



HINDUSTAN UNIVERSITY

HINDUSTAN INSTITUTE OF TECHNOLOGY & SCIENCE

(Estd. u/s 3 of the UGC Act, 1956)

Padur, Kancheepuram District - 603 103.

**DEPARTMENT OF
INFORMATION TECHNOLOGY**

**CURRICULUM
&
SYLLABUS 2013-14**

**B.Tech.
INFORMATION TECHNOLOGY**

ACADEMIC REGULATIONS (B.Tech)
(Full /Part Time) (Effective 2013-14)

1. Vision, Mission and Objectives

1.1 The Vision of the Institute is "To make every man a success and no man a failure".

In order to progress towards the vision, the Institute has identified itself with a mission to provide every individual with a conducive environment suitable to achieve his / her career goals, with a strong emphasis on personality development, and to offer quality education in all spheres of engineering, technology, applied sciences and management, without compromising on the quality and code of ethics.

1.2 Further, the Institute always strives

- To train our students with the latest and the best in the rapidly changing fields of Engineering, Technology, Management, Science & Humanities.
- To develop the students with a global outlook possessing, state of the art skills, capable of taking up challenging responsibilities in the respective fields.
- To mould our students as citizens with moral, ethical and social values so as to fulfill their obligations to the nation and the society.
- To promote research in the field of Science, Humanities, Engineering, Technology and allied branches.

1.3 Aims and Objectives of the Institute are focused on

- Providing world class education in engineering, technology, applied sciences and management.
- Keeping pace with the ever changing technological scenario to help the

students to gain proper direction to emerge as competent professionals fully aware of their commitment to the society and nation.

- To inculcate a flair for research, development and entrepreneurship.

2. Admission

2.1 The admission policy and procedure shall be decided from time to time by the Board of Management (BOM) of the Institute, following guidelines issued by Ministry of Human Resource Development (MHRD), Government of India. The number of seats in each branch of the B.Tech programme will be decided by BOM as per the directives from MHRD, Government of India and taking into account the market demands. Some seats for Non Resident Indians and a few seats for foreign nationals shall be made available.

2.2 (i) Full-Time :

At the time of applying for admission, the candidates should have passed / appeared and be awaiting results of the final examination of the 10+2 system or its equivalent with Mathematics, Physics and Chemistry as subjects of study.

(ii) Part -Time:

At the time of applying for admission, the candidates should have a Diploma in Engineering/Technology in the relevant branch of specialization awarded by the State Board of Technical Education, Tamil Nadu or any other authority accepted by the Board of Management of the University as equivalent thereto and a minimum of one year practical experience.

2.3 The selected candidates will be admitted to the B.Tech. programme after he/she fulfills all the admission requirements set by the Institute and after the payment of the prescribed fees.

2.4 In all matters relating to admission to the B.E. / B.Tech. programme, the decision of the Institute and its interpretation given by the Chancellor of the Institute shall be final.

2.5 If at any time after admission, it is found that a candidate has not fulfilled any of the requirements stipulated by the Institute, the Institute may revoke the admission of the candidate with information to the Academic Council.

3. Structure of the programme

3.1 The programme of instruction will have the following structure:

- i) A general (common) core programme comprising basic sciences, engineering sciences, humanities, technical arts and mathematics.
- ii) An engineering core programme introducing the student to the foundations of engineering in the respective branch.
- iii) An elective programme enabling the student to opt and undergo a set of courses of interest to him/ her.
- iv) Professional practice including project, seminar and industrial training.
- v) General elective courses, such as, Environmental Studies, Physical Education, Professional ethics, and National Service Scheme.

The distribution of total credits required for the degree programme into the above five categories will nominally be 20%, 50%, 15%, 5%, and 10% respectively.

3.2 (i) Full-Time:

The duration of the programme will be a minimum of 8 semesters. Every branch of the B.E. / B.Tech. programme will have a curriculum and syllabi for the courses approved by the Academic Council.

ii) Part - Time:

The duration of the programme will be a minimum of 7 semesters. Every branch of the B.Tech. programme will have a curriculum and syllabi for the courses approved by the Academic Council

3.3 The academic programmes of the Institute follow the credit system. The general pattern is:

- One credit for each lecture hour per week per semester;
- One credit for each tutorial hour per week per semester;
- Two credits for each laboratory practical/ drawing of three hours per week per semester.
- One credit for 4 weeks of industrial training and
- One credit for 4 hours of project per week per semester

3.4 (i) Full-Time:

For the award of degree, a student has to earn certain minimum total number of credits specified in the curriculum of the relevant branch of study. The curriculum of the different programs shall be so designed that the minimum prescribed credits required for the award of the degree shall be within the limits of 190-200.

(ii) Part-Time:

For the award of degree, a student has to earn certain minimum total number of

credits specified in the curriculum of the relevant branch of study. The curriculum of the different programs shall be so designed that the minimum prescribed credits required for the award of the degree shall be within the limits of 110-120.

3.5 The medium of instruction, examination and the language of the project reports will be English.

4. Faculty Advisor

4.1 To help the students in planning their courses of study and for getting general advice on the academic programme, the concerned Department will assign a certain number of students to a Faculty member who will be called their Faculty Advisor.

5. Class Committee

5.1 A Class Committee consisting of the following will be constituted by the Head of the Department for each class:

- (i) A Chairman, who is not teaching the class.
- (ii) All subject teachers of the class.
- (iii) Two students nominated by the department in consultation with the class.

The Class Committee will meet as often as necessary, but not less than three times during a semester.

The functions of the Class Committee will include:

- (i) Addressing problems experienced by students in the classroom and the laboratories.
- (ii) Analyzing the performance of the students of the class after each test and finding ways and means of addressing problems, if any.

- (iii) During the meetings, the student members shall express the opinions and suggestions of the class students to improve the teaching / learning process.

6. Grading

6.1 A grading system as below will be adhered to.

Range of Marks	Letter Grade	Grade points
95 -100	S	10
85 - 94	A	09
75 - 84	B	08
65 -74	C	07
55 - 64	D	06
50 - 54	E	05
< 50	U	00
	I (Incomplete)	–

6.2 GPA and CGPA

GPA is the ratio of the sum of the product of the number of credits C_i of course "i" and the grade points P_i earned for that course taken over all courses "i" registered by the student to the sum of C_i for all "i". That is,

$$GPA = \frac{\sum_i C_i P_i}{\sum_i C_i}$$

CGPA will be calculated in a similar manner, at any semester, considering all the courses enrolled from the first semester onwards.

6.3 For the students with letter grade I in certain subjects, the same will not be included in the computation of GPA and CGPA until after those grades are converted to the regular grades.

6.4 Raw marks will be moderated by a moderation board appointed by the Vice-Chancellor of the University. The final marks will be graded using an absolute grading system. The Constitution and composition of the moderation board will be dealt with separately.

7. Registration and Enrolment

7.1 Except for the first semester, registration and enrollment will be done in the beginning of the semester as per the schedule announced by the University.

7.2 A student will be eligible for enrollment only if he/she satisfies regulation 10 (maximum duration of the programme) and will be permitted to enroll if (i) he/she has cleared all dues in the Institute, Hostel and Library up to the end of the previous semester and (ii) he/she is not debarred from enrollment by a disciplinary action of the University.

7.3 Students are required to submit registration form duly filled in.

8. Registration requirement

8.1 (i) Full -Time:

A full time student shall not register for less than 16 credits or more than 30 credits in any given semester.

(ii) Part -Time:

A part time student shall not register for less than 10 credits or more than 20 credits in any given semester

8.2 If a student finds his/her load heavy in any semester, or for any other valid reason, he/she may withdraw from the courses within three weeks of the commencement of the semester with the written approval of his/her Faculty Advisor and HOD. However the student should

ensure that the total number of credits registered for in any semester should enable him/her to earn the minimum number of credits per semester for the completed semesters.

9. Continuation of the programme

9.1 For those students who have not earned the minimum required credit prescribed for that particular semester examination, a warning letter to the concerned student and also to his/her parents regarding the shortage of his/her credit will be sent by the HOD after the announcement of the results of the university examinations.

10. Maximum duration of the programme

10.1 (i) Full - Time

The normal duration of the programme is eight semesters. However a student may complete the programme at a slower pace by taking more time, but in any case not more than 14 semesters excluding the semesters withdrawn on medical grounds or other valid reasons.

(ii) Part - Time

The normal duration of the programme is seven semesters. However a student may complete the programme at a slower pace by taking more time, but in any case not more than 12 semesters excluding the semesters withdrawn on medical grounds or other valid reasons

11. Temporary discontinuation

11.1 A student may be permitted by the Director (Academic) to discontinue temporarily from the programme for a semester or a longer period for reasons of ill health or other valid reasons. Normally a student will be permitted to discontinue from the programme only for a maximum duration of two semesters.

12. Discipline

- 12.1** Every student is required to observe discipline and decorum both inside and outside the campus and not to indulge in any activity which will tend to bring down the prestige of the University.
- 12.2** Any act of indiscipline of a student reported to the Director (Academic) will be referred to a Discipline Committee so constituted. The Committee will enquire into the charges and decide on a suitable punishment if the charges are substantiated. The committee will also authorize the Director (Academic) to recommend to the Vice-Chancellor the implementation of the decision. The student concerned may appeal to the Vice-Chancellor whose decision will be final. The Director (Academic) will report the action taken at the next meeting of the Council.
- 12.3** Ragging and harassment of women are strictly prohibited in the University campus and hostels.

13. Attendance

- 13.1** A student whose attendance is less than 75% in a semester is not eligible to appear for the end-semester examination for that semester. The details of all students who have less than 75% attendance in a course will be announced by the teacher in the class. These details will be sent to the concerned HODs and Director (Academic).
- 13.2** Those who have less than 75% attendance will be considered for condonation of shortage of attendance. However, a condonation of 10% in attendance will be given on medical

reasons. Application for condonation recommended by the Faculty Advisor, concerned faculty member and the HOD is to be submitted to the Director (Academic) who, depending on the merits of the case, may permit the student to appear for the end semester examination. A student will be eligible for this concession at most in two semesters during the entire degree programme. Application for medical leave, supported by medical certificate with endorsement by a Registered Medical Officer, should reach the HOD within seven days after returning from leave or, on or before the last instructional day of the semester, whichever is earlier.

- 13.3** As an incentive to those students who are involved in extra curricular activities such as representing the University in Sports and Games, Cultural Festivals, and Technical Festivals, NCC/ NSS events, a relaxation of up to 10% attendance will be given subject to the condition that these students take prior approval from the officer - in-charge. All such applications should be recommended by the concerned HOD and forwarded to Director (Academic) within seven instructional days after the programme / activity.

14. Assessment Procedure

- 14.1** The Academic Council will decide from time to time the system of tests and examinations in each subject in each semester.
- 14.2** For each theory course, the assessment will be done on a continuous basis as follows:

Test / Exam	Weightage	Duration of Test / Exam
First Periodical Test *	10%	2 Periods
Second Periodical Test *	10%	2 Periods
Model Exam	20%	3 hours
Seminar/Assignments/Quiz	10%	-
Attendance	10%	
End - semester examination	50%	3 Hours

*Best out of the two tests will be considered.

14.3 For practical courses, the assessment will be done by the subject teachers as below:

- (i) Weekly assignment/Observation note book / lab records - weightage 60%.
- (ii) End semester examination of 3 hours duration including viva - weightage 40%.

14.4 For courses on Physical Education, NSS, etc the assessment will be as satisfactory/not satisfactory only.

15. Make up Examination/Model Exam

15.1 Students who miss the end-semester examinations / model examination for valid reasons are eligible for make-up examination /model examination. Those who miss the end-semester examination / model examination should apply to the Head of the Department concerned within five days after he / she missed examination, giving reasons for absence.

15.2 Permission to appear for make-up examination / model examination will be given under exceptional circumstances such as admission to a hospital due to illness. Students should produce a medical certificate issued by a Registered Medical Practitioner certifying that he/she was admitted to hospital during the period of examination / model exam and the same should be duly endorsed by parent / guardian and also

by a medical officer of the University within 5 days.

16. Project evaluation

16.1 For Project work, the assessment will be done on a continuous basis as follows:

Review / Examination	Weightage
First Review	10%
Second Review	20%
Third Review	20%
End-semester Examination	50%

For end-semester examination, the student will submit a Project Report in a format specified by the Director (Academic). The first three reviews will be conducted by a Committee constituted by the Head of the Department. The end-semester examination will be conducted by a Committee constituted by the Registrar / Controller of examination. This will include an external expert.

17. Declaration of results

17.1 A candidate who secures not less than 50% of total marks prescribed for a course with a minimum of 50% of the marks prescribed for the end semester examination shall be declared to have passed the course and earned the specified credits for the course.

(ii) To be Eligible to appear for the end semester examinations for a particular course, a candidate will have to secure a minimum of 40% marks in the sessional for that course.

(iii) Candidates are required to obtain all credits assigned to the first two semesters of the programme within the first four semesters of the programme. Candidates failing to satisfy this

requirement will not be allowed to proceed to the fifth semester until the condition is satisfied. Further, candidates will not be allowed to proceed to seventh semester if they have not cleared all the courses assigned during third & fourth semesters.

- 17.2** After the valuation of the answer scripts, the tabulated results are to be scrutinized by the Result Passing Boards of UG programmes constituted by the Vice-Chancellor. The recommendations of the Result Passing Boards will be placed before the Standing Sub Committee of the Academic Council constituted by the Chancellor for scrutiny. The minutes of the Standing Sub Committee along with the results are to be placed before the Vice-Chancellor for approval. After getting the approval of the Vice-Chancellor, the results will be published by the Controller of Examination/ Registrar.
- 17.3** If a candidate fails to secure a pass in a course due to not satisfying the minimum requirement in the end-semester examination, he/she shall register and re-appear for the end-semester examination during the following semester. However, the sessional marks secured by the candidate will be retained for all such attempts.
- 17.4** If a candidate fails to secure a pass in a course due to insufficient sessional marks though meeting the minimum requirements of the end-semester examination, and wishes to improve on his/her sessional marks, he/she will have to register for the particular course and attend the course with permission of the

HOD concerned and Director(Academic) with a copy marked to the Registrar. The sessional and external marks obtained by the candidate in this case will replace the earlier result.

- 17.5** A candidate can apply for the revaluation of his/her end-semester examination answer paper in a theory course within 2 weeks from the declaration of the results, on payment of a prescribed fee through proper application to the Registrar/ Controller of Examinations through the Head of the Department. The Registrar/ Controller of Examination will arrange for the revaluation and the results will be intimated to the candidate concerned through the Head of the Department. Revaluation is not permitted for practical courses and for project work.
- 17.6** After ten semesters, the sessional marks of the candidate will not be considered for a pass in a course. A candidate who secures 50% in the end semester examination shall be declared to have passed the course and earned the specified credits for the course.
- 18. Grade Card**
- 18.1** After results are declared, grade sheet will be issued to each student which will contain the following details:
- (i) Program and branch for which the student has enrolled.
 - (ii) Semester of registration.
 - (iii) List of courses registered during the semester and the grade scored.
 - (iv) Semester Grade Point Average (GPA)
 - (v) Cumulative Grade Point Average (CGPA).

19. Class/Division

19.1 Classification is based on CGPA and is as follows:

CGPA \geq 8.0: **First Class with distinction**

6.5 \leq CGPA < 8.0 : **First Class**

5.0 \leq CGPA < 6.5 : **Second Class.**

- 19.2 (i) Further, the award of 'First class with distinction' is subject to the candidate becoming eligible for the award of the degree having passed the examination in all the courses in his/her first appearance within the minimum duration of the programme.
- (ii) The award of 'First Class' is further subject to the candidate becoming eligible for the award of the degree having passed the examination in all the courses **within 10 semesters.**
- (iii) The period of authorized discontinuation of the programme (vide clause 11.1) will not be counted for the purpose of the above classification.

20. Transfer of credits

20.1. Within the broad framework of these regulations, the Academic Council, based on the recommendation of the transfer of credits committee so consulted by the Chancellor may permit students to earn part of the credit requirement in other approved institutions of repute and status in the country or abroad.

20.2 The Academic Council may also approve admission of lateral entry (who hold a diploma in Engineering/ technology) candidates with advance credit based on the recommendation of the transfer of credits committee on a case to case basis.

21. Eligibility for the award of B.Tech. Degree

21.1. A student will be declared to be eligible for the award of the B.Tech. Degree if he/she has

- i) registered and successfully acquired the credits for the core courses;
- ii) successfully acquired the credits in the different categories as specified in the curriculum corresponding to the discipline (branch) of his/her study within the stipulated time;
- iii) has no dues to all sections of the Institute including Hostels, and
- iv) has no disciplinary action pending against him/her.

The award of the degree must be recommended by the Academic Council and approved by the Board of Management of the University.

22. Change of Branch

22.1 If the number of students in any branch of B.Tech. class as on the last instructional day of the First Semester is less than the sanctioned strength, then the vacancies in the said branches can be filled by transferring students from other branches. All such transfers will be allowed on the basis of merit of the students. The decision of the Chancellor shall be final while considering such requests.

22.2 All students who have successfully completed the first semester of the course will be eligible for consideration for change of branch subject to the availability of vacancies.

23. Power to modify

23.1. Notwithstanding all that has been stated above, the Academic Council shall modify any of the above regulations from time to time subject to approval by the Board of Management.

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DEPARTMENT OF INFORMATION TECHNOLOGY

SEMESTER I
(COMMON TO ALL BRANCHES)

Sl. No.	Course Code	Course Title	L	T	P	C	TCH
THEORY							
1.	EL 2101	Technical English	3	0	0	3	3
2.	MA 2101	Engineering Mathematics-I	3	1	0	4	4
3.	PH 2001/ CY 2001	Engineering Physics / Engineering Chemistry*	3	0	0	3	3
4.	ME 2101	Engineering Graphics	1	0	3	3	4
5.	CS 2101	Computer Programming	3	0	0	3	3
PRACTICAL							
6.	CS 2131	Computer Programming Laboratory	0	0	3	2	3
7.	GE 2131	Engineering Practices Laboratory-I	0	0	3	2	3
8.	EL 2131	Communication Skills Laboratory I	0	0	3	2	3
9.	PH 2031/ CY 2031	Physics Laboratory / Chemistry Laboratory*	1	0	3	3	4
		TOTAL				25	30

SEMESTER II

Sl. No.	Course Code	Course Title	L	T	P	C	TCH
THEORY							
1	CY2001/ PH 2001	Engineering Chemistry / Engineering Physics*	3	0	0	3	3
2	IT2201	Fundamentals of IT#	3	0	0	3	3
3	IT2202	Object Oriented Programming#	3	1	0	4	4
4	IT2203	Electron Devices and Circuits#	3	1	0	4	4
5	MA2201	Engineering Mathematics-II	3	1	0	4	4

Practical							
6	CY2031/ PH2031	Chemistry Laboratory/ Physics Laboratory*	1	0	3	3	4
7	EL 2231	Communication Skills Laboratory - II	2	0	2	3	4
8	GE2231	Engineering Practices Laboratory-II	0	0	3	2	3
9	IT2231	Object Oriented Programming Lab#	0	0	3	2	3
		TOTAL				28	32

* Depending upon the number of batches, it will be alternated between semesters 1 & 2

Information Technology Branch only

SEMESTER III

Sl. No.	Course Code	Course Title	L	T	P	C	TCH
THEORY							
1	IT2301	Data Structures	3	1	0	4	4
2	IT2302	Digital Principles and System Design	3	0	0	3	3
3	IT2303	Java Programming	3	1	0	4	4
4	IT2304	Computer Architecture and Microprocessor	3	1	0	4	4
5	IT2305	Principles of Communication	3	1	0	4	4
PRACTICAL							
6	IT2331	Data Structures Lab	0	0	3	2	3
7	IT2332	Digital Principles and System Design Lab	0	0	3	2	3
8	IT2333	Java Programming Lab	0	0	3	2	3
9	IT2334	Microprocessor and Microcontroller Lab	0	0	3	2	3
		TOTAL				27	31

SEMESTER IV

Sl. No.	Course Code	Course Title	L	T	P	C	TCH
THEORY							
1	IT2401	System Software	3	0	0	3	3
2	IT2402	C# and .Net Framework	3	1	0	4	4
3	IT2403	Operating Systems	3	0	0	3	3
4	IT2404	Software Engineering	3	0	0	3	3
5	IT2405	Design and Analysis of Algorithms	3	1	0	4	4
PRACTICAL							
6	IT2431	System Software Lab	0	0	3	2	3
7	IT2432	C# and .Net Framework Lab	0	0	3	2	3
8	IT2433	Operating System Lab	0	0	3	2	3
9	IT2434	Mini Project	0	0	3	2	3
		TOTAL				25	29

SEMESTER V

Sl. No.	Course Code	Course Title	L	T	P	C	TCH
THEORY							
1	IT2501	Free and Open Source Software	3	1	0	4	4
2	IT2502	Computer Networks	3	0	0	3	3
3	IT2503	Database Management Systems	3	1	0	4	4
4	IT2504	Telecommunication Systems	3	0	0	3	3
5	IT2505	Visual Programming	3	1	0	4	4
6	MG2001	Principles of Management*	3	0	0	3	3
PRACTICAL							
7	IT2531	Free and Open source software Lab	0	0	3	2	3
8	IT2532	Database Management Systems Lab	0	0	3	2	3
9	IT2533	Visual Programming Lab	0	0	3	2	3
		TOTAL				27	30

* Common to All Branches

SEMESTER VI

Sl. No.	Course Code	Course Title	L	T	P	C	TCH
THEORY							
1	IT2601	Network Programming and Management	3	1	0	4	4
2	IT2602	Web Technology	3	1	0	4	4
3	IT2603	Mobile Computing	3	0	0	3	3
4	IT2604	Cryptography and Network Security	3	0	0	3	3
5	IT2605	Information Storage Management	3	0	0	3	3
6	—	Elective - I	3	0	0	3	3
PRACTICAL							
7	IT2631	Networking Lab	0	0	3	2	3
8	IT2632	Web Technology Lab	0	0	3	2	3
9	EL2631	Communication Skills and Personality Development	1	0	1	1	2
		TOTAL				25	28

SEMESTER VII

Sl. No.	Course Code	Course Title	L	T	P	C	TCH
THEORY							
1	GE2711	Professional Ethics & Human Values*	3	0	0	3	3
2	IT2701	XML and Web Services	3	1	0	4	4
3	IT2702	Computer Graphics and Multimedia	3	1	0	4	4
4	IT2703	Object Oriented Analysis and Design	3	0	0	3	3
5	IT2704	Information Coding Techniques	3	0	0	3	3
6	—	Elective - II	3	0	0	3	3
PRACTICAL							
7	IT2731	XML and WEB Services Lab	0	0	3	2	3
8	IT2732	Computer Graphics and Multimedia Lab	0	0	3	2	3
9	IT2733	Case Tools Lab	0	0	3	2	3
		TOTAL				26	29

SEMESTER VIII

Sl. No.	Course Code	Course Title	L	T	P	C	TCH
THEORY							
1	MG2003	Entrepreneurship Development *	3	0	0	3	3
2	IT2801	Software Project Management	3	0	0	3	3
3	–	Elective - III	3	0	0	3	3
PRACTICAL							
4	IT2831	Project Work	0	0	24	6	24
TOTAL						15	33

Total Credits : 198

ELECTIVE - I

Sl. No.	Course Code	Course Title	L	T	P	C	TCH
1	IT2651	Software Quality Management	3	0	0	3	3
2	IT2652	Business Intelligence (BI) and its Application	3	0	0	3	3
3	IT2653	Software Testing	3	0	0	3	3
4	IT2654	Embedded Systems	3	0	0	3	3
5	IT2655	Organizational Behavior	3	0	0	3	3
6	MA2651	Operation Research	3	0	0	3	3
7	CY2002	Environmental Science and Engineering	3	0	0	3	3

ELECTIVE - II

Sl. No.	Course Code	Course Title	L	T	P	C	TCH
1	MG2002	Total Quality Management	3	0	0	3	3
2	IT2751	Data Warehousing and Data Mining	3	0	0	3	3
3	IT2752	Management Information System	3	0	0	3	3
4	IT2753	Image Processing	3	0	0	3	3
5	IT2754	High Performance Networks	3	0	0	3	3
6	IT2755	Cloud Computing	3	0	0	3	3
7	IT2756	Component Based Technology	3	0	0	3	3

ELECTIVE - III

Sl. No.	Course Code	Course Title	L	T	P	C	TCH
1	IT2851	E-Commerce Technology	3	0	0	3	3
2	IT2852	Enterprise Resource Planning	3	0	0	3	3
3	IT2853	Bio Informatics	3	0	0	3	3
4	IT2854	Human Computer Interface	3	0	0	3	3
5	IT2855	Building Enterprise Applications	3	0	0	3	3
6	IT2856	Soft Computing	3	0	0	3	3
7	IT2857	Strategic Management	3	0	0	3	3

SEMESTER I

EL 2101 TECHNICAL ENGLISH

L T P C
3 0 0 3

GOAL

The goal of the programme is to provide a theoretical input towards nurturing accomplished learners who can function effectively in the English language skills; to cultivate in them the ability to indulge in rational thinking, independent decision-making and lifelong learning; to help them become responsible members or leaders of the society in and around their workplace or living space; to communicate successfully at the individual or group level on engineering activities with the engineering community in particular, and on multi-disciplinary activities in general, with the world at large.

OBJECTIVES

- To widen the capacity of the learners to listen to English language at the basic level and understand its meaning.
- To enable learners to communicate in an intelligible English accent and pronunciation.
- To assist the learners in reading and grasping a passage in English.
- To learn the art of writing simple English with correct spelling, grammar and punctuation.
- To cultivate the ability of the learners to think and indulge in divergent and lateral thoughts.

OUTCOME

- The learners will have the self-confidence to improve upon their informative listening skills by an enhanced acquisition of the English language.
- The learners will be able to speak English at the formal and informal levels and use it for daily conversation, presentation, group discussion and debate.
- The learners will be able to read, comprehend and answer questions based on literary, scientific and technological texts.
- The learners will be able to write instructions, recommendations, checklists, process-description, letter-writing and report writing.
- The learners will have the confidence to develop thinking skills and participate in brainstorming, mind-mapping, audiovisual activities, creative thinking and also answer tests in the job-selection processes.

UNIT I LISTENING SKILL

9

Topics: Listening to the sounds, silent letters & stress in English words & sentences - Listening to conversation & telephonic conversation -- Listening for general meaning & specific information -- Listening for positive & negative comments - Listening to technical topics - Listening to prose & poetry reading -- Listening exercises.

Embedded language learning: Sentence definition -- Spelling & punctuation -- Imperative form - Sequencing of sentences -- Gerunds -- Infinitives -- 'Wh-'questions.

UNIT II SPEAKING SKILL**9**

Topics: Self-introduction - Expressing personal opinion - Dialogue - Conversation - Simple oral interaction -- Speaking on a topic -- Expressing views for & against -- Speaking on personal topics like hobbies, topics of interest, present & past experiences, future plans - Participating in group discussions, role plays, debates, presentations, power-point presentations & job-interviews.

Embedded language learning: Adverbs -Adjectives - Comparative and Numerical adjectives -- Nouns & compound nouns -- Prefixes and suffixes.

UNIT III READING SKILL**9**

Topics: Reading anecdotes, short stories, poems, parts of a novel, notices, message, time tables, advertisements, leaflets, itinerary, content page - Reading pie chart & bar chart -- Skimming and scanning -- Reading for contextual meaning - Scanning for specific information -- Reading newspaper & magazine articles - Critical reading -- Reading-comprehension exercises.

Embedded language learning: Tenses - Active and passive voice -- Impersonal passive -- Words and their function -- Different grammatical forms of the same word.

UNIT IV WRITING SKILL**9**

Topics: Writing emails, notes, messages, memos, notices, agendas, advertisements, leaflets, brochures, instructions, recommendations & checklists -- Writing paragraphs -- Comparisons & contrasts - Process description of Flow charts - Interpretation of Bar charts & Pie charts - Writing the minutes of a meeting -- Report writing -- Industrial accident reports -- Letter-writing -- Letter to the editors - Letter inviting & accepting or declining the invitation - Placing orders - Complaints -- Letter requesting permission for industrial visits or implant training, enclosing an introduction to the educational institution -- Letters of application for a job, enclosing a CV or Resume - Covering letter.

Embedded language learning: Correction of errors - Subject-verb Concord -- Articles - Prepositions - Direct and indirect speech.

UNIT V THINKING SKILL**9**

Topics: Eliciting & imparting the knowledge of English using thinking blocks - Developing thinking skills along with critical interpretation side by side with the acquisition of English -- Decoding diagrams & pictorial representations into English words, expressions, idioms and proverbs.

Embedded language learning: General vocabulary -- Using expressions of cause and effect -- Comparison & contrast -- If-conditionals -- Expressions of purpose and means.

TOTAL : 45**REFERENCES**

1. Norman Whitby. Business Benchmark: Pre-Intermediate to Intermediate - BEC Preliminary. New Delhi: Cambridge University Press, 2008 (Latest South Asian edition).
2. Norman Whitby. Business Benchmark: Pre-Intermediate to Intermediate - Preliminary-Personal Study Book. New Delhi: Cambridge University Press, 2008 (Latest South Asian edition).

3. Cambridge BEC Preliminary: Self-study Edition - Practice Tests. New Delhi: Cambridge University Press, 2008 or latest South Asian edition.
4. Devaki Reddy & Shreesh Chaudhary. Technical English. New Delhi: Macmillan, 2009.
5. Rutherford, Andrea J. Basic Communication Skills for Technology. 2nd edition. New Delhi: Pearson Education, 2006.

