GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING

(AUTONOMOUS)

MADHURAWADA, VISAKHAPATNAM-530048

AFFILIATED TO JNTU KAKINADA

INFORMATION TECHNOLOGY

REGULATIONS, COURSE STRUCTURE AND SYLLABI FOR B.TECH. (I TO VI SEMESTERS) UNDER AUTONOMOUS STATUS

ALL BRANCHES ARE ACCREDITED BY **NBA** OF AICTE

ACCREDITED BY **NAAC** WITH '**A**' GRADE WITH A **CGPA** OF **3.47**/4.00

2011 - 2012

Prof. Allam Appa Rao, Vice Chancellor, JNTU-K launching the Autonomous System at Gayatri Vidya Parishad College of Engineering

Meeting of the Academic Council held on 15th May 2011

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CHEMICAL ENGINEERING

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Vision

To evolve into and sustain as a Centre of Excellence in Technological Education and Research with a holistic approach.

Mission

To produce high quality engineering graduates with the requisite theoretical and practical knowledge and social awareness to be able to contribute effectively to the progress of the society through their chosen field of endeavour.

To undertake Research & Development, and extension activities in the fields of Science and Engineering in areas of relevance for immediate application as well as for strengthening or establishing fundamental knowledge.

F O R E W O R D

The G.V.P. College of Engineering has successfully completed two years of Autonomy and entered into third year with great confidence and vigor. The procedures and methods adopted in implementing the autonomy has drawn admiration from other institutes of same status.

At each step, a systematic feed back is taken from all the stake holders which helped to fine tune the academic activities so that the teaching learning process is more effective.

The support and encouragement from academicians from institutes of repute from within and outside the state in the form of members on the BOS, paper setters, valuers and other types of involvement has led us to maintain the standards. The moral support and encouragement from parent University gave a boost to march forward with great enthusiasm.

The regulations and course structure are reviewed and some flexibilities and modifications are incorporated to make the slow learners catch up with the rest. The syllabi for 5th ,6th semesters is also prepared in the third meeting of the Board of Studies and approved by the Academic Council for implementation.

The students are advised to make the best use of the available resources and strive hard to achieve laurels on the personal as well as institutional levels.

On behalf of the Management and staff a warm welcome is extended to the new incumbents assuring a healthy academic environment.

Principal

COURSE STRUCTURE

ACADEMIC REGULATIONS

(EFFECTIVE FOR 2011 ADMITTED BATCH)

R 1.0 Qualification for Admission and duration:

R1.1 The selection for category A and B seats shall be as per Govt. of Andhra Pradesh rules.

R1.2 The duration of the programme for the Degree of Bachelor of Technology will be four academic years, with two semesters in each year. However if a student cannot complete within 4 years, he can do so by taking more time but not more than 8 years.

R1.3 The duration of each semester will normally be 20 weeks with 5 days a week. A working day shall have 7 periods each of 50 minutes.

R 2.0 Structure of the Programme :

Semester	No.of Courses per semester	Credits
	Theory + Lab	
I	5 + 3	26
II	5 + 3	26
III	6 + 2	28
IV	6 + 2	28
V	6 + 2	28
VI	6 + 1+	28
Advanced Communication skills Lab (V/VI semesters)		
Industry oriented Mini Project		02
VII	6(Two electives) + 2	28
VIII	3(Two electives) + Seminar + Comprehensive Viva +Project	30
Total		**224**

Note: Except elective subjects in VII, VIII semesters all courses are compulsory.

a) The curriculum in the first and second semesters shall be common for all the B.Tech. programmes except for Departmental options.

b) Each course is normally assigned a certain number of credits as follows:

- 1 credit per lecture period per week and no credits for tutorials
- 2 credits per laboratory class of 3 periods per week
- 2 credits for Industry oriented Mini Project
- 2 credits for Seminar with 3 periods per week
- 4 credits for comprehensive viva-voce examination
- 12 credits for project work

c) The curriculum for any programme of study shall have a total of 224 credits out of which a minimum of 216 credits are required to be obtained by a student for the award of B.Tech degree. The default of 8 credits is permitted only from the electives in VII and VIII semesters.

d) Participation in extra- and co-curricular activities like Sports, Social Service, Cultural and Literary associations is compulsory for all the students as and when they are planned.

i) A student has to record a participation of minimum of 32 hours in his/her chosen activity during the first year.

ii) The activities are monitored and grades are awarded as given below:

EXCELLENT
GOOD
SATISFACTORY
UNSATISFACTORY

If a candidate gets an unsatisfactory Grade, he/she has to repeat the above activity.

R 3.0 Method of Evaluation :

The performance of a student in each semester shall be evaluated subject-wise with a maximum of 100 marks each for theory and practical/Drawing subjects. In addition, Industry oriented mini-project, seminar, Comprehensive Viva-Voce and Project work shall be evaluated for 50, 50, 100 and 200 marks, respectively.

R 3.1 Theory :

For all lecture based theory courses, the evaluation shall be for 40 marks through internal evaluation and 60 marks through external end-semester examination of three hours duration.

R 3.1 a. Internal evaluation :

The 40 internal marks are divided as 20+10+10.

1.	Quiz/Subject type test	20 marks
2.	Assignment/tutorial	10 marks
3.	Seminar/Viva/ Any other method as notified by the teacher (at the beginning of the semester)	10 marks

The internal marks shall be computed as per the procedure given above, as the weighted average of the two internal evaluations at 2:1 with the higher score carrying a weightage of 2.

R 3.1 b. External evaluation :

The question paper shall be set externally and valued both internally and externally.

If the difference between the first and second valuations is less than or equal to 15% of the maximum of the paper the better of the two valuations shall be awarded and if the difference between the first and second valua-

tion is more than 15%, the chief examiner appointed has to discuss with the two valuers and have his own assessment of the script. The marks given by the chief examiner shall be final for award.

R 3.2 Practicals :

Practicals/drawing shall be evaluated for 100 marks, out of which 50 marks are for external examination and 50 marks are for internal evaluation. The 50 internal marks are distributed as 25 marks for day-to-day work and 25 marks for internal end-examination. The internal end- examination shall be conducted by the teacher concerned and another faculty member of the same department.

10 out of 12 to 16 experiments/exercises recommended are to be completed in a semester.

R 3.3 Industry Oriented Mini Project :

The industry oriented mini project shall be carried out during the summer break for a minimum of 4 weeks after the VI Semester and completed before the start of the VII semester. A report has to be submitted at the beginning of the VII semester for assessment by an internal evaluation committee comprising Head of the Department and two faculty of the department including the project Supervisor for 50 marks. A minimum of 50% of maximum marks shall be obtained to earn the corresponding credits.

R 3.4 Seminar :

The seminar shall have two components, one chosen by the student from the course-work without repetition and approved by the faculty Supervisor. The other component is suggested by the Supervisor and can be a reproduction of the concept in any standard research paper or an extension of concept from earlier course work. A hard copy of the information on Seminar topic in the form of a report is to be submitted for evaluation along with presentation. The presentation of the seminar topics shall be made before a committee comprising the Head of the Department, seminar

supervisor and a senior faculty of the department. The two components of the seminar are distributed between two halves of the semester and are evaluated for 50 marks each. The average of the two components shall be taken as the final score. A minimum of 50% of maximum marks shall be obtained to earn the corresponding credits.

R 3.5 Comprehensive Viva-Voce :

The comprehensive Viva-Voce will be conducted by a committee comprising Head of the Department, two senior faculty of the respective department and an External Examiner from outside the College. This is aimed at assessing the student's understanding of various subjects studied during the entire program of 4 years. The Comprehensive Viva-Voce shall be evaluated for 100 marks at the end of VIII semester. A minimum of 50% of maximum marks shall be obtained to earn the corresponding credits.

R 4.0 Project :

The Project work shall be spread over the entire VIII Semester and of somewhat innovative in nature, exploring the research bent of mind of the student. A project batch shall comprise of not more than four students. A mid-course review is conducted by HOD and the Supervisor on the progress for 20% of the marks. On completion of the project a second evaluation is conducted for award of internal marks of another 20% before the report is submitted making the total internal marks 40%. The final evaluation shall be based on the report submitted and a viva-voce exam for 60% marks by an external examiner.

R 5.0 Attendance Requirements :

It is desirable for a candidate to put up 100% attendance in the class in all the subjects. However, a candidate shall be permitted to appear for the end semester examination provided he records a minimum of 75% attendance for each subject in any semester. However, condonation for shortage of attendance may be given on Medical grounds, if a certificate

to the extent is submitted to the HOD when the candidate first returns to the classes. Certificates submitted afterwards shall not be entertained on any count. A condonation fee as fixed by the college for those who put in attendance between 65 and 74 per cent shall be charged before the student is permitted to the end examination.

Attendance may also be condoned as per the State Government rules for those who participate in prestigious sports, co- and extra-curricular activities provided their attendance is in the minimum prescribed limits for the purpose and recommended by the concerned authority.

Attendance will be indicated in the marks memo by a letter code as follows :

Grading of Attendance :

90% and above	A (Very Good)
75% to 89%	B (Good)
65% to 74%	C (Condoned)
Below 65%	D (Detained)

A student who gets less than 65% (D Grade) attendance in a maximum of two courses in any semester shall not be permitted to take the end-semester examination in which he/she falls short. His/her registration for those courses will be treated as cancelled. The student should re-register and repeat those courses as and when offered next.

R 5.1 : If a student gets D grade in more than two courses in any semester he/she shall be detained and has to repeat the entire semester.

R 6.0 Minimum Academic Requirement :

The following academic requirements shall be met along with the attendance requirements mentioned above to be eligible for the award of the B.Tech. degree.

i. A student shall acquire at least C grade in attendance to be eligible to appear for the end-semester examination in the concerned

subject

ii. A student shall be deemed to have satisfied the minimum academic requirements and earned the credits allotted to each theory, if he/she secures not less than 35% of marks in external end examination, and a minimum of 40% of marks on the aggregate of internal evaluation and external examination taken together.

iii. In case of practical / drawing / project / seminar, a student shall be deemed to have satisfied the minimum academic requirements and earned the credits allotted to each of them if the student secures a minimum of 50% in the end examination and not less than 50% marks on the aggregate in the internal evaluation and external end examination taken together.

iv. A student shall be promoted from IV to V semester, if he acquires 76 out of 108 credits upto the end of IV Semester (from I, II, III semesters regular and supplementary examinations & IV semester regular examinations) before he/she enters V Semester.

v. A student shall be promoted from VI to VII semester, only if he / she fulfills the academic requirements of total 100 credits out of which all 52 from first year shall be completed, from the examinations held up to IV semester including supplementary examinations.

vi. Student shall register and put up minimum attendance in all 224 credits and earn 216 credits or more. Marks obtained in the best 216 out of 224 credits shall be considered for the award of Percentage/Class/Division.

vii. A student who fails to earn 216 credits as indicated in the course structure including compulsory subjects as indicated in table given in R2.0 within eight academic years from the year of his/her admission shall forfeit his/her seat and his/her admission stands

cancelled.

R 7.0 Remedial program for defaulters:

A Remedial programme during 8.40 - 10.20 a.m. / 3.20 - 5.00 p.m. in subsequent semesters is offered for those students who had taken the course earlier but failed to fulfill the attendance requirements and detained due to shortage of attendance in not more than two subjects. However, this facility shall not be extended to those candidates who are detained for want of attendance as per regulations R 5.1.

i Remedial programme shall be announced at the beginning of every semester. The announcement of subjects offered for the summer programme is at the discretion of the Principal. A student shall have to register within the time stipulated in the announcement by paying the prescribed fee.

ii. The number of total contact hours and method of evaluation for any remedial program shall be the same as those for a regular semester.

iii. It is desirable for a candidate to put up 100% attendance in all the subjects registered for the remedial programme. However 25% concession in attendance may be permitted at the discretion of the principal based on the merits of the individual case under extraneous conditions with proper evidence. No further condonation of attendance on par with the regular semester shall be permitted.

iv. If a candidate is failed to satisfy the attendance requirement in a course registered during remedial programme, then he has to repeat the course in the subsequent remedial programme when offered next.

v. The method of internal evaluation is same as for the regular B.Tech programme. I mid examination shall be completed by the end of IV weeks and II mid to be completed by the end of VIII weeks of the programme.

vi. The earlier internal marks secured in the regular semester for the subjects registered in the remedial programme are nullified and internal marks from the latest remedial programme shall be final.

vii. The credits for the courses registered during the remedial programme can be earned from the end semester examinations following the corresponding regular semester.

viii. Attendance and completion of subjects during the remedial programme shall be suitably reflected in the consolidated marks memo.

No student can register for more than two courses during a remedial term.

Withdrawal from a remedial program after registration will not entitle for any refund of fees.

R 8.0 Supplementary examinations :

Supplementary examinations for the odd semester shall be conducted with the regular examinations of even semester and vice versa, for those who appeared and failed in regular examinations.

R 9.0 Class/Division :

70% and above : First Class with distinction
60% and above, but less than 70% : First Class
50% and above, but less than 60% : Second Class.
40% and above, but less than 50% : Pass Class
Less than 40% : Fail

**** A candidate shall get an aggregate of 40% overall at the end of VIII semester while fulfilling a minimum of 216 credits for the award of B.Tech degree. The best 216 out of 224 credits shall be considered for the award of class/division.***

REGULATIONS FOR B.TECH. (LATERAL ENTRY) STUDENTS ADMITTED INTO III SEMESTER (II YEAR) (UNDER AUTONOMOUS STREAM)

RL 1.0

1.1 The selection and admission process shall be as per Government of Andhra Pradesh rules through ECET.

1.2 A student admitted to B.Tech. through lateral entry scheme joins the College in the III Semester of the respective 8-Semester program. The duration of the programme is 3 years / 6 semesters. However, if a student can not complete within 3 years, he can do so by taking more time but not more than consecutive 6 years / 12 semesters.

RL 2.0 These students are exempted from social work.

RL 3.0 The attendance requirements shall be same as those admitted into four year B.Tech programme, I- Semester (Autonomous stream).

RL 4.0 Minimum Academic Requirements :

i) A student shall be promoted to the VII Semester only after securing 56 credits in III and IV semester courses from the examinations including supplementary examinations in these subjects held till the end of VI semester of study.

ii) A student shall register and put up minimum required attendance in all the 172 credits counted from the regular course structure of VIII semester B.Tech programme and earn at least 164 credits prescribed as compulsory to be qualified for the award of B.Tech. degree. Marks out of the best 164 credits shall be considered for the award of class /division.

RL 5.0 All other regulations are same as those applicable to the students admitted into B.Tech I-Semester under Autonomous stream.

RL 6.0 Subjects are identified as exempted / mandatory / pre-requisites. A student has to attend classes in subjects prescribed as mandatory/ pre-requisites and has to earn the credits in the examinations as and when conducted. The evaluation for the above courses may be totally internal.

TRANSITORY REGULATIONS FOR STUDENTS RE-ADMITTED INTO II - YEAR OF AUTONOMOUS STREAM FROM PREVIOUS REGULATIONS

1. The student has to attend classes in the subjects declared as prerequisites before joining into II year (III or IV semester) under autonomous stream offered in the preceding semester and has to earn the credits in the examinations as and when conducted.
2. For subjects which are not prerequisites but declared as compulsory, the instruction may be taken during the following remedial programmes or as and when they are offered and shall earn the credits in the examinations as and when conducted.
3. The re-admitted students have to appear and pass the I year / II Year I semester (in case of readmission into II semester) subjects by appearing for the examinations as and when conducted by JNT University Kakinada in the failed subjects.

4. Promotion to V semester:

For a student readmitted into III, IV semesters (II year) of Autonomous Stream, to get promoted to V semester (III year - I semester) one has to earn 80 credits up to the end of IV semester.(The credits for I year courses shall be earned from regular and supplementary examinations conducted by JNTU-K and for III semester from regular and supplementary examinations conducted by GVPCE(A) and for IV semester from regular examinations conducted by GVPCE(A) including the courses prescribed as pre-requisite and mandatory for re-admission.

5. Promotion to VII semester:

For a re-admitted student to get promoted to VII semester (IV year) the following criteria must be satisfied

I. He shall acquire all the 56 credits of the I year courses.

II. He shall acquire at least 104 credits from the courses up to the end of II year excluding prerequisites (Including the supplementary examinations) and secure a pass in prerequisite courses offered during the transition from previous regulations to autonomous regulations.

6. The student seeking readmission into II year shall abide by all other relevant regulations in force under the autonomous stream in addition to the above and shall secure a pass in prerequisite and compulsory courses.

7. For the award of the degree, a student shall acquire 216 credits. However, a pass in prerequisite or mandatory courses shall not be essential for the award of the degree if one satisfies the attendance requirements in such courses, provided the total number of courses attended exceeds those equivalent to 224 credits as per the prescribed curriculum.

TRANSITORY REGULATIONS FOR STUDENTS RE-ADMITTED INTO III - YEAR (V, VI Semesters) OF AUTONOMOUS STREAM FROM JNTU-K REGULATIONS

1. A Student has to attend classes in the subjects declared as pre requisites before joining into V or VI semesters under autonomous stream offered in the preceding semesters/ Remedial programme and can earn the credits in the examinations as and when conducted.
2. For the subjects which are not prerequisites but declared as mandatory, the instruction may be taken during or in the subsequent semester/Remedial Programme and can earn credits in the examinations as and when conducted.
3. The Re-admitted students have to appear and pass the I, II and III year- I semester (in case of readmission into II semester) subjects by appearing for the respective examinations as and when conducted at the earliest by J.N.T. University Kakinada in the failed subjects.
4. **Promotion to VII semester :**

   The promotion into VII semester (IV year I semester) for those readmitted into V or VI semester shall be in accordance with the then prevailing rules of JNTU-K.
5. A student seeking re-admission into V or VI semester (III year) shall abide by all other relevant regulations in force under the autonomous stream.
6. For the award of the degree, a student shall acquire 216 credits. However, a pass in prerequisite or mandatory courses shall not be essential for the award of the degree if one satisfies the attendance requirements in such courses, provided the total number of courses attended exceeds those equivalent to 224 credits as per the prescribed curriculum.

R 10.0 General :

i. Where the words 'he', 'him', 'his', occur, they imply 'she', 'her', 'hers', also.

ii. The academic regulation should be read as a whole for the purpose of any interpretation.

iii. In the case of any doubt or ambiguity in the interpretation of the above rules, the decision of the Chairman, Academic Council is final.

iv. The college may change or amend the academic regulations or syllabi from time to time and the changes or amendments made shall be applicable to all the students with effect from the dates notified by the college.

