ACADEMIC REGULATIONS

COURSE STRUCTURE

AND

DETAILED SYLLABUS

Computer Science Engineering

B.TECH. FOUR YEAR DEGREE COURSE

(Applicable for the batches admitted from 2011-2012)

VNR VIGNANA JYOTHI
INSTITUTE OF ENGINEERING AND
TECHNOLOGY
(AFFILIATED TO JNTUH)
An Autonomous Institute under JNTUH

Bachupally, Nizampet (S.O),
Hyderabad – 500090
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VNR VIGNANA JYOTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY

HYDERABAD

An Autonomous Institute under JNTUH

ACADEMIC REGULATIONS 2011 FOR B.TECH. DEGREE COURSE

(Applicable for Students admitted from the academic year 2011-2012)

1. Courses of study

The following courses of study are offered at present for specialization for the B. Tech. Course:

Branch Code	Branch
01	Civil Engineering.
02	Electrical and Electronics Engineering
03	Mechanical Engineering
04	Electronics and Communication Engineering
05	Computer Science and Engineering.
10	Electronics and Instrumentation Engineering
12	Information Technology
24	Automobile Engineering

1.1 Eligibility Criteria for Admission

The eligibility criteria for admission into engineering programmes shall be as mentioned below:

The candidate shall be an Indian National.

The candidate should have completed 16 years of age as on 31st December of the academic year for which the admissions are being conducted.

The Candidate should have passed the qualifying examination (10+2) or equivalent as on the date of admission.

Seats in each programme in the Institution are classified into **Category** A and **Category** B as per the G.Os.

1.1.1 Category – A Seats

These seats will be filled through counseling as per the rank at the Common Entrance Test (EAMCET) conducted by the State Government and State Government GOs as per other admission criteria laid down in the G.Os.

1.1.2 Category - B Seats

These seats will be filled by the institute as per the G.Os. Issued by State Government from time to time.

1.1.3 Category: Lateral Entry

He candidates shall be admitted into the Third Semester, based on the rank secured by the candidate at Engineering Common Entrance Test (ECET(FDH)) by the Convener, ECET.

2. Distribution and Weightage of Marks

i. The performance of a student in each Semester shall be evaluated subject –wise with **a maximum of 100 marks for theory and 75 marks for practical subjects.** In addition, an Industry oriented mini-project, Seminar, Comprehensive viva-voce, and Project Work shall be evaluated for **50, 50, 50 and 200 marks** respectively.

ii. For theory subjects the distribution shall be **30 marks for Internal Evaluation** and **70 marks for the End-Examination**.

For theory subjects, Two mid examinations will be conducted in each Semester as per the academic calendar. Each mid examination is evaluated for 25 marks. First mid examination should be conducted for 1 – 2 ½ Units of syllabus and the second mid examination shall be conducted for 2 ½ - 5 Units of syllabus. The mid descriptive type exam paper consists of Section-A and Section-B.

Section-A [compulsory] consists of 5 short answer questions and each carries one mark.

Section-B consists of 5 questions out of which 4 are to be answered and each question carries 5 marks. The time duration of each mid examination is 90 minutes.

Two assignments are to be given to students covering the syllabus of first mid and second Mid examinations and are evaluated for 5 marks each. .
The first assignment shall be submitted before first mid examinations and second Assignment should be submitted before second mid examination.

At the end of the Semester Internal Marks Maximum 30 for the respective subjects are allotted as follows:

(a) 25 marks for the better of the two mid term examinations
(b) 5 marks of the average of the two assignment marks

iii. For practical subjects there shall be a continuous evaluation during the Semester for **25 internal marks and 50 marks for end examination**. Out of the 25 marks for internal, **day-to-day work in the laboratory shall be evaluated for 10 marks**, and 10 marks for internal examination (two internal practical examinations will be conducted and the better of the two examinations will be taken into account) and 5 marks for laboratory record.

NOTE: A student who is absent for any assignment/Mid term examination for any reason what so ever shall be deemed to have secured 'zero' marks in the test/examination and no makeup test/examination shall be conducted.

iv For the subjects having design and / or drawing, (such as Engineering Graphics, Engineering Drawing, Machine Drawing, Production Drawing Practice, and Estimation etc., the distribution shall be 30 **marks for internal evaluation (15 marks for day-to-day work and 15 marks for internal tests (**the better of the two examinations will be taken into account**) and 70 marks for end examination.** There shall be **two internal tests** in a Semester.

iv. There shall be an **industry-oriented mini-Project**, in collaboration with an industry of their specialization, to be taken up during the vacation after III year II Semester examination. The **mini project shall be evaluated during the IV year I Semester.** The industry oriented mini project shall be submitted in report form and should be presented before a committee, which shall be evaluated for **50 marks.** The committee consists of Head of the Department, the supervisor of mini project and a senior faculty member of the department. There shall be **no internal assessment for industry oriented mini project.**

vi. There shall be a **Seminar presentation in IV year II Semester**. For the Seminar, the student shall collect the information on a specialized topic other than the project topic and prepare a technical report, showing his understanding of the topic, and submit to the department, which shall be evaluated by a Departmental committee consisting of the Head of the department, Seminar supervisor and a senior faculty member. The Seminar report shall be evaluated for **50 marks**. There shall be **no external examination for Seminar.**

vii. There shall be a **Comprehensive Viva-Voce in IV year II Semester**. The Comprehensive Viva-Voce will be conducted by a Committee consisting of the Head of the Department and three Senior Faculty members of the Department. The Comprehensive Viva-Voce is aimed to assess the student's understanding in various subjects studied during the B.Tech. course of study. The Comprehensive Viva-Voce is evaluated **for 50 marks** by the Committee. There will be **no internal assessment for the Comprehensive viva-voce.**

viii. The Project work shall be started by the student in the beginning of the IV year I Semester. Out of a total of **200 marks** for the project work, **60 marks shall be for Internal Evaluation** and **140 marks for the Semester end Examination**. The Semester end Examination (viva-voce) shall be conducted by a committee comprising of an external examiner, Head of the Department and the project supervisor. The evaluation of project work shall be conducted at the end of the IV year II Semester. **The Internal Evaluation shall be on the basis of three Seminars conducted during the IV year II Semester for 30 marks by the committee consisting of Head of the Department, project supervisor and senior faculty member of the Department and for 30 marks by the supervisor of the project.**

3. Semester end Examination

(a) Theory Courses

Each course is evaluated for 70 marks. Examination is of 3 hours duration.
Question paper contains two sections [Section-A and Section-B]

Section-A: Carries 30 marks [Five questions of one mark each, five questions of two marks each and another five questions of three marks each] which is compulsory.

Section-B: carries 40 marks consisting of six essay type questions out of which four questions to be answered, each carrying 10 marks.

Drawing related subjects, question paper contains 8 questions (atleast one question from each unit), out of which the candidate has to answer any 5 questions, each carrying 14 marks.

(b) Practical Courses

Each lab course is evaluated for 50 marks. The examination shall be conducted by the laboratory teacher and another senior teacher concerned with the subject of the same/other department/Industry. The external examiner may be appointed by the Chief Superintendent in consultation with HOD as and when required.

(c) Supplementary Examinations

Supplementary examinations will be conducted along with regular Semester end examinations. (During even Semester regular examinations, supplementary examinations of odd Semester and during odd Semester regular examinations, supplementary examinations of even Semester will be conducted).

4. Attendance Requirements

i. A student shall be eligible to appear for the Semester end examinations if he acquires a **minimum of 75% of attendance in aggregate of all the subjects** for Semester / year.

ii. Condonation of shortage of attendance in aggregate **up to 10% (65% and above and below 75%)** in a Semester may be granted by **Institute Academic Committee.**

iii. A student will not be permitted to write the end examination and hence not promoted to the next Semester unless he satisfies the attendance requirement of the present Semester, as applicable. They may seek re-admission for that Semester when offered next.

iv. Shortage of Attendance **below 65% in aggregate** shall in **NO case be condoned.**

v. Students whose shortage of attendance is not condoned in any Semester are not eligible to take their end examination of that Semester.

vi. A stipulated fee shall be payable towards condonation of shortage of attendance.

5. Minimum Academic Requirements

The following academic requirements have to be satisfied in addition to the attendance requirements mentioned in item No.**4.**

i. A student shall be deemed to have satisfied the minimum academic requirements and earned the credits allotted to each theory or practical design or drawing subject or project, if he secures **not less than 35% (25 out of 70 marks)** of **marks in the end examination and a minimum of 40% of marks in the sum total of the internal evaluation and end examination taken together.**

ii. A student shall be **promoted from II to III year** only if he fulfils the academic requirement of **37 credits from Two regular and one supplementary examinations of I year I Semester and One Regular and One Supplementary exam of I year II**

Semester, and one regular examination of II year I Semester irrespective of whether the candidate takes the examination or not.

iii. A student shall be **promoted from III year to IV year** only if he fulfils the academic requirements of total **62 credits from the following examinations,** whether the candidate takes the examinations or not.

- Three regular and Two supplementary examinations of I B Tech I Semester.
- Two regular and two Supplementary examinations for I B Tech II Semester
- Two regular and one supplementary examinations up to the end of II year I Semester.
- One regular and one supplementary examinations of II year II Semester.
- One regular examination of III year I Semester.

iv. A student shall register and put up minimum academic requirement in all 200 credits and earn the 200 credits. Marks obtained in all 200 credits shall be considered for the calculation of percentage of marks.

v. Students who fail to earn 200 credits as indicated in the course structure **within eight academic years** from the year of their admission shall **forfeit their seat** in B.Tech. course and their **admission shall stand get cancelled.**

6. Course pattern

i. The entire course of study is of four academic years. **All the I, II, III and IV years are of Semester pattern .**

ii. A student eligible to appear for the end examination in a subject, but absent or has failed in the end examination may reappear for that subject at the supplementary examination whenever conducted.

iii. When a student is detained due to shortage of attendance in any Semester, he may be re-admitted into that Semester when it is offered next, **with the academic regulations of the batch into which he gets readmitted.**

iv. When a student is detained due to lack of credits in any year, he may be eligible to be promoted or for promotion into the next year after fulfillment of the academic requirements, **with the academic regulations of the batch into which he gets admitted**

7. Award of B.Tech. Degree and Class

A student will be declared eligible for the award of the B. Tech. Degree if he/she fulfils the following academic regulations:

I. Pursued **a course of study for not less than four academic years and not more than eight academic years.**

ii. Registered for **200 credits** and secured **200 credits.**

NOTE: Students, who fail to fulfill all the academic requirements for the award of the degree within eight academic years from the year of their admission, shall forfeit their seat in B.Tech. Course.

Iii After a student has satisfied the requirements prescribed for the completion of the program and is eligible for the award of B. Tech. Degree he shall be placed in one of the following four classes:

Class Awarded	% of marks to be secured	
First Class with Distinction	70% and above	From the aggregate marks secured for the 200 Credits.
First Class	Below 70% but not less than 60%	
Second Class	Below 60% but not less than 50%	
Pass Class	Below 50% but not less than 40%	
Fail	Below 40%	

(The marks in internal evaluation and end examination shall be shown separately in the marks memorandum).

8. Withholding of Results

If the student has not paid dues to College, or if any case of indiscipline is pending against him, the result of the candidate may be withheld and he will not be allowed to go into the next higher Semester. The award or issue of the Degree may also be withheld in such cases.

9. Transitory Regulations

Students who have discontinued or have been detained for want of attendance or any other academic requirements, may be considered for readmission as and when they become eligible. They have to take up Equivalent subjects, as substitute subject in place of repetition of subjects as decided by the Institute Academic Committee.

10. Minimum Instruction Days

The minimum instruction days for each Semester shall be **90 clear instruction days.**

11. There shall be **no branch transfers** after the completion of admission process.

12. The decision of the Institute Academic Committee will be final in respect of equivalent subjects for those students who are transferred from other colleges. The procedure for permitting students to transfer from other colleges will be decided by the principal / Institute Academic Committee keeping the Government Rules concerned in view.

13. General

i. Where the words "he", "him", "his", occur in the regulations, they include "she", "her", "hers".

ii. The academic regulations 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 Principal is final.

iv. In the case of any discrepancy/ambiguity/doubt arises in the above rules and regulations, the decision of the Principal shall be final.

v. The College may change or amend any or all of the academic regulations or syllabi at any time and the changes or amendments made shall be applicable to all the students concerned with effect from the dates notified by the College.

14. Academic Regulations for B.Tech. (Lateral Entry Scheme)

(Applicable for students admitted from the academic year 2012-2013)

(i) A student shall register for all 150 credits and earn all the 150 credits. Marks obtained in all 150 credits shall be considered for the calculation of the class.

(ii) A student who fails to earn 150 credits as indicated in the course structure within **six** academic years from the year of their admission shall forfeit their seat in B.Tech. programme and their admission stands cancelled.

(iii) The same attendance regulations are adopted as that of B.Tech. Four year degree course.

(iv) A student shall be promoted from third year to fourth year only on fulfilling the academic requirements of securing 37 credits from the following examinations.

a. Two regular and one supplementary examination of II year I Semester

b. One regular and one supplementary examination of II year II Semester

c. One regular examination of III year I Semester.

Irrespective of whether the candidate appears the Semester-End examination or not as per the normal course of study and in case of getting detained for want of credits the student may make up the credits through supplementary exams of the above exams before the date of commencement of class work for IV year I Semester.

(v) Award of B.Tech. Degree and Class

After a student has satisfied the requirements prescribed for the completion of the program and is eligible for the award of B. Tech. Degree he shall be placed in one of the following four classes:

Class Awarded	**% of marks to be secured**	From the aggregate marks secured for the 150 Credits. (i.e., II year to IV year)
First Class with Distinction	70% and above	
First Class	Below 70% but not less than 60%	
Second Class	Below 60% but not less than 50%	
Pass Class	Below 50% but not less than 40%	
Fail	Below 40%	

(The marks in internal evaluation and end examination shall be shown separately in the marks memorandum)

(vi) All other regulations as applicable to B.Tech. four year degree course will hold good for B.Tech. (Lateral Entry Scheme).

Program Educational Objectives (PEOs):

The educational objectives of an engineering degree program are the statements that describe the expected achievements of graduates in their career, and also in particular, what the graduates are expected to perform and achieve during the first few years after graduation. PEOs are broad statements- Describe the career and professional accomplishments that the program prepares its graduates to accomplish.

I. To apply current industry accepted computing practices and new emerging technologies to analyze, design, implement and verify high quality computer-based solutions to real world problems and to work professionally in one or more following areas: Computer hardware and software design, computer-based systems, computer network design, system integration, maintaining the databases, and electronic automations.

II. To familiarize students with the practical implementation of the theoretical concept learned, by bringing the real world into the laboratories and to enhance the analytical skills of the students with VNR lab protocols like the design and development of PC Based Search Engine, Performance comparison of Routing protocols.

III. To provide graduates with sufficient knowledge in computer science, basic engineering and related technical disciplines like Electronic devices and circuits, Digital systems, Microprocessors and controllers and embedded systems. Graduates will have basic computational skills strengthened with underlying computer architecture and hardware specifications, and supplemented with presentation skills, design skills. Student should be able to undertake multi-disciplinary projects which span relevant engineering disciplines, and also to participate effectively in multi-disciplinary activities.

IV. To communicate effectively, work with multi-disciplinary teams, recognize and incorporate industry specific needs and constraints in their professional endeavors, and practice the Computer Engineer profession with high regard to legal and ethical responsibilities.

V. The students are trained to collect and consolidate information from various sources like National and International Journals, online forums, e-learning which is incorporated into the presentation of seminars and contributes to the literature survey for projects like Virtual Class room, and Rural banking. Funding is provided for innovative ideas of students so as to convert them into marketable product. The students are also encouraged to participate in contests such as Live Projects, project design contests etc., and also to incorporate team-work culture, finishing school and entrepreneur training.

VI. Graduates have been trained to carter to the contemporary requirements of the software industry with due focus on evolving technologies like Multimedia Applications Development, Software testing Environments, Modeling Languages, Data ware housing technologies and gain hands-on experience with respect to prevalent application areas like e-commerce, e-governance. Students augment their knowledge base through relevant certification in Information Technology.

3.1.1 Programme Outcomes (POs):

Students in the Computer Science & Engineering program should, at the time of their graduation, are in possession of:

a. Graduates acquire an ability to apply knowledge of mathematics, probability & statistics, basic sciences, computer science and engineering which apply to the fields of computer software and hardware.
b. Graduates demonstrate an ability to effectively communicate technical information in speech, presentation, and in writing.
c. Graduates project their education skills in Management Science. Accounting, Environmental Science in a global, economic, environmental, and societal context, with knowledge of contemporary issues.
d. Students will project an ability to design and develop computer programs which could be application oriented like designing Online Banking system application using UML, Development of In-House applications like alumni portal, College Management system or system oriented like Designing of Language translators, as well as to organize, analyze, and interpret data.
e. Graduates acquire an ability to use several programming languages and frame works such as C, C++, Java, SQL, DOT Net, Swings and different programming paradigms like structured programming, object-oriented programming and their implementation.
f. Engineering graduates demonstrate an ability to acquire sound knowledge in theoretical computer science, software engineering and computer organization concepts and the ability to apply that knowledge in formulating and implementing computer-based solutions to problems like Intermediate code generator, design of test case
g. Students demonstrate their skills to analyze algorithms, apply the knowledge of data structures, use discrete structures and graph theory and analyze the Time and space complexity of computer based solutions.
h. Graduates are equipped with the ability to engage in lifelong learning process, and will be able to design systems and software components like design models, code, test cases, tools and processes as per the needs of the Industry/society.
i. Graduate acquire the necessary skills to translate the theoretical concepts into working models which help them to design engineering solutions to the industrial needs with social commitment.
j. Graduates showcase the knowledge of computer engineering practices in a variety of professional applications covering legal, business, scientific and general utilities.
k. Graduates demonstrate an ability to cultivate confidence for self-learning and aptitude so as to face the global challenges from a higher level of education and research.
l. To substantiate contemporary knowledge and technological developments by being a continuous learner

VNR Vignana Jyothi Institute of Engineering and Technology
B. TECH Computer Science Engineering

I YEAR I SEMESTER COURSE STRUCTURE

Subject Code	Subject Name	Lectures	T/P/D	Credits
R11MTH1101	Mathematics – I	3	1	3
R11PHY1101	Engineering Physics-I	3	0	3
R11CHE1101	Engineering Chemistry	3	0	3
R11HAS1101	English	3	0	3
R11CSE1101	Computer Programming	3	0	3
R11EIE1126	Basic Electrical & Electronics Engineering	4	0	4
R11HAS1201	English Language Communication Skills Laboratory-1	0	3	2
R11CSE1201	Computer Programming Laboratory	0	3	2
R11MED1202	Workshop Practice	0	3	2
Total		**19**	**10**	**25**

I YEAR II SEMESTER COURSE STRUCTURE

Subject Code	Subject Name	Lectures	T/P/D	Credits
R11MTH1102	Mathematics – II	3	1	3
R11MTH1104	Numerical Analysis and Linear Programming	3	1	3
R11PHY1102	Engineering Physics-II	3	0	3
R11CED1109	Environmental Studies	3	0	3
R11CSE1102	Data Structures	3	0	3
R11MED1105	Engineering Drawing	3	3	4
R11EPC1201	Engineering Physics & Engineering Chemistry Laboratory	0	3	2
R11CSE1202	Data Structures Laboratory	0	3	2
R11HAS1202	English Language Communications Skills Laboratory-II	0	3	2

Total	**18**	**14**	**25**

VNR Vignana Jyothi Institute of Engineering and Technology
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II YEAR I SEMESTER **COURSE STRUCTURE**

Subject Code	Subject Name	Lectures	T/P/D	Credits
R11MTH1106	Probability and Statistics	3	**1**	**3**
R11CSE1103	Computer Organization	4	**0**	**4**
R11ITD1118	Advanced Data Structures	4	**1**	**4**
R11MTH1107	Mathematical Foundation for Computer Science	3	**0**	**3**
R11CSE1117	Principles of Programming Languages	3	**1**	**3**
R11ITD1119	Digital Logic Design	4	**0**	**4**
R11ITD1206	Advanced Data Structures Laboratory	0	**3**	**2**
R11EIE1209	Basic Electrical and Electronics Laboratory	0	**3**	**2**
Total		**21**	**9**	**25**

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B. TECH Computer Science Engineering

II YEAR II SEMESTER **COURSE STRUCTURE**

Subject Code	Subject Name	Lectures	T/P/D	Credits
R11CSE1118	Computer Graphics and Animation	4	**0**	**4**
R11CSE1108	Operating Systems	3	**1**	**3**
R11HAS1102	Business Economics and Financial Analysis	4	**0**	**4**
R11CSE1119	Design and Analysis of Algorithms	3	**1**	**3**
R11CSE1110	Database Management Systems	4	**0**	**4**
R11CSE1120	Software Engineering	3	**1**	**3**
R11CSE1203	Operating Systems Laboratory	0	**3**	**2**
R11CSE1208	Database Management Systems Laboratory	0	3	2
Total		**21**	**9**	**25**

VNR Vignana Jyothi Institute of Engineering and Technology
B. TECH Computer Science Engineering

III YEAR I SEMESTER **COURSE STRUCTURE**

Subject Code	Subject Name	Lectures	T/P/D	Credits
R11CSE1104	Formal Languages and Automata Theory	4	0	4
R11ECE1108	Microprocessors and Microcontrollers	4	0	4
R11CSE1105	Artificial Intelligence	4	0	4
R11CSE1114	Object Oriented Programming	4	0	4
Elective – I				
R11CSE1109	Advanced Computer Architecture	3	1	3
R11CSE1111	Distributed Computing			
R11ITD1123	Information Retrieval Systems			
R11CSE1204	Object Oriented Programming Laboratory	0	3	2
R11ECE1204	Microprocessors and Microcontrollers Laboratory	0	3	2
R11HAS1204	Advanced English Language Communication Skills Laboratory	0	3	2
Total		**18**	**10**	**25**

VNR Vignana Jyothi Institute of Engineering and Technology
B. TECH Computer Science Engineering

III YEAR II SEMESTER **COURSE STRUCTURE**

Subject Code	Subject Name	Lectures	T/P/D	Credits
R11CSE1113	Computer Networks	3	1	3
R11CSE1123	Data Warehousing and Data Mining	4	0	4
R11ITD1120	Linux Programming	4	1	4
R11CSE1107	Compiler Design	4	1	4
R11CSE1121	Object Oriented Analysis and Design	4	0	4
R11CSE1206	Data Mining Laboratory	0	3	2
R11ITD1207	Linux Programming Laboratory	0	3	2
R11CSE1205	Object Oriented Analysis and Design and Compiler Design Laboratory	0	3	2
Total		**19**	**12**	**25**

*** T/P/D: Tutorial/Practical/Drawing Practice**

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B. TECH Computer Science Engineering

IV YEAR I SEMESTER **COURSE STRUCTURE**

Subject Code	Subject Name	Lectures	T/P/D	Credits
R11CSE1122	Software Testing Methodologies	3	1	3
R11ITD1102	Web Technologies	3	1	3
R11CSE1124	Visual Programming Techniques	3	1	3
R11ITD1121	Network Security	3	1	3
R11HAS1103	Management Science	4	0	4
Elective – II				
R11CSE1112	Mobile Computing	3	1	3
R11CSE1125	Distributed Data Bases			
R11CSE1126	Soft computing			
R11ITD1203	Web Technologies Laboratory	0	3	2
R11CSE1207	Visual Programming Techniques Laboratory	0	3	2
R11CSE1301	Industry Oriented Mini Project	0	8	2
Total		**19**	**19**	**25**

VNR Vignana Jyothi Institute of Engineering and Technology
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IV YEAR II SEMESTER **COURSE STRUCTURE**

Subject Code	Subject Name	Lectures	T/P/D	Credits
R11ITD1122	Software Project Management	3	1	3
	Elective – III	3	1	3
R11CSE1115	Semantic Web and Social Networks			
R11ECE1113	Digital Image Processing			
R11ITD1124	Business Intelligence Applications			
R11CSE1106	Introduction to Mainframe Systems			
	Elective – IV	3	1	3
R11CSE1116	Ad hoc and Sensor Networks			
R11ITD1125	Building Enterprise Applications			
R11ITD1126	E-Commerce			
R11ITD1127	Storage Area Networks			
R11CSE1302	Seminar	0	0	2
R11CSE1303	Comprehensive Viva	0	3	2
R11CSE1304	Project Work	6	12	12
Total		**15**	**18**	**25**

*** T/P/D: Tutorial/Practical/Drawing Practice**

I Year B.Tech CSE & IT – I Sem

L	T/P/D	C
3	1	3

(R11MTH1101) MATHEMATICS – I
(Advanced Calculus)

Course Objectives:

1. Understand Taylor's theorem and its application to maxima and minima of f(x,y)
2. Understand the process of curve sketching
3. Understand multiple integrals and its applications
4. Apply the integral theorems of vector calculus.

Course Outcomes:

1. Solve problems involving the maxima and minima of f(x,y).
2. Apply the curve tracing concepts to find arc length of curves, surface area, volume of solids of revolution.
3. Evaluate the multiple integrals using appropriate change of variables.
4. Verify the integral theorems.

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Mathematics – I	CO-1	2											
	CO-2	2	2										
	CO-3	2	2										1
	CO-4	2	2										1

UNIT I

Elementary analysis

Sequences and series - convergence and divergence, ratio test, comparison test, integral test, Cauchy's root test, Raabe's test (statements only for the tests), and absolute and conditional convergence.

Mean value theorems (statements only) - Rolle's theorem, Lagrange's theorem, Cauchy's theorem, and generalized mean value theorem (Taylor's Theorem).

UNIT II

Functions of several variables

Partial differentiation; Functional dependence; Jacobian; Maxima and Minima of functions of two variables with constraints and without constraints.

Radius of curvature; Centre and circle of curvature – evolutes and envelopes.

UNIT III

Improper integrals and special functions

Improper Integrals; Beta, Gamma, and Error functions - Properties and simple applications.

UNIT IV

Curve tracing, applications of integration and multiple integrals

Curve tracing – Cartesian, polar, and parametric curves; Applications of integration to lengths, volumes and surface areas in cartesian and polar coordinates.

Multiple integrals - double and triple integrals, change of variables, and change of order of integration.

UNIT-V

Vector calculus

Introduction to vector and scalar functions; gradient, curl, divergence, and their related properties of sums and products; Laplacian and second order operators; Vector integration - line integral, work done, potential function; Area, surface, and volume integrals; Statements of Vector integral theorems and their verification (without proofs) - Green's theorem, Stoke's theorem, and Gauss divergence theorem.

TEXT BOOKS

1. Calculus and Analytic Geometry - Thomas and Finney, 9th edition, *Pearson Education*.

REFERENCES

1. Elementary Analysis: The Theory of Calculus - Kenneth Ross, *Springer.*
2. Principles of Mathematical Analysis - Walter Rudin, 3rd edition, *Paperbac,* 1976.
3. Advanced Engineering Mathematics - Erwin Kreyszig, 8th edition, *John Wiley*.
4. Calculus - Tom M. Apostol, Volume1 and Volume 2, 2nd edition, *John Wiley,* 2003.
5. Schaum's Outline of Vector Analysis - Murray R. Spiegel, 2nd edition, *Tata McGraw Hill* 2011.

I Year B.Tech CSE, IT – I Sem	L	T/P/D	C
	3	0	3

(R11PHY1101) ENGINEERING PHYSICS-I

Course Objectives:

1. To supplement and enhance the basic concepts in Physics essentially required in the study of materials as well as interaction of light with matter, interaction of light with matter through physical phenomena like interference, diffraction and polarization.
2. To know and understand some important applications of lasers and optical fibers.
3. To learn the importance of wave and particle nature of light and to understand the behavior of an electron in one dimensional potential box.
4. To understand the effect of temperature on Fermi Dirac Distribution Function and also learn the behavior of an electron in a periodic potential, the new concept of Effective mass of an electron and to know the classification of materials into conductors, semiconductors and insulators.

Course Outcomes:

1. Understand the Phenomenon of Interference, Diffraction& Polarization.
2. Learn the principle, working, construction and energy mechanism of various lasers and their applications Explain the light signal propagation and attenuation through optical fiber.
3. Understand the differences between particle and wave nature, energy states in one dimensional potential box and also the Consequences of Heisenberg's Uncertainty principle.
4. Understand the one dimensional Schrodinger's wave equation and the effect of temperature on Fermi-Dirac Distribution, Kronig Penny model.

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Engineering Physics-I	CO-1				2								
	CO-2						2	1					
	CO-3												1
	CO-4						2	1					

UNIT –I

INTERFERENCE AND DIFFRACTION: Superposition principle, resultant amplitude, coherence, methods to obtain coherent sources, interference, Young's double slit experiment, interference in thin films by reflection, Newton's rings Experiment, Distinguish between Fraunhofer and Fresnel diffraction, diffraction at single slit (Qualitative and Quantitative(Phasors approach)), double slit, circular aperture, and multiple slits (grating)(Qualitative Approach). Resolution of spectral lines, Rayleigh criterion, resolving power of grating and telescope.

UNIT - II

POLARIZATION: Polarization phenomenon, Brewster's Law and Malus law, examples, types of polarization, double refraction, Nicol prism, Quarter and Half wave plates

LASERS: Characteristics of Lasers – Spontaneous and Stimulated Emission of radiation, meta stable state, population inversion, lasing action, Einstein's coefficients and relation between them — Ruby Laser – Helium-Neon Laser – Carbon dioxide laser - Semiconductor Laser – Applications of lasers.

UNIT - III

FIBER OPTICS: Principle of optical fiber – Acceptance angle and acceptance cone – Numerical aperture – - Types of fibers and refractive index profiles – Qualitative analysis of attenuation in optical fibers –Application of optical fibers.

CRYSTAL STRUCTURES: Space lattice – Unit cell – Lattice parameter – Crystal systems – Bravais lattices Atomic radius – Co-ordination number - Structures and Packing fractions of Simple Cubic – Body Centered Cubic – Face Centered Cubic crystals – Hexagonal closed packed crystals - Structures of diamond, NaCl.

UNIT - IV

DIRECTIONS, PLANES AND X-RD: Miller Indices for Crystal planes and directions – Inter planar spacing of orthogonal crystal systems –Diffraction of X-rays by crystal planes and Bragg's law– Laue method – Powder method – Applications of X-ray diffraction

BONDING IN SOLIDS: Force and energy between two approaching atoms, primary and secondary bonds, binding energy and cohesive energy, Madelung constant, cohesive energy and Madelung constant for NaCl crystal.

DEFECTS IN SOLIDS: Imperfections in crystals – Point defects (Vacancies, Interstitial and Impurities) Schottky and Frenkel defects – (with mathematical treatment)- Line imperfections – Edge and Screw dislocation – Burger vector – Surface defects and volume defects (Qualitative Treatment).

UNIT - V

SURFACE PHYSICS: Surface Electronic structure(work function, thermionic emission, surface states, tangential surface transport), Electron Microscope, Scanning Tunneling Microscope.

SCIENCE & TECHNOLOGY OF NANOMATERIALS:Origin of nanotechnology – (Basic principles of Nanoscience & Technology) surface to volume ratio, quantum confinement – Fabrication of nano materials Bottom up fabrication: sol-gel & combustion methods – Top down fabrication: CVD& PVD methods– Characterization (XRD & TEM) - Applications of nanotechnology.

TEXT BOOKS:

(1) Introduction to Solid State Physics by Charles Kittel : John Wiley & Sons
(2) Physics vol.2, by Halliday, Resnick and Krane; John Wiley & Sons
(3) Applied Physics by P.K.Mittal, IK International Publishing House (P) Ltd.
(4) Optics by Ghatak and Thyagarajan, Tata Mc Graw

REFERENCE BOOKS:

(1) Engineering Physics by R.K.Gaur and S.L.Gupta; Dhanpat Rai and Sons
(2) Solid State Physics by S.O.Pillai
(3) Engineering Physics by M Chandra Shekar and P. Appala Naidu, VGS Book links.
(4) Solid State Physics by A.J.Dekker; Macmillan Publishers India Ltd.
(5) Solid State Physics by N.W.Ashcroft & N.David Merwin. Thomson Learning
(6) Engineering Physics by G Sahashra Buddhe; University Press
(7) Elements of Solid State Physics by J.P.Srivatsva, PHI Publishers
(8) Introduction to Optical Communication by G. Keiser
(9) Fundamentals of Molecular Spectroscopy by Banwell, Tata McGraw Hill

I Year B.Tech CSE & IT – I Sem **L T/P/D C**
3 0 3

(R11CHE1101) ENGINEERING CHEMISTRY

Course Objectives:

1. Understand electrochemistry which deals with the utilization of electrical energy of an external source for bringing about a physical or chemical change.
2. Knowledge of "Corrosion engineering education" and Usage of polymers in modern world as an integral part of every human's life.
3. Knowledge of purification techniques and various applications of soft water in industries.
4. Usage of nanomaterial's as emerging scientific components with amazing potential applications in various fields.

Course Outcomes:

1. Visualize the chemical applications of electricity.
2. Prevention of corrosion of metals and applications of polymers from domestic articles to sophisticated scientific and medical instruments.
3. Benefits of treated water as source in steam generation and other fields like production of steel, paper, textiles, atomic energy etc.
4. The applicability and greater efficiency of using a material at nanoscale in different engineering fields.