MA 2101 ENGINEERING MATHEMATICS - I

L T P C
3 1 0 4

GOAL

To create the awareness and comprehensive knowledge in engineering mathematics.

OBJECTIVES

The course should enable the students to:

- Find the inverse of the matrix by using Cayley Hamilton Theorem and Diagonalisation of matrix using transformation.
- Understand the Evolutes and Envelope of the curve.
- Learn the solutions of second order linear differential equations of standard types and Legendre's linear differential equation.
- Learn partial differentiations involving two and three variables and expansions of functions using Taylor series.
- Learn the expansions of trigonometric, hyperbolic functions and their relations.

OUTCOME

The students should be able to:

- Identify Eigen value problems from practical areas and obtain its solutions and using transformation diagonalising the matrix which would render Eigen values.
- Find out effectively the geometrical aspects of curvature and appreciates mathematical skills in constructing evolutes and envelopes in mechanics and engineering drawing.
- Recognize and model mathematically and solving, the differential equations arising in science and engineering.
- Solve and model the practical problems and solve it using maxima and minima as elegant applications of partial differentiation.
- Acquire skills in using trigonometric and hyperbolic and inverse hyperbolic functions.

UNIT I MATRICES

12

Review: Basic concepts of matrices-addition, subtraction, multiplication of matrices - adjoint -inverse - solving cubic equations. Characteristic equation - Properties of Eigen values - Eigen values and Eigen vectors - Cayley Hamilton theorem (without proof) - Verification and inverse using Cayley

Hamilton theorem. Diagonalisation of matrices - Orthogonal matrices - Quadratic form - Reduction of symmetric matrices to a Canonical form using orthogonal transformation - Nature of quadratic form.

UNIT II DIFFERENTIAL CALCULUS 12

Review: Basic concepts of differentiation - function of function, product and quotient rules.

Methods of differentiation of functions - Cartesian form - Parametric form - Curvature - Radius of curvature - Centre of curvature - Circle of curvature. Evolutes of parabola, circle, ellipse, hyperbola and cycloid - Envelope.

UNIT III ORDINARY DIFFERENTIAL EQUATIONS 12

Review: Definition, formation and solutions of differential equations.

Second order differential equations with constant coefficients - Particular integrals - $e^{ax}\cos^{bx}$, $e^{ax}\sin^{bx}$. Euler's homogeneous linear differential equations - Legendre's linear differential equation - Variation of parameters.

UNIT IV PARTIAL DIFFERENTIATION 12

Partial differentiation - differentiation involving two and three variables - Total differentiation - Simple problems. Jacobian - verification of properties of Jacobians - Simple problems. Taylor's series - Maxima and minima of functions of two and three variables.

UNIT V TRIGONOMETRY 12

Review: Basic results in trigonometry and complex numbers - De Moivre's theorem.

Expansions of $\sin \theta$, $\cos \theta$, $\tan \theta$ where n is a positive integer. Expansions of $\sin \theta$ and $\cos \theta$ of multiples of θ where m and n are positive integers. Hyperbolic and inverse hyperbolic functions - Logarithms of complex numbers - Separation of complex functions into real and imaginary parts - Simple problems.

Note: Questions need not be asked from review part.

TOTAL: 60

TEXT BOOKS

1. Erwin Kreyzig, A Text book of Engineering Mathematics, John Wiley, 1999.
2. Grewal B.S, Higher Engineering Mathematics, Thirty Eighth Editions, Khanna Publisher, Delhi, 2004.
3. Chandrasekaran A, A Text book of Engineering Mathematics I, Dhanam Publications, Chennai, 2010.

REFERENCES

1. Venkataraman M.K, Engineering Mathematics, Volume I, The National Publishing Company, Chennai, 1985.

2. Kandaswamy P, Thilagavathy K and Gunavath K, Engineering Mathematics, Volume I & II, S.Chand and Company, New Delhi, 2005.
3. Bali N.P, Narayana Iyengar. N.Ch., Engineering Mathematics, Laxmi Publications Pvt. Ltd, New Delhi, 2003.
4. Veerarajan T, Engineering Mathematics (for first year), Fourth Edition, Tata McGraw - Hill Publishing Company Limited, New Delhi, 2005.

PH2001 ENGINEERING PHYSICS

L T P C
3 0 0 3

GOAL

To impart fundamental knowledge in various fields of Physics and its applications.

OBJECTIVES

The course should enable the students to:

- Develop strong fundamentals of properties and behavior of the materials
- Enhance theoretical and modern technological aspects in acoustics and ultrasonics.
- Enable the students to correlate the theoretical principles with application oriented study of optics.
- Provide a strong foundation in the understanding of solids and materials testing.
- Enrich the knowledge of students in modern engineering materials.

OUTCOME

The students should be able to:

- Apply the properties and behaviour of materials.
- Have a fundamental knowledge of acoustics which would facilitate in acoustical design of buildings and on ultrasonics and be able to employ it as an engineering tool.
- Use application of lasers and fiber optics.
- Develop the fundamentals of crystal physics and non destructive testing methods.
- Implement production, use characteristics and application of the new engineering materials. This would aid them in the material selection stage.

UNIT I PROPERTIES OF MATTER

9

Elasticity - types of moduli of elasticity - Stress-Strain diagram - Young's modulus of elasticity - Rigidity modulus - Bulk modulus - Factors affecting elasticity - twisting couple on a wire - Torsional pendulum - determination of rigidity modulus of a wire - depression of a cantilever - Young's modulus by cantilever - uniform and non-uniform bending - viscosity - Ostwald's viscometer - comparison of viscosities.

UNIT II ACOUSTICS AND ULTRASONICS

9

Classification of sound - characteristics of musical sound - intensity - loudness - Weber Fechner law - Decibel - Reverberation - Reverberation time, derivation of Sabine's formula for reverberation time (Jaeger's method) - absorption coefficient and its determination - factors affecting acoustics of building (Optimum reverberation time, loudness, focusing, echo, echelon effect, resonance and noise) and their remedies. Ultrasonics - production - Magnetostriction and Piezoelectric methods - properties - applications of ultrasonics with particular reference to detection of flaws in metal (Non - Destructive testing NDT) - SONAR.

UNIT III LASER AND FIBRE OPTICS

9

Principle of lasers - Stimulated absorption - Spontaneous emission, stimulated emission - population inversion - pumping action - active medium - laser characteristics - Nd-Yag laser - CO₂ laser - Semiconductor laser - applications - optical fiber - principle and propagation of light in optical fibers - Numerical aperture and acceptance angle - types of optical fibers - single and multimode, step index and graded index fibers - applications - fiber optic communication system.

UNIT IV CRYSTAL PHYSICS AND NON-DESTRUCTIVE TESTING

9

Crystal Physics: Lattice - Unit cell - Bravais lattice - Lattice planes - Miller indices - 'd' spacing in cubic lattice - Calculation of number of atoms per unit cell - Atomic radius - coordination number - Packing factor for SC, BCC, FCC and HCP structures. Non Destructive Testing: Liquid penetrate method - Ultrasonic flaw detection - ultrasonic flaw detector (block diagram) - X-ray Radiography - Merits and Demerits of each method.

UNIT V MODERN ENGINEERING MATERIALS AND SUPERCONDUCTING MATERIALS

9

Modern Engineering Materials: Metallic glasses: Preparation properties and applications. Shape memory alloys (SMA): Characteristics, applications, advantages and disadvantages of SMA. Nano Materials: Synthesis - Properties and applications. Superconducting Materials: Superconducting phenomena - Properties of superconductors - Meissner effect - Type I and Type II superconductors - High T_c superconductors (qualitative) - uses of superconductors.

TOTAL : 45

TEXT BOOKS

1. Gaur R.K. and Gupta S.L., Engineering Physics , 8th edition, Dhanpat rai publications (P) Ltd., New Delhi 2010.
2. P.Mani, Engineering Physics, Vol-I, Dhanam Publications, Chennai 2011.
3. Rajendran V. an Marikani A., Applied Physics for engineers , 3rd edition, Tata Mc Graw -Hill publishing company Ltd., New Delhi,2003.

REFERENCES

1. Uma Mukherji, Engineering Physics, Narosa publishing house, New Delhi, 2003.
2. Arumugam M., Engineering Physics, Anuradha agencies, 2007.

3. Palanisamy P.K., Engineering Physics, SciTech Publications, Chennai 2007.
4. Arthur Beiser, Concepts of Modern Physics, Tata Mc Graw -Hill Publications, 2007.
5. P.Charles, Poople and Frank J. Owens, Introduction to Nanotechnology, Wiley India, 2007.

CY2001 ENGINEERING CHEMISTRY

L T P C
3 0 0 3

GOAL

To impart basic principles of chemistry for engineers.

OBJECTIVES

The course should enable the students to:

- Make the students conversant with the basics of Water technology and Polymer science.
- Provide knowledge on the requirements and properties of a few important engineering materials.
- Educate the students on the fundamentals of corrosion and its control.
- Give a sound knowledge on the basics of a few significant terminologies and concepts in thermodynamics.
- Create an awareness among the present generation about the various conventional energy sources.

OUTCOME

The students should be able to:

- Gain basic knowledge in water analysis and suitable water treatment method. The study of polymer chemistry will give an idea on the type of polymers to be used in engineering applications.
- Gain on the common engineering materials that will create awareness among the students to search for new materials.
- Gain knowledge on the effects of corrosion and protection methods will help the young minds to choose proper metal / alloys and also to create a design that has good corrosion control.
- Exposure on the important aspects of basic thermodynamics will be able to understand the advanced level thermodynamics in engineering applications.
- Get the various aspects of energy sources will create awareness on the need to utilize the fuel sources effectively and also for exploring new alternate energy resources.

UNIT I WATER TECHNOLOGY AND POLYMER CHEMISTRY

9

Hardness (Definition, Types, Units) - problems - Estimation of Hardness (EDTA Method) - Water softening - Carbonate conditioning and Calgon conditioning - Demineralization (Ion-Exchange Method) - Water Quality Parameters - Municipal Water Treatment- Desalination - Reverse Osmosis.

Classification of Polymers - PVC, Bakelite - preparation, properties and applications - Effect of

Polymer Structure on Properties - Compounding of Plastics- Polymer Blends and Polymer Alloys - Definition, Examples.

UNIT II ENGINEERING MATERIALS

9

Properties of Alloys - Heat Treatment of Steel - Polymer Composites - types and applications.- Lubricants - Classification, properties and applications - Mechanism of Lubrication - MoS₂ And Graphite - Adhesives - classification and properties - Epoxy resin (Preparation, properties and applications) - Refractories - Classification, Properties and General Manufacture - Abrasives - Classification, Properties and Uses - Carbon nano tubes - preparation, properties and applications.

UNIT III ELECTROCHEMISTRY AND CORROSION

9

Conductometric Titration - HCl vs NaOH and mixture of acids vs NaOH - Electrochemical Series and its applications - Nernst Equation - problems - Polarization, Decomposition Potential, Over-voltage (definitions only) - Galvanic series - Corrosion (Definition, Examples, effects) - Mechanism of Dry Corrosion and Wet Corrosion - Differential aeration Corrosion , examples - Factors Influencing Corrosion - Metal and Environment - Corrosion Control - Design -Cathodic Protection methods - Protective Coatings - Galvanising - Anodising - Electroplating (Cu and Ni) and Electroless plating (Cu and Ni) - Constituents of Paints and varnish.

UNIT IV CHEMICAL THERMODYNAMICS

9

Thermodynamic terminology- First Law of Thermodynamics-Internal energy- enthalpy - heat capacity - work done in isothermal expansion of an ideal gas -problems - second law of thermodynamics - entropy change - phase transformations and entropy change - problems - Work Function & Free Energy Function- Maxwell's Relations-Gibbs Helmholtz equation- van't Hoff Isotherm- van't Hoff Isochore - Problems.

UNIT V FUELS AND ENERGY SOURCES

9

Fuels - classification - Calorific Value - Dulong's Formula - Problems - Determination of Calorific Value by Bomb Calorimeter - Coal - Proximate Analysis - problems - Octane Number - Cetane Number - Diesel Index (Definitions only) - Bio Gas - Producer Gas -Water Gas - Preparation, Properties and Uses - Batteries - Primary Cells - Leclanche Cell -Secondary Cell - Nickel Cadmium Battery - Fuel Cells - Hydrogen -Oxygen Fuel Cell - Solar Battery - Lead Acid Storage Cell - Nuclear Energy - Light water nuclear power plant.

TOTAL: 45

TEXT BOOKS

1. S. S. Dara, Text Book of Engineering Chemistry, S. Chand & Company Ltd., New Delhi, 2003
2. Murthy, Agarwal & Naidu, Text Book of Engineering Chemistry, BSP, 2003.
3. S.Sumathi, Engineering Chemistry, Dhanam Publications, 2008.
4. S.Sumathi and P.S.Raghavan, Engineering Chemistry II, Dhanam Publications, 2008.

REFERENCES

1. B. K. Sharma, Engineering chemistry, Krishna Prakasam Media (P) Ltd., 2003

2. A.Vogel, A text book of Qualitative Inorganic Analysis, ELBS, London, 2004
3. A.Gowarikar, Text Book of Polymer Science, 2002
4. Kuriacose & Rajaram, Vols. 1 & 2, Chemistry in Engineering and Technology, 2004
5. Puri, Sharma and Pathania, Principles of Physical Chemistry, Vishal Publishing Co. Jalandar, 2004.

ME 2101 ENGINEERING GRAPHICS

L T P C
1 0 3 4

GOAL

To develop graphical skills for communicating concepts, ideas and designs of engineering products and to give exposure to national standards relating to technical drawings.

OBJECTIVES

The course should enable the students to:

- Get introduced to the drawing standards and use of drawing instruments.
- Get introduced to the first angle projection.
- Practice engineering hand sketching and introduce to computer aided drafting
- Familiarize the students with different type of projections.
- Get introduced to the process of design from sketching to parametric 3D CAD and 2D orthographic drawings to BIS

OUTCOME

The students should be able to:

- Develop Parametric design and the conventions of formal engineering drawing
- Produce and interpret 2D & 3D drawings
- Communicate a design idea/concept graphically
- Examine a design critically and with understanding of CAD - The student learn to interpret drawings, and to produce designs using a combination of 2D and 3D software.
- Get a detailed study of an engineering artifact

Note: Only first angle projection is to be followed

BASICS OF ENGINEERING GRAPHICS

12

Importance of graphics Use of drawing instruments - BIS conventions and specifications - drawing sheet sizes, layout and folding - lettering - Dimensioning - Geometrical constructions - Scales. Construction of curves like ellipse, parabola, cycloids and involutes.

UNIT I PROJECTION OF POINTS, LINES AND SURFACES 15

General principles of presentation of technical drawings as per BIS - Introduction to Orthographic projection - Naming views as per BIS - First angle projection. Projection of points. Projection of straight lines located in first quadrant (using rotating line method only). Projection of plane surfaces like polygonal lamina and circular lamina. Drawing views when the surface of the lamina is inclined to one reference plane.

UNIT II PROJECTION OF SOLIDS 10

Projections of simple solids like prism, pyramid, cylinder and cone - Drawing views when the axis of the solid is inclined to one reference plane.

UNIT III DEVELOPMENT OF SURFACES 10

Introduction to sectioning of solids. Development of lateral surfaces of truncated prisms, pyramids, cylinders and cones.

UNIT IV ORTHOGRAPHIC PROJECTIONS 10

Orthographic projections - Conversion of orthographic views from given pictorial views of objects, including dimensioning. Free hand sketching of Orthographic views from Pictorial views.

UNIT V PICTORIAL PROJECTIONS 10

Isometric projection - Isometric scale - Isometric views of simple solids like prisms, pyramids, cylinders and cones. Introduction to perspective Projections.

COMPUTER AIDED DRAFTING (Demonstration Only) 3

Introduction to computer aided drafting and dimensioning using appropriate software. 2D drawing commands Zoom, Picture editing commands, Dimensioning, Isometric drawing, Iso-Planes and 3D drafting. Plotting of drawing. Practice includes drawing the projection of lines and solids. Prepare isometric view of simple solids like prisms, pyramids, cylinders and cones.

TOTAL : 60

TEXT BOOKS

1. Jeyapovan T, Engineering Drawing and Graphics Using AutoCAD, Vikas Publishing House Pvt. Ltd., New Delhi, 2010.
2. Warren J. Luzadder and Jon. M.Duff, Fundamentals of Engineering Drawing, Prentice Hall of India Pvt. Ltd., Eleventh Edition, 2003.

REFERENCES

1. Bhatt N.D and Panchal V.M, Engineering Drawing: Plane and Solid Geometry, Charotar Publishing House, Anand-3001, 2007.
2. Thomas E. French, Charles J.Vierck and Robert J.Foster, Engineering Drawing and Graphic Technology, McGraw- Hill Book company 13th Edition.1987.
3. Venugopal K., Engineering Graphics, New Age International (P) Limited, New Delhi, 2008.

CS2101 COMPUTER PROGRAMMING

L T P C
3 0 0 3

GOAL

To introduce computers and programming and to produce an awareness of the power of computational techniques those are currently used by engineers and scientists and to develop programming skills to a level such that problems of reasonable complexity can be tackled successfully.

OBJECTIVES

The course should enable the students to:

- Learn the major components of a computer system.
- Learn the problem solving techniques.
- Develop skills in programming using C language.

OUTCOME

The student should be able to:

- Understand the interaction between different components of computer system and number system.
- Devise computational strategies for developing applications.
- Develop applications (Simple to Complex) using C programming language.

UNIT I COMPUTER FUNDAMENTALS 9

Introduction - Evolution of Computers - Generations of Computer - Classification of Computers - Application of Computers - Components of a Computer System - Hardware - Software - Starting a Computer (Booting) - Number Systems.

UNIT II COMPUTER PROGRAMMING AND LANGUAGES 9

Introduction - Problem-Solving Techniques: Algorithms, Flowchart, Pseudocode - Program Control Structures - Programming Paradigms - Programming languages - Generations of Programming Languages - Language Translators - Features of a Good Programming Languages.

UNIT III PROGRAMMING WITH C 9

Introduction to C - The C Declaration - Operators and Expressions - Input and Output in C - Decision Statements - Loop Control Statements.

UNIT IV FUNCTIONS, ARRAYS AND STRINGS 9

Functions - Storage Class - Arrays - Working with strings and standard functions.

UNIT V POINTERS, STRUCTURES AND UNION 9

Pointers - Dynamic Memory allocation - Structure and Union - Files.

TOTAL : 45

TEXT BOOK

1. ITL Education Solution Limited, Ashok Kamthane, Computer Programming, Pearson Education Inc 2007 (Unit: I to V).

REFERNCES

1. Byron S. Gottfried, Programming with C, Second Edition, Tata McGraw Hill 2006.
2. Yashvant Kanetkar, Let us C, Eighth edition, BPP publication 2007.
3. Stephen G.Kochan, Programming in C - A Complete introduction to the C programming language, Pearson Education, 2008.
4. T.Jeya Poovan, Computer Programming Theory and Practice, Vikas Pub, New Delhi.

CS2131 COMPUTER PROGRAMMING LABORATORY

L T P C
0 0 3 2

GOAL

To provide an awareness to develop the programming skills using computer languages.

OBJECTIVES

The course should enable the students to:

- Gain knowledge about Microsoft office.
- Learn a programming concepts in C.
- Grasp the concepts of Spread Sheet.

OUTCOME

The students should be able to :

- Use MS Word to create document, table, text formatting and Mail merge options.
- Write and execute the C programs for small applications.
- Use Spread Sheet for small calculations using formula editor, creating different types of charts and including pictures etc,

LIST OF EXPERIMENTS:

a) Word Processing

1. Document creation, Text manipulation with Scientific notations.
2. Table creation, Table formatting and Conversion.
3. Mail merge and Letter preparation.
4. Drawing - flow Chart

b) Spread Sheet

9

5. Chart - Line, XY, Bar and Pie.
6. Formula - formula editor.
7. Spread sheet - inclusion of object, Picture and graphics, protecting the document

c) Programming in C

24

8. To write a C program to prepare the electricity bill.
9. Functions:
 - (a) Call by value
 - (b) Call by reference.
10. To write a C program to print the Fibonacci series for the given number.
11. To write a C program to find the factorial of number using recursion.
12. To write a C program to implement the basic arithmetic operations using Switch Case statement.
13. To write a C program to check whether the given number is an Armstrong number.
14. To write a C program to check whether the given string is a Palindrome.
15. To write a C program to create students details using Structures.
16. To write a C program to demonstrate the Command Line Arguments.
17. To write a C program to implement the Random Access in Files.
18. To write C programs to solve some of the Engineering applications

HARDWARE/SOFTWARE REQUIRED FOR BATCH OF 30 STUDENTS

HARDWARE

LAN system with 33 nodes (OR) Standalone PCs - 33 Nos

Printers - 3 Nos

SOFTWARE

OS - Windows / UNIX

Application package - MS office

Software - C language

PRACTICAL : 45

GE 2131 ENGINEERING PRACTICES LABORATORY I
(common to all branches)

L T P C
0 0 3 2

GOAL

To provide the students with hands on experience on various basic engineering practices in Civil and Mechanical Engineering.

OBJECTIVES

The course should enable the students to

- Relate theory and practice of basic Civil and Mechanical Engineering
- Learn concepts of welding and machining practice
- Learn concepts of plumbing and carpentry practice

OUTCOME

The students should be able to

- Identify and use of tools, Types of joints used in welding, carpentry and plumbing operations.
- Have hands on experience on basic fabrication techniques such as carpentry and plumbing practices.
- Have hands on experience on basic fabrication techniques of different types of welding and basic machining practices.

LIST OF EXPERIMENTS

I. MECHANICAL ENGINEERING PRACTICE

24

1. Welding
Arc welding: Butt joints, Tee and lap joints.
2. Basic Machining
Facing, turning, threading and drilling practices using lathe and drilling operation with vertical drilling machine.
3. Machine assembly practice
Study of centrifugal pump
4. Study on
 - a. Smithy operations - Productions of hexagonal headed bolt.
 - b. Foundry operations - Mould preparation for gear and step cone pulley.

II. CIVIL ENGINEERING

21

1. Basic pipe connection using valves, couplings, unions, reducers, elbows in household fitting.

2. Practice in mixed pipe connections: Metal, plastic and flexible pipes used in household appliances.
3. Wood work: Sawing, Planning and making common joints.
4. Study of joints in door panels, wooden furniture.

List of equipment and components

(For a Batch of 30 Students)

CIVIL

1. Assorted components for plumbing consisting of metallic pipes, plastic pipes, flexible pipes, couplings, unions, elbows, plugs and other fittings. 15 Sets.
2. Carpentry vice (fitted to work bench) 15 Nos.
3. Standard woodworking tools 15 Sets.
4. Models of industrial trusses, door joints, furniture joints 5 each
5. Power Tools:
 - (a) Rotary Hammer 2 Nos
 - (b) Demolition Hammer 2 Nos
 - (c) Circular Saw 2 Nos
 - (d) Planer 2 Nos
 - (e) Hand Drilling Machine 2 Nos
 - (f) Jigsaw 2 Nos

MECHANICAL

1. Arc welding transformer with cables and holders 5 Nos.
2. Welding booth with exhaust facility 5 Nos.
3. Welding accessories like welding shield, chipping hammer, wire brush, etc. 5 Sets.
4. Oxygen and acetylene gas cylinders, blow pipe and other welding outfit. 2 Nos.
5. Centre lathe 2 Nos.
6. Hearth furnace, anvil and smithy tools 2 Sets.
7. Moulding table, foundry tools 2 Sets.
8. Power Tool: Angle Grinder 2 Nos
9. Study-purpose items: centrifugal pump, air-conditioner One each.

TEXT BOOK

1. T. Jeyapoovan, M.Saravanapandian and S. Pranitha, Engineering Practices Lab Manual, 3rd Edition 2006, Vikas Publishing house (P) Ltd., New Delhi.

EL2131 COMMUNICATION SKILLS LABORATORY I

L T P C
0 0 3 2

GOAL

The goal of the programme is to provide a practical input towards nurturing accomplished learners who can function effectively in the English language skills.

OBJECTIVES

The course should enable the students to:

- Extend the ability of the learners to be able to listen to English and comprehend its message.
- Enable the learners to have a functional knowledge of spoken English.
- Assist the learners to read and grasp the meaning of technical and non-technical passages in English.
- Help the learners develop the art of writing without mistakes.
- Expand the thinking capability of the learners so that they would learn how to view things from a different angle.

OUTCOME

The students should be able to:

- Listen to and evaluate English without difficulty and comprehend its message.
- Develop a functional knowledge of spoken English so as to use it in the institution and at job interviews.
- Read and comprehend the meaning of technical and non-technical passages in English.
- Develop the art of writing so as to put down their thoughts and feelings in words.
- Think independently and contribute creative ideas.

UNIT I LISTENING SKILL

9

Topics: Listening to conversations and interviews of famous personalities in various fields -- Listening practice related to the TV-- Talk shows - News - Educative programmes -- Watching films for critical comments - Listening for specific information - Listening for summarizing information - Listening to monologues for taking notes - Listening to answer multiple-choice questions.

UNIT II SPEAKING SKILL

9

Topics: Self-introduction -- Group discussion - Persuading and negotiating strategies - Practice in dialogues -- Presentations based on short stories / poems -- Speaking on personal thoughts and feelings -- academic topics - News reading - Acting as a compere -- Speaking about case studies on problems and solutions - Extempore speeches.

UNIT III READING SKILL

9

Topics: Reading anecdotes to predict the content - Reading for interpretation -- Suggested reading -

- Short stories and poems -- Critical reading - Reading for information transfer - Reading newspaper and magazine articles for critical commentary - Reading brochures, advertisements, pamphlets for improved presentation.

UNIT IV WRITING SKILL

9

Topics: At the beginning of the semester, the students will be informed of a mini dissertation of 1000 words they need to submit individually on any non-technical topic of their choice. The parts of the dissertation will be the assignments carried out during the semester and submitted towards the end of the semester on a date specified by the department. This can be judged as part of the internal assessment.

UNIT V THINKING SKILL

9

Topics: Practice in preparing thinking blocks to decode diagrammatical representations into English words, expressions, idioms and proverbs - Inculcating interest in English using thinking blocks. Making pictures and improvising diagrams to form English words, phrases and proverbs -- Picture reading.

PRACTICAL : 45

REFERENCES

1. Raman, Meenakshi, and Sangeetha Sharma. Technical Communication: English Skills for Engineers. 2nd edition. New Delhi: Oxford University Press, 2010.
2. Riordian, Daniel. Technical Communication. New Delhi. Cengage Learning, 2009

Websites for learning English

1. British: Learn English - British Council (Listen & Watch) - <<http://learnenglish.britishcouncil.org/>>
2. American: Randall's ESL Cyber Listening Lab - <<http://www.esl-lab.com/>>
3. Intercultural: English Listening Lesson Library Online <http://www.elllo.org/>

Equipments required

1. Career Lab:1 room
2. 2 Computers as a Server for Labs (with High Configuration)
3. LCD Projectors - 4 Nos
4. Headphones with Mic (i-ball) - 100 Nos
5. Speakers with Amplifiers, Wireless Mic and Collar Mic - 2 Sets
6. Teacher table, Teacher Chair - 1 + 1
7. Plastic Chairs - 75 Nos

PH 2031 PHYSICS LABORATORY

L T P C
1 0 3 3

OBJECTIVE

To expose the students for practical training through experiments to understand and appreciate the concepts learnt in Physics

OUTCOME

Performing the experiments related to the subject will help the students to apply the practical knowledge in industrial applications and for developing or modifying methods

S.No.	List of Experiments	Batch 2 (30)			Batch 1 (30)		
		Week	Periods allotted		Week	Periods allotted	
			L	P		L	P
1	Torsional Pendulum - Determination of rigidity modulus of the material of a wire.	1	1	3	2	1	3
2	Non Uniform Bending - Determination of Young's Modulus.	3	1	3	4	1	3
3	Viscosity -Determination of co-efficient of Viscosity of a liquid by Poiseuille's flow.	5	1	3	6	1	3
4	Lee's Disc - Determination of thermal conductivity of a bad conductor.	7	1	3	8	1	3
5	Air Wedge - Determination of thickness of a thin wire.	9	1	3	10	1	3
6	Spectrometer - Refractive index of a prism.	11	1	3	12	1	3
7	Semiconductor laser - Determination of wavelength of Laser using Grating.	13	1	3	14	1	3
	TOTAL	7	2	1	7	2	1
56 Periods							

LIST OF EQUIPMENTS REQUIRED FOR A BATCH OF 30 STUDENTS

1	Torsional Pendulum	(500 gm, wt, 60 cm wire Al-Ni Alloy)	5 nos.
2	Travelling Microscope	(X10)	15 nos.
3	Capillary tube	(length 10cm, dia 0.05mm)	5 nos.
4	Magnifying lens	(X 10)	15 nos.
5	Lee's disc apparatus	(std form)	5 nos.
6	Stop watch	(+/- 1 s)	5 nos.
7	Meter scale	1m length	5 nos.
8	Spectrometer	(main scale 360 deg, ver 30")	5 nos.
9	Grating	(2500 LPI)	5 nos.
10	Laser	(632.8 nm)	5 nos.
11	Semi transparent glass plate Al coating, 65 nm thickness,	50% visibility	5 nos.
12	Equilateral prism	(n = 1.54)	5 nos.
13	Thermometer	+/- 1 deg	8 nos.
14	Screw gauge	(+/- 0.001cm)	12 nos.
15	Vernier caliper	(+/- 0.01 cm)	8 nos.
16	Steam Boiler	1 L	5 nos.
17	Scale	50 cms	5 nos.
18	Cylindrical mass	100 gms	10 sets
19	Slotted wt	300 gms	5 sets
20	Heater	1.5 KW	5 nos.
21	Transformer sodium vapour lamp 1 KW	10 nos.	
22	Sodium vapour lamp	700 W	5 nos
23	Burette	50 mL	5 nos
24	Beaker	250 mL	5 nos
25	Spirit level		10 nos

REFERENCES

1. P.Mani, Engineering Physics Practicals, Dhanam Publications, 2011.

CY 2031 CHEMISTRY LABORATORY

L T P C
1 0 3 3

OBJECTIVE

To expose the students for practical training through experiments to understand and appreciate the concepts learnt in Chemistry.

