGN)

L/S/P: 3/Wk, Int: 50, End Exam: 50, Total: 100, End Exam: Practical & Viva-voce Cr: 3

IT

Introduction to various components of the computer. Assembling and disassembling.

DESIGN

Course Overview:

The course provides the foundation and capability to represent the concepts three dimensionally.

Objectives of the Course:

To introduce various fabrication skills and techniques necessary to produce scale-models and to encourage preparation of models as an essential phase in design development and evaluation. Expected Skills / Knowledge Transferred: Dexterity; Knowledge of materials and their properties; craft skills; visualization skills; Course Contents:

Unit – I

Introduction to model-making: Need; role of scale-models in design; general practices; Digital models.

Unit – II

Essentials of model-making: understanding of various tools and machines employed, best practices involved in operating the tools and the techniques.

Unit –III

Survey of various materials available for model making such as papers, boards, wood, plastics, films, plaster of paris, acrylic, Styrofoam, wax, metals, glass etc. and exploring their potential in model-making.

Unit IV

Techniques of Scale-modeling: Use of different scales; templates; measuring aids; Conventions followed.

Unit –V

Techniques for preparation of presentation models, mock-ups, simulation of various materials and textures such as wood, glass, aluminium, steel, bricks, roofing tiles, flooring, corrugated sheets, upholsteries etc.

Unit -VI

Techniques for preparation of clay models and presentation.

Unit-VII

Set and stage designing and models.

Reference Books :

The Handbook of Set Design - by Colin Winslow

Design Workshop, Second Edition : Robin Williams

BT17B2.1C : MATHEMATICAL METHODS

L/S/P: 4/Wk, Int: 50, End Exam: 50, Total: 100, End Exam: 3 Hours, Cr: 4

UNIT- I

Matrices and Linear systems of equations: Elementary row transformations-Rank-Echelon form, Normal form – Solution of Linear Systems – Direct Methods- LU Decomposition- LU Decomposition from Gauss Elimination –Solution of Tridiagonal Systems-Solution of Linear Systems.

UNIT-II

Eigen values, eigen vectors – properties – Cayley-Hamilton Theorem - Inverse and powers of a matrix by Cayley-Hamilton theorem – Diagonalization of matrix. Calculation of powers of matrix – Modal and spectral matrices.

UNIT- III

Real matrices – Symmetric, skew - symmetric, orthogonal, Linear Transformation – Orthogonal Transformation. Complex matrices: Hermitian, Skew-Hermitian and Unitary – Eigen values and eigen vectors of complex matrices and their properties. Quadratic forms- Reduction of quadratic form to canonical form – Rank - Positive, negative definite - semi definite - index - signature - Sylvester law.

UNIT- IV

Solution of Algebraic and Transcendental Equations: Introduction – The Bisection Method – The Method of False Position – The Iteration Method – Newton-Raphson Method.

UNIT- V

Interpolation: Introduction- Errors in Polynomial Interpolation – Finite differences-Forward Differences Backward differences –Central differences – Symbolic relations and separation of symbols-Differences of a polynomial-Newton's formulae for interpolation – Central difference interpolation Formulae – Gauss

Central Difference Formulae – Interpolation with unevenly spaced points – Lagrange's Interpolation formula.

UNIT- VI

Curve fitting: Fitting a straight line – Second degree curve – exponential curve – power curve by method of least squares. Numerical Differentiation and Integration – Trapezoidal rule – Simpson's 1/3 Rule – Simpson's 3/8 Rule.

UNIT- VII

Numerical solution of Ordinary Differential equations: Solution by Taylor's series – Picard's Method of successive Approximations – Euler's Method – Runge-Kutta Methods – Predictor- Corrector Methods – Adams Moulton Method – Milne's Method.

UNIT- VIII

Fourier Series: Determination of Fourier coefficients – Fourier series – even and odd functions – Fourier series in an arbitrary interval – even and odd periodic continuation – Half-range Fourier sine and cosine expansions. Fourier integral theorem (only statement) – Fourier sine and cosine integrals. Fourier transforms – Fourier sine and cosine transforms – properties – inverse transforms – Finite Fourier transforms.

Text/Reference books:

Mathematical Methods, T. K. V. Iyengar, B. Krishna Gandhi and Others, S. Chand & Company. Mathematical Methods, C. Sankaraiah, V. G. S. Book Links A text Book of Engineering Mathematics, B. V. Raman, Tata Mc Graw Hill. Numerical Methods for Scientific and Engineering Computation, M. K. Jain, S. R. K. Iyengar & R. K. Jain, New Age International Publishers.

GN17B2.1A COMMUNICATION SKILLS

L/S/P: 4/Wk, Int: 50, End Exam: 50, Total: 100, End Exam: Practical & Viva-voce, Cr: 2

Course Overview: To prepare students to acquire understanding and fluency in English for professional work

Objectives of the Course: To provide an adequate mastery of technical and communicative English Language training primarily, reading and writing skills, and also listening and speaking skills.

Expected Skills / Knowledge Transferred: To prepare students for participation in seminars, group discussions, paper presentation and general personal interaction at the professional level.

Unit I

Communication: Importance of Communication; Elements of good individual communication; organizing oneself; different types of communication; Barriers in the path of Communication

Unit II

Listening skills: Listening to conversation and speeches (Formal and Informal)

Reading: Techniques of reading, skimming, Scanning, SQ3R technique

Unit III

Creative Writing: Scope of creative writing; Writing skills Signposting, Outlines, Rephrasing

Writing a report/ format of the report; Paragraph, Letter Writing, Essay writing, Memo, Circular, Notice, Cover Letter, Resume, Writing with a thesis, Summary, Précis, Product description – Description of projects and features

Oral Report; Periodical Report; Progress Report; Field Report

Preparation of minutes; Video conference; Tele conference / Virtual meeting

Unit IV

Speaking: How to converse with people, How to communicate effectively; Language and grammar skills; Pronunciation drills, Phonetics, vowels, Diphthongs, consonants, Stress, Rhythm and intonation, Conversational skills

Features of effective speech- practice in speaking fluently –role play – telephone skills – etiquette.

Short Extempore speeches – facing audience – paper presentation – getting over nervousness – Interview techniques – preparing for interviews – Mock Interview – Body Language.

Unit V

Impact of internet on communication; communication through computers;

voice mail; broadcast messages; e-mail auto response; etc.

Reference books:

1. Krishna Mohan & Meera Banerji: Developing Communication Skills Macmillan India
2. C S Rayudu: Principles of Public Relations, Himalaya Publishing House
3. K. Ashwathappa: Organizational Behavior, Himalaya Publishing House
4. Daniel Colman: Emotional Intelligence,

GN17B2.2A VALUE EDUCATION

L/S/P: 2/Wk, Int: 50, End Exam: Nil, Total: 50, End Exam: Nil, Cr: 2

Course Overview: To provide guiding principles and tools for the development of the whole person, recognizing that the individual is comprised of Physical, Intellectual, Emotional and Spiritual dimensions.

Knowledge Transfer /Expected Skills:

To help individuals think about and reflect on different values.

To deepen understanding, motivation and responsibility with regard to making personal and social choices and the practical implications in relation to themselves and others, the community and the world at large to inspire individuals to choose their own personal, social, moral and spiritual values and be aware of practical methods for developing and deepening them.

Unit I

Value Education—Introduction – Definition of values – Why values? – Need for Inculcation of values – Object of Value Education – Sources of Values – Types of Values: i) Personal values ii) Social values iii) Professional values iv) Moral and spiritual value Behavioral (common) values

Unit II

Personal values – Definition of person – Self confidence – Relative and absolute confidence, being self-determined, swatantrata (loosely equivalent to freedom).

Self discipline – Self Assessment – Self restraint –Self motivation – Determination – Ambition – Contentment Self-respect and respect to others; expression of respect

Unit III

Social values – Units of Society - Individual, family, different groups – Community – Social consciousness – Equality and Brotherhood – Dialogue – Tolerance – Sharing – Honesty-Responsibility – Cooperation; Freedom – Repentance and Magnanimity.

Peer Pressure – Ragging - examples - making one's own choices

Unit IV

Professional values-Definition-Competence-Confidence-Devotion to duty-Efficiency-Accountability.

– Respect for learning /learned – Willingness to learn-Open and balanced mind – Team spirit – Professional

Ethics – Willingness for Discussion; Difference between understanding and assuming.

Time Management: Issues of planning, as well as concentration (and aligning with self goals) Expectations from yourself. Excellence and competition, coping with stress, Identifying one's interests as well as strengths.

Unit V

Behavioural values – Individual values and group values. Anger: Investigation of reasons, watching one's own anger; Understanding anger as: a sign of power or helplessness, distinction between response and reaction.

Right utilization of physical facilities. Determining one's needs, needs of the self and of the body, cycle of nature.

Relationship with teachers. Inside the class, and outside the class, interacting with teachers.

Unit VI

Complimentary nature of skills and values. Distinction between information & knowledge

Goals: Short term goals and long term goals; How to set goals; How to handle responsibilities which have to be fulfilled while working for goals.

Reference Books

1. Ramancharla Pradeep Kumar. Compiled Reading Material IIIT Hyderabad
2. Dr. S. Ignacimuthu S. J., Values for life, Better yourself Books, Bandra Mumbai- 600 050 (1999).
3. Values (Collection of Essays)., Published by : Sri Ramakrishna Math., Chennai—(1996)
4. Prof. R.P.Dhokalia., Eternal Human Values NCRT –Campus Sri Aurobindo Marg., New Delhi
5. Swami Vivekananda., Education., Sri Ramakrishna Math., Chennai-4(1957)

SEMESTER III

DT17B3.1C BUILDING DESIGN

L/S/P: 8/Wk, Int: 100, End Exam: 100, Total: 200, End Exam: Jury & Viva-voce, Cr: 8

Course Overview:

This course focuses on buildings for residential use.

Objectives of the Course:

To enhance the understanding of the complexities of architectural design for residential needs and develop creative design solutions for good living environments.

Course Contents:

The design issues to be addressed :

- Organization of functional activities in relation to user requirements and the site.
- Relating the system of horizontal and vertical circulation, open spaces, parking etc.
- Responding to socio-economic factors such as income levels, privacy, territoriality, interaction etc.
- Considering materials, structure and services in relation to the design proposal.
- Integration of plan forms and three dimensional compositions.
- Detailing for the physically handicapped and the elderly.

The list of suggested topics to be covered as design problems: Large guest house, students hostel, small hotel, holiday resort, motel, row houses, block of flats and residential complexes at a small scale, housing for specific communities in urban and rural areas such as home for the aged, fishermen's housing etc. Necessary theoretical inputs to be given highlighting the norms and design issues. The topics not covered as design problems will have to be covered by the Studio faculty members through lecture/slide show sessions and site visits. At least two major exercises and two minor design/time problems should be given. The final submission shall necessarily include a model for at least one of the two main problems.

Note: In end exam which is a viva-voce the students are to present the entire semester work for assessment.

Reference books:

Chiara Joseph de and Others. Time Savers Standards of Building Types. McGraw – Hill, 1990.

Neufert, Ernst. Ernst Neufert Architects Data, Granada Pub. Ltd., London, 2000.

Peloquin, Albert. Barrier-Free Residential Design. McGraw-Hill, Inc., New York, 1994.

Pevsner, Nikolaus. A History of Building Types. Thames and Hudson, London, 1976.

Shah, S. Charanjit. Architects Hand Book Ready Reckoner. Galogotia Pub., New Delhi, 1996.

Untermann, Richard and Snall, Robert. Site Planning for Cluster Housing.

DT17B3.2C: MATHEMATICAL FOUNDATION OF COMPUTER SCIENCE

L/S/P: 4/Wk, Int: 50, End Exam: 50, Total: 100, End Exam: 3 Hours, Cr: 4

UNIT- I

Mathematical Logic: Statements and notations, Connectives, Well formed formulas, Truth Tables, tautology, equivalence implication, Normal forms.

UNIT- II

Predicates: Predicative logic, Free & Bound variables, Rules of inference, Consistency, proof of contradiction, Automatic Theorem Proving.

UNIT- III

Set Theory: Properties of binary Relations, equivalence, compatibility and partial ordering relations, Hasse diagram. Functions: Inverse Function Comports of functions, recursive Functions, Lattice and its Properties, Pigeon hole principles and its application.

UNIT- IV

Recurrence Relation: Generating Functions, Function of Sequences Calculating Coefficient of generating function, Recurrence relations, Solving recurrence relation by substitution and Generating funds.

Characteristics roots solution of In homogeneous Recurrence Relation.

UNIT- V

Graph Theory: Representation of Graph, DFS, BFS, Spanning Trees, planar Graphs.

UNIT- VI

Graph Theory and Applications: Basic Concepts Isomorphism and Sub graphs, Multi graphs and Euler circuits, Hamiltonian graphs, Chromatic Numbers.

UNIT- VII

Elementary Combinatorics: Basis of counting, Combinations & Permutations, with repetitions, Constrained repetitions, Binomial Coefficients, Binomial Multinomial theorems, the principles of Inclusion – Exclusion.

UNIT- VIII

Algebraic structures: Algebraic systems Examples and general properties, Semi groups and monads, groups sub groups' homomorphism, Isomorphism

Text/Reference books:

Discrete and Combinational Mathematics- An Applied Introduction-5th Edition – Ralph. P.Grimaldi.Pearson Education.

Discrete Mathematical structures Theory and application-Malik & Sen

Discrete Mathematics for Computer science, Garry Haggard and others, Thomson.

Discrete Mathematics for Computer Scientists & Mathematicians, J.L. Mott, A. Kandel, T.P. Baker Prentice Hall.

DT17B3.3C: UNIX AND SHELL PROGRAMMING

L/S/P: 4/Wk, Int: 50, End Exam: 50, Total: 100, End Exam: Practical & Viva-voce, Cr: 4

Software's: Ubuntu

Unit I

Introduction to Unix: Architecture of Unix, Features of Unix , Unix Commands – PATH, man, echo, printf, script, passwd, uname, who, date, stty, pwd, cd, mkdir, rmdir, ls, cp, mv, rm, cat, more, wc, lp, od, tar, gzip.

Unit II

Unix Utilities: Introduction to unix file system, vi editor, file handling utilities, security by file permissions, process utilities, disk utilities, networking commands, unlink, du, df, mount, umount, find, unmask, ulimit, ps, w, finger, arp, ftp, telnet, rlogin. Text processing utilities and backup utilities , detailed commands to be covered are tail, head , sort, nl, uniq, grep, egrep, fgrep, cut, paste, join, tee, pg, comm, cmp, diff, tr, awk, cpio

Unit III

Introduction to Shells :

Unix Session, Standard Streams, Redirection, Pipes, Tee Command, Command Execution, Command-Line Editing, Quotes, Command Substitution, Job Control, Aliases, Variables, Predefined Variables, Options, Shell/Environment Customization.

Filters:

Filters and Pipes, Concatenating files, Display Beginning and End of files, Cut and Paste, Sorting, Translating Characters, Files with Duplicate Lines, Count characters, Words or Lines, Comparing Files.

Unit IV

Grep : Operation, grep Family, Searching for File Content.

Sed : Scripts, Operation, Addresses, commands, Applications, grep and sed.

Unit V

awk: Execution, Fields and Records, Scripts, Operations, Patterns, Actions, Associative Arrays, String Functions, Mathematical Functions, User – Defined Functions, Using System commands in awk, Applications, awk and grep, sed and awk.