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Engineering Chemistry	CO-1							1					
	CO-2						1	2					
	CO-3							2					
	CO-4				2		1	2					

UNIT- I

Electrochemical cells and Batteries:

Cell representation, Galvanic cells, Single electrode potential, standard electrode potential, Electrochemical series, Nernst equation, Concentration cells. Reference electrodes – (Hydrogen, Calomel, Quinhydrone electrode), Ion Selective Electrodes (Glass Electrode & Flouride Electrode), Numerical problems.

Batteries: Primary and secondary cells, (lead-Acid cell, Ni-Cd cell, Lithium cells). Applications of batteries.Fuel cells – Hydrogen – Oxygen fuel cells, Advantages of fuel cells. Solar cells: working, principle and applications.

UNIT- II

Corrosion and its control:Introduction, causes and different types of corrosion and effects of corrosion. Theories of corrosion – Chemical, Electrochemical corrosion, corrosion reactions, factors affecting corrosion – Nature of metal – galvanic series, over voltage, purity of metal, nature of oxide film, nature of corrosion product. Nature of environment -effect of temperature, effect of pH, Humidity, effect of oxidant.

Corrosion control methods – cathodic protection, sacrificial anode, impressed current cathode.

Surface coatings – methods of application on metals - hot dipping, galvanizing, tinning, cladding, electroplating -Organic surface coatings – paints constituents and functions.

UNIT- III

Polymers:

III a).Polymers: Introduction**,** Types of Polymerization, Plastics: Thermoplastic resins & Thermoset resins. Compounding & fabrication of plastics, preparation, properties, engineering applications of: polyethylene, PVC, PS, Teflon, Bakelite, Nylon.

III b).Rubber: Characteristics and uses Rubber –Natural rubber, vulcanization. Elastomers – Buna-s, Butyl rubber, Thiokol rubbers, Fibers – polyester, Fiber reinforced plastics (FRP), applications.

UNIT- IV

Water: Introduction, Hardness: Causes, expression of hardness – units – types of hardness, estimation of temporary & permanent hardness of water, numerical problems. Boiler troubles – Scale & sludge formation, caustic embrittlement, corrosion, priming & foaming Softening of water (Internal & external treatment-Lime soda, Zeolite, Ion exchange process and Numerical problems) Reverse osmosis, Electro dialysis.

UNIT- V

Nano-materials: Introduction, preparation and applications of nanomaterials with special reference to Carbon nano tubes.

Insulators: Classification of insulators, characteristics of thermal & electrical insulators and applications of Superconductors (Nb-Sn alloy, $YBa_2 Cu_3 O_{7-x}$).

TEXT BOOKS

1. Text book of Engineering Chemistry by Y.Bharathi Kumari, Jyotsna Cherukuri, VGS Book Links, Vijayawada.
2. Engineering Chemistry by P.C.Jain & Monica Jain, Dhanpatrai Publishing Company.

REFERENCES

1. Text book of Engineering Chemistry by S.S. Dhara & Mukkanti, S.Chand & Co. New Delhi.
2. Text book of Engineering Chemistry by C.P.Murthy, C.V.Agrawal, Naidu, B.S.Publications,Hyderabad.
3. Text book of Engineering Chemistry by R.Gopalan,D.Venkappayya,Sulochana Nagarajan, Vikas Publishers.

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I Year B.Tech CSE, IT – I Sem **L T/P/D C**
3 0 3

(R11HAS1101) ENGLISH

Course Objectives:

1. To equip the students with all the LSRW skills for advanced writing and speaking.
2. To equip the students with basic grammar, infrastructural patterns and grammatical constructions required in technical writing as well as oral presentation
3. To acquaint the students with the writing process in preparation for academic and workplace writing.
4. To acquaint the students with the reading process in preparation for academic reading.

Course Outcomes:

1. Comprehend technical writing produced in the engineering profession
2. Understand the writing process and create logical paragraphs
3. Use infrastructural patterns in writing and speaking

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
English	CO-1									2	2		2
	CO-2									2	2		2
	CO-3									2	2		2

Introduction

This is the age of information and communication technologies. Engineers and technical professionals need to convey technical information in English for various purposes.

Besides learning general English as an international language, engineering students need to be equipped with adequate writing ability so that they can communicate technical information clearly on at least a basic level. A good English writing proficiency can be a contributing factor to professional recognition and career prospects. This course teaches those writing strategies that scientists, engineers, and others will need in order to write successfully on the job. It initiates the students into Technical Writing. The purposes of technical writing are to inform and persuade. This program aims to train students in writing clear, concise and effective English.

This Syllabus is therefore, a Pragmatic English Writing Program for engineering students with intermediate proficiency. The program covers a syllabus outline and instructional approaches on basic writing skills with particular reference to technical writing.

Objectives:

i) To equip the students with all the LSRW skills for advanced writing and speaking.

ii) To equip the students with basic grammar, infrastructural patterns and grammatical constructions required of in technical writing.

iii) To acquaint the students with the writing process, beginning with paragraph writing. This would prepare them for academic and workplace writing.

iv) Equip the students with Oral Communication Skills.

Methodology

A Task-based, process oriented methodology will be used by the teachers to give a practical orientation to the teaching of language. An inductive approach will be used to demonstrate the use of language in context. This should enable the students to internalize the language structures and vocabulary used in context. Students will be exposed to numerous examples and ample practice will be given in the contextual use of language structures.

Syllabus Outline

Unit I : Prose

1. Heaven's Gate by Pico Iyer
2. The Connoisseur by Nergis Dalal

Unit II : Basic Grammar

i) Common Errors
ii) Subject-Verb Agreement
iii) Adverbs
iv) Transitional elements
v) Use of Articles and Prepositions
vi) Conjunctions
vii) pronoun reference

Unit III Reading and Writing Skills

i) Reading Comprehension
ii) Paragraph Writing
iii) Letter Writing
iv) Memo Writing
v) Words often Confused
vi) Synonyms and Antonyms
vii) One Word Substitutes
viii) Prefixes and Suffixes
ix) Idioms and Phrases

Unit IV : Prose

1. The Cuddalore Experience by Anu George
2. The Odds Against Us by Satyajit Ray

Unit V : Technical Writing Component

A. Definition of a Technical Term
B. Description of a Mechanism
C. Description of a Technical Process
D. Classification

E. Cause and Effect
F. Comparison and Contrast
G. Analogy

Prescribed Text Books

1. ***Effective Technical Communication*** Ashraf Rizv
2. ***Technical Communication : Principles and Practices*****,**M. Raman and S. Sharma, OUP, 2004. *(Indian Edition)*

References

1. Technical Writing Process and Product.Gerson Sharon J. and Steven Gerson : 3rd edition, New Jersey: Prentice Hall 1999
2. Composition Practice, Book Blanton, L.L. 1993; 4 ,Second Edition, Heinle & Heinle Publishers, pp. 54
3. A course in Analytical Writing for Science and Technology,Georges, T.M. 1996 http://www.mspiggy.etl.noaa.gov/write/
4. Oxford English for Electrical and Mechanical Engineering,Glendinning, E.H. and Glendinning, N. 1995; Oxford University Press, pp.28,68,83
5. Summary Writing and Sentence Structure in the Advanced ESL Classroom, Greaney, G.L. 1997; Less is More: The Internet TESL Journal, Vol.III, No.9 http://iteslj.org/Techniques/Greaney-Writing.html
6. A Handbook for Technical Communication,Neufeld, J.K. 1987; Prentice-Hall, Inc. pp.20,65-68
7. Principles of Course Design for Language Teaching, Yalden, J. 1987; Cambridge University Press
8. David F. Beer and David McMurrey**,** Guide to Writing as an Engineer, 2nd ed., Wiley, 2004, ISBN: 0471430749.
9. Dale Jungk, Applied Writing for Technicians, McGraw-Hill, 2005, ISBN 0-07-828357-4.
10. Diane Hacker, Pocket Style Manual**,** Bedford/St. Martin's, 2003, ISBN: 0312406843.

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I Year B.Tech CSE & IT – I Sem	**L**	**T/P/D**	**C**
	3	**0**	**3**

(R11CSE1101) COMPUTER PROGRAMMING

Course objectives

1. Learn how to write modular, efficient and readable C programs
2. Declare and manipulate single and multi-dimensional arrays of the C data types.
3. Describe the techniques for creating program modules in C using functions and recursive functions.
4. Create and manage derived data types and perform operations on files.
5. Utilize pointers and dynamic memory allocation functions to efficiently solve problems

Course Outcomes:

1. Understand the fundamentals of C programming.
2. Choose the loops and decision making statements to solve the problem.
3. Usage of different derived data types and the concepts of files
4. Implement different c concepts in problem solving.

Course name	**Mapping of CO's with PO's**												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Computer Programming	CO-1	2								2	2		1
	CO-2		2	2				2		1	1		1
	CO-3	2	2	2	1				1	1	1		1
	CO-4	2	2	2	1						1		1

UNIT- I

Introduction to Computers – Computer Systems, Computing Environments (DOS/Linux), Computer languages, Linux commands , creating and running programs, Software Development Methods, Algorithms, Pseudo code, flow charts, applying the software development method.

UNIT - II

Introduction to C Language – History, Simple C Programme, Identifiers, Basic data types, Variables, Constants, type qualifiers, Input / Output, Operators. Expressions, Precedence and Associativity, Expression Evaluation, Type conversions, Bit wise operators, Statements, Simple C Programming examples.
Selection Statements – if and switch statements, Repetition statements – while, for, do-while statements, Loop examples, other statements related to looping – break, continue, go to, C Programming examples.

UNIT - III

Designing Structured Programs, Functions- basics, user defined functions, inter function communication, Standard functions, Scope, Storage classes-auto, register, static, extern, scope rules, recursive functions, example C programs.
Arrays – Basic concepts, one-dimensional arrays, two – dimensional arrays, multidimensional arrays, arrays to functions, C program examples.
Strings – Basic concepts, String Input / Output functions, arrays of strings, string handling functions, strings to functions, C programme examples.

UNIT - IV

Derived types – Structures – Basic concepts, nested structures, arrays of structures, structures and functions, unions, typedef, bit fields, enumerated types, C programming examples.
Pointers – Basic concepts, pointers and functions, pointers and strings, pointers and arrays, pointers and structures, self referential structures , example C programs.

UNIT - V

File I/O – Basic concepts, text files and binary files, file input / output operations, file status functions (error handling), C program examples.
Preprocessor Directives, Dynamic Memory Allocation, Command-Line Arguments.

TEXT BOOKS:

1. C programming A Problem-Solving Approach by Behrouz A.Forouzan,E.V.Prasad,Richard F.Gilberg
2. The C Programming Language by Brian W. Kernighan, Dennis M. Ritchie

REFERENCES:

1. Let Us C Yashavant kanetkar BPB
2. C How to Program Paul Deitel and Harvey Deitel , PH
3. Absolute beginner's guide to C, Greg M. Perry, Edition 2,Publisher: Sams Pub., 1994

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I Year B.Tech CSE & IT– I Sem	**L**	**T/P/D**	**C**
	4	**0**	**4**

(R11EIE1126) Basic Electrical & Electronics Engineering

Course Objectives:

1. To understand the basic concepts of circuit analysis
2. To analyze electrical circuits using network theorems and analysis of AC circuits
3. To learn principle of operation, construction and characteristics of various electronic devices.
4. To know about different applications of these devices

Course Outcomes:

1. To apply basic network theorems for solving electrical networks.
2. Analyze various Electrical networks using Kirchhoff's laws.
3. To use the electronic devices in real time applications
4. Calculate h-parameters of BJT under various configurations.

Course name	**Mapping of CO's with PO's**												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Basic Electrical & Electronics Engineering	CO-1	2	2	1	1		2	2					
	CO-2	2	2	1	1		2	2					
	CO-3	1	1	2	2		2	2					
	CO-4	2	2	2	2		2	2					

UNIT I: Introduction to Electrical Engineering:

Basic circuit components, Types of elements, types of sources, Ohm's law, Kirchhoff's laws, Simple problems. resistive networks, inductive networks, capacitive networks, series, parallel circuits, star delta and delta star transformation, Network theorems- Super position, Thevenins's, Norton's, Maximum power transfer theorems and simple problems.

UNIT II: Alternating Quantities:
Principles of ac voltages, waveforms and basic definitions, root mean square and average values of alternating currents and voltages, form factor and peak factor, phasor representation of alternating quantities, the J operator and phasor algebra, analysis of ac circuits with single basic network element, single phase series circuits.

UNIT III: Diode: characteristics, Rectifiers and Filters:
Qualitative theory of p-n junction, p-n junction as a diode, diode equation, v-i characteristics, temperature dependence of VI characteristics, Ideal versus practical -resistance levels (static and dynamic), transition and diffusion capacitances, diode equivalent circuits, p-n junction as a rectifier , half wave, full wave and Bridge rectifiers. Filters **:** Inductor, Capacitor, L-section and π section filters. ripple factor. Breakdown mechanisms in pn junction diodes, zener diode characteristics, simple circuit of regulator using zener diode.

UNIT IV: Bipolar Junction Transistor
Junction transistor, Transistor current components, transistor as an amplifier, Transistor Construction, BJT operation, BJT symbol, Configurations: Common Base, Common Emitter and Common Collector.
Biasing and Stabilization**:**
Operating point, The DC and AC load lines, Need for biasing, Fixed bias, collector feedback bias, Emitter feedback bias, Collector-Emitter feedback bias, Voltage divider bias, Bias stability, Stabilization factors(S,S',S") definitions.

UNIT V: Field Effect Transistor:
The junction FET, Construction and principal of operation, symbol, Pinch off voltage, Drain and Transfer characteristics, The JFET small signal model. MOSFET principal of operation, symbol, MOSFET Characteristics in Enhancement and Depletion Mode.

TEXT BOOKS:
1. Basic Electrical Engineering by M.S.Naidu and S.Kamakshiah – TMH
2. Electronic Devices and Circuits by J.Millman and C.C.Halkias, Tata McGraw Hill, 1998.

REFERENCES:
1. Electronic Devices and Circuits by A.P. Godse & U.A.Bakshi, Technical Publications.
2. Electrical Circuit Theory and Technology – by John Bird, Elsevier Science & Technology, 2007
3. Theory and Problems of Basic Electrical Engineering by D.P.Kothari & I.J.Nagrath PHI.
4. Electrical Circuit Analysis-by Sudhakar & Shyam Mohan, TMH

I Year B.Tech CSE & IT – I Sem **L T/P/D C**
0 3 2

(R11HAS1201) ENGLISH LANGUAGE COMMUNICATION SKILLS LABORATORY-I

The English language Communication Skills Lab aims to provide practice in all the four skills of LSRW, and provide ample practice in listening and speaking skills.

Course Objectives

1. Provide ample practice in LSRW skills and train the students in oral presentations, public speaking, role play and situational dialogue.
2. Provide practice in vocabulary usage, grammatical construction, structural patterns, and improve comprehension abilities in the students.
3. Train students to use neutral pronunciation through phonetic sounds, symbols, stress and intonation.
4. Enable students to transfer information from verbal to graphic representation and vice versa.

Course Outcomes:

1. Comprehend spoken and written discourse.
2. Speak fluently with neutral pronunciation and exhibit interpersonal skills.
3. Write accurately, coherently and lucidly making appropriate use of words depending on context and present data clearly.
4. Introduce oneself to people and be able to speak extempore.

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
English Language Communication Skills Laboratory-1	CO-1									2	2		2
	CO-2									2	2		2
	CO-3									2	2		2
	CO-4									2	2		2

Syllabus for Lab Sessions

Unit 1
Multimedia Lab

1. Phonetics
2. Listening Comprehension
3. Vocabulary Lesson 1

Oral Communication Skills Lab: Self Introduction ; E-mail

Unit 2
Multimedia Lab
1. Grammar ---Nouns and Pronouns; The Present Tense
2. Vocabulary Lesson 2
3. Listening Skills

Oral Communication Skills Lab: Role Play/ Situational Dialogues

Unit 3 Multimedia Lab
1. Telephoning Skills
2. Grammar --- Articles; The Past Tense
3. Vocabulary Lesson 3

Oral Communication Skills Lab: JAM/ Short Talk

Unit 4
Multimedia Lab
1. Grammar ---- Concord; The Future Tense
2. Vocabulary Lesson 4
3. Listening Comprehension

Oral Communication Skills Lab: Information Transfer

Unit 5 Multimedia Lab
1. Grammar --- Adjectives, adverbs, conjunctions
2. Vocabulary -- Lesson 5

Oral Communication Skills Lab : Presentation Skills
Multimedia Lab Requirements
The English Language Lab shall have two parts:
i) **The Computer aided Language Lab** for 60 students with 60 systems, one master console, LAN facility and English language software for self- study by learners.
ii) **The Communication Skills Lab** with movable chairs and audio-visual aids with a P.A System,
a T. V., a digital stereo –audio & video system and camcorder etc.

System Requirement (Hardware component):
Computer network with Lan with minimum 60 multimedia systems with the following specifications:
iv) P – IV Processor
a) Speed – 2.8 GHZ

b) RAM – 512 MB Minimum
c) Hard Disk – 80 GB
v) Headphones of High quality

5. Suggested Software:
The software consisting of the prescribed topics elaborated above should be procured and used.

Suggested Software:

- **Clarity Pronunciation Power** – part II
- **Oxford Advanced Learner's Compass**, 7th Edition
- **DELTA's key to the Next Generation TOEFL Test: Advanced Skill Practice.**
- **Lingua TOEFL CBT Insider**, by Dreamtech
- **TOEFL & GRE** (KAPLAN, AARCO & BARRONS, USA, Cracking GRE by CLIFFS)

Multimedia Lab Requirements
Minimum Requirement:
The English Language Lab shall have two parts:
i) **The Computer aided Language Lab** for 60 students with 60 systems, one master console, LAN facility and English language software for self- study by learners.
ii) **The Communication Skills Lab** with movable chairs and audio-visual aids with a P.A System,
a T. V., a digital stereo –audio & video system and camcorder etc.

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a) Speed – 2.8 GHZ
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Clarity Pronunciation Power – part II
Oxford Advanced Learner's Compass, 7th Edition
DELTA's key to the Next Generation TOEFL Test: Advanced Skill Practice.
Lingua TOEFL CBT Insider, by Dreamtech
TOEFL & GRE (KAPLAN, AARCO & BARRONS, USA, Cracking GRE by CLIFFS)

I Year B.Tech CSE & IT – I Sem

L	T/P/D	C
0	3	2

(R11CSE1201) COMPUTER PROGRAMMING LABORATORY

Course objectives

1. Gain a working knowledge of C programming to write modular, efficient and readable C programs by Identifying the structural elements and layout of C source code.
2. Declare and manipulate single and multi-dimensional arrays of the C data types and derived data types like structures, unions.
3. Use functions from the portable C library and to describe the techniques for creating program modules using functions and recursive functions.
4. Manipulate character strings in C programs. Utilize pointers to efficiently solve problems, Allocate memory to variables dynamically and Perform operations on text and binary files.

Course Outcomes:

1. Able to write, compile and debug programs in C language using both Linux and windows environment .
2. Implement appropriate decision making statements and derived data types to solve a given problem.
3. Implement different concept s of files to solve real world examples.
4. Implement different c concepts in problem solving.

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Computer Programming Laboratory	CO-1	2	2							1	1		1
	CO-2	2	2	2	2		2			1	1		1
	CO-3	2	2	2	2		1			1	1		1
	CO-4	2	2	2	2		2	1	1	1	1		1

Week 1

1. WAP that reads three different integers from the keyboard and prints – sum, average, product, smallest, largest of the numbers.
2. WAP that reads two integers and prints – difference, quotient and remainder

3. WAP that reads two integers and determines whether the first is a multiple of the other

Week 2

1. Write a C program to find the sum of individual digits of a positive integer.
2. Write a program to generate Fibonacci sequence (1, 1 ,2, 3, 5, 8,….)
3. Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.

Week 3

1. Write a C program to calculate the following Sum:
   Sum=1-x2/2! +x4/4!-x6/6!+x8/8!-x10/10!
2. Write a C program to find the roots of a quadratic equation.

Week 4

1. Write a C program, which takes two integer operands and one operator from the user, performs the operation and then prints the result. (Consider the operators +,-,*, /, % and use Switch Statement)
2. Write a C program to generate Pascal's triangle.
3. Write a C program to construct a pyramids of numbers

Week 5

1 WAP to print a given number [0-1000] in words. For example, 123 as One Hundred and Twenty Three

2 WAP to check whether a given number is an Armstrong, Palindrome, Perfect, Prime, or a Fibonacci prime Number

3 Write a C program to find both the largest and smallest number in a list of integers

Week 6

1. Implementation of functions categories.
2. Write C programs that use both recursive and non-recursive functions
   i) To find the factorial of a given integer.
   ii) To find the GCD (greatest common divisor) of two given integers.

Week 7

1. Write a C program to calculate
   i) Minimum and maximum of an 1-d array
   ii) Sorting and Searching of 1-D array
   iii) Addition and Multiplication of Two Matrices

Week 8

1. Programs on String handling functions-Copying, reverse, substring, concatenation.
2. Programs on structure and unions.

Week 9
Midterm exam

Week 10
Programs using pointers- pointer basic operations, pointers and functions

Week 11
Programs on pointers and structures, Pointers and arrays, pointers and strings.

Week 12
Write a program using file operations and error handling.

Week 13
Write a program using Dynamic memory allocation

Week 14
Write a program using command line arguments.

Week 15
Write a program using preprocessor directives

Week 16
Internal Lab Exam

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I Year B.Tech CSE & IT – I Sem	**L**	**T/P/D**	**C**
	0	**3**	**2**

(R11MED1202) WORKSHOP PRACTICE (10 + 6 Weeks)

TRADES FOR EXCERCISES

Course Objectives:

1. To understand the basic concepts of hardware and peripherals of a computer and block diagram and assembling/dissembling of a pc
2. To know the functionalities and uses of an operating system and conducting experiments to install operating systems like windows and Linux
3. To run some basic Linux commands and know how to troubleshoot a pc in case of few problems

Course Outcomes:

1. Identify various peripherals of a PC, Know their functionalities and able to assemble and dissemble a PC
2. Understand the basic functionalities of an operating System and be able to install an OS
3. Analyze few problems and be able to trouble shoot them, and execute few Linux commands

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
TRADES FOR EXCERCISES	CO-1	1		1	2		1			2	2	2	2
	CO-2			1	2		2			2	1	2	2
	CO-3	1		1	1				2	2		1	2

At least two exercises from each trade:

1. Carpentry

2. Tin-Smithy

3. Fitting

4. Welding

5. Electrical Wiring

1. Computer Hardware: Identification of Parts, Assembling and disassembling Simple diagnostic exercises -
2. Installation of Operating System : Windows , Linux – Basic Command Simple diagnostic exercises .

TEXTBOOKS

1. Work shp Manual - P.Kannaiah/ K.L.Narayana, Scitech Publishers.

2. Workshop Manual by Venkat Reddy.

3. Engineering Workshop Practice – V Ramesh Babu, VRB Publishers Pvt. Ltd.

4. IT Essentials PC Hardware and Software Companion Guide Third Edition by Davis Anfinson and Ken Quamme – CISCO Press, Pearson Education.
5. PC Hardware and A+ Handbook – Kate J. Chase PHI (Microsoft)

I Year B.Tech CSE & IT – II Sem	L	T/P/D	C
	3	1	3

(R11MTH1102) MATHEMATICS – II
(Linear Algebra and Ordinary Differential Equations)

Course Objectives:

1. Understand the Echelon form and Normal form of a matrix and its applications in solving linear system of equations.
2. Understand the methods of solving first order differential equations and learn about its applications to L-R and R-C circuits.
3. Apply the convolution theorem to evaluate Laplace Transform of the functions.
4. Apply Z-Transforms in solving the difference equations.

Course Outcomes:

1. Find the rank using Echelon form and Normal form.
2. Solve the problems in first order and second order differential equations.
3. Learn Laplace Transform as a tool.
4. Evaluate the Z-Transform of the given function.

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Mathematics – II	CO-1	2											
	CO-2	2	2										
	CO-3	2	2										1
	CO-4	2	2										1

UNIT I

Solution of linear systems

Matrices and linear systems of equations - elementary row transformations, Rank Echelon form, and normal form; Solution of linear systems - direct methods - LU decomposition, LU decomposition from Gauss elimination, and solution of Tri-diagonal systems; Eigen values,

eigen vectors, and their properties - Liner dependence and independence; Cayley-Hamilton theorem - inverse and powers of a matrix by Cayley-Hamilton theorem, diagonalization of a matrix, calculation of powers of a matrix; Modal and spectral matrices.

UNIT II

Linear transformations

Real matrices - symmetric, skew symmetric, and orthogonal linear transformation; Complex matrices - Hermitian, Skew-Hermitian and unitary matrices; Eigen values and eigen vectors of complex matrices and their properties; Quadratic forms - reduction of quadratic form to canonical form, rank, positive, negative definite, semi definite, index, signature, Sylvester law, and singular value decomposition.

ORDINARY DIFFERENTIAL EQUATIONS

UNIT III

Ordinary differential equations and their applications

Differential equations of first order and first degree - Linear, Bernoulli and exact differential equation; Applications of differential equations of first order and first degree - Newton's law of cooling, Law of natural growth and decay, Orthogonal trajectories, and basic circuits.

UNIT IV

Differential equations of higher order and their applications

Differential equations of higher order - homogeneous and non-homogenous type, differential equations of second order and higher order with constant coefficients with right hand side term of the type e^{ax}, sin (ax), cos (ax), polynomials in x, e^{ax} V(x), x V(x), and method of variation of parameters; Applications to bending of beams; Mechanical systems - Simple harmonic motion.

UNIT V

Linear differential equations and qualitative methods

Cauchy's linear differential equation; Legendre's differential equations; Simultaneous linear differential equations; The phase plane; Phase portraits and direction fields; Critical points and stability.

TEXT BOOKS

1. Advanced Engineering Mathematics - R.K Jain and S.R.K Iyengar, 3rd edition, Narosa Publications, 2011.
2. Differential Equations - Dennis G. Zill, Cengage learning, 2011.

REFERENCES

1. Advanced Engineering Mathematics - Erwin Kreyszig, 8th edition, *John Wiley*.
2. Advanced Engineering Mathematics - Peter V. O'Neil, 9th Edition, *Cengage Learning.*

3. Elementary Differential Equations and Boundary Value Problems - William E. Boyce and Richard C. Diprima ,*Wiley*.
4. Linear Algebra and its applications - David C Clay, *Pearson Education.*
5. Differential Equations, with Applications and Historical Notes - George F. Simmons and John S. Robertson, 2nd Edition, *Tata McGraw Hill,* 2008.
6. Advanced Engineering Mathematics - Dennis G. Zill, Warren S. Wright, and Michael R. Cullen, 4th edition, *Jones & Bartlett Learning*.

I Year B.Tech CSE & IT – II Sem **L T/P/D C**

3 1 3

(R11MTH1104) NUMERICAL ANALYSIS AND LINEAR PROGRAMMING

Course objectives:

1. Understand the numerical methods for non linear systems, evaluating definite integrals and ordinary differential equations.
2. Understand various methods of interpolation.
3. Understand the simplex method and methods to solve the transportation problem.

Course Outcomes:

1. Apply the numerical methods to find a root of algebraic and transcendental equations.
2. Apply the numerical methods to find the solutions of ordinary differential equations.
3. Use simplex method procedure to optimize a linear function.
4. Solve transportation problems

Course name	Mapping of CO's with PO's												
Numerical Analysis and Linear Programming		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
	CO-1	2											1
	CO-2	2	2	1		1							1
	CO-3	2	2	1		1							1
	CO-4	2	2	1		1							1

UNIT I

Solutions of non-linear systems

Introduction; Mathematical preliminaries; Solution of algebraic and transcendental equations – the bisection method, the method of false position, the iteration method, Newton - Raphson method, and order of convergence.

UNIT II

Interpolation

Introduction; Errors in polynomial interpolation; Finite differences; Forward differences; Backward differences; Central differences; Symbolic relations and separation of symbols; Differences of a polynomial; Newton's formulae for interpolation; Central difference interpolation formulae; Gauss's central difference formulae; Lagrange and Hermite interpolation formulae; Cubic spline interpolation.

UNIT III

Numerical differentiation and Integration

Introduction; Differentiation of equally and unequally spaced data, and finite difference approximations; Trapezoidal rule, Simpson's 1/3 rule, and Simpson's 3/8 rule.

Numerical solutions of ordinary differential equations

Solution of initial value problems by Taylor's series - Picard's method of successive approximations, Euler's method, and Runge - Kutta methods; Predictor Corrector methods – Adams-Bashforth-Moulton method.

UNIT IV

Numerical solutions of partial differential equations (PDE)

Introduction; Classification of second order PDE; finite difference approximations to derivatives; Solution of Laplace and Poisson equation - Jacobi's method, Gauss-Seidal method by Leibmann's, Solution of parabolic equations (heat equation) by explicit and Crank Nicolson implicit scheme method; Solution of hyperbolic equations (wave equation).

UNIT V

Linear programming

Basic concepts; formulation of linear programming problem; constrained optimization-linear programming - simplex method, dual simplex method, and transportation problems.

TEXT BOOKS

1. Introduction to Numerical Analysis - S.S.Sastry*, PHI , 2010.*
2. Operations Research - Prem Kumar Gupta and D.S.Hira, *S.Chand,* 2003.

REFERENCES

1. Advanced Engineering Mathematics - Erwin Kreyszig, 8th Edition, *John Wiley and Sons.*
2. Advanced Engineering Mathematics - Peter V. O'Neil, 9th Edition, *Cengage Learning.*
3. Elementary Numerical Analysis – an algorithmic approach - Samuel D. Conte and Carl De Boor ,3rd edition,*Tata McGraw Hill,* 2006.
4. *Numerical Analysis - R.L Burden and J.D Faires, , 7th ediation, Thomson, 2007.*

I Year B.Tech CSE & IT – II Sem

L	T/P/D	C
3	0	3

(R11PHY1102) ENGINEERING PHYSICS-II

Course Objectives:

1. To learn the basic operators and expectation values in quantum mechanics
2. To learn different semiconductors and to calculate their carrier concentration and semiconductor devices
3. To learn the properties of magnetic materials and classification, Dielectric materials and to learn the concept and applications of superconductors

Course Outcomes:

1. Understand the Phenomenon of Interference, Diffraction& Polarization.
2. Learn the principle, working, construction and energy mechanism of various lasers and their applications Explain the light signal propagation and attenuation through optical fiber.
3. Understand the differences between particle and wave nature, energy states in one dimensional potential box and also the Consequences of Heisenberg's Uncertainty principle.
4. Understand the one dimensional Schrodinger's wave equation and the effect of temperature on Fermi-Dirac Distribution, Kronig Penny model.

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Engineering Physics-II	CO-1	2						1					
	CO-2	2			1								
	CO-3	2			1								
	CO-4	2											

UNIT- I

ELEMENTS OF STATISTICAL MECHANICS: Maxwell-Boltzmann, Bose-Einstein and Fermi-Dirac statistics (non mathematical treatment) – Photon gas –Planck's law of black body radiation – Deduction of Wein's law and Rayleigh-Jeans law from Plank's law.

PRINCIPLES OF QUANTUM MECHANICS: Waves and particles – De Broglie hypothesis - Matter waves - Davisson and Germer experiment –Heisenberg's uncertainty principle - Schrodinger Wave Equation – Wave function and its Physical Significance - Particle in one dimensional potential box(wave functions, probability densities and energy states).

UNIT - II

FREE ELECTRON FERMI GAS: Energy levels in one dimension, Effect of temperature on the Fermi-Dirac distribution, Free electron gas in three dimensions, electrical conductivity & Ohm's law, Electrical Resistivity of Metals (Qulitaitve), thermal conductivity of metals.

BAND THEORY OF SOLIDS: Electron in a periodic potential – Bloch Theorem - Kronig-Penney model (non mathematical treatment) – Origin of energy band formation in solids – Classification of materials into conductors, semiconductors & Insulators - Concept of effective mass of an electron.

UNIT- III

SEMICONDUCTOR PHYSICS: Fermi level in Intrinsic and Extrinsic semiconductors - Intrinsic semiconductor and carrier concentration – Extrinsic semiconductor and carrier concentration – Equation of continuity – Direct and indirect band gap semiconductors - Hall effect.

PHYSICS OF SEMICONDUCTOR DEVICES: Formation of p-n junction – open circuit p-n junction – Energy diagram of diode – i/v characteristics of p-n junction diode – p-n diode as a rectifier – Diode equation – LED

UNIT- IV

MAGNETIC PROPERTIES: Permeability, Field intensity, magnetic field induction, Magnetization and Magnetic susceptibility – Origin of magnetic moment, Bohr magneton – Classification of magnetic materials (Dia, Para and Ferro)- Domain theory of ferromagnetism, Hysteresis curve – Soft and Hard magnetic materials – properties of Anti ferro and Ferri magnetic materials – Ferrites and their applications.

UNIT V

SUPERCONDUCTORS: Experimental survey and superconductivity phenomenon, – Meissner effect – Critical fields and Persistent currents, Type I and Type II superconductors - London equations- flux quantization, BCS theory, Josephson effect – High temperature Superconductors, Applications of Superconductors.