OUTCOME

Performing the experiments related to the subject will help the students to apply the practical knowledge in industrial applications and for developing or modifying methods

S.No.	List of Experiments (Any Five)	Batch 2 (30)			Batch 1 (30)		
		Week	Periods allotted		Week	Periods allotted	
			L	P		L	P
1	Estimation of Commercial soda by acid-base titration	1	1	3	2	1	3
2	Determination of Percentage of nickel in an alloy	3		3	4		3
3	Determination of Temporary, permanent and total hardness of water by EDTA method	5	1	3	6	1	3
4	Determination of Chloride content in a water sample	7		3	8		3
5	Potentiometric Estimation of iron	9	1	3	10	1	3
6	Conductometric Titration of a strong acid with a strong base	11	1	3	12	1	3
7	Conductometric Titration of mixture of acids.	13	1	3	14	1	3
8	Determination of Degree of polymerization of a polymer by Viscometry	15	1	3	16	1	3
TOTAL			6	24		6	24
60 Periods							

List of Glassware and Equipments required for a batch of 30 students

1	Burette	(50 mL)	30 nos.
2	Pipette	(20 mL)	30 nos.
3	Conical Flask	(250 mL)	30 nos.
4	Distilled water bottle	(1 L)	30 nos.
5	Standard flask	(100 mL)	30 nos.
6	Funnel	(small)	30 nos.
7	Glass rod	20 cm length	30 nos.
8	Reagent Bottle	(250 mL)	30 nos.
9	Reagent Bottle	(60 mL)	30 nos.
10	Beaker	(100 mL)	30 nos.
11	Oswald Viscometer	Glass	30 nos.
12	Measuring Cylinder	(25 mL)	30 nos.
13	Digital Conductivity Meter	PICO make	8 nos.
14	Conductivity cell	(K=1)	12 nos.
15	Digital Potentiometer	PICO make	8 nos.
16	Calomel Electrode	Glass	12 nos.
17	Platinum Electrode	Polypropylene	12 nos.
18	Burette Stands	Wooden	30 nos.
19	Pipette stands	Wooden	30 nos.
20	Retard stands	Metal	30 nos.
21	Porcelain Tiles	White	30 nos.
22	Clamps with Boss heads	Metal	30 nos.

REFERENCES

1. J.Mendham, R.C. Denney, J.D. Barnes and N.J.K. Thomas, Vogel's Textbook of Quantative Chemical Analysis, 6th Edition, Pearson Education, 2004.
2. C. W. Garland, J. W. Nibler, D. P. Shoemaker, ;"Experiments in Physical Chemistry, 8th ed.," McGraw-Hill, New York, 2009.
3. S. Sumathi, Engineering Chemistry Practicals, Dhanam Publications, 2011.

SEMESTER-II

IT2201 FUNDAMENTALS OF INFORMATION TECHNOLOGY

L	T	P	C
3	0	0	3

GOAL

To aim of the course is to provide the fundamental information about the field of Information Technology.

OBJECTIVES

The course should enable the students to:

- Gain knowledge of solving problems using computers
- Learn the overview of the discipline of IT
- Learn about data and information
- Understand relationship between IT and other computer disciplines
- Gain knowledge of elements of a feasible IT application

OUTCOME

The students should be able to:

- Apply knowledge about problem solving in computers
- Develop the components of IT systems and their interrelationships
- Differentiate between data and information and describe their interrelationships
- Identify the relationship between IT and other computing disciplines
- Design the elements of a feasible IT application

UNIT I INTRODUCTION TO PROBLEM SOLVING AND PROGRAMMING 9

Creative thinking and problem solving skills, visualization and memory - Problem Solving Concepts - Problem Solving in everyday life, types of problems, problem solving concepts for computers, Algorithms and Flow charts; Programming Concepts.

Introduction to Programming Structure - Modules and their functions - Local and Global Variables - Four Logic Structures - Problem Solving with Sequential and Decision Logic Structures.

UNIT II PERVASIVE THEMES AND HUMAN COMPUTER INTERACTION 9

User Centeredness - IT Systems Model - Management of Complexities - ICT- Human Computer Interaction - Information Management - Networking - Platform Technologies - Programming - Web Systems and Technologies - Data versus Information. Human Factors: Ergonomics-Human Centered Valuation: Usability Testing-Usability Standards - International, OS, Accessibility-Developing Effective Interfaces

UNIT III IT AND TRAITS OF IT PROFESSIONALS 9

Definitions - Information Technology-Computer Science-Software Engineering- Information Systems

Computer Engineering and Cognitive Science-Professionalism: Life-long Learning- Ethics - Responsibility - Interpersonal Skills - Adaptability.

UNIT IV ORGANIZATIONAL ISSUES 9

How to introduce IT applications- Process: Definition- Integration of Processes-Business Process Redesign- Cost Benefit Analysis-Project Management

UNIT V APPLICATION DOMAINS 9

Bio-informatics and medical Applications-Business Applications- Law Enforcement and political Processes-E-commerce-Manufacturing- Education-Entertainment and Agriculture-HCI aspects of Application Domains.

TOTAL: 45

TEXT BOOKS

1. Maureen Sprankle, Jim Hubbard, Problem Solving and Programming Concepts, Prentice Hall, 9th Edition, March 2011
2. Introduction to Information Technology, IITL Education Solutions Limited, Pearson Education India, 2011

REFERENCES

1. Elizabeth A Dickson, Computer Program Design, Tata McGraw Hill Edition, 2002.
2. Kenneth C. Loudon, Programming Languages- Principles and Practice, Thomson Asia Pvt. Ltd., 3rd Edition, 2011.

IT2202 OBJECT ORIENTED PROGRAMMING

L	T	P	C
3	1	0	4

GOAL

To review the concepts of Object Oriented Programming and introduce it in C++

OBJECTIVES

The course should enable the students to:

- Understand Preparing methodologies, basics of C++, classes, inheritance and polymorphism
- Understand File Handling Operations
- Understand details on Exceptions
- Write simple applications using C++

OUTCOME

The students should be able to :

- Apply Object Oriented Programming using C++

- Implement file operations
- Apply error handling techniques in C++
- Develop simple applications in C++

UNIT I INTRODUCTION TO C++ 7

Overview of C++-Classes and Objects- constructor and destructor - Friend Functions - Friend Classes-Inline Function - Static Members - Arrays - Pointers - References-Dynamic Allocation.

UNIT II OVERLOADING AND INHERITANCE 11

Function Overloading-Overloading Constructor Functions-Copy Constructors-Default Argument-Operator Overloading-Member Operator Overloading-Overloading new and delete. Concept of inheritance, Base Class, Derived Class , Defining derived classes, Visibility modes , Private, Public, Protected; Single level inheritance, Multiple inheritance and Multilevel inheritance.

UNIT III POLYMORPHISM AND FILE HANDLING 9

Polymorphism - dynamic binding - abstract class. C++ streams - console streams - console stream classes-formatted and unformatted console I/O operations, manipulators - File streams - classes file modes file pointers and manipulations file I/O -.Virtual functions.

UNIT IV TEMPLATES 10

Function Templates-Overloading Function Templates-Class Templates-Templates and Inheritance-Templates and friends-Templates and static Members ,C++ Stream Input / Output-Streams- Stream Output-Stream Input-Unformatted I/O using read , write and gout-Introduction to stream Manipulators,- Stream Format States and Stream Manipulators.

UNIT V EXCEPTION HANDLING 8

Overview -Other Error Handling Techniques-Rethrowing an Exception-Exception Specifications-Process Unexpected Exceptions-Stack Unwinding-Constructors -Destructors and Exception Handling.

TUTORIAL : 15

TOTAL : 60

TEXT BOOKS

1. Deitel and Deitel, C++ How to program, 4th edition, Prentice Hall, 2004.
2. Herbert Schildt, C++ The Complete Reference, Tata McGrawHill 3rd Edition, 2003
3. Andrew Koenig , Barbara E.Moo, Accelerated C++: Practical Programming by Example

REFERENCES

1. Bjarne Stroustrup, The C++ Programming Language, 4th Edition, Addison Wesley, 2008.
2. Savitch, Problem Solving with C++: The Object of Programming , 4th Edition Addison Wesly.

IT2203 ELECTRON DEVICES AND CIRCUITS

L T P C
3 1 0 4

GOAL

The aim of this course is to familiarize the student with the principle of operation, capabilities and limitation of various electron devices so that he will be able to use these devices effectively.

OBJECTIVES

The course should enable the students to:

- Learn the operation of BJT, FET, MOSFET metal semiconductor rectifying and ohmic contacts and power control devices.
- Understand the mechanisms of DC and AC analysis of amplifiers.
- Study mechanisms of Feedback amplifiers and Oscillators.
- Learn about the operation of Multivibrators and Timers.
- Know the operation of Operational Amplifiers.

OUTCOME

The students should be able to:

- Design the circuits incorporating diodes and transistors.
- Implement the various methods in analyzing the amplifier devices.
- Develop the negative feedback amplifiers and oscillators.
- Design the multivibrators and 555 timer.
- Develop the various applications of operational amplifiers.

UNIT I SEMI CONDUCTOR DEVICES 7

Semiconductor-PN Junction diode -BJT-FET-SCR-VI characteristics (qualitative Treatment only)

UNIT II AMPLIFIERS 12

Transistor biasing - self biasing -DC and AC analysis of CE, CB and CC amplifiers.

UNIT III FEED BACK AMPLIFIERS AND OSCILLATORS 10

Negative feed back- Types feedback with examples for each type. Effect of feedback on ac characteristic of amplifiers. Positive Feedback - oscillators-Analysis of RC Phase shift Oscillator and LXC oscillators - Hardly and colpitt.

UNIT IV MULTIVIBRATORS AND TIMERS 7

Bistable, Monostable and Astable multivibrators using Transistors-triggering delay and frequency Calculation.555 Timer-Internal Block-Application.

UNIT V OPERATIONAL AMPLIFIER AND APPLICATION 9

Operational amplifier- Characteristics-Block diagram only application of op-amp-Current to voltage,

Voltage to current converters, Arithmetic circuits-Adder, Subtractor, multiplier, differentiator and Integrator.

TUTORIAL : 15

TOTAL: 60

TEXT BOOKS

1. Foyal, Electronic Device, Fifth Edition, Addison Wesley Long man Pt. Ltd Branch, 2001.
2. Thomas L. Floyd, Electronic Devices, Pearson Education, 6th Edition, 2002.
3. Albert Malvino, David J. Bates, Electronic Principles, Tata McGraw-Hill, 7th Edition, 2007.
4. David A. Bell, Electronic Devices and Circuits, Prentice Hall of India.

REFERENCES

1. Milman and Halkias, Integrated Electronics, McGraw Hill publishers, 1985.
2. Robert L. Boylestead and Louis Nasheveskx, Electronic devices and Circuit Theory, 9th edition, Prentice hall of India Pvt., 2007.

MA2201 ENGINEERING MATHEMATICS II

L	T	P	C
3	1	0	4

GOAL

To create the awareness and comprehensive knowledge in engineering mathematics.

OBJECTIVES

The course should enable the students to:

- Understand the evaluation of the double and triple integrals in Cartesian and polar forms.
- Know the basics of Vector calculus.
- Know Cauchy - Riemann equations, Milne - Thomson method and Conformal mapping
- Grasp the concept of Cauchy's integral formula, Cauchy's residue theorem and contour integration.
- Know Laplace transform and inverse Laplace transform and their properties.

OUTCOME

The students should be able to:

- Find area as double integrals and volume as triple integrals in engineering applications.
- Evaluate the gradient, divergence, curl, line, surface and volume integrals along with the verification of classical theorems involving them.
- Applies analytic functions and their interesting properties in science and engineering.
- Evaluate the basics of complex integration and the concept of contour integration which is

important for evaluation of certain integrals encountered in practice.

- Have a sound knowledge of Laplace transform and its properties and their applications in solving initial and boundary value problems.

UNIT I MULTIPLE INTEGRALS 12

Review: Basic concepts of integration - Standard results - Substitution methods - Integration by parts - Simple problems. Double integrals: Cartesian and polar co-ordinates - Change of variables - simple problems - Area as a double integral. Triple integrals: Cartesian co ordinates - Volume as a triple integral - simple problems.

UNIT II VECTOR CALCULUS 12

Review: Definition - vector, scalar - basic concepts of vector algebra - dot and cross products-properties. Gradient, Divergence and Curl - Unit normal vector, Directional derivative - angle between surfaces-Irrotational and solenoidal vector fields. Verification and evaluation of Green's theorem - Gauss divergence theorem and Stoke's theorem. Simple applications to regions such as square, rectangle, triangle, cuboids and rectangular parallelepipeds.

UNIT III ANALYTIC FUNCTIONS 12

Review: Basic results in complex numbers - Cartesian and polar forms - Demoivre's theorem.

Functions of a complex variable - Analytic function - Necessary and sufficient conditions (without proof) - Cauchy - Riemann equations - Properties of analytic function - Harmonic function - Harmonic conjugate - Construction of Analytic functions by Milne - Thomson method. Conformal mapping: $w = z + a$, az , $1/z$ and bilinear transformation.

UNIT IV COMPLEX INTEGRATION 12

Statement and application of Cauchy's integral theorem and Integral formula - Evaluation of integrals using the above theorems - Taylor and Laurent series expansions -Singularities - Classification. Residues - Cauchy's residue theorem (without proof) - Contour integration over unit circle and semicircular contours (excluding poles on boundaries).

UNIT V LAPLACE TRANSFORM 12

Laplace transform - Conditions of existence - Transform of elementary functions - properties - Transforms of derivatives and integrals - Derivatives and integrals of transforms - Initial and final value theorems - Transforms of unit step function and impulse function - Transform of periodic functions. Inverse Laplace transform - Convolution theorem - Solution of linear ODE of second order with constant coefficients.

TOTAL: 60

Note: Questions need not be asked from review part.

TEXT BOOKS

1. Venkatraman M.K, Mathematics, Volume - II, National Publishing Company, Chennai, 1985.
2. Grewal B.S, Higher Engineering Mathematics, Thirty Eighth Editions, Khanna Publisher, Delhi, 2004.

- Chandrasekaran A, Engineering Mathematics, Volume - II, Dhanam Publication, 2008.

REFERENCES

- Kandasamy P, Engineering Mathematics Volume II, S. Chand & Co., New Delhi, 1987.
- Grewal B.S, Engineering Maths - II, Sultan Chand, New Delhi, 1993.
- Bali N.P, Manish Goyal, Text book of Engineering Mathematics, 3rd Edition, Lakshmi Publications, 2003.

GE 2231 ENGINEERING PRACTICES LABORATORY II

L T P C
0 0 3 2

LIST OF EXPERIMENTS

S.No	LIST OF EXPERIMENTS	HOURS
	Electrical Engineering:	
1.	Wiring for a tube light.	6
2.	Wiring for a lamp and fan.	6
3.	Staircase wiring	3
4.	Study of (i) Iron box and (ii) Fan with Regulator	6
	Electronics Engineering	
5.	Study of Electronic components and Equipments	3
6.	Characteristics of PN junction diode & measurement of Ripple factor of half wave and full wave rectifier.	9
7.	Applications of OP-AMP - Inverter, Adder and Subtractor.	9
8.	Study and verification of Logic Gates	3

PRACTICAL 45

Components Required:

Electrical Engineering

Choke	2 nos
Starter	2 nos
Tubelight stand	2 nos
36W tubelight	2 nos
Fan	2nos
40W lamp	5nos
Single way switch	10 nos
Two way switch	5 nos
Iron box	2nos
Fan with regulator opened	1no (demo purpose)

Wires

Electronics Engineering

IC Trainer Kit, Resistors, Capacitors, CRO, Function Generator, BreadBoard, Regulated Power Supply, Zener Diode, PN Junction Diode, Potentiometer, Digital Multimeter, Ammeter, Voltmeter, Wattmeter, IC 7408, IC 7432, IC 7486, IC 7400, IC 7404, IC 7402

TEXT BOOK

1. T. Jeyapooan, M.Saravanapandian and S. Pranitha, Engineering Practices Lab Manual, 3rd Edition 2006, Vikas Publishing house (P) Ltd., New Delhi.

EL2231 COMMUNICATION SKILLS LABORATORY II

L T P C
2 0 2 2

GOAL

The goal of the programme is to provide an advanced practical input towards moulding student-achievers who can use the English language with ease.

OBJECTIVES

The course should enable the students to:

- Extend the power of the learners to listen to English at an advanced level and comment on it.
- Guide the learners to speak English at the formal and informal levels.
- Enable learners to read and grasp the in-depth meaning of technical and non-technical passages in English.
- Help the learners develop the art of writing at the formal and informal levels.

- Expand the thinking capability of the learners so that they would learn how to be original in their thoughts.

OUTCOME

The students should be able to:

- Listen to and understand English at an advanced level and interpret its meaning.
- Develop English language skill at the formal and informal levels and thus gained the confidence to use it without fear.
- Read and grasp the in-depth meaning of technical and non-technical passages in English.
- Develop the art of formal and informal writing.
- Think independently and creatively and also verbalize their thoughts fearlessly.

UNIT I LISTENING SKILL

12

Topics: Listening to telephonic conversations -- Listening to native British speakers -- Listening to native American speakers -- Listening to intercultural communication -- Listening to answer questions as one-liners and paragraphs -- Listening practice to identify ideas, situations and people -- Listening to group discussions -- Listening to films of short duration.

UNIT II SPEAKING SKILL

12

Topics: Interview skills - People skills - Job interview - Body language and communication -- How to develop fluency -- Public speaking -- Speaking exercises involving the use of stress and intonation - Speaking on academic topics - Brain storming & discussion - Speaking about case studies on problems and solutions - Extempore speeches - Debating for and against an issue - Mini presentations - Generating talks and discussions based on audiovisual aids.

UNIT III READING SKILL

12

Topics: Reading exercises for grammatical accuracy and correction of errors -- Reading comprehension exercises with critical and analytical questions based on context - Evaluation of contexts - Reading of memos, letters, notices and minutes for reading editing and proof reading -- Extensive reading of parts of relevant novels after giving the gist of the same.

UNIT IV WRITING SKILL

12

Topics: At the beginning of the semester, the students will be informed of a mini dissertation of 2000 words they need to submit individually on any non-technical topic of their choice. The parts of the dissertation will be the assignments carried out during the semester and submitted towards the end of the semester on a date specified by the department. This can be judged as part of the internal assessment.

UNIT V THINKING SKILL

12

Topics: Practice in preparing thinking blocks to decode pictorial representations into English words, expressions, idioms and proverbs - Eliciting the knowledge of English using thinking blocks -- Picture

rereading -- Finding meaning in the meaningless - Interpreting landscapes, simple modern art and verbal and non-verbal communication.

TOTAL : 60

REFERENCES

1. Ibbotson, Mark. Cambridge English for Engineering. New Delhi: Cambridge University Press, 2009.
2. Smith-Worthington Jefferson. Technical Writing for Success. New Delhi. Cengage Learning, 2007.

Websites for learning English

1. British: Learn English - British Council (Business English) - "<http://learnenglish.britishcouncil.org/>"
- BBC Learning English (General and Business English) - "<http://www.bbc.co.uk/worldservice/learningenglish/>"
- Intercultural: English Listening Lesson Library Online "<http://www.elllo.org/>"

IT2231 OBJECT ORIENTED PROGRAMMING LABORATORY

L	T	P	C
0	0	3	2

GOAL

To learn the concepts of Object oriented programming using "C ++"

OBJECTIVES

The course should enable the students to :

- Understand the concepts of static members, methods with default arguments, friend functions.
- Understand dynamic memory allocation, constructors, destructors, friend function, inheritance and interfaces.
- Know the concepts of Stack and Queue
- Understand the concepts of Sorting and Exception handling
- Learn the concepts of Class hierarchy and File handling

OUTCOME

The students should be able to:

- Implement the basic concepts of C++ and the concept of friend function , inheritance in C++
- Implement dynamic memory allocation, constructors, destructors, friend function, inheritance and interfaces.
- Develop programs for Stack and Queue in C++

- Write programs for Sorting and Exception handling
- Apply the concepts of Class hierarchy and File handling

LIST OF EXPERIMENTS C++

1. Design C++ classes with static members, methods with default arguments, friend functions. (For example, design matrix and vector classes with static allocation, and a friend function to do matrix-vector multiplication)
2. Implement complex number class with necessary operator overloading and type conversions such as integer to complex, double to complex, complex to double etc.
3. Implement Matrix class with dynamic memory allocation and necessary methods. Give proper constructor, destructor, copy constructor, and overloading of assignment operator.
4. Overload the new and delete operators to provide custom dynamic allocation of memory.
5. Develop a template of linked-list class and its methods.
6. Develop templates of standard sorting algorithms such as bubble sort, quick sort.
7. Design stack classes with necessary exception handling.
8. Design queue classes with necessary exception handling.
9. Develop with suitable hierarchy, classes for Point, Shape, Rectangle, Square, Circle, Ellipse, Triangle, Polygon, etc. Design a simple test application to demonstrate dynamic polymorphism and RTTI.
10. Write a C++ program that randomly generates complex numbers (use previously designed Complex class) and writes them two per line in a file along with an operator (+, -, *, or /). The numbers are written to file in the format (a + ib). Write another program to read one line at a time from this file, perform the corresponding operation on the two complex numbers read, and write the result to another file (one per line).

PRACTICAL : 45

SEMESTER-III

IT2301 DATA STRUCTURES

L T P C
3 1 0 4

GOAL

To provide an in-depth knowledge in problem solving techniques and data structures.

OBJECTIVES

The course should enable the students to :

- Learn the systematic way of solving problems
- Understand the different methods of organizing huge amount of data
- Learn the concepts of algorithms
- Learn sorting techniques.
- Learn about graphs and routing algorithms

OUTCOME

The students should be able to:

- Make appropriate data structure and algorithm design decisions with respect to program size, execution speed, and storage efficiency
- Design common data structures (such as arrays, linked lists, stacks, queues, priority queues, trees, heaps, hash tables, associative containers).
- Design the algorithms that build and manipulate them including various sorting, searching, and hashing algorithms
- Implement various sorting algorithms.
- Implement graphs and routing algorithms.

UNIT I PROBLEM SOLVING

9

Problem solving - Top-down Design - Implementation - Verification - Efficiency - Analysis - Sample algorithms.

UNIT II LISTS, STACKS AND QUEUES

8

Abstract Data Type (ADT) - The List ADT - The Stack ADT - The Queue ADT

UNIT III TREES

10

Preliminaries - Binary Trees - The Search Tree ADT - Binary Search Trees - AVL Trees - Tree Traversals - Hashing - General Idea - Hash Function - Separate Chaining - Open Addressing - Linear Probing - Priority Queues(Heaps) - Model - Simple implementations - Binary Heap.

UNIT IV SORTING

9

Preliminaries - Insertion Sort - Shellsort - Heapsort - Mergesort - Quicksort - External Sorting.

UNIT V GRAPHS

9

Definitions - Topological Sort - Shortest-Path Algorithms - Unweighted Shortest Paths - Dijkstra's Algorithm - Minimum Spanning Tree - Prim's Algorithm - Applications of Depth-First Search - Undirected Graphs - Biconnectivity - Introduction to NP-Completeness.

TUTORIAL : 15

TOTAL : 60

TEXT BOOKS

1. R. G. Dromey, How to Solve it by Computer (Chaps 1-2), Prentice-Hall of India, 2002.
2. M. A. Weiss, Data Structures and Algorithm Analysis in C, 2nd ed, Pearson Education Asia, 2002. (chaps 3, 4.1-4.4 (except 4.3.6), 4.6, 5.1-5.4.1, 6.1-6.3.3, 7.1-7.7 (except 7.2.2, 7.4.1, 7.5.1, 7.6.1, 7.7.5, 7.7.6), 7.11, 9.1-9.3.2, 9.5-9.5.1, 9.6-9.6.2, 9.7)

REFERENCES

1. Y. Langsam, M. J. Augenstein and A. M. Tenenbaum, Data Structures using C and C++, 2nd ed, Prentice-Hall of India, 2000.
2. Richard F. Gilberg, Behrouz A. Forouzan, Data Structures - A Pseudocode Approach with C, Thomson Brooks / COLE, 1998.
3. Aho, J. E. Hopcroft and J. D. Ullman, Data Structures and Algorithms, Addison-Wesley Publishing Company, 2002.

IT 2302 DIGITAL PRINCIPLES AND SYSTEM DESIGN

L	T	P	C
3	0	0	3

GOAL

To give in-depth knowledge about various digital circuits.

OBJECTIVES

The course should enable the students to:

- Study simplification of Boolean functions
- Learn combinational circuits
- Understand HDL
- Learn sequential circuits
- Know about state and flow table

OUTCOME

The students should be able to:

- Simplify Boolean equations

- Design combinational circuits
- Write programs in HDL
- Design sequential circuits.
- Implement the state and flow table

UNIT I BOOLEAN ALGEBRA AND LOGIC GATES 8

Review of binary number systems - Binary arithmetic - Binary codes - Boolean algebra and theorems - Boolean functions - Simplifications of Boolean functions using Karnaugh map and tabulation methods - Logic gates

UNIT II COMBINATIONAL LOGIC 9

Combinational circuits - Analysis and design procedures - Circuits for arithmetic operations - Code conversion - Introduction to Hardware Description Language (HDL)

UNIT III DESIGN WITH MSI DEVICES 8

Decoders and encoders - Multiplexers and demultiplexers - Memory and programmable logic - HDL for combinational circuits.

UNIT IV SYNCHRONOUS SEQUENTIAL LOGIC 10

Sequential circuits - Flip flops - Analysis and design procedures - State reduction and state assignment - Shift registers - Counters - HDL for sequential logic circuits, Shift registers and counters.

UNIT V ASYNCHRONOUS SEQUENTIAL LOGIC 10

Analysis and design of asynchronous sequential circuits - Reduction of state and flow tables - Race-free state assignment - Hazards.

TOTAL: 45

TEXT BOOK

1. M.Morris Mano, Digital Design, 3rd edition, Pearson Education, 2002.

REFERENCES

1. Charles H.Roth, Jr. Fundamentals of Logic Design, 4th Edition, Jaico Publishing House, 2000.
2. Donald D.Givone, Digital Principles and Design, Tata McGraw-Hill, 2003.

IT2303 JAVA PROGRAMMING

L T P C
3 1 0 4

GOAL

To learn the advanced features of Java and to develop skills to cope with any kind of java programming.

OBJECTIVES

The course should enable the students to:

- Learn about the distributed applications in core Java
- Learn different protocols used in the web
- Learn about the Bean Development kit in java
- Learn server side programming concepts.
- Learn cookies and session tracking

OUTCOME

The students should be able to:

- Apply the java fundamentals with database connectivity.
- Code TCP/IP and RMI
- Implement the BDK concepts
- Implement Server side programming using Servlet.
- Create cookies and track the sessions

UNIT I OVERVIEW OF JAVA AND JDBC 9

Review of object-oriented fundamentals - An overview of Java - Classes - Methods - Constructors - Overloading - Packages and Interfaces - String Handling

UNIT II JDBC 9

Multithreaded Programming - Exception Handling - JDBC overview - JDBC API - JDBC Drivers - Connection Class - MetaData Function - SQL Fundamentals - SQL Exception - SQL warning - Statement - Result Set .

UNIT III SWINGS 9

JApplet - Button - Combo - Trees - Tables - Panes - working with Graphics, Color and Font.

UNIT IV SOCKET PROGRAMMING AND RMI 9

InetAddress - TCP/ IP client sockets - TCP/ IP server sockets - URL - URL Connection - Datagrams - Client/ Server application using RMI.

UNIT V JAVA SERVLETS

9

Life Cycle of Servlet - Generic Servlet - HTTP Servlet - Reading Initialization Parameters - Reading Servlet Parameters - Cookies - Session Tracking.

TUTORIAL : 15

TOTAL : 60

TEXT BOOKS

1. Patrick Naughton & Herbert Schildt, The Complete Reference: Java 2, Tata McGraw Hill, 1999. (Chapter - 18, 21, 24, 25, 26, 27)
2. Joseph Weber, Using Java 2 Platform, Prentice Hall of India, 2000. (Chapter-39, 40)

REFERENCES

1. Java In A Nutshell, A Desktop Quick Reference, 5th Edition , O'REILLY - David Flanagan
2. Head First Java O' REILLY , 2nd Edition - Kathy Sierra
3. Java, A Beginner's Guide, 5th Edition - Herbert Schildt

IT2304 COMPUTER ARCHITECTURE AND MICROPROCESSOR

L	T	P	C
3	1	0	4

GOAL

To have an in depth knowledge of the Computer architecture and programming of 8-bit and 16-bit Microprocessors, Microcontrollers and various peripheral devices with them.

OBJECTIVES

The course should enable the students to :

- Study the architecture and Instruction set of 8085 and 8086
- Learn assembly language programs in 8085 and 8086.
- Understand about multiprocessor configurations
- Study different memory devices and hazards related to computer architecture.
- Study the architecture and programming of 8051 microcontroller

OUTCOME

The students should be able to:

- Apply the knowledge of the Processor and addressing modes.
- Implement Assembly language programs.
- Implement multiprocessor systems
- Design the applications of Memory Devices.
- Design Micro controller and its applications.