Unit VI

Interactive Korn Shell:

Korn Shell Features, Two Special Files, Variables, Output, Input, Exit Status of a Command, eval Command, Environmental Variables, Options, Startup Scripts, Command History, Command Execution Process.

Korn Shell Programming :

Basic Script concepts, Expressions, Decisions: Making Selections, Repetition, special Parameters and Variables, changing Positional Parameters, Argument Validation, Debugging Scripts, Script Examples.

Unit VII

Interactive C Shell:

C shell features, Two Special Files, Variables, Output, Input, Exit Status of a Command, eval Command, Environmental Variables, On-Off Variables, Startup and Shutdown Scripts, Command History, Command Execution Scripts.

C Shell Programming:

Basic Script concepts, Expressions, Decisions: Making Selections, Repetition, special Parameters and Variables, changing Positional Parameters, Argument Validation, Debugging Scripts, Script Examples.

Unit VIII

File Management:

File Structures, System Calls for File Management – create, open, close, read, write, lseek, link, symlink, unlink, stat, fstat, lstat, chmod, chown, Directory API – opendir, readdir, closedir, mkdir, rmdir, umask.

TEXT BOOKS :

1. Unix and shell Programming - Behrouz A. Forouzan, Richard F. Gilberg.Thomson
2. Your Unix the ultimate guide - Sumitabha Das, TMH. 2nd Edition.

REFERENCES :

1. Unix for programmers and users - 3rd edition, Graham Glass, King Ables, Pearson Education.
2. Unix programming environment - Kernighan and Pike, PHI. / Pearson Education
3. The Complete Reference Unix - Rosen, Host, Klee, Farber, Rosinski, Second Edition, TMH.

PRACTICAL KNOWLEDGE:

- 1) Execution of commands echo, man, cat, path, printf, who, date, pwd.
- 2) Execution of commands stty, cd, mkdir, rmdir, ls, cp, mv.
- 3) Execution of utility commands in vi editor.
- 4) Execution of networking commands.
- 5) Execution of shell commands.
- 6) Execution of filter concepts
- 7) Execution of awk, sed, grep commands.
- 8) Execution of interactive korn shell.
- 9) Execution of interactive c shell.
- 10) Execution of c shell programming.
- 11) Execution of korn shell programming
- 12) Execution of different file management commands.

DT17B3.4C COMPUTER AIDED DESIGN AND DRAFTING

L/S/P: 4/Wk, Int: 50, End Exam: 50, Total: 100, End Exam: Practical & Viva-voce, Cr: 4

Software's: Auto CAD, Sketchup, Layout, Style Builder

Objective:

To explore computer modeling techniques using CAD

Outcome:

To learn basic skills of modeling, scripting (rendering) in CAD, and to exercise methods of interface within CAD. To create two and three-dimensional objects in space with special emphasis on presentation and Visualization of interiors and exteriors of building using different rendering techniques using CAD

Course Contents

Introduction

Principle of drafting, Terminology, & fundamentals. Size & shape descriptions. Geometric Construction.

Views

Plan views, Auxiliary views, Section Views.

Projection

Method of Projection.

Multi-view Orthographic Projection. Projection Techniques.

Modeling

Modeling Fundamental for Engineering design

Shape Modeling and it's application.

CADD

Introduction of CADD (Computer Aided Drafting & Designing). Function keys, Shortcut keys, Different sizes of paper.

Application of CADD – Automatic Drafting , Geometric Modeling – Wire frame Modeling, Surface Modeling, and Solid CADD Application & it's feature Introduction to Standard based 2D drafting (Based on

International standard for representation & conformation)

3D Design

Concept of 3D Design.

X, Y, Z Co-ordination System.

Documentation

Manufacturing Process & Material Documentation.

Practical Competencies

- Practice on Drawing basics Geometrical Drawing Practice Making plan of Projection
- Creation Multi-view Orthographic projection
- Drafting views in First angle & Third angle Projection
- Creating Auxiliary views & Sections. Freehand Sketching.
- Representing Standard base 2D drafting. Drawing Elementary CADD command Line, Polyline, Polygon, Circle, Polyline, arc, ellipse, Text- Single Text, Multitext, Dtext

- Modifying Elementary Commands – Erase, Move, Copy , Mirror, Offset, Scale, Stretch, Chamfer, fillet & explode
- Making layers, line type & Line weight. Different menus of Auto-Cad, Function keys, Shortcut keys, Paper size
- Making Title Block, Writing it & inserting it in any drawing file with scale, angle & explode options.
- Creating a new template file (.Dwt file) & applying it to every drawing file. Drafting of building plan , Elevation , Section Views.
- Applying dimensions to various views by using dimension style
- Creating Revolved, Ruled, and Tabulated & Edge surfaces.
- Creating Isometric drawing with the Isoplane (Left, Top & Right Plane) Shaded it from visual style.
- Making Solid Model – Box, Polysolid, Cylinder, Cone, Pyramid, Wedge, Torus.
- Project – Site Visit Building Drawing Plan. Building Detailing. Building Model.

Text/Reference books:

Teyapooan, T. Engineering Drawing with Auto CAD 2000. Vikas Pub. House Pvt. Ltd., New Delhi, 2000.

Parker, Daniel and Rice, Habert. Inside Auto CAD Daniel. 1987. Georgeomura, Auto CAD Release 2000.

DT17B3.5C PLANNING PRINCIPLES

L/S/P: 4/Wk, Int: 50, End Exam: 50, Total: 100, End Exam: 3 Hours, Cr: 4

UNIT I

Introduction

The importance and significance of study of history, human settlement as the physical expression of a civilization; increasing urbanization and need for the higher levels of expertise to handle the situation in future; human settlements planning as the end result of this understanding.

UNIT II

Concepts of time as dimensions of the built form Concept of space and scale as followed through different cultures; the elements of the town, the house, the street, the chowk; social and cultural criteria of location of towns and activities within it.

UNIT III

Concept Formation and Perception of Space Thinking process; cognitive units,

concept formation, hypothesizing, conceptual scheme and behaviour formation; perception of space, behaviour pattern in small spaces; space at city scale; urban activity patterns, urban symbolism image of the city, building attributes, cognitive maps, urban behavior; attitudes towards city, metropolitan personality, geographical space, functional space.

UNIT IV

Planning Through the Ages Planning in ancient India; Manasara treatise and socio-cultural role of the Agora as an element of planning in Greece; the Roman city, the European Medieval cities and Medieval planning in India, the common man and idea of the baroque plan.

UNIT V

The Modern City Technological advances and their effect on the town; utopian thinking and movements about urban improvement and planning; the concept of neighborhood planning; planning concept and city structure in typical new town design, foreign examples; planning concept of Chandigarh.

UNIT VI

Synthesis The concept of ring towns and satellite towns; Delhi Master Plan and the concept of NCR, disorientation of contemporary towns from their cultural context; the concept of conservation, the role of planner as a central figure to understand the present day problems through the medium of the study of history.

UNIT VII

Planning Practice in India An overview of evolution from piecemeal projects, town planning schemes, comprehensive development plans for towns and cities to regional planning, efforts; metropolitan planning and metropolitan region development plans; scope and content of planning practice today; role of central, state and local governments in urban and regional planning and development; evolution of local governments, development authorities and other planning and development agencies and their role in planning and planning administration.

Expected Outcomes & Assignment

Students in-group shall carry out documentation of model cities based on above concepts and may culminate as seminar on the same. Internal assessment also to be in the form of tutorials on theories mentioned.

Reference:

Demetrios Caraley: City Governments & Urban problems A New introduction to urban politics edited by Ravinder Singh Sandhu, Sarup Singh Minhas & Jasmit Sandhu: Sustainable human settlements the Asian Experience Levy: Contemporary Urban Planning (fourth Edition) N.V.Modak & V.N. Ambedkar: Town and Country Planning and housing.

DT17B3.xE-- ELECTIVE-I

DT17B3.1E HUMAN SETTLEMENTS

Course Overview:

This course focuses on the review of origin of Human Settlements to the level of understanding the various Town Planning problems.

Objectives of the Course:

To make the student understand about various planning related issues.

Expected Skills / Knowledge Transferred:

Should be in a position to make a neighbourhood plan for 5000 people.

Course Contents:

Unit - I

Historic Evaluation: Brief review of the origin of early human settlements, factors responsible. Development of various settlement forms. Types of settlements (urban and rural) classification of areas within the urban settlements in terms of types of land uses, densities, administrative division, building types etc. Land use and factors influencing it in urban and rural settlements.

Unit - II

Sociological aspects: Essential elements of society Rural and Urban Communities, Growth of Socio-cultural thought through the ages. Influence of religion and culture on domestic and civil architecture.

Unit - III

Urbanization: Facts, Theories. Socio-spatial problems of migrants, slums, high and low density housing; high rise living such as isolation, alienation, accessibility, conflicts etc as related to planning and design of buildings in different areas of the city. Social Survey and social research.

Unit - IV

Transportation and communication: potential and limitations of roadways, railways, airways and waterways in the development of a settlement.

Unit - V

Principles of Ekistics: Brief introduction to the theory of "Ekistics". Introduction to the concepts of green belts, satellite towns, neighbourhood, roads in solving some of the problems in urban development. Indian context: Growth pattern of urban and rural settlements; problems and potentials.

Reference books:

Bhagiratha Rao, E.L. Land Acquisition Manual in Andhra Pradesh.

Buch, N. Mahesh. Planning the Indian city.

Chand, Mahesh & Puri, Vinay Kumar. Regional Planning in India. Allied Pub. Ltd., Bombay, 1990.

Doxiadis, C.L. Ekistics: Introduction to the science of Human Settlement.

DT17B3.2E PYTHON PROGRAMMING LANGUAGE

Software's: Python

Introduction to Python. An introduction to the Python programming language. Covers details of how to start and stop the interpreter and write programs. Introduces Python's basic data types, files, functions, and error handling.

Working with Data. A detailed tour of how to represent and work with data in Python. Covers tuples, lists, dictionaries, and sets. Students will also learn how to effectively use Python's very powerful list processing primitives such as list comprehensions. Finally, this section covers critical aspects of Python's underlying object model including variables, reference counting, copying, and type checking.

Program Organization and Functions. More information about how to organize larger programs into functions. A major focus of this section is on how to design functions that are reliable and can be easily reused in other settings. Also covers technical details of functions including scoping rules, documentation strings, and anonymous functions.

Modules and Libraries. How to organize programs into modules and details on using modules as a tool for creating extensible programs. Concludes with a tour of some of the most commonly used library modules including user interfaces and database integration. Also includes information on how to install third-party library modules.

Classes and Objects: An introduction to object-oriented programming in Python. Describes how to create new objects, overload operators, and utilize Python special methods. Also covers basic principles of object oriented programming including inheritance and composition.

Testing, Debugging, and Software Development Practice. This section discusses many issues that are considered important to Python software development. This includes effective use of documentation strings, program testing using both the doctest and unittest modules, and effective use of assertions. The Python debugger and profiler are also described.

Text/Reference books:

Exploring Python. McGraw-Hill Science, 2009 Gutttag, John.

Introduction to Computer and Programming Using Python MIT Press.2013.

Introduction to Computing Using Python, 2nd Edition by byLjubomirPerkovic

Python for Everyone, Second Edition 2015 by Cay S. Horstmann, Rance D. Necaise

DT17B3.3E: CYBER LAWS

The emerging jurisprudence of Cyber Space

Defining Cyber Space, Understanding Cyber Space, Interface of Technology and Law Defining Cyber Laws. Jurisdiction in Cyber Space, Concept of Jurisdiction, Internet Jurisdiction, Indian Context of Jurisdiction, International position of Internet Jurisdiction Cases in Cyber Jurisdiction Understanding Electronic Contracts, The Indian Law of Contract, Construction of Electronic Contracts, Issues of Security Issues of Privacy Technical Issues in Cyber Contracts. Types of Electronic Contracts- Employment Contracts Consultant Agreements Contractor Agreements Sales, Re-Seller and Distributor Agreements Nondisclosure Agreements Software Development & Licensing Agreements Shrink Wrap Contract Source Code Escrow Agreements, Cyber Contracts & Indian Legal Position, Legal Issues in Cyber Contracts, Cyber Contract and IT Act 2000, Indian Law on Shrink Wrap Contracts Drafting of Cyber Contracts

IPR in Cyber Space

Understanding Copy Right in Information Technology, Understanding the technology of Software, Software - Copyrights vs Patents debate, Authorship and Assignment Issues Commissioned Work and Work for Hire, Idea/Expression dichotomy, Copyright in Internet Legal Issues in Internet and Software Copyright, Jurisdiction Issues and Copyright Infringement, Remedies of Infringement, Multimedia and Copyright issues, Software Piracy Patents, Understanding Patents, International context of Patents, European Position on Computer related Patents, Legal position of U.S. on Computer related Patents, Indian Position on Computer related Patents Trademarks, Understanding Trademarks, Trademark Law in India, Infringement and Passing Off, Trademarks in Internet, Domain name registration, Domain Name Disputes & WIPO Databases, Databases in Information Technology, Protection of Databases, Legal Position of Database protection in U.S., European Legal position on Databases Indian Law on Databases, Sui Generis Extraction Right

Cyber Crimes

Understanding Cyber Crimes, Defining Crime, Crime in context of Internet –Actus Rea/Mens Rea, Types of crime in Internet, Computing damage in Internet crime Indian Penal Law & Cyber Crimes, Fraud, Hacking, Mischief, Trespass Defamation, Stalking, Spam Freedom of Speech & Human Rights Issues in Internet, Freedom of Expression in Internet, Issues of Censorship, Hate speech, Sedition, Libel, Subversion, Privacy Issues, International Positions on Free Speech in Internet.

- 1) Cyber Laws - By Justice Yatindra Singh
- 2) Cyber Laws & Cyber Crimes Simplified

DT17B3.4E DIGITAL GRAPHIC DESIGN

Software's: Photoshop, Corel Draw, Illustrator

Objective: Photo editing and desktop publishing (application) software.

Outcome: Assessment would be based on practical's and periodic tests on the mentioned topics Graphical concepts II (Corel draw) Photo editing and desktop publishing software Import and export of photo edited files, objects in photo editing import and export of photo edited files, objects in photo editing, fills, outlines, total text control, basic tool box of photo editing software (like Corel draw), color management tools, starting your page right. Introduction to flash.

Text/Reference books:

1. Picturing and Poeting by Alan Fletcher
2. A Designer's Art by Paul Rand
3. Super Graphic: A Visual Guide to the Comic Book Universe by Tim Leong
4. The End of Print: The Grafik Design of David Carson

XXXXX Open Elective-I

As per students choice

SEMESTER IV

DT17B4.1C DIGITAL METHODS IN DESIGN

L/S/P: 8/Wk, Int: 100, End Exam:100, Total: 200, End Exam: Jury & Viva-voce, Cr: 8

Course Overview:

This course focuses on digital design methods- problem solving, conceptualization, visualization, simulation and communication through the appropriate computer programs/ software.