DIELECTRIC PROPERTIES:Electric dipole, Dipole moment, Dielectric constant, Electronic, Ionic and Orientation Polarization – Calculation of Polarizibilities – Internal fields – Claussius – Mossotti equation –Piezo and Ferro electricity

TEXT BOOKS

(1) Introduction to Solid State Physics by Charles Kittel (Publishers: John Wiley & Sons) for units 2 to 5
(2) Concepts of Modern physics by Arthur Beiser, McGraw Hill Inc.
(3) Applied Physics by P.K.Mittal, IK International Publishing House (P) Ltd

REFERENCES

1. Solid State Physics by S.O.Pillai, New Age Publishers
2. Solid State Physics by A.J.Dekker; Macmillan Publishers India Ltd.
3. Engineering Physics by Dr M Chandra Shekar and Dr P. Appala Naidu, VGS Book links.
4. Solid State Physics by N.W.Ashcroft & N.David Merwin. Thomson Learning
5. Engineering Physics by G Sahashra Buddhe; University Press
6. Elements of Solid State Physics by J.P.Srivatsva, PHI Publishers
7. Engineering Physics by M.R.Srinivasan, New Age Publishers

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I Year B.Tech CSE & IT – II Sem	**L**	**T/P/D**	**C**
	3	**0**	**3**

(R11CED1109) ENVIRONMENTAL STUDIES

Course Objectives:

1. Develop an understanding of the necessity of protection of environment
2. Develop an understanding of Natural resources
3. Develop an understanding of Biodiversity
4. Develop an understanding of Global Environmental problems
5. Develop an understanding of Environmental pollution

Course Outcomes:

1. Acquire the knowledge on environment
2. Acquire the knowledge of various Natural Resources
3. Develop skills in understanding of various environmental problems
4. Develop skills to protect the Environment

Course name	**Mapping of CO's with PO's**												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Environmental Studies	CO-1			2	1	1	2						1
	CO-2			2	1	1	2						1
	CO-3			2	1	1	2						1
	CO-4			2	1	1	2						1

UNIT-I

Introduction, Definition, scope and Importance

Ecosystems: Introduction, types, Classification of Eco system, structure and functions of ecosystems.

Bio-diversity and its conservation, Value of bio-diversity Bio-geographical classification of India – India as a mega diversity habitat, Threats to bio-diversity –Hot-spots of Bio Diversity, Conservation of bio-diversity.

UNIT-II

Natural Resources: Classification of Resources, Land resources, Land degradation, Soil erosion and desertification, Food resources, Effects of modern agriculture, fertilizer pesticide problems, Food miles, organic farming, Forest resources, Use and over-exploitation, Water resources, Dams –benefits, Conflicts over Water, Energy resources-sustainable Development, and Energy Audit

UNIT III

Environmental pollution and its control : Classification of pollution and pollutants, Air pollution, causes ,Effects ,Control measures, ambient air quality standards, water pollution causes , Effects ,Control measures, water and waste water treatment methods, water quality standards, Noise pollution causes ,Effects ,Control measures, land pollution causes ,Effects ,Control measures, solid waste disposal methods ,characteristics of e-waste and management

UNIT IV

Global Environmental problems and global Efforts: Nuclear hazards, Global warming, Acid rain, hurricanes, Hazardous Waste, Overpopulation , ozone layer depletion, Clean development mechanism , Green computing ,Green Building ,carbon credits, carbon trading

International conventions/protocols: Earth summit, Kyoto protocol and Montreal protocol, Stockholm Declaration

UNIT V

Environmental Impact Assessment and Environmental Management plan: Definition of impact, Classification of Impacts, Prediction of Impacts and Impact assessment Methodologies, Environmental Impact Statement, Environmental Management plan: Technological Solutions

TEXT BOOKS

1. Introduction to Environmental Science by Y.Anjaneyulu, BS Publications
2. Text book of Environmental studies by Deeksha dave, Cengage publishers
3. Text book of Environmental studies by M.Anji Reddy, BS Publications

REFERENCES

1. Text book of Environmental studies by Anuba Kaushik & C P Kaushik, Newage International Pvt.Limited
2. Text book of Environmental studies by S V S Rana, Rastogi Publications
3. Text book of Environmental studies by Dr. K Raghavan Nambiar, Scitech Publishers

I Year B.Tech CSE & IT – II Sem

L	T/P/D	C
3	0	3

(R11CSE1102) DATA STRUCTURES

Course Objectives:

1. To teach efficient storage mechanisms of data for an easy access.
2. To design and implementation of various basic and advanced data structures.
3. To introduce various techniques for representation of the data in the real world.
4. To develop application using data structures and to improve the logical ability

Course Outcomes:

1. Explore and analyze the working of linear data structures like list, stack and variations of queue in both static and dynamic implementation.
2. Relate and demonstrate the application of linear data structures.
3. Illustrate and Implement basic non linear data structures like trees, graphs and their operations.
4. Identify and Implement basic and advanced comparison based sorting and searching techniques.

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Data Structures	CO-1	2	2							1	1		1
	CO-2	2	2	2	1		1			1	1		1
	CO-3	2	2	2	2		1			1	1		1
	CO-4	2	2	2	2		1			1	1		1

UNIT-1

Data Structures – Introduction to Data Structures, abstract data types, Linear list – singly linked list implementation, insertion, deletion and searching operations on linear list, circular linked list implementation, Double linked list implementation, insertion, deletion and searching operations. Applications of linked lists.

UNIT – 2

Stacks-Operations, array and linked representations of stacks, stack application-infix to postfix conversion, postfix expression evaluation, recursion implementation.

UNIT-3

Queues-operations, array and linked representations. Circular Queue operations, Dequeues, applications of queue.

UNIT-4

Trees – Definitions, Binary tree representation, Binary search tree, binary tree traversals.
Graphs – Definitions, Graph representations, Graph traversals.

UNIT-5

Searching and Sorting – Big O Notation , Sorting- selection sort, bubble sort, insertion sort, quick sort, merge sort,
Searching-linear and binary search methods.

TEXT BOOKS:

1. C Programming & Data Structures, B.A.Forouzan and R.F. Gilberg, Third Edition, Cengage Learning.
2. Data Structures Using C (Paperback) by Aaron M. Tenenbaum

REFERENCES:

1. C& Data structures – P. Padmanabham, Third Edition, B.S. Publications.
2. Data Structures using C – A.M.Tanenbaum, Y.Langsam, and M.J. Augenstein, Pearson Education / PHI
3. C Programming & Data Structures, E. Balagurusamy, TMH.
4. C Programming & Data Structures, P. Dey, M Ghosh R Thereja, Oxford University Press
5. C& Data structures – E V Prasad and N B Venkateswarlu, S. Chand&Co.

I Year B.Tech CSE & IT – II Sem

L	T/P/D	C
3	3	4

(R11MED1105) ENGINEERING DRAWING

Course Objectives:

1. Understand the usage of drawing instruments.
2. Understand the construction methods for drawing conic sections.
3. Identify the significance of curves in engineering practice like bridges, building, arches etc.
4. Understand first and third angle projections and methods.

Course Outcomes:

1. Visualize the objects looking into projections.
2. Convert projections for isometric to orthographic and vice versa.
3. Work with Auto CAD for the above

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Engineering Drawing	CO-1	1	1		1		1	2					1
	CO-2	1	1		1		1	2					1
	CO-3	1	1		1		1	2					1

UNIT – I

Introduction to engineering graphics – construction of ellipse, parabola and hyperbola – cycloidal curves.

UNIT – II

Orthographic projections of points, lines and planes – axis inclined to one planes and inclined to both the planes.

UNIT – III

Orthographic projections of solids:

Cylinder, cone, prism, pyramid and sphere positions and axis inclined to both the planes.

UNIT – IV

Isomeric projections of lines, planes and simple solids.

UNIT – V

Conversion of orthographic views into isometric views and vice-versa.

TEXT BOOKS :

1. Engineering drawings By N.D.Bhatt.
2 Engineering graphics By K.L. Narayana & P.Kannayya.

REFERENCES:

1. Engineering drawing and graphics: Venugopal/ New age
2. Engineering drawing : Johle / TMH

I Year B.Tech CSE & IT – II sem

L	T/P/D	C
0	3	2

(R11EPC1201) ENGINEERING PHYSICS & ENGINEERING CHEMISTRY LABORATORY

Course Objectives:

1. To practically learn interaction of light with matter through physical phenomena like interference, diffraction and dispersion.
2. To expose to the principle of superposition and resonance.
3. To demonstrate the formation of standing waves and to understand the mechanical wave behavior and to determine Rigidity Modulus of different materials of wires .
4. To demonstrate basic discharge phenomenon in capacitors and to know the characteristics of the circuit elements, like resistors, capacitors and inductors

Course Outcomes:

1. Understand clearly the interference principle in wave theory of light and able to relate it to the formation of Newton Rings and Obtain a pure spectrum when light passes through prism
2. Understand the formation and propagation of mechanical waves
3. Study simple oscillations of a load attached to a string and relate it to nature of material of string

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
ENGINEERING PHYSICS & ENGINEERING CHEMISTRY LABORATORY	CO-1	2											
	CO-2	2											
	CO-3	2											

Any Eight Experiments from the following:

1. Dispersive Power of the material of a Prism using Spectrometer

2. Diffraction Grating (both with Laser and non-laser source)
3. Single Slit with laser light
4. Newton's Rings
5. Finding thickness of a thin wire or sheet by forming a wedgeshaped film
6. Energy gap of a semiconductor material
7. Torsional Pendulum Expt. to determine the rigidity modulus of material of a wire
8. Melde's experiment
9. Sonometer Experiment
10. Numerical Aperture and Acceptance angle of an optical fiber cable
11. Stewart Gee's experiment
12. Characteristics of LED.
13. Photo cell/ Solar Cell

Book: Essential Practical Lab Manual of Physics: by P.Raghavendra Rao

ENGINEERING CHEMISTRY LABORATORY

LIST OF EXPERIMENTS:

1. Titrimetry

a) Estimation of hardness of water by EDTA method.

2. Instrumental methods

(i) Conductometry

a) Conductometric titration of strong acid Vs Strong base

(ii) Colorimetry

a) Estimation of copper by colorimetric method

(iii) Potentiometry

a) Titration of strong acid Vs Strong base by potentiometry

3. Physical properties

a) Determination of viscosity of sample oil by Redwood viscometer.

4. Preparation of organic compounds

Preparation of aspirin or Thiokol rubber

TEXT BOOKS

1. Laboratory Manual on Engineering Chemistry by S.K.Bhasin and Sudha Rani,Dhanpat Rai Publishing Company.
2. Laboratory Manual on Engineering Chemistry by Y.Bharathi Kumari, Jyotsna Cherukuri, VGS Book Links, Vijayawada.

I Year B.Tech CSE & IT – II Sem **L T/P/D C**
0 3 2

(R11CSE1202) DATA STRUCTURES LABORATORY

Course Objectives:

1. To develop skills to design and analyze simple linear data structures
2. To develop skills to design and analyze simple nonlinear data structures
3. To strengthen the ability to identify and apply the suitable data structure for the given real world problem
4. To gain knowledge in practical applications of data structures

Course Outcomes:

1. Implement linear data structures stacks, queues and linked lists.
2. Design non linear data structures trees and Graphs, and implement their operations.
3. Choose and Apply appropriate data structure for a given application.
4. Implement different searching and sorting techniques. Compare different searching and sorting techniques.

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Data Structures Laboratory	CO-1	2	2							1	1		1
	CO-2	2	2	2	1		1			1	1		1
	CO-3	2	2	2	2		1			1	1		1
	CO-4	2	2	2	2		1			1	1		1

WEEK1:

1. Write a program for creation, Search and Traversal of Single Linked List
2. Write a program to perform insertion and deletion operations in Single Linked List
3. Write a program to merge two single linked lists

WEEK2:

1. Write a program for creation, Search and Traversal of Circular Linked List
2. Write a program to perform insertion and deletion operations in Circular Linked List

WEEK 3:

1. Write a program for creation, Search and Traversal of Double Linked List
2. Write a program to perform insertion and deletion operations in Double Linked List

WEEK 4:

1. Write a program to implement stack using Arrays
2. Write a program to implement stack using Linked List

WEEK 5:

1. Write a program to convert infix expression to postfix expression using stack
2. Write a program to evaluate postfix expression

WEEK 6:

1. Programs using recursion
2. Write a program to convert infix expression to prefix expression using stack

WEEK 7:

1. Write a program to implement Linear queue using Array
2. Write a program to implement Linear queue using Linked List

WEEK 8:

1. Write a program to implement insertions and deletions in a circular Queue
2. Write a program to perform search and count operations in a circular queue

WEEK 9:

1. Write a program to implement insertions and deletions in a Dequeue
2. Write a program to perform search and count operations in Dequeue

WEEK 10: Midterm Exam

WEEK 11:

1. Write a program to implement Linear search
2. Write a program to implement Binary Search

WEEK 12:

1. Write a program to implement Selection sort
2. Write a program to implement Bubble sort
3. Write a program to implement Insertion sort

WEEK 13:

1. Write a program to implement Merge sort
2. Write a program to implement Quick sort

WEEK 14:

1. Implementation of a binary tree representation using Arrays
2. Write a program to search an element, to print right and left children of every node in a tree

WEEK 15:

1. Implementation of a Graph representation using Adjacency Matrix
2. Write a program to print all adjacent nodes of every node in a graph

WEEK 16: Final Internal Lab Exam

I Year B.Tech CSE & IT – II Sem

L	T /P/D	C
0	3	2

(R11HAS1202) ENGLISH LANGUAGE COMMUNICATION SKILLS LABORATORY-II

Course objectives:

1. Enable the students to create clear, accurate, and succinct content to write business letters, resume, SOP, Proposals and Technical Reports for academics as well as for workplace
2. Enable students to adjust technical content to meet the needs of a specific target audience
3. Groom students to speak accurately and fluently and prepare them for real world activities through behavioral skills.
4. Train students in soft skills through role play and group discussion to improve their EQ.

Course Outcomes:

1. Comprehend spoken and written discourse.
2. Speak fluently with neutral pronunciation and exhibit interpersonal skills.
3. Write accurately, coherently and lucidly making appropriate use of words depending on context and present data clearly.
4. Introduce oneself to people and be able to speak extempore.

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
English Language Communications Skills Laboratory-II	CO-1									2	2		2
	CO-2									2	2		2
	CO-3									2	2		2
	CO-4									2	2		2

In continuation with the first Year I semester syllabus, this course offers further practice in Listening, Speaking, and Grammar in preparation for the advanced speaking and writing skills offered in the III Year .

Unit I

Multimedia Lab :

1. Listening Comprehension
2. Grammar -- Voice
3. Vocabulary Lesson 6

Oral Communication Skills Lab : Self Introduction

Unit 2

Multimedia Lab :

1. Grammar - Conditionals & Prepositions
2. Listening Comprehension
3. Vocabulary Lesson 7

Oral Communication Skills Lab :

1. Description of Objects
2. Description of Processes

Unit 3

Multimedia Lab :

1. Grammar -- Use of Subordinate Clauses; Phrasal Verbs; Idioms
2. Vocabulary Lesson **Oral Communication Skills Lab :** Presentation Skills

Unit 4

Multimedia Lab :

1. Grammar -- Use of Substitution, Reference and Ellipsis
2. Listening Comprehension
3. Vocabulary Lesson 9

Oral Communication Skills Lab : Debate

Unit 5

Multimedia Lab :

1. Grammar --- Parallelism, Repetition, Nominalization
2. Vocabulary Lesson 10

Oral Communication Skills Lab : Group Discussions

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II Year B.Tech CSE – I Sem

L	T/P/D	C
3	1	3

(R11MTH1106) PROBABILITY AND STATISTICS

Course Objectives:

1. Understand the elementary ideas in basic probability.
2. Understand the different types of probability distribution functions
3. Understand the basic concepts in estimation theory and test of hypothesis
4. Understand the basic concepts of queuing theory.

Course Outcomes:

1. Solve problems involving basic probability.
2. Apply the knowledge of different probability distributions to Test of Hypothesis.
3. Calculate correlation, regression coefficients.

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Probability and Statistics	CO-1	2	2										
	CO-2	2		2									
	CO-3	2											

UNIT I

Probability and Distributions

Sample space and events, Probability- The axioms of probability, some elementary theorems, conditional probability, Baye's theorem. Random variables - discrete and continuous. Distributions - Binomial, Poisson and Normal distributions–related properties.

UNIT II

Sampling Distributions and Testing of Hypothesis

Sampling distributions, sampling distribution of means (σ known and unknown). Point estimation, interval estimation.Tests of hypothesis - null hypothesis, alternate hypothesis, type I, type II errors, critical region. Inferences concerning means and proportions- Large samples-test of hypothesis for single mean and difference between the means. Test of hypothesis for the proportions- single and difference between the proportions, confidence interval for the mean and proportions.

UNIT III

Tests of significance- Small samples

Tests of significance-t distributions, confidence interval for the t- distribution, F-distributions and Chi square distributions.

UNIT IV

Correlation and Regression

Coefficient of correlation, regression coefficient, the lines of regression, rank correlation, correlation for bivariate frequency distributions.

UNIT V

Reliability theory and Time Series analysis

Basic concepts of reliability, Normal failure law, Exponential failure law, The Weibull failure law and reliability of systems. Time series- utility of time series analysis, components of time series. Preliminary adjustments before analyzing time series. Measurement of trend by the method of least squares.

TEXT BOOKS

1. Probability and Statistics for Engineers - Miller I.R. and Freund J.E, 5th Edition, Prentice-Hall, 1995.
2. Introductory Probability and Statistical Application – Meyer, 2nd edition, Oxford 1970.
3. Statistical Methods - S.P. Gupta, Sultan Chand and sons, 2011.

REFERENCES

1. Reliability Engineering- Balagurusamy E,Tata McGraw Hill , 1984.
2. Elements of Applied Stochastic processes- Bhat U.N, Wiley Series in Probability and Mathematical Statistics, 1983.

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II Year B.Tech CSE – I Sem **L T/P/D C**
4 0 4

(R11CSE1103) COMPUTER ORGANIZATION

Course Objectives:

1. Differentiate the basic hardware and software issues of computer organization.
2. Know the internal working of a computer system.
3. Compare the Memory Unit Organizations related to computers.
4. Understand how parallel processing is achieved using pipeline technique.

Course Outcomes:

1. Develop the ability and confidence to use the fundamentals of computer organization as a tool in the engineering of digital systems.
2. Apply knowledge of the PC based processor's internal registers and operations.
3. Analyze the different types of memory units and understand their organization in a computer system.
4. Identify the need for pipelining along with its organization support for efficient I/O operations.

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Computer Organization	CO-1	2	2	2	2	2	2	2	2	2	2	1	2
	CO-2	2	2	2	1	2	1	1	1	1	2	2	2
	CO-3	2	2	2	2	1	2	2	2	2	2	2	2
	CO-3	2	2	1	1	2	2	2	2	1	2	2	2

UNIT I

BASIC STRUCTURE OF COMPUTERS: Computer types, functional unit, basic operational concepts, bus structures, multi processors and multi computers, multi tasking.

Register Transfer Language and Micro operations: Register Transfer language, Regiser Transfer, Arithmetic Microoperations, Logic Microoperations, Shift Microoperations, Arithmetic logic shift unit.

UNIT II

BASIC COMPUTER ORGANIZATION AND DESIGN: Instruction Codes, Computer Registers, computer instructions – instruction Cycle, memory reference instructions, input-output and interrupt.

Central Processing Unit: Stack organization, instruction formats, addressing modes, data transfer and manipulation, program control, CISC and RISC.

UNIT III

Microprogrammed Control: Control memory, address sequencing, micro program example, design of control unit, hardwired control, microprogrammed control.

The Memory Organization: Memory hierarchy, Main Memory, Cache memory, performance considerations, virtual memory, secondary storage.

UNIT IV

Computer Arithmetic: Addition and subtraction, multiplication algorithms, Division algorithms, floating-point arithmetic operations, Decimal arithmetic unit, Decimal arithmetic operations.

INPUT-OUTPUT ORGANIZATION: Peripheral devices, input-output interface, asynchronous data transfer, modes of transfer, priority interrupt, direct memory access.

UNIT V

Pipeline and Vector Processing: Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction pipeline, RISC pipeline Vector Processing, Array Processors.

TEXT BOOKS

1. Computer System Architecture – M. Morris Mano, III edition, Pearson/PHI
2. Computer organization – Carl Hamacher, Zvonks Vranesic, Safeazaky, V edition, Mc Graw Hill

REFERENCES

1. Computer Organization and Architecture – William Stallings Sixth edition Pearson/PHI
2. Fundamentals of Computer Organization and Design, Sivarama Dandamudi Springer Intl. edition
3. Computer Architecture, a Quantitative approach, John L. Hennessy and David A. Patterson, Fourth edition Elsevier.

4. Computer Architecture Fundamentals and Principles of Computer Design, Joseph D/ Dumas II, BS Publication

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4 1 4

(R11ITD1118) ADVANCED DATA STRUCTURES

Course Objectives

1. To implement various object oriented concepts like abstraction, encapsulation, polymorphism, inheritance etc.
2. To demonstrate exception handling mechanism.
3. To implement algorithms into programming code.
4. To implement dictionaries, various data structures like stacks, queues, trees, graphs using templates.

Course Outcomes:

1. Understand different object oriented concepts in C++.
2. Design different mathematical problems using oops
3. Understand and analyze the performance of various data structures such that optimizing searching.
4. Apply the various data structures and oops concepts in solving the real time problems.

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Advanced Data Structures	CO-1		2					1		1	2		1
	CO-2	2	2	2	2	1	1	1		1	1		1
	CO-3	1	2	2	1	1	2	1		1	1		1
	CO-4	2	2	2	2	2	1	1	1	1	1	1	1

UNIT I

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

UNIT II

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

UNIT III

Review of basic data structures- The list ADT, Stack ADT, Queue ADT, Implementation using template classes in C++. Priority Queues – Definition, ADT, Realizing a Priority Queue using Heaps, Definition, insertion, Deletion, Heap sort, External Sorting- Model for external sorting, Multiway merge, Polyphase merge.

UNIT IV

Dictionaries, linear list representation, Skip list representation, operations insertion, deletion and searching, hash table representation, hash functions, collision resolution-separate chaining, open addressing-linear probing, quadratic probing, double hashing, rehashing, extendible hashing, comparison of hashing and skip lists. Text Processing – Pattern matching algorithms-Brute Force, Knuth-Morris-Pratt algorithm, Tries – Standard tries, Compressed tries, Suffix tries.

UNIT V

Trees-Basic Terminology, Binary tree ADT, array and linked representations, traversals, threaded binary trees, Binary Search Trees: Definition, ADT, Implementation, Operations of Searching, Insertion and Deletion. AVL Trees, Definition, Operations-Insertion and Searching. B-Trees, Definition, B-Tree of order m, insertion, deletion and searching. Graphs: Basic terminology, representations of Graphs, Graph search methods – DFS, BFS.

TEXT BOOKS:-

1. Data structures, Algorithms and Applications in C++, S.Sahni, University Press (India) Pvt.Ltd, 2nd edition, Universities Press Orient Longman Pvt. Ltd.
2. Data structures and Algorithms in C++, Michael T.Goodrich, R.Tamassia and .Mount, Wiley student edition, John Wiley and Sons.

REFERENCES:-

1. Data structures and Algorithm Analysis in C++, Mark Allen Weiss, Pearson Education. Ltd., Second Edition.
2. Data structures using C& C++ , Langsam, Augenstein and tanenbaum, PHI
3. Problem solving with C++, The OOP, Fourth edition, W.Savitch, Pearson Education.
4. Data Structures and Algorithms Using C++, Ananda Rao Akepogu,Radhika Raju Palagiri.

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II Year B. Tech, CSE – I Sem **L T/P/D C**

3 0 3

(R11MTH1107) MATHEMATICAL FOUNDATION FOR COMPUTER SCIENCE

Course objectives:

1. Identify and distinguish between the notion of discrete and continuous mathematical structures
2. Introduces the basic concepts of relations, groups and functions
3. Provide the basics of counting techniques and combinatory in the context of discrete probability.
4. To Master in Recurrence Relations to calculate complexity of algorithms
5. To develop students' competency in getting results for graphs and trees related problems.

Course Outcomes:

1. Apply discrete mathematical structures and their reasoning in problem solving and analysis
2. Analyze the basic properties and operations related to sets, relations and functions
3. Able to compute probability of simple and conditional events
4. Use and analyze recursive definitions of standard algorithms.
5. Illustrate the basic definitions of graph theory and properties of graphs

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Mathematical Foundation for Computer Science	CO-1	2	2	2	2	2		2				1	1
	CO-2	2	2	1	2	1		2				1	1
	CO-3	2	1	1	1	2		1				1	1
	CO-4	2	1	2	2	1		1				1	1
	CO-5	2	1	2	2	2		2				1	1

UNIT I

Mathematical Logic: Statements and notations, Connectives, Well formed formulas, Truth Tables, tautology, equivalence implication, Normal forms, Quantifiers, universal quantifiers. Predicates: Predicative logic, Free & Bound variables, Rules of inference, Consistency, proof of contradiction, Automatic Theorem Proving.

UNIT II

Relations: Properties of binary Relations, equivalence, transitive closure, compatibility and partial ordering relations, Hasse diagram. Functions: Inverse Function, Composition of functions, recursive Functions. Algebraic structures: Algebraic systems, Examples and general properties, Semi groups and monoids, groups, and sub groups, Homomorphism, Isomorphism on groups and semi groups.

UNIT III

Elementary Combinatorics: Basics of counting, Combinations & Permutations, with repetitions, Constrained repetitions, Binomial Coefficients, Binomial and Multinomial theorems, the principles of Inclusion – Exclusion, Pigeon hole principles and its application.

UNIT IV

Recurrence Relations: Generating Functions, Function of Sequences, Calculating Coefficients of generating functions, Recurrence relations, Solving recurrence relation by substitution and Generating functions, the method of Characteristic roots, solution of Inhomogeneous Recurrence Relations.

UNIT V

Graph Theory: Representation of Graphs, DFS, BFS, Spanning Trees, Planar Graphs. Graph Theory and Applications: Basic Concepts, Isomorphism and Sub graphs, Multi graphs and Euler circuits, Hamiltonian graphs, Chromatic Numbers.

TEXT BOOKS

1. "Elements of Discrete Mathematics- A Computer Oriented Approach, C.L.Liu, D.P. Mohapatra, 3rd edition, Tata M c Graw Hill.
2." Discrete Mathematics for Computer Scientists & Mathematicians," Second edition, J.L.Mott, A. Kandel, T.P. Baker, PHI

REFERENCES

1. Discrete Mathematics and its Applications, 5th edition, Kenneth.H.Rosen, TMH.
2. Discrete Mathematical Structures Theory and applications, Mallik and Sen, Cengage.
3. Discrete Mathematics with Applications, Thomas Koshy, Elsevier.
4. Logic and Discrete Mathematics, Grass Man and Tremblay, Pearson Education

II Year B.Tech CSE – I Sem **L T/P/D C**
3 1 3

(R11CSE1117) PRINCIPLES OF PROGRAMMING LANGUAGES

Course Objectives:

1. Understand and analyze the importance and basic concepts of artificial intelligence and the use of agents.
2. Identify, explore the complex problem solving approaches and strategies.
3. Explore and analyze the basic concepts of neural networks and learning process.
4. Analyze and use the concept of neural network programming for various domains.

Course Outcomes:

1. Implement the principles of various types of programming Languages.
2. Apply the syntax-related concepts including various types of grammars, parse trees, Recursive descent parsing, data types and also Axiomatic and Denotational semantics.
3. Use various types of Expressions and Statements and illustrate the language abstraction constructs of classes, interfaces, packages, procedures and sub-programs
4. Compare the implementations of imperative, object-oriented, functional and logic languages.

Course name	Mapping of CO's with PO's												
Principles of Programming Languages		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
	CO-1	2	2	2	2	1	1	2	1	2	1	1	2
	CO-2	2	2	1	2	1	1	1	1	1	2	2	2
	CO-3	1	2	2	2	1	1	2	2	2	2	2	2
	CO-4	2	2	2	2	2	2	2	2	2	2	2	2

UNIT-I

Preliminary Concepts: Reasons for studying, concepts of Programming languages, Programming domains Language Evaluation Criteria, Influences on Language Design Language categories.
Programming Paradigms---imperative, object-oriented, functional programming, logic programming. Programming Language Implementation--- compilation and virtual machines, Programming environments.

UNIT-II

Syntax and Semantics: General Problem of describing syntax and semantics, formal methods of describing syntax---BNF, EBNF for common programming languages features, parse trees, ambiguous grammars, attribute grammars, denotational semantics and axiomatic semantics for common programming language features.

UNIT-III

Data types: Primitive, character, user defined, array, associative, record, union, pointer and reference types, design and implementation uses related to these types. Names, Variable, concept of binding, type checking, strong typing, type compatibility, named constants, variable initialization.
Expressions and Statements: Arithmetic, Relational and Boolean expressions, Short circuit evaluation, mixed mode assignment, Assignment statements, Control Structures **---** Statement level, Compound Statements, Selection, Iteration, Unconditional Statements, guarded commands.

UNIT-IV

Subprograms and Blocks: Fundamentals of sub-programs, Scope and lifetime of variable, static and dynamic scope, Local referencing environments, parameter passing methods, overloaded sub-programs, generic sub-programs.
Abstract Data types: Introduction to data abstraction, encapsulation, and design issues, C++ parameterized ADT, object oriented programming in C++, Java. Concurrency---Subprogram level concurrency, semaphores, monitors, message passing, and Java threads.

UNIT-V

Exception handling: Exceptions, Exception propagation, Exception handler in C++ and Java.
Logic Programming Language: Introduction and overview of logic programming, applications of logic programming. **Functional Programming Language:** Introduction and fundamentals of FPL, LISP, ML, Haskell, applications of FPL and comparison of functional and imperative languages.

TEXT BOOKS

1. Concepts of Programming Languages Robert. W. Sebesta 6/e, Pearson Education.
2. Programming Languages-Louden, Second Edition, Thomson.

REFERENCES

1. Programming languages – Ghezzi, 3/e, John Wiley
2. Programming Languages Design and Implementation – Pratt and Zelkowitz, Fourth Edition PHI/Pearson Education.
3. Programming Languages – Watt, Wiley Dreamtech
4. Programming in PROLOG Clocksin, Springer.

II Year B.Tech CSE – I Sem

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(R11ITD1119) DIGITAL LOGIC DESIGN

Course Objectives:

This course covers the basics of digital logic circuits and design:

1. Boolean algebra and number systems introduces the student to the fundamentals of combinational logic design, their minimization(using K-Maps/Tabulation Methods), this enables building of PLD's
2. Student uses the above techniques to design sequential circuits (both synchronous and asynchronous).
3. Students will be provided with an opportunity to implement all the logic circuits using VHDL.
4. By the end of the course the student will be able to design, simulate, build, and debug combinational and sequential digital circuits based on an abstract functional specification.
5. The student will also understand the basic internal workings of the central processing unit of a computer and its interface with memory and input/output subsystems.

Course Outcomes:

1. To apply the principles of Boolean algebra to manipulate and minimize logic expressions.
2. To understand the functionalities, and minimization techniques using of all logical gates(NAND, NOR, AND, NOR, NOT, XOR,XNOR…)
3. To design combinational circuits using adders, decoders, Multiplexers, Encoders, De-Multiplexers, ROM , RAM, PLD's
4. The operation of sequential(sync. & async.) circuits (flip-flops, counters, registers, and register) and in analyzing the operation of sequential circuits along with hazards handling
5. For all the above concepts students will be able to simulate the functionalities using Verilog HDL with the support of the Lab.

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Digital Logic Design	CO-1	1	1		2			1		2		2	2
	CO-2		2	2	1		1		2				1
	CO-3		1		2	1	2	1		2			2
	CO-4	2		2		1		2	2	2	2	2	1
	CO-5	1		1	2		2	1		1	2	1	1

UNIT-I

NUMBERS SYSTEMS AND CODES:

Review of number systems- number base conversion-binary arithmetic- binary weighted and non-weighted codes – Complements-Signed binary numbers-Error Detection and Correcting Codes-Binary Logic.

UNIT-II

BOOLEAN ALGEBRA and GATE LEVEL MINIMIZATION:

Postulates and theorems- representation of switching functions-SOP and POS forms – Canonical forms-digital logic gates –Karnaugh Maps –minimization using three variable, four variable and five variable K-Maps, Don't Care Conditions- NAND and NOR implementation , Other Two-Level Implementation –Exclusive –OR function -Integrated Circuits-Hardware Description Language(HDL)

UNIT-III

DESIGN OF COMBINATIONAL CIRCUITS:

Tabular Minimization- Combinational Circuits- Analysis and Design Procedure- Binary adder and subtractors – Carry Look-ahead adder-Decimal adder-Binary multiplier-magnitude comparator-BCD adder- Decoders- Encoders-Multiplexers-Random Access Memory-Read Only Memory-Programmable Logic Array-Programmable Array Logic - HDL for Combinational Circuits

UNIT-IV

DESIGN OF SEQUENTIAL CIRCUITS:

Combinational Vs Sequential Circuits – Latches-Flip Flops-RS flip flop, JK flip flop, T flip flop, D flip flop, Master-Slave Flip flop- Flip Flops excitation functions –Conversion of one flip flop to another flip flop- Asynchronous Vs Synchronous circuits-Analysis of clocked sequential circuits-State Table-State Diagram-State Reduction and State Assignment-Mealy and Moore Machines-capabilities and limitations of Finite State Machine-State equivalence and machine

minimization-Design of synchronous counters- Ripple Counters-Asynchronous counters-Registers-Shift Registers- HDL for Sequential circuits.

UNIT-V

ASYNCHRONOUS SEQUENTIAL LOGIC:

Introduction-Analysis Procedure, Circuits with Latches, Design Procedure-Reduction of state and flow Tables – Race Free State Assignment Hazards, Design examples.

