MARRI LAXMAN REDDY
INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AN AUTONOMOUS INSTITUTION)
(Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad)
Accredited by NBA and NAAC with 'A' Grade & Recognized Under Section2(f) & 12(B)of the UGC act,1956

B.Tech –Computer Science and Engineering

Course Structure (R20)
Applicable From 2020-21 Admitted Batch
Structure Breakup

S. No	Category	Breakup of credits (Total160credits)
1	Humanities and Social Sciences including Management courses(HSMC)	10
2	Basic Sciences Courses(BS)	22
3	Engineering Sciences courses including Workshop, Drawing basics of electrical/mechanical/computer etc.(ES)	19
4	Professional Core courses(PC)	69
5	Professional Electives(PE)	18
6	Open Electives(OE)	9
7	Project work, Seminar and Internship in industry or else where(PS)	13
8	Mandatory Courses	-
	TOTAL	**160**

I YEAR I SEMESTER

S. No.	Course Code	Course Name	Course Area	Periods per week			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIE)	External (SEE)	Total
1	2010001	Engineering Mathematics - I	BS	3	1	0	4	30	70	100
2	2010008	Engineering Chemistry	BS	3	1	0	4	30	70	100
3	2010501	Programming for Problem Solving	ES	3	1	0	4	30	70	100
4	2020372	Engineering Workshop	ES	1	0	3	2.5	30	70	100
5	2010009	Communicative English	HSMC	2	0	0	2	30	70	100
6	2010073	Engineering Chemistry Lab	BS	0	0	3	1.5	30	70	100
7	2010074	Communicative English Lab	HSMC	0	0	2	1	30	70	100
8	2010571	Programming for Problem Solving Lab	ES	0	0	3	1.5	30	70	100
9	2010021	Environmental Science	MC	2	0	0	0	-	-	-
TOTAL				**14**	**3**	**11**	**20.5**	**240**	**560**	**800**

I YEAR II SEMESTER

S. No.	Course Code	Course Name	Course Area	Periods per week			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIE)	External (SEE)	Total
1	2020002	Engineering Mathematics - II	BS	3	1	0	4	30	70	100
2	2020006	Applied Physics	BS	3	1	0	4	30	70	100
3	2020502	Data Structures	ES	3	0	0	3	30	70	100
4	2020009	Engineering Drawing Practice	ES	1	0	4	3	30	70	100
5	2020071	Applied Physics Lab	BS	0	0	3	1.5	30	70	100
6	2020572	Data Structures Lab	ES	0	0	2	1	30	70	100
TOTAL				**10**	**2**	**9**	**16.5**	**180**	**420**	**600**

***MC-Satisfactory/Unsatisfactory**

II YEAR I SEMESTER

S. No.	Course Code	Course Name	Course Area	Periods per week			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIE)	External (SEE)	Total
1	2030503	Database Management Systems	PC	3	0	0	3	30	70	100
2	2030010	Business Economics and Financial Analysis	HSMC	3	0	0	3	30	70	100
3	2030004	Probability And Statistics	BS	3	0	0	3	30	70	100
4	2030504	Digital Logic Design	PC	3	1	0	4	30	70	100
5	2030505	Python Programming	PC	3	0	0	3	30	70	100
6	2030573	Database Management Systems Lab	PC	0	0	3	1.5	30	70	100
7	2030574	IT Workshop Lab	PC	0	0	3	1.5	30	70	100
8	2030575	Python Programming Lab	PC	0	0	3	1.5	30	70	100
9	2030022	Gender Sensitization	MC	2	0	0	0	-	-	-
TOTAL				**17**	**1**	**9**	**20.5**	**240**	**560**	**800**