Objectives of the Course:

To enable the student to apply digital techniques in design

Expected Skills / Knowledge Transferred:

Students are expected to design a building of approximately 1000 sq.m. of area

Students would learn to apply digital techniques at different stages of design from conceptualization to Bill or quantities

Course Contents:

The following issues relating to design will be addressed to:

- Pre-design studies
- User behavior and requirement pertaining to the building typology based on post occupancy evaluation
- Design as problem solving activity.
- conceptualizing for design. Creative thinking, Introduction to design process and principles of design and digital methods, use of conceptualization tools like Sketchup, Formz etc.
- Generation of alternatives and evaluation of alternatives using digital methods
- Integration of function: movement, climate, acoustics, structure and services into building.
- Site planning and Landscaping
- Preparation of the scheme, visualization through CAD.
- Simulation of at least any three like thermal comfort, lighting, wind flow etc.
- Generation of detailed working drawings and BOQ s'

Necessary theoretical inputs to be given highlighting the norms and design issues. The topics not covered as design problems may be covered by the studio faculty members through lecture/slide shows. And site visits.

The topics to be covered as design problems may include:

- Institution of learning –schools, music and dance colleges, vocational training institutions etc.

- Institutions of health such as small hospitals, reformatory and rehabilitation institutes • Institutions of research in various disciplines.
- At least one major exercise (one problem should be pertinent to the urban fabric) and one minor design/time problems should be given and the final submission shall necessarily include a model

Note: In end exam which is a viva-voce the students have to present the entire semester work for assessment.

Reference books:

Chiara Joseph de and Others. Time Savers Standards of Building Types. McGraw – Hill, 1990.

Hand Book of Planning and Design Data.

Kirk, Paul Hayden and Sternberg, D. Eugene. Doctors Offices and Clinics, 2nd ed. Reinhold Pub., USA, 1960.

Konya, Allan. Libraries: A Briefing and Design Guide. The Architectural Press, London, 1986.

Neufert, Ernst. Ernst Neufert Architects Data. Granada Pub. Ltd., London, 2000.

Pevsner, Nikolaus. A History of Building Types. Thames and Hudson, London, 1976.

Rosenfield, Isadore. Hospital Architecture and Beyond. Van Nostrand Reinhold, New York, 1969.

Stone, G. Louis. Institutional Buildings Architecture of Controlled Environment.

Tergsone, W.R. Practical Laboratory Planning.

Wild, Friedemann, Libraries for Schools and Universities. Van Nostrand Reinhold, New York, 1972.

DT17B4.2C: OBJECT ORIENTED PROGRAMMING

L/S/P: 4/Wk, Int: 50, End Exam: 50, Total: 100, End Exam: Practical & Viva-voce, Cr: 4

Software's: Note-PAD, JDK 7.0, JDK8.0, My Eclipse, Net Beans

UNIT I

Object oriented thinking :- Need for oop paradigm, A way of viewing world – Agents, responsibility, messages, methods, classes and instances, class hierarchies (Inheritance), method binding, overriding and exceptions, summary of oop concepts, coping with complexity, abstraction mechanisms.

UNIT II

Java Basics History of Java, Java buzzwords, data types, variables, scope and life time of variables, arrays, operators, expressions, control statements, type

conversion and costing, simple java program, classes and objects – concepts of classes, objects, constructors, methods, access control, this keyword, garbage collection, overloading methods and constructors, parameter passing, recursion, string handling.

UNIT III

Inheritance – Hierarchical abstractions, Base class object, subclass, subtype, substitutability, forms of inheritance- specialization, specification, construction, extension, limitation, combination, benefits of inheritance, costs of inheritance. Member access rules, super uses, using final with inheritance, polymorphism- method overriding, abstract classes.

UNIT IV

Packages and Interfaces : Defining, Creating and Accessing a Package, Understanding CLASSPATH, importing packages, differences between classes and interfaces, defining an interface, implementing interface, applying interfaces, variables in interface and extending interfaces. Exploring packages – Java.io, java.util.

UNIT V

Exception handling and multithreading - Concepts of exception handling, benefits of exception handling, Termination or presumptive models, exception hierarchy, usage of try, catch, throw, throws and finally, built in exceptions, creating own exception sub classes. Differences between multi threading and multitasking, thread life cycle, creating threads, synchronizing threads, daemon threads, thread groups.

UNIT VI

Event Handling : Events, Event sources, Event classes, Event Listeners, Delegation event model, handling mouse and keyboard events, Adapter classes, inner classes. The AWT class hierarchy, user interface components- labels, button, canvas, scrollbars, text components, check box, check box groups, choices, lists panels – scrollpane, dialogs, menu bar, graphics, layout manager – layout manager types – boarder, grid, flow, card and grid bag.

UNIT VII

Applets – Concepts of Applets, differences between applets and applications, life cycle of an applet, types of applets, creating applets, passing parameters to applets. Swing – Introduction, limitations of AWT, MVC architecture, components, containers, exploring swing- JApplet, JFrame and JComponent, Icons and Labels, text fields, buttons – The J Button class, Check boxes, Radio buttons, Combo boxes, Tabbed Panes, Scroll Panes, Trees, and Tables.

UNIT VIII

Networking – Basics of network programming, addresses, ports, sockets, simple client server program, multiple clients, Java .net package ,Packages – java.util,

TEXT BOOKS:

1. Java; the complete reference, 7th edition, Herbert Schildt, TMH.
2. Understanding OOP with Java, updated edition, T. Budd, Pearson Education.

REFERENCES :

1. An Introduction to programming and OOP design using Java, J. Nino and F.A. Hosch, John Wiley & Sons.
2. An Introduction to OOP, second edition, T. Budd, Pearson Education.
3. Introduction to Java programming 6th edition, Y. Daniel Liang, Pearson Education.
4. An introduction to Java programming and object oriented application development, R.A. Johnson- Thomson.
5. Core Java 2, Vol 1, Fundamentals, Cay.S.Horstmann and Gary Cornell, seventh Edition, Pearson Education.
6. Core Java 2, Vol 2, Advanced Features, Cay.S.Horstmann and Gary Cornell, Seventh Edition, Pearson Education
7. Object Oriented Programming through Java, P. Radha Krishna, University Press.

PRACTICAL KNOWLEDGE:

1. Execution of simple Java program.
2. Execution of programs on different data types and their sizes.
3. Execution of programs on constants.
4. Execution of programs on different types of operators.
5. Execution of programs on different types of looping statements.
6. Execution of programs on different types of jumping statements.
7. Execution of programs on type conversions.
8. Execution of programs on inheritance.
9. Execution of programs on polymorphism.
10. Execution of programs on overloading.
11. Execution of programs on overriding.
12. Execution of programs on abstract classes.
13. Execution of programs on interfaces.
14. Execution of programs on different types of methods.
15. Execution of programs on constructors.

16. Execution of programs on super and this keyword.
17. Execution of programs on exception handling.
18. Execution of program on user defined exception.
19. Execution of programs on predefined threads.
20. Execution of programs on user defined threads.
21. Execution of programs on thread groups.
22. Execution of programs on different packages.
23. Execution of programs on event handling.
24. Execution of programs on AWT classes.
25. Execution of programs on different types of layouts.
26. Execution of programs on different types of applets.
27. Execution of programs on swings.
28. Execution of programs on JApplet, JComponent.
29. Execution of programs on trees.
30. Execution of programs on networking.
31. Execution of simple client server program.
32. Execution of program on sockets.

DT17B4.3C: COMPUTER GRAPHICS

L/S/P: 4/Wk, Int: 50, End Exam: 50, Total: 100, End Exam: Practical & Viva-voce, Cr: 4

Software's: Turbo C,Turbo C++

UNIT I

Introduction, Application areas of Computer Graphics, overview of graphics systems, video- display devices, raster-scan systems, random scan systems, graphics monitors and work stations and input devices (p.nos 22-90 of text book-1).

UNIT II

Output primitives : Points and lines, line drawing algorithms, mid-point circle and ellipse algorithms. Filled area primitives: Scan line polygon fill algorithm, boundary-fill and flood-fill algorithms (p.nos 103-123,137- 145,147-150,164-171 of text book-1, p.nos. 72-99 of text book-2).

UNIT III

2-D geometrical transforms: Translation, scaling, rotation, reflection and shear transformations, matrix representations and homogeneous coordinates, composite

transforms, transformations between coordinate systems. (p.nos 204-227 of text book-1).

UNIT IV

2-D viewing: The viewing pipeline, viewing coordinate reference frame, window to view- port coordinate transformation, viewing functions, Cohen-Sutherland and Cyrus-beck line clipping algorithms, Sutherland –Hodgeman polygon clipping algorithm(p.nos 237-249,257-261 of text book -1,p.nos. 111-126 of text book-2).

UNIT V

3-D object representation: Polygon surfaces, quadric surfaces, spline representation, Hermite curve, Bezier curve and B-Spline curves, Bezier and B-Spline surfaces. Basic illumination models, polygon rendering methods. (p.nos 324-331,340-342, 347-364, 516-531, 542-546 of text book-1, p.nos 473-529,721-739 of text book-2).

UNIT VI

3-D Geometric transformations: Translation, rotation, scaling, reflection and shear transformations, composite transformations.

3-D viewing: Viewing pipeline, viewing coordinates, view volume and general projection transforms and clipping (p.nos 427-443, 452-481 of text book -1).

UNIT VII

Visible surface detection methods: Classification, back-face detection, depth-buffer, scan- line, depth sorting, BSP-tree methods, area sub-division and octree methods(p.nos 489-505 of text book -1, Chapter 15 of of text book-2).

UNIT VIII

Computer animation: Design of animation sequence, general computer animation functions, raster animation, computer animation languages, key frame systems, motion specifications. (p.nos 604-616 of text book -1, chapter 21 of text book-2).

TEXT BOOKS :

1. "Computer Graphics C version", Donald Hearn and M.Pauline Baker, Pearson Education.
2. "Computer Graphics Principles & practice", second edition in C, Foley, VanDam, Feiner and Hughes, Pearson Education.

REFERENCES :

1. "Computer Graphics", second Edition, Donald Hearn and M.Pauline Baker, PHI/Pearson Education.
2. "Computer Graphics Second edition", Zhigand xiang, Roy Plastock, Schaum's outlines, Tata Mc-Graw hill edition.
3. Procedural elements for Computer Graphics, David F Rogers, Tata Mc Graw hill, 2nd edition.

4. "Principles of Interactive Computer Graphics", Neuman and Sproul, TMH.
5. Principles of Computer Graphics, Shalini Govil, Pai, 2005, Springer.
6. Computer Graphics, Steven Harrington, TMH

PRACTICAL KNOWLEDGE:

- 1) Execution of simple program for line.
- 2) Execution of simple programs for different types of lines.
- 3) Execution of different polygons.
- 4) Production of line using DDA line drawing algorithm.
- 5) Production of line using Bresenhams line drawing algorithm.
- 6) Production of different polygons with colors.
- 7) Execution of different curves.
- 8) Execution of circle using mid-point circle generating algorithms.
- 9) Execution of ellipse using mid-point ellipse generating algorithms.
- 10) Execution of programs on viewing.
- 11) Execution of programs on clipping.
- 12) Execution of programs on surface detection methods.
- 13) Execution of programs on computer animation.
- 14) Execution of program on Indian national flag.
- 15) Execution of program on human face.
- 16) Execution of program on kite.
- 17) Execution of program on moving car;
- 18) Execution of program on double bedroom house.
- 19) Execution of program on android logo.
- 20) Execution of program on bi-cycle.
- 21) Execution of program on audio embedding.
- 22) Execution of program on video embedding.
- 23) Execution of program on ceiling fan.
- 24) Execution of program on computer keyboard.
- 25) Execution of program on tractor.

DT17B4.4C GIS SYSTEM (2D & 3D)

L/S/P: 4/Wk, Int: 50, End Exam: 50, Total: 100, End Exam: Practical & Viva-voce, Cr: 4

Software's: Arc GIS

Basic Concepts about spatial information, Philosophy and definition of GIS, features, pictures, variables: points, lines, areas, Position on the earth; Basics of map.

Fundamentals of Data Storage, Information Organization and Data Structure Basic File Structures;

Tabular Databases; Advantages of Databases, Types of Databases- hierarchical systems, network systems, relational systems and Object-oriented database systems (OODS), Data Models-Entity Relationship model, Relational Model, Data Structures; Raster Structures, Vector Structures.

GIS Data Requirement, sources and collection, Methods of data capture-scanning, digitization and associated errors, Conversion from Other Digital Sources, Attribute data input and management, Edge matching, creating digital data - remote sensing; generating data from existing data ; Metadata ;Different Kinds of geospatial data.

Detecting and Evaluating Errors, Data Quality Measurement and Assessment, digital output options. Image storage formats, Data retrieval, Data compression, NSDI,GSDI; geographic information in decision making; human resources and education; Interactive data exploration, Vector & Raster data query, Geographic visualization; Raster data and structure, Local operations, Neighborhood operations, Zonal operations, Distance measure operations, Spatial auto correlations, DEM generation, Spatial Modeling, combining data; terrain mapping finding and quantifying relationships; spatial interpolation; Vector data base.

Topological Relationships; Creation of Topology and Error Correction; Accuracy and Precision; The Importance of Error, Accuracy, and Precision, types of error, sources of error, data quality, Spatial interpolation, Overlay Operations and Buffering, Neighborhood functions Distant Measurement , Map Manipulation, Network analyses,

GIS and Remote Sensing data Integration, Thematic Mapping , GIS and Integration of other types of data, Virtual GIS and SDSS, Project design and management, need assessment.

GIS Lab:

1. Analog to Digital Conversion – Scanning methods
2. Introduction to software
3. Digital database creation – Point features, Line features, Polygon features
4. Data Editing-Removal of errors – Overshoot & Undershoot, Snapping
5. Data Collection and Integration, Non-spatial data attachment working with tables

6. Dissolving and Merging
7. Clipping, Intersection and Union
8. Buffering techniques
9. Spatial and Attribute query and Analysis
10. Contouring and DEM
11. Advanced Analyses – Network analyses
12. Layout Generation and report

Text/Reference books:

Kang-tsung Chang 2002, 'Introduction to Geographic Information Systems' Tata McGraw Hill, New Delhi.

C.P.Lo and Albert K.W.Yeung 2005 "Concepts and Techniques of Geographic Information Systems" Prentice Hall of India, New Delhi.

Burrough, Peter A. and Rachael McDonnell, 1998, 'Principles of Geographical Information Systems' Oxford University Press, New York.

2Magwire, D. J., Goodchild, M.F. and Rhind, D. M. Ed. 1991, 'Geographical Information Systems: Principles and Applications', Longman Group, U.K.

DT17B4.5C 3D MODELING

L/S/P: 4/Wk, Int: 50, End Exam: 50, Total: 100, End Exam: Practical & Viva-voce, Cr: 4

Software's: Sketch up, V-Ray Sketch up, Auto Desk (3DS Max)

Course Overview:

The course focuses on the convergence of techniques and skills acquired in the area of CAD and Computer applications in the earlier semesters, for developing digital tools and techniques for architectural presentations, digital gaming, 3D Animation and graphic design.

Objectives of the Course:

Exploring use of Computers for presentation, graphic design, 3D modelling

Course Contents:

Preparation of basic forms, shapes, Building Plans and layouts using software; Layers, Shape, Text, Line Weights, Line types, Scaling, import – export.