TEXT BOOKS

1. DIGITAL DESIGN , Third Edition , M.Morris Mano, Pearson Education/PHI.
2. FUNDAMENTALS OF LOGIC DESIGN, Roth, 5th Edition,Thomson.

REFERENCES

1. Switching and Finite Automata Theory by Zvi. Kohavi, Tata McGraw Hill.
2. Switching and Logic Design, C.V.S. Rao, Pearson Education
3. Digital Principles and Design Donald D.Givone, Tata McGraw Hill, Edition.
4. Fundamentals of Digital Logic & Micro Computer Design , 5TH Edition, M. Rafiquzzaman John Wiley

II Year B.Tech CSE – I Sem **L T/P/D C**
0 3 2

(R11ITD1206) ADVANCED DATA STRUCTURES LABORATORY

Course Objectives

1. To implement various object oriented concepts like abstraction, encapsulation, polymorphism, inheritance etc.
2. To demonstrate exception handling mechanism.
3. To implement algorithms into programming code.
4. To implement dictionaries, various data structures like stacks, queues, trees, graphs using templates.

Course Outcomes:

1. Relate various object oriented concepts
2. Implement different data structures and text processing techniques
3. Analyze performance of various data structures through implementation
4. Apply the knowledge of data structures and OOP concepts in the design and implementation of applications

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Advanced Data Structures Laboratory	CO-1	2	2					1			1		1
	CO-2		1	2	2		2				1		1
	CO-3		1	2	2		2		1	1	1		1
	CO-4	1	2	2	2		1	1	1	1	1		1

Week 1: Implementation of C++ programs using - Constructors, friend functions, Parameter passing methods, this pointer, inline functions, static members, dynamic memory allocation, exception handling.

Week 2: Implementation of C++ programs using: Function over Loading, Operator Overloading, Function and class templates, inheritance types, runtime polymorphism using virtual functions, abstract classes, streams I/O.

Week 3: Write C++ programs to implement the following using an array
a) Stack ADT b) Queue ADT c) Linear list

Week 4: Write C++ programs to implement the following using linked list
a) Stack ADT b) Queue ADT c) Linear list

Week 5: Write C++ programs to implement the following using an array
a) Circular Queue ADT b) Dequeue ADT

Week 6: Write C++ programs to implement the following using linked list
a) Circular Queue ADT b) Dequeue ADT c) Double linked list

Week 7: Write C++ programs to implement the following
Binary Search tree insertions
Binary Search tree deletions
Binary Search tree search

Week 8: Write C++ programs to implement Binary tree traversals (preorder, inorder, postorder)

Week 9: Write C++ programs to implement bfs and dfs for a given graph

Week 10: Write C++ programs to implement
a) Heap sort b) merge sort

Week 11: Write C++ programs to implement all functions of dictionary (ADT) using hashing.

Week 12
Write C++ programs to implement Brute Force and Knuth –Morris-Pratt pattern matching algorithm

II Year B.Tech CSE – I Sem **L T/P/D C**
0 3 2

(R11EIE1209) BASIC ELETRICAL AND ELECTRONICS ENGINEERING LABORATORY

Course Objectives:

1. To understand the basic concepts of circuit analysis
2. To analyze electrical circuits using network theorems and analysis of AC circuits
3. To learn principle of operation, construction and characteristics of various electronic devices.
4. To know about different applications of these devices

Course Outcomes:

1. To apply basic network theorems for solving electrical networks.
2. Analyze various Electrical networks using Kirchhoff's laws.
3. To use the electronic devices in real time applications

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Basic Electrical and Electronics Laboratory	CO-1	1	2	1			1	2					
	CO-2	1	2	1			1	2					
	CO-3	1	1	2			1	2					

Demonstration (1 lab Session):

1. Identification, of R, L, C Components (Colour Codes),Potentiometers, variable capacitors, DRB, DLB, DCB, Relays, Bread Boards.
2. Identification, Diodes, BJTs, Low power JFETs, MOSFETs, LEDs, LCDs, Optoelectronic Devices, Linear and Digital ICs.
3. Study and operation of Multi meters (Analog and Digital), Function Generator, Regulated Power Supplies and CRO.

PART A:

1. Verification of Kirchhoff's laws
2. Verification of superposition theorem
3. Verification of maximum power transfer theorem on DC with resistive load
4. Experimental verification of Thevenin's and Norton's theorems

PART B:

1. Deflection sensitivity measurement of CRO.
2. PN Junction diode characteristics. (Forward bias and Reverse bias)
3. Zener diode characteristics and Zener voltage regulator.
4. Full wave Rectifier with & without filters
5. Half wave Rectifier with & without filters
6. Bridge Rectifier with & without filters
7. Transistor CE characteristics (Input and Output).
8. Drain and transfer characteristics of FET.

(Any 10 experiments should be completed)

II Year B.Tech CSE – II Sem **L T/P/D C**
4 0 4

(R11CSE1118) COMPUTER GRAPHICS AND ANIMATION

Course Objectives:

1. Explain fundamental concepts and the theory of computer graphics and animation.
2. Outline the algorithms and theories that form the basis of computer graphics and modeling.
3. Construct application programming interface based on graphics algorithms.
4. Devise practical knowledge and experience on modeling technologies and techniques.

Course Outcomes:

1. Analyze the theory and practical knowledge on computer graphics and animation.
2. Build algorithms on computer graphics.
3. Describes the basics of graphics application programs including animation.
4. Explain the principles and commonly used paradigms and techniques of computer graphics.

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Computer Graphics and Animation	CO-1	2	2					1			1		
	CO-2			2			2				1	1	1
	CO-3				2	2			1				
	CO-4	1			2					1	2		

UNIT I
INTRODUCTION

Introduction: Usage of Graphics and their applications, Presentation Graphics-Computer Aided Design- Computer Art- Entertainment- Education and Training-Visualization- Image Processing- Graphical User Interfaces

Over view of Graphics systems: Video Display Devices- Raster Scan systems-random scan systems-Graphics monitors and workstations-Input devices-hard copy devices-Graphics software

Output primitives: Points and Lines-Line Drawing Algorithms- Loading the Frame buffer- Line function- Circle- Generating Algorithms- Ellipse Generating Algorithms-Other Curves- Parallel Curve Algorithms-Curve Functions-Pixel Addressing- Filled Area Primitives-Filled Area Functions- Cell Array- Character Generation

Attributes of Output Primitives: Line and Curve Attributes-Color and Gray scale levels- Area Fill Attributes- Character Attributes-Bundled Attributes- Inquiry Functions-Anti aliasing

UNIT II

TWO DIMENSIONAL GEOMETRICALTRANSFORMATION AND VIEWING

Two dimensional geometric transformations - Matrix representations and homogeneous coordinates, composite transformations; Two dimensional viewing - viewing pipeline, viewing coordinate reference frame; widow-to-viewport coordinate transformation, Cohen -Sutherland- and Cyrus-beck line clipping algorithms,Southerland-Hodgeman polygon clipping algorithm.

UNIT III

THREE DIMENSIONAL OBJECT REPRESENTATION

Three dimensional concepts; Three dimensional object representations - Polygon surfaces - Polygon tables - Plane equations - Polygon meshes; Curved Lines and surfaces, Quadratic surfaces; Blobby objects; Spline representations - Bezier curves and surfaces - B-Spline curves and surfaces

UNIT IV

THREE DIMENSIONAL GEOMETRICAL TRANSFORMATION AND VIEWING

Three dimensional geometric and modeling transformations - Translation, Rotation, Scaling, composite transformations; Three dimensional viewing - viewing pipeline, viewing coordinates, Projections, Clipping; Visible surface detection methods: Depth buffer, scan line, Depth sorting, BSP-tree methods, Area sud-division and octree methods

UNIT V

COMPUTER ANIMATION

Design of Animation Sequence, General computer Animation functions, Raster animation, Computer animation languages, key frame systems, motion specifications

TEXT BOOKS

1. Computer Graphics C Version by Donald Hearn and M.Pauline Baker, Pearson Education, New Delhi, 2004.
2. "Computer graphics principles &practice", second edition in c, Foley, VanDam, Feiner and Hughes, Pearson Education

REFERENCES

1. "Procedural elements for Computer Graphics", David Rogers, Tata McGraw hill,2nd edition
2. "Computer Graphics", Steven Harington, TMH
3. "Principles of interactive Computer Graphics" Neuman and sproul,TMH
4. "Computer Graphics" Second Edition zhigand xiang, Roy Plastock, schaums outlines, TMH Edition.

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3 1 3

(R11CSE1108) OPERATING SYSTEMS

Course Objectives:

1. Analyze the tradeoffs inherent in operating system design.
2. Summarize the various approaches to solving the problem of mutual exclusion in an operating system.
3. Evaluate the trade-offs in terms of memory size (main memory, cache memory, auxiliary memory) and processor speed.
4. Demonstrate disk storage strategies, file strategies and system protection and security with different crypto models.

Course Outcomes:

1. Identify the System calls, protection and interrupts of any GOS.
2. Explain Input/output, disk access, file systems facilities any GOS()
3. Write application keeping Concurrency and synchronization Semaphores/monitors, sharedmemory, mutual exclusion
4. Process scheduling services of an GOS in the mind

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Operating Systems	CO-1	1	2		1		2	1		2		2	
	CO-2		1	2	1		2		2		1		2
	CO-3		2		1	2	2	1	1	2			1
	CO-4	2		1		1		2	2	1	1	2	1

UNIT-I

Computer System and Operating System Overview- Overview of Computer System hardware . Operating System Objectives and functions, Evaluation of operating System ,Example Systems. Operating System Services , System Calls , System Programs, Process Management- Process Description ,Process Control, Process States, Cooperating Processes , Inter-process Communication.

UNIT –II

CPU Scheduling- Basic Concepts, Scheduling Criteria, Scheduling Algorithms and evaluation. Threads Overview, Threading issues.

Concurrency - Principles of Concurrency, Mutual Exclusion, Software and hardware approaches , Semaphores , Monitors , Message Passing , Classic problems of synchronization.

UNIT-III

Principles of deadlock-System Model , Deadlock Characterization , Methods for handling Deadlocks, Deadlock Prevention, Deadlock avoidance ,Deadlock detection ,Recovery from Deadlocks, Dining philosophers problem .

UNIT-IV

Memory Management – Basic concepts, Swapping, Contiguous memory allocation, Paging, Segmentation, Virtual memory, Demand paging, Page-replacement algorithms, Thrashing.

Secondary storage structure-Disk structure, Disk scheduling, Disk management, Swap-space Management, RAID structure, Stable-storage Implementation, Tertiary-Storage Structure

I/O systems- I/O hardware, Application I/O interface, Kernel I/O subsystem, Transforming I/O request to hardware operations, STREAMS

UNIT-V

File Management - File system-File concepts, Access methods, Directory structure, File system mounting, File sharing and Protection. Implementing file systems-File system structure and implementation, Directory implementation, Allocation methods, Free-space management, Efficiency and performance

Security - Security threats, Protection, Intruders, Viruses, Trusted System.

TEXT BOOKS

1. Operating System Principles- Abraham Silberchatz, Peter B. Galvin, Greg Gagne 7th Edition, John Wiley.
2. Operating Systems - Internal and Design Principles William Stallings, Fifth Edition-2005, Pearson education/PHI

REFERENCES

1. Operating System A Design Approach-Crowley,TMH.
2. Modern Operating Systems, Andrew S Tanenbaum 2nd edition Pearson/PHI.

3. “An Introduction to Operating Systems, Concepts and Practice”, Pramod Chandra P. Bhatt –PHI, 2003.
4. Operating Systems – A Concept based Approach – D.M.Dhamdhere, 2nd Edition, TMH.

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(R11HAS1102) BUSINESS ECONOMICS AND FINANCIAL ANALYSIS

Course objectives

1. To explain different forms of organizing private and public sector business enterprises and to analyze the significance of Business Economics in solving the problems of business enterprise. Also to define and analyze the concepts of Demand, Elasticity of Demand and Demand Forecasting Methods.
2. To analyze the various types of costs and to determine the level of output at which there is neither profit nor loss. To estimate capital requirements and to describe various sources of mobilizing funds. Also to identify least cost combinations of inputs produce desired quantity of output.
3. To describe the features of different market structure and pricing strategies.
4. To explain the basic accounting concepts and conventions. To elaborate the importance of finance function for evaluating the economic status of a business unit.

Course Outcomes:

1. Select the suitable form of business organization which meets the requirement of selected business also perform decision – making effectively in an uncertain frame work by applying concepts of Managerial Economics
2. Meet and manipulate the demand efficiently and plan the future course of action.
3. Apply right kind cost and to reduce cost by paying attention towards the costs which can be regulated or reduced. Take decision whether to buy or produce?
4. Reduce the cost of capital by selecting best sources of fund mobilization and select best investment opportunity which yields higher rate of return.

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Business Economics and Financial Analysis	CO-1				2				2	1		2	
	CO-2								2	1		2	
	CO-3								2	1		2	
	CO-4								2	1		2	

UNIT I

Business and new economic environment

Characteristic features of business; Features and evaluation of sole proprietorship; Partnership; Joint stock company; Public enterprises and their types; Changing business environment in post- liberalization scenario.

UNIT II

Introduction to business economics, and demand analysis

Definition; Nature and scope of managerial economics - demand analysis determinants; Law of demand and its exceptions.

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 methods, statistical methods, expert opinion method, test marketing, controlled experiments, and judgmental approach to demand forecasting.

UNIT III

Cost analysis

Cost concepts - opportunity cost, fixed vs. variable costs, explicit costs vs. implicit costs, and out of pocket costs vs. imputed costs; Break-even analysis (BEA) - determination of break-even point (simple problems), managerial significance, and limitations of BEA.

Capital and capital budgeting

Capital and its significance; Types of capital; Estimation of fixed and working capital requirements; Methods and sources of raising finance.

Nature and scope of capital budgeting; Features of capital budgeting proposals; Methods of capital budgeting - payback method, accounting rate of return (ARR), and net present value method (simple problems)

UNIT IV

Theory of production

Production function - isoquants and isocosts, least cost combination of inputs, and laws of returns; Internal and external economics of scale.

Market structures

Types of competition; Features of perfect competition, monopoly, and monopolistic competition; Price-output determination in case of perfect competition and monopoly.

Pricing policies and methods

Cost plus pricing; Marginal cost pricing; Sealed bid pricing; Going rate pricing, Limit pricing, Market skimming pricing, Penetration pricing, Two-part pricing, Block pricing, Bundling pricing, Peak load pricing, Cross subsidization.

UNI T V

Introduction to financial accounting

Double-entry book keeping; Journal; Ledger; Trial balance; Final accounts - trading account, profit and loss account, and balance sheet with simple adjustments.

Financial analysis through ratios

Computation; Analysis and interpretation of liquidity ratios - current ratio, and quick ratio; Activity ratios - inventory turnover ratio, and debtor turnover ratio; Capital structure ratios – debt-equity ratio, and interest coverage ratio; Profitability ratios - gross profit ratio, net profit ratio, operating ratio, P/E ratio, and EPs.

TEXT BOOK

1. Managerial Economics and Financial Analysis *by* Aryasri, 2009; *Publisher: Tata McGraw Hill*.
2. Managerial Economics *by* Varshney & Maheswari, 2009; *Publisher: Sultan Chand*.

REFERENCES

1. Financial Accounting for Management: An analytical perspective *by* Ambrish Gupta, 2010; *Publisher: Pearson Education*.
2. Managerial Economics *by* H. Craig Peterson & W. Cris Lewis; *Publisher: Prentice Hall of India*.

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(R11CSE1119) DESIGN AND ANALYSIS OF ALGORITHMS

Course Objectives:

1. Design and analysis of algorithms is a basis of computer science. The objective of this course is to cover key techniques for designing and analyzing algorithms. The topics include (but not limited to) (1) divide and conquer, (2) dynamic programming, (3) greedy algorithms, (4) backtracking, (5) branch and bound, (6) time and space complexity analysis, , and (7) theory of NP.
2. Learning classic algorithms
3. Devise correct and efficient algorithms for solving a given problem
4. Validate/Verify correctness of an algorithm.

Course Outcomes:

1. Describe and use major algorithmic techniques (divide-and-conquer, dynamic programming, linear programming, greedy paradigm, graph algorithms) and cite problems for which each technique is suitable.
2. Evaluate and compare different algorithms using worst-, average-, and best-case analysis. Identify the complexity of problems.
3. Understand asymptotic notation, its properties and use in measuring algorithm behavior
4. Determine asymptotic expressions for the worst-case execution time and space requirements of algorithms and data structures.

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Design and Analysis of Algorithms	CO-1	1	1	1	1		1					1	1
	CO-2	1	1	1	1	1		1				2	
	CO-3	1	1	1	1						2		1
	CO-4	1	1	1	1	1						2	1

UNIT I

Introduction: Algorithm, Psuedo code for expressing algorithms, Performance Analysis-Space complexity, Time complexity, Asymptotic Notation- Big oh notation, Omega notation, Theta notation. **Disjoint Sets**- disjoint set operations, union and find algorithms, spanning trees, connected components and biconnected components.

UNIT II

Divide and conquer: General method , applications-Binary search, Quick sort, Merge sort, Strassen's matrix multiplication**.** **Greedy method**: General method, applications-Job sequencing with dead lines, 0/1 knapsack problem, Minimum cost spanning trees, Single source shortest path problem, Huffman Codes.

UNIT III

Dynamic Programming: General method, Principle of optimality, applications-Multistage graphs, Matrix chain multiplication, Optimal binary search trees, 0/1 knapsack problem, All pairs shortest path problem, Travelling sales person problem, Reliability design.

UNIT IV

Backtracking: General method, applications- Recursive Permutation Generator ,N-queen problem, sum of subsets problem, Graph coloring, Hamiltonian cycles.

UNIT V

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

NP-Hard and NP-Complete problems: Basic concepts, non deterministic algorithms, NP - Hard and NP Complete classes, Cook's theorem.

TEXT BOOKS

1. Fundamentals of Computer Algorithms, Ellis Horowitz, Satraj Sahni and Rajasekharam, Galgotia publications pvt. Ltd.
2. Introduction to Algorithms, second edition, T.H.Cormen, C.E.Leiserso R.L.Rivest,and C.Stein, PHI Pvt. Ltd./ Pearson Education

REFERENCES

1. Algorithm Design: Foundations, Analysis and Internet examples M.T.Goodrich and R.Tomassia,John wiley and sons.
2. Introduction to Design and Analysis of Algorithms A strategic approach R.C.T.Lee, S.S.Tseng, R.C.Chang and T.Tsai, Mc Graw Hill.
3. Algorithms Richard Johnson baugh and Marcus Schaefer, Pearson Education

4. Fundamentals of Algorithmics by Brassard & Brattley PHI

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(R11CSE1110) DATA BASE MANAGEMENT SYSTEMS

Course objectıves:

1. To appreciate the nature of scripting and the role of scripting languages.
2. To effectively apply knowledge of PERL and PHP to new situations and learn from the experience.
3. To be able to analyze requirements of software systems for the purpose of determining the suitability of implementation of PERL, PYTHON or TCL.
4. To design and implement PERL, PYTHON and TCL software solutions that accommodate specified requirements and constraints, based on analysis or modeling or requirements specification.

Course Outcomes:

1. Understand, appreciate and effectively explain the underlying concepts of database system architecture and technologies
2. Design and illustrate the database schema for a given scenario in an Entity-Relationship(ER) model.
3. Analyse the features of Relational Data Model features in SQL and formulate the queries in Relational Algebra, Calculus and SQL.
4. Define the concepts of Normalization and apply them for the design of the database.
5. Summarize the concepts of transaction management and the data storage.

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Database Management Systems	CO-1	2	2	1	1			1					
	CO-2	2	2	2	1			1					
	CO-3	2	2	1			1						
	CO-4	2	2	2	2	1	1					1	1
	CO-5	2	2	1	1								

UNIT-I

Introduction to Databases and Database Management System - Database system Applications - Advantages of DBMS over File System - Data Models – Instances and schema - View of Data - Database Languages -DDL-DML - Database Users and Administrator - Database System Structure.

UNIT-II

Database Design and ER diagrams – Attributes and Entity Sets – Relationships and Relationship Sets – Constraints - Keys - Design Issues - Entity-Relationship Diagram- Weak Entity Sets - Extended E-R Features - Database Design with ER model - Database Design for Banking Enterprise

UNIT – III

Introduction to the Relational Model – Structure of RDBMS - Integrity Constraints over Relations – Enforcing Integrity Constraints – Querying Relational Data - Relational Algebra and Calculus.

Introduction to SQL- Data Definition commands, Data Manipulation Commands, Basic Structure, Set operations Aggregate Operations - Join operations - Sub queries and correlated queries, SQL functions , views ,Triggers, Embedded SQL.

UNIT – IV

Functional Dependencies– Introduction , Basic Definitions, Trivial and Non trivial dependencies, closure of a set of dependencies, closure of attributes, irreducible set of dependencies- Schema Refinement in Database Design- Problems Caused by Redundancy – Decompositions – Problem Related to Decomposition –- Lossless Join Decomposition – Dependency Preserving Decomposition - FIRST, SECOND, THIRD Normal Forms – BCNF –– Multivalued Dependencies – Fourth Normal Form.

UNIT-V

Transaction concept- Transaction state- Implementation of atomicity and Durability- Concurrent executions – Serializability, Recoverability

Lock Based Protocols, Timestamp Based Protocols, Validation Based Protocols, Multiple Granularity, Dead Lock Handling – Failure Classification – Storage Structure - Recovery and Atomicity- Log Based recovery – Recovery with concurrent transactions – Checkpoints .

File Organization – Organization of records in file - Data Dictionary Storage – Indexing and Hashing – Basic Concepts , Ordered Indices,B^+Tree Index files, B- tree index files – Static Hashing – Dynamic Hashing – Comparision of Indexing with Hashing.

TEXTBOOKS.

1. Database System Concepts, Silberschatz, Korth , Fifth Edition, McGraw hill (1,2,3 & 5 Units)
2. Introduction to Database Systems, C.J.Date, Pearson Education (4th Unit)

REFERENCES:

1. Fundamentals of Database Systems, Elmasri Navrate Pearson Education
2. Database Management Systems, Raghuramakrishnan, Johannes Gehrke, TATA Mc Graw Hill(1,2,3 & 5 Units)
3. Data base Systems design, Implementation, and Management, Peter Rob & Carlos Coronel 7th Edition.
4. Data Base Systems using Oracle : A simplified guide to SQL and PL /SQL, Shah, PHI

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3 1 3

(R11CSE1120) SOFTWARE ENGINEERING

Course Objectives:

1. Understand the basic concepts, purposeandimportance ofsoftware.
2. Specify, analyze and design the requirementsfor aparticular project.
3. Design the analysis models and document them.
4. Understand the importance of risk and apply the test strategies applicable for good quality software.

Course Outcomes:

1. Choose the appropriate Process model for the given project
2. Document the Requirements
3. Develop Different system Models and Create simple Test cases
4. Develop the skills for Software measurement and Prepare RMMI plan

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Software Engineering	CO-1	2	1		2			1					
	CO-2	1		2	2	1			1	1	2	1	2
	CO-3		2		2		2		2	1		1	
	CO-4	2		1	2			2	2		1		1

UNIT I

Introduction to Software Engineering: Changing nature of Software, Software Myths.A Generic View Of Process:-Software engineering-A layered technology, The Capability Maturity Model Integration (CMMI) Process Models:-The water fall model, Incremental process models, evolutionary process models, the unified process.

UNIT II

Software Requirements Functional and non functional requirements, User requirements, System requirements, Interface specification, The software requirements document. Requirements Engineering Process:Feasibility studies, requirements elicitation and analysis, requirements validation, requirements management

UNIT III

System models: context models, behavior models, data models, object models, structured methods

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 IV

Test Strategies : A strategic approach to software testing Black box and White box Testing, Validation Testing, System Testing,

Product Metrics ,Software Quality, Metrics for analysis model, Metrics for design model, Metrics for source code, Metrics for testing, Metrics for maintenance Metrics for process and products Software measurement, Metrics for software quality

UNIT V

Risk Management Reactive vs proactive risk strategies, Software risks, Risk identification, Risk projection Risk refinement, RMMM, RMMM plan Quality Management, Quality concepts, Software quality assurance, Software reviews, Formal technical reviews, Statistical Software Quality Assurance, Software reliability, ISO 9000 Quality standards

TEXT BOOKS

1. Software engineering- A practitioner's Approach, Roger S.Pressman, McGraw-Hill International Edition, 5th edition, 2001.
2. Software engineering, Ian Sommerville, Pearson education Asia, 6th edition, 2000.

REFERENCES

1. "An Integrated Approach to Software Engineering" - Pankaj Jalote, Springer Verlag, 1997.
2. "Software Engineering- An Engineering Approach"- James F Peters and Witold Pedryez, John Wiley and Sons, New Delhi, 2000.
3. "Software Engineering Fundamentals"- Ali Behforooz and Frederick J Hudson, Oxford University Press, New Delhi, 1996.
4. Software Engineering – Aprimer, Waman S Jawadekar, TMH, 2008.

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(R11CSE1203) OPERATING SYSTEMS LABORATORY

Course Objectives:

1. General understanding of structure of modern computers and Operating Systems.
2. Understanding the Purpose, structure and functions of operating systems
3. Illustration of key OS functions through C programming with examples

Course Outcomes:

1. Identify the System calls, protection and interrupts of any GOS.
2. Explain Input/output, disk access, file systems facilities any GOS()

Course name	Mapping of CO's with PO's												
Operating Systems Laboratory		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
	CO-1	2	2	1	2								
	CO-2	2	2	1	2	1				1		1	1

Week 1 & 2

1. Simulate the following CPU scheduling algorithms
   a) FCFS b) SJF c) Priority d) Round Robin

Week 3 & 4

2) Simulate MVT and MFT

Week 5

3) Simulate Paging Technique of memory management

Week 6 & 7

4) Simulate all page replacement algorithms
   a) FIFO b) LRU c) LFU Etc. …

Week 8

5) Simulate Bankers Algorithm for Dead Lock Avoidance

Week 9

6) Simulate Bankers Algorithm for Dead Lock Prevention

Week 10

7) Simulate all File Organization Techniques

a) Single level directory b) Two level c) Hierarchical d) DAG

Week 11 & 12

8) Simulate all file allocation strategies

a) Sequential b) Indexed c) Linked

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(R11CSE1208) DATABASE MANAGEMENT SYSTEMS LABORATORY

Course Objectives:

1. To provide a strong formal foundation in database concepts and relational model.
2. To familiarize the students with the nuances of database environments towards data-process oriented framework
3. To present SQL and procedural interfaces of SQL comprehensively
4. To give an introduction to systematic database design approaches covering conceptual design, logical design and an overview of physical design and to present the concepts and techniques relating to query processing by SQL engines

Course Outcomes:

1. Create, maintain and manipulate SQL/ Oracle Database.
2. Design and implement a database schema for a given problem-domain and
3. Normalize a database schema
4. Declare and enforce integrity constraints on a database using a state-of-the-art RDBMS and Populate and query a database using SQL commands and PL/SQL features like cursors, triggers and stored procedures

Course name	Mapping of CO's with PO's												
Database Management Systems Laboratory		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
	CO-1	1	1	1	1	2	1					2	2
	CO-2	1	1	1	1	1		1			2	2	
	CO-3	1	2	1	2							2	1
	CO-4	1	1	1	1	1						2	1

Objective: This lab enables the students to practice the concepts learnt in the subject DBMS by developing a database for an example company named "Roadway Travels" whose description is as

follows. The student is expected to practice the designing, developing and querying a database in the context of example database "Roadway travels". Students are expected to use "Oracle" database.

Roadway Travels

"Roadway Travels" is in business since 1997 with several buses connecting different places in India. Its main office is located in Hyderabad.

The company wants to ***computerize its operations*** in the following areas:

- Reservations and Ticketing
- Cancellations

Reservations & Cancellation:

Reservations are directly handled by booking office. Reservations can be made 30 days in advance and tickets issued to passenger. One Passenger/person can book many tickets (to his/her family).

Cancellations are also directly handed at the booking office.

In the process of ***computerization*** of **Roadway Travels** you have to design and develop a Database which consists the data of Buses, Passengers, Tickets, and Reservation and cancellation details. You should also develop query's using SQL to retrieve the data from the database.

The above process involves many steps like

1. Analyzing the problem and identifying the Entities and Relationships
2. E-R Model
3. Relational Model
4. Normalization
5. Creating the database
6. Querying.

Students are supposed to work on these steps week wise and finally create a complete "Database System" to Roadway Travels. Examples are given at every experiment for guidance to students.

Experiment 1: E-R Model

Analyze the problem carefully and come up with the entities in it. Identify what data has to be persisted in the database. This contains the entities, attributes etc.

Identify the primary keys for all the entities. Identify the other keys like candidate keys, partial keys, if any.

Note: *The student is required to submit a document by writing the Entities and Keys to the lab teacher.*

Experiment 2: Concept design with E-R Model

Relate the entities appropriately. Apply cardinalities for each relationship. Identify strong entities and weak entities (if any). Indicate the type of relationships (total / partial). Try to incorporate generalization, aggregation, specialization etc wherever required.

Note: *The student is required to submit a document by drawing the* E-R Diagram *to the* lab teacher.

Experiment 3: Relational Model

Represent all the entities (Strong, Weak) in tabular fashion. Represent relationships in a tabular fashion. There are different ways of representing relationships as tables based on the cardinality. Represent attributes as columns in tables or as tables based on the requirement. Different types of attributes (Composite, Multi-valued, and Derived) have different way of representation.
Note: *The student is required to submit a document by Represent relationships in a tabular fashion to the lab teacher.*

Experiment 4: Normalization

Database normalization is a technique for designing relational database tables to minimize duplication of information and, in so doing, to safeguard the database against certain types of logical or structural problems, namely data anomalies. For example, when multiple instances of a given piece of information occur in a table, the possibility exists that these instances will not be kept consistent when the data within the table is updated, leading to a loss of data integrity. A table that is sufficiently normalized is less vulnerable to problems of this kind, because its structure reflects the basic assumptions for when multiple instances of the same information should be represented by a single instance only.

Experiment 5: Practicing DDL and DML commands

Create all the normalized tables that are identified in Experiment 4.
Insert data into the above tables.

Experiment 7: Querying

In this week you are going to practice queries (along with sub queries) using ANY, ALL, IN, Exists, NOT EXISTS, UNION, INTERSECT, Constraints etc.

Practice the following Queries:

1. Display unique PNR_no of all passengers.
2. Display all the names of male passengers.
3. Display the ticket numbers and names of all the passengers.
4. Find the ticket numbers of the passengers whose name start with V and ends with 'h'.
5. Find the names of passengers whose age is between 30 and 45.
6. Display all the passengers names beginning with 'A'
7. Display the sorted list of passengers names.

Experiment 8 Querying (continued...)

You are going to practice queries using Aggregate functions (COUNT, SUM, AVG, and MAX and MIN), GROUP BY, HAVING and Creation and dropping of Views.

8. Write a Query to display the Information present in the Passenger and cancellation tables. Hint: Use UNION Operator.
9. Display the number of days in a week on which the 9WO1 bus is available.
10. Find number of tickets booked for each PNR_no using GROUP BY CLAUSE. Hint: Use GROUP BY on PNR_No.
11. Find the distinct PNR numbers that are present.
12. Find the number of tickets booked by a passenger where the number of seats is greater than 1. Hint: Use GROUP BY, WHERE and

HAVING CLAUSES.

13. Find the total number of cancelled seats.
14. Display the details of passengers who travelled within the last 3 months.
15. Create a view for the details of passengers who cancelled their tickets.

Experiment 9: Create tables for the following schema.
Student(*snum:* integer, *sname:* string, *major:* string, *level:* string, *age:* integer)
Class(*name:* string, *meets at:* time, *room:* string, fi*d:* integer)
Enrolled(*snum:* integer, *cname:* string)
Faculty(*fid*: integer, *fname:* string, *deptid:* integer)

Experiment 10: Querying

1. Find the names of all Juniors (Level = JR) who are enrolled in a class taught by I. Teacher.
2. Find the age of the oldest student who is either a History major or is enrolled in a course taught by I. Teacher.
3. Find the names of all classes that either meet in room R128 or have 5 or more students enrolled.
4. Find the names of all students who are enrolled in two classes that meet at the same time.
5. Find the names of faculty members who teach in every room in which some class is taught.
6. Find the names of faculty members for whom the combined enrollment of the courses that they teach is less than 5
7. Print the Level and the average age of students for that Level, for each Level.
8. Print the Level and the average age of students for that Level, for all Levels except JR.
9. Print the Level and the average age of students for that Level, whose average age is greater than 20.
10. Find the names of students who are enrolled in the maximum number of classes.
11. Find the names of students who are not enrolled in any class.
12. Count the number of junior level students.
13. Display all the students whose names starts with the letter “p”.
14. Display all the teachers whose names contain letter ‘a’ or ‘I’ in their names.

Experiment 11: PL/SQL Programs

1. Program to find sum of first ‘n’ natural no.s
2. Program to find reverse of a number
3. Insert the values of areas of a circle into a table called areas taking radius values from 2 to 8.

Experiment 12: Cursors

In this week you need to do the following: Declare a cursor that defines a result set.
Open the cursor to establish the result set. Fetch the data into local variables as needed from the cursor, one row at a time. Close the cursor when done. Practice the following programs using cursors.

1. Write a cursor program to retrieve the details of all students using cursors (Use students table in experiment 9)

2. Write a PL/SQL block to update the level of students from JL to "junior Level" and SL to "senior Level" and insert a record in new level table.
3. Write a cursor program to display the details of Senior Level students .