II YEAR II SEMESTER

S. No.	Course Code	Course Name	Course Area	Periods per week			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIE)	External (SEE)	Total
1	2040506	Discrete Mathematics	PC	3	1	0	4	30	70	100
2	2040201	Basic Electrical Engineering	ES	3	0	0	3	30	70	100
3	2040507	Computer Organization &Microprocessors	PC	3	1	0	4	30	70	100
4	2040508	Design and Analysis of Algorithms	PC	3	0	0	3	30	70	100
5	2040509	JAVA Programming	PC	3	0	0	3	30	70	100
6	2040271	Basic Electrical Engineering Lab	ES	0	0	2	1	30	70	100
7	2040576	Design and Analysis of Algorithms through Java Lab	PC	0	0	3	1.5	30	70	100
8	2040577	Computer Organization &Microprocessors Lab using MASAM	PC	0	0	2	1	30	70	100
9	2040023	Constitution of India	MC	2	0	0	0	-	-	-
TOTAL				**17**	**2**	**7**	**20.5**	**240**	**560**	**800**

***MC-Satisfactory/Unsatisfactory**

III YEAR I SEMESTER

S. No.	Course Code	Course Name	Course Area	Periods per week			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIE)	External (SEE)	Total
1	2050510	Operating Systems	PC	3	0	0	3	30	70	100
2	2050511	Computer Networks	PC	3	0	0	3	30	70	100
3	2050512	Formal Languages and Automata Theory	PC	3	0	0	3	30	70	100
4	2050513	Software Engineering	PC	3	0	0	3	30	70	100
5		Professional Elective I	PE	3	0	0	3	30	70	100
6	2050578	Computer Networks Lab	PC	0	0	3	1.5	30	70	100
7	2050579	Operating System Lab	PC	0	0	3	1.5	30	70	100
8	2050580	Software Engineering Lab	PC	0	0	2	1	30	70	100
9	2020024	Intellectual Property Rights	MC	2	0	0	0	-	-	-
TOTAL				**17**	**0**	**8**	**19**	**240**	**560**	**800**

III YEAR II SEMESTER

S. No.	Course Code	Course Name	Course Area	Periods per week			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIE)	External (SEE)	Total
1	2060514	Data Mining	PC	3	0	0	3	30	70	100
2	2060515	Compiler Design	PC	3	0	0	3	30	70	100
3	2060516	Web Technologies	PC	3	1	0	3	30	70	100
4		Professional Elective II	PE	3	0	0	3	30	70	100
5		Open Elective I	OE	3	0	0	3	30	70	100
6	2060581	Data Mining Lab	PC	0	0	3	1.5	30	70	100
7	2060582	Web Technology Lab	PC	0	0	3	1.5	30	70	100
8	2060075	Advanced English Communication Lab	HSMC	0	0	2	1	30	70	100
9		Professional Ethics	MC	2	0	0	0	-	-	-
TOTAL				**17**	**1**	**8**	**20**	**240**	**560**	**800**

***MC-Satisfactory/Unsatisfactory**

IV Year – I Semester

S. No.	Course Code	Course Name	Course Area	Periods per week			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIE)	External (SEE)	Total
1	2070011	Fundamentals of Management	HSMC	3	0	0	3	30	70	100
2	2070517	Full Stack Development	PC	3	0	0	3	30	70	100
3	2070518	Machine Learning	PC	3	0	0	3	30	70	100
4		Professional Elective III	PE	3	0	0	3	30	70	100
5		Professional Elective IV	PE	3	0	0	3	30	70	100
6		Open Elective II	OE	3	0	0	3	30	70	100
7	2070583	Full Stack Development Lab	PC	0	0	3	1.5	30	70	100
8	2070584	Machine Learning Lab	PC	0	0	3	1.5	30	70	100
9	2070585	Industry Oriented Mini Project/Summer Internship*	PS	0	0	4	2	30	70	100
10	2070586	Project Stage-I	PS	0	0	6	3	30	70	100
TOTAL				**18**	**0**	**16**	**26**	**300**	**700**	**1000**