PROGRAMMES OF STUDY AND INTAKE

I. U.G. PROGRAMMES :

Courses	Intake
Chemical Engineering	60
Civil Engineering	120
Computer Science and Engineering	120
Electrical and Electronics Engineering	120
Electronics and Communication Engineering	180
Information Technology	90
Mechanical Engineering	120

II. P.G. PROGRAMMES :

Courses	Intake
i) **M.TECH**	
Chemical Engineering	18
Computer science and Engineering	18
Embedded Systems and VLSI Design	18
Communications and Signal Processing	18
CAD/CAM	18
Infrastructural Engg. & Mgmt. in Civil Engg.	18
Structural Engineering	18
Power System Control and Automation	18
Software Engineering	18
ii) M.C.A	60

COURSE STRUCTURE

INFORMATION TECHNOLOGY

I SEMESTER :

COURSE CODE	THEORY/LAB	L	T	P	C
AHE1101	English	4	0	0	4
ABM1101	Mathematics-I	4	1	0	4
ABP1101	Physics	4	1	0	4
ABC1101	Chemistry	4	1	0	4
AME1103	Engineering Mechanics	4	1	0	4
ABP1102	*Physics and Chemistry Lab*	0	0	3	2
AHE1102	*English Language Lab*	0	0	3	2
AMT1101	*Engineering Workshop*	0	0	3	2
	Total	**20**	**4**	**9**	**26**

II SEMESTER :

COURSE CODE	THEORY/LAB	L	T	P	C
ABM1102	Mathematics-II	4	1	0	4
ABM1103	Probability, Statistics and numerical Methods	4	1	0	4
AEE1136	Basic Electrical Engineering	4	1	0	4
ABE1101	Environmental Studies	4	0	0	4
ACT1102	Computer Programming through C	4	1	0	4
ACT1101	*PC Software Lab*	0	0	3	2
ACT1103	*Computer programming Lab*	0	0	3	2
AME1102	*Engineering Drawing*	0	0	3	2
	Total	**20**	**4**	**9**	**26**

III SEMESTER :

COURSE CODE	THEORY/LAB	L	T	P	C
ABM1106	Discrete Mathematical Structures	4	1	0	4
ACT1104	Computer Organisation	4	1	0	4
AEC1142	Digital Logic Design	4	0	0	4
AEC1143	Electronic Devices and circuits	4	1	0	4
AHM1101	Managerial Economics and Financial Analysis	4	0	0	4
ACT1105	*Data structures using C++*	4	1	0	4
AEC1144	*Analog & Digital Circuits Lab*	0	0	3	2
ACT1106	*Data structures Lab*	0	0	3	2
	Total	**24**	**4**	**6**	**28**

IV SEMESTER :

COURSE CODE	THEORY/LAB	L	T	P	C
ACT1107	Unix & Shell Programming	4	0	0	4
ACT1108	Operating Systems	4	1	0	4
ACT1109	Database Management Systems	4	1	0	4
ACT1110	Object Oriented Programming through Java	4	1	0	4
ACT1116	Design and Analysis of Algorithms	4	1	0	4
ACT1113	Computer Graphics	4	0	0	4
ACT1111	*Operating Systems Lab*	0	0	3	2
ACT1112	*Database Management Systems Lab*	0	0	3	2
	Total	**24**	**4**	**6**	**28**

V SEMESTER :

COURSE CODE	THEORY/LAB	L	T	P	C
AIT1101	Data Communication Systems	4	1	0	4
AIT1102	E-Commerce	4	0	0	4
ACT1134	Web Programming	4	1	0	4
ACT1115	Microprocessor and Interfacing	4	1	0	4
AHM1102	Management Science	4	0	0	4
ACT1117	Software Engineering	4	1	0	4
ACT1118	*Microprocessors and Interfacing Lab*	0	0	3	2
AIT1103	*Web Programming Lab*	0	0	3	2
	Total	**24**	**4**	**6**	**28**

VI SEMESTER :

COURSE CODE	THEORY/LAB	L	T	P	C
AIT1104	Middleware Technologies	4	1	0	4
ACT1130	Computer Networks	4	1	0	4
AIT1105	Enterprise Resource Planning & Supply chain Management	4	1	0	4
ACT1119	Software Testing Methodologies	4	1	0	4
ACT1123	Data Warehousing and Data Mining	4	1	0	4
ACT1120	Object Oriented Analysis and Design	4	0	0	4
AIT1106	*Computer Networks and Case Tools Lab*	0	0	3	2
AHE1103	*Advanced communication skills lab*	0	0	3	2
	Total	**24**	**5**	**6**	**28**

VII SEMESTER :

COURSE CODE	THEORY/LAB	L	T	P	C
ACT1121	Embedded Systems	4	1	0	4
ACT1122	Multimedia and Application Development	4	0	0	4
ACT1124	Network Programming	4	1	0	4
ACT1132	Mobile Computing	4	1	0	4
	Elective-I	4	0	0	4
ACT1125	Information Retrieval Systems				
AIT1107	Information Security				
ACT1131	Artificial Intelligence				
	Elective-II	4	1	0	4
ACT1126	Software Project Management				
AIT1108	Advanced Computing Concepts				
ACT1114	Formal Language and Automata Theory				
AIT1109	*Multimedia and Application Development Lab*	0	0	3	2
AIT1110	*Network Programming Lab*	0	0	3	2
AIT11MP	*Industry Oriented Mini Project*	-	-	-	2
	Total	**24**	**4**	**6**	**30**

VIII SEMESTER :

COURSE CODE	THEORY/LAB	L	T	P	C
AIT1111	Distributed Databases	4	0	0	4
	Elective-III	4	1	0	4
AIT1112	Multimedia Databases				
ACT1127	Network Management Systems				
AIT1113	Biometrics				
	Elective-IV	4	1	0	4
ACT1133	Bio-informatics				
ACT1128	Image processing				
ACT1129	Pattern Recognition				
AIT11SM	*Seminar*	0	0	3	2
AIT11CV	*Comprehensive Viva*	-	-	-	4
AIT11PW	*Project Work*	0	0	9	12
	Total	**12**	**2**	**12**	**30**

SYLLABI FOR I SEMESTER

ENGLISH

Course Code : AHE1101

L	T	P	C
4	0	0	4

Reading and Writing skills

Objectives :

The primary objective of the course is to help students of engineering to achieve a sound foundation in communicational skills, basic grammar and vocabulary. It also enables them to become successful communicators in academic, professional and social areas of life.

The course aims to enable the students to use English effectively for the purpose of

- Understanding class room lectures in different subjects
- Reading technical and general materials
- Effective written communication in professional contexts

Outcomes :

- The learners develop adequate skills in skimming, scanning, intensive and extensive reading
- The learners also develop enough vocabulary to be clearly expressive in any group - Professional or Managerial or Social
- The learners can correspond and communicate in descriptive, analytical modes with ease.

Course work :

To achieve the above objectives, instruction will be imparted through relevant ESP materials, articles from newspapers, technical journals, magazines, industry materials etc. in classes and laboratory. Students will be given individual and holistic practice in LSRW skills.

Contents :

Reading :

- Reading with a purpose; Reading for understanding; skimming, scanning etc;
- Reading and interpreting charts and diagrams
- Vocabulary, synonyms, antonyms, prefixes, suffixes, confusables, one-word substitutes etc.

Writing :

- common errors, articles, prepositions, tenses, concord, phrasal verbs, modals, conditionals etc. (Remedial Grammar)
- Practice of writing- definition, description
- Paragraph writing with coherence, cohesiveness and clarity
- Essay, report and précis writing

Reference skills **:** Use of dictionary, thesaurus, library and internet materials.

UNIT - I

1. Around the House *(Language in Use)*
2. Education on Education *(English for Engineers)*

UNIT - II

1. On Holiday *(Language in Use)*
2. Vocabulary- synonyms, antonyms, prefixes, suffixes, confusables, one-word substitutes etc.

UNIT - III

1. Imagining *(Language in Use*)
2. Tenses & Concord, Articles & Prepositions

UNIT - IV

1. New Information Technology and Poverty Eradication (English for Engineers)
2. The media (Language in Use)

UNIT - V

1. What we must Learn from the West *(English for Engineers)*
2. Paragraph writing, Note-making and Minute writing

UNIT - VI

1. Essay writing
2. Value added Life *(English for Engineers)*

UNIT - VII

1. Breaking the Law *(Language in Use)*
2. Key item *(English for Engineers)*

UNIT - VIII

1. Letter and Précis writing
2. Dialogue writing

Text Books :

1. Language in Use(Intermediate)-Cambridge University Press India Pvt. Ltd.- Reprint-2008.
2. English for Engineers-Regional Institute of English-Bangalore, Foundation Books Pvt. Ltd, 2006.

References :

1. "Study reading- A course in reading skills for academic purposes"-CUP by Eric H. Glendinning & Beverly Holmstorm, 2004.
2. Study writing – Liz Hamp Lyons, Ben Heasley-CUP, 2004.
3. Word Power Made Easy- Norman Lewis, Lotus Press, 2006.
4. Practical English Usage- Oxford University Press, Michael Swan, 3rd Edition, 2005.
5. Murphy's English Grammar-Murphy-CUP, 3rd Edition, 2004.

Suggested Reading : Stories of humour, adventure, mystery and autobiographies of eminent scientists.

MATHEMATICS – I

(Common to all Branches)

Course Code : ABM1101

L	T	P	C
4	1	0	4

Aim : To impart the necessary fundamental principles that are essential to study the core courses of Engineering**.**

Objective : To motivate and inculcate the logical thinking and methodical approach to solve mathematical problems

UNIT - I

Sequences – Series – Convergence and divergence – Comparison test – Ratio test –Integral test –Alternating series, Leibniz's test

(9.1 to 9.9, 9.12).

Rolle 's theorem – Lagrange's Mean Value Theorem – Cauchy's mean value Theorem –Taylor's theorem and Maclaurin's series (all theorems without proof)

(4.3, 4.4).

UNIT - II

Differential equations of first order (linear, Bernoulli), Linear differential equations with constant coefficients, Method of Variation of parameters .

(11.9, 11.10, 13.1, 13.3-13.8(i), 13.9)

UNIT - III

Applications of Linear differential equations: orthogonal trajectories, Newton's law of cooling, Simple harmonic motion, Oscillatory electrical circuits (LC and LCR circuits).

(12.3, 12.6, 14.2, 14.5)

UNIT - IV

Laplace transform of elementary functions, properties, Transforms of derivatives and integrals – Unit step function – second shifting theorem, Periodic function.

(21.1-21.5, 21.7-21.11)

UNIT - V

Inverse transform –- Inverse transform of Derivatives and Integrals - Convolution theorem – Application of Laplace transforms to ordinary differential equations, Unit step function, Unit impulse function.

(21.12-21.15, 21.17, 21.18)

UNIT - VI

Partial differentiation: Total derivative, change of variables, Jacobians, Taylor's theorem for functions of two variables, maxima and minima of functions of two variables.

(5.5 – 5.9, 5.11)

UNIT - VII

Formation of partial differential equations by elimination of arbitrary constants and arbitrary functions – solutions of first order linear (Lagrange) equation and nonlinear first order (standard type) equations.

(17.1 to 17.3, 17.5, 17.6)

UNIT - VIII

Method of separation of variables – Classification of second order linear Partial Differential Equations, solutions of one dimensional heat equation, wave equation and two-dimensional Laplace's equation under initial and boundary conditions.

(18.1 to 18.7)

Text Book :

Dr.B.S.Grewal "Higher Engineering Mathematics", 40th Edition, Khanna Publishers

References :

1. Kreyszig E, "Advanced Engineering Mathematics", 8th Ed. John Wiley, Singapore (2001)
2. Greenberg M D, "Advanced Engineering Mathematics", 2nd Ed, Pearson Education, Singapore, Indian Print (2003).

PHYSICS

Course Code : ABP1101

L	T	P	C
4	1	0	4

Aim : To give prerequisites in understanding the advanced Physics leading to applications in engineering field.

Objective : To impart the students the concept and principles in Engineering to enable them to comprehend and take up the experimental work independently.

UNIT - I

VIBRATIONS & ACOUSTICS OF BUILDINGS :

i) Overview of vibrations with emphasis on damped and forced oscillations- resonance, coupled oscillators - two coupled pendulums and normal mode solutions.

(Engineering Physics - Gaur & Gupta Chap - 33, and Unified Physics, Vol-1, S L Gupta & Sanjeev Gupta, Chap-11 (coupled oscillators)

ii) Reverberation and Reverberation time – Sabine's formula for reverberation time – measurement of absorption coefficient of material- Basic requirements of acoustically good hall -Factors affecting the architectural acoustics and their remedies.

(Engineering Physics - Gaur & Gupta Chap - 14)

UNIT – II

PHYSICAL OPTICS :

Interference: Superposition of waves, Young's double slit experiment, Interference in thin films by reflection, Newton's rings experiment with necessary theory.

Diffraction: Fresnel and Fraunhoffer diffraction, Diffraction at single slit and diffraction grating, determination of wavelengths of various spectral lines, resolving power of grating.

Polarization: Types of Polarizations, Brewster's law, Double refraction, Nicol Prism, Polaroid's.

(Engineering Physics - Gaur & Gupta Chap - 26, 27, 28 & 29)

UNIT – III

CRYSTAL PHYSICS & SUPERCONDUCTIVITY :

i) Crystal Physics : Space lattice, basis and crystal structure, Unit cell, primitive cell, Seven crystal systems, Bravais lattices- SC, BCC, FCC crystal structures- crystal planes and Directions- Miller indices, Derivation of inter planar spacing.

(Applied Physics for Engineers - P K Palanisamy Chap - 2)

ii) Superconductivity: superconducting phenomenon, Meissner effect, Type I & Type II Super conductors, BCS theory, DC and AC Josephson effects, SQUIDS, High Temperature Super conductors- Applications.

(Applied Physics for Engineers - P K Palanisamy Chap - 9)

UNIT – IV

QUANTUM MECHANICS :

Dual nature of matter, DeBroglie wave length, Time independent Schrödinger wave equation, Physical significance of wave function, particle in a potential well, rigid and non rigid walls, Tunneling effect

(Applied Physics for Engineers - P K Palanisamy Chap - 3)

UNIT – V

FREE ELECTRON THEORY :

Introduction, Quantum free electron theory, Fermi-Dirac distribution and its dependence on temperature, Fermi energy, Electron scattering and resistance, motion of an electron in periodic potential, Kronig-Penney model (qualitative treatment), effective mass; classification of solids.

(Applied Physics for Engineers - P K Palanisamy Chap - 4 & 5)

UNIT – VI

DIELECTRICS :

Basic definitions, relation between **P,D** and **E** vectors, Polarization mechanisms, expression for electronic polarizability, Internal fields in solids,

Claussius-Mosotti equation, frequency and temperature dependence of electronic polarization, Dielectric strength, Dielectric loss, Loss tangent and Dielectric breakdown, Applications.

(Applied Physics for Engineers - P K Palanisamy Chap - 6)

UNIT – VII

LASERS AND FIBER OPTICS :

i) Introduction, Characteristics of lasers, Induced absorption, spontaneous and stimulated emission of radiation, Population Inversion, Einstein's coefficients, Low and high power Lasers, Ruby laser, He-Ne laser, CO_2 and semiconductor laser, Applications of lasers.

(Applied Physics for Engineers - P K Palanisamy Chap - 10)

ii) Basic principle of propagation of light in optical fibers, Numerical aperture, acceptance angle, Derivation of Numerical aperture, Classification of optical fibers on the basis of refractive index profile, Fiber optic communication system, Applications.

(Applied Physics for Engineers - P K Palanisamy Chap - 2)

UNIT – VIII

FUNCTIONAL MATERIALS :

i) Bio materials, SMART materials, metallic glasses, metal matrix composites, Electrets – piezo and ferro electric matrerials.

(Engineering Physics by V Rajendran, Chap - 21, 24, 25, materials Science - M Armugam - Metal Matrix composites and Electrets, SMART Materials chap -11)

ii) Nanophase materials: Introduction to nano materials, types of nano materials, Fabrication Techniques: ball milling, nano lithography, CVD, carbon nano tubes (CNT's), Applications.

(Engineering Physics M R Sirnivasn, Chap - 15)

Text Books :

1. R.K. Gaur and S.L.Gupta, Engineering Physics, 8th Edition, Dhanpaat Rai, 2003.
2. P.K. Palanisamy, Applied Physics, 2nd Edition, Scitech Publishers, 2010.
3. M.R. Srinivasan, Engineering Physics, 1st Edition, New Age Publishers, 2009.
4. V. Rajendran, Engineering Physics, TMH, 2009.

References :

1. C.Kittel, Introduction to Solid State Physics, 7th Edition, John Wiley, 2007.
2. M Ross, Lowrence, Shepard, J Wulff Structure and properties of Materials, (Volume-4, Electronic properties), Wiley East Publishers, 2004.
3. Avadhanulu & Kshirasagar, Engineering Physics, 9th Edition, S. Chand Publishers, 2008.
4. S.O. Pillai, Solid State Physics, New Age Publishers, 2004.
5. Sulabh. K. Kulkarni, Nano Technology - Principles and Practices, 2006.
6. V.Raghavan, Material Science, 5th Edition, PHI, 2007.
7. R.L.Singhal, Solid State Physics, 6th Edition, Kedarnadh, Ramnadh Publishers, 2003.
8. A. Beiser., Perspectives in Modern Physics, 5th Edition, McGraw Hill Publishers, 2006.
9. A.J. Dekker, Electrical Engineering materials, 1st Edition, Mac Millan, 2007.
10. M. Armugam, Material Science,3rd Edition, Anuradha Publishers, 2009.
11. S.L. Gupta, & Sanjeev Gupta, Unified Physics, Vol - 1, 16th Edition, Jaiprakash Nath & Co., 2007.

CHEMISTRY

Course Code : ABC1101

L	T	P	C
4	1	0	4

Aim : The aim of the course is to provide basic chemistry background required for under graduate students of engineering.

Objective : The Objective of the course is to provide an over view of chemical properties of materials which the engineers are likely to use during their professional careers.

UNIT - I

ELECTROMOTIVE FORCE

Electrode potential, Nernest equation, EMF of electro chemical cell, calculation of cell potential, concentration cell, determination of P^H of solution.

BATTERIES - primary cell-Dry or Lachanche cell, alkaline battery; secondary cells (storage batteries or accumulators) – Lead-acid Accumulator, Nickel-cadmium battery.and lithium ion battery.

Fuel cells - hydrogen, oxygen fuel cell, phosphoric acid fuel cell, solid oxide fuel cells.

UNIT - II

CORROSION AND ITS CONTROL

Introduction-Dry or chemical corrosion, Wet or Electrochemical corrosion-Hydrogen evolution type, oxygen absorption type, Galvanic corrosion and concentration cell corrosion, pitting ,waterline, and stress corrosion; passivity; Galvanic series; factors influencing corrosion. Corrosion control-proper designing, cathodic protection, modifying the environment and using

inhibitors. Protective coatings- anodic and cathodic coatings; Hot dipping-Galvanizing and Tinning, Metal cladding; Electroplating; Electro less plating; cementation or diffusion coatings.

UNIT - III

CHEMICAL KINETICS

Arrhenius theory-effect of temperature on reaction rates –concept of activated complex; collision theory of reaction rates; Lindeman's theory of unimolecular reactions, steady state approximation; Transition state theory.

UNIT - IV

BONDING IN COORDINATION COMPOUNDS

Valence bond theory- limitations, crystal field theory, ligand field theory-octahedral and tetrahedral complexes. Spectral properties of d^1 ions & magnetic properties of low spin and high spin complexes.Molecular orbital theory as applied to octahedral complexes not involving pi-bonding.

UNIT - V

PRINCIPLES AND MECHANISMS OF ORGANIC REACTIONS

Bond fission – homolysis and heterolysis-examples. Types of reagents-electrophilic and nucleophilic reagents -examples. Concept of aromaticity, Huckel's (4n+2) rule. Introduction to mechanistic aspect of electrophilic aromatic substitution- nitration, sulphonation. Friedel-Crafts alkylation and acylation.

UNIT - VI

POLYMER SCIENCE AND TECHNOLOGY

Nomenclature; Types of polymerization, Mechanism of addition and condensation polymerization, Effect of polymer structure on properties. Plastics- Thermo and thermosetting plastics, constituents of a plastic. Preparation, properties and uses of polythene, PVC, Teflon, nylons-6,6, bakelite and silicones.

RUBBER - Natural rubber-structure-vulcanization, compounding of rubber; synthetic rubbers-Buna-Sand Buna-N.

UNIT - VII

SEMI CONDUCTING MATERIALS

Band theory of solids, Types-Intrinsic, extrinsic,(n-type, p-type,) non-elemental semi conducting materials- stoichiometric semi conducting compounds, defect semiconductors, controlled valency semiconductors. Preparation of semiconductors- Zone refining, Czochralski crystal pulling technique, Doping technique.

UNIT - VIII

CHEMISTRY OF ENGINEERING MATERIALS

Cement - classification; Portland cement- raw materials, manufacture of Portland cement, chemical constititution of Portland cement, setting and hardening of Portland cement.

REFRACTORIES - Classification and properties of refractories

FUELS - classification; calorific value and its determination using Bomb and Junker's gas calorimeter, theoretical calculation of calorific value-Proximate and ultimate analysis of coal; Refining of petroleum-, catalytic cracking; catalytic reforming, knocking, octane rating, improvement in anti knock characteristics, unleaded petrol; diesel engine fuels, cetane value

LUBRICANTS - Friction- mechanism of lubrication-Fluid film lubrication; thin or boundary lubrication and extreme pressure lubrication, classification-Lubricating oils, greases and solid lubricants.