Experiment 13: Procedures

In this session you are going to learn Creation of stored procedure, Execution of procedure and modification of procedure. Practice procedures using the above database.

Experiment 14: Triggers

In this week you are going to work on Triggers. Creation of insert trigger, delete trigger, update trigger. Practice triggers using the above database.

REFERENCES

1. Introduction to SQL, Rick F.Vander Lans, Pearson education.
2. Oracle PL/SQL, B.Rosenzweig and E.Silvestrova,Pearson education.
3. Oracle PL/SQL Programming,Steven Feuerstein,SPD.
4. SQL & PL/SQL for Oracle 10g,Black Book, Dr.P.S.Deshpande,Dream Tech.
5. Oracle Database l l g PL/SQL Programming, M.Laughlin. TMH.
6. SQL Fundamentals,! J.Patrick,Pearson Education.

III Year B.Tech CSE – I Sem **L T/P/D C**
4 0 4

(R11CSE1104) FORMAL LANGUAGES AND AUTOMATA THEORY

Course Objectives:

1. To introduce the theoretical foundations of computer science concerning– the relationships between languages and machines, the inherent limits of what can be computed, and the inherent efficiency of solving problems.
2. To determine a language's location in the Chomsky hierarchy (regular sets, context-free, context-sensitive, and recursively enumerable languages).
3. To convert among equivalently powerful notations for a language, including among DFAs, NFAs, and regular expressions, and between PDAs and CFGs.
4. To discuss the applications of theory to other areas of computer science such as algorithms, programming languages, compilers, natural language translation, operating systems, and software verification and to build the foundation for students to pursue research in the areas of automata theory, formal languages, and computational power of machines

Course Outcomes:

1. Understand the theory of automata.
2. Classify computational devices according to their computational power, and tools which will allow us to tell if a device is powerful enough to solve a given computational problem.
3. Understand the concept of the grammar and concept of programming language.
4. Understand Turing machine concept and in turn the technique applied in computers and Classify P vs NP- Class problems and NP-Hard vs NP-complete problems

Course name	Mapping of CO's with PO's												
Formal Languages and Automata Theory		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
	CO-1	1	1	1	1	2	2		2				
	CO-2	1	1	1	1	2	2	2	2				2
	CO-3		1	1	1	2							2
	CO-4		1		2	1		1					

UNIT-I

Fundamentals: strings, Alphabet, Language, Operations, Chomsky hierarchy of languages, Finite state machine Definitions, finite automation model, acceptance of strings and languages, DFA and NFA, transition diagrams and language recognizers. NFA with ε transitions – Equivalence between NFA with and without ε transitions, NFA to DFA conversion, minimization FSM, equivalence between two FSM's, Output machines- Moore and Mealy machine.

UNIT –II

Regular Languages : Regular Sets , Regular Expressions , identity Rules, Constructing Finite automata for a given regular expressions, Conversion of Finite automata to regular expressions, Pumping lemma of regular sets , closure properties of regular sets (proofs not required). Regular Grammars – right linear and left linear grammars, equivalence between regular grammar and FA,

UNIT –III

Context Free Grammar, derivation trees, sentential forms, right most and left most derivations of strings. Ambiguity in Context free Grammars. Minimization of Context free grammars, CNF, GNF, Pumping Lemma for Context Free Languages. Enumeration of properties of CFL (proofs omitted).

Push Down Automata- definition, model, acceptance of CFL, Acceptance by final state and acceptance by empty state and its equivalence, Equivalence of CFL and PDA (proofs not required), Introduction to DCFL and DPDA.

UNIT –IV

Turing Machine: Definition, model, Design of TM, computable functions, recursively enumerable languages. Church's hypothesis, counter machine, types of Turing Machines (proofs not required)

UNIT –V

Computability Theory: Linear Bounded Automata and context sensitive languages, LR (0) grammar, decidability of problems, Universal TM, Un decidable problems about Turing Machine – Post's Correspondence Problem - The classes P and NP.

TEXT BOOKS

1. "Introduction to Automata Theory, Languages and Computations", H.E.Hopcroft, R.Motwani and J.D Ullman, Second Edition, Pearson Education, 2003.
2. "Introduction of the Theory and Computation", Micheal Sipser, Thomson Brokecole, 1997.

REFERENCES

1. "Elements of The theory of Computation", H.R.Lewis and C.H.Papadimitriou, Second Edition, Pearson Education/PHI, 2003

2. “Introduction to Languages and the Theory of Computation”, J.Martin, Third Edition, TMH, 2003.
3. “Theory of Computer Science- Automata Languages and computation”, Mishra and Chandra shekaran, Second Edition PHI.
4. “Formal languages and Automata Theory”, K.V.N.Sunitha & N.Kalyani TMH,2010.

III Year B.Tech CSE – I Sem

L	T/P/D	C
4	0	4

(R11ECE1108) MICROPROCESSORS AND MICROCONTROLLERS

Course Objectives:

1. To learn the Architecture, addressing modes and instruction set of 8086 and 8051.
2. To learn the programming concepts of 8086 and 8051.
3. To interface various peripherals to 8086.

Course Outcomes:

1. Select the proper architecture for the implementation of digital designs
2. Write various assembly language programs for 8086 and 8051.
3. Design and implement microprocessor based systems.
4. Hardware and software interaction and integration.

Course name	Mapping of CO's with PO's												
Microprocessors and Microcontrollers		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
	CO-1	1	2	2	2	1	1	2	1	1	1	1	1
	CO-2	2	2	2	2	1	1	2	1	1	1	1	1
	CO-3	2	2	1	2	1	1	1	1	1	1	1	1
	CO-4	2	2	2	2	1	1	1	1	1	1	1	1

UNIT I

Introduction to 8085 Microprocessor, Architecture of 8086 Microprocessor, Addressing modes of 8086, Instruction set of 8086, Assembler directives, simple assembly language programs, procedures, and macros. Pin diagram of 8086-Minimum mode and maximum mode of operation. Memory and I/O organization of 8086.

UNIT II

8255 PPI – various modes of operation and interfacing to 8086. Interfacing Keyboard & Displays, D/A and A/D converter to 8086 using 8255, memory interfacing to 8086, Interfacing 8257 DMA Controller to 8086.

UNIT III

Serial Communication standards, serial data transfer schemes, 8251 USART architecture and interfacing, RS-232, IEEE 488 standards. Interrupt structure of 8086, Interrupt Vector Table. Need for 8259 Programmable Interrupt Controller.

UNIT IV

Introduction to Microcontrollers, 8051 Microcontroller Architecture, I/O ports, memory organization, counters and Timers, Serial data Input/Output, Interrupts. Addressing modes, Instruction set of 8051, Simple programs.

Timer, serial port and Interrupts programming: Programming 8051 timers/counters, 8051 serial port programming, programming timer interrupts, programming External hardware interrupts, programming serial communication interrupts.

UNIT V

The AVR RISC microcontroller architecture: Introduction, AVR family architecture, Register File, The ALU, Memory access and Instruction execution, I/O memory, EEPROM, I/O ports, Timers, UART, Interrupt structure.

TEXT BOOKS

1. Microprocessors and interfacing – Douglas V. Hall, TMH, 2nd Edition, 1999.
2. 8051 Microcontroller – Kenneth J. Ayala, Penram International/ Thomson, 3rd Edition.
3. The 8051 microcontrollers and Embedded systems- Mazidi and mazidi, PHI, 2000.

REFERENCES

1. Micro computer systems, The 8086/8088 Family Architecture, Programming and Design – Y.Liu and G.A. Gibson, PHI, 2nd edition.
2. Advanced microprocessors and Peripherals – A.K.Ray and K.M.Bhurchandi, TMH, 2000.
3. Micro Computer System 8086/8088 Family Architecture Programming and Design – By Liu and GA Gibson PHI, 2nd Edition
4. Microcontrollers and Applications, Ajay . V. Deshmukh, TMGH,2005.
5. The 8085 Microprocessor : Architecture Programming and Interfacing – K.Uday Kumar, B.S Umashankar, Pearson , 2008.

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III Year B.Tech CSE – I Sem

L	T/P/D	C
4	0	4

(R11CSE1105) ARTIFICIAL INTELLIGENCE

Course Objectives:

1. Understand and analyze the importance and basic concepts of artificial intelligence and the use of agents.
2. Identify, explore the complex problem solving approaches and strategies.
3. Explore and analyze the basic concepts of neural networks and learning process.
4. Analyze and use the concept of neural network programming for various domains.

Course Outcomes:

1. To analyze and apply the basic the concepts of artificial intelligence and the use of agents into the real world scenario.
2. To identify, analyze, formulate and solve complex problems by using various search techniques.
3. To synthesize, create and solve various issues in developing the Games and specify various constraints involved in solving complex problems.
4. To have better understanding of logic programming skills and resolve problems related to reasoning.
5. To use and apply various form of learning techniques and design the solutions for complex problems.

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Artificial Intelligence	CO-1	1	1	1	1	2					1		1
	CO-2	1	2	2	1		1		1				
	CO-3	1	2	2			1		1				
	CO-4	2		2	2	2	1				1		1
	CO-5	1			2	2	1				1		1

UNIT I

Introduction

Introduction to AI – Foundations of Artificial Intelligence –State of the art. Intelligent agents- Agents & Environments- Nature of Environments- Structure of Agents. Problem solving agents – Example problems- searching for solutions.

UNIT II

Search techniques – uninformed search strategies- Breadth First, Depth First, Depth limited , Iterative deepening depth- First search, Bidirectional search, comparison.

Informed search strategies- Greedy Best first search , A*, Heuristic search, Heuristic functions, local search Algorithms-Hill climbing search, simulated annealing. Online search agents.

UNIT III

Constraint satisfaction problems – Back tracking search for CSPs. Adversial search- Game playing – optimal strategies – minimax algorithm – alpha Beta Pruning – Evaluation Functions – Cutting off Search.

Knowledge & Reasoning – Logical Agents, Knowledge Based Agents – Propositional logic – Reasoning in Propositional Logic – Resolution – Forward & Backward chaining.

UNIT IV

First order logic – Syntax & semantics of first order logic – Models, symbols, terms, quantifiers.

fPropositional vs First Order Inference –Unification & Lifting – Forward Chaining – Algorithm, Backward chaining – Algorithm, Logic programming, Resolution – Procedure, Examples.

UNIT V

Planning – Planning Problem, Planning with state space search – Forward, Backward, Heuristics. Planning Graphs – Algorithm.

Learning – Forms of Learning, Inductive Learning, Learning Decision trees.

AI – Present and Future.

TEXT BOOKS:

1. Artificial Intelligence: A modern approach by Stuart Russell and Peter Norvig. 2nd Edition, Prentice Hall, 2010.
2. Artificial Intelligence – E.Rich and K.Knight, II Edition, TMH.

REFERENCES:

1. Artificial Intelligence – Agents and Environments by William John Teahan
2. Fundamentals of the new Artificial Intelligence (Second Edition) by Toshinori Munakata. Springer Second edition.
3. Artificial intelligence : A new Synthesis.J.Nillson. Elsevier Publishers.

III Year B.Tech CSE – I Sem **L T/P/D C**
4 0 4

(R11CSE1114) OBJECT ORIENTED PROGRAMMING

Course Objectives:

On completion, students will be able

1. Understand Object Oriented Programming concepts
2. Write efficient and effective applications in Java
3. Design and implement a Java Applet.
4. Explore how object-oriented design principles were used to extend Java's GUI capabilities.

Course Outcomes:

1. Understand the concept and underlying principles of Object-Oriented Programming
2. Relate object-oriented concepts to the Java programming
3. Develop problem-solving and programming skills using Java concepts such as multi-threading, IO and language packages and exceptional handling
4. Design and develop GUI for an application and to understand the event-based GUI handling principles
5. Implement Java applets and applications for real time problems

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Object Oriented Programming	CO-1	2	2	1	1		1	1					
	CO-2	2	2	1	1								
	CO-3	1	2	2	1		2	1	1				
	CO-4	1	2	2	1		2		2	1	1	2	2
	CO-5	1	2	2	1		2		2	1	1	2	2

UNIT – I

Fundamentals of Object Oriented programming: Object Oriented paradigm - Basic concepts of Object Oriented Programming - Benefits of OOP - Applications of OOP

Java Evolution: Java Features - How Java differs from C and C++ - Java and Internet - Java and World Wide Web - Web Browsers - Hardware and Software Requirements - Java Environment. Overview of Java Language: Simple Java Program - Java Program Structure - Java Tokens- Java Statements - Implementing a Java Program - Java Virtual Machine - Constants - Variables - Data types - Scope of Variables-Symbolic Constants-Type Casting and type promotions – Operators, Operator Precedence and Associativity - Control Statements – break - continue- Arrays-Multi dimensional arrays, Wrapper Classes - Simple examples.

UNIT – II

Classes - Objects - Constructors – methods - this keyword – garbage collection- finalize - Overloading methods and constructors - Access Control- Static members – nested and inner classes – command line arguments - variable length arguments.

Inheritance – forms of inheritance – specialization, specification, construction, extension, limitation, combination, benefits and costs of inheritance. Super uses- final - polymorphism, method overriding - dynamic method dispatch –abstract classes – exploring string class.

UNIT – III

Packages & Interfaces - Defining and accessing a package – understanding CLASSPATH – access protection importing packages – Interfaces - Defining and implementing an interface, Applying interfaces, Variables in interfaces and extended interfaces. Exploring java.lang and java.util packages.

Exception Handling-Fundamentals, usage of try, catch, multiple catch clauses, throw, throws and finally. Java Built in Exceptions and creating own exception subclasses.

UNIT – IV

Multithreaded Programming: Java Thread life cycle model – Thread creation - Thread Exceptions - Thread Priority – Synchronization - Messaging - Runnable Interface - Interthread Communication - Deadlock - Suspending, Resuming and stopping threads.

I/O Streams: File – Streams – Advantages - The stream classes – Byte streams – Character streams.

Networks basics: Socket Programming - Proxy Servers - TCP/IP Sockets - Net Address - URL - Datagram's

UNIT – V

Applet Programming: How Applets differ from Applications - Applet Life Cycle - Creating an Applet - Running the Applet- Designing a Webpage - Applet Tag - Adding Applet to HTML file - More about Applet Tag - Passing parameters to Applets - Aligning the display.

Event handling- basics of event handling, Event classes, Event Listeners, delegation event model, handling mouse and keyboard events, adapter classes, AWT Class hierarchy - AWT Controls - Layout Managers and Menus, limitations of AWT, Swing, MVC architecture, components, containers, exploring swing.

TEXT BOOKS

1 Complete Reference Java J2SE, Herbert Schildt, The, 5th Edition, , TMH.
2. Core Java Cay S.Horstmann, Gary Cornell 2 Volume I Fundamentals,5th Edn. PHI,2000.

REFERENCES

1. The Java Programming Language - Second Edition, K. Arnold and J. Gosling - Addison Wesley, 1996.
2 . Java Programming and Objected Oriented Application Development, Richard A. Johnson - INDIA Edition CENGAGE Learning.
3. Object Oriented Programming with Java, R.Buyya, S.T.Selvi, X.Chu –TMH.
4. An Introduction to Java Programming Y.Daniel Liang –- Pearson Education.

III Year B.Tech CSE – I Sem **L T/P/D C**
Elective-I **3 1 3**

(R11CSE1109) ADVANCED COMPUTER ARCHITECTURE

Course Objectives:

1. Explore the classes of computers, and new trends and developments in computer architecture
2. Understand pipelining, instruction set architectures, memory addressing.
3. Understand the various techniques to enhance a processors ability to exploit Instruction-level parallelism (ILP), and its challenges.
4. Analyze and explore the symmetric shared-memory architectures and their performance, several advanced optimizations to achieve cache performance and also understand storage systems, RAID, I/O performance, and reliability measures.

Course Outcomes:

1. Describe the principles of computer design.
2. Classify instruction set architectures.
3. Analyze the operation of performance enhancements such as pipelines, caches, shared memory.
4. Describe modern architectures such as RISC, VLIW (very large instruction word) and multi-cpu systems and compare the performance of different architectures

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Advanced Computer Architecture	CO-1	1	1	2	1	2	2	2	2	2	2	2	1
	CO-2	1	1	1	1	1	1	1	2	2	2	2	1
	CO-3	1	1	1	1	2	1	1	2	2	1	2	1
	CO-4	1	1	1	1	1	1	1	2	2	1	1	1

UNIT – I

Fundamentals of Computer design- Technology trends- cost price and their trends- measuring and reporting performance - quantitative principles of computer design.

UNIT – II

Instruction set principles and examples- Classifying instruction set architecture - memory addressing- type and size of operands- operations in the instruction set- instructions for control flow- encoding an instructionset.

UNIT – III

Instruction level parallelism (ILP)and its dynamic explotation – Concepts and challenges- overcoming data hazards- reducing branch costs with dynamic hardware prediction – high performance instruction delivery- hardware based speculation

ILP software approach- compiler techniques- static branch protection - VLIW approach - H.W support for more ILP at compile time- H.W verses S.W Solutions

UNIT - IV

Memory hierarchy design- review of the ABCs of caches - cache performance- reducing cache misses penalty and miss rate – virtual memory.

Multiprocessors and thread level parallelism- symmetric shared memory architectures- distributed shared memory- Synchronization- multi threading.

UNIT - V

Storage systems - Types – Buses - RAID- errors and failures - designing an I/O system in five easy pieces..

I**nter connection networks and clusters** - interconnection network media – practical issues in interconnecting networks – clusters- designing a cluster.

TEXT BOOKS

1. Computer Architecture A quantitative approach 3rd edition John L. Hennessy & David A. Patterson Morgan Kufmann (An Imprint of Elsevier).
2. Advanced Computer Architecture second Edition , Kai Hwang, Tata McGraw Hill Publishers.

REFERENCES

1. Advanced Computer Architectures, Dezso Sima, Terence Fountain, Peter Kacsuk, Pearson.
2. Parallel Computer Architecture, A Hardware / Software Approach, David E. Culler, Jaswinder Pal singh with Anoop Gupta, Elsevier
3. Computer Architecture, B.Parhami, Oxford Univ.Press.
4. Advanced Computer Architecture, S.G.Shiva, Speacial Indian Edsition, CRC, Taylor & Francis.

III Year B.Tech CSE – I Sem	L	T/P/D	C
Elective-I	3	1	3

(R11CSE1111) DISTRIBUTED COMPUTING

Course Objectives:

The student should have learned the following:

1. Describe the differences among: concurrent, networked, distributed, and mobile.
2. Discuss Resource allocation and deadlock detection and avoidance techniques.
3. Analyze Remote procedure calls in Distributed Computing.
4. Design IPC mechanisms in distributed systems.

Course Outcomes:

1. Develop, test and debug RPC based client-server programs in UNIX.
2. Design and build application programs on distributed systems.
3. Improve the performance and reliability of distributed programs.
4. Design and build newer distributed file systems for any OS.

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Distributed Computing	CO-1	2		1	2	1	2		1	2	2	1	2
	CO-2	2	1	2	1		2			1	2	2	1
	CO-3	1	2	1	2		2	1	1	2	2	1	2
	CO-4	2	2	2	1	1	1			2	1	2	1

UNIT I

Introduction

Definitions, The different forms of computing - Monolithic, Distributed, Parallel and cooperative computing, the meaning of Distributed computing, Examples of Distributed systems, the strengths and weaknesses of Distributed computing, operating system concepts relevant to distributed computing, Network basics, the architecture of distributed applications, Interprocess

Communications-An Archetypal IPC Program Interface, Event Synchronization, Timeouts and Threading,

UNIT II

Distributed Computing Paradigms

Paradigms and Abstraction, Paradigms for Distributed Applications -Message Passing Paradigm, The Client-Server Paradigm, The peer-to-peer Paradigm, Message system (or MOM) Paradigm - the point-to-point message model and the publish/subscribe message model, RPC model, The Distributed Objects Paradigms - RMI, ORB, the object space

Paradigm, The Mobile Agent Paradigm, the Network Services Paradigm, The collaborative application (Groupware Paradigm) .choosing a Paradigm for an application.

UNIT III

The Socket API-The Datagram Socket API, The Stream-Mode Socket API, Client-Server Paradigm Issues, Connection- Oriented and Connectionless Servers, Iterative and Concurrent Servers. Group Communication-Unicasting versus Multicasting, Multicast API, Connectionless versus Connection-Oriented Multicast, Reliable Multicasting versus Unreliable Multicasting, the Java Basic Multicast API.

UNIT IV

Distributed Objects Paradigm (RMI)

Message passing versus Distributed Objects, An Archetypal Distributed Object Architecture, Distributed Object Systems, RPC, RMI, The Java RMI Architecture, Java RMI API, A sample RMI Application, steps for building an RMI application, testing and debugging, comparison of RMI and socket API

UNIT V

Distributed Object Paradigm (CORB A)

The basic Architecture, The CORE A object interface, Inter-ORB protocols, object servers and object clients, CORE A object references, CORB A Naming Service and the Interoperable Naming Service, CORBA object services, object Adapters, Java IDL, An example CORBA application.

Grid Computing

Introduction, Grid Computing Anatomy - The Grid Problem, The Concept of Virtual Organizations, Grid Architecture, Grid Architecture and relationship to other Distributed Technologies, Grid computing road map. Merging the Grid services Architecture with the Web Services Architecture.

TEXTBOOKS

1. Distributed Computing, Principles and Applications, M.L.Liu, Pearson Education.
2. Grid Computing, Joshy Joseph & Craig Fellenstein, Pearson education, 2004

REFERENCE BOOKS

1. A Networking Approach to Grid Computing, D.Minoli, Wiley & sons.
2. Grid Computing: A Practical Guide to Technology and Applications, A.Abbas, Firewall Media.
3. Java Network Programming, E.R.Harold, 2nd edition, O'Reilly, SPD.
4. Distributed Systems, Concepts and Design, 3rd edition, GCoulouris, J.Dollimore and Tim Kindbirg, Pearson Education.

III Year B.Tech CSE – I Sem **L T/P/D C**
Elective-I **3 1 3**

(R11ITD1123) INFORMATION RETRIEVAL SYSTEMS

Course Objectives:

1. Study fundamentals of DBMS, Data warehouse and Digital libraries
2. Learn various preprocessing techniques and searching and indexing approaches in text mining
3. Know various clustering approaches and study different similarity measures and different cognitive approaches used in text retrieval systems
4. Know about query languages and online IR system

Course Outcomes:

1. Distinguish classical information retrieval models, identifying their principles, document models and measures used for evaluating similarity and retrieval systems.
2. Recognize the Boolean Model, Vector Space Model, and Probabilistic Model.
3. Clearly separate the indexing and search modules in information retrieval tools
4. Create an appropriate document model for a document collection and a retrieval task, and specify automatic methods.

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Information Retrieval Systems	CO-1	2	2					1					
	CO-2		1	2	2				2				1
	CO-3					1	2	2		1			2
	CO-4	2		2				2	2	2	1	2	2

UNIT – I

Introduction: Definition, Objectives, Functional Overview, Relationship to DBMS, Digital libraries and Data Warehouses. Information Retrieval System Capabilities, Search, Browse, Miscellaneous.

UNIT – II

Cataloging and Indexing: Objectives, Indexing Process, Automatic Indexing, Information Extraction. Data Structures: Introduction, Stemming Algorithms, Inverted file structures, N-gram data structure, PAT data structure, Signature file structure, Hypertext data structure. Automatic Indexing: Classes of automatic indexing, Statistical indexing, Natural language, Concept indexing, Hypertext linkages.

UNIT – III

Document and Term Clustering: Introduction, Thesaurus generation, Item clustering, Hierarchy of clusters. User Search Techniques: Search statements and binding, Similarity measures and ranking, Relevance feedback, Selective dissemination of information search, weighted searches of Boolean systems, Searching the Internet and hypertext.

UNIT – I V

Information Visualization: Introduction, Cognition and perception, Information visualization technologies. Text Search Algorithms: Introduction, Software text search algorithms, Hardware text search systems. Information System Evaluation: Introduction, Measures used in system evaluation, Measurement example – TREC results.

UNIT – V

Multimedia Information Retrieval, Models and Languages, Data Modeling, Query Languages, Indexing and Searching. Libraries and Bibliographical systems, online IR system, OPACs, Digital Libraries.

TEXTBOOKS:

1. Information storage and retrieval systems Theory and Implementation by Kowalski, Gerald, Mark T Maybury, springer.
2. Modern Information Retrieval By Ricardo Baeza-Yates, Pearson Education, 2007.

FREFERENCE BOOKS:

1. Information Retrieval: Algorithms and Heuristics By David A Grossman and Ophir Frider, 2nd Edition, Springer.
2. Information Retrieval Data Structures and Algorithms,Frakes, W.B., Ricardo Baeza-Yates: Prentice Hall, 1992.
3. Modern Information Retrieval by Yates Pearson Education.
4. Information Storage & Retrieval by Robert Korfhage – John Wiley & Sons

5. Natural Language Processing and Information Retrieval, T.Siddiqui and U.S.Tiwary, Oxford University Press.

III Year B.Tech CSE – I Sem **L T/P/D C**
0 3 2

(R11CSE1204) OBJECT ORIENTED PROGRAMMING LABORATORY

Course Objectives:

1. Understand basic principles of object-oriented program design using Java.
2. Understand the basic and some advanced issues related to writing classes and methods such as data, visibility, scope, method parameters, object references, and nested classes.
3. Understand the basic ideas behind class hierarchies, polymorphism, and programming to interfaces.
4. Get exposure to exceptions and basic I/O streams.
5. Develop solid Java programming skills and the ability to put in practice the acquired knowledge and understanding of the Java language and object-oriented design in relatively simple case studies.

Course Outcomes:

1. Be able to understand better the object-oriented approach in programming. Students should be able to analyze and design a computer program to solve real world problems based on object-oriented principles.
2. Be able to write computer programs to solve real world problems in Java
3. To learn and appreciate the importance and merits of proper comments in source code and API documentations
4. Be able to write simple GUI interfaces for a computer program to interact with users, and to understand the event-based GUI handling principles.

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Object Oriented Programming Laboratory	CO-1	2	2	1	1		1	1					
	CO-2	2	2	1	1								
	CO-3	1	2	2	1		2	1	1				
	CO-4	1	2	2	1		2		2	1	1	2	2

1. Write a java program to print all the twin primes below 1000.
   (A twin prime is a prime number that differs from another prime number by two. (3, 5), (5, 7), (11, 13), (17, 19), (29, 31), (41, 43), ... (821, 823), etc. .
2. Write a java program to implement matrix multiplication. (Take the input from keyboard).
3. Write a Java program for sorting a given list of names in ascending order.
4. The Fibonacci sequence is defined by the following rule. The first two values in the sequence are 1 and 1. Every subsequent value is the run 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.
5. Write a Java program that prompts the user for an integer and then prints out all prime numbers up to that integer.
6. Write a Java program that checks whether a given string is a palindrome or not. Ex: MALAYALAM is a palindrome.
7. Write a Java program that prints all real solutions to the quadratic equation ax2 + bx + c = 0. Read in a, b, c and use the quadratic formula. If the discriminant b2 -4ac is negative, display a message stating that there are no real solutions.
8. Write a java program using constructor overloading.
9. Write a java program using variable length arguments
10. Write a java program using inner classes.
11. Write a java program using dynamic method dispatch.
12. Write a Java program that illustrates how run time polymorphism is achieved.
13. Write a java program that illustrates the following
    a) Creation of simple package.
    b) Accessing a package.
    c) Implementing interfaces.
14. Write a java program that illustrates the following
    a) Handling predefined exceptions
    b) Handling user defined exceptions
15. Write a Java program for creating multiple threads
    a) Using Thread class
    b) Using Runnable interface
16. Write a Java program for creating multiple threads. The main method sleeps for 10 seconds at the end of which all the threads should be terminated.
17. Write a Java program that correctly implements producer consumer problem using the concept of inter thread communication.

18. 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 client sends a Celsius value, and the result produced by the server is the Fahrenheit value.
19. Write a Java program that reads on file name from the user then displays information about whether the file exists, whether the file is readable, whether the file is writable, the contents of file and the length of the file in bytes.
20. Write a Java program that: (Use classes and objects)
    a) Implements stack ADT.
    b) Converts infix expression into Prefix form.
21. Write an applet that displays a simple message.
22. Write a java program for passing parameters to applets
23. 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.
24. Write a Java program for handling mouse and keyboard events.
25. Write a Java program for handling menu events.

TEXT BOOKS

1 The Complete Reference Java J2SE, Herbert Schildt , 5th Edition, TMH.
2. Core Java 2 Volume I Fundamentals,Cay S.Horstmann, Gary Cornell - 5th Edn. PHI,2000.
3. The Java Programming Language, K. Arnold and J. Gosling –- Second Edition, Addison Wesley, 1996.

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III Year B.Tech CSE – I Sem

L	T/P/D	C
0	3	2

(R11ECE1204) MICROPROCESSORS AND MICROCONTROLLERS LABORATORY

Course Objectives:

1. To program 8086 microprocessor using assembly language
2. To interface various peripherals to 8086

Course Outcomes:

1. To apply the concepts in the design of microprocessor based systems in real time applications

Course name	Mapping of CO's with PO's												
Microprocessors and Microcontrollers Laboratory		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
	CO-1	2	2	2	2	1	1	2	1	1	1	1	1

I. Microprocessor 8086 & Interfacing:

1. Introduction to MASM/TASM.

2. Arithmetic operation – Multi byte Addition and Subtraction, Multiplication and Division – Signed and unsigned Arithmetic operation, ASCII – arithmetic operation.

3. Logic operations – Shift and rotate – Converting packed BCD to unpacked BCD, BCD to ASCII conversion.

4. By using string operation and Instruction prefix: Move Block, Reverse string, Sorting, Inserting, Deleting, Length of the string, String comparison.

5. 8255 : Interface keyboard

6. 8255 : Interface Display

7.Serial communication between 8086 processors and PC through 8251.

II. Microcontroller 8051 & Interfacing:

1. Programming using arithmetic, logical and Bit manipulation instructions of 8051
2. Reading and Writing on a parallel port.
3. Timer in different modes
4. Serial communication between 8051 and PC
5. Interrupt programming
6. LCD Interfacing
7. Keyboard Interfacing
8. ADC Interfacing
9. DAC Interfacing
10. stepper motor Interfacing
11. DC motor Interfacing
12. Sensor Interfacing and signal conditioning

(At least 5 interfacing experiments must be completed in addition to programming experiments from part-II)

III Year B.Tech CSE – I Sem **L T/P/D C**
0 3 2

(R11HAS1204) ADVANCED ENGLISH LANGUAGE COMMUNICATION SKILLS LABORATORY

Course objectives:

1. Enable the students to create clear, accurate, and succinct content to write business letters, resume, SOP, Proposals and Technical Reports for academics as well as for workplace
2. Enable students to adjust technical content to meet the needs of a specific target audience
3. Groom students to speak accurately and fluently and prepare them for real world activities through behavioral skills.
4. Train students in soft skills through role play and group discussion to improve their EQ.

Course Outcomes:

1. Summarize and synthesize information and produce technical writing that is required in academics as well as in the engineering profession
2. write covering letters, resume, SOP, Project Proposals and Technical Reports
3. speak fluently and address a large group of audience and participate in debates and discussions.
4. negotiate terms, manage complex situations through interpersonal skills, persuade people and make quick decisions.

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Advanced English Language Communication Skills Laboratory	CO-1									2	2		2
	CO-2									2	2		2
	CO-3									2	2		2
	CO-4									2	2		2

Introduction

This course aims to offer students a practical approach to Technical Writing, and provide a relevant, contemporary and authoritative introduction to the dynamic field of technical communication that prepares them for Workplace Communication. Each unit in the syllabus is devised so as to include a writing component as well as an oral component.

The objectives of this course are to

i) expose students to workplace writing
ii) initiate them into the Process of Technical Communication
iii) to enable the students to create clear, accurate, and succinct content
iv) enable students to produce documents reflecting different types of technical communication such as Abstracts, Proposals and Technical Reports through ample practice
v) enable students to adjust technical content to meet the needs of a specific target audience
vi) groom students in behavioral skills

Methodology

Writing Component

A Process- Genre methodology will be used in teaching the technical genres. This method would enable students to understand the use of particular lexico-grammatical patterns required of in the context of technical writing. They would learn to use language to express the particular communicative intent that is required of in the context of writing these genres.

Oral Communication Component

The objective of including Oral Communication is to impart behavioral skills and prepare students to speak to a large group or team, keeping in mind the audience, context and purpose of communication. This Oral Communication component must enable students to speak in an organized and mature way, without any inhibitions. They will be groomed to relate their speech to their audience.

Objectives of Oral Communication Component

i) equip students with Behavioral skills
ii) prepare them for Oral presentations, and Group Discussions

iii) equip them with Interview skills

Syllabus Outline

Unit I

1. Applications and Covering letters
2. Resume Writing
3. Oral Communication :Self Introduction

Unit II

1. Introduction to Technical Writing

- Defining Technical Writing
- Distinguishing it from other types of writing
- Determining audience, purpose and context

2. Summarizing and Synthesizing Information

3. Behavioral Skills and Personality Development

a) Building a Positive Attitude, Building a Positive Personality, Motivation, Goal Setting & Values &
Vision

b) Problem Solving and Decision Making; Negotiation Skills through Role Play

c) Team Building and Leadership Abilities

Unit III

1. Verbal Ability : Language, Reasoning Skills, Analytical Ability, Reading and Listening Skills
2. Oral Communication: Presentation Skills (Oral and Visual)

Unit IV

1. Writing Research Abstracts
2. Oral Communication: Group Discussions

Unit V.