IV Year – II Semester

S. No.	Course Code	Course Name	Course Area	Periods per week			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIE)	External (SEE)	Total
1		Professional Elective V	PE	3	0	0	3	30	70	100
2		Professional Elective VI	PE	3	0	0	3	30	70	100
3		Open Elective III	OE	3	0	0	3	30	70	100
4	2080587	Technical Seminar	PS	0	0	2	1	100	-	100
5	2080588	Project Stage-II	PS	0	0	14	7	30	70	100
TOTAL				**9**	**0**	**16**	**17**	**220**	**280**	**500**

***Students have to complete industry oriented mini project in III Year- II Semester Summer break, Evaluation is carried in IV-I semester.**

PE I - Professional Elective I

S.No	Course Code	Course Title
1	2050541	Embedded Systems
2	2050542	Computer Graphics
3	2050543	Artificial Intelligence
4	2050544	Information Retrieval Systems

PE II - Professional Elective II

S.No	Course Code	Course Title
1	2060545	Linux Programming
2	2060546	Mobile Computing
3	2060547	Cryptography and Network Security
4	2060548	Software Project Management

PE III – Professional Elective III

S.No	Course Code	Course Title
1	2070549	Wireless Sensor Networks
2	2070550	Design Thinking
3	2070551	Cyber Forensics
4	2070552	Natural Language Processing

PE IV - Professional Elective

S.No	Course Code	Course Title
1	2070553	Distributed System
2	2070554	Image Processing
3	2070555	Semantic Web
4	2070556	Data Analytics

PE V - Professional Elective V

S.No	Course Code	Course Title
1	2080557	Artificial Neural Networks
2	2080558	Deep Learning
3	2080559	Virtual Reality
4	2080560	Block Chain Technology

PE VI - Professional Elective VI

S.No	Course Code	Course Title
1	2080561	Robotics
2	2080562	Soft Computing
3	2080563	Web Services
4	2080564	Video Processing

Open Electives

	Course Code	Course Title
1	Open Elective 1	20x0509- Java Programming
		20x0503- Database Management System
2	Open Elective 2	20x0556- Data Analytics
		20x0505-Python Programming
3	Open Elective 3	20x0518-Machine Learning
		20x0517- Internet of Things

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT
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2010001: ENGINEERING MATHEMATICS - I

I Year B.Tech. CSE I – Sem. **L T P C**

3 1 0 4

Course Objectives:

- Types of matrices and their properties, Concept of a rank of the matrix and applying this concept to know the consistency and solving the system of linear equations.
- Concept of Eigen values and eigen vectors and to reduce the quadratic form to canonical form.
- Geometrical approach to the mean value theorems and their application to the mathematical problems.
- Partial differentiation, concept of total derivative, finding maxima and minima of function of two and three variables.
- The evaluation of Multiple integration and its applications

Course Outcomes: At the end of this course, students will be able to

- **CO.1**: Write the matrix representation of a set of linear equations and to analyse the solution of the system of equations
- **CO.2**: Find the Eigen values, Eigen vectors and reduce the quadratic form to canonical form using orthogonal transformations.
- **CO.3:** Solve the applications on the mean value theorems.
- **CO.4:** Find the extreme values of functions of two variables with/ without constraints.
- **CO.5**: Evaluate the multiple integrals and apply the concept to find areas, volumes for cubes, sphere and rectangular parallelepiped.

UNIT-I: Matrices

Matrices: Types of Matrices, Symmetric ;Skew-symmetric; orthogonal matrices; rank of a matrix by Echelon form, Normal form, Inverse of Non-singular matrices by Gauss-Jordan method; System of linear equations; solving system of Homogeneous and Non-Homogeneous equations. Gauss elimination method, Gauss seidel iteration method.

UNIT-II: Eigen values and Eigenvectors

Eigen values and Eigen vectors and their properties: Diagonalization of a matrix; Cayley-Hamilton Theorem (without proof); finding inverse and power of a matrix by Cayley-Hamilton Theorem; Quadratic forms up to three variables. Nature of the Quadratic Forms; Reduction of Quadratic form to canonical forms by Orthogonal Transformation.