Text books :

1. A text book of Engineering Chemistry by Jain& Jain, Dhanapat Roy publishing company, 15th Edition, 2006.
2. Engineering chemistry by Shiva Shankar, Tata Mc Graw Hill, 2008.

References :

1. Engineering Chemistry –Sashi chawala, Dhanpath Rai Publications, 3rd Edition, 2010.
2. A Text Book of Engineering Chemistry – C. Parameswara Murthy, C.V. Agarwal and Andhra Naidu, B.S. Publications, 1st Edition, 2006.
3. Concise inorganic Chemistry-J.D.Lee, Black well science publications, 5th Edition, 2005.
4. Advanced organic chemistry-Arun Bahl & B.S.Bahl, S.Chand Publications, 2010.
5. Physical chemistry- Gurudeep Raj, Goel Publications, 3rd Edition, 2007.
6. Text book of Engineering Chemistry - S.S. Dara, S. Chand Publications, 11th Edition, 2006.

ENGINEERING MECHANICS

Course Code : AME1103

L	T	P	C
4	1	0	4

Aim & Objectives :

1. To develop logical thinking approach to engineering problems.
2. Calculation and estimation of fourses developed in various engineering structures.

UNIT – I

SYSTEMS OF FORCES : Introduction – parallelogram law – Forces and components - Resultant of coplanar concurrent forces - component forces in space - vector notation – moment of force – principle of moments – couples. Resultant of planar force systems and spatial concurrent force system.

UNIT – II

EQUILIBRIUM OF FORCE SYSTEMS : Equilibrium – free body diagrams – Equations of equilibrium – equilibrium of planar systems – graphical methods and analytical methods for equilibrium of planar systems – equilibrium of spatial concurrent force systems.

UNIT – III

FRICTION: Introduction – Theory of friction – Angle of friction – Laws of friction - static friction – Kinetic friction-friction in bodies moving up or down on an inclined plane-screw friction and screw jack.

UNIT – IV

CENTROIDS AND CENTERS OF GRAVITY : Centre of gravity – centroids of area and lines – determination of centroids by integration – centroids of composite figures – theorems of Pappus.

UNIT – V

AREA MOMENT OF INERTIA : Moment of inertia – polar moment of Inertia – Radius of gyration - Transfer theorem for moment of Inertia – Moment of inertia of composite areas – product of inertia – Transfer formula for product of Inertia.

MASS MOMENT OF INERTIA : Moment of inertia of masses – Radius of gyration – Transfer formula for mass moment of inertia – Mass moment of Inertia by Integration.

UNIT – VI

KINEMATICS : Rectilinear motion-curvilinear motion - Rectangular components of curvilinear motion - Normal and Tangential components of acceleration, Radial and transverse components - Kinematics of rigid bodies - angular motion – fixed axis rotation – Definition and analysis of plane motion.

UNIT – VII

KINETICS: Kinetics of rigid bodies – equation of planes motion – fixed axis rotation – rolling bodies (simple examples) - general plane motion (Simple examples).

UNIT – VIII

WORK ENERGY METHODS : Work energy equations for translation – applications to particle motion – connected systems – fixed axis rotation (Simple cases)

Text Books :

1. I.B. Prasad : Applied Mechanics, Khanna Publishers, 19th Edition, 2009.
2. Ferdinand L. Singer : Engineering Mechanics, Harper Collins Publishers India, 3rd Edition, 2008.

References :

1. Irving. H. Shames : Engineering Mechanics, PHI Publishers, 4th Edition, 2008.
2. Timoshenko & Young : Engineering Mechanics, MGH Publishers, 4th Edition, 2010.
3. A.K. Tayal : Engineering Mechanics, Umesh Publishers, 13th Edition, 2008.
4. K.L. Kumar, Engineering Mechanics, TMH Publishers, 3rd Edition, 2009.

PHYSICS AND CHEMISTRY LAB

Course Code : ABP1102

L	T	P	C
0	0	3	2

Aim : To give prerequisites in understanding the advanced Physics & Chemistry leading to applications in engineering field.

Objectives : Training the students to understand the principles, concepts helpful in doing laboratory classes individually. To mould them to solve any technical problem in general.

LIST OF PHYSICS EXPERIMENTS

Any **SIX** of the following experiments are to be performed during the semester

01. Determination of rigidity modulus of the material of a given wire– Torsional pendulum
02. Verification of laws of vibration of stretched string - Sonometer
03. Determination of radius of curvature of a given convex lens - Newton's rings
04. Determination of wavelength of spectral lines of a mercury spectrum - Diffraction grating
05. Study of frequency response of LCR series and parallel resonant circuits
06. Study of variation of magnetic field along a circular current carrying conductor – Stewart & Gee apparatus
07. Determination of Hall coefficient and carrier concentration - Hall effect

08. Study of I-V characteristics of a solar cell

09. Optical Fibers – Determination of numerical aperture and losses in fibers

10. Measurement of dielectric constant of material by Waveguide method

LIST OF CHEMISTRY EXPERIMENTS

Any **SIX** of the following experiments are to be performed during the semester.

1. Preparation of standard potassium dichromate and determination of ferrous iron.
2. Determination of hardness of water by EDTA method.
3. Determination of dissolved oxygen in water.
4. Determination of chlorides in water.
5. Determination of iron-II by potentiometric method.
6. Determination of viscosity of lubricant by viscometer.
7. Determination of flash and fire points of oils.
8. Determination of percentage residue of carbon in oils.
9. Determination of calorific value of solid fuels.
10. Colorometric determination of iron in cement.

References :

1. Vogel's text book of quantitative chemical analysis, 6th ed. J.Mendham Et.al., Pearson Education.
2. Chemistry practical lab manual by Dr. K. B. Chandrasekhar
3. Laboratory Manual on Engineering Chemistry by K.Sudha Rani

ENGLISH LANGUAGE LAB

Course Code: AHE1102

L	T	P	C
0	0	3	2

The **Language Lab** focuses on the production and practice of sounds of language and familiarizes the students with the use of English in everyday situations and contexts.

Objectives :

- To make students recognise the sounds of English through Audio-Visual aids and Computer Software.
- To help them overcome their inhibitions and self- consciousness while speaking in English and to build their confidence. *The focus shall be on fluency rather than accuracy.*
- To enable them to speak English correctly with focus on stress and intonation.

Syllabus :

The following course content is prescribed for the **English Language Laboratory** sessions:

1. Introduction to the Sounds of English- Vowels, Diphthongs & Consonants.
2. Introduction to Stress and Intonation.
3. Situational Dialogues / Role Play.
4. Oral Presentations- Prepared and Extempore/Speaking personally
5. 'Just A Minute' Sessions (JAM).
6. Describing things / Narration
7. Information Transfer

8. Debate
9. Telephoning Skills.
10. Giving Directions.

Suggested Software :

- Cambridge Advanced Learners' English Dictionary with CD.
- The Rosetta Stone English Library
- Clarity Pronunciation Power
- Mastering English in Vocabulary, Grammar, Spellings, Composition
- Dorling Kindersley series of Grammar, Punctuation, Composition etc.
- Language in Use, Foundation Books Pvt Ltd with CD.
- Learning to Speak English - 4 CDs
- Microsoft Encarta with CD
- Murphy's English Grammar, Cambridge with CD

References :

1. Spoken English (CIEFL) in 3 volumes with 6 cassettes, OUP.

2. English Pronouncing Dictionary Daniel Jones Current Edition with CD.

3. Spoken English- R. K. Bansal and J. B. Harrison, Orient Longman 2006.

4. A Practical course in English Pronunciation, (with two Audio cassettes) by J. Sethi, Kamlesh Sadanand & D.V. Jindal, Prentice-Hall of India Pvt. Ltd., New Delhi.

5. A text book of English Phonetics for Indian Students by T.Balasubramanian (Macmillan), 18th Reprint, 2005.

6. English Skills for Technical Students**,** WBSCTE with British Council, OL

ENGINEERING WORKSHOP

Course Code : AMT1101

L	T	P	C
0	0	3	2

Aim : To provide hands on experience on basic Engineering and IT related skills.

Objectives :

* To train the student in the basics of computer components, maintenance, software(s) installation and office tools.
* To demonstrate and train the students in basic professional trades.

Compulsory Exercises :

- Identification of the peripherals of a computer, components in a CPU and its functions - Block diagram of the CPU along with the configuration of each peripheral. Disassembly and assembly of a personal computer.
- Installation of MS windows on the personal computer.
- One lamp controlled by a one-way switch and (b) Two-way switching for stair-case lamp

Any Nine Exercises From The Following :

- **Carpentry**: Making a Cross-half lap joint using wooden pieces
- **Carpentry**: Making a Mortise and Tenon joint using wooden pieces
- **Fitting**: Preparation of a V-fit between mild steel flat pieces
- **Fitting**: Preparation of a Square-fit between mild steel flat pieces

- **Foundry**: Preparation of a sand mould using a single piece pattern
- **Foundry**: Preparation of a sand mould using a split piece pattern
- **Tin-Smithy**: Preparation of a sheet metal pipe-joint using tin-smithy tools
- **Tin-Smithy**: Preparation of a sheet metal funnel using tin-smithy tools
- **Welding**: Making a Lap joint through arc welding
- **Lathe Machine**: Demonstration of turning related activities on Lathe machine
- **Black smithy**: Demonstration of Black smithy trade
- **Plumbing**: Demonstration of Plumbing trade
- **Installation of Linux** on the computer wherein the windows was installed. The system should be configured as dual boot with both windows and Linux.
- **Hardware Troubleshooting :** Identification of the problem of a PC which does not boot (due to improper assembly or defective peripherals) and fixing it to get the computer back to working condition.
- **Software Troubleshooting :** Identification of the problem of a malfunctioning CPU (due to some system software problems) and fixing it to get the computer back to working condition.
- **Connectivity Boot Camp : C**onnectivity to the Local Area Network and accessibility to the Internet. TCP / IP setting.
- **Web Browsers, Surfing the Web : C**ustomization the web browsers with the LAN proxy settings, bookmarks, search toolbars and pop up blockers. Also, plug-ins like Macromedia Flash and JRE for applets should be configured.

- **Using LaTeX and / word : C**reation of project certificate. Exposure to features like:- Formatting Fonts in word, Drop Cap in word, Applying Text effects, Using Character Spacing, Borders and Colors, Inserting Header and Footer, Using Date and Time option in both LaTeX and / Word.
- **Creating project abstract :** Features to be covered are: Formatting Styles, Inserting table, Bullets and Numbering, Changing Text Direction, Cell alignment, Footnote, Hyperlink, Symbols, Spell Check, Track Changes.
- **Creating a Newsletter** : Features to be covered are : Table of Content, Newspaper columns, Images from files and clipart, Drawing toolbar and Word Art, Formatting Images, Textboxes and Paragraphs
- **Creating a Feedback form** - Features to be covered are: Forms, Text Fields, Inserting objects, Mail Merge in Word.
- **Excel Orientation : Introduction of** Excel as a Spreadsheet tool, Using Excel –Accessing, overview of toolbars, saving excel files, Using help and resources
- **Creating a Scheduler -** Features to be covered are: Gridlines, Format Cells, Summation, auto fill, Formatting Text
- **Calculating GPA -** Features to be covered:- Cell Referencing, Formulae in excel – average, standard deviation, Charts, Renaming and Inserting worksheets, Hyper linking, Count function, LOOKUP/VLOOKUP
- **Performance Analysis -** Features to be covered:- Split cells, freeze panes, group and outline, Sorting, Boolean and logical operators, Conditional formatting

- **Power point presentation**
- Exposure to basic power point utilities and tools (PPT Orientation, Slide Layouts, Inserting Text, Word Art, Formatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows in both LaTeX and Power point, Hyperlinks, inserting Images, Clip Art, Audio, Video, Objects, Tables, Charts) .to create basic power point presentation.

SYLLABI FOR II SEMESTER

MATHEMATICS – II

(Common to all Branches)

Course Code : ABM1102

L	T	P	C
4	1	0	4

Aim : To impart the necessary fundamental principles that are essential to study the core courses of Engineering

Objective : To motivate and inculcate the logical thinking and methodical approach to solve mathematical problems

UNIT - I

Matrices: Rank – Normal form - Echelon form – Consistency – Solution of system of simultaneous linear homogeneous and non-homogeneous equations.(Gauss Jordan)

(2.8, 2.11)

UNIT - II

Eigen values, Eigen vectors – properties – Cayley-Hamilton Theorem (only statement) - Inverse and powers of a matrix by Cayley-Hamilton theorem – Diagonalisation of matrix. (2.14-2.17)

UNIT - III

Quadratic forms - Linear Transformation - Orthogonal Transformation. Reduction of quadratic form to canonical form, Nature of the quadratic form.

(2.12, 2.18 , 2.19).

UNIT - IV

Double and triple integrals, Change of order, change of variables

(7.1 – 7.3 , 7.5, 7.7).

UNIT - V

Vector Differentiation**:** Differentiation of vectors, Scalar and Vector point functions. Gradient of a scalar field and directional derivatives- Divergence and curl of a Vector field and it's physical interpretation.

(8.1, 8.4 – 8.8)

UNIT - VI

Vector Integration - Line integral – -Circulation-work done - surface and volume integrals Vector integral theorems: Green's theorem- Stoke's and Gauss's Divergence Theorem (Without proof). Verification of Green's - Stoke's and Gauss's Theorems. (8.10 – 8.17)

UNIT - VII

Fourier series: Euler's formulae, Conditions for Fourier expansion, Change of interval, even and odd functions, half range series.

(10.1 – 10.7)

UNIT - VIII

Fourier integral theorem – Fourier sine and cosine integrals. Fourier transforms – Fourier sine and cosine transforms – properties – Finite Fourier transforms.

(22.1 – 22.4)

Text Book :

1. Dr.B.S.Grewal "Higher Engineering Mathematics", 40th Edition, Khanna Publishers

References :

1. Kreyszig E, "Advanced Engineering Mathematics", 8th Ed. John Wiley, Singapore (2001)
2. Greenberg M D, "Advanced Engineering Mathematics", 2nd Ed, Pearson Education, Singapore, Indian Print (2003).

PROBABILITY, STATISTICS AND NUMERICAL METHODS

Course Code : ABM1103

L	T	P	C
4	1	0	4

Aim : To acquire basic knowledge in concepts of Probability Statistics and Numerical Computation.

Objective : The student shall be able to apply the methods of Probability distributions, perform Statistical analysis and draw inference in various Engineering problems and also shall be able to apply methods of Numerical Computation for real time problems.

Pre requisites : Basic concepts of Probability and calculus.

UNIT - I

RANDOM VARIABLES - Discrete distribution - continuous distribution - expectation-moment generating function – probability generating function.

(26.7, 26.8, 26.9, 26.10, 26.11, 26.12)

UNIT - II

DISTRIBUTIONS - Binomial distribution - Poisson distribution - normal distribution - probable error – Normal approximation to Binomial distribution

(26.13, 26.14, 26.15, 26.16, 26.17, 26.18)

UNIT - III

SAMPLING DISTRIBUTION – Test of Hypothesis – test of significance for large samples – sampling distribution of the mean – central

limit theorem – confidence limits for unknown mean – Test of significance for to large samples

(27.1 to 27.12)

UNIT - IV

SAMPLING OF VARIABLES-SMALL SAMPLES – Students t-distribution – significance test of a sample mean - significance test of difference between sample means – Chi square test – Goodness of fit

(27.13, 27.14, 27.15, 27.16, 27.17, 27.18)

UNIT - V

SOLUTIONS OF ALGEBRAIC AND TRANSCENDENTAL EQUATION – Bisection method – Regula Falsi – Newton Raphson method, deductions from Newton Raphson method – finite differences – differences of polynomial - other difference operators.

(28.1, 28.2, 28.3, 29.1, 29.2, 29.4)

UNIT - VI

INTERPOLATION - Newton's forward interpolation – Newton's backward interpolation – Interpolation with unequal intervals : Lagrange's interpolation - Newton's divided difference interpolation

(29.5, 29.8)

UNIT - VII

NUMERICAL DIFFERENTIATION - derivatives using Newton's forward difference formula - derivatives using Newton's backward difference formula.

NUMERICAL INTEGRATION –Newton cotes formula - Trapezoidal rule – Simpson's 1/3 Rule –Simpson's 3/8 Rule – weddle's rule.

(29.10(1,2), 29.12)

UNIT - VIII

NUMERICAL SOLUTION OF ORDINARY DIFFERENTIAL EQUATIONS - Picard's method - Solution by Taylor's series - Euler's Method – Modified Euler's method - Runge-Kutta Method.
(31.1, 31.2, 31.3, 31.4, 31.5, 31.7)

Text Book :

1. Dr.B.S.Grewal "Higher Engineering Mathematics", 40th Edition, Khanna Publishers

References :

1. Probability and statistics for engineers**:** Erwin Miller and John E.Freund. Prentice-Hall of India / Pearson, Sixth edition.
2. Introductory methods of Numerical Analysis: S.S .Sastry / PHI, Fourth edition.

BASIC ELECTRICAL ENGINEERING

Course Code : AEE1136

L	T	P	C
4	1	0	4

Aim : The aim of the course is to teach the Basic Fundamentals of Electrical Engineering.

Objectives : Basic Electrical Engineering is a basic fundamental course for the disciplines of CSE and IT. Hence it is introduced in I-Year –I Sem so that the students will have to understand the topics related to Electrical Applications in the later studies.

UNIT - I

INTRODUCTION TO ELECTRICAL ENGINEERING

Introduction, SI units, charge & current, voltage, power & energy, circuit elements. Ohm's law, Nodes, Branches & Loops, Kirchoff's laws, series resistors and voltage division, parallel resistors and current division(simple problems).

UNIT - II

DC CIRCUITS

Wye–Delta transformation, source transformation, super position, Thevenin's, Norton's, Maximum power transfer theorems (simple problems).

UNIT - III

MAGNETIC CIRCUITS

Magnetic field due to Electric current, force on current carrying conductor, Electro Magnetic Induction, Direction of Induced EMF's, EMF induced in a coil, comparison of electric, magnetic circuits, self and mutual inductance.

UNIT - IV

AC CIRCUITS

Introduction, Capacitors, series and parallel capacitors, Inductors, series, parallel inductors, sinusoids, Phasors, phasor relationships for circuit elements, impedance, admittance, instantaneous and average power, RMS values, apparent power, power factor, complex power.

UNIT - V

TRANSFORMERS

Working Principle, construction, types, rating, induced EMF, ideal transformer,magnetizing and core loss current, voltage regulation, efficiency (simple problems), Auto transformer (elementary treatment only).

UNIT - VI

DC MACHINES

Constructional features, emf and torque, DC machine excitation, characteristics of DC motors and speed control, losses, efficiency (simple problems), (elementary treatment only).

UNIT - VII

AC MACHINES

SYNCHRONOUS MACHINE : Constructional details, EMF equation, determination of synchronous reactance, voltage regulation (simple problems), Principle of operation of a synchronous motor.

INDUCTION MOTOR : Constructional details, principle of operation, slip, rotor frequency, torque equation (simple problems) (Elementary treatment only).

UNIT - VIII

BASIC INSTRUMENTS

Introduction, classification of Instruments, operating Principles, Basic requirements for measurement, Moving Coil Permanent Magnet (PMMC) instruments, Moving Iron of Ammeters and Voltmeters (elementary treatment only).

Text Books :

1. Fundamentals of Electric circuits – Charles k Alexander, Mathew N.O. Sadiku, McGraw-Hill Companies. (Units 1,2,4)
2. Theory and Problems of basic Electrical Engineering by D.P. Kothari & I.J. Nagrath - PHI
   (Units 3, 5, 6, 7, 8)

Reference :

1. Electrical & Electronic Technology , Hughes by I Mckenzie Smith, Pearson Education.

ENVIRONMENTAL STUDIES

Course Code : ABE1101

L	T	P	C
4	0	0	4

Aim : To create awareness on environmental hazards.

Objective : The student shall acquire knowledge regarding utilization of natural resources, and the imbalance in ecosystems, environmental pollution caused by various practices and safe guards to be taken.

UNIT - I

MULTIDISCIPLINARY NATURE OF ENVIRONMENTAL STUDIES : Definition, Scope and Importance – Need for Public Awareness.