1. Writing Project Proposals
2. Writing Project Reports
3. Oral Communication: Interview Skills

REQUIRED TEXT BOOKS AND MATERIALS

1. Technical Writing: Process and Product *by* Sharon J. Gerson and Steven M. Gerson (1999); *Publisher: Prentice Hall.*
2. Effective Technical Communication *by* Ashraf Rizvi, M., (2005); Publisher: *Tata Mc Graw Hill*.
3. Anderson, Paul V. (2003). Reports. In Paul V. Anderson's Technical Communication: A Reader-Centered Approach (5th ed.) (pp. 457-473). Boston: Heinle.

REFERENCES

1. Technical Communication *by* Rebecca E. Burnett, 5th edition (2001); *Publisher: Thomson/Wadsworth*
2. Technical Communication: A Practical Approach (7th ed.) *by* William S. Pfeiffer; *Publisher: Person education*
3. Technical Communication: Situations and Strategies *by* Mike Markel (2006-2007); *Publisher: Bedford/ St. Martins*.
4. Anderson, Paul V. (2003). Three Types of Special Reports. In Paul V. Anderson's Technical Communication: A Reader-Centered Approach (5th ed..) ((pp. 474-513). Boston:Heinle.
5. Bolter, Jay David (2001), "The Late Age of Print" in Robert P. Yagelski's Literacies and Technologies: A Reader for Contemporary Writers (135-145); *Publisher: Longman*.
6. Brandt, Deborah. (1998) Sponsors of literacy. College Composition and Communication 49.2, 165-185.
7. Burnett, Rebecca, E. (2001) "Locating and Recording Information" in Rebecca E. Burnett's Technical Communication (pp. 164-195).
8. Johnson-Sheehan, Richard (2007). "Starting Your Career" in Richard Johnson-Sheehan's Technical Communication Today (2nd ed.) (pp. 388-402). New York: Longman.
9. Business Correspondence and Report Writing by R. C. Sharma and K. Mohan, Third Edition (2002); *Publisher: Tata McGraw Hill*.
10. Technical Communication: Principles and Practices by M. Raman and S. Sharma (Indian edition; 2004); *Publisher: Oxford University Press*.

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3 1 3

(R11CSE1113) COMPUTER NETWORKS

Course Objectives:

1. Analyze existing network protocols and networks.
2. Understand the meaning and power of a layered architectural model
3. Able to understand how to preserve the integrity of data communication on network.
4. Remember the security and privacy issues that relate to computer networks.

Course Outcomes:

1. Understand fundamental underlying principles of computer networking.
2. Understand and building the skills of sub- netting and routing mechanisms.
3. Analyze, specify and design the topological and routing strategies for an IP based
4. Networking infrastructure and Analyze the hardware, software, components of a network and the interrelations.

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Computer Networks	CO-1	1			2						1		2
	CO-2	2				1		2	1				
	CO-3		1			2	1			2			
	CO-4						2	1	2		1		

UNIT – I

Introduction to networks, internet, protocols and standards, the OSI Model, Layers in OSI model, TCP/IP suite, Addressing, Analog and Digital signals.

Physical layer: Digital transmission, multiplexing, transmission media, circuit switched networks, Datagram networks, virtual circuit networks, switch and Telephone networks.

UNIT – II

Data link layer: Introduction, Block coding, cyclic codes, checksum, framing, flow and error control, Noiseless channels, noisy channels, HDLC, point to point protocols.
Medium Access sub layer: Random access, controlled access, channelization.

UNIT – III
IEEE standards, Ethernet, Fast Ethernet, Giga-Bit Ethernet, wireless LANS.
Connecting LANS , backbone networks and virtual LANS, Wireless WANS, SONET, Frame relay and ATM.

UNIT – IV
Network layer: Logical addressing, internetworking, tunneling, address mapping, ICMP, IGMP, forwarding, Uni-cast routing protocols, multicast routing protocols.

UNIT – V
Transport Layer: Process to process delivery, UDP and TCP protocols, SCTP, Data traffic, congestion, congestion control, Qos, integrated services, differentiated services,QoS in switched networks.
Application Layer: Domain name space, DNS in internet, electronic mail, FTP, WWW, HTTP, SNMP, multi-media, network security.

TEXT BOOKS :

1. Data Communications and Networking – Behrouz A. Forouzan, Fourth Edition TMH,2006.
2. Computer Networks — Andrew S Tanenbaum, 4th Edition. Pearson Education/PHI.

REFERENCES :

1. Data communications and computer Networks, P.C .Gupta, PHI.
2. An Engineering Approach to Computer Networks-S.Keshav, 2nd Edition, Pearson Education.
3. Understanding communications and Networks, 3rd Edition, W.A. Shay, Cengage Learning.
4. *Computer Networking: A Top-Down Approach Featuring the Internet*. *James F. Kurose* & *Keith W. Ross*,3rd Edition, Pearson Education.

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4 0 4

(R11CSE1123) DATA WAREHOUSING AND DATA MINING

Course Objectives:

1. Understand the importance of Business Intelligence and the basic concepts of digital data
2. Understand the importance of data warehousing in business intelligence applications
3. Apply the ETL process using Pentaho data integration tool.
4. Differentiate the ER data model and multidimensional data model.
5. Understand the significance of a dashboard and also differentiate balanced scorecard and enterprise dashboard.

Course Outcomes:

1. Apply database analysis and design techniques to the concept of Data Warehousing.
2. Construct a data model for a case sample Data Warehouse project.
3. List and describe the core components of a Data Mart.
4. Summarize the rational and key benefits of using Data Marts and Construct a data model representing a Data Mart strategy and Explain the concept of Data Mining and List and describe the core components of a Data Mining initiative.
5. Summarize the tools and approaches used in support of Data Mining and Analyze sample data and identify correlations. To introduce advanced topics in data mining, applications and trends in data mining

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Data Warehousing and Data Mining	CO-1	2		2				1					
	CO-2		2	2	1								
	CO-3	2											
	CO-4				2	2	2					1	
	CO-5			2		2							1

UNIT I:

Introduction: Fundamentals of data mining, KDD process, Data Mining Functionalities, Classification of Data Mining systems, Data Mining Task primitives, Integration of a Data mining System with a Database or a Data warehouse systems, Major issues in Data Mining.
Data Preprocessing: Needs for Preprocessing the Data, Data Cleaning, Data Integration and Transformation, Data Reduction, Discretization and Concept Hierarchy Generation.

UNIT II:

Data Warehouse and OLAP Technology for Data Mining: Data Warehouse, Multidimensional Data Model, Data Warehouse Architecture, Data Warehouse Implementation, From Data Warehousing to Data Mining.
Data Cube computation and Data Generalization: Efficient Methods for Data Cube Computation, Further Development of data cube and OLAP Technology, Characterization and Discrimination: Attribute-Oriented Induction.

UNIT – III

Mining Frequent, Associations and Correlations: Basic Concepts, Frequent Itemset mining methods, Mining Multilevel Association Rules from Transaction Databases, Mining Multidimensional Association Rules from Relational Databases and Data Warehouses, From Association Mining to Correlation Analysis, Constraint-Based Association Mining.

UNIT – IV

Classification and Prediction: Issues Regarding Classification and Prediction, Classification by Decision Tree Induction, Bayesian Classification, Classification by Backpropagation, Classification Based on Concepts from Association Rule Mining, Other Classification Methods, Prediction, Classifier Accuracy.

UNIT – V

Cluster Analysis Introduction: Types of Data in Cluster Analysis, A Categorization of Major Clustering Methods, Partitioning Methods, Density-Based Methods, Grid-Based Methods, Model-Based Clustering Methods, Outlier Analysis.
Mining Complex Types of Data: Mining Spatial Databases, Mining Multimedia Databases, Mining Time-Series and Sequence Data, Mining Text Databases, Mining the World Wide Web.

TEXT BOOKS

1. Data mining: Concepts and Techniques, Jiawei Han and Micheline Kamber, 2nd Edition, Elsevier, 2006.
2. Introduction to Data Mining – Pang – Ning Tan, Michael Steinbach and Vipin Kumar, Pearson Education.

REFERENCES

1. Data Mining Introductory and advanced topics –MARGARET H DUNHAM, PEARSON EDUCATION
2. Data Mining Techniques – ARUN K PUJARI,2nd Edition University Press.
3. Data Warehousing in the Real World – SAM ANAHORY & DENNIS MURRAY. Pearson Edn Asia.
4. Data Warehousing Fundamentals – Paulraj Ponnaiah wiley student edition.

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(R11ITD1120) LINUX PROGRAMMING

Course Objectives:

1. Understand the fundamentals of shell scripting/Programming and Linux system Administration.
2. Learn the basic principles of file system architecture to organize the file system.
3. Apply the core concept of Processes and implement in the linux Environment by handling signals.
4. Implementing Inter-Process communication techniques in linux environment and analyze their differences.
5. Learn and design Client-server applications using Connection Oriented(TCP) and Connection-Less Protocols(UDP).

Course Outcomes:

1. Understand the fundamentals of shell scripting/Programming and Linux system Administration.
2. Learn the basic principles of file system architecture to organize the file system.
3. Apply the core concept of Processes and implement in the Linux Environment by handling signals.
4. Implementing Inter-Process communication techniques in Linux environment and analyze their differences.
5. Learn and design Client-server applications using Connection Oriented(TCP) and Connection-Less Protocols(UDP).

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Linux Programming	CO-1	2				1			1				
	CO-2	1							1				
	CO-3	2		2					1				
	CO-4	1		2	2	1							

	CO-5			2	2						2		2

UNIT I

Linux Utilities-File handling utilities, Security by file permissions, Process utilities, Disk utilities, Networking commands, Filters, Text processing utilities and Backup utilities, Working with the Bourne again shell(bash): Introduction, shell responsibilities, pipes and input Redirection, output redirection, here documents, running a shell script, the shell as a programming language, shell meta characters, file name substitution, shell variables, command substitution, shell commands, the environment, quoting, test command, control structures, arithmetic in shell, shell script examples, interrupt processing, functions, debugging shell scripts.

UNIT II

Linux Files: File Concept, File System Structure, nodes, File types, the standard I/O and formatted I/O, stream errors, , System calls, library functions, file descriptors, Directory management – Directory file APIs, Symbolic links and hard links.

UNIT III

Linux Process – Process concept, process attributes, process control - process creation, waiting for a process, process termination, zombie process, orphan process, Process APIs. Signals – Introduction to signals, Signal generation and handling, kill, sleep functions.

UNIT IV

Interprocess Communication: Introduction to IPC, pipes, FIFOs, Introduction to three types of IPC (Linux)-message queues, semaphores and shared memory. , Linux APIs for messages, client/server example. Semaphores-, Linux APIs for semaphores, file locking with semaphores. Shared Memory-, Linux APIs for shared memory, semaphore and shared memory example.

UNIT V

Sockets: Introduction to Linux Sockets, Socket system calls for connection oriented protocol and connectionless protocol, example-client/server programs.

TEXT BOOKS

1. Unix System Programming using C++, T.Chan, PHI.
2. Unix Concepts and Applications, 4th Edition, Sumitabha Das, TMH,2006.
3. Unix Network Programming ,W.R.Stevens,PHI.

REFERENCE BOOKS

1. Unix and Shell programming, B.A.Forouzan and R.F.Gilberg, Cengage Learning
2. A practical guide to Linux , Mark G.Sobell.

3. Beginning Linux Programming, 4th Edition, N.Matthew, R.Stones,Wrox, Wiley India Edition,-2008.
4. Linux System Programming, Robert Love, O'Reilly, SPD-2007.

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4 1 4

(R11CSE1107) COMPILER DESIGN

Course Objectives:

1. Demonstrate the various phases of a compiler and its construction tools
2. Examine the process of different parses along with SDD
3. Describe intermediate code and code optimizations techniques with data flow analysis
4. Understand machine independent and dependent code generation schemes.

Course Outcomes:

1. Know the major phases of compilation, particularly lexical analysis, parsing, semantic analysis and code generation.
2. Understand the differences types of parsing techniques and syntax directed translations.
3. Understand the code optimization methods..
4. Apply the optimization techniques to programming languages and Know the language features and natural language representations.

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Compiler Design	CO-1	1	1		2	1		2				2	2
	CO-2	2	1	1	1	2	2	2					2
	CO-3	2	1	1	2			1					
	CO-4	2	1		1	2	1		2	2		2	2

UNIT–I

Overview of Compilation: Phases of Compilation – Lexical Analysis, Regular Grammar and regular expression for common programming language features, pass and Phases of translation, interpretation, bootstrapping, data structures in compilation – LEX lexical analyzer

generator.

UNIT–II

Top down Parsing: Context free grammars, Top down parsing – Backtracking, LL (1), recursive descent parsing, Predictive parsing, Preprocessing steps required for predictive parsing.

Bottom up parsing: Shift Reduce parsing, LR and LALR parsing, Error recovery in parsing , handling ambiguous grammar, YACC – automatic parser generator.

UNIT–III

Semantic analysis: Intermediate forms of source Programs – abstract syntax tree, polish notation and three address codes. Attributed grammars, Syntax directed translation, Conversion of popular Programming languages language Constructs into Intermediate code forms, Type checker.

Symbol Tables: Symbol table format, organization for block structures languages, hashing, tree structures representation of scope information. Block structures and non block structure storage allocation: static, Runtime stack and heap storage allocation, storage allocation for arrays, strings and records.

UNIT–IV

Code optimization: Consideration for Optimization, Scope of Optimization, local optimization, loop optimization, frequency reduction, folding, DAG representation.

Data flow analysis: Flow graph, data flow equation, global optimization, redundant sub expression elimination, Induction variable elements, Live variable analysis, Copy propagation.

UNIT–V

Object code generation: Object code forms, machine dependent code optimization, register allocation and assignment generic code generation algorithms, DAG for register allocation.

Systems programming: Language processors, data structures for language processing, assemblers,maross and macro processing ,linkers ,loaders .

TEXTBOOKS

1. Principles of compiler design -A.V. Aho . J.D.Ullman; Pearson Education.
2. Modern Compiler Implementation in C- Andrew N. Appel, Cambridge University Press.

REFERENCES

1. lex &yacc – John R. Levine, Tony Mason, Doug Brown, O'reilly
2. Modern Compiler Design- Dick Grune, Henry E. Bal, Cariel T. H. Jacobs,Wiley dreamtech.

3. Engineering a Compiler-Cooper & Linda, Elsevier.
4. Compiler Construction, Louden, Thomson.

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4 0 4

(R11CSE1121) OBJECT ORIENTED ANALYSIS AND DESIGN (USING UML)

Course Objectives:

At the end of the course, student will be able to

1. Identify the need and process of modeling a software intensive system using the artifacts Unified Modeling Language
2. Understand the CRC (structural) approach for a given case study
3. Identify the various behaviours that supports the CRC (structural) approach
4. Explore various diagrams with advanced behavioural elements that enables the deployment of a model for a given case study

Course Outcomes:

1. Analyze the requirements through Use-Case View
2. Identify all structural and behavioral concepts of the entire system
3. Develop a model using UML concepts by different types of diagrams like Use case diagram, Class Diagram, Sequence Diagram e.t.c….

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Object Oriented Analysis and Design	CO-1	2	2	1	2	1		2			1	2	1
	CO-2	2	2	2	1	2	2	1		2	1	2	1
	CO-3	2	2	2	1	2	2	1		2	1	2	1

UNIT-I

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

UNIT-II

Basic Structural Modeling: Classes, Relationships, Common mechanisms and diagrams.Advanced Structural Modeling**:** Advanced classes, advanced relationships, Interfaces, Types and Roles, Packages, Common modeling techniques.

UNIT-III

Class and Object Diagrams: Terms, concepts, modeling techniques for class and object diagrams, Common modeling techniques.

Basic Behavioral Modeling-I: Interactions, Interaction diagrams, Common modeling techniques

UNIT-IV

Basic Behavioral Modeling-II: Use cases, Use case diagrams, Activity diagrams, Common modeling techniques.Advanced Behavioral Modeling: Events and signals, state machines, processes and Threads, time and space, state chart diagrams, Common modeling techniques.

UNIT-V

Architectural Modeling: Component, Deployment, Component diagrams, Deployment diagrams, Common modeling techniques.

Case Studies

TEXT BOOKS

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

REFERENCS

1. Fundamentals of Object Oriented Design in UML, Meilir Page-Jones: Pearson Education.
2. Object Oriented Analysis & Design, Atul Kahate: The McGraw-Hill.\
3. Practical Object-Oriented Design with UML, Mark Priestley: TATA McGrawHill
4. Applying UML and Patterns: An introduction to Object – Oriented Analysis and Design and Unified Process, Craig Larman, Pearson Education.

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0 3 2

(R11CSE1206) DATA MINING LABORATORY

Course Objectives:

1. To introduce students to the basic concepts and techniques of Data Mining.
2. Performing data preprocessing tasks for data mining in Weka
3. To perform classification on data sets using the Weka machine learning toolkit.
4. Implement and apply basic algorithms for supervised and unsupervised learning
5. To develop skills of using recent data mining software for solving practical problems.

Course Outcomes:

1. At the end of the semester, successful students will have fundamental understanding of data mining algorithms and their applications.
2. Consequently they will have necessary skills to effectively apply data mining techniques to solve real business problems.

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Data Mining Laboratory	CO-1	2		2				1					
	CO-2		2	2	1								

WEEK 1:

1. Introduction to QTP

Creating various GUI check points in QTP to verify the functionality testing of test build
Creating various Bitmap check points in QTP to verify the functionality testing of test build

WEEK 2:

2. Creating various data base check points in QTP to verify the functionality testing of test build.

WEEK 3:

3. To conduct DDT in QTP on test build

To conduct batch testing in QTP on test build.

]Week 4:

4. To know the various functions available in QTP, using function generator.
   User defined function in QTP.
   Creating a compiled module

Week 5:

5. Synchronization of QTP & test build.
   Exception handling in QTP
   Executing a prepared query in QTP

Week 6:

6. Creating various Test Cases for: ATM operations
   Creating a Test plan for: Automated library system
   Creating a Test methodology for: Railway Reservation System

DMDW Lab

7. Introduction to the Weka machine learning toolkit – Part 1
8. Introduction to the Weka machine learning toolkit – Part 2
9. Classification using the Weka toolkit
10. Performing data preprocessing for data mining in Weka
11. Performing clustering in Weka
12. Association rule analysis in Weka

Week 7:

Title

Introduction to the Weka machine learning toolkit

Aim

To learn to use the Weak machine learning toolkit

Requirements

How do you load Weka?

1. What options are available on main panel?
2. What is the purpose of the the following in Weka:
    1. The Explorer
    2. The Knowledge Flow interface
    3. The Experimenter
    4. The command-line interface
3. Describe the ***arff*** file format.
4. Press the Explorer button on the main panel and load the weather dataset and answer

    the following questions
    1. How many instances are there in the dataset?
    2. State the names of the attributes along with their types and values.
    3. What is the class attribute?

4. In the histogram on the bottom-right, which attributes are plotted on the X,Y-axes? How do you change the attributes plotted on the X,Y-axes?
5. How will you determine how many instances of each class are present in the data
6. What happens with the Visualize All button is pressed?
7. How will you view the instances in the dataset? How will you save the changes?

Week 8:

1. What is the purpose of the following in the Explorer Panel?
    1. The Preprocess panel
        1. What are the main sections of the Preprocess panel?
        2. What are the primary sources of data in Weka?
    2. The Classify panel
    3. The Cluster panel
    4. The Associate panel
    5. The Select Attributes panel
    6. The Visualize panel.
2. Load the weather dataset and perform the following tasks:
    1. Use the unsupervised filter Remove With Values to remove all instances where the attribute 'humidity' has the value 'high'?
    2. Undo the effect of the filter.
    3. Answer the following questions:
        1. What is meant by filtering in Weka?
        2. Which panel is used for filtering a dataset?
        3. What are the two main types of filters in Weka?
        4. What is the difference between the two types of filters? What is the difference between and attribute filter and an instance filter?
3. Load the iris dataset and perform the following tasks:
    1. Press the Visualize tab to view the Visualizer panel.
    2. What is the purpose of the Visualizer?
    3. Select one panel in the Visualizer and experiment with the buttons on the panel.

Week 9:

Title

Classification using the Weka toolkit

Aim

To perform classification on data sets using the Weka machine learning toolkit

Requirements

1. Load the 'weather.nominal.arff' dataset into Weka and run Id3 classification algorithm**.** Answer the following questions
    1. List the attributes of the given relation along with the type details
    2. Create a table of the weather.nominal.arff data
    3. Study the classifier output and answer the following questions

1. Draw the decision tree generated by the classifier
2. Compute the entropy values for each of the attributes
3. What is the relationship between the attribute entropy values and the nodes of the decision tree?

4. Draw the confusion matrix? What information does the confusion matrix provide?
5. Describe the following quantities:
    1. TP Rate
    2. FP Rate
    3. Precision
    4. Recall

Week 10:
Title

Performing data preprocessing tasks for data mining in Weka
Aim
To learn how to use various data preprocessing methods as a part of the data mining
Requirements
Application of Discretization Filters
1. Perform the following tasks
    1. Load the 'sick.arff' dataset
    2. How many instances does this dataset have?
    3. How many attributes does it have?

    4. Which is the class attribute and what are the characteristics of this attribute?
    5. How many attributes are numeric? What are the attribute indexes of the numeric attributes?
    6. Apply the Naive Bayes classifier. What is the accuracy of the classifier?
2. Perform the following tasks:
    1. Load the *'sick.arff'* dataset.
    2. Apply the supervised discretization filter.
    3. What is the effect of this filter on the attributes?
    4. How many distinct ranges have been created for each attribute?
    5. Undo the filter applied in the previous step.
    6. Apply the unsupervised discretization filter. Do this twice:
        1. In this step, set 'bins'=5
        2. In this step, set 'bins'=10
        3. What is the effect of the unsupervised filter filter on the datset?
    7. Run the the Naive Bayes classifier after apply the following filters
        1. Unsupervised discretized with 'bins'=5
        2. Unsupervised discretized with 'bins'=10
        3. Unsupervised discretized with 'bins"=20.
    8. Compare the accuracy of the following cases
        1. Naive Bayes without discretization filters
        2. Naive Bayes with a supervised discretization filter
        3. Naive Bayes with an unsupervised discretization filter with different values for the 'bins' attributes.

Week 11:

Title

Performing clustering using the data mining toolkit

Aim

To learn to use clustering techniques

Requirements

1. Perform the following tasks:
    1. Load the 'bank.arff' data set in Weka.
    2. Write down the following details regarding the attributes:
        1. names
        2. types
        3. values.
    3. Run the Simple K-Means clustering algorithm on the dataset
        1. How many clusters are created?
        2. What are the number of instances and percentage figures in each cluster?
        3. What is the number of iterations that were required?
        4. What is the sum of squared errors? What does it represent?
        5. Tabulate the characteristics of the centroid of each cluster.
        6. Visualize the results of this clustering (let the X-axis represent the cluster name, and the Y-axis represent the instance number)
            1. Is there a significant variation in age between clusters?
            2. Which clusters are predominated by males and which clusters are predominated by females?
            3. What can be said about the values of the region attribute in each cluster?
            4. What can be said about the variation of income between clusters?
            5. Which clusters are dominated by married people and which clusters are dominated by unmarried people?
            6. How do the clusters differ with respect to the number of children?
            7. Which cluster has the highest number of people with cars?
            8. Which clusters are predominated by people with savings accounts?
            9. What can be said about the variation of current accounts between clusters?
            10. Which clusters comprise mostly of people who buy the PEP product and which ones are comprised of people who do not buy the PEP product?
    4. Run the SimpleKMeans algorithm for values of K (no. of clusters) ranging from 1 to 12. Tabulate the sum of squared errors for each run. What do you observe about the trend of the sum of squared errors?
    5. For the run with K=12, answer the following questions:
        1. Is there a significant variation in age between clusters?

2. Which clusters are predominated by males and which clusters are predominated by
females?
3. How do the clusters differ with respect to the number of children?
4. Which clusters comprise of people who buy the PEP product and which ones are comprised of people who do not buy the PEP product?
5. Do you see any differences in your ability to evaluate the characteristics of clusters generated for K=6 versus K=12? Why does this difference arise?

Week 12:

Title

Using Weka to determine Association rules

Aim

To learn to use Association algorithms on datasets

Requirements

1. Perform the following tasks
   1. Define the following terms
      1. item and item set
      2. Association
      3. Association rule
      4. Support of an association rule
      5. Confidence of an association rule
      6. Large item set
      7. Association rule problem
   2. What is the purpose of the Apriori Algorithm
2. Perform the following tasks:
   1. Load the 'vote.arff' dataset
   2. Apply the Apriori association rule
   3. What is the support threshold used? What is the confidence threshold used?
   4. Write down the top 6 rules along with the support and confidence values.
   5. What does the figure to the left of the arrow in the association rule represent?
   6. What does the figure to the right of the arrow in the association rule represent?
   7. For rule 8, verify that numerical values used for computation of support and confidence are
      in accordance with the data by using the Preprocess panel. Then compute the support and
      confidence values. Are they above the threshold values?
3. Perform the following tasks:
   1. Load the dataset 'weather.nominal.arff'.
   2. Apply the Apriori association rule
      1. Consider the rule "temperature=hot ==> humidity=normal." Compute the support and confidence for this rule.
      2. Consider the rule "temperature=hot humidity=high ==> windy=TRUE." Consider the support and confidence for this rule.

3. Is it possible to have a rule like the following rule:
   “outlook=sunny temperature=cool” ==> humidity=normal play=yes

4. Perform the following tasks:
   1. Load the bank-data.csv file.
   2. Apply the Apriori association rule algorithm. What is the result? Why?
   3. Apply the supervised discretization filter to the age and income attributes.
   4. Run the Apriori rule algorithm
   5. List the rules that were generated.

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0 3 2

(R11ITD1207) LINUX PROGRAMMING LABORATORY

Course Objectives:

1. Understand basic principles of Linux programming.
2. Learn the fundamentals of shell scripting/programming.
3. Familiarize students with basic linux administration.
4. Implement the Linux IPC Mechanism and Design Client-Server Applications using TCP/UDP protocols

Course Outcomes:

1. Understand the how to work with Linux commands
2. Understand the how to write Shell Scrips
3. Learn various System Calls in linux .
4. Become familiar with Write shell scripts to automate various tasks

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Data Mining Laboratory	CO-1	2				1			1				1
	CO-2	1							1				1
	CO-3	2		2					1				1
	CO-4	1		2	2	1							

Note: Use Bash for Shell scripts.

Week 1

1. Write a shell script that accepts a file name, starting and ending line numbers as arguments and displays all the lines between the given line numbers.
2. Write a shell script that deletes all lines containing a specified word in one or more files supplied as arguments to it.
3. Write a shell script that displays a list of all the files in the current directory to which the user has read, write and execute permissions.

Week 2

4. Write a shell script that receives any number of file names as arguments checks if every argument supplied is a file or a directory and reports accordingly. Whenever the argument is a file, the number of lines on it is also reported.
5. Write a shell script that accepts a list of file names as its arguments, counts and reports the occurrence of each word that is present in the first argument file on other argument files.
6. Write a shell script to list all of the directory files in a directory.

Week 3

7. Write a shell script to find factorial of a given integer.
8. Write an awk script to count the number of lines in a file that do not contain vowels.
9. Write an awk script to find the number of characters, words and lines in a file.

Week 4

10. Write a c program that makes a copy of a file using standard I/O and system calls.
11. Implement in C the following Unix commands using System calls
    A . cat B. ls C. mv
12. Write a program that takes one or more file/directory names as command line input and reports the following information on the file.
    A. File type. B. Number of links.
    C. Time of last access. D. Read, Write and Execute permissions.

Week 5

13. Write a C program to emulate the Unix ls –l command.
14.Write a C program to list for every file in a directory, its inode number and file name.
15. Write a C program that demonstrates redirection of standard output to a file.Ex: ls > f1.

Week 6

16. Write a C program to create a child process and allow the parent to display “parent” and the child to display “child” on the screen.
17. Write a C program to create a Zombie process.
18. Write a C program that illustrates how an orphan is created.

Week 7

19. Write a C program that illustrates how to execute two commands concurrently with a command pipe. Ex:- ls –l | sort
20. Implement the following forms of IPC. a)Pipes b)FIFO

Week 8

21. Implement Message Queue form of IPC.
22. Write a program to create an integer variable using shared memory concept and increment the variable simultaneously by two processes. Use semaphores to avoid race conditions

Week 9

23. Design TCP iterative Client and server application to reverse the given input sentence

Week 10

24. Design a TCP concurrent server to convert a given text into upper case.
25. Design UDP Client and server application to reverse the given input sentence

Week 11

26. Write a program to implement file locking mechanisms using semaphores.

Week 12

27. Implement shared memory form of IPC.

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0 3 2

(R11CSE1205) OBJECT ORIENTED ANALYSIS AND COMPILER DESIGN LABORATORY

Course Objectives:

1. Provide the environment to learn the language translator importance
2. Help students understand the phases of compiler
3. Impart practical knowledge to write code to implement various methods
4. Make students learn the need of models in the software development process and the basic review of object-oriented concepts will be given.

Course Outcomes:

1. Design and implement language processors in C/C++
2. Use tools (such as LEX and YACC) to automate parts of the implementation process.
3. Analyse the requirements through Use-Case View
4. Identify all structural and behavioral concepts of the entire system and Develop a model using UML concepts by different types of diagrams like Usecase Diagram,Class Diagram,Sequence Diagram etc.,

Course name	Mapping of CO's with PO's												
Object Oriented Analysis and Design and Compiler Design Laboratory		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
	CO-1	1	1	2	2			2				2	2
	CO-2	1	1	2	2	2	2	2					2
	CO-3	2	2	1	1		2	1					2
	CO-4		1	1	1	2	1		2			2	2

The student should take up the case studies of ATM system, Online Reservation System and Model it in different views i.e. Use case view, logical view, component view, Deployment view.

Week 1

Design a Class Diagram for ATM system, Online Reservation System.

Week 2

Design a Use case Diagram for ATM system, Online Reservation System.

Week 3
Design a Sequence Diagram for ATM system, Online Reservation System.

Week 4
Design a Collaboration Diagram for ATM system, Online Reservation System.

Week 5
Design a Activity Diagram for ATM system, Online Reservation System.
Design a State Chart Diagram for ATM system, Online Reservation System.

Week 6
Design a Component Diagram for ATM system, Online Reservation System.
Design a Deployment Diagram for ATM system, Online Reservation System.

COMPILER DESIGN

Consider the following mini Language, a simple procedural high-level language, only operating on
integer
data, with a syntax looking vaguely like a simple C crossed with Pascal. The syntax of the language is
defined by the following BNF grammar:

<program> ::= <block>
<block> ::= { <variabledefinition> <slist> }
| { <slist> }
<variabledefinition> ::= int <vardeflist> ;
<vardeflist> ::= <vardec> | <vardec> , <vardeflist>
<vardec> ::= <identifier> | <identifier> [<constant>]
<slist> ::= <statement> | <statement> ; <slist>
<statement> ::= <assignment> | <ifstatement> | <whilestatement>
| <block> | <printstatement> | <empty>
<assignment> ::= <identifier> = <expression>
| <identifier> [<expression>] = <expression>
<ifstatement> ::= if <bexpression> then <slist> else <slist> endif
| if <bexpression> then <slist> endif
<whilestatement> ::= while <bexpression> do <slist> enddo
<printstatement> ::= print (<expression>)
<expression> ::= <expression> <addingop> <term> | <term> | <addingop> <term>
<bexpression> ::= <expression> <relop> <expression>
<relop> ::= < | <= | == | >= | > | !=
<addingop> ::= + | -

<term> ::= <term> <multop> <factor> | <factor>
<multop> ::= * | /
<factor> ::= <constant> | <identifier> | <identifier> [<expression>]
| (<expression>)
<constant> ::= <digit> | <digit> <constant>
<identifier> ::= <identifier> <letterordigit> | <letter>
<letterordigit> ::= <letter> | <digit>
<letter> ::= a|b|c|d|e|f|g|h|i|j|k|l|m|n|o|p|q|r|s|t|u|v|w|x|y|z
<digit> ::= 0|1|2|3|4|5|6|7|8|9
<empty> has the obvious meaning
Comments (zero or more characters enclosed between the standard C/Java-style comment brackets /
.../) can be inserted. The language has rudimentary support for 1-dimensional arrays. The declaration
int a[3] declares an array of three elements, referenced as a[0], a[1] and a[2]. Note also that you should
worry about the scoping of names.
A simple program written in this language is:

```
{ int a[3],t1,t2;
t1=2;
a[0]=1; a[1]=2; a[t1]=3;
t2=-(a[2]+t1*6)/(a[2]-t1);
if t2>5 then
print(t2);
else {
int t3;
t3=99;
t2=-25;
print(-t1+t2*t3); /* this is a comment
on 2 lines */
} endif }
```

Experiments on week wise:

Week 7

Design a Lexical analyzer for the above language. The lexical analyzer should ignore redundant spaces, tabs and newlines. It should also ignore comments. Although the syntax

specification states that identifiers can be arbitrarily long, you may restrict the length to some reasonable value.

Week 8

Implement the lexical analyzer using JLex, flex or lex or other lexical analyzer generating tools.

Week 9

Design Predictive parser for the given language

Design LALR bottom up parser for the above language.

Week 10

Convert the BNF rules into Yacc form and Write code to generate abstract syntax tree.