Wire frame model, Handling, Export Formats Spline modeling- working with modifiers- compound objects- Standard and extended primitives -Surface modeling Introduction to NURBS modeling– curves and surfaces, High resolution modeling, modeling using patches,

Rendering- assigning materials-developing materials for rendering, setting up

lighting- rendering using various types of rendering engines- photo-realistic, artistic and true-color renderings

Animation- defining the paths, frames, and controls for animation

Video Streaming- editing the animation clips, adding sound and special effects etc.

Reference books:

CAD. Comedia Publications , New Delhi.

Guide to dream weaver - Macro Madia Publications.

Omura, George. Mastering in Auto CAD 2000. BPB Pub., New Delhi, 1999.

Parker, Daniel and Rice, Habert. Inside Auto CAD Daniel. 1987.

Teyapoovan, T. Engineering Drawing with Auto CAD 2000. Vika Pub. House Pvt. Ltd., New Delhi, 2000.

Underdahl, Brian. Windows 98 one step at a time. Comdex Computer Pub. New Delhi, 1998.

Zampi, Giulian and Morgan, Conway Lloyd. Virtual Architecture.

DT17B4.xE- ELECTIVE-II

DT17B4.1E BUILDING CONSTRUCTION

Course Overview:

The course introduces to the methods and techniques of construction of basic elements of a simple building.

Objectives of the Course:

To understand the elementary and simple construction methods, explaining basic principles and considerations in the construction of one roomed rectilinear building with verandah.

Expected Skills / Knowledge Transferred:

To understand the techniques of construction of a simple load bearing structure with simple material like brick, stone etc.

Course Contents:

Unit – I

Brickwork: Various types of bonds, stopped ends, junctions, piers, jambs, footings, foundations, corbelling, damp proof course, window sills, thresholds, copings, mortar joints and pointing.

Unit – II

Stone masonry: stone walls, rubble work, ashlar work, masonry joints, window sills, plinth, cornices, surface finishes.

Unit – III

Composite masonry: Brick backed ashlar, rubble backed ashlar, concrete backed masonry, ashlar faced concrete walls, marble faced masonry; tile faced concrete, hollow block masonry.

Cladding: Cladding of various materials-marble, granite, slate, tiles, metal etc.

Unit – IV

Lintels: Lintels of wood, stone, brick.

Arches: arches; terms defined; various forms of arches like segmental, semi-circular, elliptical, three-centered, flat and relieving arch, etc.

Unit – V

Ground and upper floors: solid floor, brick flooring, floor finishing and floor coverings, Basement floor

Flooring Finishes: Brick on edge, concrete, wood, Indian patent floor, granolithic, terrazzo, pitch mastic, Magnesium Oxide, Chloride, flag stone or shahbad stone flooring, etc.

Unit – VI

Flat roofs: Madras terrace, Jack arch, elementary knowledge about R.C.C roof and floor slabs.

The class work and home assignments should include appropriate site visits by the students. Student will maintain field observations / record books. At least two exercises to be done in the construction yard.

Reference books:

Barry, R. The Construction of Buildings Vol. 2, 5th ed. East-West Press. New Delhi, 1999.

Bindra, S. P. and Arora, S. P. Building Construction: Planning Techniques and Methods of Construction, 19th ed. Dhanpat Rai Pub. New Delhi, 2000.

Hailey and Hancock, D.W. Brick Work and Associated Studies Vol. 2. MacMillan, London, 1979.

Moxley, R. Mitchell's Elementary Building Construction, Technical Press Ltd.

Rangwala, S.C. Building Construction, 22nd ed. Charotar Pub. House, Anand, 2004.

Sushil Kumar. T.B. of Building Construction, 19th ed. Standard Pub, Delhi, 2003.

DT17B4.2E: HUMAN COMPUTER INTERACTION

UNIT - I

Introduction: Importance of user Interface – definition, importance of good design. Benefits of good design. A brief history of Screen design.

UNIT - II

The graphical user interface – popularity of graphics, the concept of direct manipulation, graphical system, Characteristics, Web user – Interface popularity, characteristics- Principles of user interface.

UNIT - III

Design process – Human interaction with computers, importance of human characteristics human consideration, Human interaction speeds, understanding business junctions.

UNIT - IV

Screen Designing : Design goals – Screen planning and purpose, organizing screen elements, ordering of screen data and content – screen navigation and flow – Visually pleasing composition – amount of information – focus and emphasis – presentation information simply and meaningfully – information retrieval on web – statistical graphics – Technological consideration in interface design.

UNIT – V

Windows – New and Navigation schemes selection of window, selection of devices based and screen based controls.

UNIT - VI

Components – text and messages, Icons and increases – Multimedia, colors, uses problems, choosing colors.

UNIT - VII

Software tools – Specification methods, interface – Building Tools.

UNIT - VIII

Interaction Devices – Keyboard and function keys – pointing devices – speech recognition digitization and generation – image and video displays – drivers.

TEXT BOOKS :

1. The essential guide to user interface design, Wilbert O Galitz, Wiley DreamaTech.
2. Designing the user interface. 3rd Edition Ben Shneidermann , Pearson Education Asia.

REFERENCES:

1. Human – Computer Interaction. ALAN DIX, JANET FINCAY, GRE GORYD, ABOWD, RUSSELL BEALG, PEARSON.
2. Interaction Design PRECE, ROGERS, SHARPS. Wiley Dreamtech,
3. User Interface Design, Soren Lauesen , Pearson Education.

DT17B4.3E: E-COMMERCE

UNIT - I

Electronic Commerce-Frame work, anatomy of E-Commerce applications, E-Commerce Consumer applications, E-Commerce organization applications.

UNIT - II

Consumer Oriented Electronic commerce - Mercantile Process models.

UNIT – III

Electronic payment systems - Digital Token-Based, Smart Cards, Credit Cards, Risks in Electronic Payment systems.

UNIT-IV

Inter Organizational Commerce - EDI, EDI Implementation, Value added networks.

UNIT - V

Intra Organizational Commerce - work Flow, Automation Customization and internal Commerce, Supply chain Management.

UNIT – VI

Corporate Digital Library - Document Library, digital Document types, corporate Data Warehouses. Advertising and Marketing - Information based marketing, Advertising on Internet, on-line marketing process, market research.

UNIT - VII

Consumer Search and Resource Discovery - Information search and Retrieval, Commerce Catalogues, Information Filtering.

UNIT - VIII

Multimedia - key multimedia concepts, Digital Video and electronic Commerce, Desktop video processing's, Desktop video conferencing.

TEXT BOOK:

1. Frontiers of electronic commerce – Kalakata, Whinston, Pearson.

REFERENCES:

1. E-Commerce fundamentals and applications - Hendry Chan, Raymond Lee, Tharam Dillon, Elizabeth Chang, John Wiley.
2. E-Commerce - S.Jaiswal – Galgotia.
3. E-Commerce - Efrain Turbon, Jae Lee, David King, H.Michael Chang.
4. Electronic Commerce – Gary P.Schneider – Thomson.
5. E-Commerce – Business, Technology, Society, Kenneth C.Taudon, Carol Guyerico Traver.

DT17B4.4E DIGITAL 2D STUDIO

Software's: Photoshop, Illustrator, Toom Boom, Flash

Objective: Introduction to animation principles.

UNIT I

Introduction to different animation principles, the sequence of events of 2D Animation

UNIT II

Drawing and sketching for 2D animation: Character design and anatomy-

UNIT III

Use of software like MS Paint, Coral painter, auto- sketch to make simple animations

UNIT IV

Making of Flash Movie- simple commands related to setup, input of text, animation of text, grid, templates, tool panel and library.

UNIT V

Making simple graphics, concepts of drawing, fill and stroke colors, brushes, design of text, transformation of graphics and text, inserting images, editing sound and videos

UNIT VI

Concepts of animation, types of animation, key frames, motion and shape controls buttons, movie clips controls, sound controls.

UNIT VII

Defining paths, flash action script, understand symbols, creating simple movie clips, scripts for interactive and controlled movie clips.

UNIT VIII

Publishing the movie clips, optimizing on the file sizes, exporting the flash movies, At least two complete projects in animation.

Alternative software for 2D animation

Practical Knowledge : Publishing the movie clips, optimizing on the file sizes, exporting the flash movies, At least two complete projects in animation. Alternative software for 2D animation

Text/Reference books:

The Illusion of Life – Frank Thomas and Ollie Johnston

Animator's Survival Kit - Richard Williams

Cartoon Animation - Preston Blair

Simplified Drawing for Planning Animation - Wayne Gilbert

XXXXX Open Elective-II

As per student choice

SEMESTER V

DT17B5.1C: DIGITAL METHODS IN PLANNING

L/S/P: 8/Wk, Int: 100, End Exam: 100, Total: 200, End Exam: Jury & Viva-voce, Cr: 8

UNIT I

Data Base for Planning and Socio Economic Surveys Data requirements for urban and regional planning; sources of primary and secondary data; questionnaire design, measurement scales and their application; sampling techniques, types of socio economic surveys; self surveys, interviews, mailed questionnaires and observer participation. Coding, analysis and presentations using digital techniques

UNIT II

Role of Landscape Planning

Landscape planning in the context of urban extensions and new towns, landscape assessment techniques, characteristics and components of different landscapes; Landscape elements like plant materials, surface materials, outdoor fittings and structures; Role of vegetation, Environmental benefits, functional requirements, aesthetic consideration; typical situations and criteria for design with plants and selection of species in planning (eg. Street/roadside planting), Principles of organization of outdoor spaces].

UNIT III

Physical Surveys Techniques of conducting surveys for land use, building use, density, and structural condition of buildings, heights of building, land utilization and physical features of land. Coding, analysis and presentations using GIS

UNIT IV

Techniques of Presenting and Analysis Data using appropriate computer programs Land use classification, coding and analysis; residential and non-residential density patterns and analysis, tabulation of data; graphical presentation of data; pie diagrams, histograms, bar charts, normal, semi log and double log graphs and their uses; color, black and white presentation techniques; basic disciplines of illustration and tables.

PROJECT PLANNING FOR RESIDENTIAL AREAS

UNIT V

Group Housing Design

Design and preparation of plan, sections and elevation of low rise and high rise apartments taking into account the building by laws and zoning regulations; preparation of presentation drawings.

UNIT VI

Working Drawings

Introduction to the working drawings; preparation of plans, sections, elevations and important details of an apartment unit; internal jury for group housing design and working drawings.

UNIT VII

Site Layout

Site analysis, development standards, and preparation of the design brief, various considerations for the layout, conceptual approach to site planning preparation of preliminary layout and area analysis. Final layout showing the circulation and basic infrastructure.

Expected Outcomes & Assignment

Study of a neighbourhood involving location, salient features, spatial characteristics, facilities and amenities, road circulation patterns, spatial and non-spatial linkages to surrounding areas. Comparison with standards, building byelaws etc.

Concept design for a given area. Design brief, drawings,

Design of a neighbourhood unit analytical charts etc.

The distribution of marks in the studio subject may be as follows:

40% for individual assignment

60% for group work

Reference books :

Public space and Relational perspectives - Routledge Research in planning and urban design
An Introduction to techniques in urban planning - Neha Verma Madan
Town Planning - Rangwala

DT17B5.2C: OBJECT ORIENTED ANALYSIS AND DESIGN

L/S/P: 4/Wk, Int: 50, End Exam: 50, Total: 100, End Exam: 3 Hours, Cr: 4

UNIT - I

Introduction to UML: Importance of modelling, principles of modelling, object oriented modelling, conceptual model of the UML, Architecture, Software Development Life Cycle.

UNIT - II

Basic Structural Modelling: Classes, Relationships, common Mechanisms, and diagrams. Advanced Structural Modelling: Advanced classes, advanced relationships, Interfaces, Types and Roles, Packages.

UNIT - III

Class & Object Diagrams: Terms, concepts, modeling techniques for Class & Object Diagrams.

UNIT - IV

Basic Behavioural Modelling-I: Interactions, Interaction diagrams.

UNIT-V

Basic Behavioural Modelling-II: Use cases, Use case Diagrams, Activity Diagrams.

UNIT - VI

Advanced Behavioural Modelling: Events and signals, state machines, processes and Threads, time and space, state chart diagrams.

UNIT - VII

Architectural Modelling: Component, Deployment, Component diagrams and Deployment diagrams.

UNIT - VIII

Case Study: The Unified Library application

TEXT BOOKS:

1. Grady Booch, James Rumbaugh, Ivar Jacobson : The Unified Modeling Language User Guide, Pearson Education.
2. Hans-Erik Eriksson, Magnus Penker, Brian Lyons, David Fado: UML 2 Toolkit, WILEY-Dreamtech India Pvt. Ltd.

REFERENCES:

1. Meilir Page-Jones: Fundamentals of Object Oriented Design in UML, Pearson Education.
2. Pascal Roques: Modeling Software Systems Using UML2, WILEY-Dreamtech India Pvt. Ltd.
3. Atul Kahate: Object Oriented Analysis & Design, The McGraw-Hill Companies.
4. Mark Priestley: Practical Object-Oriented Design with UML, TATA McGrawHill
5. Craig Larman Applying UML and Patterns: An introduction to Object – Oriented Analysis and Design and Unified Process, Pearson Education.

DT17B5.3C WEB GIS

L/S/P: 4/Wk, Int: 50, End Exam: 50, Total: 100, End Exam: Practical & Viva-voce, Cr: 4

Software's: PHP

UNIT-I

Web GIS Introduction, Web Services, Frameworks, & Libraries

UNIT-II

Query Overview / Review

UNIT-III

Object Oriented JavaScript, Namespacing, Constructor functions & prototypal inheritance, Insights into jQuery

UNIT-IV

Google Maps JavaScript API Geolocation

PHP1: Introduction, Client-server architecture, Local development environments, Language overview

UNIT-V

PHP2:Object Oriented Programming, Classes, Inheritance, Encapsulation, Polymorphism, Magic Methods

UNIT-VI

PHP MVC Frameworks - Part 1

Installation & Configuration, Models, Views, & Controllers

UNIT-VII

PHP MVC Frameworks - Part 2

Database Interaction w/ Active Record, Object Relational Mapping (ORM)

UNIT-VIII

Real-time Applications

Text/Reference books:

PHP and MySQL Web Development: A Beginner's Guide 2015 by Matthews, Marty. Mc Graw Hill publications.

Oracle Database Ajax & PHP Web Application Development 2008 by Barney, Lee; McLaughlin, Michael. Mc Graw Hill publications.

DT17B5.4C WEB TECHNOLOGIES

L/S/P: 4/Wk, Int: 50, End Exam: 50, Total: 100, End Exam: Practical & Viva-voce, Cr: 4

Software's: Notepad, Browsers (Google Chrome, Internet Explorer, Mozilla Firefox)

This course demonstrates an in-depth understanding of the tools and Web technologies necessary for business application design and development. The course covers client side scripting like HTML, JavaScript and server side scripting like servlets, JSPs. And also XML and web servers and database interfacing.