UNIT I ADDRESSING MODES AND MEMORY 9

Addressing Memory - Types of Addressing modes - 8085 addressing modes - 8086 addressing modes - Bus structures- Assembly language- Basic concepts of memory- Virtual memory- Memory Management requirements.

UNIT II INSTRUCTION SET AND HAZARDS 9

Fundamental concepts - Execution of complete instruction-8085 instruction sets-8086 instruction sets- Basic concepts - Data hazards - Instruction hazards.

UNIT III 8085 ARCHITECTURE 9

Introduction to 8085 - Microprocessor architecture - Programming the 8085 - Code conversion-8085 applications

UNIT IV 8086 ARCHITECTURE 9

Intel 8086 microprocessor - Architecture - assembler directives -programming - Procedures - Macros - Interrupts and interrupt service routines.

UNIT V MICROCONTROLLERS 9

Architecture of 8051 - Signals - Operational features - Memory and I/O addressing - Interrupts - Instruction set - Applications.

TUTORIAL: 15

TOTAL: 60

TEXT BOOKS

1. Carl Hamacher, Zvonko Vranesic and Safwat Zaky, 5th Edition, Computer Organization, McGraw-Hill, 2002.(UNIT 1, 2)
2. Ramesh S.Gaonkar, Microprocessor - Architecture, Programming and Applications with the 8085, Penram International publishing private limited, fi fth edition. (UNIT-3, unit1 8085 addressing modes, unit 2 8085 instruction set)
3. A.K. Ray & K.M.Bhurchandi, Advanced Microprocessors and peripherals- Architectures, Programming and Interfacing, TMH, 2002 reprint. (Units 4, 5, unit1 8086 addressing modes, unit 2 instruction set of 8086)

REFERENCES

1. Douglas V.Hall, Microprocessors and Interfacing: Programming and Hardware, TMH, Third edition.
2. Yu-cheng Liu, Glenn A.Gibson, Microcomputer systems: The 8086 / 8088 Family architecture, Programming and Design, PHI, 2003.
3. Mohamed Ali Mazidi, Janice Gillispie Mazidi, The 8051 microcontroller and embedded systems, Pearson education, 2004.

IT2305 PRINCIPLES OF COMMUNICATION

L T P C
3 1 0 4

GOAL

To have knowledge about Analog and Digital transmission of both Analog data and Digital Data, Security, modulation and different accessing methods.

OBJECTIVES

The course should enable the students to :

- Understand about the different types of AM Communication systems (Transmitters & Receivers)
- Study the different types of FM transmitters & Receivers and PM Transmitters and Receivers
- Gain knowledge about different digital modulation techniques for digital transmission.
- Learn about base band transmission ISI and distortion free base band transmission
- Know the spread spectrum modulation techniques and different multiple access methods.

OUTCOME

The students should be able to:

- Apply the amplitude and angle modulation and its principles.
- Design FM & PM transmitters and Receivers
- Implement the digital modulation techniques.
- Apply the baseband data transmission and multiple access technique.
- Implement spread spectrum modulation techniques and different multiple access methods.

UNIT I AMPLITUDE MODULATION: TRANSMISSION AND RECEPTION

9

Principles of amplitude modulation - AM envelope, frequency spectrum and bandwidth, modulation index and percent modulation, AM power distribution, AM modulator circuits - low level AM modulator, medium power AM modulator, AM transmitters - low level transmitters, high level transmitters, Receiver parameters. AM reception: AM receivers - TRF, Superheterodyne receivers, Double Conversion AM receivers.

UNIT II ANGLE MODULATION: TRANSMISSION AND RECEPTION

9

Angle Modulation - FM and PM waveforms, phase deviation and modulation index, frequency deviation, phase and frequency modulators and demodulators, frequency spectrum of a angle modulated waves, Bandwidth requirement, Broadcast band FM, Average power FM and PM modulators - Direct FM and PM, Direct FM transmitters, Indirect transmitters, Angle modulation Vs. amplitude modulation.. FM receivers: FM demodulators, PLL FM demodulators, FM noise suppression, Frequency Vs. phase Modulation.

UNIT III DIGITAL MODULATION TECHNIQUES**9**

Introduction, Binary PSK, DPSK, Differentially encoded PSK, QPSK, M-ary PSK, QASK, Binary FSK, MSK, Duobinary encoding - Performance comparison of various systems of Digital Modulation.

UNIT IV BASEBAND DATA TRANSMISSION**9**

Sampling theorem, Quadrature sampling of bandpass signals, reconstruction of message from its samples, Signal distortion in sampling, Discrete PAM signals, power spectra of Discrete PAM signals, ISI Nyquist Criterion for Distortionless baseband binary transmission, eye pattern, baseband M-ary PAM systems, adaptive equalization for data transmission.

UNIT V SPREAD SPECTRUM AND MULTIPLE ACCESS TECHNIQUES**9**

Introduction, Pseudo-noise sequence, DS spread spectrum with coherent binary PSK, Processing gain, FH spread spectrum, multiple access techniques, wireless communications, TDMA and CDMA, wireless communication systems, source coding of speech for wireless communications.

TUTORIAL : 15**TOTAL: 60****TEXT BOOKS**

1. Wayne Tomasi, Electronic Communication Systems: Fundamentals Through Advanced, Pearson Education, 2001. (UNIT I Chapters- 3,4; UNIT II : Chapters-6,7; UNIT III Chapters-12).
2. Simon Haykin, Digital Communications, John Wiley & Sons, 2003. (UNIT IV Chapters-3, 4; UNIT V Chapters-7, 8)

REFERENCES

1. Simon Haykin, Communication Systems, John Wiley & Sons, 4th edn.,2001.
2. Taub & Schilling, Principles of Communication Systems, TMH, 2nd edn., 2003.
3. Martin S.Roden, Analog and Digital Communication System, PHI, 3rd edn. 2002.
4. Blake, Electronic Communication Systems, Thomson Delman, 2nd edn., 2002.

IT2331 DATA STRUCTURES LAB**L T P C**
0 0 3 2**GOAL**

To teach the principles of good programming practice and to give a practical training in writing efficient programs in C

OBJECTIVES

The course is to enable the students to :

- Learn implementation of various data structure in C programming
- Understand various data structures as Abstract Data Types

- Learn to solve problems using ADTs

OUTCOME

The students should be able to:

- Implement data structure using C programs
- Develop Abstract Data types
- Implement the applications of Abstract Data types

Software Requirements

Language : C

Implement the following exercises using C:

S.No.	Experiments	No. of Hours
1	Array implementation of List Abstract Data Type (ADT)	3
2	Linked list implementation of List ADT	4
3	Cursor implementation of List ADT	3
4	Array implementations of Stack ADT	3
5	Linked list implementations of Stack ADT	3
6	Implement the application for checking 'Balanced Parenthesis' using array implementation of Stack ADT	3
7	Implement the application for checking 'Balanced Parenthesis' using linked list implementation of Stack ADT	4
8	Implement the application for 'Evaluating Postfix Expressions' using array and linked list implementations of Stack ADT	8
9	Queue ADT	3
10	Search Tree ADT - Binary Search Tree	5
11	Heap Sort	3
12	Quick Sort	3

PRACTICAL : 45

IT2332 DIGITAL PRINCIPLES AND SYSTEM DESIGN LAB

L T P C
0 0 3 2

GOAL

To design and implement various digital circuits

OBJECTIVES

The course should enable the students to :

- Learn Boolean laws and theorems
- Understand combinational and sequential circuits
- Learn HDL

OUTCOME

The students should be able to:

- Test the gates of the ICs
- Design sequential circuits like shift registers and counters
- Simulate the circuits in HDL

LIST OF EXPERIMENTS

No.	Name of the Experiment	No. of Hours
1.	Verification of Boolean theorems using digital logic gates	3
2.	Design and implementation of adders and subtractors.	3
3.	Design and implementation of encoders and decoders.	3
4.	Design and implementation of 4 to 1 MUX and 8 to 1 MUX.	3
5.	Design and implementation of parity generators and checkers.	3
6.	Design and implementation of magnitude comparators.	3
7.	Design and implementation of shift registers.	3
8.	Design and implementation of synchronous counters.	3
9.	Design and implementation of ripple counters.	6
10.	Coding combinational circuits using HDL	8
11.	Coding sequential circuits using HDL.	7

PRACTICAL : 45

Hardware Requirements

1. Digital IC Trainer Kit
2. IC 7408, IC7402, IC7404, IC7400, IC7432, IC7486, IC7476, IC7442, IC74151, IC74153, IC74194.
3. Connecting Wires

IT2333 JAVA PROGRAMMING LAB

L T P C
0 0 3 2

GOAL

To understand the concept of Core Java programming and Applet

OBJECTIVES

The course should enable the students to :

- Understand the basics of Java
- Understand about Interface and Packages in Java
- Learn about Java Applets
- Learn how to handle mouse events
- Learn about Layout Managers

OUTCOME

The students should be able to:

- Write programs in core java
- Write programs using Interface and applications of packages.
- Create GUI using Applets.
- Develop programs with mouse events.
- Write program with different Layout Managers.

SOFTWARE REQUIRED

1. Java Development Kit 6.
2. Eclipse IDE

LIST OF EXPERIMENTS

- | | |
|--|---|
| 1. Programs illustrating various data types in Java | 1 |
| 2. Programs illustrating class, objects and methods | 3 |
| 3. Programs for addition and multiplication of Matrices | 3 |
| 4. Programs illustrating Overloading in Java | 3 |
| 5. Programs illustrating the implementation of Various forms of Inheritance (Single, Hierarchical, Multilevel) | 3 |
| 6. Programs illustrating Overriding methods in Java | 3 |
| 7. Programs illustrating Exception Handling | 1 |
| 8. Programs to manipulate strings | 3 |

JAVA BASICS

- | | | |
|----|--|---|
| 1. | Programs illustrating Interfaces in Java | 1 |
| 2. | Programs to create Packages in Java | 3 |
| 3. | Programs illustrating Threads in Java | 3 |

JAVA APPLETS

- | | | |
|----|--|---|
| 1. | Programs to write applets to draw the various shapes | 3 |
| 2. | Programs to manipulate labels, lists, text fields and panels | 3 |
| 3. | Programs to handle mouse events | 3 |
| 4. | Programs using layout managers | 3 |

PRACTICAL: 45

IT 2334 MICROPROCESSOR AND MICROCONTROLLER LAB

L T P C
0 0 3 2

GOAL

To understand the concept of microprocessor and microcontroller programming and its applications.

OBJECTIVES

The course should enable the students to :

- Understand the Arithmetic & Logical operations of 8085.
- Understand various microprocessors and its interfaces.
- Understand the implementation of Microcontrollers.

OUTCOME

The students should be able to:

- Write programs for 8085 Microprocessor.
- Write programs using Interface and applications of various Microprocessors.
- Know the applications of microcontrollers.

LIST OF EXPERIMENTS

S.No	Name of the experiment	No of Hours
1	Programming with 8085 - 8-bit addition, subtraction, division, multiplication.	4
2	Programming with 8085 - 16-bit addition, subtraction, division, multiplication.	4
3	Programming with 8085-code conversion, decimal arithmetic, bit manipulations.	4
4	Programming with 8085-matrix multiplication, floating point operations	4
5	Programming with 8086 - String manipulation, search, find and replace, copy operations, sorting. (PC Required)	4
6	Using BIOS/DOS calls: Keyboard control, display, file manipulation. (PC Required)	4
7	Using BIOS/DOS calls: Disk operations. (PC Required)	4
8	Interfacing with 8085/8086 - 8255, 8253	4
9	Interfacing with 8085/8086 - 8279,8251	4
10	8051 Microcontroller based experiments - Simple assembly language programs (cross assembler required).	4
11	8051 Microcontroller based experiments - Simple control applications (cross assembler required).	5

REQUIREMENTS:

1. 8085 kit
2. Opcode sheet
3. Message display kit
4. Addressing modes basics
5. Number system basics
6. Stepper motor tool kit (8085)

PRACTICAL : 45

SEMESTER IV

IT2401 SYSTEM SOFTWARE

L T P C
3 0 0 3

GOAL

To give a knowledge, fundamentals and idea of Assemblers, loaders, linkers, and macro processors.

OBJECTIVES

The course should enable the students to :

- Understand the relationship between system software and machine architecture.
- Know the design and implementation of assemblers
- Know the design and implementation of Loaders.
- Know the design and implementation of linkers.
- Understand of macro processors.

OUTCOME

The students should be able to:

- Gain the knowledge about assembler and addressing modes of the computer.
- Gain the knowledge about loaders and linkers used in programming.
- Know the applications of Loaders.
- Know the applications of Linkers.
- Gain the knowledge of Macro processors and its function.

UNIT I INTRODUCTION

8

System software and machine architecture - The Simplified Instructional Computer (SIC) -Machine architecture - Data and instruction formats - addressing modes - instruction sets - I/O and programming.

UNIT II ASSEMBLERS

10

Basic assembler functions - A simple SIC assembler - Assembler algorithm and data structures- Machine dependent assembler features - Instruction formats and addressing modes - Program relocation - Machine independent assembler features - Literals - Symbol-defining statements - Expressions - One pass assemblers and Multi pass assemblers - Implementation example - MASM assembler.

UNIT III LOADERS

9

Basic loader functions - Design of an Absolute Loader - A Simple Bootstrap Loader - Machine dependent loader features-Loader Options- Loader design options-Bootstrap Loaders-Single pass loader, two pass loader.

UNIT IV LINKERS**9**

Relocation - Program Linking - Algorithm and Data Structures for Linking Loader-Automatic Library Search-Linkage Editors - Dynamic Linking-Implementation example - MSDOS linker.

UNIT V MACRO PROCESSORS**9**

Basic macro processor functions - Macro Definition and Expansion - Macro Processor Algorithm and data structures - Machine-independent macro processor features - Concatenation of Macro Parameters - Generation of Unique Labels - Conditional Macro Expansion - Keyword Macro Parameters-Macro within Macro-Implementation example - MASM Macro Processor - ANSI C Macro language.

TOTAL : 45**TEXT BOOK**

1. Leland L. Beck, System Software - An Introduction to Systems Programming, 3rd Edition, Pearson Education Asia, 2000.

REFERENCES

1. D. M. Dhamdhare, Systems Programming and Operating System, Second Revised Edition, Tata McGraw-Hill, 1999.
2. John J. Donovan, Systems Programming, Tata McGraw-Hill Edition, 1972.

IT2402 C# AND .NET FRAME WORK

L	T	P	C
3	1	0	4

GOAL

To cover the fundamental concepts of the C# language and the .NET framework.

OBJECTIVES

The course should enable the students to :

- Understand the basic concepts of C#.
- Understand the object oriented aspects of C#.
- Study about data access.
- Use C# in web application development.
- Understand the concepts of .NET Framework

OUTCOME

The students should be able to:

- Develop simple programs in C#.
- Write effective C# code in object oriented aspects.
- Access data using ADO .NET.

- Develop web applications.
- Develop programs using .NET Framework.

UNIT I INTRODUCTION TO C# 8

Introducing C#, Understanding .NET, Overview of C#, Literals, Variables, Data Types, Operators, Expressions, Branching, Looping, Methods, Arrays, Strings, Structures, Enumerations.

UNIT II OBJECT ORIENTED ASPECTS OF C# 9

Classes, Objects, Inheritance, Polymorphism, Interfaces, Operator Overloading, Delegates, Events, Errors and Exceptions.

UNIT III APPLICATION DEVELOPMENT ON .NET 8

Building Windows Applications, Accessing Data with ADO.NET.

UNIT IV WEB BASED APPLICATION DEVELOPMENT ON .NET 8

Programming Web Applications with Web Forms, Programming Web Services.

UNIT V THE CLR AND THE .NET FRAMEWORK 12

Assemblies, Versioning, Attributes, Reflection, Viewing MetaData, Type Discovery, Reflecting on a Type, Marshaling, Remoting, Understanding Server Object Types, Specifying a Server with an Interface, Building a Server, Building the Client, Using SingleCall, Threads.

TUTORIAL:15

TOTAL:60

TEXT BOOKS

1. E. Balagurusamy, Programming in C#, Tata McGraw-Hill, 2004. (Unit I, II)
2. J. Liberty, Programming C#, 2nd ed., O'Reilly, 2002. (Unit III, IV, V)

REFERENCES

- a. Herbert Schildt, The Complete Reference: C#, Tata McGraw-Hill, 2004.
2. Robinson et al, Professional C#, 2nd ed., Wrox Press, 2002.
3. Andrew Troelsen, C# and the .NET Platform, A! Press, 2003.
4. Thamarai Selvi, R. Murugesan, "A Textbook on C#", Pearson Education, 2003.

IT2403 OPERATING SYSTEMS

L T P C
3 0 0 3

GOAL

To have a thorough knowledge of processes, scheduling concepts, memory management, I/O and file systems in an operating system

OBJECTIVES

The course should enable the students to:

- Learn different types of operating systems
- Know the components of an operating system.
- Understand about process management
- Gain a thorough knowledge of storage management
- Know the concepts of I/O and file systems.

OUTCOME

The students should be able to:

- Identify the types of operating system
- Design the components of operating system
- Apply the concepts of process management
- Implement the storage management
- Implement the concepts of file systems

UNIT I INTRODUCTION

9

Introduction - Mainframe systems - Desktop Systems - Multiprocessor Systems - Distributed Systems - Clustered Systems - Real Time Systems - Handheld Systems - Hardware Protection - System Components - Operating System Services - System Calls - System Programs - Process Concept - Process Scheduling - Operations on Processes - Cooperating Processes - Inter-process Communication.

UNIT II SCHEDULING

9

Threads - Overview - Threading issues - CPU Scheduling - Basic Concepts - Scheduling Criteria - Scheduling Algorithms - Multiple-Processor Scheduling - Real Time Scheduling - The Critical-Section Problem - Synchronization Hardware - Semaphores - Classic problems of Synchronization - Critical regions - Monitors.

UNIT III DEADLOCKS

9

System Model - Deadlock Characterization - Methods for handling Deadlocks -Deadlock Prevention - Deadlock avoidance - Deadlock detection - Recovery from Deadlocks - Storage Management - Swapping - Contiguous Memory allocation - Paging - Segmentation - Segmentation with Paging.

UNIT IV PAGING AND FILE SYSTEM**9**

Virtual Memory - Demand Paging - Process creation - Page Replacement - Allocation of frames - Thrashing - File Concept - Access Methods - Directory Structure - File System Mounting - File Sharing - Protection

UNIT V FILE MANAGEMENT**9**

File System Structure - File System Implementation - Directory Implementation - Allocation Methods - Free-space Management. Kernel I/O Subsystems - Disk Structure - Disk Scheduling - Disk Management - Swap-Space Management.

TOTAL: 45**TEXT BOOK**

1. Abraham Silberschatz, Peter Baer Galvin and Greg Gagne, Operating System Concepts, Sixth Edition, John Wiley & Sons (ASIA) Pvt. Ltd, 2011.

REFERENCES

1. Harvey M. Deitel, Operating Systems, 2nd Edition, Pearson Education Pvt.Ltd,2002.
2. Andrew S. Tanenbaum, Modern Operating Systems, Prentice Hall of India Pvt. Ltd, 2003.
3. William Stallings, Operating System, Prentice Hall of India, 4th Edition, 2003.
4. Pramod Chandra P. Bhatt , An Introduction to Operating Systems, Concepts and Practice, PHI, 2003.

IT2404 SOFTWARE ENGINEERING

L	T	P	C
3	0	0	3

GOAL

To give a knowledge for maintaining ,developing and testing a software

OBJECTIVES

The course should enable the students to :

- Understand the concept of Life cycle model.
- Understand the architecture and design methods.
- Understand the various testing strategies and software planning.

OUTCOME

The students should be able to:

- Develop the software based on life cycle model.
- Apply the testing strategies in software.
- Analyze the cost and maintenance of software

UNIT I SOFTWARE PROCESS**9**

Introduction -S/W Engineering Paradigm - life cycle models (water fall, incremental, spiral, WINWIN spiral, evolutionary, prototyping, object oriented) - system engineering - computer based system - verification - validation - life cycle process - development process -system engineering hierarchy.

UNIT II SOFTWARE REQUIREMENTS**9**

Functional and non-functional - user - system -requirement engineering process - feasibility studies - requirements - elicitation - validation and management - software prototyping - prototyping in the software process - rapid prototyping techniques - user interface prototyping -S/W document. Analysis and modeling - data, functional and behavioral models - structured analysis and data dictionary.

UNIT III DESIGN CONCEPTS AND PRINCIPLES**9**

Design process and concepts - modular design - design heuristic - design model and document. Architectural design - software architecture - data design - architectural design - transform and transaction mapping - user interface design - user interface design principles. Real time systems - Real time software design - system design - real time executives - data acquisition system - monitoring and control system. SCM - Need for SCM - Version control - Introduction to SCM process - Software configuration items.

UNIT IV TESTING**9**

Taxonomy of software testing - levels - test activities - types of s/w test - black box testing - testing boundary conditions - structural testing - test coverage criteria based on data flow mechanisms - regression testing - testing in the large. S/W testing strategies - strategic approach and issues - unit testing - integration testing - validation testing - system testing and debugging.

UNIT V SOFTWARE PROJECT MANAGEMENT**9**

Measures and measurements - S/W complexity and science measure - size measure - data and logic structure measure - information flow measure. Software cost estimation - function point models - COCOMO model- Delphi method.- Defining a Task Network - Scheduling - Earned Value Analysis - Error Tracking - Software changes - program evolution dynamics - software maintenance - Architectural evolution. Taxonomy of CASE tools.

TOTAL : 45**TEXT BOOK**

1. Roger S.Pressman, Software engineering- A practitioner's Approach, McGraw-Hill International Edition, 5th edition, 2001.

REFERENCES

1. Ian Sommerville, Software Engineering, Pearson education Asia, 6th edition, 2000.
2. Pankaj Jalote- An Integrated Approach to Software Engineering, Springer Verlag, 1997.
3. James F Peters and Witold Pedryez, Software Engineering - An Engineering Approach, John Wiley and Sons, New Delhi, 2000.
4. Ali Behforooz and Frederick J Hudson, Software Engineering Fundamentals, Oxford University Press, New Delhi, 1996.

IT2405 DESIGN AND ANALYSIS OF ALGORITHMS

L T P C
3 1 0 4

GOAL

To create analytical skills, to enable the students to design algorithms for various applications, and to analyze the algorithms.

OBJECTIVES

The course should enable the students to:

- Understand the basic concepts of algorithms
- Learn the various mathematical aspects and analysis of algorithms
- Study the concept of sorting and searching algorithms
- Learn the different types algorithmic techniques
- Understand algorithm methods and analysis

OUTCOME

The students should be able to:

- Apply basic ideas about algorithms
- Apply the time and space complexity, worst case, average case and best case complexities and the big-O notation
- Develop searching and sorting algorithms
- Develop efficient algorithms
- Apply complexity measures of algorithms, including recursive algorithms using recurrence relations

UNIT I ALGORITHM ANALYSIS 9

Algorithm Analysis - Time Space Tradeoff - Asymptotic Notations - Conditional asymptotic notation - Removing condition from the conditional asymptotic notation - Properties of big-Oh notation - Recurrence equations - Solving recurrence equations - Analysis of linear search.

UNIT II DIVIDE AND CONQUER 9

Divide and Conquer: General Method - Binary Search - Finding Maximum and Minimum - Merge Sort - Greedy Algorithms: General Method - Container Loading - Knapsack Problem.

UNIT III DYNAMIC PROGRAMMING 9

Dynamic Programming: General Method - Multistage Graphs - All-Pair shortest paths - Optimal binary search trees - 0/1 Knapsack - Travelling salesperson problem.

UNIT IV BACKTRACKING 9

Backtracking: General Method - 8 Queens problem - sum of subsets - graph coloring - Hamiltonian problem - knapsack problem.

UNIT V GRAPH

9

Graph Traversals - Connected Components - Spanning Trees - Biconnected components - Branch and Bound: General Methods (FIFO & LC) - 0/1 Knapsack problem - Introduction to NP-Hard and NP-Completeness.

TUTORIAL: 15

TOTAL : 60

TEXT BOOKS

1. Ellis Horowitz, Sartaj Sahni and Sanguthevar Rajasekaran, Computer Algorithms/ C++, Second Edition, Universities Press, 2007. (For Units II to V)
2. K.S. Easwarakumar, Object Oriented Data Structures using C++, Vikas Publishing House pvt. Ltd., 2000 (For Unit I)

REFERENCES

1. T. H. Cormen, C. E. Leiserson, R.L.Rivest, and C. Stein, Introduction to Algorithms, Second Edition, Prentice Hall of India Pvt. Ltd, 2003.
2. Alfred V. Aho, John E. Hopcroft and Jeffrey D. Ullman, The Design and Analysis of Computer Algorithms, Pearson Education, 1999.

IT2431 SYSTEM SOFTWARE LAB

L T P C
0 0 3 2

GOAL

To give a knowledge, fundamentals and idea of Assemblers, loaders, linkers, and macro processors.

OBJECTIVES

The course should enable the students to:

- Learn the concepts of assembler.
- Understand Macro Processor.
- Know the concepts of absolute loader.
- Learn about Direct Linking Loader

OUTCOME

The students should be able to:

- Translate mnemonic operation codes to machine codes using the assembler.
- Implement Macro processors and its function.
- Design an absolute loader and illustrate its operations.
- Develop a Direct Linking Loader

SOFTWARE REQUIRED

C and C++

LIST OF EXPERIMENTS

1.	Implement a symbol table with functions to create, insert, modify, search, and display.	6
2.	Implement pass one of a two pass assembler.	3
3.	Implement pass two of a two pass assembler.	6
4.	Implement a single pass assembler.	3
5.	Implement a macro processor.	3
6.	Implement an absolute loader.	3
7.	Implement a relocating loader.	3
8.	Implement pass one of a direct-linking loader.	9
9.	Implement pass two of a direct-linking loader.	9

PRACTICAL : 45

IT2432 C# AND .NET FRAMEWORK LAB

L T P C
0 0 3 2

GOAL

To understand the fundamental concepts of the C# as a developing tool and to understand the concepts of .NET framework.

OBJECTIVES

The course should enable the students to:

- Understand the basic concepts and the object oriented aspects of C#.
- Learn web application development in .Net.
- Learn Web form controls.

OUTCOME

The students should be able to:

- Develop simple programs in C#.
- Develop web applications and data access using ADO .NET.
- Create applications using Web form controls.

SOFTWARE REQUIRED

Visual Studio 2010

LIST OF EXPERIMENTS

S. No.	Name of the Experiment	No. of Hours
1.	C# programs using expressions, branching and looping.	6
2.	C# programs using arrays, strings, structures and enumerations.	6
3.	C# programs using methods.	3
4.	C# programs to implement inheritance, polymorphism and operator overloading.	6
5.	C# programs to implement interface, errors and exception.	6
6.	Programs using .Net data provider.	3
7.	Net program for web application.	3
8.	Program to build an XML Web Service Client.	3
9.	Program using Web forms control.	3
10.	Program for exchanging information using SOAP.	6

PRACTICAL : 45

IT2433 OPERATING SYSTEM LAB

L T P C
0 0 3 2

GOAL

To have a thorough knowledge of processes, scheduling concepts, memory management, I/O and file systems in an operating system

OBJECTIVES

The course should enable the students to:

- Understand shell programming
- Know the commands of LINUX operating system.
- Understand the I/O system calls
- Learn about the scheduling policies
- Know the concepts of Semaphores and Memory management schemes.

OUTCOME

The students should be able to:

- Write simple shell programs

- Implements the commands in LINUX operating system
- Implement the I/O system calls
- Implement the scheduling policies
- Develop Semaphores and Memory management schemes.

SOFTWARE REQUIRED

1. Linux Operating System
2. TC

(Implement the following on LINUX platform. Use C for high level language implementation)

LIST OF EXPERIMENTS

S.No.	Name of the Experiment	No. of Hours
1.	Shell programming - command syntax - write simple functions - basic tests	6
2.	Shell programming - loops - patterns - expansions - substitutions	6
3.	Write programs using the following system calls of LINUX operating system: fork, exec, getpid, exit, wait, close, stat, opendir, readdir	3
4.	Write programs using the I/O system calls of LINUX operating system (open, read, write, etc)	6
5.	Write C programs to simulate LINUX commands like ls, grep, etc.	6
6.	Given the list of processes, their CPU burst times and arrival times, display/print the Gantt chart for FCFS and SJF. For each of the scheduling policies, compute and print the average waiting time and average turnaround time	3
7.	Given the list of processes, their CPU burst times and arrival times, display/print the Gantt chart for Priority and Round robin. For each of the scheduling policies, compute and print the average waiting time and average turnaround time	3
8.	Implement the Producer - Consumer problem using semaphores.	3

9. Implement some memory management schemes - I for eg

Free space is maintained as a linked list of nodes with each node having the starting byte address and the ending byte address of a free block. Each memory request consists of the process-id and the amount of storage space required in bytes. Allocated memory space is again maintained as a linked list of nodes with each node having the process-id, starting byte address and the ending byte address of the allocated space.

3

10. Implement some memory management schemes - II for eg

When a process finishes (taken as input) the appropriate node from the allocated list should be deleted and this free disk space should be added to the free space list. [Care should be taken to merge contiguous free blocks into one single block. This results in deleting more than one node from the free space list and changing the start and end address in the appropriate node]. For allocation use first fit, worst fit and best fit.