UNIT - II

NATURAL RESOURCES : Renewable and non-renewable resources – Natural resources and associated problems – Forest resources – Use and over – exploitation, deforestation, case studies – Timber extraction – Mining, dams and other effects on forest and tribal people – Water resources – Use and over utilization of surface and ground water – Floods, drought, conflicts over water, dams – benefits and problems -Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies. - Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies. – Energy resources: Growing energy needs, renewable and non-renewable energy sources use of alternate energy sources. Case studies. Land resources: Land as a resource, land degradation, man induced landslides,

soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.

UNIT - III

ECOSYSTEMS : Concept of an ecosystem. - Structure and function of an ecosystem. - Producers, consumers and decomposers. - Energy flow in the ecosystem - Ecological succession. - Food chains, food webs and ecological pyramids. - Introduction, types, characteristic features, structure and function of the following ecosystem:

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

UNIT - IV

BIODIVERSITY AND ITS CONSERVATION : Introduction - Definition: genetic, species and ecosystem diversity.- Bio-geographical classification of India - Value of biodiversity: consumptive use, productive use, social,ethical, aesthetic and option values - . Biodiversity at global, National and local levels. - . India as a megadiversity nation - Hot-sports of biodiversity - Threats to biodiversity: habitat loss, poaching of wildlife, manwildlife conflicts. - Endangered and endemic species of India - Conservation of biodiversity: In-situ and Exsitu conservation of biodiversity.

UNIT - V

ENVIRONMENTAL POLLUTION : Definition, Cause, effects and control measures of :

a. Air pollution
b. Water pollution
c. Soil pollution

d. Marine pollution
e. Noise pollution
f. Thermal pollution
g. Nuclear hazards

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

UNIT - VI

SOCIAL ISSUES AND THE ENVIRONMENT : From Unsustainable to Sustainable development -Urban problems related to energy -Water conservation, rain water harvesting, watershed management -Resettlement and rehabilitation of people; its problems and concerns. Case Studies - Environmental ethics: Issues and possible solutions. -Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case Studies. -Wasteland reclamation. -Consumerism and waste products. –Environment Protection Act. -Air (Prevention and Control of Pollution) Act. -Water (Prevention and control of Pollution)

Act -Wildlife Protection Act -Forest Conservation Act -Issues involved in enforcement of environmental legislation. -Public awareness.

UNIT - VII

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

UNIT - VIII

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

Text Books :

1 Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.

2 Environmental Studies by R. Rajagopalan, Oxford University Press.

Reference :

1. Textbook of Environmental Sciences and Technology by M. Anji Reddy, B

COMPUTER PROGRAMMING THROUGH C

Course Code : ACT1102

L	T	P	C
4	1	0	4

Aim : To give the basic idea about programming.

Objective : To make the students capable of programming in high level computer languages as well as applications.

UNIT - I

Algorithm, Flow chart, Program development steps, Basic structures of C Language, C tokens, Data types and sizes, Declaration of variables, Assigning values, Arithmetic, Relational and Logical operators, Increment and decrement operators, Conditional operator, Bitwise operators, Type conversions, Expressions, evaluation, Input output statements, blocks.

UNIT - II

If and switch statements, while, do while and for statements. C programs covering all the above aspects.

UNIT - III

One dimensional and two dimensional arrays, Initialization, String variables declaration, reading, writing, basics of functions, parameter passing, String handling functions.

UNIT - IV

User defined functions, recursive functions, variables and storage classes, scope rules, block structure, header files, C preprocessor, Example C Programs.

UNIT - V

Pointers and arrays: Pointers and addresses, Pointers and arrays, Pointers and function arguments, address arithmetic, character pointers and functions

UNIT - VI

Pointers to pointers, multi-dimensional arrays, initialization of pointer arrays, command line arguments, pointers to functions, function pointers.

UNIT - VII

Structure definition, initializing, assigning values, passing of structures as arguments, arrays of structures, pointers to structures, self reference to structures, unions, type-defs, bit fields, C program examples.

UNIT - VIII

Console and file-I/O: Standard I/O, Formatted I/O, Opening and closing of files, I/O operations on files, command line arguments.

Text books :

1. Herbert Schild : Complete Reference Using C, 4th Edition, Tata McGraw Hill, 2009.
2. Yashawanth Kanethkar : Let us C, 9th Edition, BPB Publishers, 2009.

References :

1. B.A.Fouruzan and R.F.Gilberg : Computer Science, A structured programming approach using C, 3rd Edition, Thomson Publishers, 2008.
2. B.W.Kerninghan and Dennis M. Ritche : C Programming Language, 2nd Edition, Pearson Education, 2009.
3. Stephen G.Kochan : Programming in C – 3rd Edition, Pearson Education, 2005.
4. N. B. Venkateswarlu, E. V. Prasad : C & Data structures, 1st Edition, S. Chand publications, 2002.

PC SOFTWARE LAB

Course Code : ACT1101

L	T	P	C
0	0	3	2

Aim : To give basic computer knowledge for the students in software installation and hardware

Objective : To make the students self reliant in maintaining their computer system

List of Experiments :

1. **Installation of Linux :** on the computer wherein the windows was installed. The system should be configured as dual boot with both windows and Linux.
2. **Hardware Troubleshooting :** Identification of the problem of a PC which does not boot (due to improper assembly or defective peripherals) and fixing it to get the computer back to working condition.
3. **Software Troubleshooting:** Identification of the problem of a malfunctioning CPU (due to some system software problems) and fixing it to get the computer back to working condition.
4. **Connectivity Boot Camp : C**onnectivity to the Local Area Network and accessibility to the Internet. TCP / IP setting.
5. **Exposure on Internet and usage of Internet:** mail account creation and use, using search engines, interaction with people using forums.
6. **Hands on Exposure on DOS commands -1:**
   Using help command for finding information about commands.
   Using file processing commands (move, copy, dir, mkdir, rmdir, attrib)

7. **Hands on Exposure on DOS commands -2:**

   Using text processing commands (find ,findstr, etc..)

   Using disk utility commands (format, chkdsk, chkntfs, disk comp disk copy etc..)

8. **Hands on Exposure on Unix shell commands -1:**

   Using man, info commands for finding information about commands.

   Using file processing commands (ls, cp, mv, ln, mkdir, rmdir, chmod etc..)

9. **Hands on Exposure on Unix shell commands-2:**

   Using text processing commands (grep, egrep, sed etc…)

   Using disk utility commands, mount commands (du,df,mount etc..)

10. **Using Vi Editor**: learning the three modes of Vi Editor-Insert Mode-command mode-Colon mode

11. **Modification of CMOS settings :**

    Changing of Boot device priority, putting passwords, disabling and enabling of external devices.

12. **Installation and Uninstallation of Antivirus :**

    Installation of any free Antivirus like AVG , MCAFEE etc..

    Uninstallation of Antivirus.

13. **Using System tools in windows:**

    Disk defragmenter, system Restore ,Disk cleanup, character map

14. **Installation and configuration of printer and scanner software.**

    Installation and configuration of any printer and scanner software.

COMPUTER PROGRAMMING LAB

Course Code : ACT1103

L	T	P	C
0	0	3	2

Aim : To give basic knowledge with practical orientation of programming language.

Objective : To train the students to write programmes in C language for different applications.

List of Programmes :

1. To write C programs for the following
   a) Sum of individual digits of a positive integer.
   b) A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1.Subsequent terms are found by adding the preceding two terms in the sequence. Write a c program to generate to generate the first n terms of the Fibonacci sequence.

2
   a) To write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user
   b) To write a C program to calculate the following sum:
   Sum=$1+x^2/2!+x^4/4!$ ———————— upto given 'n' terms.
   c) To write a c program to find the roots of a quadratic equation.

3. To write C programs that uses both recursive and non-recursive functions
   i) To find the factorial of a given number.
   ii) To find the GCD(greatest common divisor) of two given integers.
   iii) To solve Towers of Hanoi problem.

4. The total distance traveled by vehicle in 't' seconds is given by distance=ut+1/2at^2 where 'u' and 'a' are the initial velocity (m/sec) and acceleration (m/sec^2). Write a C program to find the distance traveled at regular intervals of time given values of 'u' and 'a'. The program should provide the flexibility to the user to select his own time intervals and repeat the calculations for different values of 'u' and 'a'.

5. Using switch-case statement, write a C program that takes two operands and one operator from the user, performs the operation and then prints the answer. (consider operators +, -, *, and %).

6. Write a C program to find the largest and smallest number in a list of integers.

7. Write a C program that uses functions to perform the following
   a. Addition of Two Matrices
   b. Multiplication of Two Matrices

8. Write a C program that uses functions to perform the following operations
   a. To insert a sub-string in to given main string from a given position
   b. To delete n characters from a given position in given string.

9. Write a C program to determine if the given string is a palindrome or not.

10.
   a) Write a C program that displays the position or index in the string S where the string T begins, or -1 if S does not contain T.
   b) Write a C program to count the lines, words and characters in a given text.

11. To write a C program
    a) to generate Pascal's triangle
    b) to construct a pyramid of numbers

12. To write a C program to read in two numbers, x and n, and then compute the sum of this geometric progression $1+x+x^2+x^3+\ldots x^n$
    For example : if n is 3 and x is 5, then the program computes 1+5+25+125. print x,n, the sum.

    Perform error checking. For example the formula does not make sense for negative

    Exponents – if n is less than 0. Have your program print an error message if n<0, then go back and read in the nest pair of numbers of without computing the sum. Are any values of x also illegal? If so, test for them too..

13. To write a C program
    a) to find the 2's compliments of a binary number.
    b) to convert a Roman numeral to its decimal equivalent

14. To write a C program that uses functions to perform the following operations
    a. Reading a complex number
    b. Writing a complex number
    c. Addition of 2 complex numbers
    d. Multiplication of 2 complex numbers
    (Note: represent complex number using a structure)

15. To write a C program
    a) to copy the contents from one file to another.
    b) to reverse the first n characters in a file.

    (Note: the file name and n are specified on the command line)

c) to fine the no. of characters, no. of words, no. of lines in a given file.

16. To implement the algorithms for the below given iterative methods using C to find one root of the equation f(x)=x sinx + cosx=0

    a) Bisection b) False Position c) Newton-Raphson
    d) Successive approximation

17. To write C programs to implement the Lagrange interpolation

18. To implement the Newton- Gregory forward interpolation using C language.

19. To implement in C the linear regression algorithm.

20. To implement in C the polynomial regression algorithm.

Text Books :

1. Programming in C , P. Dey & M. Ghosh, Oxford Univ. Press
2. C and Data Structures, E. Balaguruswamy, TMH publications
3. C Programming and Data structures, P. Padmanabham, 3rd Edition, BS publications.
4. Numerical Methods for Scientific and Engineering Computation, M.K. Jain, S.R.K. Iyengar & R.K. Jain, New Age International Publishers.
5. Elementary Numerical Analysis, Aitkinson & Han, Wiely India, 3rd Edition 2006.

ENGINEERING DRAWING

Course Code : AME1102

L	T	P	C
0	0	3	2

Aim & Objectives :

1. To make the student well familiar to the drawing practices and convention
2. To familiarize the various engineering curves used in industry
3. To enable student draft simple engineering components.

LIST OF EXERCISES

1 Introduction to Engineering drawing & basics of Geometrical construction

2 Construction of parabola, ellipse, hyperbola

3 Construction of Involutes and Cycloidal curves

4 Projections of points and lines inclined to one plane

5 Projections of lines inclined to both the planes

6 Projections of planes in simple positions, planes inclined to one plane

7 Projections of planes inclined to both the planes

8 Demonstration & Practice: Computer aided drafting of lines, planes and dimensioning

9 Projections of solids in simple positions

10 Projections of solids inclined to both the planes

11 Isometric projections

12 Demonstration & Practice: Computer aided drafting of solids and dimensioning.

Text Books :

1. Engineering Drawing by N.D. Bhatt

2. Engineering graphics with Auto CAD- R.B. Choudary/Anuradha Publishes

3. Computer Aided Engineering Drawing - Trymbaka Murthy - I.K. International.

SYLLABI FOR III SEMESTER

DISCRETE MATHEMATICAL STRUCTURES
(Common to CSE & IT)

Course Code: ABM1106

L	T	P	C
4	1	0	4

Aim:

To acquire basic knowledge in some concepts of discrete mathematical structures.

Objective:

The student shall be able to learn logical thinking and be able to apply enumerating techniques. The student shall be able to use graph theoritic techniques.

UNIT- I

MATHEMATICAL LOGIC-I: Statements and notations, connectives, Well formed formulas, tautologies, equivalence of formulas, Duality law, Tautological Implications, other connectives, Normal forms, Rules of inference, consistency of premises and Indirect method of proof. (1-1, 1-2.1 to 1-2.4, 1-2.6 to 1-2.11, 1-2.14, 1-3.1 to 1-3.4, 1-4.2, 1-4.3 of [1])

UNIT- II

MATHEMATICAL LOGIC-II: Predicates, the statement function, variables and quantifiers, predicate formula, free and bound variables, universe of discourse, inference theory of the predicate calculus, Automatic theorem proving.
(1-5.1 to 1-5.4, 1-6.1 to 1-6.4, 1-4.4 of [1])

UNIT- III

RELATIONS: Relations, properties of binary relations in a set, Relation matrix and Graph of a relation, partition and covering of a set, equivalence relations, partial ordering, partially ordered set, lattices : Definition and examples, properties of lattices.
(2-3.1 to 2-3.5, 2-3.8, 2-3.9, 4-1.1, 4-1.2of [1])

UNIT- IV

ALGEBRAIC STRUCTURES: Algebraic systems : Definition and

examples, Semi groups and monoids: Definitions and examples, Homomorphism of Semi groups and Monoids, Groups: Definitions, and examples, Subgroups and Homomorphisms,
(3-1.1, 3-2.1, 3-2.2, 3-5.1, 3-5.2 of [1])

UNIT- V

COMBINATORICS-I: Basics of counting, Combinations and permutations, Enumeration of Combinations and permutations , Enumerating Combinations and permutations with repetitions, Enumerating permutations with constrained repetitions, Binomial coefficients, The binomial and Multinomial theorems, The principle of inclusion-exclusion (2.1-2.8 of [2])

UNIT- VI

COMBINATORICS-II: Generating Functions of sequences, Calculating coefficients of generating functions, Recurrence relations, Solving Recurrence relations by substitution and generating functions, the method of characteristic roots, (3.1-3.5 of [2])

UNIT- VII

GRAPH THEORY I: Basic concepts, Isomorphism and Subgraphs, Trees and their properties, spanning trees.(5.1-5.4 of [2])

UNIT- VIII

GRAPH THEORY II: Directed Trees, Binary Trees, Planar graphs, Euler's formula, Multigraphs and Euler Circuits, (5.5-5.9 of [2])

Text Books:

[1] "Discrete Mathematical Structures with Applications to Computer Science", J.P Tremblay R.Manohar, Tata McGraw-Hill Publishing Company Limited, 1997

[2] "Discrete Mathematics for Computer Scientists & Mathematicians", J.L. Mott, A. Kandel, T.P. Baker, Prentice Hall of India Pvt Limited, New Delhi Second Edition.

Reference Book:

"Discrete Mathematics of Computer Science" Kenneth Bogart, Clifford Stein and Robert L. Drysdale, Springer International Edition, 2006.

COMPUTER ORGANIZATION

(Common to ECE, CSE, IT)

Course Code: ACT1104	L	T	P	C
	4	1	0	4

Aim:

To give detailed information about the structure of computers and internal organization of different units regarding memory I/O devices registers.

Objective:

Student will get an idea about the internal organization of the computer system and its internal operations.

UNIT-I

BASIC STRUCTURE OF COMPUTERS: Computer Types, Functional unit, Basic operational concepts, Bus structures, Software, Performance, multiprocessors and multi computers, Multicore processors, Data Representation. Fixed Point Representation & Arithmetic, Error Detection codes.

UNIT-II

REGISTER TRANSFER LANGUAGE AND MICRO OPERATIONS: Register Transfer language, Register Transfer Bus and memory transfers, Arithmetic Micro-operations, logic micro operations, shift micro operations, Arithmetic logic shift unit. Instruction codes. Computer Registers Computer instructions – Instruction cycle.

Memory – Reference Instructions. Input – Output and Interrupt. STACK organization. Instruction formats. Addressing modes. DATA Transfer and manipulation. Program control. Reduced Instruction set computer.

UNIT-III

MICRO PROGRAMMED CONTROL: Control memory, Address sequencing, microprogram example, design of control unit Hard wired control. Microprogrammed control

UNIT-IV

COMPUTER ARITHMETIC: Addition and subtraction, multiplication Algorithms, Division Algorithms, Floating – Point Representation, Floating – point Arithmetic operations, Decimal Arithmetic unit Decimal Arithmetic operations.

UNIT-V

THE MEMORY SYSTEM: Basic concepts, semiconductor RAM memories, Read-only memories Cache memories performance considerations, Virtual memories secondary storage. Introduction to RAID, Hierarchical memory features.

UNIT-VI

INPUT-OUTPUT ORGANIZATION: Peripheral Devices, Input-Output Interface, Asynchronous data transfer Modes of Transfer, Priority Interrupt Direct memory Access, Input –Output Processor (IOP) Serial communication; Introduction to peripheral component, Interconnect (PCI) bus. Introduction to standard serial communication protocols like RS232, USB, IEEE1394.

UNIT-VII

PIPELINE AND VECTOR PROCESSING: Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction Pipeline, RISC Pipeline Vector Processing, Array Processors.

UNIT-VIII

MULTI PROCESSORS: Characteristics or Multiprocessors, Interconnection Structures, Interprocessor Arbitration. InterProcessor Communication and Synchronization Cache Coherance. Shared Memory Multiprocessors.

Text Books:

1. Carl Hamacher, Zvonks Vranesic, SafeaZaky : Computer Organization, 5th Edition, McGraw Hill, 2009.
2. M.Moris Mano : Computer Systems Architecture, 3rd Edition, Pearson Education, 2006.

References:

1. William Stallings : Computer Organization and Architecture, 6th Edition, Pearson Education 2006.
2. Andrew S. Tanenbaum : Structured Computer Organization, 5th Edition, PHI/Pearson Education, 2006.
3. Sivaraama Dandamudi : Fundamentals of Computer Organization and Design, - Springer Int. Edition, Springer, 2009.
4. John L. Hennessy and David A. Patterson : Computer Architecture a quantitative approach, 4th Edition Elsevier, 2009.
5. Joseph D. Dumas II : Computer Architecture - Fundamentals and principles of Computer Design, 1st Edition, BS Publication, 2010.
6. John P. Hayes : Computer Architecture and Organization, 3rd Edition, Tata McGraw hill, 2009.

DIGITAL LOGIC DESIGN

Course Code:AEC1142

L	T	P	C
4	0	0	4

Aim:

To provide necessary Digital fundamentals required for the construction of different circuits that required for computer science research and development.

Objective:

The student shall be able to deal with digital logic, counters, sequential circuits, combinational circuits etc.

UNIT – I

BINARY SYSTEMS: Digital Systems, Binary Numbers, Number base conversions, Octal and Hexadecimal Numbers, complements, Signed binary numbers, Binary codes, Binary Storage and Registers, Binary logic.

UNIT - II

BOOLEAN ALGEBRA AND LOGIC GATES: Basic Definitions, Axiomatic definition of Boolean Algebra, Basic theorems and properties of Boolean algebra, Boolean functions, canonical and standard forms, other logic operations, Digital logic gates, integrated circuits.

UNIT - III

GATE – LEVEL MINIMIZATION: The map method, Four-variable map, Five-Variable map, Product of sums simplification, Don't-care conditions, NAND and NOR implementation, other Two-level implementations, Exclusive – OR function.

UNIT - IV

COMBINATIONAL LOGIC: Combinational Circuits, Analysis procedure, Design procedure, Binary Adder-Subtractor, Decimal Adder, Binary multiplier, Magnitude comparator, Decoders, Encoders, Multiplexers.

UNIT - V

SYNCHRONOUS SEQUENTIAL LOGIC: Sequential circuits, latches, Flip-Flops, Analysis of clocked sequential circuits, State Reduction and Assignment, Design Procedure.

UNIT - VI

Registers, shift Registers, Ripple counters, synchronous counters, Other counters.