UNIT-I

HTML Common tags- List, Tables, images, forms, Frames; Cascading Style sheets;

UNIT-II

Introduction to Java Scripts, Objects in Java Script, Dynamic HTML with Java Script

UNIT-III

XML: Document type definition, XML Schemas, Document Object model, Presenting XML, Using XML Processors: DOM and SAX

UNIT-IV

Java Beans: Introduction to Java Beans, Advantages of Java Beans, JDK Introspection, Using Bean properties, Bean Info Interface, Constrained properties Persistence, Customizes, Java Beans API, Introduction to EJB's

UNIT-V

Web Servers and Servlets: Tomcat web server, Introduction to Servlets: Lifecycle of a Servlet, JSDK, The Servlet API, The javax.servelet Package, Reading Servlet parameters, Reading Initialization parameters. The javax.servelet HTTP package, Handling Http Request & Responses, Using Cookies-Session Tracking, Security Issues,

UNIT-VI

Introduction to JSP: The Problem with Servlet. The Anatomy of a JSP Page, JSP Processing. JSP Application Design with MVC Setting Up and JSP Environment: Installing the Java Software Development Kit, Tomcat Server & Testing Tomcat

UNIT-VII

JSP Application Development: Generating Dynamic Content, Using Scripting Elements Implicit JSP Objects, Conditional Processing – Displaying Values Using an Expression to Set an Attribute, Declaring Variables and Methods Error Handling and Debugging Sharing Data Between JSP pages, Requests, and Users Passing Control and Data between Pages – Sharing Session and Application Data– Memory Usage Considerations

UNIT VIII

Database Access: Database Programming using JDBC, Studying javax.sql.* package, Accessing a Database from a JSP Page, Application – Specific Database Actions, Deploying JAVA Beans in a JSP Page, Introduction to struts framework.

TEXT BOOKS:

1. Web Programming, building internet applications, Chris Bates 2nd edition, WILEY Dreamtech (UNIT s 1,2 ,3)
2. The complete Reference Java 2 Fifth Edition by Patrick Naughton and Herbert Schildt. TMH (Chapters: 25) (UNIT 4) Java Server Pages –Hans Bergsten, SPD O'Reilly (UNITs 5, 6, 7, 8)

REFERENCE BOOKS:

1. Programming world wide web-Sebesta,Pearson
2. Core SERVLETS AND JAVASERVER PAGES VOLUME 1: CORE TECHNOLOGIES By Marty Hall and Larry Brown Pearson
3. Internet and World Wide Web – How to program by Dietel and Nieto PHI/ Pearson Education Asia.
4. Jakarta Struts Cookbook , Bill Siggelkow, S P D O'Reilly for chap 8.
5. Murach's beginning JAVA JDK 5, Murach, SPD
6. An Introduction to web Design and Programming –Wang-Thomson
7. Web Applications Technologies Concepts-Knuckles,John Wiley
8. Programming world wide web-Sebesta,Pearson
9. Web Warrior Guide to Web Programmimg-Bai/Ekedaw-Thomas
10. Beginning Web Programming-Jon Duckett WROX.
11. Java Server Pages, Pekowsky, Pearson.

PRACTICAL KNOWLEDGE:

1. Execution of simple HTML program.
2. Execution of programs on headers and lists.
3. Execution of programs on tables, images and forms.
4. Execution of programs on frames.
5. Execution of programs on cascading style sheets.
6. Create a simple website with html and css tags.
7. Execution of programs with java script tags.
8. Execution of programs on creating java script objects.
9. Execution of programs java script embedded in DHTML.
10. Execution of programs on XML tags.
11. Execution of programs on XML schemas.
12. Execution of programs on parsers like DOM and SAX.
13. Execution of programs on java beans.
14. Execution of program on simple servlet.
15. Execution of program on jsp pages.
16. Execution of programs on JDBC drivers.
17. Prepare a website which consists of html tags, java script, jsp, servlet, dhtml, xml,jdbc,etc..

DT17B5.5C BUILDING SERVICES

L/S/P: 4/Wk, Int: 50, End Exam: 50, Total: 100, End Exam: 3 Hours, Cr: 4

WATER SUPPLY AND SANITATION

Water Supply

Introduction to water supply and sanitation. Traditional sources of water supply and sanitation. Classification of water based on its usage.

Elements of public / private water supply system, Different sources of water supply such as wells, reservoirs, etc. Water and its qualities, pumping and Distribution

Types of fittings like taps, bathtubs, showers, jets, cocks, valves, electrical fixtures, etc. Faucets for kitchens, bathrooms and toilets. Check valves, foot valves, sump pump check valves, and pressure test gauges.

Building service connections, cold and hot water distribution systems in buildings and their design, materials, joints, fittings and valves (gate, flap, ball, flush valves etc.). Direct and indirect systems, individual water supply, special installation in multistoried buildings. Special emphasis on city level distribution of water.

Sanitation

Conventional water treatment – sedimentation, coagulation, filtration and disinfection. Distribution system, sanitary, storm and combined sewerage system. Design of sewerage systems, Location of sewage systems, conventional wastewater treatment, activated sludge, trickling filters etc.

Design of drainage and vent pipes, system for low-rise and high-rise buildings, building drains, sewers, gullies, inspection chambers, manholes, connection to public sewer, cross connections, ferrule, water meters, stopcocks, bib cocks etc.

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

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

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

References :

Husain, S.K. T.B. of Water Supply and Sanitary Engineering, 3rd ed. Oxford and IBH Pub. Ltd., New Delhi, 1994.

Kshirsagar, S.R. Water Supply Engineering, 6th ed. Roorkee Pub., Roorkee, 1980.

Rangwala, S.C. Water Supply and Sanitary Engineering: Environmental Engineering, 19th ed. Charotar Pub. House, Anand, 2004.

ELECTRICAL

Electrical Energy System: Fundamental principles of Electricity, Voltage, Amperage, wattage. Generation and distribution of power, HT and LT consumers. Types of Generators, Indian Electricity Act.

Building Wiring System: Service wires, metering distribution boards circuits. MCB's cut outs. Conductors, wiring methods switch boards, electrical devices in general building. Light and power circuits. ISI Codes and standard material. Electrical safety system: ELCB, pipe earthing, plate earthing.

Electric layouts: Electrical symbols, NBC, 3 phase connection, preparation of layouts for residences, offices etc. Domestic appliances: Types of electric motors and electro mechanical devices. Construction and working of at least six domestic appliances and location in buildings.

Building Illumination: Artificial lighting various compression, advantages and disadvantages. · Method of lighting: Direct, Semi direct, Indirect · Decorative lighting for building interiors, Concealed lighting, Spot lighting, Task illumination, Dining lights, Under water lighting calculation of intensity illumination for nominal application as per standards. Flood lighting – Light of Monuments, Façade illumination, Yard lighting.

Air-conditioning: principles of Air-condition IAQ, carnot cycles, gas laws, refrigeration, cycles and refrigerants. Different types of Air-conditioning, single zone, multi zone, equipment and Devices. Compressors, condensers, evaporators, heat exchangers, etc all in working.

Window air conditioner and split air conditioners. Ductable air conditioners and package system. Central air conditioning. - AC plant and room. - All air systems and chilled water systems. - AHU and FC units. - Building ducting, diffusers and grills.

Reference books:

Electrical wiring and Contracting (Vol.1 to Vol.4), London The New era Publishing Company.

Dr. Frith Abnws and others, Electrical Engineering hand Book

William. J. Guinnesss, Mechanicla and electrical Equipmet for Buildings, New York: Wiley

Bovay. H.E., Handbook of Mechanical and Electrical Systems for BuildingsNew York: MC Graw Hill 60 61

Special services in High rise buildings and provision to be made for installation and operation.

Lifts: Types of lifts, Passenger, Capsule, Hospital bed- lift; goods-lift etc. Working and operation of lifts, parts of lifts; industry standards and capacity calculations. Provision to be made in buildings for installation; Introduction to working of escalator and design;

Electronic Systems in Buildings: Telephone and communication, EPABX networks, transmission. Security systems, Burglar alarms, video surveillance, access control. Computer labs, access flooring, server rooms.

Fire safety in buildings, portable fire fighting equipment, built in wet riser system, sprinkler system, fire hydrant, class of fire and occupancy. Cooking gas distribution, piped gas supply, bulk gas supply, bottled gas supply, Relevant NBC other standards, Stoves, burners and grills.

Swimming Pools: Pool design, Tank and channels, cascades, finishes; Water circulation, balancing tank. Filtration and water treatment; Water quality and disinfection

Hotel services: Specialty; services required for hospitality industry; Laundry services; Kitchen services; Channeled Music, Internet.

Environmental services: Waste generation, types of waste, treatment and disposal facilities, Industrial buildings; Hospital buildings.

Alternative energy sources for buildings: Solar energy, Hot water system, photo voltaic cells; Biomass digesters; Wind energy.

Reference books:

Faber, Oscar and Kell, J.R. Heating and Air-Conditioning of Building. Architectural Press, Surrey, 1945.

Prasad, Manohar. Refrigeration and air-conditioning, 5th ed. New Age Intl. Pub., New Delhi, 1996.

Tiwari, Satish. Water and Energy resources.

DT17B5.xE—ELECTIVE-III

DT17B5.1E WORKING DRAWINGS & DETAILS

Course Overview:

The focus of the course is to impart skills related to the preparation of drawings meant for construction work on the site and to improve the students' ability of detailing.

Objectives of the Course:

To impart training in the preparation of working drawings for buildings with specific reference to code of practice as per IS Code No. 962 of 1969 and incorporating specifications as complementary to the working drawings.

To sensitize the students in preparing finer design details required for buildings.

Expected Skills / Knowledge Transferred:

To prepare working drawings for a project and resolve complex aspects in the buildings with appropriate materials and design details.

Course Contents:

Unit - I

Preparation of working drawings: Suitable scales of drawings, methods of giving dimensions: on plans, sections, elevations and other standards.

Unit – II

Preparation of Plans Building marking plan, centerline plan, foundation plan, column centerlines drawings, floor plans, terrace floor plan.

Unit - III

Elevation and Sections

Detailed elevations, detailed sections – at least one through staircase and one through toilet, typical wall profile sections and elevations.

Unit - IV

Details Layout for Sanitation: and detailed plans, Electrical layout: plans and details, details of staircases, toilets and kitchens.

UNIT – V

Detailing for walls, floors, ceilings through detail drawings to large scale in the form of plans, sections, elevations. Surface Treatment; Cladding, texture treatment.

UNIT – VI

Detailing of architectural elements such as staircase, balcony, verandah, shading devices vertical and horizontal components of the building.

UNIT – VII

Detailing of Doors, windows, storage shelves for frames, shutters, joinery of frame to shutter, shutter to panelling etc. and other fixing details.

UNIT – VIII

Design details appropriate for creating Barrier Free Environment.

***Note:** - Students shall prepare at least two working drawing sets, one for a small residence and one for a large building.

Reference books:

Lerrs, Jack. Engineering Construction Specification.

Liebing, W. Ralph and Raul, Ford Mimi. Architectural Working Drawings, 2nd ed. John Wiley and Sons, New York, 1983.

Macey, W. Frank. Specification in Detail, 5th ed. Technical Press Ltd, London, 1955.

Shah, M.G., and Others. Building Drawing: with an integrated approach to build environment, 3rd ed. Tata McGraw Hill Pub., co. Ltd, New Delhi, 1996.

Standard Specification of Government of Andhra Pradesh State.

Lewis, R. Jack. Building Construction Specifications. Prentice-Hall, Inc., New Jersey, 1975.

Govt. of Maharashtra. Standard Specifications, Government Press, Nagpur, 1972.

Datta, B.N. Estimating and Costing in Civil Engineering: Theory and Practice, 23rd ed. UBS Pub. New Delhi, 1993.

Wakita, Osamu A. & Linde, Richard M. The professional practice of architectural detailing, 2nd ed. New York: Wiley, 1987.

Robert, C. Mc Hugh. Working Drawing Hand Book, New York: VNR, 1977.

DT17B5.2E MANAGEMENT SCIENCE

Unit - I

Introduction to Management: Concepts of Management and organization- nature, importance and Functions of Management, Taylor's Scientific Management Theory, Fayol's Principles of Management, Mayo's Hawthorne Experiments, Maslow's Theory of Human Needs, Douglas McGregor's Theory X and Theory Y, Herzberg's Two-Factor Theory of Motivation, Systems Approach to Management, Leadership Styles, Social responsibilities of Management.

Unit - II

Designing Organisational Structures : Basic concepts related to Organisation - Departmentation and Decentralisation, Types of mechanistic and organic structures of organisation (Line organization, Line and staff organization, functional organization, Committee organization, matrix organization, Virtual Organisation, Cellular Organisation, team structure, boundary less organization, inverted pyramid structure, lean and flat organization structure) and their merits, demerits and suitability.

Unit - III

Operations Management : Principles and Types of Plant Layout-Methods of production (Job, batch and Mass Production), Work Study -Basic procedure involved in Method Study and Work Measurement- Statistical Quality Control: chart, R chart, c chart, p chart, (simple Problems), Acceptance Sampling, Deming's contribution to quality.

Unit -IV

a) Materials Management: Objectives, Need for Inventory control, EOQ, ABC Analysis, Purchase Procedure, Stores Management and Stores Records.

b) Marketing: Functions of Marketing, Marketing Mix, Marketing Strategies based on Product Life Cycle, Channels of distribution

Unit - V

Human Resources Management (HRM) : Concepts of HRM, HRD and Personnel

Management and Industrial Relations (PMIR), HRM vs. PMIR, Basic functions of HR Manager: Manpower planning, Recruitment, Selection, Training and Development, Placement, Wage and Salary Administration, Promotion, Transfer, Separation, Performance Appraisal, Grievance Handling and Welfare Administration, Job Evaluation and Merit Rating.

Unit - VI

Project Management (PERT/CPM) : Network Analysis, Programme Evaluation and Review Technique (PERT), Critical Path Method (CPM), Identifying critical path, Probability of Completing the project within given time, Project Cost Analysis, Project Crashing. (simple problems)

Unit - VII

Strategic Management : Mission, Goals, Objectives, Policy, Strategy, Programmes, Elements of Corporate Planning Process, Environmental Scanning, Value Chain Analysis, SWOT Analysis, Steps in Strategy Formulation and Implementation, Generic Strategy alternatives.

Unit - VIII

Contemporary Management Practices : Basic concepts of MIS, End User Computing, Materials Requirement Planning (MRP), Just-In-Time (JIT) System, Total Quality Management (TQM), Six sigma and Capability Maturity Model (CMM) Levels, Supply Chain Management, Enterprise Resource Planning (ERP), Performance Management, Business Process outsourcing (BPO), Business Process Re-engineering and Bench Marking, Balanced Score Card.

TEXT BOOKS :

Aryasri : Management Science, TMH, 2004.

Stoner, Freeman, Gilbert, Management, 6th Ed, Pearson Education, New Delhi, 2004.

REFERENCES :

1. Kotler Philip & Keller Kevin Lane: Marketing Management 12/e, PHI, 2005
2. Koontz & Weihrich: Essentials of Management, 6/e, TMH, 2005
3. Thomas N. Duening & John M. Ivancevich Management — Principles and Guidelines, Biztantra, 2003.
4. Kanishka Bedi, Production and Operations Management, Oxford University Press, 2004.
5. Memoria & S.V. Gauker, Personnel Management, Himalaya, 25/e, 2005
6. Samuel C. Certo: Modern Management, 9/e, PHI, 2005
7. Schermerhorn, Capling, Poole & Wiesner: Management, Wiley, 2002.
8. Parnell: Strategic Management, Biztantra, 2003.

9. Lawrence R Jauch, R.Gupta &William F.Glueck:Business Policy and Strategic Management, Frank Bros.2005.
10. L.S.Srinath: PERT/CPM,Affiliated East-West Press, 2005.