6

PRACTICAL: 45

SEMESTER V

IT2501FREE AND OPEN SOURCE SOFTWARE

L T P C
3 1 0 4

GOAL

To introduce the concepts and technologies in free and open source software.

OBJECTIVES

The course should enable the students to:

- Learn the different concepts of free and open source software
- Learn MySQL open source database software
- Learn PHP
- Know the concepts of Python
- Understand the concepts of Pearl

OUTCOME

The students should be able to:

- Apply the concepts of freeware
- Work with MySQL database system.
- Write the program in PHP,
- Develop programs in Python
- Design programs in pearl.

UNIT I INTRODUCTION

9

Overview, Definition and History of Free / Open Source Software and GNU/Linux - Need of Open Sources - Advantages of Open Sources - Open Source Operating Systems - GNU/Linux Installation and Configuration - Basic Shell Utilities / Commands - Layout of the Linux File system - Exploring the vi Text Editor - Configuring an Internet Connection - Getting Help: man, info pages, Online Manuals - X-The Graphical User Interface of Linux - Overview of GNOME / KDE Desktop Environment - Overview of LibreOffice Office Suite - Software Package Management - Understanding the Linux OS Booting Process - Configuring Network Services in Linux - Configuring Printers using CUPS

UNIT II MySQL DATABASE

9

MySQL: Introduction - Setting up account - Starting, Terminating and Writing your own SQL Programs - Record Selection Technology - Working with Strings - Date and Time - Sorting Query Results - Generating Summary - Working with Metadata - Using Sequences - MySQL and Web

UNIT III PHP**9**

PHP: Introduction - Programming in Web Environment - Variables - Constants - Data Types - Operators - Statements - Functions - Arrays - OOP - String Manipulation and Regular Expression - File Handling and Data Storage - PHP and MySQL Database Connectivity - PHP and LDAP - Sending and Receiving E-mails - Debugging and Error Handling - Security - Templates

UNIT IV PYTHON**9**

Python: Syntax and Style - Python Objects - Numbers - Sequences - Strings - Lists and Tuples - Dictionaries - Conditionals and Loops - Files - Input and Output - Errors and Exceptions - Functions - Modules - Classes and OOP - Execution Environment

UNIT V PERL**9**

Perl Backgrounder - Perl Overview - Perl Parsing Rules - Variables and Data - Statements and Control Structures - Subroutines, Packages and Modules - Working with Files - Data Manipulation.

TUTORIAL: 15**TOTAL : 60****TEXT BOOKS**

1. Understanding Open Source Software Development, Joseph Feller & Brian FitzGerald, Pearson Education Limited 2001
2. Introduction to Linux - A Hands on Guide, Author: Machtelt Garrels , UNIX Academic publications 2007 <http://www.tldp.org/LDP/intro-linux/intro-linux.pdf>
3. Beginning PHP and MySQL: From Novice to Professional, Fourth Edition: W. J. Gilmore : APress 2010
4. Learning Python : Mark Lutz : O'Reilly Publications, 2007
5. Programming PERL : Larry Wall, Tom Christiansen & Jon Orwant : O'Reilly Publications, 2009.

REFERENCES

1. Introduction to Linux : Installation and Programming. Dr.N.B.Venkateswarlu. 2011. NRCFOSS Series
2. PHP: A Beginner's Guide : Vikram Vaswani: McGraw Hill , 2008
3. MySQL: The Complete Reference, Vikram Vaswani : McGraw Hill 2003
4. Running Linux, Fourth Edition, Matt Welsh, Matthias Kalle Dalheimer, Terry Dawson, and Lar Kaufman, O'Reilly Publishers, December 2002, ISBN: 0-596-00272-6.
5. Linux Cookbook, First Edition, Carla Schroder, O'Reilly Cookbooks Series, November 2004, ISBN: 0-596-00640-3.
6. Open Sources: Voices from the Open Source Revolution, First Edition, January 1999, ISBN: 1-56592-582-3. URL: <http://www.oreilly.com/catalog/opensources/book/toc.html>

7. The Linux Cookbook: Tips and Techniques for Everyday Use, First Edition, Michael Stutz, 2001. URL: http://dsl.org/cookbook/cookbook_toc.html
8. The Linux System Administrators' Guide, Lars Wirzenius, Joanna Oja, Stephen Stafford, and Alex Weeks, December 2003. URL: <http://www.tldp.org/guides.html>
9. Using GCC, Richard Stallman et al. URL: <http://www.gnu.org/doc/using.html>
10. An Introduction to GCC, Brian Gough. URL: <http://www.network-theory.co.uk/docs/gccintro/>
11. GNU Autoconf, Automake and Libtool, Gary V. Vaughan, Ben Elliston, Tom Tromey and Ian Lance Taylor. URL: <http://sources.redhat.com/autobook/>
12. Open Source Development with CVS, Third Edition, Karl Fogel and Moshe Bar. URL: <http://cvsbook.red-bean.com/>
13. Advanced Bash Scripting Guide, Mendel Cooper, June 2005. URL: <http://www.tldp.org/guides.html>
14. GTK+ / GNOME Application Development, Havoc Pennington. URL: <http://developer.gnome.org/doc/GGAD>
15. Python Tutorial, Guido van Rossum, Fred L. Drake, Jr., Editor URL: <http://www.python.org/doc/current/tut/tut.html>

IT 2502 COMPUTER NETWORKS

L T P C
3 0 0 3

GOAL

To introduce the concepts and technologies in data communications and computer networks

OBJECTIVES

The course should enable the students to :

- Learn the basic concepts of networks
- Learn about data link layer
- Understand the concept of network layer
- Study TCP and UDP
- Understand the application layer functions

OUTCOME

The students should be able to:

- Apply the ISO/OSI model
- Detect and correct errors in transmission
- Determine the IP address and route
- Develop programs for TCP and UDP

- Apply the protocol for desired applications

UNIT I DATA COMMUNICATIONS 8

Components - Direction of Data flow - networks - Components and Categories - types of Connections - Topologies - Protocols and Standards - ISO / OSI model - Transmission Media - Coaxial Cable - Fiber Optics - Line Coding - Modems - RS232 Interfacing sequences.

UNIT II DATA LINK LAYER 10

Error - detection and correction - Parity - LRC - CRC - Hamming code - low Control and Error control - stop and wait - go back-N ARQ - selective repeat ARQ- sliding window - HDLC. - LAN - Ethernet IEEE 802.3 - IEEE 802.4 - IEEE 802.5 - IEEE 802.11 - FDDI - SONET - Bridges.

UNIT III NETWORK LAYER 10

Internetworks - Packet Switching and Datagram approach - IP addressing methods - Subnetting - Routing - Distance Vector Routing - Link State Routing - Routers.

UNIT IV TRANSPORT LAYER 9

Duties of transport layer - Multiplexing - Demultiplexing - Sockets - User Datagram Protocol (UDP) - Transmission Control Protocol (TCP) - Congestion Control - Quality of services (QOS) - Integrated Services.

UNIT V APPLICATION LAYER 8

Domain Name Space (DNS) - SMTP - FTP - HTTP - WWW - Security - Cryptography.

TOTAL: 45

TEXT BOOK

1. Behrouz A. Forouzan, Data communication and Networking, Tata McGraw-Hill, 2004.

REFERENCES

1. James F. Kurose and Keith W. Ross, Computer Networking: A Top-Down Approach Featuring the Internet, Pearson Education, 2003.
2. Larry L. Peterson and Peter S. Davie, Computer Networks, Harcourt Asia Pvt. Ltd., Second Edition.
3. Andrew S. Tanenbaum, Computer Networks, PHI, Fourth Edition, 2003.
4. William Stallings, Data and Computer Communication, Sixth Edition, Pearson Education, 2000.

IT2503 DATABASE MANAGEMENT SYSTEM

L T P C
3 1 0 4

GOAL

To provide a strong foundation in database technology and an introduction to the current trends in this field.

OBJECTIVES

The course should enable the students to :

- Learn the fundamentals of data models and to conceptualize and depict a database system using ER diagram.
- Understand SQL and relational database design.
- Understand the internal storage structures using different file and indexing techniques which will help in physical DB design.
- Know the fundamental concepts of transaction processing- concurrency control techniques and recovery procedure.
- Understand the applications of database

OUTCOME

The students should be able to:

- Apply the concepts of database models.
- Write standard queries in SQL.
- Design disk storage, file of records, unordered files, ordered files and hashed files.
- Implement the concepts and techniques of transaction processing, concurrency control and recovery.
- Develop applications for database.

UNIT I INTRODUCTION AND CONCEPTUAL MODELING 9

Introduction to File and Database systems- Database system structure - Data Models - Introduction to Network and Hierarchical Models - ER model - Relational Model - Relational Algebra and Calculus.

UNIT II RELATIONAL MODEL 9

SQL - Data definition- Queries in SQL- Updates- Views - Integrity and Security - Relational Database design - Functional dependences and Normalization for Relational Databases (up to BCNF).

UNIT III DATA STORAGE AND QUERY PROCESSING 9

Record storage and Primary file organization- Secondary storage Devices- Operations on Files- Heap File- Sorted Files- Hashing Techniques - Index Structure for files -Different types of Indexes- B-Tree - B+Tree - Query Processing.

UNIT IV TRANSACTION MANAGEMENT

9

Transaction Processing - Introduction- Need for Concurrency control- Desirable properties of Transaction- Schedule and Recoverability- Serializability and Schedules - Concurrency Control - Types of Locks- Two Phases locking- Deadlock- Time stamp based concurrency control - Recovery Techniques - Concepts- Immediate Update- Deferred Update - Shadow Paging.

UNIT V CURRENT TRENDS

9

Object Oriented Databases - Need for Complex Data types - OO data Model- Nested relations - Complex Types- Inheritance Reference Types - Distributed databases- Homogenous and Heterogenous- Distributed data Storage - XML - Structure of XML- Data- XML Document- Schema- Querying and Transformation. - Data Mining and Data Warehousing.

TUTORIAL: 15

TOTAL: 60

TEXT BOOK

1. Abraham Silberschatz, Henry F. Korth and S. Sudarshan - Database System Concepts, Fourth Edition, McGraw-Hill, 2002.

REFERENCES

1. Ramez Elmasri and Shamkant B. Navathe, Fundamental Database Systems, Third Edition, Pearson Education, 2003.
2. Raghu Ramakrishnan, Database Management System, Tata McGraw-Hill Publishing Company, 2003.
3. Hector Garcia-Molina, Jeffrey D. Ullman and Jennifer Widom- Database System Implementation- Pearson Education- 2000.
4. Peter Rob and Corlos Coronel- Database System, Design, Implementation and Management, Thompson Learning Course Technology- Fifth edition, 2003.

IT2504 TELECOMMUNICATION SYSTEMS

L T P C
3 0 0 3

GOAL

To give a basic concept of various communication systems

OBJECTIVES

The course should enable the students to :

- Understand the concepts of antenna
- Learn about satellite communications
- Understand about the fiber optic communication systems

- Learn about telephone systems applications
- Know about advancements in cellular systems

OUTCOME

The students should be able to:

- Determine the range of RADAR
- Identify where satellite communication systems are applied
- Apply optical concepts
- Know the working of telephone systems.
- Explain the various cellular systems

UNIT I METHODS OF COMMUNICATION 9

Transmission lines - Types and Characteristics, Antenna Fundamentals - Different types of antennas & their Characteristics, Radio Frequency wave propagation- Microwave -Principles, Devices (Reflex Klystron, Magnetron, TWT)-(Principles Only) Radar - Pulsed Radar - CW Radar (Principles and Block Diagram Only).

UNIT II INTRODUCTION TO SATELLITE COMMUNICATIONS 9

Satellite orbits- Satellite communication systems -Earth stations- Applications: Surveillance, Navigation, Mobile Communication, TV Broadcast, Satellite Radio, Satellite Telephone-The Internet.

UNIT III INTRODUCTION TO FIBER OPTIC COMMUNICATION 9

Light wave communication systems - Fiber structure and function types of Fiber - Optical Transmitter & Receiver -Fiber optic Data communication systems.

UNIT IV TELEPHONE SYSTEM AND ITS APPLICATION 9

Telephones -Telephone system- Facsimile- Cellular telephone system-Paging system -Integrated services Digital Networks (ISDN)

UNIT V CELLULAR RADIO 9

Citizen's band Radio, Cordless Telephone, Improved Mobile Telephone service (IMTS), Introduction to Advanced Mobile Phone Service (AMPS), GSM - RF channels and time slots - Voice transmission - Frequency Hopping - Subscriber ID module - GSM Privacy and Security - IS-95 CDMA PCS - Channels - Forward Channel - Reverse Channel - Voice Coding - Power Control - Hand-off and CDMA Security.

TOTAL: 45

TEXT BOOKS

1. Louis.E.Frenzel, Communication Electronics - Principles and Application, 3rd Editions, Tata McGraw-Hill, 2002 (Units I to IV)
2. Roy Blake, Wireless Communication Technology, Thomson Delmar Learning, Second Reprint 2002. (UNIT V Chapters: 10, 11)

REFERENCES

1. Wayne Tomasi, Electronic Communication systems, 4th Edition, Pearson Education, 2001.
2. Marin Cole, Introduction to Telecommunications -Voice, Data and Internet, Pearson Education, 2001.

IT2505 VISUAL PROGRAMMING

L T P C
3 1 0 4

GOAL

To understand the windows programming concepts including Microsoft Foundation Classes.

OBJECTIVES

The course is to enable the students to :

- Know the concepts of windows programming.
- Learn about drawing of windows
- Understand GUI programming using Microsoft Foundation Classes.
- Learn programming and simple applications using various controls
- Know to connect database

OUTCOME

The students should be able to:

- Develop programs using windows programming.
- Design the windows
- Write programs using GUI programming.
- Create simple application using various controls.
- Connect databases and retrieve information.

UNIT I WINDOWS PROGRAMMING

9

Windows environment - a simple windows program - windows and messages - creating the window - displaying the window - message loop - the window procedure - message processing - text output - painting and repainting - introduction to GDI - device context - basic drawing - child window controls

UNIT II VISUAL C++ PROGRAMMING - INTRODUCTION

9

Application Framework - MFC library - Visual C++ Components - Event Handling - Mapping modes - colors - fonts - modal and modeless dialog - windows common controls - bitmaps.

UNIT III THE DOCUMENT AND VIEW ARCHITECTURE

9

Menus - Keyboard accelerators - rich edit control - toolbars - status bars - reusable frame window base class - separating document from its view - reading and writing SDI and MDI documents - splitter window and multiple views - creating DLLs - dialog based applications.

UNIT IV ACTIVEX Controls**9**

ActiveX controls Vs. Ordinary Windows Controls - Installing ActiveX controls - Calendar Control - ActiveX control container programming - create ActiveX control at runtime - Component Object Model (COM) - containment and aggregation Vs. inheritance.

UNIT V ADVANCED CONCEPTS**9**

Database Management with Microsoft ODBC - Structured Query Language - MFC ODBC classes - sample database applications - filter and sort strings - DAO concepts - displaying database records in scrolling view - Threading.

TUTORIAL: 15**TOTAL: 60****TEXT BOOKS**

1. Charles Petzold, Windows Programming, Microsoft press, 1996 (Unit I - Chapter 1-9)
2. David J.Kruglinski, George Shepherd and Scot Wingo, Programming Visual C++, Microsoft press, 1999 (Unit II - V)

REFERENCE

1. Steve Holtzner, Visual C++ 6 Programming, Wiley Dreamtech India Pvt. Ltd., 2003.

MG 2001 PRINCIPLES OF MANAGEMENT**L T P C**
3 0 0 3**GOAL**

To make the students to understand the different managerial functions like planning, organizing, staffing, leading and controlling.

OBJECTIVES

The course should enable the students to:

- Be familiar with the historical development of organizations.
- Understand the various steps involved in planning.
- Understand the Structure and Process involved in formal and informal organization.
- Impart knowledge on the principles of leadership and human factors.
- Impart knowledge on System and process of Controlling.

OUTCOME

The students will be able to:

- Visualize the development of various business organizations.
- Be acquainted with steps involved in planning.

- Gain knowledge in departmentation by different strategies.
- Be acquainted with different motivation techniques.
- Describe the various issues on process control.

UNIT I HISTORICAL DEVELOPMENT 9

Definition of Management - Science or Art - Management and Administration - Development of Management Thought - Contribution of Taylor and Fayol - Functions of Management - Types of Business Organisation.

UNIT II PLANNING 9

Nature & Purpose - Steps involved in Planning - Objectives - Setting Objectives - Process of Managing by Objectives - Strategies, Policies & Planning Premises- Forecasting - Decision-making.

UNIT III ORGANISING 9

Nature and Purpose - Formal and informal organization - Organization Chart - Structure and Process - Departmentation by difference strategies - Line and Staff authority - Benefits and Limitations - De-Centralization and Delegation of Authority - Staffing - Selection Process - Techniques - HRD - Managerial Effectiveness.

UNIT IV DIRECTING 9

Scope - Human Factors - Creativity and Innovation - Harmonizing Objectives - Leadership - Types of Leadership Motivation - Hierarchy of needs - Motivation theories - Motivational Techniques - Job Enrichment - Communication - Process of Communication - Barriers and Breakdown - Effective Communication - Electronic media in Communication.

UNIT V CONTROLLING 9

System and process of Controlling - Requirements for effective control - The Budget as Control Technique - Information Technology in Controlling - Use of computers in handling the information - Productivity - Problems and Management - Control of Overall Performance - Direct and Preventive Control - Reporting - The Global Environment - Globalization and Liberalization - International Management and Global theory of Management.

TOTAL : 45

TEXT BOOKS

1. G.K. Vijaya Raghavan, M.Sivakumar, Principles of Management, Lakshmi Publications, Jan 2010.
2. M. Govindarajan, S. Natarajan, Principles Of Management, Prentice Hall of India Learning Pvt. Ltd2005
3. Harold Kooritz & Heinz Wehrich, Essentials of Management, Tata McGraw-Hill, 1998
4. Joseph L Massie, Essentials of Management, Prentice Hall of India, (Pearson) Fourth Edition, 2003.

REFERENCES

1. Tripathy PC And Reddy PN, Principles of Management, Tata McGraw-Hill, 1999.
2. Decenzo David, Robbin Stephen A, Personnel and Human Resources Management, Prentice Hall of India, 1996
3. JAF Stomer, Freeman R. E and Daniel R Gilbert, Management, Pearson Education, Sixth Edition, 2004.
4. Fraidoon Mazda, Engineering Management, Addison Wesley, 2000.

IT2531 FREE AND OPEN SOURCE SOFTWARE LAB

L	T	P	C
0	0	3	2

GOAL

To understand and Implement the Open Source Programming

OBJECTIVES

The course should enable the students to :

- Understand the installation and configuration of Open source software
- Understand the basics of Linux
- Learn about MySQL,
- Know the concepts of PHP.

OUTCOME

The students will be able to:

- Install and Configure Open source software.
 - Write programs in Linux environment.
 - Create and use the database in MySQL.
 - Develop the applications using PHP.
1. Installation of any GNU/Linux Operating System (Fedora, Ubuntu, Debian, OpenSuSE, CentOS or any other GNU/Linux OS)
 2. Installation and Configuration of Apache http Web Server
 3. **MySQL Exercises: 10 Hrs**
 - 1 Creating a Simple Database and Displaying its Structure
 - 2 Putting Data into a Table
 - 3 Adding Fields
 - 4 Multi-line Command Entry
 - 5 Insert Some More Records into the Table

6 Updating Existing Records

7 Deleting Records

4. PHP Exercises : 35 Hrs

Beginnings

1 Show Text in Browser

2 Create and Use Variables

3 Arithmetic Operators and Variables

4 Arithmetic-Assignment Operators and Variables

5 Variable Content and Destruction

6 Concatenation of Strings

7 Variable Data Types

Control Structures

1 If-Else Statement

2 Simple Loops

3 Simple For Loop

4 Nested For Loops

Forms

1 Simple Form and Response

2 Interactive Form with If-Else

3 If-Elseif-Else Construction

4 Switch Statement

PRACTICAL :45

IT2532 DATABASE MANAGEMENT SYSTEM LAB

L T P C
0 0 3 2

GOAL

To provide concepts of database queries, database models and normalization.

OBJECTIVES

The course should enable the students to :

- Learn the concepts and techniques relating to query processing SQL engines
- Present the concepts and techniques relating to ODBC and its implementation
- Acquire a knowledge of procedures and functions supported by SQL.
- Make use of PL/SQL language component, variables and data types.
- Understand the scope of the Block, Nested blocks and Labels.

OUTCOME

The students should be able to:

- Implement the query processing techniques
- Design and implement the database schema for a general problem domain.
- Normalize a database.
- Populate and query a database using SQL DDL / DML commands.
- Program PL/SQL including stored procedures, stored functions, cursors, packages.

SOFTWARE REQUIRED

Oracle 9i

Visual Studio 6

Java 7

Windows XP SP 3

LIST OF EXPERIMENTS

S.No.	Name of the Experiment	No. of Hours
1.	Data Definition Language (DDL) commands in RDBMS	3
2.	Data Manipulation Language (DML) and Data Control Language (DCL) commands in RDBMS	6
3.	High-level language extension with Cursors.	3
4.	High level language extension with Triggers	3
5.	Procedures and Functions	6
6.	Embedded SQL.	6

7.	Database design using E-R model and Normalization	6
8.	Design and implementation of Payroll Processing System	6
9.	Design and implementation of Banking System	3
10.	Design and implementation of Library Information System	3

PRACTICAL: 45

IT2533 VISUAL PROGRAMMING LAB

L T P C
0 0 3 2

GOAL

To give an in-depth knowledge in VC++.

OBJECTIVES

The course should enable the students to :

- Learn programming in VC++.
- Learn MFC.
- Learn about various controls.
- Understand GUI objects.

OUTCOME

The students should be able to:

- Create windows.
- Write programs using MFC.
- Implement the features of MFC using controls.
- Implement GUI objects.

LIST OF EXPERIMENTS

Windows SDK / Visual C++

12

1. Writing code for keyboard and mouse events.
2. Dialog Based applications
3. Creating MDI applications

Visual C++

33

1. Threads
2. Document view Architecture, Serialization
3. Dynamic controls

4. Menu, Accelerator, Tool tip, Tool bar
5. Creating DLLs and using them
6. Data access through ODBC
7. Creating ActiveX control and using it.

PRACTICAL : 45

SEMESTER-VI

IT2601 NETWORK PROGRAMMING AND MANAGEMENT

L T P C
3 1 0 4

GOAL

To enable the students to develop the necessary skills for developing robust & scalable network applications and to build necessary basic knowledge for managing networks.

OBJECTIVES

The course should enable the students to:

- Learn the basics of socket programming using TCP Sockets.
- Develop knowledge of threads for developing high performance scalable applications.
- Understand the various socket options
- Learn basics of UDP sockets.
- Learn about raw sockets.

OUTCOME

The students should be able to:

- Develop programs using Sockets
- Write programs using threads.
- Implement socket options
- Implement the UDP Sockets.
- Program using raw sockets

UNIT I ELEMENTARY TCP SOCKETS

9

Introduction to Socket Programming - Overview of TCP/IP Protocols -Introduction to Sockets - Socket address Structures - Byte ordering functions - address conversion functions - Elementary TCP Sockets - socket, connect, bind, listen, accept, read, write, close functions - Iterative Server - Concurrent Server.

UNIT II APPLICATION DEVELOPMENT

9

TCP Echo Server - TCP Echo Client - Posix Signal handling - Server with multiple clients - boundary conditions: Server process Crashes, Server host Crashes, Server Crashes and reboots, Server Shutdown - I/O multiplexing - I/O Models - select function - shutdown function - TCP echo Server (with multiplexing) - poll function - TCP echo Client (with Multiplexing)

UNIT III SOCKET OPTIONS**9**

Socket options - getsocket and setsocket functions - generic socket options - IP socket options - ICMP socket options - TCP socket options -

UNIT IV ELEMENTARY UDP SOCKETS**9**

Elementary UDP sockets - UDP echo Server - UDP echo Client - Multiplexing TCP and UDP sockets - Domain name system - gethostbyname function - Ipv6 support in DNS - gethostbyadr function - getservbyname and getservbyport functions.

UNIT V ADVANCED SOCKETS**9**

Ipv4 and Ipv6 interoperability - threaded servers - thread creation and termination - TCP echo server using threads - Mutexes - condition variables - raw sockets - raw socket creation - raw socket output - raw socket input - ping program - trace route program.

TUTORIAL : 15**TOTAL: 60****TEXT BOOK**

1. W. Richard Stevens, UNIX NETWORK PROGRAMMING Vol-I, Second Edition, PHI / Pearson Education, 1998.

REFERENCE

1. D.E. Comer, Internetworking with TCP/IP Vol- III, (BSD Sockets Version), second Edition, PHI, 2003.

IT2602 WEB TECHNOLOGY**L T P C**
3 1 0 4**GOAL**

To familiarize about the Internet Programming concepts and Scripting Languages

OBJECTIVES

The course should enable the students to :

- Understand the concepts of networking.
- Familiarize with CGI Scripts and XML
- Understand Java Fundamentals
- Learn Server Side Programming
- Understand database concepts

OUTCOME

The students should be able to:

- Develop programs using web concepts and scripting languages.

- Code Server Side Scripts and xml
- Develop programs in core java.
- Code server side programming using servlets, JSP and ASP.
- Implement database connectivity and its applications.

UNIT I INTRODUCTION 9

Introduction - Network concepts - Web concepts - Internet addresses - Retrieving Data with URL - XHTML - DHTML: Cascading Style Sheets.

UNIT II PROGRAMMING THE WEB 9

Scripting Languages: JavaScript, VbScript-CGI & Perl - HTML Forms - Server Side Includes - Server security issues - XML.

UNIT III JAVA PROGRAMMING 9

Java fundamentals: Classes - Inheritance - Packages - Interfaces - Exceptions Handling - Multi threading - Applets.

UNIT IV SERVER SIDE PROGRAMMING 9

Server side Programming - Active server pages - Java server pages - Java Servlets: Servletcontainer - Exceptions - Sessions and Session Tracking - Using Servlet context - Dynamic Content Generation - Servlet Chaining and Communications.

UNIT V APPLICATIONS 9

Simple applications - Internet Commerce - Database connectivity - Online databases - EDI Applications in Business - Plug-ins - Firewalls.

TUTORIAL: 15

TOTAL: 60

TEXT BOOKS

1. Deitel, Deitel and Neito, INTERNET and WORLD WIDE WEB - How to program, Pearson education Asia, 2001
2. D.Norton and H. Schildt, Java 2: The complete Reference, TMH, 2000.

REFERENCES

1. Eric Ladd and Jim O'Donnell, et al, USING HTML 4, XML, and JAVA1.2, PHI publications, 2003.
2. Elliotte Rusty Herold, Java Network Programming, O'Reilly Publications, 3rd Edition, 2004.

IT2603 MOBILE COMPUTING

L T P C
3 0 0 3

GOAL

To provide basics for various techniques in Mobile Communications and Mobile Content services.

OBJECTIVES

The course should enable the students to :

- Learn the basics of Wireless voice and data communications technologies.
- Build working knowledge on various telephone and satellite networks.
- Study the working principles of wireless LAN and its standards.
- Build knowledge on various Mobile Computing algorithms.
- Build skills in working with Wireless application Protocols to develop mobile content applications

OUTCOME

The student should be able to:

- Implement the wireless communication technologies
- Design satellite communication and networking.
- Implement the Wireless LAN Standards
- Design mobile communication systems.
- Apply the wireless application protocols.

UNIT I WIRELESS COMMUNICATION FUNDAMENTALS

9

Introduction - Wireless transmission - Frequencies for radio transmission - Signals - Antennas - Signal Propagation - Multiplexing - Modulations - Spread spectrum - MAC - SDMA - FDMA - TDMA - CDMA - Cellular Wireless Networks.

UNIT II TELECOMMUNICATION NETWORKS

11

Telecommunication systems - GSM - GPRS - DECT - UMTS - IMT-2000 - Satellite networks - Basics - Parameters and Configurations - Capacity Allocation - FAMA and DAMA - Broadcast Systems - DAB - DVB.

UNIT III WIRELESS LAN

9

Wireless LAN - IEEE 802.11 - Architecture - services - MAC - Physical layer - IEEE 802.11a - 802.11b standards - HIPERLAN - Blue Tooth.

UNIT IV MOBILE NETWORK LAYER

9

Mobile IP - Dynamic Host Configuration Protocol - Routing - DSDV - DSR - Alternative Metrics.

UNIT V TRANSPORT AND APPLICATION LAYERS

7

Traditional TCP - Classical TCP improvements - WAP, WAP 2.0.

TOTAL : 45

TEXT BOOKS

1. Jochen Schiller, Mobile Communications, PHI/Pearson Education, Second Edition, 2003.
2. William Stallings, Wireless Communications and Networks, PHI/Pearson Education, 2002.

REFERENCES

1. Kaveh Pahlavan, Prasanth Krishnamoorthy, Principles of Wireless Networks, PHI/Pearson Education, 2003.
2. Uwe Hansmann, Lothar Merk, Martin S. Nicklons and Thomas Stober, Principles of Mobile Computing, Springer, New York, 2003.
3. Hazysztof Wesolowshi, Mobile Communication System, John Wiley and Sons Ltd, 2002.