UNIT - VII

Introduction, Random-Access Memory, Memory Decoding, Error Detection and correction, Read-only memory, Programmable logic Array, Programmable Array logic, Sequential Programmable Devices.

UNIT - VIII

Asynchronous Sequential Logic : Introduction, Analysis Procedure, Circuits with Latches, Design Procedure, Reduction of state and Flow Tables, Race-Free state Assignment Hazards, Design Example.

Text Books:

1 M.Morris Mano : Digital Design, 3rd Edition, Pearson Education, 2009.

2. Roth : Fundamentals of Logic Design, 5th Edition,Thomson Publishers, 2008.

References:

1. Donald Leach, Albert Paul Malvino : Digital Principles & Applications, 5th Edition, by TMH, 2003.
2. Zvi. Kohavi : Switching and Finite Automata Theory, 1st Edition Tata McGraw Hill, 2006.
3. C.V.S. Rao : Switching and Logic Design, 1st Edition Pearson Education, 2008.
4. Donald D.Givone : Digital Principles and Design, 1st Edition, Tata McGraw Hill, 2006.
5. M. Rafiquzzaman : Fundamentals of Digital Logic & Micro Computer Design, 5th Edition, John Wiley, 2007.

ELECTRONIC DEVICES AND CIRCUITS

Course Code:AEC1143

L	T	P	C
4	1	0	4

Aim & Objective:

To introduce the basic design concepts of low frequency & high frequency amplifiers & oscillators circuits using various transmissions for different applications.

Unit – I

DIODE CHARACTERISTICS: Introduction to semiconductor materials, V-I Characteristics of diode, Zener Diode Characteristics, Zener Diode as Voltage Regulator, Tunnel diode, LED.

UNIT–II

RECTIFIERS AND FILTERS: Introduction, Half wave rectifier, Full wave rectifier , Advantages of full wave rectifier over Half Wave rectifier, Inductor filter, C- Filter, LC- Filter, ð- filter .

UNIT–III

TRANSISTOR CHARACTERISTICS: Construction, current components, input & output Characteristics of transistor in CB, CE, CC configurations, Relations between á,â,ã.

UNIT–IV

FET CHARACTERISTICS: Introduction, JFET Characteristics (qualitative and quantitative discussion), MOSFET Characteristics (Enhancement and depletion), V-I Characteristics of UJT .

UNIT-V

BIASING AND STABILITY: Introduction, need for biasing, criteria for fixing the operating point, thermal run away, thermal stability, stabilization techniques.

UNIT-VI

SMALL SIGNAL AMPLIFIERS: h-parameter representation of a transistor, Analysis of single stage transistor amplifier using h-parameters, comparison of transistor configurations in terms of A_V , A_I , R_i ,R_o.

UNIT-VII

NEGATIVE FEEDBACK AMPLIFIERS: Concept of feedback, classification of feedback amplifiers, general characteristics of negative feedback amplifiers, effect of negative feedback on input and output characteristics.

UNIT-VIII

OSCILLATORS: Introduction, condition for oscillations, RC Phase shift oscillator with Transistor, Wein bridge oscillator, Hartley and Collpits oscillators.

Text Books:

1. Integrated Electronics Millman Jacob , Halkias C Christos :Tata Mcgrawhill publications.
2. Electronic Devices And Circuits Theory : Boylestad.Robert, PHI publications.

Reference Books:

1. Electronic Devices And Circuits : Sanjeev Gupta, Dhanpat Rai publications.
2. Electronic Devices & Circuits Vol I: Lal Kishore, BSP publications.
3. Electronic Devices And Circuits, Bhaskarram Murthy, K.Raja Rajeswari.
4. Electronic Devices And Circuits : Raju GSN, IK International.

MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS

Course Code: AHM 1101

L	T	P	C
4	1	0	4

Objective

To explain the basic principles of managerial economics, accounting practices and financial management techniques for effective business decision making and to promote entrepreneurial abilities among budding engineers

Outcome

To understand the economic environment and to give an idea on various accounting and financial management techniques for effective utilization of economic resources

UNIT-I

INTRODUCTION TO MANAGERIAL ECONOMICS: Definition, Nature and Scope of Managerial Economics, Demand Analysis, Demand Determinants, Law of Demand and its exceptions

UNIT-II

ELASTICITY OF DEMAND AND DEMAND FORECASTING: Definition, Types, Measurement and Significance of Elasticity of Demand

Demand Forecasting, Factors governing demand forecasting, Methods of demand forecasting (Survey method, Statistical method, Expert opinion method, Test marketing, Controlled experiment, Judgmental approach)

UNIT-III

THEORY OF PRODUCTION AND COST ANALYSIS: Production Function – Isoquants and Isocosts, Laws of returns, Internal and External Economies of Scale

COST ANALYSIS: Types of Costs, Break Even Analysis (BEA) – Determination of Break Even Point (Simple numerical problems) – managerial significance and limitations of BEA

UNIT-IV

INTRODUCTION TO MARKETS: Market Structures: Types of competition, features of perfect competition, monopoly and monopolistic competition, price output determination in case of perfect competition and monopoly

UNIT-V

FORMS OF BUSINESS ORGANIZATIONS: Features of Business, Advantages, Limitations of Sole Proprietorship, Partnership and Joint Stock Company

UNIT-VI

INTRODUCTION TO FINANCIAL ACCOUNTING:

ACCOUNTING: Principles, concepts, conventions, double entry book keeping, Journal, Ledger, Trial Balance, Trading Account, Profit and Loss Account and Balance Sheet with simple adjustments, international financial reporting standards (simple numerical problems)

UNIT-VII

FINANCIAL ANALYSIS THROUGH RATIOS: Introduction, Advantages and limitations, Computation, Analysis and Interpretation of Liquidity ratios, Activity ratios, Solvency ratios and Profitability ratios (simple numerical problems)

UNIT-VIII

BUDGETING AND CAPITAL BUDGETING: Introduction to Budgeting: Production budget, Flexible budget and Cash budget

Definition, nature and scope of capital budgeting, features of capital budgeting proposals, methods of capital budgeting: Traditional and discounted methods (simple numerical problems)

Text Books:

1. Aryasri : Managerial Economics and Financial Analysis, Tata McGraw Hill, 3/e,2009
2. Siddiqui and Siddiqui : Managerial Economics and Financial Analysis, New Age Publishers, 1/e, 2005

Reference Books:

1. R L Varshney and K L Maheswari: Managerial Economics, Sultan Chand & Sons
2. D Ragnunath Reddy & M V Narasimha Chary: Managerial Economics and Financial

Analysis, SciTech Publications

3. Dwivedi: Managerial Economics, Vikas Publishers
4. P K Sharma and Shashi K Gupta: Management Accounting, Kalyani Publishers
5. S P Jain and K L Narang: Financial Accounting, Kalyani Publishers
6. Bhattacharya: Management Accounting, Pearson Education
7. P L Mehta: Managerial Economics, Sultan Chand & Sons

DATA STRUCTURES USING C++

Course Code:ACT1105

L	T	P	C
4	1	0	4

Aim:

To deliver the programming Techniques which are advanced for solving the problems regarding memory locations and also object oriented features.

Objective:

Student can get the grip on advanced programming and gets the knowledge to solve the problems regarding large data structures like stack, queue and heap, and gets good grip on pointers.

UNIT-I

Different strategies for problem solving , need for OOP, overview of OOP principles –Encapsulation, inheritance, polymorphism .C++ Class Overview- Class Definition, Objects, Class Members, Access Control, Class Scope, Constructors and destructors, Inline functions, static class members, this pointer, friend functions, dynamic memory allocation and deallocation (new and delete).

UNIT-II

POLYMORPHISM AND INHERITANCE: Function Overloading, Operator Overloading, Generic Programming- Function and class templates, Inheritance basics, base and derived classes, inheritance types, base class access control, virtual base class, function overriding, runtime polymorphism using virtual functions, abstract classes.

UNIT-III

Streams, libraries and error handling-stream classes hierarchy, console I/O, formatted I/O,file streams and string streams, exception handling mechanism , standard template library.

UNIT-IV

Searching and sorting- linear and binary search methods, sorting-bubble sort, selection sort, insertion sort, quick sort, merge sort.

UNIT-V

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

UNIT-VI

Trees-binary trees, terminology, representation, insertion, deletion, searching, traversals, Binary search trees, definition, ADT, implementation, operations-searching, insertion and deletion, Balanced search trees- AVL trees, definition, height of an AVL tree, representation, operations-insertion, deletion and searching.

UNIT-VII

Priority Queues – Definition, ADT, Realizing a Priority Queue using Heaps, Definition, insertion, Deletion, Application-Heap Sort, Leftist Trees.

UNIT-VIII

Graphs- terminology, representation, traversal(BFS and DFS) , minimal spanning trees, Kruskal's algorithm, prim's algorithm.

Text Books:

1. S.Sahni : Data structures , algorithms and applications in C++, 2nd edition, University Press(India) pvt ltd., 2005.
2. Langsam, M.J. Augenstein, A. M. Tanenbaum : Data structures using C and C++, 2nd edition, PHI Education, 2008.

Reference Books:

1. Mark Allen Weiss : Data structures and Algorithm analysis in C++, 2nd edition, Pearson Education, 2010.
2. Herbert Schildt : C++; The Computer Refernce, 4th Edition, Tata McGrwaw Hill, 2009.
3. Ashok N.Kamthane : Object Oriented Programming with ANSI & Turbo C++, 1st Edition, Palgrave Publisher, 2010.
4. Barkakali Nagajyoti : Object Oriented Programming using C++, 1st Edition, PHI, 2008.
5. Vijayalakshmi Pai.A.G : Data Structures and Algorithms Concepts, Techniques and applications, Tata McGraw Hill, 2010.

ANALOG & DIGITAL CIRCUITS LAB

Course Code:AEC1144

L	T	P	C
0	0	3	2

Aim & Objective:

To design & implement various analog and digital electronic circuits such as amplifiers, oscillators, combinational and sequential circuits.

Part- A

1. PN Junction diode characteristics.
2. Zener Diode Characteristics.
3. Rectifiers without filters (Full wave & half wave).
4. Transistor CE characteristics.
5. FET Characteristics.
6. CE Amplifier.
7. FET Amplifier.
8. RC Phase shift oscillator.

Part –B

1. Study of Logic Gates using Discrete Components.
2. Half Adder and Full Adder.
3. Encoder and Decoder.
4. Multiplexer and Demultiplexer.
5. Study of Flip-flops.
6. Asynchronous Counter.
7. Synchronous Counter.
8. Registers.

Note : Any FIVE experiments from PART –A and FIVE experiments from Part- B are to be conducted.

DATA STRUCTURES LAB

Course Code:ACT1106

L	T	P	C
0	0	3	2

Aim:

Same as the Data Structures using C++, but student will be taught practically.

Objective:

gets the practical knowledge to solve the problem regarding memory locations practically so that the student will be benefitted in the usage of pointers.

1. Write C++ programs that use both recursive and non recursive functions to perform the following searching operations for a Key value in a given list of integers :
   i) Linear search ii) Binary search
2. Write C++ programs that implement the following sorting methods to sort a given list of integers in ascending order:
   i) Bubble sort ii) Quick sort
3. Write C++ programs that implement the following sorting methods to sort a given list of integers in ascending order:
   i) Insertion sort ii) Merge sort.
4. Write C++ programs that implement stack (its operations) using
   i) Arrays ii) Singly linked list
5. Write C++ programs that implement Queue (its operations) using
   i) Arrays ii) Singly linked list
6. Write a C++ program to implement Circular queue

7. Write a C++ program that uses Stack operations to perform the following:
   i) Converting infix expression into postfix expression ii) Evaluating the postfix expression
8. Write a C++ program to perform the following operations on singly linked list to implement priority queue on student records.

   i) Creation ii) Insertion iii) Deletion iv) Traversal v)Reversal
9. Write a C++ program to perform the following operations on circular doubly linked list.
   i) Creation ii) Insertion iii) Deletion iv)Traversal in both ways
10. Write a C++ program to implement binary trees
    i) Creating a Binary Tree of integers ii) Insertion, searching iii) Traversing the above binary tree in preorder, inorder and postorder.
11. Write a C++ program to perform the following operations: i) Insert an element into a binary search tree. ii) Delete an element from a binary search tree. iii) Search for a key element in a binary search tree.
12. Write C++ programs for the implementation of bfs and dfs for a given graph.
13. Write C++ programs for the implementation of Prim's algorithm for shortest paths between every pair of nodes in the graph.
14. Write a C++ program to implement Kruskal's algorithm to generate a minimum cost spanning tree.

SYLLABI FOR IV SEMESTER

UNIX AND SHELL PROGRAMMING

Course Code:ACT1107

L	T	P	C
4	0	0	4

Aim:

An Introduction to UNIX Environment, through explanation of shell programming, as well as some system programming concepts.

Objective:

Student will get knowledge about unix environment. UNIX is the powerful O.S. which will be used on 90% of servers, hence while working in industry this knowledge should be helpful.

UNIT -I

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

UNIT -II

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

UNIT -III

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

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

UNIT -IV

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

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

UNIT -V

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

UNIT -VI

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

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

UNIT -VII

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

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

UNIT -VIII

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

Text Books:

1. Behrouz A. Forouzan, Richard F. Gilbery : Unix and shell Programming, 1st Edition, Cengage Learning India, 2008.
2. Sumitabha Das : Your Unix the ultimate guide, 2nd Edition. TMH, 2010.

References:

1. Graham Glass, King Ables : Unix for programmers and users, 3rd edition, Pearson Education, 2009.
2. Brain W.Kernighan, Rob Pike : Unix programming environment, 1st Edition, PHI. Learning Private Limited/ Pearson Education, 2009.
3. Kenneth Rosen, Host, Klee, Farber, Rosinski : The Complete Reference Unix, 2nd Edition, TMH, 2007.
4. Yashwanth Kanitkar : Unix Shell programming 1st Edition, BPB Publisher, 2010.

OPERATING SYSTEMS

Course Code:ACT1108

L	T	P	C
4	1	0	4

Aim:

Gives the idea about the CPU scheduling and memory scheduling and now they implemented using respective algorithms.

Objective:

Student may have the idea about resource sharing, multitasking, multiprocessing etc.

UNIT-I

Computer System and Operating System Overview: Overview of computer operating systems operating systems functions protection and security distributed systems special purpose systems operating systems structures and systems calls operating systems generation

UNIT-II

Process Management – Process concepts threads, scheduling-criteria algorithms, their evaluation,Thread scheduling, case studies UNIX, Linux, Windows

UNIT-III

CONCURRENCY: Process synchronization, the critical- section problem, Peterson's Solution, synchronizationHardware, semaphores, classic problems of synchronization, monitors, Synchronization examples, atomic ransactions. Case studies UNIX, Linux, Windows.

UNIT-IV

MEMORY MANAGEMENT: Swapping, contiguous memory allocation, paging, structure of the page table ,segmentation, virtual memory, demand paging, page-Replacement, algorithms, case studies UNIX, Linux,Windows

UNIT-V

Principles of deadlock – system model, deadlock characterization, deadlock prevention, detection and Avoidance, recovery form deadlock, I/O systems, Hardware, application interface, kernel I/O subsystem, Transforming I/O requests Hardware operation, STREAMS, performance.

UNIT-VI

File system Interface - the concept of a file, Access Methods, Directory structure, File system mounting, file sharing, protection.

File System implementation- File system structure, file system implementation, directory implementation, directory implementation, allocation methods, free-space management, efficiency and performance, case studies. UNIX, Linux, Windows

UNIT-VII

Mass-storage structure overview of Mass-storage structure, Disk structure, disk attachment disk scheduling, swap-space management, RAID structure, stable-storage implementation, Tertiary storage structure.

UNIT-VIII

PROTECTION: Protection, Goals of Protection, Principles of Protection, Domain of protection Access Matrix, Implementation of Access Matrix, Access control, Revocation of Access Rights, Capability- Based systems, Language – Based Protection,

Security- The Security problem, program threats, system and network threats cryptography as a security tool, user authentication, implementing security defenses, firewalling to protect systems and networks, computer –security classifications, case studies UNIX, Linux, Windows

Text Books:

1. Abraham Silberchatz, Peter B. Galvin, Greg Gagne : Operating System Concepts, 7th Edition, John Wiley & Sons, 2006.
2. D.M.Dhamdhere : Operating systems - A Concept based Approach-, 2nd Edition, TMH, 2010.

References:

1. William Stallings : Operating Systems' – Internal and Design Principles, 6th Edition, Pearson education/PHI, 2009.
2. Charles Crowley : Operating Systems - A Design Approach- 1st Edition, TMH, 2009.
3. Andrew S Tanenbaum : Modern Operating Systems, 3rd edition Pearson/PHI, 2008.

DATABASE MANAGEMENT SYSTEMS

Course Code:ACT1109

L	T	P	C
4	1	0	4

Aim:

To make the student confident in maintaining huge amount of data by creating tables, and accessing them.

Objective:

Student can get the capability of maintenance of huge amount of data along with reducing of redundancy in data.

UNIT-I

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

UNIT-II

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

UNIT-III

Introduction to the Relational Model – Integrity Constraint Over relations – Enforcing Integrity constraints – Querying relational data – Logical data base Design – Introduction to Views – Destroying /altering Tables and Views. Relational Algebra – Selection and projection set operations – renaming – Joins – Division – Examples of Algebra overviews – Relational calculus – Tuple relational Calculus – Domain relational calculus – Expressive Power of Algebra and calculus.

UNIT-IV

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

UNIT-V

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

UNIT-VI

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

UNIT-VII

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

UNIT-VIII

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

Text Books:

1. Raghurama Krishnan, Johannes Gehrke : Data base Management Systems, 3rd Edition, TATA McGrawHill, 2008.
2. Silberschatz, Korth : Data base System Concepts, 5th Edition, McGraw Hill, 2010.

References:

1. Peter Rob & Carlos Coronel : Data base Systems design, Implementation, and Management, 7th Edition, Pearson Education, 2000.
2. Elmasri Navrate : Fundamentals of Database Systems, 5th Edition, Pearson Education, 2007.
3. C.J.Date : Introduction to Database Systems, 7th Edition, Pearson Education, 2002.

OBJECT ORIENTED PROGRAMMING THROUGH JAVA

Course Code:ACT1110

L	T	P	C
4	1	0	4

Aim:

To make the student confident in object oriented programming and also in developing network, and multi threaded user interface programs.

Objective:

Student will get the capability of developing applications using GUI with the help of JAVA concepts.

UNIT-I

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

UNIT-II

Java Basics History of Java, Java buzzwords, data types, variables, scope and life time of variables, arrays, operators, expressions, control statements, type conversion and costing, simple java program, classes and objects – concepts of classes, objects, constructors, methods, access control, this keyword, garbage collection, overloading methods and constructors, parameter passing, recursion, string handling.

UNIT–III

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

UNIT-IV

PACKAGES AND INTERFACES: Defining, Creating and Accessing a Package, Understanding CLASSPATH, importing packages, differences between classes and interfaces, defining an interface, implementing interface, applying interfaces, variables in interface and extending interfaces,Exploring packages java .io (Character streams, Byte streams),Files, Directories, randomaccessfiles), java.util (collections (vectors, hashmap, treemap, lists, sets,), calendar, regex(pattern matching),date, scanner)

UNIT -V

EXCEPTION HANDLING AND MULTITHREADING: Concepts of exception handling, benefits of exception handling, Termination or resumptive models, exception hierarchy, usage of try, catch, throw, throws and finally, built in exceptions, creating own exception sub classes. Differences between multi threading and multitasking, thread life cycle, creating threads, synchronizing threads, daemon threads, thread groups.

UNIT -VI

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

UNIT -VII

APPLETS: Concepts of Applets, differences between applets and applications, life cycle of an applet, types of applets, creating applets, passing parameters to applets.

SWING: Introduction, limitations of AWT, MVC architecture, components, containers, exploring swing- JApplet, JFrame and JComponent, Icons and Labels, text fields, buttons – The JButton class, Check boxes, Radio buttons, Combo boxes, Tabbed Panes, Scroll Panes, Trees, and Tables.