DT 17B5.3E CONCEPTS OF INTERACTIVE AND VIRTUAL WORLDS

Software's: Maya, Unity

UNIT-I

Introduction : The three I's of virtual reality, commercial VR technology and the five classic components of a VR system. (1.1, 1.3 and 1.5 of Text Book (1))

UNIT - II

Input Devices : (Trackers, Navigation, and Gesture Interfaces): Three-dimensional position trackers, navigation and manipulation, interfaces and gesture interfaces. (2.1, 2.2 and 2.3 of Text Book (1)).

UNIT - III

Output Devices: Graphics displays, sound displays & haptic feedback. (3.1,3.2 & 3.3 of Text Book (1))

UNIT - IV

Modeling : Geometric modeling, kinematics modeling, physical modeling, behaviour modeling, model management. (5.1, 5.2 and 5.3, 5.4 and 5.5 of Text Book (1)).

UNIT - V

Human Factors: Methodology and terminology, user performance studies, VR health and safety issues. (7.1, 7.2 and 7.3 of Text Book (1)).

UNIT - VI

Applications: Medical applications, military applications, robotics applications. (8.1, 8.3 and 9.2 of Text Book (1)).

UNIT - VII

VR Programming-I : Introducing Java 3D, loading and manipulating external models, using a lathe to make shapes.

(Chapters 14, 16 and 17 of Text Book (2))

UNIT - VIII

VR Programming-II : 3D Sprites, animated 3D sprites, particle systems. (Chapters 18, 19 and 21 of Text Book (2))

TEXT BOOKS:

1. Virtual Reality Technology, Second Edition, Gregory C. Burdea & Philippe Coiffet, John Wiley & Sons, Inc.,
2. Killer Game Programming in Java, Andrew Davison, Oreilly-SPD, 2005.

REFERENCES :

1. Understanding Virtual Reality, interface, Application and Design, William R.Sherman, Alan Craig, Elsevier(Morgan Kaufmann).
2. 3D Modeling and surfacing, Bill Fleming, Elsevier(Morgan Kauffman).
3. 3D Game Engine Design, David H.Eberly, Elsevier.
4. Virtual Reality Systems, John Vince, Pearson Education.

DT17B5.4E MULTIMEDIA AND PRODUCTION TECHNIQUES

Software's: Premier, Photoshop

Objective: Understanding the concepts of Post Production Techniques Outcome: Making a short film using effects and other Production Techniques

Unit I

Fundamental concepts in text and image: multimedia and hypermedia, world wide web , over view of multimedia software tools. Graphics and image data representation graphics/ image data types, file formats, color in image and video: color science , color models in images , color models in video.

Unit II

Fundamental concepts in video and digital audio : Types of video signals, analog video, digital video, digitalization of sound , MIDI, quantization and transmission of audio.

Unit III

Action script features , object oriented action script, data types and type checking, classes, authoring an action script class, Inheritance, authoring an action script subclass, interfaces packages, exceptions. Multimedia data compression: Lossless compression algorithm: Run-Length Coding, Variable Length Coding, Dictionary Based Coding, Arithmetic Coding, Lossless Image Compression, Lossy compression algorithm: Quantization, Transform Coding, Wavelet- Based Coding, Embedded Zerotree of Wavelet Coefficients Set Partitioning in Hierarchical Trees (SPIHT).

UNIT IV

Basic Video Compression Techniques: Introduction to video compression, video compression based on motion compensation, search for motion vectors, MPEG, Basic Audio Compression Techniques.

UNIT V

Multimedia Networks: Basics of Multimedia Networks, Multimedia Network Communications and Applications: Quality of Multimedia Data Transmission, Multimedia over IP, Multimedia over ATM Networks, Transport of MPEG-4, Media-on Demand(MOD).

Production Organization

Production Techniques

Case Study: Contemporary British Cinema

Practical Knowledge:

1. The internal assessment to be carried out through practicals and periodic tests on the mentioned topics.
2. The internal assessment to be in the form of term papers and practicals on above mentioned topics.

Text/Reference books:

Pre-Production Planning For Video ,Film, and Multimedia by Steve

R. Cartwright.

XXXXX OPEN ELECTIVE-III

As per student choice

SEMESTER VI

DT17B6.1C BUILDING INFORMATION MODELING

L/S/P: 8/Wk, Int: 100, End Exam: 100, Total: 200, End Exam: Jury & Viva-voce, Cr: 8

Software's: Revit Architecture, Archibus

Objective:

To explore computer modelling techniques using REVIT

Outcome:

Presenting the Building Model, Creating and Printing Drawing Sheets, Working with Title Blocks, Managing Revisions, Creating Renderings, Using Walkthroughs, Using Sun and Shadow Settings Building Information Modelling, background and history, need for BIM Revit Architecture Basics, Exploring the User Interface, Working with Revit Elements and Families

Course Contents

Starting a Project

Starting a Design, Creating a Basic Floor Plan , Creating and Modifying Levels , Working with Grids ,The Basics of the Building Model, Adding and Modifying Walls, Working with Compound and Vertically Compound Walls ,Using Editing Commands , Working with Doors, Adding and Modifying Windows, Loading Additional Building Components, Adding and Modifying Component Families Viewing the Building Model, Managing Views, Controlling Object Visibility, Working with Section and Elevation Views , Creating and Modifying 3D Views.

Using Dimensions and Constraints, Working with Dimensions, Applying and Removing Constraints Developing the Building Model, Creating and Modifying Floors, Adding and Modifying Ceilings, Adding and Modifying Roofs, Creating Curtain Walls, Adding Stairs and Railings, Detailing and Drafting, Creating Callout Views, Working with Text and Tags, Working with Detail Views, Working with Drafting Views, Construction Documentation, Creating and Modifying Schedules, Creating Rooms and Room Schedules, Creating Legends and Keynotes

Archibus

Course topics: Fundamentals

Space Planning & Management

Real Estate Portfolio and Asset Management

Building Operations & Basic System Administration

Practical Competencies

- Production of parametric three- dimensional building design models & working drawing using Revit software Generating Building elevation and sections Annotating & documenting the drawing Surface modeling–Revolved, Ruled, Tabulated & Edge surfaces.
- Solid modeling Box , Polysolid , Cone , Pyramid ,Wedge & Torus
- Creating professional quality rendering Creating & modifying three - dimensional objects
- Placing of cameras & lights Computer rendering technique Creating professional quality output
- Applying light (point, distance & spot light) to 3 D Model
- Applying material & landscaping to the model
- Showing exteriors & interiors in the correct setting with appropriate lighting & coloring
- Hands- on-exercises will be used to reinforce
- Practice on 3 D drawing & designing
- Structural designing
- Electrical plumbing layout design &drafting

Text/Reference books:

BIM Handbook: A Guide to Building Information Modeling for Owners, Managers, Designers,

Engineers and Contractors- Chuck Eastman

Building Information Modeling – Willem Kymmell

DT17B6.2C: DATABASE MANAGEMENT SYSTEMS

L/S/P: 4/Wk, Int: 50, End Exam: 50, Total: 100, End Exam: Practical & Viva-voce, Cr: 4

Software's: Oracle 8i, 9i, 10g, 11g

UNIT I

Data base System Applications, data base System VS file System – View of Data – Data Abstraction –Instances and Schemas – data Models – the ER Model – Relational Model – Other Models – Database Languages – DDL – DML – database Access for applications Programs – data base Users and Administrator – Transaction Management – data base System Structure – Storage Manager – the Query Processor

UNIT II

History of Data base Systems. Data base design and ER diagrams – Beyond ER Design Entities, Attributes and Entity sets – Relationships and Relationship sets – Additional features of ER Model – Concept Design with the ER Model – Conceptual Design for Large enterprises.

UNIT III

Introduction to the Relational Model – Integrity Constraint Over relations – Enforcing Integrity constraints – Querying relational data – Logical data base Design – Introduction to Views – Destroying /altering Tables and Views.

Relational Algebra – Selection and projection set operations – renaming – Joins – Division – Examples of Algebra overviews – Relational calculus – Tuple relational Calculus – Domain relational calculus –Expressive Power of Algebra and calculus.

UNIT IV

Form of Basic SQL Query – Examples of Basic SQL Queries – Introduction to Nested Queries – Correlated Nested Queries Set – Comparison Operators – Aggregative Operators – NULL values –Comparison using Null values – Logical connectivity's – AND, OR and NOT – Impact on SQL Constructs – Outer Joins – Disallowing NULL values – Complex Integrity Constraints in SQL Triggers and Active Data bases.

UNIT V

Schema refinement – Problems Caused by redundancy – Decompositions – Problem related to decomposition – reasoning about FDS – FIRST, SECOND, THIRD Normal forms – BCNF – Lossless join Decomposition – Dependency preserving Decomposition – Schema refinement in Data base Design – Multi valued Dependencies – FORTH Normal Form.

UNIT VI

Transaction Concept- Transaction State- Implementation of Atomicity and Durability – Concurrent – Executions – Serializability- Recoverability – Implementation of Isolation – Testing for serializability- Lock –Based Protocols – Timestamp Based Protocols- Validation- Based Protocols – Multiple Granularity.

UNIT VII

Recovery and Atomicity – Log – Based Recovery – Recovery with Concurrent Transactions – Buffer Management – Failure with loss of non-volatile storage-Advance Recovery systems- Remote Backup systems.

UNIT VIII

Data on External Storage – File Organization and Indexing – Cluster Indexes, Primary and Secondary Indexes – Index data Structures – Hash Based Indexing – Tree base Indexing – Comparison of File Organizations – Indexes and Performance Tuning- Intuitions for tree Indexes – Indexed Sequential Access Methods (ISAM) – B+ Trees: A Dynamic Index Structure.

TEXT BOOKS :

1. Data base Management Systems, Raghurama Krishnan, Johannes Gehrke, TATA McGrawHill 3rd Edition
2. Data base System Concepts, Silberschatz, Korth, McGraw hill, V edition.

REFERENCES:

1. Data base Systems design, Implementation, and Management, Peter Rob & Carlos Coronel 7th Edition.
2. Fundamentals of Database Systems, Elmasri Navrate Pearson Education
3. Introduction to Database Systems, C.J.Date Pearson Education

PRACTICAL KNOWLEDGE:

1. Create a table with all the data types of SQL.
2. Execute all DDL commands.
3. Execute all DML commands.
4. Execute all DCL commands.
5. Execute all DQL commands.
6. Execute all number format functions.
7. Execute all character format functions.
8. Execute all the constraints.
9. Execute all the views.
10. Execute all types of joins.
11. Execute all the schemas.
12. Execute schema refinement.
13. Execute all the trigger programs.
14. Execute the programs on active data bases.
15. Execute the programs on normal forms.
16. Execute the commands on ACID properties.
17. Execute the programs on indexing.
18. Execute programs on concurrent recovery.
19. Execute programs on ISAM.
20. Execute programs on B+ trees.

DT17B6.3C: IMAGE PROCESSING

L/S/P: 4/Wk, Int: 50, End Exam: 50, Total: 100, End Exam: 3 Hours, Cr: 4

UNIT-I

Introduction: Light, Brightness adaption and discrimination, Pixels, coordinate conventions, Imaging Geometry, Perspective Projection, Spatial Domain Filtering, sampling and quantization.

UNIT-II

Spatial Domain Filtering: Intensity transformations, contrast stretching, histogram equalization, Correlation and convolution, Smoothing filters, sharpening filters, gradient and Laplacian.

UNIT-III

Filtering in the Frequency domain: Hotelling Transform, Fourier Transforms and properties, FFT (Decimation in Frequency and Decimation in Time Techniques), Convolution, Correlation, 2-D sampling, Discrete Cosine Transform, Frequency domain filtering.

UNIT-IV

Color Image Processing: Color fundamentals, color models, pseudo color image processing, basics of full-color image processing, color transforms, smoothing and sharpening, color segmentation.

UNIT-V

Image Restoration: Basic Framework, Interactive Restoration, Image deformation and geometric transformations, image morphing, Restoration techniques, Noise characterization, Noise restoration filters, Adaptive filters, Linear, Position invariant degradations, Estimation of Degradation functions, Restoration from projections.

UNIT-VI

Image Compression: Fundamentals, image compression models, error-free compression, lossy predictive coding, image compression standards.

UNIT-VII:

Morphological Image Processing: Basics, SE, Erosion, Dilation, Opening, Closing, Hit-or-Miss Transform, Boundary Detection, Hole filling, Connected components, convex hull, thinning, thickening, skeletons, pruning, Geodesic Dilation, Erosion, Reconstruction by dilation and erosion.

UNIT-VIII

Image Segmentation: Boundary detection based techniques, Point, line detection, Edge detection, Edge linking, local processing, regional processing, Hough transform, Thresholding, Iterative thresholding, Otsu's method, Moving averages, Multivariable thresholding, Region-based segmentation, Watershed algorithm, Use of motion in segmentation

Text/Reference books:

1. Digital Image Processing, 3rd Edition, by Rafael C Gonzalez and Richard E Woods. Publisher: Pearson Education.
2. Image Processing, Analysis, and Machine Vision, Milan Sonka, Vaclav Hlavac and Roger Boyle, Second Edition, Thomson Learning.
3. Introduction to Digital Image Processing with Matlab, Alasdair McAndrew, Thomson Course Technology
4. Digital Image Processing and Analysis, B. Chanda, D. Datta Majumder, Prentice Hall of India, 2003.
5. Computer Vision and Image Processing, Adrian Low, Second Edition, B.S.Publications Fundamentals of Digital Image Processing By Anil K Jain.

DT17B6.4C INTRODUCTION TO SIMULATION AND MODELING

L/S/P: 4/Wk, Int: 50, End Exam: 50, Total: 100, End Exam: Practical & Viva-Voce, Cr: 4

Software's: CPP

Introduction to Modelling and Computer Simulation, Simulation in decision making, elements of simulation modeling, modeling packages, languages for, simulation, interpretation of simulation data, Probability and Statistical Tools Probability distributions, discrete and continuous random variables, pseudorandom number generation and testing, hypothesis testing, confidence intervals, one-way analysis of variance, variance reduction Simulation Modeling Procedures, Techniques, and

Case Studies

- Model design
- Inventory and queuing models, single models, alternative models
- Collection and analysis of input data
- Simulation performance
- Analysis of simulation results, simulation verification and model validation, sensitivity analysis.
- Discrete Event Simulation with a Simulation Language
- Deterministic and stochastic models, probability distribution sampling, simulation i/o,
- Simulation projects with written and oral presentations

REFERENCES

Banks, J., Editor, Handbook of Simulation, Wiley, 1998.

Banks, Carson, and Nelson, Discrete-Event System Simulation, 3 Ed., Prentice Hall, 2001.

Banks, Carson, and Sy, Getting Started with GPSS/H, Wolverine Software Corp., 1989.

Fishwick, Simulation Model Design and Execution, Prentice Hall, 1995.

Kelton, Sadowski, and Sadowski, Simulation with Arena, 2 Ed., McGraw-Hill, 2002.

Law, A. M. and Kelton, W. D. Simulation Modeling and Analysis, 3 Ed., McGraw-Hill, 2000.

Shriber, An Introduction to Simulation Using GPSS/H, Wiley, 1991.

Silverman, A Laboratory Manual for Simulation with GPSS/H for Computer Science Majors: an Integrated Approach, NSF Workshop, 1997.