IT2604 CRYPTOGRAPHY AND NETWORK SECURITY

L T P C
3 0 0 3

GOAL

To give a knowledge, idea and applications of network security

OBJECTIVES

The course should enable the students to :

- Understand the concept of cryptography.
- Understand the applications of cryptography
- Learn the concepts of Authentication and Hash function
- Understand the various principles of network security.
- Learn about system security

OUTCOME

The students should be able to:

- Implement the concepts of cryptography.
- Apply cryptography.
- Apply authentications applications in different networks
- Implement firewall and it applications.
- Design the system security

UNIT I INTRODUCTION	10
OSI Security Architecture - Classical Encryption techniques - Cipher Principles - Data Encryption Standard - Block Cipher Design Principles and Modes of Operation - Evaluation criteria for AES - AES Cipher - Triple DES - Placement of Encryption Function - Traffic Confidentiality	
UNIT II PUBLIC KEY CRYPTOGRAPHY	10
Key Management - Diffie-Hellman key Exchange - Elliptic Curve Architecture and Cryptography - Introduction to Number Theory - Confidentiality using Symmetric Encryption - Public Key Cryptography and RSA.	
UNIT III AUTHENTICATION AND HASH FUNCTION	9
Authentication requirements - Authentication functions - Message Authentication Codes - Hash Functions - Security of Hash Functions and MACs - MD5 message Digest algorithm - Secure Hash Algorithm - RIPEMD - HMAC Digital Signatures - Authentication Protocols - Digital Signature Standard	
UNIT IV NETWORK SECURITY	8
Authentication Applications: Kerberos - X.509 Authentication Service - Electronic Mail Security - PGP - S/MIME - IP Security - Web Security.	
UNIT V SYSTEM LEVEL SECURITY	8
Intrusion detection - password management - Viruses and related Threats - Virus Counter measures - Firewall Design Principles - Trusted Systems.	
TOTAL : 45	

TEXT BOOK

1. William Stallings, Cryptography And Network Security - Principles and Practices, Prentice Hall of India, Third Edition, 2003.

REFERENCES

1. Atul Kahate, Cryptography and Network Security, Tata McGraw-Hill, 2003.
2. Bruce Schneier, Applied Cryptography, John Wiley & Sons Inc, 2001.
3. Charles B. Pfleeger, Shari Lawrence Pfleeger, Security in Computing, Third Edition, Pearson Education, 2003.

IT2605 INFORMATION STORAGE AND MANAGEMENT

L T P C
3 0 0 3

GOAL

To provide basic knowledge about continuous time and discrete time signals and systems

OBJECTIVES

The course should enable the students to:

- Evaluate storage architectures, including storage subsystems, DAS, SAN, NAS, and CAS.
- Define backup, recovery, disaster recovery, business continuity, and replication.
- Learn the concepts of networked storage
- Understand logical and physical components of a storage infrastructure. Identify components of managing and monitoring the data center
- Define information security and identify different storage virtualization technologies.

OUTCOME

The student should be able to:

- Design the storage architecture
- Implement the recovery process
- Design a networked storage
- Implement the components of Data Center and how to manage the data center
- Understand the security Information in storage management

UNIT I INTRODUCTION TO STORAGE TECHNOLOGY

9

Introduction to Information Storage Technology: Review data creation and the amount of data being created and understand the value of data to a business, Challenges in Data Storage and Management, Data Storage Infrastructure

UNIT II STORAGE SYSTEMS ARCHITECTURE

9

Hardware and software components of the host environment, Key protocols and concepts used by each component, Physical and logical components of a connectivity environment. Major physical components of a disk drive and their function, logical constructs of a physical disk, access characteristics and performance implications, Concept of RAID and its components, Different RAID levels and their suitability for different application environments: RAID 0, RAID 1, RAID 3, RAID 4, RAID 5, RAID 0+1, RAID 1+0, RAID 6, Compare and contrast integrated and modular storage systems, High-level architecture and working of an intelligent storage system.

UNIT III INTRODUCTION TO NETWORKED STORAGE

9

Evolution of networked storage, Architecture, components and topologies of FC-SAN, NAS, and IP-SAN, Benefits of the different networked storage options, Understand the need for long-term archiving

solutions and describe how CAS fulfills the need Understand the appropriateness of the different networked storage options for different application environments.

UNIT IV INFORMATION AVAILABILITY, MONITORING & MANAGING DATACENTER 9

List reasons for planned/unplanned outages and the impact of downtime, Impact of downtime, Differentiate between business continuity (BC) and disaster recovery (DR), RTO and RPO, Identify single points of failure in a storage infrastructure and list solutions to mitigate these failures . Architecture of backup/recovery and the different backup! recovery topologies, replication technologies and their role in ensuring information availability and business continuity, Remote replication technologies and their role in providing disaster recovery and business continuity capabilities. Identify key areas to monitor in a data center, Industry standards for data center monitoring and management, Key metrics to monitor for different components in a storage infrastructure. Key management tasks in a data center

UNIT V SECURING STORAGE AND STORAGE VIRTUALIZATION 9

Security Framework, Storage security domains, List and analyzes the common threats in each domain, Security Implementations. Managing The Storage Infrastructure: Monitoring the Storage Infrastructure, Storage Management Activities, Challenges and solutions.

TOTAL : 45

TEXT BOOK

1. EMC Educational Services, Information Storage and Management, Wiley India, 2009.

REFERENCES

1. Richard Barker and Paul Massiglia, Storage Area Network Essentials: A Complete Guide to Understanding and Implementing SANs, Wiley India, 2008.
2. Robert Spalding, Storage Networks: The Complete Reference, Tata McGraw Hill Osborne, 2003.
3. Marc Farley, Building Storage Networks, Tata McGraw Hill, Osborne, 2001.
4. Meet Gupta, Storage Area Network Fundamentals, Pearson Education Limited, 2002.

IT2631 NETWORKING LABORATORY

L T P C
0 0 3 2

GOAL

To learn and develop programs using the concepts of socket programming

OBJECTIVES

The course should enable the students to :

- Learn Socket Programming
- Learn about protocols like ARP, BGP, Sliding Window
- Learn the network concepts like CRC, Bit stuffing, Client Server applications
- Understand the concepts of DNS Server, File Transfer, Downloading a file

OUTCOME

The student should be able to:

- Write program with sockets
- Simulate ARP, BGP, Sliding Window Protocols
- Develop programs for CRC, Bitstuffing, Client Server applications
- Write programs for DNS Server, File Transfer, Downloading a file

SOFTWARE REQUIRED

C and Linux

LIST OF EXPERIEMENTS

- | | | |
|-----|--|---|
| 1. | Simulation of ARP / RARP. | 6 |
| 2. | Write a program that takes a binary file as input and performs bit stuffing and CRC Computation. | 3 |
| 3. | Develop an application for transferring files over RS232. | 6 |
| 4. | Simulation of Sliding-Window protocol. | 3 |
| 5. | Simulation of BGP / OSPF routing protocol. | 3 |
| 6. | Develop a Client - Server application for chat. | 6 |
| 7. | Develop a Client that contacts a given DNS Server to resolve a given host name. | 3 |
| 8. | Write a Client to download a file from a HTTP Server. | 9 |
| 9. | Study of NS2. | 3 |
| 10. | Study of Glomosim / OPNET. | 3 |

PRACTICAL: 45

IT2632 WEB TECHNOLOGY LABORATORY

L T P C
0 0 3 2

GOAL

To understand the concept of web service programming using Advanced Java and Web languages.

OBJECTIVES

The course should enable the students to:

- Learn website creation
- Learn Dynamic Web Pages
- Understand Client Side Validation.
- Learn about XML Programming
- Know J2EE Concepts

OUTCOMES

The students should be able to:

- Develop a website using CSS
- Design dynamic web pages using JavaScript.
- Implement Client Side Scripting for validation.
- Code XML with DTD for web based applications.
- Write the J2EE Coding for applications.

SOFTWARE REQUIRED :

1. Java Development Kit 6.0
2. Eclipse IDE

LIST OF EXPERIMENTS

- | | |
|--|---|
| 1. Create a personal website using HTML with Cascading Style Sheet. | 6 |
| 2. Create a Dynamic HTML Page using Java Script. | 3 |
| 3. Create a HTML page for signing up an E-Mail with client side validation with database connectivity. | 6 |
| 4. Create an XML document and validate it using DTD. | 3 |
| 5. Extracting contents of the XML document using DOM parser | 6 |
| 6. Java Program for implementing Multithreading. | 3 |
| 7. Draw different shapes using Applets. | 3 |
| 8. Server Side Application using JSP. | 3 |
| 9. Create an Banking Application using Servlets. | 6 |
| 10. Write a ASP program for shopping cart. | 6 |

PRACTICAL : 45

EL2631 COMMUNICATION SKILLS AND PERSONALITY DEVELOPMENT

L T P C
1 0 1 1

GOAL

The goal of the programme is to provide the learner some finishing touches to improve their soft skills and develop their personality familiarize them with interview skills and also make them aware of the salient features of corporate manners and etiquette at a global level.

OBJECTIVES

The course should enable the students to:

- Expose the learners to interview skills
- Acquaint the learners with manners and etiquette in different countries.
- Polish soft skills.

OUTCOME

The students should be able to

- Attend interviews with confidence.
- Carry himself with confidence and élan.
- Develop a positive attitude.

Career Lab:

- | | |
|---|---|
| 1. Students participate in Role play to depict social skills and manners in different countries | 6 |
| 2. Mock interviews | 6 |
| 3. Addressing an audience | 4 |

TOTAL: 16

Language Lab:

- | | |
|--|---|
| 4. Videos or films depicting social skills | 2 |
| 5. Manners in different countries | 6 |
| 6. Interview skills | 2 |
| 7. Methods of time management | 2 |
| 8. Methods of stress management | 2 |

TOTAL: 14

A record of activities to be presented in the form of a portfolio at the end of the course.

PRACTICAL : 30

SEMESTER VII

GE 2711 PROFESSIONAL ETHICS AND HUMAN VALUES

L T P C
3 0 0 3

GOAL

To introduce the students to basic concepts of Engineering Ethics and Human Values.

OBJECTIVES

The course should enable the students to :

- Gain an awareness on Human Values.
- Understand the various theories on Engineering Ethics.
- Learn moral social values and Loyalty of professional.
- Learn about the safety aspects responsibilities and various rights of professionals.

OUTCOME

The students will be able to:

- Write about Human values.
- Use the senses of Engineering Ethics and ethical theories.
- Be acquainted with the Global issues on Environmental Ethics and Computer Ethics.
- Get awareness on the Ethics and responsibilities of a professional.
- Get awareness on Engineering Ethics and Human Values.

UNIT I HUMAN VALUES

10

Morals, Values and Ethics - Integrity - Work Ethic - Service Learning - Civic Virtue - Respect for Others - Living Peacefully - caring - Sharing - Honesty - Courage - Valuing Time - Co-operation - Commitment - Empathy - Self-Confidence - Character - Spirituality.

UNIT II ENGINEERING ETHICS

9

Senses of 'Engineering Ethics' - variety of moral issued - types of inquiry - moral dilemmas - moral autonomy - Kohlberg's theory - Gilligan's theory - consensus and controversy - Models of Professional Roles - theories about right action - Self-interest - customs and religion - uses of ethical theories.

UNIT II ENGINEERING AS SOCIAL EXPERIMENTATION

9

Engineering as experimentation - engineers as responsible experimenters - codes of ethics - a balanced outlook on law - the challenger case study.

UNIT IV SAFETY, RESPONSIBILITIES AND RIGHTS

9

Safety and risk - assessment of safety and risk - risk benefit analysis and reducing risk - the three mile island and chernobyl case studies. Collegiality and loyalty - respect for authority - collective

bargaining - confidentiality - conflicts of interest - occupational crime - professional rights - employee rights - Intellectual Property Rights (IPR) - discrimination.

GLOBAL ISSUES

8

Multinational corporations - Environmental ethics - computer ethics - weapons development - engineers as managers-consulting engineers-engineers as expert witnesses and advisors -moral leadership-sample code of Ethics like ASME, ASCE, IEEE, Institution of Engineers (India), Indian Institute of Materials Management, Institution of electronics and telecommunication engineers (IETE), India, etc.

TOTAL : 45

TEXT BOOKS

1. Mike Martin and Roland Schinzinger, Ethics in engineering, McGraw-Hill, New York 1996.
2. Govindarajan M, Natarajan S, Senthil Kumar V. S, Engineering Ethics, Prentice Hall of India, New Delhi, 2004.

REFERENCES

1. Charles D. Fleddermann, Engineering Ethics, Pearson Education/ Prentice Hall, New Jersey, 2004 (Indian Reprint)
2. Charles E Harris, Michael S. Protchard and Michael J Rabins, Engineering Ethics - Concepts and Cases, Wadsworth Thompson Learning, United States, 2000 (Indian Reprint now available)
3. John R Boatright, Ethics and the Conduct of Business, Pearson Education, New Delhi, 2003.
4. Edmund G Seebauer and Robert L Barry, Fundamentals of Ethics for Scientists and Engineers, Oxford University Press, Oxford, 2001.

IT2701 XML AND WEB SERVICES

L T P C
3 1 0 4

GOAL

To provide exposure to the concepts of XML and Web Services and its applications.

OBJECTIVES

The course should enable the students to :

- Learn the basics of XML
- Understand the concepts of XML schemas and DTD.
- Learn the basics of SOAP
- Learn Web services
- Understand the concepts of Web security.

OUTCOME

The students should be able to:

- Write XML scripts for simple applications
- Develop XML schemas
- Program in SOAP and SOAP protocol
- Implement Web services
- Create programs using web security.

UNIT I INTRODUCTION 9

Role Of XML - XML and The Web - XML Language Basics - SOAP - Web Services - Revolutions Of XML - Service Oriented Architecture (SOA).

UNIT II XML TECHNOLOGY 8

XML - Name Spaces - Structuring With Schemas and DTD - Presentation Techniques - Transformation - XML Infrastructure.

UNIT III SOAP 9

Overview Of SOAP - HTTP - XML-RPC - SOAP: Protocol - Message Structure - Intermediaries - Actors - Design Patterns And Faults - SOAP With Attachments.

UNIT IV WEB SERVICES 9

Overview - Architecture - Key Technologies - UDDI - WSDL - ebXML - SOAP And Web Services In E-Com - Overview Of .NET And J2EE.

UNIT V XML SECURITY 10

Security Overview - Canonicalization - XML Security Framework - XML Encryption - XML Digital Signature - XKMS Structure - Guidelines For Signing XML Documents - XML In Practice.

TOTAL : 45

TEXT BOOK

1. Frank. P. Coyle, XML, "Web Services And The Data Revolution", Pearson Education, 2002.
2. Ramesh Nagappan , Robert Skoczylas and Rima Patel Sriganesh, " Developing Java Web Services", Wiley Publishing Inc., 2004.

REFERENCES

1. Sandeep Chatterjee, James Webber, "Developing Enterprise Web Services", Pearson Education, 2004.
2. McGovern, et al., "Java Web Services Architecture", Morgan Kaufmann Publishers, 2005.

IT2702 COMPUTER GRAPHICS AND MULTIMEDIA

L T P C
3 1 0 4

GOAL

To impart the fundamental concepts of Computer Graphics and Multimedia.

OBJECTIVES

The course should enable the students to :

- Study the graphics techniques and algorithms.
- Study about 3D Representations.
- Know about the Multimedia concepts.
- Understand about the Multimedia File Handling
- Understand about the hypermedia concepts

OUTCOME

The students should be able to:

- Do graphical algorithms and 2D transformations.
- Do 3D representation algorithm and Color Models.
- Implement the architecture of multimedia and multimedia database.
- Develop programs using compression techniques of Multimedia Files and different file formats.
- Develop hypermedia messaging and distributed multimedia system.

UNIT I OUTPUT PRIMITIVES

9

Introduction - Line - Curve and Ellipse Algorithms - Attributes - Two-Dimensional Geometric Transformations - Two-Dimensional Viewing.

UNIT II THREE-DIMENSIONAL CONCEPTS

9

Three-Dimensional Object Representations - Three-Dimensional Geometric and Modeling Transformations - Three-Dimensional Viewing - Color models - Animation.

UNIT III MULTIMEDIA SYSTEMS DESIGN

9

An Introduction - Multimedia applications - Multimedia System Architecture - Evolving technologies for Multimedia - Defining objects for Multimedia systems - Multimedia Data interface standards - Multimedia Databases.

UNIT IV MULTIMEDIA FILE HANDLING

9

Compression & Decompression - Data & File Format standards - Multimedia I/O technologies - Digital voice and audio - video image and animation - Full motion video - Storage and retrieval Technologies.

UNIT V HYPERMEDIA

9

Multimedia Authoring & User Interface - Hypermedia messaging - Mobile Messaging - Hypermedia message component - creating Hypermedia message - Integrated multimedia message standards - Integrated Document management - Distributed Multimedia Systems.

TUTORIAL : 15

TOTAL: 60

TEXT BOOKS

1. Donald Hearn and M.Pauline Baker, Computer Graphics C Version, Pearson Education, 2003.(UNIT I : Chapters 1 to 6; UNIT 2: Chapter 9 - 12, 15, 16)
2. Prabat K Andleigh and Kiran Thakrar, Multimedia Systems and Design, PHI, 2003. (UNIT 3 to 5)

REFERENCES

1. Judith Jeffcoate, Multimedia in practice technology and Applications, PHI,1998.
2. Foley, Vandam, Feiner, Huges, Computer Graphics: Principles & Practice, Pearson Education, second edition 2003.

IT2703 OBJECT ORIENTED ANALYSIS AND DESIGN

L T P C
3 0 0 3

GOAL

To understand the concepts of object oriented analysis and design.

OBJECTIVES

The course should enable the students to :

- Understand the object oriented life cycle.
- Know how to identify objects, relationships, services and attributes through UML.
- Understand the use-case diagrams.
- Know the Object Oriented Design process.
- Learn about software quality and usability.

OUTCOME

The students should be able to:

- Approach new complex software development with confidence
- Capture requirements through the utilization of Use Cases
- Utilize the UML diagrams that "best fit" in an organization
- Implement the software based on the design

- Establish a software development methodology for in-house development

UNIT I INTRODUCTION 8

An Overview of Object Oriented Systems Development - Object Basics - Object Oriented Systems Development Life Cycle.

UNIT II OBJECT ORIENTED METHODOLOGIES 12

Rumbaugh Methodology - Booch Methodology - Jacobson Methodology - Patterns - Frameworks - Unified Approach - Unified Modeling Language - Use case - class diagram - Interactive Diagram - Package Diagram - Collaboration Diagram - State Diagram - Activity Diagram.

UNIT III OBJECT ORIENTED ANALYSIS 9

Identifying use cases - Object Analysis - Classification - Identifying Object relationships - Attributes and Methods.

UNIT IV OBJECT ORIENTED DESIGN 8

Design axioms - Designing Classes - Access Layer - Object Storage - Object Interoperability.

UNIT V SOFTWARE QUALITY AND USABILITY 8

Designing Interface Objects - Software Quality Assurance - System Usability - Measuring User Satisfaction

TOTAL: 45

TEXT BOOKS

1. Ali Bahrami, Object Oriented Systems Development, Tata McGraw-Hill, 1999 (Unit I, III, IV, V).
2. Martin Fowler, UML Distilled, 2nd Edition, PHI/Pearson Education, 2002.(UNIT II).

REFERENCES

1. Stephen R. Schach, Introduction to Object Oriented Analysis and Design, Tata McGraw-Hill, 2003.
2. James Rumbaugh, Ivar Jacobson, Grady Booch, The Unified Modeling Language Reference Manual, Addison Wesley, 1999.
3. Hans-Erik Eriksson, Magnus Penker, Brain Lyons, David Fado, UML Toolkit, OMG Press Wiley Publishing Inc., 2004.

IT2704 INFORMATION CODING TECHNIQUES

L T P C
3 0 0 3

GOAL

To introduce the fundamental concepts of information theory: data compaction, data compression, data transmission, error detection and correction.

OBJECTIVES

The course should enable the students to:

- Understand encoding and decoding of digital data streams.
- Understand the various modulation techniques
- Know methods for the generation of these codes and their decoding techniques and error control coding.
- Have detailed knowledge of compression and decompression techniques.
- Understand the concepts of multimedia communication.

OUTCOME

The students should be able to:

- Implement information entropy
- Develop pulse code and delta modulation technique.
- Implement methods for framing the code word.
- Develop the fundamentals of data & voice coding
- Implement the fundamentals of video coding.

UNIT I INFORMATION ENTROPY FUNDAMENTALS

9

Uncertainty, Information and Entropy - Source coding Theorem - Huffman coding - Shannon Fano coding - Discrete Memory less channels - channel capacity - channel coding Theorem - Channel capacity Theorem.

UNIT II DATA AND VOICE CODING

9

Differential Pulse code Modulation - Adaptive Differential Pulse Code Modulation - Adaptive subband coding - Delta Modulation - Adaptive Delta Modulation - Coding of speech signal at low bit rates (Vocoders, LPC).

UNIT III ERROR CONTROL CODING

9

Linear Block codes - Syndrome Decoding - Minimum distance consideration - cyclic codes - Generator Polynomial - Parity check polynomial - Encoder for cyclic codes - calculation of syndrome - Convolutional codes.

UNIT IV COMPRESSION TECHNIQUES**9**

Principles - Text compression - Static Huffman Coding - Dynamic Huffman coding - Arithmetic coding
- Image Compression - Graphics Interchange format - Tagged Image File Format - Digitized documents
- Introduction to JPEG standards.

UNIT V AUDIO AND VIDEO CODING**9**

Linear Predictive coding - code excited LPC - Perceptual coding, MPEG audio coders - Dolby audio
coders - Video compression - Principles - Introduction to H.261 & MPEG Video standards.

TOTAL: 45**TEXTBOOKS**

1. Simon Haykin, Communication Systems, John Wiley and Sons, 4th Edition, 2001.
2. Fred Halsall, Multimedia Communications, Applications Networks Protocols and Standards, Pearson Education, Asia 2002; Chapters: 3,4,5.

REFERENCES

1. Mark Nelson, Data Compression Book, BPB Publication 1992.
2. Watkinson J, Compression in Video and Audio, Focal Press, London, 1995.

IT2731 XML AND WEB SERVICES LABORATORY

L	T	P	C
0	0	3	2

Goal

To provide exposure to the concepts of XML , Web Services and its applications.

OBJECTIVES

The course should enable the students to :

- Understand XML document
- Understand an XML Schema
- Understand an XML document with CSS
- Understand a web service program
- Understand a web service with C#

OUTCOME

Students should be able to:

- Create a well formed XML document with DTD for validating it.
- Create an XML Schema for an XML document
- Create an XML document and present through CSS

- Write a Java Web Service program
- Code a Hello World web service with c#.

SOFTWARE REQUIRED:

1. Java Development Kit 6.0
2. Microsoft Visual Studio 2010
3. Eclipse IDE

LIST OF EXPERIMENTS

- | | |
|--|---|
| 1. Create an XML document to store an address book. | 3 |
| 2. Create an XML document to store information about books and create the DTD files. | 3 |
| 3. Create an XML schema for the book's XML document from Exp. 2 | 6 |
| 4. Create an XML document to store resumes for a job web site and create the DTD file. | 6 |
| 5. Present the book's XML document using Cascading Style Sheet(CSS) | 3 |
| 6. Write an XSLT program to extract book titles, authors, publications, book rating from the book's XML document and use formatting. | 6 |
| 7. Create a web service for temperature conversion with appropriate client program. | 3 |
| 8. Development of a Java Web service for squaring an integer. | 3 |
| 9. Development of a Java client application for consuming the Java Web service. | 6 |
| 10. Development of a Hello World Web service with C# in Microsoft Visual Studio | 6 |

PRACTICAL : 45

IT2732 GRAPHICS AND MULTIMEDIA LABORATORY

L T P C
0 0 3 2

GOAL

To understand the concept of Graphics Algorithms Multimedia software

OBJECTIVES

The course should enable the students to :

- Understand the algorithm for drawing graphical shapes.
- Understand the 2D concepts
- Understand the 3D concepts
- Understand the compression algorithms
- Learn about the animations
- Know about image editing

OUTCOME

Students should be able to:

- Write the program for graphical shapes using Bresenham's algorithm
- Program for 2D Transformations.
- Program for 3D Transformations.
- Program for compressing Text and Images.
- Do animation using software
- Do Image Editing using Software.

SOFTWARE REQUIRED

Adobe Photoshop and C

LIST OF EXPERIMENTS

S.No	Name of the experiment	No. of Hours
1	To implement Bresenham's algorithms for line, circle and ellipse drawing	5
2	To perform 2D Transformations such as translation, rotation, scaling, reflection and shearing.	6
3	To implement Cohen-Sutherland 2D clipping and window-viewport mapping	4
4	To perform 3D Transformations such as translation, rotation and scaling.	6
5	To visualize projections of 3D images.	5
6	To convert between color models.	4
7	To implement text compression algorithm	4
8	To implement image compression algorithm	4
9	To perform animation using any Animation software	4
10	To perform basic operations on image using any image editing software	3

PRACTICAL : 45

IT2733 CASE TOOLS LABORATORY

L T P C
0 0 3 2

GOAL

To give a practical knowledge about software development and testing

OBJECTIVES

The course should enable the students to:

- Understand the practical difficulties for developing software.
- Understand the applications of software.
- Understand the various principles of software testing.

OUTCOME

The students should be able to

- Develop small application software easily.
- Apply the testing methods in software development.
- Design software using case tools

SOFTWARE REQUIRED

IBM Rational Rose Enterprise Edition

Visual Basic 6.0

JAVA 7.0

LIST OF EXPERIMENTS

Prepare the following documents for two or three of the experiments listed below and develop the software engineering methodology.

1. Program Analysis and Project Planning. Thorough study of the problem - Identify project scope, Objectives, Infrastructure. 9
2. Software requirement Analysis Describe the individual Phases / Modules of the project, Identify deliverables. 9
3. Data Modeling Use work products - Data dictionary, Use diagrams and activity diagrams, build and test class diagrams, Sequence diagrams and add interface to class diagrams. 9
4. Software Development and Debugging 9
5. Software Testing Prepare test plan, perform validation testing, Coverage analysis, memory leaks, develop test case hierarchy, Site check and Site monitor. 9

SUGGESTED LIST OF APPLICATIONS

1. Student Marks Analyzing System
2. Quiz System
3. Online Ticket Reservation System
4. Payroll System
5. Course Registration System
6. Expert Systems
7. ATM Systems
8. Stock Maintenance
9. Real-Time Scheduler
10. Remote Procedure Call Implementation

PRACTICAL : 45

SEMESTER VIII

MG2003 ENTREPRENEURSHIP DEVELOPMENT

L T P C
3 0 0 3

GOAL

Study of this subject provides an understanding of the scope of an entrepreneur, key areas of development, financial assistance by the institutions, methods of taxation and tax benefits, etc.

OBJECTIVES

The course should enable the students to :

- Learn the Scope of an Entrepreneur
- Understand the Major motives influencing an Entrepreneur.
- Know about Steps involved in Business Development.

OUTCOME

The students should be able to:

- Develop the Techno Economic Feasibility Assessment procedure.
- Write a Project Proposal.
- Create the various forms of Finance and support available.

UNIT I ENTREPRENEURSHIP

9

Entrepreneur - Types of Entrepreneurs - Difference between Entrepreneur and Intrapreneur - Entrepreneurship in Economic Growth, Factors Affecting Entrepreneurial Growth.

UNIT II MOTIVATION

9

Major Motives Influencing an Entrepreneur - Achievement Motivation Training, self Rating, Business Game, Thematic Apperception Test - Stress management, Entrepreneurship Development Programs - Need, Objectives.

UNIT III BUSINESS

9

Small Enterprises - Definition, Classification - Characteristics, Ownership Structures - Project Formulation - Steps involved in setting up a Business - identifying, selecting a Good Business opportunity, Market Survey and Research, Techno Economic Feasibility Assessment - Preparation of Preliminary Project Reports - Project Appraisal - Sources of Information - Classification of Needs and Agencies.

UNIT IV FINANCING AND ACCOUNTING

9

Need - Sources of Finance, Term Loans, Capital Structure, Financial Institution, management of working Capital, Costing, Break Even Analysis, Network Analysis Techniques of PERT/CPM - Taxation - Income Tax, Excise Duty - Sales Tax.

UNIT V SUPPORT TO ENTREPRENEURS

9

Sickness in small Business - Concept, Magnitude, causes and consequences, Corrective measures - Government Policy for Small Scale Enterprises - Growth Strategies in small industry - Expansion, Diversification, Joint Venture, Merger and Sub Contracting.

TOTAL : 45

TEXT BOOKS

1. S.S.Khanka Entrepreneurial Development S.Chand & Co. Ltd. Ram Nagar New Delhi, 3rd edition 2010.
2. Hisrich R D and Peters M P, Entrepreneurship 6th Edition Tata McGraw-Hill, 2010.

REFERENCES

1. Rabindra N. Kanungo Entrepreneurship and innovation, Sage Publications, New Delhi, 1998.
2. E DII Faculty and External Experts - A Hand Book for New Entrepreneurs Publishers: Entrepreneurship Development Institute of India, Ahmadabad, 1986.

IT2801 SOFTWARE PROJECT MANAGEMENT

L T P C
3 0 0 3

GOAL

To learn the concepts of Software Project Management, Process Frame Work and Optimizing the process.

OBJECTIVES

The course should enable the students to:

- Understand and develop concepts those are seen as central to the effective management of software projects.
- Learn an appreciation of key, generic project management concepts and techniques as well as those techniques and approaches those are specific to the management of software projects.
- Know the core techniques, you will be expected to apply them across a limited range of software project management scenarios.

OUTCOME

The students should be able to

- Manage, estimate, cost, plan, schedule, specify, design, implement, test, and measure an object-oriented application
- Present deliverables
- Review deliverables of other teams for each of the above tasks, students will use a language, tool, or technique that is being widely used in industry.