UNIT -VIII

NETWORKING: Basics of network programming, addresses, ports, sockets, simple client server program, multiple clients, Java .net package.

Text Books:

1. Herbert schildt : Java the complete reference, 7th Editon, TMH, 2010.
2. T. Budd : An Introduction to OOP, 3rd Edition, Pearson Education, 2009.

References:

1. J.Nino and F.A. Hosch : An Introduction to programming and OO design using Java, 1st Edition, John Wiley & Sons, 2002
2. Y. Daniel Liang : Introduction to Java programming 7th Edition, Pearson Education, 2010.
3. R.A. Johnson : An introduction to Java programming and object oriented application development, 1st Edition, Course Technology, 2009.
4. Cay.S.Horstmann and Gary Cornell : Core Java 2, Vol 1, Fundamentals, 8th Edition, Pearson Education, 2008.
5. Cay.S.Horstmann and Gary Cornell : Core Java 2, Vol 2, Fundamentals, 8th Edition, Pearson Education, 2008.
6. P. Radha Krishna : Object Oriented Programming through Java, 1st Edition, University Press, 2008.
7. Iver Horton : Beginning in Java 2 JDK 5th edition, Wrox publications, 2009.

DESIGN AND ANALYSIS OF ALGORITHMS

Course Code:ACT1116

L	T	P	C
4	1	0	4

UNIT -I

Introduction:

Algorithm, Psuedo code for expressing algorithms, Performance Analysis-Space complexity, Time complexity, Asymptotic Notation- Big oh notation, Omega notation, Theta notation and Little oh notation,Probabilistic analysis, Amortized analysis.

UNIT -II

Disjoint Sets- disjoint set operations, union and find algorithms, spanning trees, connected components and biconnected components.

UNIT -III

DIVIDE AND CONQUER: General method , applications-Binary search, Quick sort, Merge sort, Strassen's matrix multiplication.

UNIT -IV

GREEDY METHOD: General method, applications-Job sequencing with dead lines, 0/1 knapsack problem, Minimum cost spanning trees, Single source shortest path problem.

UNIT -V

DYNAMIC PROGRAMMING: General method, applications-Matrix chain multiplication, Optimal binary search trees, 0/1 knapsack problem, All pairs shortest path problem,Travelling sales person problem, Reliability design.

UNIT -VI

BACKTRACKING: General method, applications-n-queen problem, sum of subsets problem, graph coloring, Hamiltonian cycles.

UNIT -VII

BRANCH AND BOUND: General method, applications - Travelling sales person problem, 0/1 knapsack problem- LC Branch and Bound solution, FIFO Branch and Bound solution.

UNIT -VIII

NP-HARD AND NP-COMPLETE PROBLEMS: Basic concepts, non deterministic algorithms, NP - Hard and NPComplete classes, Cook's theorem.

Text Books:

1. Ellis Horowitz,Satraj Sahni and Rajasekharam : Fundamentals of Computer Algorithms, 3rd Edition, PHI/ Pearson Education, 2009.
2. M.T.Goodrich and R.Tomassia : Algorithm Design Foundations, Analysis and Internet examples, John Wiley and Sons, 2008.

References:

1. T.H.Cormen, C.E.Leiserson, R.L.Rivest and C.Stein : Introduction to Algorithms, 3rd Edition, PHI/ Pearson Education, 2009.
2. R.C.T.Lee, S.S.Tseng, R.C.Chang and T.Tsai : Introduction to Design and Analysis of Algorithms - A strategic approach, 2nd Edition, Tata Mc Graw Hill, 2009.
3. Allen Weiss : Data structures and Algorithm Analysis in C++, 2nd Edition, Pearson education, 2009.
4. Aho, Ullman and Hopcroft : Design and Analysis of algorithms, 3rd Edition, Pearson education, 2008.
5. Richard Johnson baugh and Marcus Schaefer : Algorithms, 1st Edition, Pearson Education, 2007.

COMPUTER GRAPHICS

Course Code: ACT1113

L	T	P	C
4	0	0	4

UNIT -I

Introduction, Application areas of Computer Graphics, overview of graphics systems, video-display devices, raster-scan systems, random scan systems, graphics monitors and work stations and input devices.

UNIT -II

OUTPUT PRIMITIVES : Points and lines, line drawing algorithms, mid-point circle and ellipse algorithms.Filled area primitives: Scan line polygon fill algorithm, boundary-fill and flood-fill algorithms

UNIT -III

2-D GEOMETRICAL TRANSFORMS : Translation, scaling, rotation, reflection and shear transformations, matrix geneous coordinates, composite transforms, transformations between coordinate systems.

UNIT -IV

2-D VIEWING : The viewing pipeline, viewing coordinate reference frame, window to view-port coordinate transformation, viewing functions, Cohen-Sutherland and Cyrus-beck line clipping algorithms, Sutherland –Hodgeman polygon clipping algorithm

UNIT -V

3-D OBJECT REPRESENTATION : Polygon surfaces, quadric surfaces, spline representation, Hermite curve, Bezier curve and B-Spline curves, Bezier and B-Spline surfaces. Basic illumination models, polygon rendering methods.

UNIT -VI

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

3-D VIEWING: Viewing pipeline, viewing coordinates, view volume and general projection transforms and clipping.

UNIT -VII

VISIBLE SURFACE DETECTION METHODS : Classification, back-face detection, depth-buffer, scan-line, depth sorting, BSP-tree methods, area sub-division and octree methods

UNIT -VIII

COMPUTER ANIMATION: Design of animation sequence, general computer animation functions, raster animation, computer animation languages, key frame systems, motion specifications.

Text Books:

1. Donald Hearn and M.Pauline Baker :Computer Graphics C version, 1st Edition Pearson Education, 2009.
2. Foley, VanDam, Feiner and Hughes : Computer Graphics Principles & practice, 2nd Edition, Pearson Education, 2009.

References:

1. Donald Hearn and M.Pauline Baker : Computer Graphics, 2nd Edition, PHI/Pearson Education, 2008.
2. Zhigand xiang, Roy Plastock : Computer Graphics, Schaum's outlines, 2nd Edition, Tata Mc- Graw Hill Edition, 2007.
3. David F Rogers : Procedural elements for Computer Graphics, 2nd Edition, Tata Mc Graw Hill, 2008.
4. Neuman and Sproul : Principles of Interactive Computer Graphics, 2nd Edition, TMH, 2008.
5. Shalini Govil, Pai : Principles of Computer Graphics, Springer International Edition, 2005.
6. Steven Harrington : Computer Graphics - A Programming approach, 1st Edition TMH, 2010.

OPERATING SYSTEM LAB

Course Code: ACT1111

L	T	P	C
0	0	3	2

Aim:

To provide necessary operating system concepts like Disk scheduling paging, deadlock avoidance and concurrency techniques.

Objective:

To provide an understanding of the design aspects of operating system Recommended Systems/Software Requirements:

· Intel based desktop PC with minimum of 166 MHZ or faster processor with atleast 64 MB RAM and 100 MB free disk space

JDK kit

Part – A

1. Simulate the following unix commands:
   a) mv b) cp c) ls (Use system calls)
2. Simulate the following CPU scheduling algorithms
   a) Round Robin b) SJF c) FCFS d) Priority
3. Simulate all file allocation strategies
   a) Sequential b) Indexed c) Linked
4. Simulate Bankers Algorithm for Dead Lock Avoidance
5. Simulate Bankers Algorithm for Dead Lock Prevention
6. Simulate all page replacement algorithms
   a) FIFO b) LRU c) LFU

Part – B

1. (Using java.math class)
   a) Write a Java program that prints all real solutions to the quadratic equation $ax^2 + bx + c = 0$. Read in a,b, c and use the quadratic formula. If the discriminant b^2 -4ac is negative, display a message stating that there are no real solutions.

b) The Fibonacci sequence is defined by the following rule:

The fist two values in the sequence are 1 and 1. Every subsequent value is the sum of the two values preceding it. Write a Java program that uses both recursive and non recursive functions to print the nth value in the Fibonacci sequence.

2. a) Write a Java program that prompts the user for an integer and then prints out all prime numbers up to that integer.

   b) Write a Java program to multiply two given matrices.

   c) Write a Java Program that reads a line of integers, and then displays each integer, and the sum of all the integers (Use StringTokenizer class of java.util)

3. (Using java.lang.FileInputStream and FileOutputStream)

   a) Write a Java program that reads a file name from the user, then displays information about whether the file exists, whether the file is readable, whether the file is writable, the type of file and the length of the file in bytes.

   b) Write a Java program that reads a file and displays the file on the screen, with a line number before each line.

   c) Write a Java program that displays the number of characters, lines and words in a text file.

4. Write a Java program that:

   a. Implements stack ADT.

   b. Converts infix expression into Postfix form

   c. Evaluates the postfix expression

5. (packages)

   Design a package to contain the class Student that contains data members such as name, roll number and another package contains the interface Sports which contains some sports information. Import these two packages in a package called Report which process both Student and Sport and give the report.

6. a) Write a java program to create an abstract class named Shape that contains an empty method named number OfSides( ).Provide three classes named Trapezoid, Triangle and Hexagon such that each one of the classes extends the class Shape. Each one of the classes contains only the method numberOfSides ( ) that shows the number of sides in the given geometrical figures.

   b) Write a Java program that checks whether a given string is a palindrome or not. Ex: MADAM is a palindrome.

   c) Write a Java program for sorting a given list of names in ascending order.

7. (Exception Handling and Multithreading)

   a. Write a program that reads two numbers from the user to perform integer division into Num1 and Num2 variables. The division of Num1 and Num2 is displayed if they are integers. If Num1 or Num2 were not an integer, the program would throw a NumberFormatException. If Num2 were Zero, the program would throw an ArithmeticException.

   b. Create a user defined exception.

   c. Write a Java program that correctly implements producer consumer problem using the concept of multithreading.

8. (Using java.awt.*)

   a. Write a java program that simulates a traffic light. The program lets the user select one of three lights: red, yellow, or green. When a radio button is selected, the light is turned on, and only one light can be on at a time No light is on when the program starts.

   b. Write a applet program that simulates a digital clock.

9. (Applets and EventHandling)

   a) Develop an applet that displays a simple message.

   b) Develop an applet that receives an integer in one text field, and computes its factorial Value and returns it in another text field, when the button named “Compute” is clicked.

c) Write a Java program that works as a simple calculator. Use a grid layout to arrange buttons for the digits and for the +, -,*, % operations. Add a text field to display the result.

10. (Swings and Event Handling)

a) Suppose that a table named Table.txt is stored in a text file. The first line in the file is the header, and the remaining lines correspond to rows in the table. The elements are separated by commas. Write a java program to display the table using Jtable component.

b) Write a Java program for handling mouse events.

11. (Socket Programming)

Write a Java program that implements a simple client/server application. The client sends data to a server. The server receives the data, uses it to produce a result, and then sends the result back to the client. The client displays the result on the console. For ex: The data sent from the client is the radius of a circle, and the result produced by the server is the area of the circle. (Use java.net)

DATABASE MANAGEMENT SYSTEMS LAB

Course Code: ACT1112

L	T	P	C
0	0	3	2

Aim:

To teach the student logical database design and querying the database using SQL & PL/SQL.

Objective:

Student will get knowledge of creating and maintaining tables of a database using SQL, handling all types of Queries, and writing all kinds of programming scripts in PL/SQL, transaction managements, creation of stored procedures, functions, cursors & triggers.

Recommended Systems/Software Requirements:

- Intel based desktop PC
- Mysql /Oracle latest version Recommended

1) Creation, altering and droping of tables and inserting rows into a table (use constraints while creating tables) examples using SELECT command.
2) Queries (along with sub Queries) using ANY, ALL, IN, EXISTS, NOTEXISTS, UNION, INTERSET, Constraints.

   Example:- Select the roll number and name of the student who secured fourth rank in the class.
3) Queries using Aggregate functions (COUNT, SUM, AVG, MAX and MIN), GROUP BY, HAVING and Creation and dropping of Views.
4) Queries using Conversion functions (to_char, to_number and to_date), string functions (Concatenation, lpad, rpad, ltrim, rtrim, lower, upper, initcap, length, substr and instr), date functions (Sysdate, next_day, add_months, last_day, months_between, least, greatest, trunc, round, to_char, to_date)

5) i) Creation of simple PL/SQL program which includes declaration section, executable section and exception – Handling section (Ex. Student marks can be selected from the table and printed for those who secured first class and an exception can be raised if no records were found)

ii) Insert data into student table and use COMMIT, ROLLBACK and SAVEPOINT in PL/SQL block.

6) Develop a program that includes the features NESTED IF, CASE and CASE expression. The program can be extended using the NULLIF and COALESCE functions.

7) Program development using WHILE LOOPS, numeric FOR LOOPS, nested loops using ERROR Handling, BUILT –IN Exceptions, USE defined Exceptions, RAISE- APPLICATION ERROR.

8) Programs development using creation of procedures, passing parameters IN and OUT of PROCEDURES.

9) Program development using creation of stored functions, invoke functions in SQL Statements and write complex functions.

10) Program development using creation of package specification, package bodies, private objects, package variables and cursors and calling stored packages.

11) Develop programs using features parameters in a CURSOR, FOR UPDATE CURSOR, WHERE CURRENT of clause and CURSOR variables.

12) Develop Programs using BEFORE and AFTER Triggers, Row and Statement Triggers and INSTEAD OF Triggers

Text Books:

1) ORACLE PL/SQL by example. Benjamin Rosenzweig, Elena Silvestrova, Pearson Education 3rd Edition

2) ORACLE DATA BASE LOG PL/SQL Programming SCOTT URMAN, Tata Mc- Graw Hill.

3) SQL & PL/SQL for Oracle 10g, Black Book, Dr.P.S. Deshpande.

SYLLABI FOR V SEMESTER

DATA COMMUNICATION SYSTEMS

Course Code: AIT1101

L	T	P	C
4	1	0	4

Aim:

To make the student to understand the Data flow in Wired and Wireless Networks

Objective:

Student would be able to understand different modulation techniques and transmission media

UNIT- I:

Introduction to Data Communications and Networking: Standards Organizations for Data Communications, Layered Network Architecture, Open Systems Interconnection, Data Communications Circuits, Serial and parallel Data Transmission, Data communications Circuit Arrangements, Data communications Networks, Alternate Protocol Suites, Bits, Bit Rate, Baud rate.

UNIT- II:

Metallic Cable Transmission Media : Metallic Transmission Lines, Transverse Electromagnetic Waves, Characteristics of Electromagnetic Waves,Transmission Line Classifications, Types, Metallic Transmission Line Equivalent Circuit, Wave Propagation on Metallic Transmission Lines, Metallic Transmission Line Losses.

Optical Fiber Transmission Media : Advantages & Disadvantages of Optical Fiber Cables, Electromagnetic spectrum, Optical Fiber Communications System Block Diagram, Optical Fiber construction, The Physics of Light, Velocity of Propagation, Propagation of Light Through an Optical fiber Cable, Optical Fiber Modes and Classifications, Optical Fiber Comparison, Losses in Optical Fiber Cables, Light sources, Light Detectors, Lasers.

UNIT - III:

Analog & Digital Transmission : Basics of Analog communications, Pulse Modulation, Pulse code Modulation, Dynamic Range, Signal Voltage –to-Quantization Noise Voltage Ratio, Linear Versus Nonlinear PCM Codes, Companding, PCM Line Speed, Delta Modulation PCM and Differential PCM.

UNIT - IV:

Multiplexing and T Carriers : Time- Division Multiplexing, T1 Digital Carrier System, Digital Line Encoding, T Carrier systems, Frame Synchronization, Frequency- Division Multiplexing, Wavelength- Division Multiplexing, Synchronous Optical Network.

UNIT - V:

Telephone Instruments and Signals: The Local Subscriber Loop, Standard Telephone Set, Basic Telephone Call Procedures, Call Progress Tones and Signals, Units of Powers Measurement, Transmission Parameters, Crosstalk, Cordless Telephones, Caller ID, Electronic Telephones, Paging systems.

UNIT - VI:

Wireless Communication & Cellular Telephone Systems: Electromagnetic Polarization, Spherical Wavefront and the Inverse Square Law, wave Attenuation and Absorption,, Terrestrial Propagation of Electromagnetic Waves, Skip Distance, Free-Space Path Loss. First-Generation Analog Cellular Telephone, Second-Generation Cellular Telephone Systems, N-AMPS, Digital Cellular Telephone, CDMA and Global system for Mobile Communications.

UNIT - VII:

Data Communications Codes, Error Control, and Data Formats: Data Communications Character Codes, Bar Codes, Error Control, Error Detection, Error Correction, Character Synchronization.

Data Communications Equipment: Digital Service Unit and Channel Service Unit, Voice- Band Data Communication Modems, Voice-Band Modem Block Diagram, Asynchronous Voice-Band Modems, Synchronous Voice-Band Modems, Modem Synchronization, ITU-T

Voice- Band Modem Specifications, 56K Modems, Cable Modems, Probability of Error and Bit Error Rate.

UNIT - VIII:

Data–Link Protocols: Data Link Protocol Functions, Character and Bit- Oriented Protocols, Data Transmission Modes, Asynchronous Data Link Protocols, Synchronous Data Link Protocols, Synchronous Data Link Control, High Level Data Link Control.

Text Books:

1. Wayne Tomasi: Introduction to Data Communications and Networking, 3rd Edition, Pearson Education, 2009.

References:

1. Behrouz A Forouzan: Data Communications and Networking, 4th Edition, TMH, 2006.
2. Wayne Tomasi: Advanced Electronic Communications System, 6th Edition, PHI, 2008.

E-COMMERCE

Course code: AIT1102

L	T	P	C
4	0	0	4

Aim:

1) To make student familiar with e-commerce technology and capable of using it.
2) To make him capable of setting an e commerce infrastructure for a company.

Objective:

To make students familiar with the process of buying and selling of goods on internet. To make student learn the basic concepts of networking. To make student understand the security and management issues related to web servers.

UNIT - I:

Introduction: Electronic commerce and physical commerce, the DIGITAL phenomenon, Looking at e-commerce form different perspectives, Different types of e-commerce, Examples of the types of e-commerce, Some e-commerce scenarios, changes brought by e-commerce, Advantages of e-commerce, Myths about e-commerce development and implementation.

UNIT - II:

Internet and world wide web: An overview of the internet, Brief history of the web, Web system architecture, Uniform resource locator, Overview of the Hyper text transfer Protocol, HTTP, Generation of dynamic web pages, Cookies, HTTP/1.1

UNIT - III:

Basic cryptography for enabling e-commerce: Security Concerns, Security requirements, encryption, two basic principles of private key encryption, public key encryption, Firewalls, different types of firewalls, Examples of firewalls, Introduction to mobile Agents, WAP.

UNIT - IV:

Internet payment systems: Characteristics of payment systems, 4C payment models, SET protocol for credit card payment, E-cash, E-check, Micropayment system, overview of smart card, overview of Mondex, Putting it all together for payments in the VBS.

UNIT - V:

Consumer Oriented e-commerce: Introduction, Traditional retailing and e-retaining, Benefits of e-retailing, Key success factors, Models of e-retailing, Features of e-retailing, Developing a consumer-oriented e-commerce system, The PASS model.

UNIT - VI:

Business oriented Commerce: Features of B2B commerce, Business Models, Integration

UNIT-VII:

E-Services: Categories of e-services, Web-enabled Services, Matchmaking services, Information-selling on the web, E-entertainment, Auctions and other specialized services.

Unit-VIII:

Web advertizing and web publishing: Traditional versus internet advertising, Internet advertising techniques and strategies, Business Models for advertizing and their revenue streams, Pricing models and measurement of the effectiveness of advertisements, Web-publishing- goals and criteria, Web site development methodologies, Web presence and visibility.