DT17B6.5C- ENERGY SIMULATION IN BUILDING DESIGN

L/S/P: 4/Wk, Int: 50, End Exam: 50, Total: 100, End Exam: Practical & Viva-Voce, Cr: 4

Software's: Auto Desk, Revit, Architecture, Ecotect

Energy simulation —HVAC, mechanical equipment etc. Simulation of wind flow- Introduction to various simulation programs like Energy-plus, design builder DOE, etc-

Course Introduction and Background, brief history, need for simulation, simulation as part of design process-various methods in simulation process, data collection, the variables which effect energy consumption in buildings

Fundamentals of energy, mass transfer, and Thermal analysis of building components, Numerical methods, and Theoretical framework for energy simulation for buildings related to various aspects

Energy simulation tools , Introduction to DOE2 (EQUEST) software, Building envelope analyses, HVAC System analyses, Parametric Analyses, Lighting Analyses, Special emphasis shall be given to the open source code software-their applications and customization for the specific needs in the context of energy simulation.

Simulation of at least two building typologies to be undertaken. Students may be encouraged to prepare the algorithms and develop programs for simulation

Introduction to Energy Audit

Definition, need, and types of energy audit; Energy management (audit) approach:

Understanding energy costs, bench marking, energy performance, matching energy use to requirement, maximizing system efficiencies, optimizing the input energy requirements; Fuel & energy substitution; Energy audit instruments; Energy Conservation Act; Duties and responsibilities of energy managers and auditors.

Reference

J A Clarke, 2002, Energy Simulation in Building Design (2nd Edn), Butterworth-Heinemann, ISBN 0 7506 5082.

2001 ASHRAE Handbook: Fundamentals. IP or SI edition, hard copy or CD.

S V Patankar, 1980, Numerical Heat Transfer and Fluid Flow, ISBN: 0891165223.

John A. Duffie, William A. Beckman, 1991, Solar Engineering of Thermal Processes, ISBN: 0471510564

Hamies, Energy Auditing and Conservation; Methods, Measurements, Management & Case study, Hemisphere, Washington, 1980

DT17B6.xE—ELECTIVE-IV

DT17B6.1E BUILDING BYELAWS AND LEGISLATION FOR ARCHITECTURAL AND PLANNING

Unit - I Concept of law source of law (i.e. custom, legislation, precedents) separation of powers judiciary, legislation and executives. Meaning of terms of law, legislation, ordinance, bill, act, regulations and bye laws. Brief introduction to legislation process as per Indian constitution- division of subjects between centre and states. Articles 19 (1) (f), 19 (5) and 31.

Unit - II Provisions regarding land, property and planning components of state and central Government to enact town-planning acts. Case of Maniklal Chhotla vs H.G. Makwana.

Unit - III Administrative law Delegation of powers principles of Natural justice, its bearing on planning laws. Model Town planning Act-Planning agencies at National, State and local levels, their functions and inter-relationships, Contents and preparation of development plans. Town Planning Act-and its objectives, contents and procedure for implementation of regional plans, master plans, town planning schemes-development charge-public participation in statutory planning process.

Unit - IV Concepts of structure plan and local plan under the English law. Urban and Metro plan, development board and authority acts scope overlapping of provisions with other allied acts and provision for prevention of duplicating of authority, urban development authorities Act of A.P. and Establishment of HMDA. VGTM-UDA, VUDA etc., Scope of comprehensive housing codes and building bye-laws, contents and critical evaluation of subdivision regulation, building bye-laws, zoning laws and law relating to periphery control. Introduction to law relating to slum clearance.

Unit - V Housing code, National parks system and traffic legislation. Building estimation Norms for exterior and interior open spaces, setbacks margins, norms for building projections open spaces, FAR norms for vehicular areas, norms for fire protection, building services. Study of local administrative provisions for obtaining building permissions, regulation for superstructures, building height regulations, regulation for high rise/ structures, large development projects.

REFERENCE BOOKS:

Ajit Prakashan's Model Building Bye-Laws, 2016

LexisNexis Building & Engineering Contracts Law & Practice by PC. Markanda (Set of 2 HB Volumes)

Sweet & Maxwell Construction Law (HB) compiled by John Uff

DT17B6.2E GEO-INFORMATICS IN RESOURCE MANAGEMENT

UNIT-I

Resources classification systems, natural and cultural resources, renewable and non-renewable resources.

UNIT-II

Resource Conservation: Remote sensing based Land use- Land cover mapping for resource monitoring and management Sustainable development of natural resources

UNIT-III

Land Resources: Introduction to soil, mineral resources, remote sensing in mapping soil degradation, impact of surface mining on land resources,

UNIT-IV

Bio-Resources: Remote sensing application in agriculture, forest resources and wildlife habitat assessment.

UNIT-V

Mapping of forest density and type, issues in forest management.

UNIT-VI

Water Resources: Remote sensing application in surface and sub surface water resources evaluation, water mining and pollution, issues in water resources management.

UNIT-VII

Energy Resources: Coal, oil and nuclear energy, non conventional energy resources, future potential and requirement of energy resources. GIS in energy resources management.

UNIT-VIII

Geoinformatics Models in Resource Management: Forest Fire Modeling, Wild Life Habitat Assessment Modeling, Soil Erosion Modeling, Land Resources Development Prioritization Modeling.

Text/Reference books:

Miller, R. W. and Donahue, R. L. (1990): Soils, Prentice-Hall of India. Lillisand, T. M. and Keifer, R. W. 1994.

Remote Sensing and Image interpretation', John Willey and Sons, New York, Third Edition Simmons, T.G.

The Ecology of Natural Resources, Edword Arnold, London, 1974.

Robert G. Reeves: manual of Remote Sensing Vol. II American Society of Photogrammetry and Remote Sensing, Falls Church. Donald A Davidson: Soils and Land use Planning, Longman, London, 1998. Robert W. Colwell.

Monitoring of Earth Resources from Aircraft and Spacecraft, NASA, Washington DC.

DT17B6.3E 3D VISUALISATION

Software's: 3DS Max, Maya, Lumion, Unreal

1. Introduction: Interface of 3d Maya Layout and workflow, Introduction to menu bars and tools, navigating 3D Workspace
2. Creating Geometry: Creating polygon shapes, NURBS, Surfaces, Curves and build-up building Geometry, Learning Different Modelling editing tools, Transforms, Modifiers etc.,
3. Animation Basics: Learning Camera Animations, Graph Editors, Time Line, Frames and Key Frames.
4. Texturing and lighting: Material Editors, Material and mapping, learning about unwrapping and applying textures to the objects, introduction to different lights, placing of lights, light linking.
5. Rendering: Mental Ray Renders, Passes, Color pass, Occlusion pass, V Ray Renders, Render Settings, Render Views, Batch Render, Effects and also creating environment in Maya.
6. Video Post Production: Compiling the render images in adobe premier and adobe after effects, Introduction to the interface, video editing's, transitions, Mattes, Sound Editing, Importing and exporting video files.

Practical Knowledge:

1. Architectural Visualisation
2. Construction Applications
3. Interior Decoration
4. Real-Estate Development
5. Engineering Simulations
6. Advertising
7. Films
8. Cartoon Animation
9. Games

Reference Books

Architectural Rendering with 3ds Max and V-Ray : Photorealistic Visualization by Markus Kuhlo

Simplifying Maya - Author Jana Germano

DT17B6.4E WEB DESIGNING

Software's: Photo shop, HTML, Java script, Dream Weaver

Objective: Understanding principles of animation and working alternative 2D Animation software Introduction to drawing and sketching for 2D animation, use of software like MS Paint, Coral painter, auto-sketch to make simple animations.

Making of Flash Movie- simple commands related to setup, input of text, animation of text, grid, templates, tool panel and library.

Making simple graphics, concepts of drawing, fill and stroke colors, brushes, design of text, transformation of graphics and text, inserting images, editing sound and videos.

Concepts of animation, types of animation, key frames, motion and shape controls buttons, movie clips controls, sound controls.

Defining paths, flash action script, understand symbols, creating simple movie clips, scripts for interactive and controlled movie clips.

Publishing the movie clips, optimizing on the file sizes, exporting the flash movies, At least two complete projects in animation.

Alternative software for 2D animation

Practical Knowledge:

1. The internal assessment to be carried out through practicals and periodic tests on the mentioned topics.

Reference Books

Javascript and JQuery : Interactive front - end web development, by Jon Duckett

The Web Designer's Idea Book, Vol.2

HTML & CSS : Design and Build Web Sites - Jon Duckett

XXXXX: OPEN ELECTIVE-IV

As per students choice

SEMESTER VII

DT17B7.1C: MINI PROJECT (IT/GIS/DESIGN/ANIMATION)

L/S/P: 12/Wk, Int: 100, End Exam: 100, Total: 200, End Exam: Jury & Viva-Voce, Cr:12

DT17B7.2C: ARTIFICIAL INTELLIGENCE

L/S/P: 4/Wk, Int: 50, End Exam: 50, Total: 100, End Exam: 3 Hours, Cr:4

Course Contents:

Introduction to AI. Agents and environments. Problem solving by search; uninformed search, informed ("heuristic") search, constrained satisfaction problems, adversarial search, Knowledge representation and reasoning; rule based representations, logical formalisms, frames or object oriented systems, network based approaches and mixed representations. Theorem-proving. Knowledge bases and expert systems. Overview of LISP and PROLOG. Reasoning in uncertain environments. Planning communication and multi agent systems. Learning. Vision. Natural Language Processing.

Books and References:

Charniak and Mcdermott. Introduction to Artificial Intelligence , Addison-Wesley, 1985.

Ginsburg. Essentials of Artificial Intelligence, Morgan Kaufmann, 1993.

Winston. Artificial Intelligence , 3rd Edition, Addison Wesley, 1992

DT17B7.3C: SOFTWARE PROJECT MANAGEMENT

L/S/P: 4/Wk, Int: 50, End Exam: 50, Total: 100, End Exam: 3 Hours, Cr:4

UNIT I

Conventional Software Management: The waterfall model, conventional software Management performance.

Evolution of Software Economics: Software Economics, pragmatic software cost estimation.

UNIT II

Improving Software Economics: Reducing Software product size, improving software processes, improving team effectiveness, improving automation, Achieving required quality, peer inspections.

The old way and the new: The principles of conventional software Engineering, principles of modern software management, transitioning to an iterative process.

UNIT III

Life cycle phases: Engineering and production stages, inception, Elaboration, construction, transition phases.

Artifacts' of the process: The artifact sets, Management artifacts, Engineering artifacts, programmatic artifacts.

UNIT IV

Model based software architectures: A Management perspective and technical perspective.

Work Flows of the process: Software process workflows, Iteration workflows.

UNIT V

Checkpoints of the process: Major mile stones, Minor Milestones, Periodic status assessments.

Iterative Process Planning: Work breakdown structures, planning guidelines, cost and schedule estimating, Iteration planning process, Pragmatic planning.

UNIT VI

Project Organizations and Responsibilities: Line-of-Business Organizations, Project Organizations, evolution of Organizations.

Process Automation: Automation Building blocks, The Project Environment.

UNIT VII

Project Control and Process instrumentation: The seven core Metrics, Management indicators, quality indicators, life cycle expectations, pragmatic Software Metrics, Metrics automation.

Tailoring the Process: Process discriminates.

UNIT VIII

Future Software Project Management: Modern Project Profiles, Next generation Software economics, modern process transitions. Case Study: The command Centre Processing and Display system- Replacement (CCPDS-R).

TEXT BOOK:

Software Project Management, Walker Royce: Pearson Education, 2005.

REFERENCES:

1. Software Project Management, Bob Hughes and Mike Cotterell: Tata McGraw- Hill Edition.
2. Software Project Management, Joel Henry, Pearson Education.
3. Software Project Management in practice, Pankaj Jalote, Pearson Education.2005.

DT17B7.4C BUILDING MANAGEMENT SYSTEMS

L/S/P: 4/Wk, Int: 50, End Exam: 50, Total: 100, End Exam: 3 Hours, Cr:4

Objective:

To understand the control system installed in buildings that controls and monitors the building's mechanical and electrical equipment.

Outcome:

Student has to design a BMS consists of software and hardware; the software program, usually configured in a hierarchical manner, can be proprietary, using such protocols.

UNIT I

Introduction building electronics, various types of sensors, protocols, consoles and networking systems, Intelligent Building Systems, Their applications in various aspects of building management - security, energy, HVAC, lighting

UNIT II

Role of IBS in management of various services like water supply, drainage, lighting, for large buildings, high-rise building and campuses.

UNIT III

Building performance – Building management systems. Measuring Building Performance.

UNIT IV

Intelligent Buildings. Introduction to CAFM

UNIT V

Introduction to BMS Network Infrastructure for building connectivity-Benefits of advanced building cabling, Definitions, basic principles, building network infrastructure & design considerations.

UNIT VI

Data transmission over twisted pair lines, LAN(local area network), optical fiber, testing.

Text/Reference books:

Building Quality management systems – Vikas Kumar

Building energy management systems – GJ.Levermore

Understanding building automation systems – Robert A. Di

DT17B7.Xe-ELECTIVE-V

DT17B7.1E ADVANCED DIGITAL DESIGN

Software's: Rhino, Lumion, Unity and Vuforia

RHINO

Rhino is a 3D-modeling powerhouse, used to design and engineer products ranging from jewelry and furniture to architecture and automobiles. Learn how to build your own 3D models, characters, and prototypes with the NURBS-based modeling tools in Rhino 5.0 for Windows. Rhino's three primary entities (the curve, the surface, and the solid) and shows the best ways to draw curves and model 3D objects, edit their geometry efficiently, and render and export your designs.

Topics include:

Why use Rhino?

Understanding 3D terminology

Comparing Bézier curves, B-splines, and NURBS objects

Navigating the viewport

Manipulating objects with commands

Creating curves, surfaces, and solids

Performing basic transformations

Making solids with primitives

Extruding curves

Snapping to objects and planes

Trimming, splitting, rotating, and copying objects

Working with NURBS and seams

Prototyping a 3D model

LUMION

Starting a project – Project Setup, Screen Layout, Controlling the Camera, Modeling Environment and Modifying Terrain Adding a Water Plane and/or Ocean, Importing – Updating Models with Geometry, Placing Content from the Library Moving, Adding, Deleting and Scaling Models, Advanced Transformations Content Specific Properties, Using Layers, Assigning and Modifying Materials, Saving Material Sets Merging Materials with Terrain, Advanced Materials (Glass, Waterfalls, Self Illumination, Glows) Environment Settings, Setting Sun Direction and Height, Cloud Setting, Environment Setting, Adding / Modifying Light Fixture, Creating Still Images, Creating Animations, Animating Objects, Camera Presets, Animating Camera Zoom Creating a camera Pan, Speed of Clips, Working with existing still images.

Importing an existing movie file, Working with Filters, Filter Specific Settings, Adding Special Effects to Individual clips and entire movies, Adding Multiple Effects, Using Theater Mode Export and Rendering Options, Rendering the final output as a movie file.

UNITY

Unity is the ultimate game development platform. Use Unity to build high-quality 3D and 2D games, deploy them across mobile, desktop, VR/AR, consoles or the Web, and connect with loyal and enthusiastic players and users.