UNIT I INTRODUCTION	9
Conventional Software Management - Evolution of Software Economics - Improving Software Economics - Conventional versus Modern Software Project Management.	
UNIT II SOFTWARE MANAGEMENT PROCESS FRAMEWORK	9
Lifecycle Phases - Artifacts of the Process - Model Based Software Architectures - Workflows of the Process - Checkpoints of the Process.	
UNIT III SOFTWARE MANAGEMENT DISCIPLINES	9
Iterative Process Planning - Organisation and Responsibilities - Process Automation - Process Control and Process Instrumentation - Tailoring the Process.	
UNIT IV MANAGED AND OPTIMIZED PROCESS	9
Data Gathering and Analysis: Principles of Data Gathering, Data Gathering Process, Software Measures, Data Analysis - Managing Software Quality - Defect Prevention.	
UNIT V CASE STUDIES	9
COCOMO Cost Estimation Model - Change Metrics - CCPDS-R	
TOTAL : 45	

TEXT BOOKS

1. Walker Royce Software Project Management - A Unified Framework , Pearson Education, 2004 (Unit I, II, III & V)
2. Humphrey, Watts: Managing the software process , Addison Wesley, 1989. (Unit IV)

REFERENCES

1. Ramesh Gopaldaswamy, Managing Global Projects, Tata McGraw Hill, 2001.
2. Bob Hughes, Mikecoterell, Software Project Management, 3rd Edition, Tata McGraw Hill, 2004.

ELECTIVE - I

IT2651 SOFTWARE QUALITY MANAGEMENT

L T P C
3 0 0 3

GOAL

To introduce an integrated approach to software development incorporating quality management methodologies.

OBJECTIVES

The course should enable the student s to :

- Understand software quality models
- Know measurement and metrics
- Study quality plan, implementation and documentation
- Work with quality tools including CASE tools
- Understand quality control and reliability of quality process
- Understand management system models
- Study complexity metrics and customer satisfaction
- Know International quality standards - ISO, CMM

OUTCOME

The students should be able to:

- Develop an inquisitive attitude and the ability to analyze the relations among software product, process and project in quality assurance and management;
- Design process and quality models for developing and assessing software products and processes;
- Describe and apply professional practices in managing the development of quality software;
- Describe, evaluate and critique quality systems and established standards for software products and processes.

UNIT I INTRODUCTION TO SOFTWARE QUALITY

9

Software Quality - Hierarchical models of Boehm and McCall - Quality measurement - Metrics measurement and analysis - Gilb's approach - GQM Model.

UNIT II SOFTWARE QUALITY ASSURANCE

9

Quality tasks - SQA plan - Teams - Characteristics - Implementation - Documentation - Reviews and Audits.

UNIT III QUALITY CONTROL AND RELIABILITY 9

Tools for Quality - Ishikawa's basic tools - CASE tools - Defect prevention and removal - Reliability models - Rayleigh model - Reliability growth models for quality assessment.

UNIT IV QUALITY MANAGEMENT SYSTEM 9

Elements of QMS - Rayleigh model framework - Reliability Growth models for QMS - Complexity metrics and models - Customer satisfaction analysis.

UNIT V QUALITY STANDARDS 9

Need for standards - ISO 9000 Series - ISO 9000-3 for software development - CMM and CMMI - Six Sigma concepts.

TOTAL: 45

TEXT BOOKS

1. Allan C. Gillies, Software Quality: Theory and Management, Thomson Learning, 2003. (UI : Ch 1-4 ; UV : Ch 7-8)
2. Stephen H. Kan, Metrics and Models in Software Quality Engineering, Pearson Education (Singapore) Pte Ltd., 2002. (UI : Ch 3-4; UIII : Ch 5-8 ; UIV : Ch 9-11)

REFERENCES

1. Norman E. Fenton and Shari Lawrence Pfleeger, Software Metrics Thomson, 2003.
2. Modechai Ben - Menachem and Garry S.Marliss, Software Quality, Thomson Asia Pte Ltd, 2003.
3. Mary Beth Chrissis, Mike Konrad and Sandy Shrum, CMMI, Pearson Education (Singapore) Pte Ltd, 2003.
4. ISO 9000-3 Notes for the application of the ISO 9001 Standard to software development.

IT2652 BUSINESS INTELLIGENCE AND ITS APPLICATION

L T P C
3 0 0 3

GOAL

The aim of the course is to provide the knowledge about business intelligence software and its application

OBJECTIVES

The course should enable the students to :

- Understand the core modules of Business Intelligence(BI).
- Understand BI terminologies and framework.
- Understand the basics of data integration (Extraction Transformation Loading).

- Know multi-dimensional data modeling, basics of enterprise reporting and application of the concepts using open source/Microsoft tools.

OUTCOME

The students should be able to:

- Differentiate between Transaction Processing and Analytical applications and describe the need for Business Intelligence
- Demonstrate understanding of technology and processes associated with Business Intelligence framework
- Demonstrate understanding of Data Warehouse implementation methodology and project life cycle
- Give a business scenario and identify the metrics, indicators and make recommendations to achieve the business goal
- Design an enterprise dashboard that depicts the key performance indicators which helps in decision making
- Demonstrate application of concepts in Microsoft BI suite

UNIT I INTRODUCTION TO BUSINESS INTELLIGENCE 9

Introduction to OLTP and OLAP, BI Definitions & Concepts, Business Applications of BI, BI Framework, Role of Data Warehousing in BI, BI Infrastructure Components - BI Process, BI Technology, BI Roles & Responsibilities

UNIT II BASICS OF DATA INTEGRATION (EXTRACTION TRANSFORMATION LOADING) 9

Concepts of data integration need and advantages of using data integration, introduction to common data integration approaches, introduction to ETL using SSIS.

UNIT III DATA QUALITY 9

Introduction to data quality, data profiling concepts and applications

UNIT IV INTRODUCTION TO MULTI-DIMENSIONAL DATA MODELING 9

Introduction to data and dimension modeling, multidimensional data model, ER Modeling vs. multi dimensional modeling, concepts of dimensions, facts, cubes, attribute, hierarchies, star and snowflake schema, introduction to business metrics and KPIs, creating cubes using SSAS

UNIT V BASICS OF ENTERPRISE REPORTING 9

Introduction to enterprise reporting, concepts of dashboards, balanced scorecards, introduction to SSRS Architecture, enterprise reporting using SSRS

TOTAL : 45

TEXT BOOKS

1. David Lostics, Business Intelligence The Savvy Manager's Guide Knowledge Integrity Incorporated 2003

2. Mike Biera Business Intelligence for the Enterprise Patience Hall PTR
3. Larissa T.Moss, Snaku Atre Business Intelligence Roadmap, The complete project lifecycle for Decision-Support Application Addison-Wesley
4. Cindi Howson Successful Business Intelligence Secrets to making BI a killer App McGraw-Hill Osborne Medice, 2007

REFERENCES

1. Brian Larson Delivering Business Intelligence with Microsoft SQL server 2008 second edition, McGraw-Hill, 2008
2. Lynn Langit Foundations of SQL server 2005 Business Intelligence Apress, 2007
3. Stephen few Information Dashboard Design, The effective visual communication of data O'Recilly, 2006.

IT2653 SOFTWARE TESTING

L T P C
3 0 0 3

GOAL

To make students understand the principles of software testing.

OBJECTIVES

The course should enable the students to :

- Understand the basics of software testing.
- Learn the strategies for software testing.
- Know the need and conduct of testing levels.
- Understand the issues in testing management.
- Know the ways and means of controlling and monitoring testing activity.

OUTCOME

The students should be able to:

- Develop the testing process and testing principles.
- Implement the black box and white box approaches.
- Implement the levels of testing.
- Identifies testing management with engineering Disciplines.
- Implement control and monitor the testing process.

UNIT I INTRODUCTION

8

Testing as an Engineering Activity, Role of Process in Software Quality, Testing as a Process, Basic Definitions, Software Testing Principles, The Tester's Role in a Software Development Organization,

Origins of Defects, Defect Classes, The Defect Repository and Test Design, Defect Examples, Developer/Tester Support for Developing a Defect Repository.

UNIT II TEST CASE DESIGN **11**

Introduction to Testing Design Strategies, The Smarter Tester, Test Case Design Strategies, Using Black Box Approach to Test Case Design, Random Testing, Equivalence Class Partitioning, Boundary Value Analysis, Other Black-box Test Design Approaches, Black-box testing and COTS, Using White-Box Approach to Test design, Test Adequacy Criteria, Coverage and Control Flow Graphs, Covering Code Logic, Paths: Their Role in White-box Based Test Design, Additional White Box Test Design Approaches, Evaluating Test Adequacy Criteria.

UNIT III LEVELS OF TESTING **9**

The Need for Levels of Testing, Unit Test, Unit Test Planning, Designing the Unit Tests. The Class as a Testable Unit, The Test Harness, Running the Unit tests and Recording results, Integration tests, Designing Integration Tests, Integration Test Planning, System Test - The Different Types, Regression Testing, Alpha, Beta and Acceptance Tests.

UNIT IV TEST MANAGEMENT **9**

Introductory Concepts, Testing and Debugging Goals and Policies, Test Planning, Test Plan Components, Test Plan Attachments, Locating Test Items, Reporting Test Results, The role of three groups in Test Planning and Policy Development, Process and the Engineering Disciplines, Introducing the test specialist, Skills needed by a test specialist, Building a Testing Group.

UNIT V CONTROLLING AND MONITORING **8**

Defining Terms, Measurements and Milestones for Controlling and Monitoring, Status Meetings, Reports and Control Issues, Criteria for Test Completion, SCM, Types of reviews, Developing a review program, Components of Review Plans, Reporting review results

TOTAL: 45

TEXT BOOK

1. Ilene Burnstein, Practical Software Testing, Springer International Edition, Chennai, 2003

REFERENCES

1. Edward Kit, Software Testing in the Real World - Improving the Process, Pearson Education, New Delhi, 1995.
2. Elfriede Dustin, Effective Software Testing, Pearson Education, New Delhi, 2003.
3. Renu Rajani and Pradeep Oak, Software Testing - Effective Methods, Tools and Techniques, Tata McGraw-Hill, New Delhi, 2003.

IT2654 EMBEDDED SYSTEMS

L T P C
3 0 0 3

GOAL

To Provide basic knowledge about various processors, controllers, sensors and their Applications

OBJECTIVES

The course should enable the students to :

1. Learn about the principles and analysis of sensors.
2. Understand buses for the network communication
3. About the embedded programming.
4. Know about Real time operating system.
5. Study the types of real time operating systems.

OUTCOME

The students should be able to:

1. Implement the processor concept of the embedded system
2. Develop the communication system and the types of busses for communication.
3. Implement the programming concept.
4. Implement the various real time operating systems.
5. Implement the application and the working principle of the real time operating system.

UNIT I INTRODUCTION TO EMBEDDED SYSTEMS

9

Definition and Classification - Overview of Processors and hardware units in an embedded system - Software embedded into the system - Exemplary Embedded Systems - Embedded Systems on a Chip (SoC) and the use of VLSI designed circuits.

UNIT II DEVICES AND BUSES FOR DEVICES NETWORK

9

I/O Devices - Device I/O Types and Examples - Synchronous - Iso-synchronous and Asynchronous Communications from Serial Devices - Examples of Internal Serial-Communication Devices - UART and HDLC - Parallel Port Devices - Sophisticated interfacing features in Devices/Ports- Timer and Counting Devices - '12C', 'USB', 'CAN' and advanced I/O Serial high speed buses- ISA, PCI, PCI-X, cPCI and advanced buses.

UNIT III PROGRAMMING CONCEPTS AND EMBEDDED PROGRAMMING IN C, C++

9

Programming in assembly language (ALP) vs. High Level Language - C Program Elements, Macros and functions -Use of Pointers - NULL Pointers - Use of Function Calls - Multiple function calls in a Cyclic Order in the Main Function Pointers - Function Queues and Interrupt Service Routines Queues Pointers - Concepts of EMBEDDED PROGRAMMING in C++ - Objected Oriented Programming - Embedded Programming in C++, 'C' Program compilers - Cross compiler - Optimization of memory codes.

UNIT IV REAL TIME OPERATING SYSTEMS - PART - 1

9

Definitions of process, tasks and threads - Clear cut distinction between functions - ISRs and tasks by their characteristics - Operating System Services- Goals - Structures- Kernel - Process Management - Memory Management - Device Management - File System Organisation and

Implementation - I/O Subsystems - Interrupt Routines Handling in RTOS, REAL TIME OPERATING SYSTEMS : RTOS Task scheduling models - Handling of task scheduling and latency and deadlines as performance metrics - Co-operative Round Robin Scheduling - Cyclic Scheduling with Time Slicing (Rate Monotonics Co-operative Scheduling) - Preemptive Scheduling Model strategy by a Scheduler - Critical Section Service by a Preemptive Scheduler - Fixed (Static) Real time scheduling of tasks - INTER PROCESS COMMUNICATION AND SYNCHRONISATION - Shared data problem - Use of Semaphore(s) - Priority Inversion Problem and Deadlock Situations - Inter Process Communications using Signals - Semaphore Flag or mutex as Resource key - Message Queues - Mailboxes - Pipes - Virtual (Logical) Sockets - Remote Procedure Calls (RPCs).

UNIT V REAL TIME OPERATING SYSTEMS - PART - 2

9

Study of Micro C/OS-II or Vx Works or Any other popular RTOS - RTOS System Level Functions - Task Service Functions - Time Delay Functions - Memory Allocation Related Functions - Semaphore Related Functions - Mailbox Related Functions - Queue Related Functions - Case Studies of Programming with RTOS - Understanding Case Definition - Multiple Tasks and their functions - Creating a list of tasks - Functions and IPCs - Exemplary Coding Steps.

TOTAL : 45

TEXT BOOK

1. Rajkamal, Embedded Systems Architecture, Programming and Design, TATA McGraw-Hill, First reprint Oct. 2003.

REFERENCES

1. Steve Heath, Embedded Systems Design, Second Edition, 2003, Newnes.
2. David E. Simon, An Embedded Software Primer, Pearson Education Asia, First Indian Reprint, 2000.
3. Wayne Wolf, Computers as Components; Principles of Embedded Computing System Design, Harcourt India, Morgan Kaufman Publishers, First Indian Reprint, 2001.
4. Frank Vahid and Tony Givargis, Embedded Systems Design - A unified Hardware / Software Introduction, John Wiley, 2002.

IT2655 ORGANIZATIONAL BEHAVIOR

L T P C
3 0 0 3

GOAL

To provide the tools necessary to understanding the dynamics of values, attitudes and group behavior for efficient and effective utilization of human resources in the organizations

OBJECTIVES

The course should enable the students to:

- Learn the fundamentals, challenges and opportunities of organizational behavior
- Understand organizational behavior in its broadest multi-disciplinary context.
- Appreciate the role of leadership in organizing community-based activities.
- Discuss the relevance of the interplay between authority, power and politics.

OUTCOME

The students will be able to :

- Implement the concepts of organizational behavior
- Explain the terminology associated with organizational behavior.
- Develop the systems approach as applied to human and organizational behavior.
- Get knowledge of contemporary issues and approaches to the organizational change facing organizations.
- Apply organizational behavior approaches to the analysis of one organization's initiative

UNIT I INTRODUCTION

8

Need and Importance of Organizational Behavior - Contributing Discipline to the Organizational Behavior - Field - Challenges and Opportunities for Organizational Behavior - Organizational Behavior Models.

UNIT II VALUES, ATTITUDES AND JOB SATISFACTION

9

Values - Importance, Types of Values, Values Across Culture Attitudes - Types - Cognitive Dissonance Theory - Self Perception Theory - Affective Components - Attitude Survey - Attitude and Work Diversity - Job Satisfaction - Relationship between Job Satisfaction and Absenteeism and Turnover.

UNIT III GROUP BEHAVIOR

9

Organization structure - Formation - Groups in organizations - Influence - Group dynamics - Emergence of informal leaders and working norms - Group decision making techniques - Team building - Interpersonal relations - Communication - Control.

UNIT IV ORGANIZATIONAL CONFLICT

9

Conflict Management, Traditional & Modern view of conflict, Constructive & Destructive conflict, Conflict Process, Strategies for encouraging constructive conflict, Strategies for resolving destructive conflict, Leadership Styles, Models and Theories of Leadership.

UNIT V DYNAMICS OF ORGANIZATIONAL BEHAVIOR

10

Organizational culture and climate - Factors affecting organizational climate - Importance. Job satisfaction - Determinants - Measurements - Influence on behavior. Organizational change - Importance - Stability Vs Change - Proactive Vs Reaction change - the change process - Resistance to change - Managing change.

TOTAL: 45

TEXT BOOKS

1. Stephen P. Robins, Organizational Behavior, PHI Learning / Pearson Education, 11th edition, 2008.
2. Fred Luthans, Organizational Behavior, McGraw Hill, 11th Edition, 2001.

REFERENCES

1. Schermerhorn, Hunt and Osborn, Organizational behavior, John Wiley, 9th Edition, 2008
2. Udai Pareek, Understanding Organizational Behavior, 2nd Edition, Oxford Higher Education, 2004.
3. Mc Shane & Von Glinov, Organizational Behavior, 4th Edition, Tata Mc Graw Hill, 2007.
4. Hellrigal, Slocum and Woodman, Organizational Behavior, Cengage Learning, 11th Edition 2007.
5. Ivancevich, Konopaske & Maheson, Organisational Behavior & Management, 7th edition, Tata McGraw Hill, 2008.

MA2651 OPERATION RESEARCH

L T P C
3 0 0 3

GOAL

To introduce students to use quantitative methods and techniques for effective decisions-making; model formulation and applications that are used in solving business decision problems.

OBJECTIVES

The course should enable the students to :

- Learn management skills by applying management theories in real life
- Understand a basic Marketing Plan
- Understand and interpret financial statements
- Learn cost accounting principles in decision makings
- Know economic principles in day to day business operations
- Learn effective inventory control system for an Organization

OUTCOME

The students will be able to:

- Write about the characteristics of different types of decision-making environments and the appropriate decision making approaches and tools to be used in each type.
- Build and solve Transportation Models and Assignment Models.
- Design new simple models, like: CPM, MSPT to improve decision -making and
- Develop critical thinking and objective analysis of decision problems.
- Implement practical cases, by using TORA, WinQSB

UNIT I PROBABILITY AND RANDOM VARIABLES 9

Probability concepts - Random variables - moment generating functions - Functions of random variables - Two dimensional random variables - correlation and regression

UNIT II STOCHASTIC PROCESSES 9

Classification - standard and random processes - Markov process - Markov chains Transition probability - classification of markov chain - limited distribution - Poisson process - birth and death process.

UNIT III OPERATION RESEARCH 9

Introduction: Basics of Operations Research - Linear Programming - Problem formulation, Graphical Method, Simplex methods, primal & dual problem sensitivity analysis - Transportation & Assignment problems - Deterministic Dynamic Programming.

UNIT IV DECISION, GAME, QUEUE THEORY 9

Decision theory- Decision under various conditions - Game Theory - Two Person Zero sum game, Sequencing - Queuing model - Markovian models - Queuing applications.

UNIT V SIMULATIONS AND OPTIMIZATION 9

Introduction - Types of simulation - Limitations of simulation techniques - Monte Carlo simulation - Unconstrained external problem - Newton-Raphson method - Equality constraints - Lagrangian method.

TOTAL : 45

TEXT BOOKS

1. Kapur, J.N. and Saxena, H.C. Mathematical Statistics, S. Chand and Co. Ltd., New Delhi, 1997.
2. Bhat, U.N., Elements of Applied Stochastic Processes , John Wiley and Sons, 2nd Edition, New York, 1984.
3. Taha, H.A., Operations Research - An Introduction , Prentice Hall of India Ltd., 6th Edition, New Delhi, 1997.
4. Sharma, S.D., Operations Research , Kedar Nath, Ram Nath and Co., Meerut, 12th Edition, 1998.

CY 2002 ENVIRONMENTAL SCIENCE AND ENGINEERING
(Common to all Branches except CIVIL Engineering)

L T P C
3 0 0 3

GOAL

To impart basic knowledge on the significance of environmental science for engineers.

OBJECTIVES

The course should enable the students to:

- Make the students aware of the existing natural resources such as forest water resources etc. and to educate them to understand the need for preserving the resources.
- Educate the students about the functions of various ecosystems and biodiversity.
- Provide knowledge on the various aspects of different types of pollution such as air pollution, water pollution, soil pollution etc.
- Give a basic knowledge on the social issues such as global warming, acid rain, ozone layer depletion, nuclear hazards etc. and to educate them about the various Environmental Protection Acts.
- Create an awareness among the present generation about the various aspects of human population and their effect on environment.

OUTCOME

The students should be able to:

- Understand the effects of over exploitation of water resources, forest resources etc. and their impact on day to day life on earth.
- Acquire knowledge on the functions of several of ecosystems will help the students to design the processes that are eco friendly.
- Acquire knowledge on the different types of pollution will help the young minds to device effective control measures to reduce rate of pollution.
- Get exposure on the issues such as global warming, acid rain, ozone layer depletion, and nuclear hazards will make the students understand the significances of sustainable development and the need to enforce Environmental Acts.
- Educate on the various aspects of population explosion will create awareness on population control for effective utilization of the resources and the need to explore new alternate energy resources for a healthy environment.

UNIT I INTRODUCTION TO ENVIRONMENTAL STUDIES AND NATURAL RESOURCES 10

Definition, scope and importance - Need for public awareness - Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests 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.

Field study of local area to document environmental assets - river / forest / grassland / hill / mountain.

UNIT II ECOSYSTEMS AND BIODIVERSITY

14

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 (a) Forest ecosystem (b) Grassland ecosystem (c) Desert ecosystem (d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries) - Introduction to Biodiversity - Definition: genetic, species and ecosystem diversity - Biogeographical 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.

Field study of common plants, insects, birds Field study of simple ecosystems - pond, river, hill slopes, etc.

UNIT III ENVIRONMENTAL POLLUTION

8

Definition - Causes, 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 - Soil 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.

Field Study of local polluted site - Urban / Rural / Industrial / Agricultural

UNIT IV SOCIAL ISSUES AND THE ENVIRONMENT

7

From Unsustainable to Sustainable development - Urban problems related to energy - Water conservation, rain water harvesting, 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 Production 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 V HUMAN POPULATION AND THE ENVIRONMENT

6

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.

TOTAL : 45

TEXT BOOKS

1. Gilbert M.Masters, Introduction to Environmental Engineering and Science, Pearson Education Pvt., Ltd., Second Edition, ISBN 81-297-0277-0, 2004.
2. Miller T.G. Jr., Environmental Science, Wadsworth Publishing Co., 1971.
3. Townsend C., Harper J and Michael Begon, Essentials of Ecology, Blackwell Science, 1999.
4. Trivedi R.K. and P.K. Goel, Introduction to Air Pollution, Techno-Science Publications, 1998.

REFERENCES

1. Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad India, 2004.
2. Trivedi R.K., Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards, Vol. I and II, Enviro Media.
3. Cunningham, W.P.Cooper, T.H.Gorhani, Environmental Encyclopedia, Jaico Publ., House, Mumbai, 2001.
4. Wager K.D., Environmental Management, W.B. Saunders Co., Philadelphia, USA, 1998.

ELECTIVE - II

MG 2002 TOTAL QUALITY MANAGEMENT

L T P C
3 0 0 3

GOAL

To understand the Total Quality Management concepts and principles and the various tools available to achieve Total Quality Management and also to understand the statistical approach for quality control.

OBJECTIVES

The course should enable the students to:

- Understand the basic concepts of Total Quality Management.
- Be familiar with the total quality management principles.
- Know about the various process control tools available to achieve Total Quality Management.
- Study about quality function deployment and total productive maintenance.
- Get awareness about the ISO certification process and their need in various industries.

OUTCOME

The students will be able to:

- Apply the concepts of quality planning, quality control etc., in the appropriate places.
- Apply the total quality management principles in issues like customer complaints, customer retention, relationship development etc.,
- Describe the tools of quality, management tools, process capability etc.,
- Describe quality function deployment and total productive maintenance.
- Implement the quality systems for various industries.

UNIT I INTRODUCTION 9

Definition of Quality, Dimensions of Quality, Quality Planning, Quality costs - Analysis Techniques for Quality Costs, Basic concepts of Total Quality Management, Historical Review, Principles of TQM, Leadership - Concepts, Role of Senior Management, Quality Council, Quality Statements, Strategic Planning, Deming Philosophy, Barriers to TQM Implementation.

UNIT II TQM PRINCIPLES 9

Customer satisfaction - Customer Perception of Quality, Customer Complaints, Service Quality, Customer Retention, Employee Involvement - Motivation, Empowerment, Teams, Recognition and Reward, Performance Appraisal, Benefits, Continuous Process Improvement - Juran Trilogy, PDCA Cycle, 5S, Kaizen, Supplier Partnership - Partnering, sourcing, Supplier Selection, Supplier Rating, Relationship Development, Performance Measures - Basic Concepts, Strategy, Performance Measure.

UNIT III STATISTICAL PROCESS CONTROL (SPC) 9

The seven tools of quality, Statistical Fundamentals - Measures of central Tendency and Dispersion, Population and Sample, Normal Curve, Control Charts for variables and attributes, Process capability, Concept of six sigma, New seven Management tools.

UNIT IV TQM TOOLS 9

Benchmarking - Reasons to Benchmark, Benchmarking Process, Quality Function Deployment (QFD) - House of Quality, QFD Process, Benefits, Taguchi Quality Loss Function, Total Productive Maintenance (TPM) - Concept, Improvement Needs, FMEA - Stages of FMEA.

UNIT V QUALITY SYSTEMS 9

Need for ISO 9000 and Other Quality Systems, ISO 9000:2000 Quality System - Elements, Implementation of Quality System, Documentation, Quality Auditing, TS 16949, ISO 14000 - Concept, Requirements and Benefits.

TOTAL : 45

TEXT BOOK

1. Dale H.Besterfiled, et al., Total Quality Management, Pearson Education, Inc. 2003. (Indian reprint 2004). ISBN 81-297-0260-6.

REFERENCES

1. James R.Evans & William M.Lidsay, The Management and Control of Quality, (5th Edition), South-Western (Thomson Learning), 2002 (ISBN 0-324-06680-5).
2. Feigenbaum.A.V. Total Quality Management, McGraw Hill, 1991.
3. Oakland.J.S.Total Quality Management Butterworth - Hcinemann Ltd., Oxford. 1989.
4. Narayana V. and Sreenivasan, N.S. Quality Management - Concepts and Tasks, New Age International 1996.

IT2751 DATA WAREHOUSING AND DATA MINING

L T P C
3 0 0 3

GOAL

To serve as an introductory course to under graduate students with an emphasis on the design aspects of Data Mining and Data Warehousing.

OBJECTIVES

The course should enable the students to:

- Understand the concept of data mining with in detail coverage of basic tasks, metrics, issues, and implication. Core topics like classification, clustering and association rules are exhaustively dealt with.
- Understand the concept of data warehousing with special emphasis on architecture and design.

OUTCOME

The students should be able to:

- Implement the basics of Data warehousing.
- Implement different techniques of data mining like association rule, classification, clustering, etc..
- Develop different application of data mining in real world

UNIT I INTRODUCTION AND DATA WAREHOUSING

8

Introduction, Data Warehouse, Multidimensional Data Model, Data Warehouse Architecture, Implementation, Further Development, Data Warehousing to Data Mining

UNIT II DATA PREPROCESSING, LANGUAGE, ARCHITECTURES, CONCEPT DESCRIPTION

8

Why Preprocessing, Cleaning, Integration, Transformation, Reduction, Discretization, Concept Hierarchy Generation, Data Mining Primitives, Query Language, Graphical User Interfaces,

Architectures, Concept Description, Data Generalization, Characterizations, Class Comparisons, Descriptive Statistical Measures.

UNIT III ASSOCIATION RULES **9**

Association Rule Mining, Single-Dimensional Boolean Association Rules from Transactional Databases, Multi-Level Association Rules from Transaction Databases.

UNIT IV CLASSIFICATION AND CLUSTERING **12**

Classification and Prediction, Issues, Decision Tree Induction, Bayesian Classification, Association Rule Based, Other Classification Methods, Prediction, Classifier Accuracy, Cluster Analysis, Types of data, Categorization of methods, Partitioning methods, Outlier Analysis.

UNIT V RECENT TRENDS **8**

Multidimensional Analysis and Descriptive Mining of Complex Data Objects, Spatial Databases, Multimedia Databases, Time Series and Sequence Data, Text Databases, World Wide Web, Applications and Trends in Data Mining.

TOTAL: 45

TEXT BOOK

1. J. Han, M. Kamber, Data Mining: Concepts and Techniques, Harcourt India / Morgan Kauffman, 2001.

REFERENCES

1. Margaret H.Dunham, Data Mining: Introductory and Advanced Topics, Pearson Education 2004.
2. Sam Anahory, Dennis Murry, Data Warehousing in the real world, Pearson Education 2003.
3. David Hand, Heikki Manila, Padhraic Symth, Principles of Data Mining, PHI 2004.
4. W.H.Inmon, "Building the Data Warehouse", 3rd Edition, Wiley, 2003.
5. Alex Bezon, Stephen J.Smith, Data Warehousing, Data Mining & OLAP, McGraw-Hill Edition, 2001.
6. Paulraj Ponniah, Data Warehousing Fundamentals, Wiley-Interscience Publication, 2003.

IT2752 MANAGEMENT INFORMATION SYSTEM

L T P C
3 0 0 3

GOAL

To equip the students with the capability to successfully identify, evaluate, develop, apply and manage information technology solution to critical business and organizational problems.