Text Books:

1) Henry Chan, Raymond Lee, Tharam Dillon, Elizabeth Chang: E-Commerce Fundamentals and Applications, 1st Edition Wiely INDIA Edition, 2009. (For all 8 Units)

References:

1. S.Jaiswal: E-commerce- Electronic Communication for Business, 1st Edition, Galgotia Publication, Revised in 2008.

2. Efrain Turbon, Lae Lee, David King, H. Michael chang: E-commerce – A Management Perspective, 1st Edition, Pearson Education, 2007

3. Gary P.Schneider: Electronic Commerce Course Technology, 1st Edition, Thomson, 2007

4. Kenneth C.taudon, Carol Guyerico Traver: E-commerce – Buisiness, technology, Society, 4th Edition, Pearson Education, 2008

5. Kalakata, Whinston: Frontiers of electronic commerce, 9th Edition, Pearson Education, 2007.

Web Reference:

http://ecommercetechnology.org/

WEB PROGRAMMING

Course code: ACT1134

L	T	P	C
4	1	0	4

Aim:

To highlight the features of different technologies involved in Web Technology and various Scripting Languages.

Objectives:

Students will get an introduction about various Scripting Languages. Students will be provided with an up-to-date survey of developments in Web Technologies & enable the students to know techniques involved to support real-time Software development.

UNIT- I:

Introduction: History of the Internet and World Wide Web – HTML 4 protocols – HTTP, SMTP, POP3, MIME, IMAP. Basic Tags of HTML, Creating Links, Tables,Frames, Forms, Form Tags.

UNIT - II:

Document Object Model: Concept and Importance of Document Object Model, Cascading Style Sheet (CSS). Java script: Introduction, documents, forms, statements, functions, objects,event and event handling; Dynamic HTML with Java Script.

UNIT- III:

XML: Introduction: Features of XML, Document type definition, XML Schemas, Presenting XML, Using XML Processors: DOM.

UNIT - IV:

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

UNIT - V:

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

UNIT - VI:

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

UNIT - VII:

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

UNIT - VIII:

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

Text books:

1. Dietel and Nieto : Internet and world wide web – how to program, 3rd Edition PHI/Pearson Education, 2003. (Units : 1,2,3)
2. Patrick Naughton and Herbert Schildt : The complete Reference Java 2, 5th Edition, TMH, 2007. (Units : 4,5)
3. Hans Bergsten : Java Server Pages, 3rd Edition, O'Reilly publication, 2008.(Units :6,7,8)

References:

1. Raj Kamal : Internet & web technologies, 8th Edition, Tata McGraw-Hill, 2007.
2. Chris Bates : Web Programming, building internet applications, 2nd Edition, WILEY Dreamtech, 2008.
3. Xavier. C : web technology and design , 1st Edition, New Age International, 2011.
4. Sebesta : Programming world wide web, 4th Edition, Pearson Education, 2008.
5. Marty Hall and larry Brown : Core servlets and java Server pages volume 1: core technologies, 2nd Edition, Pearson Eduacation, 2007.
6. Bill siggelko : Jakarta struts cookbook, 1st Edition, O'Reilly publication, 2007.
7. Murach, : Murach's beginning java jdk 5, 1st Edition, S P D Publication, 2007.
8. Wang Katila : An introduction to web design and programming, 1st Edition, Thomson, 2008.
9. Knuckles : Web applications technologies concepts and Real World Design, John Wiley, 2008.
10. Jon Duckett : Beginning web programming with HTML, XHTML, 2nd Edition, Wrox Publication, 2008.
11. Pekowsky : Java server pages, 2nd Edition, Pearson Education, 2008.

MICROPROCESSORS AND INTERFACING

Course code: ACT1115

L	T	P	C
4	1	0	4

Aim:

To give an exposure on different microprocessors and their programming.

Objective:

The student shall be able to learn features of different microprocessors, and programming and simulation in IDU. This syllabus focuses on processors with Harvard architecture with an efficient instruction set.

UNIT - I:

Introduction to Classic 8051 family Architecture. Address and data bus with multiplexed I/O pins. Registers Examples with arithmetic and Boolean instruction set. Applications using Timers Counters and I/O programming for external logic sensing and control. Interrupts and its programming. This is an example of Vanneumann Architecture.

UNIT - II

Introduction to Harvard architecture. Advantages of separate address and data busses providing faster and efficient programming. Built in Flash with two wire programming reducing CPU size. Provision of peripherals and flash ROM, EEPROM, and a large special function register work space for application oriented embedded systems.

Introduction to PIC family Architecture and instruction set. Introduction to the Risk instruction set and its usage with example programs using Integrated development environment MPLAB simulation.

UNIT - III :

Peripheral systems in Pic 16f877a processor.

(a) Digital Input and Output Programming,

(b) Timers and Counters

(c) Capture Control and PWM

(d) Analog to Digital Converters and their Programming

(e) Simple data acquisition systems and programming.

Unit - IV :

Introduction to At mega processor family architecture using typical Atmega 8535 processor. The many features in the peripherals provided. Introduction to its large instruction set. Using IDU Atmel Studio for programming and simulation.

UNIT -V :

Peripheral systems in Atmega 8535

(a) Digital Input and Output Programming

(b) Timers and Counters wave form generation.

(c) Capture Control and PWM

(d) Analog to Digital Converters and their Programming

(e) Simple data acquisition programming.

UNIT - VI :

Serial Communication busses

(a) USART, with addressable feature

(b) SPI bus

(c) 12c two wire bus

(d) introduction to USB bus

UNIT - VII :

Application design using an embedded system.

Interrupts, and interrupt processing. Interrupt vectors, and their application programming. Interrupt processing in PIC and Atmega processor families. Interrupt latency. Processing multiple interrupts.

Logical steps to design a program to meet an objective. Examples in robotics, Motor control, display control, data acquisition etc. preferably with illustrative examples.

UNIT-VIII :

Processor simulation and debugging using integrated development environment. The use of IDU gives a comprehensive glimpse of all processor activities to enable the programmer to watch events. Such a program makes it easy to find errors in the program logic and correct it. A brief introduction to In-circuit debugging of an assembly level program.

Text Books :

1. Bendapudy Kanta Rao : Embedded Systems, Prentice Hall India, 1st Edition, 2011.
2. Ajay V Deshmukh : Microcontrollers, 4th Edition,TMH, 2010.
3. Kenneth J Ayala : The 8051 Micro Controller, 3rd Edition, Thomson Publishers, 2009.

References :

1. Raj Kamal : Embedded Sytesms, 2nd Edition,TMH, 2008.
2. Raj Kamal : Microcontrollers, 1st Edition, Pearson Education, 2009.
3. Ali Mazidi Mohammed Gillispie, Mazide Janice: The 8051 Microcontroller and Embedded Systems, 2nd Edition, Pearson Education, 2009.

MANAGEMENT SCIENCE

Course Code: AHM1102

L	T	P	C
4	0	0	4

Objective:

To familiarize with the process of management and to provide basic insights to select contemporary management practices.

Outcome:

To understand the management processes and evolve management levels for effective decision making.

UNIT – I:

Introduction to Management: Concepts of Management and Organization – Nature, Importance and Functions of Management, Taylor's Scientific Management Theory, Fayol's Principles of Management, Mayo's Hawthorne experiments, Maslow's Theory of human needs, Douglas Mc Gregor's Theory X and Theory Y, Hertzberg's Two factor Theory of motivation, Systems approach to Management, Leadership styles.

UNIT – II:

Designing Organizational Structures: Basic concepts related to Organization, Departmentation and Decentralization, Types of mechanistic and organic structure of organization (Line Organization, Line and staff Organization, Functional Organization, Committee Organization, Matrix Organization, Virtual Organization, Cellular Organization, Team Structure, Boundaryless Organization, Inverted Pyramid Structure, Lean and Flat Organization Structure) and their merits, demerits and suitability.

UNIT - III:

Operations Management: Principles and Types of Plant Layout, Methods of Production (Job, Batch and Mass Production), Work Study,

Basic procedure involved in Method Study and Work Measurement, Statistical Quality Control: R chart, P chart, C chart (Simple numerical problems)

UNIT – IV:

Materials Management: Objectives, Need for Inventory control, EOQ, ABC & VED Analysis, Purchase Procedure, Stores Management and Stores Records (simple numerical problems) Just in Time System (JIT).

UNIT – V:

Marketing Management: Functions of Marketing, Marketing mix, marketing strategies based on product life cycle, Channels of distribution, Consumer behavior and Customer relationship management

UNIT – VI:

Human Resources Management: Concepts of HRM, HRD and Personnel Management and Industrial Relations (PMIR), HRM vs. PMIR, Basic functions of HR Manager : Manpower planning, Recruitment, Selection, Training and Development, Placement, Performance Appraisal, Job Evaluation and Merit Rating Grievance handling and Welfare Administration Introduction to Social Security Laws: Payment of Gratuity Act (1972), Employees Provident Fund & Miscellaneous Provisions Act (1958), Employees State Insurance Act (1948)

UNIT – VII:

Project Management (PERT / CPM): Network Analysis, Programme Evaluation and Review Technique (PERT), Critical Path Method (CPM), Identifying critical path, probability of completing the project within given time, project cost analysis, project crashing (simple numerical problems)

UNIT – VIII:

Strategic Management: Mission, Goals, Objectives, Policy, Strategy, Programmes, Elements of Corporate Planning Process, Environmental Scanning, Steps in strategy formulation and implementation, value Chain Analysis, SWOT Analysis corporate social responsibility, business ethics and corporate governance

Text Books:

1. A R Aryasri : Management Science, 4th Edition, Tata McGraw Hill, 2010.
2. O P Khanna : Industrial Engineering and Management, 2nd Edition, Dhanpat Rai Publishers, 2008.

Reference Books

1. Azhar Kazmi : Strategic Management& Business Policy, 3rd Edition, TMH, 2010
2. S D Sharma : Operations Research, 15th Edition, Kedarnath Ramnath & Co, 2008.
3. Philip Kotler, Keller, Koshy & Jha : Marketing Management, 13th Edition, Pearson Education, 2009.
4. C B Mamoria & S V Gankar: Personnel Management, 28th Edition, Himalaya Publishing, 2008.
5. BS Goel : Production & Operations Management, 20th Edition, Pragati Prakasan, 2008.
6. Srinivasan R : Strategic Management, 3rd Edition, Eastern Economy, 2009.
7. LM Prasad : Principles & Practices of Management, 7th Edition, S. Chand & Sons, 2007.

SOFTWARE ENGINEERING

Course Code: ACT1117

L	T	P	C
4	1	0	4

Aim :

- To provide an understanding of the various processes software engineers may employ in developing contemporary software systems
- To examine all phases of the software development life cycle, from initial planning through implementation and maintenance.
- To develop an understanding of the tools and techniques employed in contemporary software engineering.

Objective:

- To demonstrate the skills required to analyse, design, test and maintain software systems
- To demonstrate an appreciation of good practices in software engineering
- To demonstrate the application of software quality concepts

UNIT - I:

Introduction to Software Engineering: The evolving role of software, Changing Nature of Software, Software myths.

A Generic view of process: Software engineering- A layered technology, a process framework, The Capability Maturity Model Integration (CMMI), Process patterns, process assessment, personal and team process models.

UNIT - II:

Process models: The waterfall model, Incremental process models, Evolutionary process models, The Unified process.

Software Requirements: Functional and non-functional requirements, User requirements, System requirements, Interface specification, the software requirements document.

UNIT- III:

Requirements engineering process: Feasibility studies, Requirements elicitation and analysis, Requirements validation, Requirements management.

System models: Context Models, Behavioral models, Data models, Object models, structured methods.

UNIT - IV:

Design Engineering: Design process and Design quality, Design concepts, the design model.

Creating an architectural design: Software architecture, Data design, Architectural styles and patterns, Architectural Design.

UNIT - V:

Object-Oriented Design: Objects and object classes, An Object-Oriented design process, Design evolution.

Performing User interface design: Golden rules, User interface analysis and design, interface analysis, interface design steps, Design evaluation.

UNIT - VI:

Testing Strategies: A strategic approach to software testing, test strategies for conventional software, Black-Box and White-Box testing, Validation testing, System testing, the art of Debugging.

Product metrics: Software Quality, Metrics for Analysis Model, Metrics for Design Model, Metrics for source code, Metrics for testing, Metrics for maintenance.

UNIT - VII:

Metrics for Process and Products: Software Measurement, Metrics for software quality.

Risk management: Reactive vs. Proactive Risk strategies, software risks, Risk identification, Risk projection, Risk refinement, RMMM, RMMM Plan.

UNIT - VIII:

Quality Management: Quality concepts, Software quality assurance, Software Reviews, Formal technical reviews, Statistical Software quality Assurance, Software reliability, The ISO 9000 quality standards.

Text Books:

1. Roger S. Pressman : Software Engineering, A practitioner's Approach, 7thEdition, TMH, 2008. (Units : 1,4,6,7,8)
2. Sommerville : Software Engineering, 7th Edition, Pearson Education, 2008.(Units : 2,3,5)

References:

1. K.K. Agarwal & Yogesh Singh : Software Engineering, 3rd Edition, New Age International Publishers, 2008.
2. James F. Peters, Witold Pedrycz : Software Engineering, an Engineering approach, 1st Edition, John Wiely Publications, 2007.
3. Shely Cashman Rosenblatt : Systems Analysis and Design, 1st Edition,Thomson Publications, 2010.
4. Waman S Jawadekar : Software Engineering principles and practice, 1st Edition, TMH, 2006.

Web References:

http://www.nptel.iitm.ac.in/courses/Webcourse-contents/IIT%20Kharagpur/Soft%20Engg/New_index1.html

MICROPROCESSORS AND INTERFACING LAB

Course code: ACT1118

L	T	P	C
0	0	3	2

1. Exposure to Integrated development Environment, for the processors. What it is and how to simulate and run any Embedded program. All the exercises are first simulated and debugged using one of the IDU programs. The learning process becomes easy and rewarding for all students. Using these programs, the following exercises are suggested:

Study of typical programs:

- Multi precission Addition Subtraction, and Multiplication.
- Handling Fractional numbers
- BCD-Binary Conversion examples
- Ascii to BCD conversion
- Binary to ASCII conversion

2. Input Output control programming. The advantage of Tristate ports in PIC and ATMEL processors. Individual pin control, and drive capability. Using the I/O the following programs are run:

- Sensing external input signals.
- Controlling the external switching, for DC motors, Steppers
- Clock generation and timing using Timers ad Counters
- Pulse width control,
- Capture control of external events

3. Analog to Digital Converters its programming usage in fast data acquisition. Use multiplexed analog channels and their configuration.. Learn about acquisition speed, interrupt driven data converting.

4. Programming using built in Timers

- As Event Timers
- As Counters
- Frequency Generation
- Simple programs to generate FSK

5. Capture Control and its application examples.

- Measurement of pulse width using I/O
- Measurement of Duty cycle, power factor etc
- Measurement of velocity or speed
- Sensing touch

6. Serial Communication Methods.

- USART and its programming
- SPI bus and its programming

7. Wave form generation using PWM methods .

- Generation of Sine wave
- Generation of FSK

WEB PROGRAMMING LAB

Course Code: AIT1103

L	T	P	C
0	0	3	2

1. A topic based homepage has to be developed by each student using various commands covered in HTML.Web page should be designed with following features.
   HTML Basic Tags: (html/head/title/body/B/I/U/BR/HR)
   Anchor/Image insertion/Linking Tables/Frame/Form , CSS
2. Webpage of a student containing personal information about student such as email address, photograph, likes, dislikes, hobbies, class, school name, achievements, favorite restra, favorite tourist places, ultimate aim of life, message to mankind, role model.
3. Design the following static web pages required for an online book store web site. HOME PAGE: the static home page must contain three frames.(top,left,right)
4. **Registration Page:**

   Create a "registration form "with the following fields

   1) Name (Text field) 2) Password (password field) 3) E-mail id (text field) 4) Phone number (text field) 5) Sex (radio button) 6) Date of birth (3 select boxes) 7) Languages known (check boxes – English, Telugu, Hindi, Tamil) 8) Address (text area)
5. **Validation:**

   Write JavaScript to validate the above registration page.
6. Design a web page using CSS (Cascading Style Sheets).
7. a) Write an XML file which will display the Book information which includes the following:

1) Title of the book 2) Author Name 3) ISBN number 4) Publisher name 5) Edition 6) Price

b) Write a Document Type Definition (DTD) to validate the above XML file.

8. Visual Beans:

Create a simple visual bean with a area filled with a color. The color of the area should be changed dynamically for every mouse click.

9. a) Install TOMCAT web server and APACHE.

b)Access the above developed static web pages for books web site, using these servers.

10. User Authentication:

Read the user id and passwords entered in the Login form (week1) and authenticate with the values (user id and passwords) available in the cookies.

If he is a valid user(i.e., user-name and password match) you should welcome him by name(user-name) else you should display " You are not an authenticated user ".

11. Install a database(Mysql or Oracle).

Create a table for the registration form.

Write a java program/servlet/JSP to connect to that database and extract data from the tables and display them. Experiment with various SQL queries.

12. HTTP is a stateless protocol. Session is required to maintain the state. This can be achieved through the use of sessions. Every user will have his own session which will be created after his successful login to the website. When the user logs out his session should get invalidated (by using the method session.invalidate()

13. Create tables in the database which contain the details of items

(books in our case like Book name, Price, Quantity, Amount) of each category. Modify your catalogue page (week 2)in such a way that you should connect to the database and extract data from the tables and display them in the catalogue page using JDBC.

SYLLABI FOR VI SEMESTER

MIDDLEWARE TECHNOLOGIES

Course code: AIT1104

L	T	P	C
4	1	0	4

Aim:

The aim of the course is to teach the role of middleware in the distributed environment and it's common services.

Objective:

To study the set of services that middleware system constitute of and to understand how middleware facilitates the development of distributed applications in heterogeneous environment. To understand the web services that is the most oft-used middleware technique.

UNIT - I:

Introduction to client server computing:

Evolution of corporate computing models from centralized to distributed computing, client server models. Benefits of client server computing, pitfalls of client server programming.

(www.doc.ic.ac.uk/nd/surprise-95/journal/vol4/wcy/report.html)

UNIT - II:

CORBA with Java:

Distributed programming with Java RMI; Overview of CORBA, CORBA IDL, Client/server programming with CORBA & Java.

UNIT - III:

XML Technology

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

UNIT - IV:

SOAP:

Overview of SOAP – HTTP – XML-RPC – SOAP: Protocol – Message Structure –Intermediaries – Actors – Design Patterns And Faults – SOAP

With Attachments.

UNIT - V:

Web Services

Overview – Architecture – Key Technologies - UDDI – WSDL – eb XML – SOAP and Web Services In E-Com – Overview Of .NET And J2EE.

UNIT - VI:

Agent and User Experience

Interacting with Agents - Agent From Direct Manipulation to Delegation - Interface Agent Metaphor with Character - Designing Agents - Direct Manipulation versus Agent Path to Predictable.

UNIT - VII:

Agent Communication and Collaboration

Overview of Agent Oriented Programming - Agent Communication Language - Agent Based Framework of Interoperability - Agents for Information Gathering - Open Agent Architecture - Communicative Action for Artificial Agent

UNIT - VIII:

Agent Architecture

Agents for Information Gathering - Open Agent Architecture – Communicative Action for Artificial Agent

Text Books:

1. Frank. P. Coyle : XML, Web Services and The Data Revolution, 1st Edition, Pearson Education, 2002.(Units : 3, 4,5)
2. Jeffrey M. Bradshaw : Software Agents, 1st Edition, PHI, 2010. (Units : 6,7,8)

References:

1. M.L.Liu, : Distributed Computing, Principles and applications, 1st Edition, Pearson Education, 2008. (Units : 2,4)
2. Ramesh Nagappan, Robert Skoczylas and Rima Patel Sriganesh : Developing Java Web Services , 1st Edition, Willey Publishing, 2004.

COMPUTER NETWORKS

Course code: ACT1130

L	T	P	C
4	1	0	4

Aim:

To make the student learn the design of computer networks.

Objective:

To make student learn the basic concepts of networking and security.

UNIT – I:

Introduction: Network Topologies WAN, LAN, MAN, Applications of Computer Networks, OSI, TCP/IP and other networks models, Examples of Networks: Novell Networks Arpanet, Internet.

UNIT – II:

Physical Layer: Transmission media copper, twisted pair wireless, switching and encoding asynchronous communications; Narrow band, broad band ISDN and ATM.

UNIT – III:

Data link layer: Design issues, framing, error detection and correction, CRC, Elementary Protocol-stop and wait, Sliding Window, Slip, Data link layer in HDLC, Internet, and ATM.