UNIT-III: Calculus of single variable

Mean value theorems: Rolle's Theorem, Lagrange's Mean value theorem with their Geometrical Interpretation and applications, Cauchy's Mean value Theorem. Taylor's and Maclaurin theorems with remainders (without proof). Beta and Gamma functions and their applications.

UNIT-IV: Multivariable Calculus

Partial Differentiation; Euler's Theorem; Total derivative; Jacobian; Functional dependence, independence, Maxima and minima of functions of two variables and three variables using method of Lagrange multipliers.

UNIT-V: Multiple integrals& applications

Evaluation of Double integrals (Cartesian and polar coordinates); Change of order of integration (Cartesian form); Evaluation of Triple integrals; Change of variables (Cartesian to polar) for double and (cartesian to spherical and cylindrical polar coordinates) for triple integrals.

Applications: finding the area of a region using double integration and volume of a region using double and triple integration.

TEXTBOOKS:

1. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010
2. Erwin kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons,2006.

REFERENCES:

1. N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, Laxmi Publications, Reprint, 2008.
2. Ramana B.V., Higher Engineering Mathematics, Tata McGraw Hill New Delhi, 11thReprint, 2010.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

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2010008: ENGINEERING CHEMISTRY

I Year B.Tech. CSE I – Sem. **L T P C**

3 1 0 4

Course Objectives:

- To bring adaptability to the concepts of chemistry and to acquire the required skills to become a perfect engineer.
- To impart the basic knowledge of atomic, molecular and electronic modifications which makes the student to understand the technology based on them.
- To acquire the knowledge of electro chemistry,corrosion and water treatment which are essential for the Engineers and in industry
- To acquire the skills pertaining to spectroscopy and to apply them for medical and other fields.
- To impart the knowledge of stereo chemistry and synthetic aspects useful for understanding reaction pathways

Course Outcomes: At the end of this course, students will be able to

- The knowledge of atomic, molecular and electronic changes, band theory related to conductivity.
- The required principles and concepts of electro chemistry, corrosion and in understanding the problem of water and its treatments.
- The required skills to get clear concepts on basic spectroscopy and application to medical and other fields.
- The knowledge of configurational and conformational analysis of molecules and reaction mechanisms.

UNIT-I:

Molecular structure and Theory of Bonding: Atomic and Molecular orbitals / Introduction of VBT. Linear Combination of Atomic Orbitals (LCAO), molecular orbitals of diatomic molecules, molecular orbital energy level diagrams of N2, O2 and CO molecules.πmolecularorbitalsof1,3-butadiene.

Crystal Field Theory (CFT): Salient Features of CFT – Crystal Field Splitting of transition metal ion d- orbitalsin tetrahedral, octahedral and square planar geometries. Applications of CFT. Band structure of solids and effect of doping on conductance.

Learning Outcomes: At the end of this unit, the students will be able to

- Understand the Schrodinger wave equation to hydrogen and particle in a box.
- Explain the molecular orbital energy level diagram of different molecular species.
- Apply the band theory of solids for conductors,semiconductors and insulators.
- Analyze discuss the magnetic behavior and colour of complexes.
- Evaluate the Crystal Field theory and Splitting of d-orbital‟s

UNIT-II:

Water and its treatment: Introduction – hardness of water – Causes of hardness - Types of hardness: temporary and permanent – expression and units of hardness – Estimation of hardness

of water by complex metric method, Numerical Problems on hardness of water. Potable water and its specifications. Steps involved in treatment of water – Disinfection of water by chlorination and ozonization. Boiler troubels-scale and sludge,causticembrittlement, priming and foaming. Boiler feed water and its treatment–Calgon conditioning, Phosphate conditioning and colloidal conditioning. External treatment of water – Ion exchange process. Desalination of water – Reverse osmosis.