OBJECTIVES

The course should enable the students to:

- Learn a broad comprehension of business administration: Principles and practices of management; Organizational behavior; Business communication, Business information systems
- Understand aspects of management in decision making within an organization;
- Analyze and design basic management information systems;
- Learn appropriate information technology applications and products for given business situations.

OUTCOME

The students should be able to:

- Implement management process using system knowledge
- Develop the systems for decision making in management process.

UNIT I INTRODUCTION

9

Technology of Information Systems - Concepts - Definition - Role and Impact of MIS -Role and Importance of Management-Approaches to Management -Functions of the Manager- Management as a Control System -Database Management Systems -Concepts-Data Models-Database Design-MIS & Client Server Architecture.Process of Management -Planning-Organization-Staffing-Co-ordination and Controlling -Management by Exception-MIS as a Support to Management-Organization Structure and Theory-Basic Model and Organization Structure-Organizational Behavior.

UNIT II DECISION MAKING AND INFORMATION

9

Decision Making Concepts-Methods-Tools and Procedures-Behavioral Concepts in Decision Making -Organizational Decision Making -Information Concepts as a Quality Product-Classification of the Information- Methods of Data and Information Collection-Value of the Information - Organization and Information System Concepts-Control-Types -Handling System Complexity-Post Implementation Problems in Systems.

UNIT III SYSTEM ANALYSIS AND DESIGN

9

System Analysis and Design -Need for System Analysis- System Analysis of Existing System -New Requirement-System Development Model -Structured System Analysis and Design -Computer System Design-Development of MIS -Development of Long Range Plans of the MIS -Ascertaining the Class of the Information -Determining the Information Requirement-Development and Implementation of the MIS Management of Quality-MIS Factors of Success and Failure.

UNIT IV DECISION SUPPORT SYSTEMS**9**

Deterministic systems -Artificial Intelligence-Knowledge Based Systems -MIS and the Role of DSS
-Enterprise Management Systems -EMS -Enterprise Resource Planning (ERP)System-ERP Basic
Features-Benefits -Selection-Implementation-EMS and MIS.

UNIT V CURRENT TRENDS**9**

Knowledge Management-Networks-Internet and Web Based Information System-Electronic Commerce
-Electronic Business-Commercial Applications-Case Studies.

TOTAL: 45**TEXT BOOKS**

1. W.S Jawadekar, Management Information Systems ,Tata McGraw Hill Publishing Company Limited 1997.
2. Kenneth C Landon and Jane P.Laudon ,Management Information Systems Prentice Hall Sixth Edition 2000.
3. Effy OZ,Management Information Systems ,Thomson Learning, 2001.

REFERENCES

1. Gordon B.Davis and Davis and Margereth H.Olson,Management Information Systems,McGraw Hill,1998.
2. Jerome Karnter, Management Information Systems, IIIrd Edtion, PHI, 1990.
3. David Kroenke,Management Information Systems,Tata McGraw Hil, 1989.
4. James A O' Brien Management Information Systems,Tata McGraw Hill, 1999.

IT2753 IMAGE PROCESSING**L T P C**
3 0 0 3**GOAL**

To introduce the various techniques in Image processing

OBJECTIVES

The course should enable the students to:

- Learn the fundamentals of digital image
- Learn about image enhancement technique
- Understand the image restoration
- Study image compression techniques
- Know the image segmentation and representation

OUTCOME

The students should be able to:

- Transform images
- Subtract images, average images
- Develop image models
- To compress image with lossless and lossy compression techniques
- Identify the range for image segmentation

UNIT I DIGITAL IMAGE FUNDAMENTALS AND TRANSFORMS 9

Elements of visual perception - Image sampling and quantization Basic relationship between pixels - Basic geometric transformations-Introduction to Fourier Transform and DFT - Properties of 2D Fourier Transform - FFT - Separable Image Transforms -Walsh - Hadamard - Discrete Cosine Transform, Haar, Slant - Karhunen - Loeve transforms.

UNIT II IMAGE ENHANCEMENT TECHNIQUES 9

Spatial Domain methods: Basic grey level transformation - Histogram equalization - Image subtraction - Image averaging -Spatial filtering: Smoothing, sharpening filters - Laplacian filters - Frequency domain filters : Smoothing - Sharpening filters - Homomorphic filtering.

UNIT III IMAGE RESTORATION 9

Model of Image Degradation/restoration process - Noise models - Inverse filtering -Least mean square filtering - Constrained least mean square filtering - Blind image restoration - Pseudo inverse - Singular value decomposition.

UNIT IV IMAGE COMPRESSION 9

Lossless compression: Variable length coding - LZW coding - Bit plane coding- predictive coding-DPCM. Lossy Compression: Transform coding - Wavelet coding - Basics of Image compression standards: JPEG, MPEG, Basics of Vector quantization.

UNIT V IMAGE SEGMENTATION AND REPRESENTATION 9

Edge detection -Thresholding - Region Based segmentation - Boundary representation: chain codes-Polygonal approximation -Boundary segments -boundary descriptors: Simple descriptors-Fourier descriptors - Regional descriptors -Simple descriptors- Texture .

TOTAL: 45

TEXT BOOK

1. Rafael C Gonzalez, Richard E Woods 2nd Edition, Digital Image Processing - Pearson Education 2003.

REFERENCES

1. William K Pratt, Digital Image Processing, John Willey, 2001

2. Millman Sonka, Vaclav hlavac, Roger Boyle, Broos/colic, Image Processing Analysis and Machine Vision, Thompson Learniy, 1999.
3. A.K. Jain, Fundamentals of Digital Image Processing, PHI, New Delhi, 1995.
4. Chanda Dutta Magundar - Digital Image Processing and Applications, Prentice Hall of India, 2000.

IT2754 HIGH PERFORMANCE NETWORKS

L T P C
3 0 0 3

GOAL

To understand the different high speed networks available and study their characteristics.

OBJECTIVES

The course should enable the students to:

- Understand High performance network architecture, topology, protocol stacks
- Understand and analyze congestion in network
- Learn and manage network traffic
- Understand error control and flow control in high speed networks
- Understand multicast routing

OUTCOME

The students should be able to:

- Implement high performance network topology and protocol architecture.
- Develop the operation principles of congestion control and traffic control in IP networks.
- Solve problems in high speed networks and related applications.
- Implement the error control methods in high speed networks.
- Develop the concept of multiple access and multicasting.

UNIT I INTRODUCTION TO HIGH PERFORMANCE NETWORK

9

Overview and introduction - administrative details-network history-internet evolution-network & protocol architecture-topology-network requirements & service classes-layering & protocol stacks-multiplexing-high speed LAN & WAN - introduction & analysis of Ethernet, fast & giga bit Ethernet - token ring - FDDI, ATM.

UNIT II NETWORK CONGESTION & TRAFFIC MANAGEMENT

9

Network congestion & traffic management-error & flow control-TCP, TCP over ATM-admission control & traffic policing-network & traffic model-traffic modeling & simulation-self similar & heavy tailed models-network of queues.

UNIT III SWITCHING TECHNIQUES**9**

Fast switching architecture & analysis-buffering-blocking-fast forwarding-IP switching & multicast - multicast routing.

UNIT IV OPTICAL NETWORKS**9**

Optical networks: fiber optics-WDM-all optical networks.

UNIT V ACCESSING TECHNIQUES**9**

Wireless networking - multiple access -FDMA, CDMA, TDMA, GSM, mobile IP, multicast based mobility.

TOTAL: 45**TEXT BOOKS**

1. William Stallings, High Speed Networks, Prentice Hall of India, 2nd Edition, 1998
2. Jean Waraland & Pravin varaiya, Morgan kaufmann, High Performance Communication Networks, 2000.

REFERENCS

1. S. Keshav, An Engineering Approach to Computer Networks, Addison Wesley, 1997.
2. Uyless Black, ATM volume 1, Prentice Hall, 1991.

IT2755 CLOUD COMPUTING

L	T	P	C
3	0	0	3

GOAL

To provide fundamental concepts about cloud environment and windows azure

OBJECTIVES

The course should enable the students to:

- Have a comprehensive knowledge of cloud computing techniques, best practices in cloud computing.
- Study the current challenges in cloud computing.
- Study the design concepts in implementation of cloud-based applications.

OUTCOME

The students should be able to:

- Develop fundamentals of cloud.
- Implement windows Azure
- Design and implement cloud-based applications

UNIT I UNDERSTANDING CLOUD COMPUTING 9

Introduction to cloud computing, are you ready for cloud computing?, surveying the Role of Cloud Computing, developing the cloud services. Understanding Windows Azure Platform Architecture: The Windows Azure Developer Portal, Creating and running Projects in the Azure Development Platform, Using Azure Application Templates for Visual Studio 2008, Taking advantage of Auxiliary Cloud Services, Deploying Application and Services to the Azure Cloud.

UNIT II ANALYZING THE WINDOWS AZURE OPERATING SYSTEM 9

The Lifecycle, Securing and Isolating Services and Data, Assuring Fabric Controller Availability, Virtualizing Windows Server for Azure. - Scaling Azure Table and Blob Storage: Creating Storage Accounts, Using or Wrapping the Azure Storage Services. REST APIs, Understanding Azure Table Storage, Storing and retrieving Blobs.

UNIT III AUTHENTICATING AND AUTHORIZING SERVICE USER 9

Taking Advantage of ASP.NET Membership Services, Adapting ASP.NET Authentication and Role Management to Windows Azure Web Role, Analyzing the AspProviders Library.s Classes, Moving the AspProvidersDemo.s Data Source to the Cloud, Integrating Membership Services with an Azure Service, Authenticating users with Windows Live ID.

UNIT IV OPTIMIZING THE SCALABILITY AND PERFORMANCE OF AZURE TABLES 9

Assigning Primary Key Values to Entities, Handling Associated Entities, Taking Advantage of Entity Group Transactions, Uploading the table data, Displaying the Data from Heterogeneous Tables in Grids - Massaging with Azure Queues: Creating and Processing Azure Queues and Messages, Enhancing the Thumbnails.sin Sample Solution.

UNIT V AUTHENTICATING USERS WITH .NET ACCESS CONTROL SERVICES 9

Creating the .NET Services Solution, Installing the .NET Services SDK and other Tools, Crating the CardSpace Credentials at Federated identity.net, Using a Managed CardSpace Credential with ACS. - Interconnecting the Services with the .NET Service Bus: Creating .NET Service Solution and Installing Prerequisites, Relaying Message with SB, Analyzing the .NET Services SDK.s EchoSample Solution, Using the Configuration File to Specify WSHttpRelayBinding.

TOTAL : 45

TEXT BOOK

1. Cloud Computing with the Windows Azure Platform., Roger Jennings, Wiley Publishing Inc., 2009.

REFERENCES

1. Michael Miller, Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online, Que Publishing, August 2008.
2. Haley Beard, Cloud Computing Best Practices for Managing and Measuring Processes for On-demand Computing, Applications and Data Centers in the Cloud with SLAs, Emereo Pty Limited, July 2008.

IT2756 COMPONENT BASED TECHNOLOGY

L T P C
3 0 0 3

GOAL

To introduce different software components and their application

OBJECTIVES

The course should enable the students to:

- Get introduction of JAVA, CORBA and .Net components
- Know about the Java Based Component Technologies.
- Understand fundamental properties of components, technology and architecture and middleware.
- Know about the .NET Technologies
- Study the Component Frameworks and its Development.

OUTCOME

The students should be able to:

- Implement the software components and its architecture.
- Develop Concepts of EJP, DOM and RMI components.
- Develop the concepts of CORBA architecture and its services.
- Develop the .NET technologies and ACTIVEX controls
- Implement Component Frameworks and implementation tools.

UNIT I INTRODUCTION

9

Software Components - objects - fundamental properties of Component technology - modules - interfaces - callbacks - directory services - component architecture - components and middleware.

UNIT II JAVA BASED COMPONENT TECHNOLOGIES

9

Threads - Java Beans - Events and connections - properties - introspection - JAR files - reflection - object serialization - Enterprise Java Beans - Distributed Object models - RMI and RMI-IIOP.

UNIT III CORBA COMPONENT TECHNOLOGIES

9

Java and CORBA - Interface Definition language - Object Request Broker - system object model - portable object adapter - CORBA services - CORBA component model - containers - application server - model driven architecture.

UNIT IV .NET BASED COMPONENT TECHNOLOGIES

9

COM - Distributed COM - object reuse - interfaces and versioning - dispatch interfaces - connectable objects - OLE containers and servers - Active X controls - .NET components - assemblies - appdomains - contexts - reflection - remoting.

UNIT V COMPONENT FRAMEWORKS AND DEVELOPMENT

9

Connectors - contexts - EJB containers - CLR contexts and channels - Black Box component framework - directory objects - cross-development environment - component-oriented programming - Component design and implementation tools - testing tools - assembly tools.

TOTAL: 45

TEXT BOOK

1. Clemens Szyperski, Component Software: Beyond Object-Oriented Programming, Pearson Education publishers, 2003.

REFERENCES

2. Ed Roman, Mastering Enterprise Java Beans, John Wiley & Sons Inc., 1999.
3. Mowbray, Inside CORBA, Pearson Education, 2003.
4. Freeze, Visual Basic Development Guide for COM & COM+, BPB Publication, 2001.
5. Hortsamann, Cornell, CORE JAVA Vol-II Sun Press, 2002.

ELECTIVE - III IT2851 E-COMMERCE TECHNOLOGY

L	T	P	C
3	0	0	3

GOAL

To understand the concepts in E-Commerce.

OBJECTIVES

The course should enable the students to:

- Understand E-Commerce Framework.
- Know Electronic Systems for Payment.
- Learn use of E-Commerce Advertising & Marketing
- Understand business documents and Digital Library.
- Understand use of multimedia systems for E-Commerce.

OUTCOME

The students should be able to:

- Work in E-Commerce Framework
- Create a website for accepting payment
- Create advertising web sites
- Create Digital Library
- Create & Use multimedia sites.

UNIT I E-COMMERCE FRAMEWORK 9

Introduction - Electronic Commerce Framework - The Anatomy of E-Commerce Applications. The Network Infrastructure for E-Commerce, the Internet as a Network Infrastructure.

UNIT II ELECTRONIC SYSTEMS FOR PAYMENT 9

Electronic Payment Systems, Inter organizational Commerce and EDI, EDI Implementation, MIME and Value - added Networks.

UNIT III E-COMMERCE ADVERTISING AND MARKETING 9

Advertising and Marketing on the Internet, Computer Based Education and Training, Technological Components of Education on-Demand, Digital Copy rights and Electronic Commerce, Software Agent.

UNIT IV BUSINESS DOCUMENTS AND DIGITAL LIBRARY 9

The Corporate Digital Library - Dimensions of Internal Electronics Commerce Systems, Making a Business case for a document Library, Types of Digital documents, Issues behind document Infrastructure, Corporate data warehouses, Documents Active / Compound document architecture.

UNIT V MULTIMEDIA SYSTEMS FOR E-COMMERCE 9

Multimedia and Digital Video - Broad band Telecommunications - Mobile and Wireless Computing Fundamentals.

TOTAL: 45

TEXT BOOK

1. Frontiers of Electronic Commerce, Kalakota & Whinston, Pearson Education, 2002.

REFERENCES

1. Kamalesh K. Bajaj, E-Commerce: The Cutting Edge & Business, Tata McGraw-Hill, 2003.
2. Brenda Kennan, Managing your E-Commerce Business, PHI, 2001.
3. Electronic Commerce from Vision to Fulfillment, PHI, Elias M. Awad, Feb-2003.
4. Electronic Commerce - Framework, Technology and Application, TMH, Bharat Bhaskar, 2003.
5. Effy Oz, Foundations of E-Commerce, PHI, 2001.
6. Jim A Carter, Developing E-Commerce Systems, PHI, 2001.

IT2852 ENTERPRISE RESOURCE PLANNING

L T P C
3 0 0 3

GOAL

To know the strategic importance of Enterprise Resource Planning.

OBJECTIVES

The course should enable the students to :

- Know the basics of ERP
- Understand the key implementation issues of ERP
- Know the business modules of ERP
- Be aware of some popular products in the area of ERP
- Understand the current and future trends in ERP

OUTCOME

The students should be able to:

- Develop the concept of ERP
- Implement ERP in real time environment
- Develop programs with some ERP software.

UNIT I INTRODUCTION TO ERP 9

Integrated Management Information Seamless Integration - Supply Chain Management - Integrated Data Model - Benefits of ERP - Business Engineering and ERP - Definition of Business Engineering - Principle of Business Engineering - Business Engineering with Information Technology.

UNIT II BUSINESS MODELLING FOR ERP 9

Building the Business Model - ERP Implementation - An Overview - Role of Consultant, Vendors and Users, Customisation - Precautions - ERP Post Implementation Options-ERP Implementation Technology -Guidelines for ERP Implementaion.

UNIT III ERP AND THE COMPETITIVE ADVANTAGE 9

ERP domain MPGPRO - IFS/Avalon - Industrial and Financial Systems - Baan IV SAP-Market Dynamics and Dynamic Strategy.

UNIT IV COMMERCIAL ERP PACKAGE 9

Description - Multi-Client Server Solution - Open Technology - User Interface- Application Integration.

UNIT V SAP ARCHITECTURE 9

Basic Architectural Concepts - The System Control Interfaces - Services - Presentation Interface - Database Interface.

TOTAL: 45

TEXT BOOK

1. Vinod Kumar Garg and N.K.Venkita Krishnan, Enterprise Resource Planning - Concepts and Practice, PHI, 1998.

REFERENCE

1. Jose Antonio Fernandz, The SAP R/3 Handbook, TMH, 1998.

IT2853 BIOINFORMATICS

L T P C
3 0 0 3

GOAL

The aim of this course is to expose the students to the basics of bioinformatics processing and the computational techniques needed for the process.

OBJECTIVES

The course should enable the students to:

- Study the basic aspects of the biological patterns
- Study Biological pattern matching
- Use the archives and information retrieval strategies
- Learn the approaches to sequence alignments
- Study the issues in proteins and drug discovery

OUTCOME

The students should be able to:

- Implement genome architectures
- Develop technology to integrate IT with biotechnology.

UNIT I INTRODUCTION

9

Life in Space and Time, Dogmas, Data Archives, WWW, Computers, Biological Classification, Use of Sequences, Protein Structure, Clinical Implications.

UNIT II GENOME ORGANIZATION

9

Genomics and Proteomics, Eavesdropping on transmission of genetic information, Genomes of prokaryotes, Genomes of Eukaryotes, Human Genome, SNPs, Genetic Diversity, Evolution of Genomes.

UNIT III ARCHIVES AND INFORMATION RETRIEVAL

9

Introduction, The archives, Gateways to Archives

UNIT IV ALIGNMENTS AND PHYLOGENETIC TREES

9

Introduction to Sequence Alignment, The dotplot, Dotplots and Sequence Alignments, Measures of

Sequence similarity, Computing the Alignment, The dynamic programming algorithm, Significance of alignments, Multiple sequence alignment, Applications, Phylogeny, Phylogenetic trees.

UNIT V PROTEIN STRUCTURE AND DRUG DISCOVERY

9

Protein Stability and Folding, Applications of Hydrophobicity, Superposition of structures, DALI, Evolution of Protein Structures, Classification of Protein Structures, Protein Structure prediction and modeling, Assignment of protein structures to genomes, Prediction of protein function, Drug discovery and development.

TOTAL: 45

TEXT BOOK

1. Arthur M Lesk, Introduction to Bioinformatics, Oxford University Press, India, 2004.

REFERENCE

1. Attwood T K and Parry-Smith D J, Introduction to Bioinformatics, Pearson Education Asia, New Delhi, 2001.

IT2854 HUMAN COMPUTER INTERFACE

L	T	P	C
3	0	0	3

GOAL

To implement the basics and in-depth knowledge about UID. It enables the students to take up the design the user interface, design, menu creation and windows creation and connection between menu and windows.

OBJECTIVES

The course should enable the students to :

- Study the concept of menus, windows, interfaces.
- Study about business functions.
- Study the characteristics and components of windows.
- Study the various controls for the windows.
- Study about various problems in windows design with color, text, graphics.
- Study the testing methods

OUTCOME

The students should be able to:

- Write characteristic of HCI
- Implement windows controls
- Design a comprehensive interface for users.

- Develop a web page
- Test windows layout

UNIT I INTRODUCTION 8

Introduction-Importance-Human-Computer interface-characteristics of graphics interface-Direct manipulation graphical system - web user interface-popularity-characteristic & principles.

UNIT II USER INTERFACE DESIGN 10

User interface design process- obstacles-usability-human characteristics in design - Human interaction speed-business functions-requirement analysis-Direct-Indirect methods-Design standards - Human consideration in screen design - structures of menus - contents of menu- graphical menus.

UNIT III WINDOWS AND CONTROLS 9

Windows: Characteristics-components-presentation styles-types-operations-web systems-device-based controls: characteristics-Screen -based controls: operate control - text boxes-selection control-combination control-custom control-presentation control.

UNIT IV WEB PAGE DEVELOPMENT 9

Text for web pages - effective feedback-guidance & assistance-Internationalization-accessibility-Icons-Image-Multimedia -coloring.

UNIT V WINDOWS LAYOUT - TESTING AND TOOLS 9

Windows layout-test: prototypes - kinds of tests - retest - Information search - visualization - Hypermedia - www - Software tools.

TOTAL: 45

TEXT BOOK

1. Wilbent. O. Galitz, The Essential Guide to User Interface Design, John Wiley& Sons, 2001.

REFERENCES

1. Ben Sheiderman, Design the User Interface, Pearson Education, 1998.
2. Alan Cooper, The Essential of User Interface Design, Wiley - Dream Tech Ltd., 2002.

IT 2855 BUILDING ENTERPRISE APPLICATIONS

L T P C
3 0 0 3

GOAL

To provide the knowledge about how to develop enterprise application

OBJECTIVES

The course should enable the students to:

- Learn the Business Enterprise modeling
- Learn the Architecture of business application
- Learn about building a business software.

OUTCOME

The students should be able to:

- Familiarize with concept of Enterprise Analysis and Business Modeling.
- Write requirements validation, planning and estimation.
- Design and document the application architecture.
- Write about the importance of application framework and designing other application components.
- Construct and develop different solution layers.
- Perform Code review, Code analysis, build process.
- Implement different testing involved with enterprise application and the process of rolling out an enterprise application.

UNIT I INTRODUCTION

9

Introduction to enterprise applications and their types, software engineering methodologies, life cycle of raising an enterprise application, introduction to skills required to build an enterprise application, key determinants of successful enterprise applications, and measuring the success of enterprise applications.

UNIT II MODELING

9

Inception of enterprise applications, enterprise analysis, business modeling, requirements elicitation, use case modeling, prototyping, non functional requirements, requirements validation, planning and estimation.

UNIT III ARCHITECTURE

9

Concept of architecture, views and viewpoints, enterprise architecture, logical architecture, technical architecture - design, different technical layers, best practices, data architecture and design - relational, XML, and other structured data representations, Infrastructure architecture and design elements - Networking, Internetworking, and Communication Protocols, IT Hardware and Software, Middleware,

Policies for Infrastructure Management, Deployment Strategy, Documentation of application architecture and design.

UNIT IV ENTERPRISE APPLICATION I

9

Construction readiness of enterprise applications - defining a construction plan, defining a package structure, setting up a configuration management plan, setting up a development environment, introduction to the concept of Software Construction Maps, construction of technical solutions layers, methodologies of code review, static code analysis, build and testing, dynamic code analysis - code profiling and code coverage.

UNIT V ENTERPRISE APPLICATION II

9

Types and methods of testing an enterprise application, testing levels and approaches, testing environments, integration testing, performance testing, penetration testing, usability testing, globalization testing and interface testing, user acceptance testing, rolling out an enterprise application.

TOTAL : 45

TEXT BOOKS

1. Raising Enterprise Applications - Published by John Wiley, authored by Anubhav Pradhan, Satheesha B. Nanjappa, Senthil K. Nallasamy, Veerakumar Esakimuthu
2. Building Java Enterprise Applications - Published by O'Reilly Media, authored by Brett McLaughlin.

REFERENCES

1. Software Requirements: Styles & Techniques - published by Addison-Wesley Professional
2. Software Systems Requirements Engineering: In Practice - published by McGraw-Hill/Osborne Media
3. Managing Software Requirements: A Use Case Approach, 2/e - published by Pearson
4. Software Architecture: A Case Based Approach - published by Pearson
5. Designing Enterprise Applications with the J2EE Platform (PDF available at- http://java.sun.com/blueprints/guidelines/designing_enterprise_applications_2e/)
6. Software Testing, 2/e - published by Pearson
7. Software Testing, Principles and Practices - published by Oxford University Press.

IT2856 SOFT COMPUTING

L T P C
3 0 0 3

GOAL

To introduce the techniques of soft computing and adaptive neuro-fuzzy inferencing systems which differ from conventional AI and computing in terms of its tolerance to imprecision and uncertainty.

OBJECTIVES

The course should enable the students to:

- Understand the ideas of fuzzy sets, fuzzy logic and use of heuristics based on human experience
- Understand neural networks that can learn from available examples and generalize to form appropriate rules for inferencing systems
- Know the mathematical background for carrying out the optimization associated with neural network learning
- Gain knowledge with genetic algorithms and other random search procedures useful while seeking global optimum in self-learning situations
- Understand case studies utilizing the above and illustrate the intelligent behavior of programs based on soft computing.

OUTCOME

The students should be able to:

- Develop the fuzzy theory
- Implement neural networks
- Apply the Application of computation intelligence.

UNIT I FUZZY SET THEORY

9

Introduction to Neuro - Fuzzy and Soft Computing - Fuzzy Sets - Basic Definition and Terminology - Set-theoretic Operations - Member Function Formulation and Parameterization - Fuzzy Rules and Fuzzy Reasoning - Extension Principle and Fuzzy Relations - Fuzzy If-Then Rules - Fuzzy Reasoning - Fuzzy Inference Systems - Mamdani Fuzzy Models - Sugeno Fuzzy Models - Tsukamoto Fuzzy Models - Input Space Partitioning and Fuzzy Modeling.

UNIT II OPTIMIZATION

9

Derivative-based Optimization - Descent Methods - The Method of Steepest Descent - Classical Newton's Method - Step Size Determination - Derivative-free Optimization - Genetic Algorithms - Simulated Annealing - Random Search - Downhill Simplex Search.

UNIT III NEURAL NETWORKS

9

Supervised Learning Neural Networks - Perceptrons - Adaline - Backpropagation Multilayer Perceptrons - Radial Basis Function Networks - Unsupervised Learning Neural Networks - Competitive Learning Networks - Kohonen Self-Organizing Networks - Learning Vector Quantization - Hebbian Learning.

UNIT IV NEURO FUZZY MODELING AND OTHER TECHNIQUES 9

Adaptive Neuro-Fuzzy Inference Systems - Architecture - Support Vector Machines - Independent Component Analysis.

UNIT V APPLICATIONS OF COMPUTATIONAL INTELLIGENCE 9

Printed Character Recognition - Inverse Kinematics Problems - Automobile Fuel Efficiency Prediction - Soft Computing for Color Recipe Prediction.

TOTAL: 45

TEXT BOOK

1. J.S.R.Jang, C.T.Sun and E.Mizutani, Neuro-Fuzzy and Soft Computing, PHI, 2004, Pearson Education 2004.

REFERENCES

1. Timothy J.Ross, Fuzzy Logic with Engineering Applications, McGraw-Hill, 1997.
2. Davis E.Goldberg, Genetic Algorithms: Search, Optimization and Machine Learning, Addison Wesley, N.Y., 1989.
3. S. Rajasekaran and G.A.V.Pai, Neural Networks, Fuzzy Logic and Genetic Algorithms, PHI, 2003.
4. R.Eberhart, P.Simpson and R.Dobbins, Computational Intelligence - PC Tools", AP Professional, Boston, 1996.

IT2857 STRATEGIC MANAGEMENT

L T P C
3 0 0 3

GOAL

The main aim of the course is to provide knowledge about problem solving and decision making skill in the area of management.

OBJECTIVES

The course should enable the students to :

- Gain familiarity with the principal concepts, frameworks and techniques of strategic management.
- Gain the knowledge gained in previous and parallel courses.
- Learn skills of oral and written communication.

OUTCOME

The students should be able to:

- Implement plan the problem solving methods

- Implement strategic management
- Implement skills of oral and written management

UNIT I STRATEGIC MANAGEMENT PROCESS 9

Vision, Mission, Goal Philosophy. Policies of an Organization. Strategy, Strategy as planned action, Its importance, Process and advantages of planning, Strategic v/s Operational Planning.

UNIT II DECISION MAKING AND PROBLEM SOLVING 9

Categories of problems, Problem solving skill, Group decision making. Phases in decision making, Communication Commitment and performance, Role of the leader, Manager v/s Leaders Leadership styles.

UNIT III TYPES 9

Conventional Strategic Management vs Unconventional Strategic Management - The Differences, Changed Circumstance.

UNIT IV BUSINESS 9

Growth Accelerators: Business Web, Market Power, learning based.

UNIT V MANAGEMENT CONTROL 9

Management Control, Elements, Components of Management Information Systems, Mokena's 7 8 Models : Strategy, style, structure, systems, staff, skill and Shared values

TOTAL : 45

TEXT BOOK

1. Strategic Management Concepts and Cases by Arthur A. Thompson, Jr. & A. J. Strickland, McGraw Hill 12th Edition, 2000.

REFERENCES

1. Strategic Management Concepts & Cases by Fred R. David -Pearson Education/PHI.
2. Strategic Management Building and Sustaining Competitive Advantage by Robert A. Pitts, David Lei. - Thomson South -Western, 3/e, 2002.
3. Competitive Advantage by Michael E Porter, Free press, NY.
4. Strategic Management by David Hunger.