Week 11

Write program to generate machine code from the abstract syntax tree generated by the parser

Week 12

Write a Yacc Program to construct a parse tree for the given grammar

Write a Lex program to construct a lexical analyzer

TEXT BOOKS

1. Principles of compiler design -A.V. Aho . J.D.Ullman; Pearson Education.
2. Modern Compiler Implementation in C- Andrew N. Appel, Cambridge University Press.

REFERENCES

1. lex &yacc – John R. Levine, Tony Mason, Doug Brown, O'reilly
2. Modern Compiler Design- Dick Grune, Henry E. Bal, Cariel T. H. Jacobs, Wiley dreamtech.
3. Engineering a Compiler-Cooper & Linda, Elsevier.
4. Compiler Construction, Louden, Thomson.

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3 1 3

(R11CSE1122) SOFTWARE TESTING METHODOLOGIES

Course Objectives:

1. An ability to design and conduct a software test process for a software testing project and identify the needs of software test automation.
2. An ability understand and identify various software testing problems, and solve these problems by designing and selecting software test models, criteria, strategies, use software testing methods and modern software testing tools for their testing projects and basic understanding and knowledge of contemporary issues in software testing, such as component-based software testing problems.
3. An ability to use various communication methods and skills to communicate with their teammates to conduct their practice-oriented software testing projects.
4. Analyze different approaches to software testing and quality assurance, and select optimal solutions for different situations and projects.

Course Outcomes:

1. Apply fundamental knowledge of Testing in Real time scenarios.
2. Test a simple application.
3. Understand and Applying the Techniques in Software Development Life cycle

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Software Testing Methodologies	CO-1	2	2	1	1	1	1	1			1		1
	CO-2		1		2		2		1		2		1
	CO-3		1	2	2		2		1	1	1		1

UNIT I:

Introduction: Purpose of testing-Dichotomies-Software Testing Principles- Bugs, consequences of bugs, Taxonomy of bugs -The Tester's Role in a Software Development Organization-Black box testing and white box testing- Defects -Cost of defects- Defect Classes- Defect Examples ,software testing life cycle.

UNIT II:

Flow graphs and Path testing: Basics concepts of path testing-predicates-path predicates and achievable paths- path sensitizing- path instrumentation, application of path testing.
Transaction Flow Testing: Transaction flows- transaction flow testing techniques-
Dataflow testing: Basics of dataflow testing - strategies in dataflowtesting-application of data flow testing.

UNIT III:

Test Case Design Strategies – Using Black Box Approach to Test Case Design - Random Testing – Requirements based testing – Boundary Value Analysis –Equivalence Class Partitioning– Compatibility testing – User documentation testing – Domain testing.
Alpha, Beta Tests – Usability and Accessibility testing – Configuration testing - Compatibility testing – Testing the documentation.

UNIT IV:

Paths, Path products and Regular expressions: Path products & path expression- reduction procedure- applications- regular expressions & flow anomaly detection.
Logic Based Testing: Overview decision tables-path expressions, k-v charts- State- State Graphs and Transition testing: State graphs- good & bad stategraphs-statetesting
State, state graphs and transition testing: state graphs ,good and bad state graphs ,state testing, testability tips

UNIT V:

Graph Matrices and applications: motivational over view ,matrix of graph, relations ,power of matrix, node reduction algorithm .
People and organizational issues in testing – organization structures for testing teams – testing services - Test Planning – Test Plan Components – Test Plan Attachments – Locating Test Items – test management – test process- bug detection life cycle.

TEXT BOOKS:

1. "Software Testing – Principles and Practices", Srinivasan Desikan and Gopalaswamy Ramesh, Pearson education, 2006.
2 "Software Testing Techniques", Boris Beizer, – 2nd Edition, Van Nostrand Reinhold, New York, 1990

REFERENCES:

1. " Software Testing", Ron Patton, Second Edition, Sams Publishing, Pearson education, 2007
2. "Software Testing – Effective Methods, Tools and Techniques", Renu Rajani, Pradeep OakTata McGraw Hill, 2004.
3. "Software Testing in the Real World – Improving the Process", Edward Kit Pearson Education, 1995.
4. "Foundations of Software Testing – Fundamental algorithms and techniques",Aditya P. Mathur, Dorling Kindersley (India) Pvt. Ltd., Pearson Education, 2008.

IV Year B.Tech CSE – I Sem

L	T/P/D	C
4	1	3

(R11ITD1102) WEB TECHNOLOGIES

Course Objectives:

The main objectives are summarized as shown below:

1. Explain various fundamental concepts for developing websites and web based applications.
2. To Know about technology for data transportation among incompatible systems and applications
3. Write various programs to develop static and dynamic websites
4. To implement various frameworks for developing well architected web applications

Course Outcomes:

1. Understand the concepts required for building web base technologies.
2. Write the programs for implementing websites and web applications.
3. Analyze the requirements of the customer and build web based applications.
4. Optimize the applications by using various frameworks of web technologies

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Web Technologies	CO-1	2	2	1	2	2	2	2	1	2		2	2
	CO-2	2	1		2	2	2	2		2	2	2	2
	CO-3	2	2	1	2	2	2	2	1	2		2	2
	CO-4	2	2	1	2	2	2	2	1		1	1	2

UNIT I

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

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

UNIT II

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

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 III

Web Servers and Servlets: Tomcat web server, Installing the Java Software Development Kit, Tomcat Server & Testing Tomcat, 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 IV

Database Access: Database Programming using JDBC, JDBC drivers,Studying Javax.sql.* package, Accessing a Database from a Servelet.

Introduction to JSP: The Problem with Servelet. The Anatomy of a JSP Page, JSP Processing. JSP Application Design with MVC Setting Up and JSP Environment.

UNIT V

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, Accessing a Database from a JSP page, Deploying JAVA Beans in a JSP Page, Introduction to struts framework.

TEXT BOOKS

1. Web Programming, building internet applications, Chris Bates 2nd edition, WILEY Dreamtech (UNIT s 1, 2)
2. Core SERVLETS ANDJAVASERVER PAGES VOLUME 1: CORE TECHNOLOGIES By Marty Hall and Larry Brown Pearson (UNITs 3,4,5)

REFERENCE BOOKS

1. Programming world wide web-Sebesta,Pearson

2. Internet and World Wide Web – How to program by Dietel and Nieto PHI/Pearson Education Asia.
3. Jakarta Struts Cookbook , Bill Siggelkow, S P D O'Reilly.
4. Java : The complete Reference, 7th Edition by Herbert Schildt. TMH.

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3 1 3

(R11CSE1124) VISUAL PROGRAMMING TECHNIQUES

Course objectives:

1. Implementing various applications using Visual C#.NET language
2. Develop various applications using Microsoft Visual Studio .NET IDE environment.
3. Write various programs to develop static and dynamic websites using ASP.NET
4. Building a good foundation for understanding and learning advanced programming concepts, such as, object-oriented programming.

Course Outcomes:

5. Understand the fundamentals of visual programming
6. Be familiar with the essential techniques to build windows applications using visual C# approach
7. Will be able to develop, test and debug programs in C# .NET using the Microsoft Visual Studio .NET IDE environment.
8. Take advantages of the many new capabilities of building applications in graphical environment

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Visual Programming Techniques	CO-1	1	2	1	1	2	2					1	1
	CO-2	1	2	2	1	1	1					2	2
	CO-3	2	2	1	1	1	2					1	2
	CO-4	1	2	1	1	2	2					1	1

INTRODUCTION:
This course builds skills to develop console-based and windows-based applications using VC#.NET. The course discusses the implementation of Object-oriented concepts using C# language. In addition, this course introduces implementation of various programming concepts,

such as threads, file handling, delegates, attributes, and reflection using C# language. This course also introduces GUI application development and database programming through ADO.NET.
Furthermore, this course also provides an understanding to develop and deploy Web applications using ASP.NET. This course covers adding and configuring server controls, and master pages.

UNIT 1: Introduction to .NET
What is .NET, Why .NET, Advantages of .NET, Architecture of .NET, Introduction to CLR, CLR architecture, Just-in-time compiler(JIT), Microsoft Intermediate Language(MSIL), Understanding IL with ILDASM, .NET Framework, common class library, common type system(CTS), common language specifications(CLS), Languages under .NET, Working with Microsoft Visual studio IDE.

UNIT 2: Object Oriented Programming Using C#
Explain features and phases of the object-oriented approach, Write and execute C# programs, Use decision-making constructs and loop constructs, Implement structures, enumerations, arrays, and collections, Implement polymorphism and overload functions and operators, Explain and use delegates and events , Use various stream classes to implement file handling.

UNIT 3: GUI Applications Development using .NET Framework Work with the Windows Forms and controls, Perform validation of controls using classes and controls , Work with Dialog Boxes, Menus and MDI Application, Implement Printing and Reporting Functionality in a Windows Forms Application, Package and deploy applications.

UNIT 4: Developing Database Applications Using ADO.NET
Create and manage connections using ADO.NET, Identify the disconnected and connected environment in ADO.NET, Create datasets and data tables, Retrieve and store large binary data, Perform bulk copy operations , Execute SQL notification maintain and update a cache, Read, write, validate, and modify XML data using XML reader and writer classes.

UNIT 5: Developing Web applications Using ASP.NET
Create a Web Application, Program a Web Application, Add and Configure Server Controls, Create a Common Layout by Using Master Pages, Manage State for a Web Application , Access and Display Data, Control Access to a Web Application , Deploy a Web Application, Build Dynamic Web Applications, Create Controls for Web Applications.

TEXT BOOKS

1. C# and the .NET Platform Andrew Troelsen, Apress Wiley-dreamtech, India Pvt Ltd
2. Professional ASP.NET 3.5: In C# and VB, March 2008, WroxPress.

REFERENCES

1. C# Your Visual Blueprint for building .NET Applications By : Eric Butow and Tommy Ryan
2. ASP.NET Your Visual Blueprint for building Web on the .NET framework By Danny Ryan and Tommy Ryan
3. Introduction to C# Using .NET Pearson Education
4. C# How to program, Pearson Education

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IV Year B.Tech CSE – I Sem

L	T/P/D	C
3	1	3

(R11ITD1121) NETWORK SECURITY

Course Objectives:

1. Discuss security concepts, threats, attacks,services and mechanisms.
2. Describe various cryptosystems- symmetric key cryptography, public key cryptography.
3. Comprehend and apply authentication services and mechanisms, and Email security.
4. Discuss the concepts of IP Security, web security, viruses and firewalls

Course Outcomes:

1. Define fundamentals of network security and demonstrate available networking solutions.
2. Analyze cryptographic techniques and encryption algorithms for secure communication.
3. Discriminate threats, attacks and possible types of firewall implementations.
4. Design secure mails and apply authentication techniques available.

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Network Security	CO-1	1	2	1	2		2						
	CO-2	1	1	1	1	2	2	2	2				2
	CO-3		1	2									2
	CO-4		1		2	1		1					

UNIT I

INTRODUCTION: Security Attacks (Interruption, Interception, Modification and Fabrication), Security Services (Confidentiality, Authentication, Integrity, Non-repudiation, access Control

and Availability) and Mechanisms, A model for Internetwork security, Classical Encryption techniques, Fiestel Cipher Structure, Data Encryption Standard, Block Cipher Design Principles and Modes of Operation, Triple DES, IDEA, BLOWFISH, RC-4, Evaluation criteria for AES, AES Cipher, Placement of Encryption Function, Traffic Confidentiality

UNIT II

PUBLIC KEY CRYPTOGRAPHY

Confidentiality using Symmetric Encryption – Principles of Public key Cryptosystems, RSA algorithm, Key Management, Diffie-Hellman key Exchange, Elliptic Curve Cryptography. Buffer overflow, TCP session hijacking, ARP attacks, route table modification, UDP hijacking and man-in-the-middle attacks.

UNIT III

AUTHENTICATION AND HASH FUNCTIONS

Authentication requirements, Authentication functions, Message Authentication Codes, Hash Functions, Security of Hash Functions and MACs, MD5 message Digest algorithm , Secure Hash Algorithm, RIPEMD, HMAC Digital Signatures, Authentication Protocols, Digital Signature Standard, Authentication Applications: Kerberos – X.509 Authentication Service

UNIT IV

NETWORK SECURITY: Email Security and Web Security

Electronic Mail Security – PGP/ SMIME, IP security- Architecture, Authentication Header, Encapsulating Security Payload, Key Management, Web Security- Secure Socket Layer, Transport Layer Security and Secure Electronic Transaction

UNIT V

SYSTEM LEVEL SECURITY

Intrusion detection – password management – Viruses and related Threats – Virus Counter measures – Firewall Design Principles – Trusted Systems.

TEXT BOOKS

1. "Cryptography And Network Security – Principles and Practices",William Stallings, Prentice Hall of India, Fourth Edition, 2005.
2. "Applied Cryptography", Bruce Schneier, John Wiley & Sons Inc, 2001

REFERENCES

1. "Security in Computing", Charles B. Pfleeger, Shari Lawrence Pfleeger, Third Edition, Pearson Education, 2003
2. "Cryptography and Network Security", Atul Kahate, Tata McGraw-Hill, 2003.
3. "Hack Proofing your network" by Ryan Russell, Dan Kaminsky, Rain Forest, Puppy, Joe Grand, DavidAhmad, Hal Flynn Ido Dubrawsky, Steve W.Manzuik and Ryan Permeh, wiley Dreamtech

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IV Year B.Tech CSE – I Sem **L T/P/D C**
4 0 4

(R11HAS1103) MANAGEMENT SCIENCE

Course objectives:

1. Understand the principles, functions, theories and practices of different management areas and to provide them with practical exposure to cases of success/failure in business.
2. Expose with a systematic and critical understanding of organizational theory, structures and design.
3. Familiarize with the tools of operations and project management.
4. Understand the role of human relations in the management of operations.
5. Comprehend conceptual models of strategic management.
6. Provide basic insights into contemporary management practices.

Course Outcomes:

1. Function effectively in multidisciplinary teams to accomplish a common goal of organizations.
2. Demonstrate knowledge of contemporary management practices.
3. Use the project management techniques and Achieve new insights and refine skills of interpretation.
4. Appreciate the management challenges associated with high levels of change in the organizations and Compare and contrast between different organization structures.

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Management Science	CO-1				2				2	1		2	
	CO-2								2	1		2	
	CO-3								2	1		2	
	CO-4								2	1		2	

UNIT I

Introduction to management

Concepts of management - nature, importance, and functions of management; Taylor's scientific management theory; Fayol's principles of management; Mayo's Hawthorne experiments; Maslow's theory of human needs; Douglas McGregor's theory X and theory Y; Herzberg's two-factor theory of motivation; System and contingency approach to management; Planning – meaning, significance, and types of plans; Decision making and steps in decision making process; Leadership styles; Social responsibilities of management.

Organizing - Meaning, and features; Process of organization; Principles of organization; Elements of organization; Organization chart; Span of control - Graicunas formulae; Centralisation and decentralization; Types of mechanistic and organic structures of organisation - line organization, line and staff organization, functional organization, committee organization, matrix organization, virtual organisation, cellular organisation, team structure, boundaryless organization, inverted pyramid structure, and lean and flat organization structure; Their merits, demerits and suitability.

UNIT II

Human resources management

Concepts of HRM;

Basic functions of HR manager - human resource planning (definition; objectives; process), recruitment (definition; sources; techniques), selection (definition; process), induction and orientation, training and development (definition; need; methods), employee exit process, employee relations management, employee compensation and benefits administration, job evaluation (objectives; process; methods), and performance appraisals (objectives; process; methods).

UNIT III

Strategic management

Mission; Goals; Objectives; Policy; Strategy; Programmes; Elements of corporate planning process - environmental scanning; value chain analysis, BCG matrix, generic strategy alternatives, SWOT analysis, and steps in strategy formulation and implementation; Balance score card; Capability maturity model (CMM)/ People capability maturity model (PCMM).

UNIT IV

Operations management

Plant location; Types of plant layout; Methods of production – job, batch, and mass production; Work study-basic procedure involved in method study and work measurement.

Materials management

Objectives; Need for inventory control; EOQ, ABC Analysis; Purchase procedure; Value analysis; JIT, Six sigma; TQM; Supply chain management; Stores management and stores records.

Marketing

Functions of marketing; Marketing mix, and marketing strategies based on product life cycle; Channels of distribution.

UNIT V

Project management – network analysis

Network analysis; Programme evaluation review technique - PERT (probability of completing the project within given time); Critical path method - CPM (Identifying critical path); Project cost analysis; Project crashing; Simple problems.

TEXT BOOK

1. Management Science *by* Aryasri; *Publisher: Tata McGraw Hill, 2009.*
2. Management *by* James Arthur, Finch Stoner, R. Edward Freeman, and Daniel R. Gilbert 6th Ed; *Publisher: Pearson Education/Prentice Hall.*
3. Principles and Practice of Management - L.M. Prasad; *Publisher: Sultan Chand Publications, New Delhi.*

REFERENCES

1. Principles of Marketing: A South Asian Perspective *by* Kotler Philip, Gary Armstrong, Prafulla Y. Agnihotri, and Eshan ul Haque , 2010, 13th Edition, *Publisher: Pearson Education/ Prentice Hall of India*.
2. A Handbook of Human Resource Management Practice *by* Michael Armstrong, 2010; *Publisher: Kogan Page Publishers*.
3. Quantitative Techniques in Management *by* N.D. Vohra, 4th edition, 2010; *Publisher: Tata McGraw Hill*.
4. Operations Management: Theory and Practice *by* B. Mahadevan, 2010; *Publisher: Pearson Education*.
5. Strategic Management *by* V.S.P. Rao and V. Hari Krishna, 2010; *Publisher: Excel Books*.

VNR Vignana Jyothi Institute of Engineering and Technology

IV Year B.Tech CSE – I Sem **L T/P/D C**
Elective – II **3 1 3**

(R11CSE1112) MOBILE COMPUTING

Course Objectives:

1. Recognize the need of Mobile communications and Mobile computing and WLAN Techniques.
2. Identify the need of Mobility management at IP and Transport Layers.
3. Differentiate between Audio and Video broad casting and to know the role of scripting in Mobile environment
4. State the Role of Database and it's Management in Mobile Environment role security in wireless environment.

Course Outcomes:

1. Demonstrate differences between wired and wireless communications and categorize MAC protocols used in Wireless Communication, GSM.
2. Describe the need of Mobile IP and illustrate about Encapsulation, MANET's and Mobile Transport Layer.
3. Apply DAB and DVB in real life and develop scripting codes needed for mobile environment
4. Models Different Hoarding Techniques and Updating Database in Mobile Environment and construct the security features to suite for mobile environment.

Course name	Mapping of CO's with PO's												
Mobile Computing		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
	CO-1	1	2				1	1	1	2	1	2	1
	CO-2	1	1	1	2		1	1		2	1	2	2
	CO-3	1	2		1	2	1	2		2	1	2	2
	CO-4	1	1	1	2	1	1			2	1	1	1

UNIT I

Introduction
Mobile Communications, Mobile Computing – Paradigm, Promises/Novel Applications and Impediments and Architecture; Mobile and Handheld Devices, Limitations of Mobile and Handheld Devices.

GSM – Services, System Architecture, Radio Interfaces, Protocols, Localization, Calling, Handover, Security, New Data Services, GPRS, CSHSD, DECT.

UNIT –II
(Wireless) Medium Access Control (MAC)
Motivation for a specialized MAC (Hidden and exposed terminals, Near and far terminals), SDMA, FDMA, TDMA, CDMA. MAC protocols for GSM, Wireless LAN (IEEE802.11), Collision Avoidance (MACA, MACAW) Protocols.

UNIT –III
Mobile IP Network Layer
IP and Mobile IP Network Layers, Packet Delivery and Handover Management, Location Management, Registration, Tunnelling and Encapsulation, Route Optimization, DHCP.

Mobile Transport Layer
Conventional TCP/IP Protocols, Indirect TCP, Snooping TCP, Mobile TCP, Other Transport Layer Protocols for Mobile Networks.

UNIT IV
Mobile Ad hoc Networks (MANETs)
Introduction, Applications & Challenges of a MANET, Routing, Classification of Routing Algorithms, Algorithms such as DSR, AODV, DSDV, etc. , Mobile Agents, Service Discovery.

Protocols and Platforms for Mobile Computing
WAP, Bluetooth, XML, J2ME, JavaCard, PalmOS, Windows CE, SymbianOS, Linux for Mobile Devices.

UNIT V
Database Issues
Database Hoarding & Caching Techniques, C – S Computing & Adaptation, Transactional Models, Query processing, Data Recovery Process & QoS Issues.

Data Dissemination and Synchronization
Communications Asymmetry, Classification of Data Delivery Mechanisms, Data Dissemination Broadcast Models, Selective Tuning and Indexing Methods, Digital Audio and Video Broadcasting (DAB & DVB). Data Synchronization – Introduction, Software, and Protocols

Text Book:-

1. “Mobile Computing”, Raj Kamal, Oxford University Press, 2007, ISBN: 0195686772

Reference Books:-

1. “Mobile Communications”, Jochen Schiller, Addison-Wesley, Second Edition, 2004.
2. “Handbook of Wireless Networks and Mobile Computing”, Stojmenovic and Cacute, Wiley, 2002, ISBN 0471419028.
3. “Mobile Computing Principles: Designing and Developing Mobile Applications with UML and XML”, Reza Behravanfar, ISBN: 0521817331, Cambridge University Press,Oct 2004,

IV Year B.Tech CSE – I Sem **L T/P/D C**
Elective – II **3 1 3**

(R11CSE1125) DISTRIBUTED DATABASES

COURSE OBJECTIVES:

1. Construct simple and moderately advanced database queries using Structured Query Language (SQL).
2. Design and implement a small database project using Microsoft Access.
3. Understand the concept of a database transaction and related database facilities, including concurrency control; backup and recovery, and data object Locking and protocols.
4. Describe and discuss selected advanced database topics, such as distributed database systems and the data warehouse.

Course Outcomes:

5. Explain and evaluate the fundamental theories and requirements that influence the design of modern database systems
6. Assess and apply database functions and packages suitable for enterprise database
7. Development and database management critically evaluate alternative designs and architectures for databases and data warehouses
8. Analyze and evaluate methods of storing, managing and interrogating complex data

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Distributed Data Bases	CO-1	2	2	1	1	1	1			2	2	1	2
	CO-2	2	2	2	2		2	1		1	2	2	1
	CO-3	2	1	2	2	1	2	1	1	2	2	1	1
	CO-4	2	1	2	1		1		1	2	1	2	2

UNIT – I

Features of Distributed versus Centralized Databases, Principles Of Distributed Databases , Levels Of Distribution Transparency, Reference Architecture for Distributed Databases , Types

of Data Fragmentation, Distribution transparency for Read – only Applications, Distribution transparency for update Applications, Distributed database Access primitives, Integrity Constraints in Distributed Databases.Distributed Database design – A frame work, the design of database fragmentation, the allocation of fragments.

UNIT – II

Translation of Global Queries to Fragment Queries, Equivalence Transformations for Queries, Transforming Global Queries into Fragment Queries, Distributed Grouping and Aggregate Function Evaluation, Parametric Queries.

UNIT – III

Optimization of Access Strategies, A Framework for Query Optimization, Join Queries, General Queries.

UNIT – IV

The Management of Distributed Transactions, A Framework for Transaction Management, Supporting Atomicity of Distributed Transactions, Concurrency Control for Distributed Transactions, Architectural Aspects of Distributed Transactions.

Concurrency Control, Foundation of Distributed Concurrency Control, Distributed Deadlocks, Concurrency Control based on Timestamps, Optimistic Methods for Distributed Concurrency Control.

UNIT – V

Reliability, Basic Concepts, Non blocking Commitment Protocols, Reliability and concurrency Control, Determining a Consistent View of the Network, Detection and Resolution of Inconsistency, Checkpoints and Cold Restart.

Distributed Database Administration, Catalog Management in Distributed Databases, Authorization and Protection

TEXT BOOKS

1. Distributed Database Principles & Systems, Stefano Ceri, Giuseppe Pelagatti McGraw-Hill

REFERENCES

1. Principles of Distributed Database Systems, M.Tamer Ozsu, Patrick Valduriez – Pearson Education.

IV Year B.Tech CSE – I Sem **L T/P/D C**

Elective – II **3 1 3**

(R11CSE1126)SOFT COMPUTING

Course Objectives:

1. Understand and analyze the importance and basic concepts of Soft Computing and the use of agents.
2. Identify, explore the complex problem solving approaches and strategies.
3. Explore and analyze the basic concepts of fuzzy logic and learning process.
4. Analyze and use the concept of neural network programming for various domains.

Course Outcomes:

1. Recognize the feasibility of applying a soft computing methodology for a particular problem.
2. Categorize fuzzy logic and reasoning to handle uncertainty and solve engineering problems.
3. Remembering genetic algorithms to solve combinatorial optimization problems .
4. Apply neural networks to pattern classification and regression problems

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Soft computing	CO-1		1		2			1					
	CO-2	2		2		1				1		1	
	CO-3		2		1		2		2				
	CO-4			1					2		1		1

UNIT-I

AI Problems and Search: AI problems, Techniques, Problem Spaces and Search, Heuristic Search Techniques- Generate and Test, Hill Climbing, Simulated Annealing, Best First Search

Problem reduction, Constraint Satisfaction and Means End Analysis. Approaches to Knowledge Representation- Using Predicate Logic and Rules.

UNIT-II

Artificial Neural Networks: Introduction, Basic models of ANN, important terminologies, Supervised Learning Networks, Perceptron Networks, Adaptive Linear Neuron, Back propagation Network. Asscociative Memory Networks. Training Algorithms for pattern association,BAM and Hopfield Networks.

UNIT-III

Unsupervised Learning Network- Introduction, Fixed Weight Competitive Nets, Maxnet, Hamming Network, Kohonen Self-Organizing Feature Maps, Counter Propagation Networks, Adaptive Resonance Theory Networks. Special Networks-Introduction to various networks.

UNIT-IV

Introduction to Classical Sets (crisp Sets) and Fuzzy Sets- operations and Fuzzy sets. Classical Relations and Fuzzy Relations- Cardinality, Operations, Properties and composition. Tolerance and equivalence relations. Membership functions- Features, Fuzzification, membership value assignments, Defuzzification.

UNIT-V

Fuzzy Arithmetic and Fuzzy Measures, Fuzzy Rule Base and Approximate Reasoning Fuzzy Decision making Fuzzy Logic Control Systems. Genetic Algorithm- Introduction and basic operators and terminology. Applications: Internet Search Technique, Hybrid Fuzzy Controllers.

Text Books:

1. Principles of Soft Computing- S N Sivanandam, S N Deepa, Wiley India, 2007
2. Soft Computing and Intelligent System Design -Fakhreddine O Karray, Clarence D Silva,. Pearson Edition, 2004.

References:

1. Artificial Intelligence and Soft Computing- Behavioral and Cognitive Modeling of the Human Brain- Amit Konar, CRC press, Taylor and Francis Group.
2. Artificial Intelligence – Patric Henry Winston – Third Edition, Pearson Education.
3. A first course in Fuzzy Logic-Hung T Nguyen and Elbert A Walker, CRC. Press Taylor and Francis Group.
4. Artificial Intelligence – Elaine Rich and Kevin Knight, TMH, 1991, 2008.

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IV Year B.Tech CSE – ISem **L T/P/D C**
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(R11ITD1203) WEB TECHNOLOGIES LABORATORY

Course Objectives:

1. Choose best technologies for solving web client/server problems
2. Create conforming web pages ,Use JavaScript for dynamic effects
3. Use Javascript to validate form input entry, Use appropriate client-side or Server-side applications, Create adaptive web pages, Implement cookies
4. Deploy Java Applets and Servlets ,Create an XML application

Course Outcomes:

1. Identify the entities responsible for implementing mark-up language standards.
2. Code and troubleshoot HTML and XHTML web pages, incorporating CSS and Scripts.
3. Incorporate multimedia (images, animation, sound, and movies) into web pages.
4. Demonstrate effective use of Dreamweaver to build and publish professional websites that employ best practices, adhere to current web standards, and pass Validation.

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Web Technologies Laboratory	CO-1	1	1		2	1		2				2	2
	CO-2	2	1	1	1	2	2	2					2
	CO-3	2	1	1	2			1					
	CO-4	2	1		1	2	1		2	2		2	2

HARDWARE AND SOFTWARE REQUIRED

1. A working computer system with either Windows or Linux
2. A web browser either IE or firefox
3. Tomcat web server
4. XML editor like Altova Xml-spy [www.Altova.com/XMLSpy – free] , Stylusstudio , etc.,
5. A database either Mysql or Oracle
6. JVM(Java virtual machine) must be installed on your system
7. BDK(Bean development kit) must be also be installed

WEEK 1

Design the following static web pages required for an online book store web site.

1) HOME PAGE:

The static home page must contain three frames.

Top frame : Logo and the college name and links to Home page, Login page, Registration page, Catalogue page and Cart page (the description of these pages will be given below).

Left frame : At least four links for navigation, which will display the catalogue of respective links. For e.g.: When you click the link "CSE" the catalogue for CSE Books should be displayed in the Right frame.

Right frame: The pages to the links in the left frame must be loaded here. Initially this page contains description of the web site.

Logo	Web Site Name			
Home	Login	Registration	Catalogue	Cart
CSE ECE EEE CIVIL	Description of the Web Site			

Fig 1.1

2) LOGIN PAGE:

This page looks like below:

Logo	Web Site Name			
Home	Login	Registration	Catalogue	Cart

CSE
ECE
EEE
CIVIL

Login :
Password:

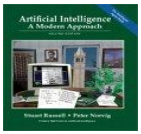
Submit Reset

3) CATOLOGUE PAGE:

The catalogue page should contain the details of all the books available in the web site in a tabular format.

The details should contain the following:

1. Snap shot of Cover Page.
2. Book Title, Author Name, Publisher.
3. Price.
4. Add to cart button.

Logo	Web Site Name			
Home	Login	Registration	Catalogue	Cart
CSE ECE EEE CIVIL		Book : XML Bible Author : Winston Publication : Wiely	$ 40.5	Add to cart
		Book : AI Author : S.Russel Publication : Princeton hall	$ 63	Add to cart
		Book : Java 2 Author : Watson Publication : BPB publications	$ 35.5	Add to cart

		Book : HTML in 24 hours Author : Sam Peter Publication : Sam publication	$ 50	Add to cart

WEEK 2

4) CART PAGE:

The cart page contains the details about the books which are added to the cart.

The cart page should look like this:

Logo	Web Site Name			
Home	Login	Registration	Catalogue	Cart

IT
CSE
ECE
EEE
CIVIL

Book name	Price	Quantity	Amount
Java 2	$35.5	2	$70
XML bible	$40.5	1	$40.5
		Total amount -	$130.5

5) 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)

WEEK 3

VALIDATION:

a) Write JavaScript to validate the following fields of the above registration page.

1. Name (Name should contains only alphabets and the length should not be less than 6 characters).
2. Password (Password should not be less than 6 characters length).
3. E-mail id (should not contain any invalid and must follow the standard pattern name@domain.com)
4. Phone number (Phone number should contain 10 digits only).

b) Write JavaScript to validate the above login page with the above parameters.

WEEK 4

Design a web page using CSS (Cascading Style Sheets) which includes the following:

1) Use different font, styles:

In the style definition you define how each selector should work (font, color etc.).
Then, in the body of your pages, you refer to these selectors to activate the styles.
For example:

```
<HTML>
<HEAD>
<style type="text/css">
B.headline {color:red; font-size:22px; font-family:arial; text-decoration:underline}
</style>
</HEAD>
<BODY>
<b>This is normal bold</b><br>
<b class="headline">This is headline style bold</b>
</BODY>
</HTML>
```

2) Set a background image for both the page and single elements on the page. You can define the background image for the page like this:

```
BODY {background-image:url(myimage.gif);}
```

3) Control the repetition of the image with the background-repeat property.
As background-repeat: repeat
Tiles the image until the entire page is filled, just like an ordinary background image in plain HTML.

4) Define styles for links as

A:link
A:visited
A:active
A:hover

Example:

```
<style type="text/css">
A:link    {text-decoration: none}
A:visited {text-decoration: none}
A:active  {text-decoration: none}
A:hover   {text-decoration: underline; color: red;}
</style>
```

5) Work with layers:

For example:

LAYER 1 ON TOP:

```
<div style="position:relative; font-size:50px; z-index:2;">LAYER 1</div>
<div style="position:relative; top:-50; left:5; color:red; font-size:80px; z-
```

LAYER 2 ON TOP:

```
<div style="position:relative; font-size:50px; z-index:3;">LAYER 1</div>
<div style="position:relative; top:-50; left:5; color:red; font-size:80px; z-
```

6) Add a customized cursor:

Selector {cursor:value}

For example:

```
<html>
<head>
<style type="text/css">
.xlink {cursor:crosshair}
.hlink{cursor:help}
</style>
</head>
<body>
<b>
<a href="mypage.htm" class="xlink">CROSS LINK</a>
<br>
<a href="mypage.htm" class="hlink">HELP LINK</a>
</b>
</body>
</html>
```

WEEK 5

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

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

Display the XML file as follows.

The contents should be displayed in a table. The header of the table should be in color GREY. And the Author names column should be displayed in one color and should be capitalized and in bold. Use your own colors for remaining columns.

Use XML schemas XSL and CSS for the above purpose.

Note: Give at least for 4 books. It should be valid syntactically.

Hint: You can use some xml editors like XML-spy

WEEK 6

VISUAL BEANS:

Create a simple visual bean with a area filled with a color.

The shape of the area depends on the property shape. If it is set to true then the shape of the area is Square and it is Circle, if it is false.

The color of the area should be changed dynamically for every mouse click. The color should also be changed if we change the color in the "property window ".