VUFORIA

Vuforia brings an important capability to HoloLens – the power to connect AR experiences to specific images and objects in the environment. You can use this capability to overlay guided step by step instructions on top of machinery or to add digital features to a physical product.

Reference Books

Advanced Digital Design with the Verilog HDL

New Rhino book by Michiel van der Kley

Getting Started with Lumion 3D

BookbyCiro Cardoso

DT17B7.2E BUILDING CONSTRUCTION MANAGEMENT

Course Overview:

To introduce the importance of construction management in the field of architecture.

Course Contents:

Unit – I

Introduction

Construction in India; its role in development, importance of Management in Construction, role of Construction Manager, Construction team, responsibilities and authorities of Construction Manager Organization.

Unit - II

Management Techniques:

Planning for Construction Projects: Principles, objectives, advantages of planning, stages of planning.

Scheduling: Definition, advantages Methods of Scheduling: Bar chart, Milestone chart, Controlling, Life cycle curves. Job layout, work break down structure.

Project Management through Networks

Introduction, objectives, advantages, terms and definitions, types of networks,

rules for drawing a network, Fulkerson's Rule of numbering the events.

Introduction to PERT, CPM, difference between PERT and CPM, finding critical path.

Unit – III

Introduction to construction equipments, performance, characteristics and usage of equipment used in large scale projects.

Human Resource management: manpower estimation at various stages, recruitment, training, under and over manning.

Materials Management : Materials of construction, classification codification, ABC analysis, estimation of materials procurement, inventory / stock control, purchase procedure, stores management.

Quality control in Construction: Importance of quality, elements of quality, organization for quality control, quality assurance techniques.

Unit – IV

Labour Legislations pertaining to construction industry, payment of wages act, migration Act, Factories Act, Contract Labour Act, Labour Welfare Fund Act, Workmen's Compensation Act.

Construction Safety Management: Importance of safety causes of accidents, safety measures, safety benefits to employees, employees and customers.

Unit – V

Economics of Project Management: Economic analysis of projects, economic studies, sensitivity analysis. Cost estimating principles, parameter estimation, detailed estimates, cost concepts, classification of costs, elements of costs, and cost analysis for control.

Unit – VI

Budgetary Control Systems: Types of budgets, new approaches for budgeting, responsibility of accounting, profit centre approach.

Financial Management: Meaning and scope, financial statement analysis, ratio analysis, funds flow analysis.

Working Capital Management: Meaning, policy for working capital, estimating working capital needs. Capital investment decision, long term financing working of financial institutions in India and abroad, self-financing, financing mechanisms.

Value engineering: Definition, value engineering job plan, life cycle costing, value engineering applications.

Unit – VII

Introduction to Linear programming, Transportation problem, Sensitive analysis.

Reference books:

Gupta, B.L. and Gupta, Amit. Construction Management, Machinery and Accounts, 3rd ed. Standard Pub, 2005.

Loraine, R.K. Construction Management in Developing Countries. Thomas Telford, London, 1993.

Srinath, L.S. PERT and CPM Principles and Applications, 3rd ed. Affiliated East-West Press, New Delhi, 2003.

Singh, Harpal. Construction Management and Accounts 14th ed. Tata McGraw-Hill Pub., New Delhi, 1981.

Gould, E. Frederick and Joyce, E. Nancy. Construction Project Management. Prentice Hall, New Jersey, 2000.

Shrivastava, U.K. Construction Planning and Management, 3rd ed. Galgotia Pub., New Delhi, 2004.

DT17B7.3E: SOFTWARE ENGINEERING

UNIT I

Introduction to Software Engineering: The evolving role of software, Changing Nature of Software, legacy software, Software myths. A Generic view of process: Software engineering- A layered technology, a process framework, The Capability Maturity Model Integration (CMMI), Process patterns, process assessment, personal and team process models.

UNIT II

Process models: The waterfall model, Incremental process models, Evolutionary process models, specialized process models, The Unified process.

UNIT III

Software Requirements: Functional and non-functional requirements, User requirements, System requirements, Interface Specification, the software requirements document.

Requirements engineering process: Feasibility studies, Requirements Elicitation and analysis, Requirements validation, Requirements management.

System models: Context Models, Behavioural models, Data models, Object models, structured methods.

UNIT IV

Design Engineering: Design process and Design quality, Design concepts, the design model, patternbased software design.

Creating an architectural design: software architecture, Data design, Architectural styles and patterns, Architectural Design, assessing alternative architectural designs, mapping data flow into a software architecture.

UNIT V

Modelling component-level design: Designing class-based components, conducting component-level design, Object constraint language, designing conventional components.

Performing User interface design: Golden rules, User interface analysis and design, interface analysis, interface design steps, Design evaluation.

UNIT VI

Testing Strategies: A strategic approach to software testing, test strategies for conventional software, Black-Box and White-Box testing, Validation testing, System testing, the art of Debugging. Product metrics: Software Quality, Frame work for Product metrics, Metrics for Analysis Model, Metrics for Design Model, Metrics for source code, Metrics for testing, Metrics for maintenance.

Metrics for Process and Products: Software Measurement, Metrics for software quality.

UNIT VII

Risk management: Reactive Vs Proactive Risk strategies, software risks, Risk identification, Riskprojection, Risk refinement, RMMM, RMMM Plan.

UNIT VIII

Quality Management: Quality concepts, Software quality assurance, Software Reviews, Formal technical reviews, Statistical Software quality Assurance, Software reliability, The ISO 9000 quality standards.

TEXT BOOKS:

1. Software Engineering A practitioner's Approach, Roger S Pressman, sixth edition,. McGraw Hill International Edition.
2. Software Engineering, Ian Sommerville, seventh edition, Pearson education.

REFERENCE BOOKS:

1. Software Engineering - A Precise Approach, Pankaj Jalote, Wiley India, 2010.
2. Software Engineering : A Primer, Waman S Jawadekar, Tata McGraw-Hill, 2008. Fundamentals of Software Engineering, Rajib Mall, PHI, 2005.
3. Software Engineering, Principles and Practices, Deepak Jain, Oxford University Press.
4. Software Engineering1: Abstraction and modeling, Diner Bjorner, Springer International edition, 2006.
5. Software Engineering2: Specification of systems and languages, Diner Bjorner, Springer International edition, 2006.
6. Software Engineering Foundations - Yingxu Wang, Auerbach Publications, 2008.

7. Software Engineering Principles and Practice, Hans Van Vliet, 3rd edition, John Wiley & Sons Ltd.
8. Software Engineering 3: Domains, Requirements, and Software Design, D.Bjorner, Springer International Edition.
9. Introduction to Software Engineering, R.J. Leach, CRC Press

DT 17B7.4E PROJECT STUDIES

This subject forms the preliminary work on which the students' project in the next semester would be based. Therefore the objective of seminar in this semester is to encourage students to identify and select topics of interest and explore the theoretical issues based on extensive literature survey, interviews with experts and site visits wherever possible.

As it is mandatory that students subsequently carry the work into the Digital Techniques project, students will have to submit a detailed proposal on the chosen topic. The topic has to be approved by the committee and supervisor. Periodic reviews will be held to facilitate exchange of ideas, clarify the issues of concern and pave the way for further study in the planning project. Emphasis will be placed on clear understanding of the topic so that the student can work independently on the terminal project subsequently.

Note:

Each student shall present a formal report and a seminar for final assessments.

DT17B7.Xe-ELECTIVE-VI

DT17B7.5E DIGITAL GLOBAL POSITIONING SYSTEM

Introduction of Global Positioning System, Satellite constellation, GPS signals and data, Geopositioning- Basic Concepts. NAVSTAR, GLONASS

Basic geodesy, Geoid /datum/ Ellipsoid,- definition and basic concepts, Coordinate Systems, Special Referencing system, Map Scale, Scale factors, Indian geodetic System

Control Segment, Space Segments, User Segment, GPS Positioning Types- Absolute Positioning, Differential positioning

Methods-Static & Rapid static, Kinematic-Real time kinematic Survey- DGPS-GPS data processing and Accuracy.

Selection of Reference Station, Reference Station Equipment: GPS receiver, GPS antenna. Radio and its types, Radio Antenna

GPS Application in Surveying and Mapping, Navigation Military, Location Based Services, Vehicle tracking.

Text/Reference books:

Leicka. A.: GPS Satellite Surveying, John Wiley & Sons, use. New York

Terry-Karen Steede, 2002, Integrating GIS and the Global Positioning System, ESRI Press

N.K.Agrawal Essentials of GPS, Spatial Network Pvt Ltd 2004

Sathish Gopi , GPS and Surveying using GPS

DT17B7.6E STATISTICS AND PROGRAMMING FOR GEO DATA

Software's: R

Introduction to the R language:

- Arithmetic and matrix operations

- Introduction to functions

- Reading and writing data

- Functions and R programming

- the if statement

- looping:for, repeat, while

- writing functions

- function arguments and options.

Graphics:

- Basic plotting

- Manipulating the plotting window

- Advanced plotting using lattice library

- Saving plots.

- Models considered:

- Linear regression:lm()

- Logistic regression:glm()

- Poisson regression:glm()

- Survival analysis:Surv(), coxph()

- Linear mixed models:lme().

- Migration SAS to R

Text/Reference books:

Principal Component Analysis by Jolliffe, I.T. (opensource)

ggplot2 Elegant Graphics for Data Analysis (open source)

DT17B7.7E DIGITAL 3D STUDIO

Software's: Maya, Photoshop

Objective: Introduction to 3D Animation software MAYA and work process

UNIT I

Spline modelling- working with modifiers- compound objects- Standard and extended primitives - Surface modeling.

UNIT II

Introduction to NURBS modeling– curves and surfaces, High resolution modeling, modelling using patches.

UNIT III

Human anatomy, Character modeling, controlling the character,

UNIT IV

Introduction to MAYA- NURBS modeling- polygon modeling, subdivision modeling,- Applying textures using nodes- UV unwrapping- lighting concepts, types of lights- using cameras, working with paint effects

UNIT V

Rendering- assigning materials-developing materials for rendering, setting up lighting- rendering using various types of rendering engines- photo-realistic, artistic and true- color renderings, rendering techniques with different rendering engines- Limitations of software and hardware, overcoming the software and hardware limitations.

UNIT VI

Animation- defining the paths, frames, and controls for animation, freedom animation, walk through

UNIT VII

Video Streaming- editing the animation clips, adding sound and special effects mixing special effects, composing with visual effects, wire removal, colour gradient, colour corrections, SFX and VFX composing.

UNIT VIII

Students are required to create one neighbourhood scene and walkthrough, one interior view and walkthrough, 10 minute length movie using character, half minute length commercial apart from practice renderings.

Practical Knowledge :

Create a 3D animated short film (8minutes)

Text/Reference books:

The Male and Female Figure in Motion - Edward Muybridge

How to Cheat in Maya 2012: Tools and Techniques for Character Animation By Eric Luhta & Kenny Roy

Acting for Animators By EdHook

Timing for Animation by John Halas & Harold Whitaker

Introducing Character Animation with Blender by Tony Mullen

Stop Staring: Facial Modeling & Animation Done Right by Jason Osipa

Directing the Story: Professional Storytelling and Storyboarding Techniques by Francis Glebas

Body Language: Advanced 3D Character Rigging by Eric Allen, Kelly L. Murdock, Jared Fong, Adam G. Sidwell

DT17B7.8E VFX & COMPOSITING

Software's: Auto Desk Maya, Adobe Premier, Adobe after Effects

Unit I

Introduction to Compositing and After Effects: Fundamental concepts of Compositing, Introduction to the AE Interface & Tools

Unit II

Basic Animation Basic Animation: Fundamentals of animation, Key frames & Transform properties, Anchor Point, Key frame types, Motion Sketch, Smoother, Project Settings & Parameters

Unit III

Layer Control & Blending Layer Control & Blending: Layer Editing, Stacking, Work Area, Effects & Presets Assignment #1 is due.

Unit IV

Transparency A Transparency - Part A: Mask & Pen tool, Bezier curves

Unit V

Transparency B Transparency - Part B: Track Matte, Luma Matte, Stencils

Unit VI

Keying Keying: Import Issues, Footage Interpretation, Keylight basics

Unit VII

Tracking & Output Tracking: Stabilization, 1-point tracking, 4-point tracking

Unit VIII

Additional Keying & Tracking tools Color Correction, Alpha painting, Mocha Demo

Practical Knowledge:

1. Group Project Review Group presentations & Notes
2. Multi-pass rendering and node based compositing. Film, video, and chroma-keying for 3D. Pre-visualization and Pipeline planning techniques, 3D asset creation, photorealistic texturing, and asset management., Color correction, optical effects, and advanced compositing.
3. Recap & Final Project Review Recap & Final Project: Wish list, Questions, Final project

The internal assessment to be in the form of term papers and practical's on above mentioned topics.

Text/Reference books:

HTML and CSS: Design and Build Websites

The Principles of Beautiful Web Design (2nd Edition) by Jason Beaird

HTML & CSS: Design and Build Websites by Jon Duckett

Designing Interfaces (2nd Edition) by Jenifer Tidwell

SEMESTER VIII

DT17B8.1C INTERNSHIP (IT/GIS/DESIGN/ANIMATION)

L/S/P: Nil, Int: 150, End Exam: 150, Total: 300, End Exam: Jury & Viva-voce, Cr:12

Student's choice for Project related INTERNSHIP

Course Overview:

Internship period not less than 12 weeks.

Objectives of the Course:

To provide experience in practical aspects of digital techniques for Design and planning

Expected Skills / Knowledge Transferred: The skills required for a student to grow into a professional.

Course Contents:

Every student must work in an Office as a full-time trainee for a period of 12 calendar weeks (excluding Viva-voce) from the date of commencement of training. The Chief in the firm should have a minimum of five years of practical / professional experience after her/his post-graduation. The student should involve herself/himself in various aspects of work in an office. Detailed instructions regarding the training, the frequency of reporting to the department, etc. will be issued at the end of the seventh Semester, which the student must strictly follow.

After completion of training, every student will have to submit a detailed report with a set of drawings on at least two projects on which she/he has worked during the twenty calendar weeks of the practical training period. This report will be evaluated at a viva-voce by a jury consisting of one external, one internal and head of the department or his nominee. After submission of the report the department at its convenience will arrange for the conduct of the viva-voce examination.

DT17B8.2C PROJECT (IT/GIS/DESIGN/ANIMATION)

L/S/P: Nil, Int: 250, End Exam: 250, Total: 500, End Exam: Jury & Viva-voce, Cr:18

Student's choice for the PROJECT

Course Contents:

Each student of Bachelor of Technology (Digital Techniques for Design and Planning) is required to prepare a dissertation / project on a subject concerning Digital Techniques for Design and Planning under a guide/adviser as approved by the Head of the Department. The dissertation / project will provide an opportunity to the student to synthesize the knowledge and skills acquired through the learning of various theories and practices during the course.

The particulars of schedule of internal Juries, content, presentation, format, etc., as decided by the department from time to time, shall be strictly followed.

At the end of the semester, each student is expected to submit all original drawings prepared as per the department's specifications, three copies of the report in the specified format and in a soft copy and a physical or digital / virtual model should be submitted to the department after obtaining the approval of the respective guide/ adviser.

The department shall schedule the final viva voce a jury consisting of one external, one internal and head of the department or his nominee, at its convenience, only after the receipt of the dissertation submission by a student.