UNIT – IV:

Medium Access sub layer: A LOHA, MAC addresses, Carrier sense multiple access. IEEE 802.X Standard Ethernet, wireless LANS, Bridges.

UNIT – V:

Network Layer: Virtual circuit and Datagram subnets-Routing algorithm shortest path routing, Flooding, Hierarchical routing, Broad cast, Multi cast, distance vector routing.

UNIT – VI:

Dynamic routing: Broadcast routing. Rotary for mobility. Congestion, Control Algorithms – General Principles – of Congestion prevention policies. Internetworking: The Network layer in the internet and in the ATM Networks.

UNIT – VII:

Transport Layer: Transport Services, Connection management, TCP and UDP protocols; ATM AAL Layer Protocol.

UNIT – VIII:

Application Layer: Network Security, Domain name system, SNMP, Electronic Mail; the World WEB, Multi Media.

Text Books:

1. Andrew S Tanenbaum : Computer Networks ,4th Edition. Pearson Education/PI, 2006.. (Units :1,2,3,4,5,7,8)
2. Behrouz A. Forouzan : Data Communications and Networking, 3rd Edition TMH, 2005 (Units : 6)

Reference Books:

1. S.Keshav : An Engineering Approach to Computer Networks, 2nd Edition, Pearson Education, 2001.
2. William, A. Shay : Understanding communications and Networks, 3rd Edition, Thomson Publication, 2006.

Web References:

http://www.nptel.iitm.ac.in/courses/Webcourse-contents/IIT%20Kharagpur/Computer%20networks/New_index1.html

ENTERPRISE RESOURCE PLANNING AND SUPPLY CHAIN MANAGEMENT

Course code: AIT1105

L	T	P	C
4	1	0	4

Aim:

To explore the different strategies that are adopted in managing the different resources in Business environment.

Objective:

To understand the Supply chain networks, strategies and management. To understand the different metrics that are used for supply chain performance.

UNIT - I:

Introduction to ERP: Overview-Benefits of ERP-ERP and Related Technologies-Business Process Reengineering-Data Warehousing-Data Mining-On-Line Analytical Processing-Supply Chain Management.

UNIT - II:

ERP Implementation: Implementation Life Cycle-Implementation Methodology-Hidden Costs-Organizing Implementation-Vendors, Consultants and Users-Contracts-Project Management and Monitoring.

UNIT - III:

Business Modules: Business Modules in ERP Package-Finance-Manufacturing-Human Resource-Plant Maintenance-Materials Management-Quality Management-Sales and Distribution.

UNIT - IV:

Fundamentals of Supply Chain Management: Supply Chain Networks, Integrated Supply Chain Planning, Decision Phases in Supply Chains-Process View of a Supply Chain, Supply Chain Flows, Overview of Supply Chain Models and Modeling system, Supply Chain Planning: strategic, Operational and Tactical, Understanding Supply Chain Through Process Mapping and Process Flow Chart.

UNIT - V:

SCM Strategies, Performance: Supply Chain Strategies, Achieving Strategic Fit, Value Chain, Supply Chain Drivers and Obstacles, Strategic Alliances and Outsourcing, Purchase of Aspects Of Supply Chain. Supply Chain Performance Measurement: The Balanced Score Card Approach, Performance Metrics. Planning Demand And Supply: Demand Forecasting in Supply Chain, aggregate Planning in Supply Chain, Predictable Variability.

UNIT - VI:

Planning and managing Inventories: Introduction to Supply Chain Management. Invent Theory Models: Economic Order Quantity Models, Reorder Point Models and Multiechelon Inventory Systems, Relevant Deterministic And Stochastic Inventory Models and Vendor Managed Inventory Models.

UNIT - VII:

Distribution Management: Role of Transportation in Supply Chain-Direct Shipment, Ware Housing, Cross Docking; Push Vs Pull Systems; Transportation Decisions (Mode Selection, fleet size), Market Channel Structure, Vehicle Routing Problem. Facilities Decisions in a Supply Chain. Mathematical Foundations of Distribution Management, Supply Chain Facility Layout and Capacity Planning.

UNIT - VIII:

Strategic cost Management in Supply Chain: The Financial Impacts, Volume Leveraging and Cross Docking, Global Logistics and Material Positioning, Global Supplier Development, Target Pricing, Cost Management Enablers, Measuring Service Levels in Supply Chain, Customer Satisfaction/Value/Profitability/Differential Advantages.

Text Books:

1. Alexis Leon : ERP Demystified, 2nd Edition , TMH, 2007.
2. Sunil Chopra, Peter Meindal : Supply Chain Management: Strategy, Planning, Operation, 3rd Edition, Pearson, 2002.

Reference Books:

1. Vinod Kumar, Venkata Krishna : Enterprise Resource Planning-Concepts and Planning , 2nd Edition, PHI, 2011.
2. David Simchi-Levi, Philip Kaminsky, and Edith Simchi-Levi : Designing and Managing the Supply Chain: Concepts, Strategies and Case Studies, 2nd Edition, TMH, 2003.

SOFTWARE TESTING METHODOLOGIES

Course code: ACT1119

L	T	P	C
4	1	0	4

Aim:

To explore the different testing techniques that are going to use in testing a software.

Objective:

To understand the Risk Management in software testing. To understand the testing planes and policies that are adopted for different fields like client/server computing, Data warehouse etc..

UNIT - I:

Creating an environment supportive of Software Testing: Minimizing Risks, Writing Policy for Software Testing, Economics of Testing, Building a structural Approach to Software Testing and Developing a Test Strategy.

Building the Software Testing Process: Software Testing Guidelines, Workbench Concept, Customizing the Software Testing process, Process Preparation Checklist.

UNIT - II:

Overview of the Software Testing Process: Advantages of Following Process, The Cost of Computer testing, The Seven-Step Software Testing Process, Workbench Skills.

Step 1: Organizing for Testing: Objective, Workbench, Input, Do Procedures (Task 1-5), Check Procedures, Output.

UNIT - III:

Developing the Test Plan: Overview, Objective, Concerns, Workbench, Input, Do Procedures (Task 1-6), Check Procedures, Output, and Guidelines.

UNIT - IV:

Verification Testing: Overview, Objective, Concerns, Workbench, Input, Do Procedures (Task 1-3), check Procedures, Output, and Guidelines.

UNIT - V:

Validation Testing: Overview, Objective, Concerns, Workbench, Input, Do procedures (Task 1-3), Check Procedures, Output, Guidelines.

Analyzing and Reporting Test Results: Overview, Concerns, Workbench, Input, Do Procedures (Task 1-3), Check Procedures, Output, Guidelines.

UNIT - VI:

Acceptance and Operational Testing: Overview, Objective, Concerns, Workbench, Input Procedures (Task 1-3), Check Procedures, Output, Guidelines. (491-525) Post Implementation Analysis: Overview, Concerns, Workbench, Input Procedures (Task 1-7), Check Procedures, Output, and Guidelines.

UNIT - VII:

Testing Client/Server Systems: Overview, Concerns, Workbench, Input, Do Procedures (Task 1-3), Check Procedures, Output, Guidelines.

Testing Software System Security: Overview, Objective, Concerns, Background on Testing a multiplication environment, Workbench, Input, Do Procedures (Task 1-6), Check Procedures, Output, Guidelines.

UNIT - VIII:

Testing a Data Warehouse: Overview, Concerns, Workbench, Input, Do Procedures (Task 1-3), Check Procedures, Output, Guidelines.

Testing Web-Based Systems: Overview, Concerns, Workbench, Input, Do Procedures (Task 1-4), Check Procedures, Output, Guidelines.

Text Books:

1) William E. Perry : Effective Methods for Software Testing (Includes Complete Guidelines and Checklists), 3rd Edition, Wiley India, 2006. (Units : 1 to 8)

References:

1) Elfriede Dustin : Effective Software testing (50 specific ways to improve Your Testing), 1st Edition, Pearson Education, 2006.

2) Boris Beizer : Software Testing Technique, 2nd Edition, DreamTech.press, 2009.

3) K.V.K.K. Prasad : Software Testing Tools, 1st Edition, DreamTech Press, 2007.

DATA WAREHOUSING AND DATA MINING

Course code: ACT1123

L	T	P	C
4	1	0	4

Aim:

To understand the Data Warehousing Concepts, functionalities of Data Mining and mining on different types of databases.

Objective:

1. To differntiate between DataWarehouse and OLAP architecture
2. To understand Data Mining functionalities like association , classification , clustering , prediction
3. To understand Text Mining, Web Mining

UNIT - I:

Introduction: Data mining-On what kinds of Data, Data Mining Functionalities, Classification of Data Mining systems, Data Mining Task Primitives, Integration of a Data Mining System with a Database or Data Warehouse System, Major issues in Data Mining.

UNIT - II:

Data Preprocessing: Descriptive data summarization, Data Cleaning, Data Integration and Transformation, Data Reduction, Discretization and Concept Hierarchy Generation

UNIT - III:

Data Warehouse and OLAP Technology: Multidimensional Data Model, Data Warehouse Architecture, Data Warehouse Implementation, From Data Warehousing to Data Mining.

UNIT -IV:

Data Cube Computation and Data Generalization: Efficient methods for Data Cube Computation, Further Development of Data Cube and OLAP Technology, Attribute-Oriented Induction.

UNIT - V:

Mining Frequent Patterns, Association and Correlations: Basic Concepts, Efficient and Scalable Frequent Itemset Mining Methods, Mining Various kinds of Association Rules, From Association Mining to Correlation Analysis, Constraint-Based Association.

UNIT - VI:

Classification and Prediction-1: Issues Regarding Classification and Prediction, Classification by Decision Tree Induction, Bayesian Classification, Rule-Based Classification, Classification by backpropagation.

UNIT - VII:

Classification and Prediction-2: Support Vector Machines, Association Classification, Other Classification Methods, Prediction, Accuracy and Error Measures, Evaluating the Accuracy of a Classifier or Predictor.

UNIT - VIII:

Cluster Analysis: Types of Data in Cluster Analysis, A Categorization of Major Clustering Methods, Partitioning Methods, Hierarchical Methods, Density-Based Methods, Grid-Based Methods, Model-Based Clustering Methods, Outlier Analysis.

Text Books:

1. Jiawei han & Micheline Kamber : Data Mining – Concepts and Techniques, 2nd Edition, Morgan Kaufmann Publishers, 2008.
2. Margaret H Dunham : Data Mining Introductory and Advanced Topics, 6th Edition, Pearson education, 2009.

References:

1. Arun K Pujari: Data Mining Techniques, 1st Edition, University Press, 2005.
2. Pang-Ning Tan, Michael Steinbach, Vipin Kumar: Introduction To Data Mining, 1st Edition, Pearson Education, 2009.
3. Sam Aanhory & Dennis Murray: Data Warehousing in the Real World, 1st Edition, Pearson Education, 2008.

4. Paulraj Ponnaiah: Data Warehousing Fundamentals, 1st Edition, Wiley student Edition, 2007.
5. Ralph Kimball: The Data Warehouse Life cycle Tool kit, 2nd Edition, Wiley student Edition, 2005.

OBJECT ORIENTED ANALYSIS AND DESIGN

Course code: ACT1120

L	T	P	C
4	0	0	4

Aim:

To understand the object basics and the systems development life cycle and designing methods.

Objective:

To provide an overview of object oriented systems development and its importance. To know about unified modeling language and concepts of forward and reverse engineering.

UNIT - I:

An Overview of Object Oriented Systems Development: Introduction,Two Orthogonal Views of the Software,Object Oriented Systems Development Methodology,Why an Object Orientation?(Ali Bahrami).

Why We Model: The Importance of Modeling, Principles of Modeling, Object Oriented Modeling

Introducing the UML: An overview of the UML, A Conceptual Model of the UML,Architecture, Software Development Life Cycle

UNIT - II:

Basic Structural Modeling: Classes, Relationships, common Mechanisms, and diagrams,class diagrams

UNIT - III:

Advanced Structural Modeling: Advanced classes, advanced relationships, Interfaces, Types and Roles, Packages, Object Diagrams

UNIT - IV:

Basic Behavioral Modeling: Interactions, Interaction diagrams, Usecases, Usecase diagrams, Activity Diagrams

UNIT - V:

Advanced Behavioral Modeling: Events and signals, state machines, processes and Threads, time and space, state chart diagrams.

UNIT - VI:

Architectural Modeling I: Component, Deployment, Component diagrams and Deployment diagrams

UNIT - VII:

Architectural Modeling II: Patterns and Frameworks, Collaborations, Systems and Models

UNIT - VIII:

Case Study: Bank ATM Application

Text Books:

1. Grady Booch, James Rumbaugh, Ivar Jacobson : The Unified Modeling Language User Guide, 1st Edition, Pearson Education, 2006. (Units : 1)
2. Ali Baharami : Object Oriented Systems Development using the unified modeling language, 1st Edition, TMH, 2000. (Units : 2 to 8)

Reference Books:

1. Meilir Page-Jones: Fundamentals of Object Oriented Design in UML, 1st Edition,Pearson Education, 2006.
2. Pascal Roques: Modeling Software Systems Using UML2, 1st Edition, WILEY Dreamtech, 2007.
3. Atul Kahate: Object Oriented Analysis & Design, 1st Edition, TMH, 2007.
4. Mark Priestley: Practical Object-Oriented Design with UML, 2nd Edition, TMH, 2005.
5. Craig Larman: Appling UML and Patterns: An introduction to Object – Oriented Analysis and Design and Unified Process, 3rd Edition, Pearson Education, 2007.

COMPUTER NETWORKS AND CASE TOOLS LAB

Course code: AIT1106

L	T	P	C
0	0	3	2

Aim:

To make the student learn the design of computer networks.

Objective:

- To understand the functionalities of various layers of OSI model.
- To inculcate object oriented software design.

System/ Software Requirement

- Intel based desktop PCs LAN CONNECTED with minimum of 166 MHZ or faster processor with atleast 64 MB RAM and 100 MB free disk space.
- Tools Such as Rational Rose .

Part - A

1. Implement the data link layer framing methods such as character, character stuffing and bit stuffing.
2. Implement on a data set of characters the three CRC polynomials – CRC 12, CRC 16 and CRC CCIP .
3. Implement Dijkstra 's algorithm to compute the Shortest path thru a graph.
4. Take an example subnet graph with weights indicating delay between nodes. Now obtain Routing table art each node using distance vector routing algorithm
5. Take a 64 bit playing text and encrypt the same using DES algorithm .
6. Write a program to break the above DES coding
7. Using RSA algorithm Encrypt a text data and Decrypt the same.

Part - B

1. The student should take up the case study of Unified Library application which is mentioned in the theory, and Model it in different views i.e Use case view, logical view, component view, Deployment view, Database design, forward and Reverse Engineering, and Generation of documentation of the project.
2. Student has to take up another case study of his/her own interest and do the same what ever mentioned in first problem. Some of the ideas regarding case studies are given in reference books which were mentioned in theory syllabus can be referred for some idea.

   Note : The analysis, design, coding, documentation, database design of mini project which will be carried out in 4th year should be done in object-oriented approach using UML and by using appropriate software which supports UML, otherwise the mini project will not be evaluated.
3. Take an example subnet of hosts. Obtain broadcast tree for it.

ADVANCED COMMUNICATION SKILLS LAB

CODE: AHE1103

L	T	P	C
0	0	3	2

Introduction

The introduction of English Language Lab is considered essential at III/ IV B.Tech year level. At this stage the students need to prepare themselves for their careers which may require them to listen to, read, speak and write in English both for their professional and interpersonal communication in the globalised context. This is an integrated theory and lab course to enable students use 'good' English and perform the following:

- Gathering ideas and information: organizing ideas relevantly and coherently.
- Engaging in debates.
- Participating in group discussions.
- Facing interviews.
- Writing project/research/technical reports
- Making oral presentations.
- Writing formal letters and essays.
- Transferring information from non-verbal to verbal texts and vice versa.
- Taking part in social and professional communication.

Objectives:

The Lab focuses on using computer-aided multimedia instruction for language development to meet the following targets:

- To improve the students' accuracy and fluency in English through a well-developed vocabulary, and enable them listen to English spoken at normal conversational speed by educated English speakers and respond appropriately in different socio-cultural and professional contexts.

- To enable them communicate their ideas relevantly and coherently in writing.

TEXT BOOK: LANGUAGE IN USE (Upper-Intermediate) ***by Adrian Doff and Christopher Jones, Cambridge University Publications.***

UNIT – I:

- Reading and Listening comprehension – reading for facts, guessing meanings from context, scanning, skimming, inference, critical reading
- (Lesson 2: Communicating)

UNIT – II:

- Vocabulary building, Creativity & Innovation, Using Advertisements and Music, Case studies
- Decision-Making, Time Management, Positive Thinking
- (Lesson 4: Sports and Games, Lesson 8: In The Market-Place)

UNIT – III:

- Cross-Cultural Communication- Problems of Language, Lack of Language equivalency/difficulties in using English.
- Non-Verbal Communication across different Cultures.
- (Lesson 13: Right and Wrong)

UNIT – IV:

- Literary reviews- reviewing the choicest genres like science fiction, autobiographies, travelogues, modern poetry etc.

UNIT – V:

- Group Discussion – dynamics of group discussion , Lateral thinking, Brainstorming and Negotiation skills

(Lesson 10: Life, the universe and everything & Lesson 16: World Affairs)

UNIT – VI:

- Resume writing – structure and presentation, planning, defining the career objective

- Interview Skills – concept and process, pre-interview planning, opening strategies, answering-strategies, interview through tele and video-conferencing

UNIT – VII:

- Writing essays for competitive examinations
- Media writing-writing headlines, analyzing newspaper articles
- Analytical writing

UNIT – VIII:

- Technical Report writing – Types of formats and styles, subject matter – organization, clarity, coherence and style, planning, data-collection, tools, analysis.- Progress and Project Reports.

Recommended Books:

Communications Skills

1. M. Ashraf Rizvi, "Effective Technical Communication", Tata McGraw-Hill Publishing Company Ltd., 2005.
2. Bhanu Ranjan, "An Approach to Communication Skills", DhanpatRai &Co, 2010.
3. Raymond V. Lesikar, Marie E. Flatley, "Basic Business Communication: Skills for Empowering The Internet Generation", 11th Edition, Tata McGraw-Hill. 2006.
4. Stephen Bailey, "Academic Writing- A Practical guide for students", Routledge Falmer, London & New York, 2004.
5. Dr A. Ramakrishna Rao, Dr G.Natanam & Prof S.A. Sankaranarayanan, "English Language Communication : A Reader cum Lab Manual", Anuradha Publications, Chennai, 2006.
6. Dr. Shalini Verma, "Body Language- Your Success Mantra", S. Chand, 2006.
7. Barron's, "DELTA's key to the Next Generation TOEFL Test: Advanced Skill Practice", New Age International (P) Ltd., Publishers, New Delh, Books on TOEFL/GRE/GMAT/CAT, 2011.
8. "IELTS series with CDs", CUP, 2010.

9. Daniel G. Riordan & Steven E. Pauley, "Technical Report Writing Today", Biztantra Publishers, 2005.
10. Andrea J. Rutherford, "Basic Communication Skills for Technology", 2nd Edition, Pearson Education, 2007.
11. Sunita Mishra & C. Muralikrishna, "Communication Skills for Engineers", Pearson Education, 2007.
12. Jolene Gear & Robert Gear, "Cambridge Preparation for the TOEFL" Test, 2010.
13. Meenakshi Raman & Sangeeta Sharma, "Technical Communication", OUP, 2010.
14. Nick Ceremilla & Elizabeth Lee, "Cambridge English for the Media", CUP, 2010

General Reading

1. A Reader's Digest Selection, "Classic Short Stories" (India Today group), 2004.
2. Saros Cowasjee, "More Stories from the Raj and After", HarperCollins Publishers India, 1986.
3. Girish Karnad, "Hayavadana", OUP 1976.
4. A.P.J. Abdul Kalam "Wings of Fire", Universities Press, 1999.
5. Bernard Shaw, "Apple Cart/Arms and the Man", Orient Longman, 2010.
6. Khalil Gibran, "The Prophet" - Rajapal & Sons, 2008.

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