WEEK 7

Install TOMCAT web server.

While installation assign port number 8000 to TOMCAT. Make sure that these ports are available i.e., no other process is using this port.

Access the above developed static web pages for books web site, using these servers by putting the web pages developed in week-1 and week-2 in the document root.

Access the pages by using the urls: http://localhost:8000/vnr/books.html

WEEK 8

User Authentication :

Assume four users user1, user2, user3 and user4 having the passwords pwd1,pwd2,pwd3 and pwd4 respectively. Write a servelet for doing the following.

1. Create a Cookie and add these four user id's and passwords to this Cookie.
2. 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 ".

Use init-parameters to do this. Store the user-names and passwords in the web.xml and access them in the servlet by using the getInitParameters() method.

WEEK 9

Install JSDK.

User Authentication :

Assume four users user1, user2, user3 and user4 having the passwords pwd1, pwd2, pwd3 and pwd4 respectively. Write a servelet for doing the following.

1. Use init-parameters to do this. access them in the servlet by using the getInitParameters() method.
2. Read the user id and passwords entered in the Login form (week1) and authenticate with the values (user id and passwords) with above accessed values.

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

WEEK 10

Install a database (Mysql or Oracle).

Create a table which should contain at least the following fields: name, password, email-id, phone number (these should hold the data from the registration form).

Practice 'JDBC' connectivity.

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.
Insert the details of the users who register with the web site, whenever a new user clicks the submit button in the registration page (week2).

WEEK 11

Write a JSP which does the following job: Insert the details of the 3 or 4 users who register with the web site (week9) by using registration form. Authenticate the user when he submits the login form using the user name and password from the database (similar to week8 instead of cookies).

WEEK 12

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.

IV Year B.Tech CSE – I Sem **L T/P/D C**
0 3 2

(R11CSE1207) VISUAL PROGRAMMING TECHNIQUES LABORATORY

Course objectives:

1. Implementing various applications using Visual C#.NET language
2. Develop various applications using Microsoft Visual Studio .NET IDE environment.
3. Write various programs to develop static and dynamic websites using ASP.NET
4. Building a good foundation for understanding and learning advanced programming concepts, such as, object-oriented programming.

Course Outcomes:

1. Understand the fundamentals of visual programming
2. Be familiar with the essential techniques to build windows applications using visual C# approach
3. Will be able to develop, test and debug programs in C# .NET using the Microsoft Visual Studio .NET IDE environment.
4. Take advantages of the many new capabilities of building applications in graphical environment

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Visual Programming Techniques Laboratory	CO-1	1	2	1	1	2	2					1	1
	CO-2	1	2	2	1	1	1					2	2
	CO-3	2	2	1	1	1	2					1	2
	CO-4	1	2	1	1	2	2					1	1

Week 1:

1. Write console applications using C# for the following:
    a. Display message “Welcome to Visual Programming Lab”
    b. Perform arithmetic operations on given two numbers
    c. Finding factorial Value
    d. Money Conversion
    e. Quadratic Equation
    f. Temperature Conversion

Week 2:

2. Write console applications to illustrate conditional statements such as:
    a. If-then-else
    b. Switch, break and continue
3. Write console applications to illustrate looping statements such as:
    a. While and do-while
    b. For and foreach

Week 3:

4. Write C# programs to implement exception handling using the following keywords:
    a. Try ,catch and throw
5. Write C# programs to illustrate Object oriented programming features:
    a. Encapsulation
    b. Inheritance
    c. Polymorphism

Week 4:

6. Write C# programs to make us of the following data types
    a. Enum.
    b. Structures
7. Write C# programs to make us of the following data types
    a. Arrays
    b. Collections
8. Write C# programs using the following concepts
    a. Delegates
    b. Events

Week 5:

9. Design a Windows Application to implement simple calculator by using controls in C#.
    a. Textbox b. Labels c. Buttons
10. Design a student registration form by making use of all other controls in C#.
    a. ListBox b. Combobox c. Radio Buttons d. Check Boxes and other controls

Week 6:

11. Design a windows form application by using advanced controls available in C#.
12. Design a windows form application using Menu Control and Dialog Box (Notepad).
13. Design an MDI Application in C#

Week 7 & 8:

14. Design a windows form application which uses ADO.NET to perform basic database operations.
15. Design a windows form application which uses ADO.NET to perform advanced database operations.
16. Write a C# program to read and write data in XML file.

Week 9:

17. Design web applications using ASP.NET for the following:
    a. Display message “Welcome to Visual Programming Lab”
    b. Perform arithmetic operations on given two numbers
    c. Finding factorial Value
    d. Money Conversion
    e. Quadratic Equation
    f. Temperature Conversion
18. Write a Program to perform Asp.Net state.

Week 10:

19. Write a Program to create an Advertisement using Ad rotator.
20. Write a Program to perform following operations on calendar
21. display the Holiday in calendar.
22. display the selected date in the calendar.
23. display the Difference between the two dates in the calendar.
24. Write a Program to perform Tree view operation using data list.

Week 11:

25. Write a Program to perform validation operation.
26. Write a Program to insert the data in to database using Execute-Non Query.
27. Write a Program to delete the data in to database using Execute non-query.

Week 12:

28. Create an application in which user has to display records in the Grid View Control fromTable created in access data base. (With the Help Of Oledb Classes or Access Data SourceControl)
29. Study of the User Controls and their event, using the user controls to the web pages
30. Create application which uses Standard Login Control to The Web Application

Week 13:

31. Use the Asp Navigation control that allows user to navigation and selection facility the pages of Web site
32. Create the Sign In, Sign Up and Update Application using session management

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IV Year B.Tech CSE – II Sem

L	T/P/D	C
3	1	3

(R11ITD1122) SOFTWARE PROJECT MANAGEMENT

Course Objectives:

1. To study how to plan and manage projects at each stage of the software development life cycle (SDLC)
2. The ability to come up with a project schedule and assign resources and identify project risks, monitor and track project deadlines
3. The capability to work in a team environment and be aware of different modes of communications
4. To train software project managers and other individuals involved in software project planning and tracking and oversight in the implementation of the software project management process and To understand successful software projects that support organization's strategic goals.

Course Outcomes:

1. Identify and describe how different project contexts will impact upon all aspects of a software development project
2. Identify and describe the key phases of project management and the key skills associated with each
3. Determine an appropriate project management approach through an evaluation of the business context and project scope and knowledge of agile and traditional project management approaches
4. Demonstrate through application, knowledge of the key project management skills, such as product and work break-down structure, schedule; governance including progress reporting, risk and quality management

Course name	Mapping of CO's with PO's												
Software Project Management		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
	CO-1		1		2			1					2

	CO-2	2		2		1				1		2	
	CO-3		2		1		2		2				
	CO-4			1					2		1		1

UNIT-I

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

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

UNIT – II

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

Life cycle phases: Engineering and production stages, Inception, Elaboration, Construction, Transition phases.

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

UNIT – III

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

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

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

UNIT – IV

Process Automation: Automation Building blocks.

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

Tailoring the Process: Process discriminants.

UNIT – V

Project Organizations and Responsibilities: Line-of-Business Organizations

Future Software Project Management: Modern Project Profiles, Next generation Software economics, modern process transitions.

Case Study: The command Center Processing and Display system- Replacement (CCPDS-R)

TEXT BOOKS

1. Software Project Management, Walker Royce: Pearson Education, 2005.
2. Software Project Management, Bob Hughes and Mike Cotterell: Tata McGraw- Hill Edition.

REFERENCES

1. Software Project Management, Joel Henry, Pearson Education.
2. Software Project Management in practice, Pankaj Jalote, Pearson Education.2005.

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Elective-III **3 1 3**

(R11CSE1115) SEMANTIC WEB AND SOCIAL NETWORKS

Course Objectives

1. To analyze Web Intelligence and synthesize Knowledge Representation for the Semantic Web
2. To evaluate Ontology engineering and applications pertaining to it.
3. To understand the essence of Semantic Web Applications, Services that promotes Semantic Web Technology
4. To infer the principles of Social Network Analysis and correlate the rules with the semantic web and to categorize ontologies, domain modeling, logic, reasoning and inference techniques, semantic web services.

Course Outcomes:

1. Discuss social media as a set of digital tools used for a wide range of information dissemination and communication purposes.
2. Explore the metaphor of social media as "communication as culture."
3. Demonstrate familiarity with the range of social media spaces.
4. Reflect critically on the use of social tools and identify strategies for their effective implementation

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Semantic Web and Social Networks	CO-1	2	2		1	2	1	1	1	2	2	1	1
	CO-2	2	2	2	1	2	2	2	2		1	2	
	CO-3	2	2		1	2		1	2		1	2	1
	CO-4	2	2	2	2	2	2	1	2	2	2	2	2

UNIT I

Thinking and Intelligent Web Applications, The Information Age, The World Wide Web, Limitations of Todays Web, The Next Generation Web

Machine Intelligence, Artificial Intelligence, Ontology, Inference engines, Software Agents, Berners-Lee www, Semantic Road Map, Logic on the semantic Web.

UNIT II

Ontologies and their role in the semantic web, Ontologies Languages for the Semantic Web - Resource Description Framework(RDF) / RDF Schema. Ontology Web Language(OWL),UML,XML/XML Schema.
Ontology Engineering, Constructing Ontology, Ontology Development Tools, Ontology Methods, Ontology Sharing and Merging, Ontology Libraries and Ontology Mapping,

UNIT III

Logic, Rule and Inference Engines. Semantic Web applications and services. Semantic Search.
e-learning, Semantic Bioinformatics, Knowledge Base

UNIT IV

XML Based Web Services, Creating an OWL-S Ontology for Web Services. Semantic Search Techno logy, Web Search Agents and Semantic Methods,

UNIT V

What is social Networks analysis, development of the social networks analysis, Electronic Sources for Network Analysis - Electronic Discussion networks.
Blogs and Online Communities. Web Based Networks. Building Semantic Web Applications with social network features.

TEXTBOOKS:

1. Thinking on the Web - Berners Lee.Godel and Turing,Wiley interscience,20()8.
2. Social Networks and the Semantic Web, Peter Mika,Springer,2007.

REFERENCE BOOKS:

1. Semantic Web Technologies,Trends and Research in Ontology Based Systems, J.Davies, Rudi Studer. Paul Warren, John Wiley & Sons.
2. Semantic Web and Semantic Web Services -Liyang Lu Chapman and Hall/CRC Publishers,(Taylor & Francis Group)
3. Information Sharing on the semantic Web - Heiner Stuckenschmidt; Frank Van Harmelen, Springer Publications.
4. Programming the Semantic Web.T.Segaran, C.Evans, J.Taylor, O'Reilly,SPD.

IV Year B.Tech CSE – II Sem	L	T/P/D	C
Elective - III	3	1	3

(R11ECE1113) DIGITAL IMAGE PROCESSING

Course Objectives:

1. Explain various fundamental concepts digital image processing
2. Application of various image transforms to improve the quality of image.
3. Analysis of different image features to segment various objects for image recognition.
4. To implement various algorithms for image compression and decompression

Course Outcomes:

1. Understand the basic concepts required for processing the image.
2. Write the programs for enhancing the image quality both in spatial and frequency domain.
3. Implement various algorithms for extracting image features which are used for image analysis.
4. Optimize various image processing algorithms for improving the speed of processing.

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Digital Image Processing	CO-1	2			1	2					1		2
	CO-2	2	2	2	1	2	1	1			2		2
	CO-3	2	2	1	2	2	2	1			1		2
	CO-4	2	1	2	2	1	2	2			2	1	2

UNIT I

Fundamentals of Image Processing and Image Transforms

Digital Image Fundamentals, Basic steps of Image Processing System, Sampling and Quantization of an image, relationship between pixels, Imaging Geometry. Image Transforms: 2 D- Discrete Fourier Transform, Discrete Cosine Transform (DCT), Haar Transform, Hadmard Transform, Hotelling Transform and slant transform.

UNIT II

Image Enhancement

Spatial domain methods: Histogram processing, Fundamentals of Spatial filtering, Smoothing spatial filters, Sharpening spatial filters.

Frequency domain methods: Basics of filtering in frequency domain, image smoothing, image sharpening, Selective filtering.

UNIT III

Image Segmentation

Segmentation concepts, Point, Line and Edge Detection, Edge Linking using Hough Transform, Thresholding, Region Based segmentation.

Wavelet based Image Processing: Introduction to wavelet Transform, Continuous wavelet Transform, Discrete wavelet Transform, Filter banks, Wavelet based image compression

UNIT IV

Image Compression

Image compression fundamentals - Coding Redundancy, Spatial and Temporal redundancy, Compression models: Lossy and Lossless, Huffman coding, Arithmetic coding, LZW coding, Run length coding, Bit plane coding, Transform coding, Predictive coding, JPEG Standards.

UNIT V

Image Restoration

Image Restoration Degradation model, Algebraic approach to restoration, Inverse Filtering, Least Mean square filters, Constrained Least squares Restoration, Interactive restoration. Overview of Digital Image Watermarking Methods

TEXT BOOKS:

1. Digital Image Processing- Rafael C. Gonzalez and Richard E.Woods, 3rd Edition, Pearson, 2008.
2. Digital Image Processing- S.Jayaraman, S Esakkirajan, T Veerakumar, TMH, 2010.
3. Fundamentals of Digital Image Processing-A.K.Jain, PHI, 1989.

REFERENCES:

1. Digital Image Processing-William K.Pratt, 3rd Edition, John Willey, 2004.

2. Digital Image Processing and Computer Vision – Somka, Hlavac, Boyl, Cengage Learning, 2008.
3. Digital Image Processing using MATLAB - Rafael C. Gonzalez, Richard E.Woods and Steven L.Edding 2nd , ,TMH. 2010.
4. Introductory Computer Vision Imaging Techniques and Solutions – Adrian Low,2nd Edition, 2008.
5. Introduction to image Processing and Analysis – John C. Russ, J. Christian Russ, CRC Press, 2010

IV Year B.Tech CSE – II Sem **L T/P/D C**

Elective -III **3 1 3**

(R11ITD1124) BUSINESS INTELLIGENCE APPLICATIONS

Course Objectives:

1. To provide students with multimedia programming/scripting skills necessary for designing and implementing rich internet applications.
2. To offer students with the skills to integrate complex dynamic databases with intuitive front-end user interfaces using multimedia technologies.
3. To encourage students to independently engage with current and emerging industry standard technologies for the creation of rich internet applications.
4. To develop students' competency in getting results for multimedia related problems.

Course Outcomes:

1. Upon completion of the course, the students are expected to Differentiate between Transaction Processing and Analytical applications and describe the need for Business Intelligence
2. Demonstrate understanding of technology and processes associated with data mining
3. Demonstrate understanding of Data Mining implementation methodology and project life cycle
4. Design an enterprise dashboard that depicts the key performance indicators which helps in decision making
5. Demonstrate application of concepts using open source tools

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Business Intelligence Applications	CO-1					2		1					
	CO-2	2	2		1								
	CO-3				2	1	1						
	CO-4			2								1	

	CO-5			2	2	2	1	1					

UNIT I

Introduction to Business Intelligence

Introduction to digital data and its types – structured, semi-structured and unstructured. Introduction to OLTP, OLAP (MOLAP, ROLAP, HOLAP), BI Definitions & Concepts.

UNIT II

Business Intelligence framework

BI Framework Data Warehousing concepts and its role in BI, BI Infrastructure Components – BI Process, BI Technology, BI Roles & Responsibilities, Business Applications of BI, BI best practices

UNIT III

Basics of Data Integration (Extraction Transformation Loading),

Concepts of data integration, needs and advantages of using data integration, introduction to common data integration approaches, Meta data - types and sources, Introduction to data quality, data profiling concepts and applications, introduction to ETL using Pentaho data Integration (formerly Kettle)

UNIT IV

Introduction to Multi-Dimensional Data Modeling

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

UNIT V

Basics of Enterprise Reporting

A typical enterprise, Malcolm Baldrige - quality performance framework, balanced scorecard, enterprise dashboard, balanced scorecard vs. enterprise dashboard, enterprise reporting using MS Access / MS Excel, best practices in the design of enterprise dashboards

Reference Books:

1. Business Intelligence by David Loshin
2. Business intelligence for the enterprise by Mike Biere
3. Business intelligence roadmap by Larissa Terpeluk Moss, ShakuAtre
4. An introduction to Building the Data Warehouse – IBM
5. Business Intelligence For Dummies – Swain Scheps
6. Successful Business Intelligence: Secrets to making Killer BI Applications by Cindi Howson
7. Information dashboard design by Stephen Few

IV Year B.Tech CSE – II Sem **L T/P/D C**
Elective – III **3 1 3**

(R11CSE1106) INTRODUCTION TO MAINFRAME SYSTEMS

Course Objectives:

1. Create and edit JCL files.
2. Create parameters and execute common utility programs including Sort.
3. Create and use symbolic parameters and conditionals in a procedure.
4. Create and use VSAM and other types of data sets.
5. Create and use Generation Data Groups (GDG).

Course Outcomes:

6. Understand the importance of Legacy System.
7. Role of Mainframes in infrastructure of a medium to large IT organization.
8. Understand the different components of Mainframe Technology.
9. Learn the best practices for designing applications using Mainframe Technology.

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Introduction to Mainframe Systems	CO-1	1											
	CO-2		2	2		2	1						
	CO-3	1	1										
	CO-4	1		1		1							

UNIT I

Evolution of Mainframe hardware & Mainframes OS and Terminology

Overview of Computer Architecture -Classification of Computers - micro, mini, mainframes and super computer - Mainframe computer - key features - benefits - Evolution of Mainframes - Different hardware systems

Operating systems on mainframes, Batch processing vs. online processing - mainframe operating system. - evolution - concepts of Address space, Buffer management - Virtual storage - paging - swapping - Dataset management in mainframes

UNIT II

Z/OS and its features

Z-operating system (Z/OS) - Virtual storage - Paging process - storage Managers - Program execution modes - Address space - Multiple virtual system(MVS) , MVS address space, Z/OS address space - Dataset - sequential and partial dataset - Direct access storage device(DASD) -Access methods - Record formats - Introduction to virtual storage access methods(VSAM) - Catalog - VTOC

UNIT III

Overview of JCL & Overview of DB2

Introduction to Job Control language - Job processing - structure of JCL statements - Various statements in JCL - JOB statement - EXEC statement - DD statement - JCL procedures and IBM utility programs.

Introduction to DB2 – System Service component, Database Service component, Locking Service component, Distributed Data Facility Services component, Stored Procedure component, catalogs and optimizer

DB2 Objects and Data Types - DB2 Objects Hierarchy, Storage groups, Database, Table space, Table, Index, Clustered index, Synonyms and aliases, Views, Data Types.

DB2 SQL programming – Types of SQL statements, DCL, DDL, DML, SPUFI utility.

Embedded SQL programming – Host variable, DECLGEN utility, SQLCA, single/multiple row manipulation, cursors, scrollable cursors.

UNIT IV

COBOL Programming

Introduction – History, evolution and Features, COBOL program Structure, steps in executing COBOL

Language Fundamentals – Divisions, sections, paragraphs, sections, sentences and statements, character set, literals, words, figurative constants, rules for forming user defined words, COBOL coding sheet.

Data division – Data names, level numbers, PIC and VALUE clause, REDEIFNES, RENAMES and USAGE clause

Procedure Division – Input / Output verbs, INITIALIZE verb, data movement verbs, arithmetic verbs, sequence control verbs.

File processing – Field, physical / logical records, file, file organization (sequential, indexed and relative) and access mode, FILE-CONTROL paragraph, FILE SECTION, file operations.

File handling verbs – OPEN, READ, WRITE, REWRITE, CLOSE.

Table processing – Definition, declaration, accessing elements, subscript and index, SET statement, SEARCH verb, SEARCH ALL verb, comparison.
Miscellaneous verbs – COPY, CALL, SORT, MERGE, STRING, UNSTRING verbs.

UNIT V

Mainframe Application Development guidelines

COBOL coding standards, relation between a COBOL file handling program and JCL, Different types of ABEND codes, COBOL-DB2 program pre-compilation, DBRM (Database Request Module), Application plan/packages, program execution methods (EDIT JCL, foreground and background modes).

TEXT BOOKS

1. MVS JCL, Doug Lowe, Mike Murach and Associates
2. JCL Programming Bible (with z/OS) Gary DeWard Brown, fifth edition, Wiley India Dream Tech, 2002.
3. z/OS V1R4.0 MVS JCL Reference found online at http://www-1.ibm.com/support/docview.wss?uid=pub1sa22759706
4. z/OS V1R1.0 MVS JCL Reference found online at http://publibz.boulder.ibm.com/cgibin/bookmgr_OS390/BOOKS/iea2b600/CCONTENTS
5. COBOL - Language Reference, Ver 3, Release 2, IBM Redbook.
6. COBOL - Programming Guide, Ver 3, Release 2, IBM Redbook.
7. Nancy Stern & Robert A Stern, “Structured Cobol Programming”, John Wiley & Sons, New York, 1973.
8. M.K. Roy and D. Ghosh Dastidar, “Cobol Programming”, Tata McGraw Hill, New York, 1973.
9. Newcomer and Lawrence, Programming with Structured COBOL, McGraw Hill Books, New York, 1973.
10. DB2 Developer’s Guide, Craig S Mullins, Sams Publishing, 1992.
11. DB2 Design & Development Guide, Gabrielle Wiorkowski & David Kull, Addison Wesley, 1992.

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Elective – IV **3 1 3**

(R11CSE1116) ADHOC AND SENSOR NETWORKS

Course Objectives:

1. To know the constraints of the wireless physical layer that affect the design and performance of ad hoc and sensor networks, protocols, and applications
2. To understand MAC, Routing protocols that have been proposed for ad hoc and sensor networks
3. To understand the energy issues in sensor networks and how they can be addressed using scheduling, media access control, and special hardware.
4. To explain various security threats to ad hoc networks and describe proposed solutions

Course Outcomes:

1. Demonstrate different types of Routing techniques in MANET's and Data Transmission techniques in MANET's.
2. Describe the changes done to TCP to suite for ASN.
3. Summarize the design issues of Sensor Networks, Classify WSN, Security measurements used in WSN
4. Illustrate Programming challenges in WSN different Platforms of WSN.

Course name	Mapping of CO's with PO's												
Ad hoc and Sensor Networks		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
	CO-1	1	2				1	1	1	2	1		
	CO-2	1	1	1	2		1	1		2	1		
	CO-3	1	2	1	1	2	1	2		2	1		
	CO-4	1	1	1	2	1	1	1	1	2	1		

UNIT I

Introduction to Ad Hoc Wireless Networks
Characteristics of MANETs, Applications of MANETs, Challenges.
Routing in MANETs
Topology-based versus Position based approaches, Topology based routing protocols, Position based routing, Other Routing Protocols.

UNIT II
Data Transmission in MANETs
The Broadcast Storm, Multicasting, Geocasting
TCP over Ad Hoc Networks
TCP Protocol overview, TCP and MANETs, Solutions for TCP over Ad Hoc

UNIT III
Basics of Wireless Sensors and Applications
The Mica Mote, Sensing and Communication Range, Design Issues, Energy consumption, Clustering of Sensors, Applications

UNIT IV
Data Retrieval in Sensor Networks
Classification of WSNs, MAC
layer, Routing layer, High-level application layer support, Adapting to the inherent dynamic nature of WSNs.
Security
Security in Ad hoc Wireless Networks, Key Management, Secure Routing, Cooperation in MANETs, Intrusion Detection Systems.

UNIT V
Sensor Network Platforms and Tools
Sensor Network Hardware, Sensor Network Programming Challenges, Node-Level Software Platforms
Operating System - TinyOS
Imperative Language: nesC, Dataflow style language: TinyGALS, Node-Level Simulators, ns-2 and its sensor network extension, TOSSIM

TEXTBOOKS:

1. Ad Hoc and Sensor Networks - Theory and Applications, Carlos Corderio Dharma P.Aggarwal, World Scientific Publications / Cambridge University Press, March 2006
2. Wireless Sensor Networks: An Information Processing Approach, Feng Zhao, Leonidas Guibas, Elsevier Science imprint, Morgan Kauffman Publishers, 2005, rp2009

REFERENCE BOOKS:

1. Adhoc Wireless Networks - Architectures and Protocols, C.Siva Ram Murthy, B.S.Murthy, Pearson Education, 2004
2. Wireless Sensor Networks - Principles and Practice, Fei Hu, Xiaojun Cao, AnAuerbach book, CRC Press, Taylor & Francis Group, 2010
3. Wireless Ad hoc Mobile Wireless Networks - Principles, Protocols and Applications, Subir Kumar Sarkar, et al., Auerbach Publications, Taylor & Francis Group, 2008.
4. Ad hoc Networking. Charles E.Perkins, Pearson Education, 2001.

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ELECTIVE – IV **3 1 3**

(R11ITD1125) BUILDING ENTERPRISE APPLICATIONS

Course Objectives:

1. Define the Enterprise Architect's roles, responsibilities and deliverables.
2. Identify non-functional requirements (NFRs) and describe common problems and solutions.
3. Translate business requirements into an architecture.
4. How to weigh choices in architecting the client, web, business, integration and data tiers and Apply various evaluation criteria to choosing architectural elements and patterns, tools, servers and frameworks.

Course Outcomes:

1. Explore basic economic principles and practices (e.g supply and demand, free enterprise)
2. Examine role of entrepreneurs in our society
3. Explore recent trends in small business growth
4. Describe the importance of marketing and List several ways in which training can contribute to the development of human resources

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Building Enterprise Applications	CO-1						2						
	CO-2						2						
	CO-3							1					
	CO-4						2						

UNIT I

Introduction to enterprise applications and their types, software engineering methodologies, life cycle of raising an enterprise application, introduction to skills required to build an enterprise application, key determinants of successful enterprise applications, and measuring the success of enterprise applications

UNIT II

Inception of enterprise applications, enterprise analysis, business modeling, requirements elicitation, use case modeling, prototyping, non functional requirements, requirements validation, planning and estimation

UNIT III

Concept of architecture, views and viewpoints, enterprise architecture, logical architecture, technical architecture - design, different technical layers, best practices, data architecture and design – relational, XML, and other structured data representations, Infrastructure architecture and design elements - Networking, Internetworking, and Communication Protocols, IT Hardware and Software, Middleware, Policies for Infrastructure Management, Deployment Strategy, Documentation of application architecture and design

UNIT IV

Construction readiness of enterprise applications - defining a construction plan, defining a package structure, setting up a configuration management plan, setting up a development environment, introduction to the concept of Software Construction Maps, construction of technical solutions layers, methodologies of code review, static code analysis, build and testing, dynamic code analysis – code profiling and code coverage

UNIT V

Types and methods of testing an enterprise application, testing levels and approaches, testing environments, integration testing, performance testing, penetration testing, usability testing, globalization testing and interface testing, user acceptance testing, rolling out an enterprise application.

TEXT BOOKS

1.Raising Enterprise Applications – Published by John Wiley, authored by Anubhav Pradhan, Satheesha B. Nanjappa, Senthil K. Nallasamy, Veerakumar Esakimuthu
2.Building Java Enterprise Applications – Published by O'Reilly Media, authored by Brett McLaughlin

REFERENCES

1. Software Requirements: Styles & Techniques – published by Addison-Wesley Professional.
2. Software Systems Requirements Engineering: In Practice – published by McGraw-Hill/Osborne Media
3. Managing Software Requirements: A Use Case Approach, 2/e – published by Pearson
4. Software Architecture: A Case Based Approach – published by Pearson

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ELECTIVE – IV **3 1 3**

(R11ITD1126) E-COMMERCE

Course Objectives

1. Understand the nature and the scope of e-commerce in the realm of modern business
2. Learn advantages and disadvantages of technology choices such as merchant server software and electronic payment options
3. Explain the technologies required to make e-Commerce viable;
4. Know the resource Discovery information search and retrieval, e-commerce catalogs and information filtering
5. Study the trends of multimedia concepts in e-Commerce and the use of the Internet

Course Outcomes:

1. Understand the applications of Ecommerce and the framework requirements of Ecommerce
2. Categorize the different types of payment types like E-payment systems, smartcard, credit card and identify the risks involved in E-payment system
3. To implement EDI, MIME and analyze the supply chain management and interactive product catalogs
4. Analyze the marketing methods used in e-commerce and identify the current drivers and inhibitors facing the business world in adopting and using e-Commerce
5. Analyze and utilize the multimedia concepts like digital and desktop video processing.

Course name	Mapping of CO's with PO's												
E-Commerce		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l

	CO-1	2	1	2	2			2	1			2	2
	CO-2	1	2		2		2			1	1	1	2
	CO-3	2	2	2	1	2	2				1	2	2
	CO-4				2	2	2	2	1	2	1		2
	CO-5	1	2	1		2	2	1	2			2	2

UNIT -- I

Electronic Commerce-Frame work, anatomy of E-Commerce applications, E-Commerce Consumer applications, E-Commerce organization applications, Consumer Oriented Electronic commerce - Mercantile Process models.

UNIT - II

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

UNIT – III

Inter Organizational Commerce - EDI, EDI Implementation, Value added networks.
Intra Organizational Commerce - work Flow, Automation Customization and internal Commerce, Supply chain Management.

UNIT – IV

Corporate Digital Library - Document Library, digital Document types, corporate Data Warehouses. Advertising and Marketing - Information based marketing, Advertising on Internet, on-line marketing process, market research, Consumer Search and Resource Discovery - Information search and Retrieval,Commerce Catalogues, Information Filtering.

UNIT - V

Multimedia - key multimedia concepts, Digital Video and electronic Commerce, Desktop video processings, Desktop video conferencing, broadband telecommunications, mobile & wireless computing fundamentals.

TEXT BOOKS

1. Frontiers of Electronic commerce – Kalakata, Whinston, Pearson.
2. E-Commerce fundamentals and applications Hendry Chan, Raymond Lee, Tharam Dillon, Ellizabeth Chang, John Wiley.

REFERENCES

1. E-Commerce, S.Jaiswal – Galgotia.
2. E-Commerce, Efrain Turbon, Jae Lee, David King, H.Michael Chang.
3. Electronic Commerce – Gary P.Schneider – Thomson.

4. E-Commerce – Business, Technology, Society, Kenneth C.Taudon, Carol Guyerico Traver

IV Year B.Tech CSE – II Sem **L T/P/D C**
ELECTIVE – IV **3 1 3**

(R11ITD1127) STORAGE AREA NETWORKS

Course Objectives

1. Understand the necessity for storage area networks
2. Differentiate among storage models, and describe the benefits of SANs
3. Identify how to implement security measures in a SAN using zoning, Logical Unit Number (LUN) masking, and virtualization
4. Identify components of a SAN and their roles

Course Outcomes:

1. Design, Implement or Manage storage in a SAN.
2. Investigate the architecture and components of a SAN and the technological underpinnings that make SANs work.
3. Apply these concepts in a series of on-line design activities that employ techniques such as Zoning to practice the consolidation of large amounts of data in a secure and highly available environment.
4. Discuss on Audit accounts and the database system and Design to create a Back-up and Restore database.

Course name	Mapping of CO's with PO's												
		PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-l
Storage Area Networks	CO-1	2	2						1				
	CO-2		2	2	1	1							
	CO-3	1			2			1		1			
	CO-4			1	1	2		1	1	2	1		2

Unit I:

Review data creation and the amount of data being created and understand the value of data to a business, challenges in data storage and data management, Solutions available for data storage, Core elements of a data center infrastructure, role of each element in supporting business activities

Hardware and software components of the host environment, Key protocols and concepts used by each component .Physical and logical components of a connectivity environment ,Major physical components of a disk drive and their function, logical constructs of a physical disk, access characteristics, and performance Implications.

Unit II:

Concept of RAID and its components , Different RAID levels and their suitability for different application environments: RAID 0, RAID 1, RAID 3, RAID 4, RAID 5, RAID 0+1, RAID 1 +0, RAID 6, Compare and contrast integrated and modular storage systems ,High-level architecture and working of an intelligent storage system

Evolution of networked storage, Architecture, components, and topologies of FC-SAN, NAS, and IP-SAN, Benefits of the different networked storage options, Understand the need for long-term archiving solutions and describe how CAS fulfills the need , Understand the appropriateness of the different networked storage options for different application environments

Unit III:

List reasons for planned/unplanned outages and the impact of downtime,Impact of downtime, Differentiate between business continuity (BC) and disaster recovery (DR) ,RTO and RPO, Identify single points of failure in a storage infrastructure and list solutions to mitigate these failures.

Architecture of backup/recovery and the different backup/recovery topologies , replication technologies and their role in ensuring information availability and business continuity, Remote replication technologies and their role in providing disaster recovery and business continuity capabilities

Unit IV:

Identify key areas to monitor in a data center, Industry standards for data center monitoring and management, Key metrics to monitor for different components in a storage infrastructure, Key management tasks in a data center. Information security, Critical security attributes for information systems, Storage security domains, List and analyzes the common threats in each domain

Unit V:

Virtualization technologies, block-level and file-level virtualization technologies and processes.

Case Studies

The technologies described in the course are reinforced with EMC examples of actual solutions.

Realistic case studies enable the participant to design the most appropriate solution for given sets of criteria.

TEXTBOOKS:

1. EMC Corporation, Information Storage and Management, Wiley.

2. "Storage Networks: The Complete Reference", Robert Spalding, Tata McGraw Hill, Osborne,2003.

REFERENCE BOOKS:

1. "Building Storage Networks", Marc Farley, Tata McGraw Hill, Osborne, 2001.
2. Storage Area Network Fundamentals, Meeta Gupta, Pearson Education Limited, 2002.