Learning outcomes: The student will be able to

- Understand the differences between temporary and permanent hardness of water.
- Explain the principles of reverse osmosis and Ion-Exchange processes.
- Apply the drinking water with BIS and WHO standards.
- Analyze problems associated with hardwater –scale and sludge.
- Evaluate the Internal and external treatment of water

UNIT-III:

Electrochemistry and corrosion: Electro chemical cells – electrode potential, standard electrode potential, types of electrodes – calomel, Quinhydrone and glass electrode. Nernst equation Determination of pH of a solution by using glass electrode. Electrochemical series and its applications. Numerical problems. Potentiometric titrations. Batteries – primary (Lithium cell) and secondary batteries (Lead – acid storage battery and Lithium ion battery).

Causes and effects of corrosion – theories of chemical and electrochemical corrosion – mechanism of electrochemical corrosion, Types of corrosion: Galvanic, water-line and pitting corrosion. Factors affection grate of corrosion, Corrosion control methods-Proper Design, Cathodicprotection– Sacrificial anode and impressed current cathodic methods. Surface coatings – metallic coatings – methods of application. Electroplating and electroless plating of Nickel.

Learning outcomes: The student will be able to

- Understand the Nernst equation for calculating electrode and cell potentials.
- Explain the corrosion prevention methods and factors affecting corrosion.
- Apply the Pilling Bed worth rule for corrosion and corrosion prevention.
- Analyze the Dry and Wet corrosion and its Mechanism.
- Evaluate the Corrosion control methods

UNIT-IV:

Stereochemistry, Reaction Mechanism and synthesis of drug molecules: Introduction to representation of 3-dimensional structures, Structural and stereoisomers, symmetry and chirality. Enantiomers, diastereomers, optical activity and configurational nomenclatures (D,L and R,S configurations) Conformational analysis of n- butane.

Substitution reactions: Nucleophilic substitution reactions: Mechanism of SN1, SN2 reactions. Electrophilic and nucleophilic addition reactions: Addition of HBr to propene. Markownikoff and anti Markownikoff"s additions. Grignard additions on carbonyl compounds. Elimination reactions: Dehydro halogenation of alkylhalides. Saytzeff rule. Oxidation reactions: Oxidation of alcohols using KMnO4.Reduction reactions: reduction ofcarbonyl compoundsusing LiAlH4.Structure, synthesis and pharmaceutical applications of Paracetamol and Aspirin.

Learning Outcomes: At the end of this unit, the students will be able to

- Understand the 3-dimension structures of organic chemistry
- Explain the symmetry, chirality of the organic molecule
- Apply the Mark ownik off and an tiMarkownik off‟ sadditions; Grignard additions conformations of n-butane
- Analyze the reaction mechanism of different compounds.
- Evaluate the synthesis of a spirin, paracetamol

UNIT-V: Spectro scopic techniques and applications: Principles of spectroscopy, selection rules and applications of electronic spectroscopy and IR Spectroscopy. Basic concepts of Nuclear magnetic resonance Spectroscopy, chemical shift,spin-spin splitting Introduction to Magnetic resonance imaging.

Learning Outcomes: At the end of this unit, the students will be able to

- Understand the. Principles of .spectro scopy and its selection rules
- Explain the concepts of nuclear magnetic resonance spectroscopy
- Apply the chemical shift values for the different compounds
- Analyze the different structures of organic compound
- Evaluate the vibrational and rotational spectroscopy

TEXTBOOKS:

1. Engineering Chemistry by P.C.Jain & M.Jain; Dhanpat Rai Publishing Company (P) Ltd.,NewDelhi.
2. Text Book of Engineering chemistry by Jaya Shree Anireddy: WileyPublications.
3. Text Book of Engineering Chemistry by Prasanth Rath,B.Rama Devi and Ch.Venkata RamanaReddy:CengagePublication2019.

REFERENCES:

1. Organic reaction Mechanism by Morrison and Boyd.
2. Fundamentals of Molecular Spectroscopy by C.N.Banwell
3. Inorganic Chemistry byJ.D.Lee

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

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2010501: PROGRAMMNG FOR PROBLEM SOLVING

I Year B.Tech. CSE I – Sem.	**L**	**T**	**P**	**C**
	3	**1**	**0**	**4**

Course Objectives:

- To learn the fundamentals of computers.
- To understand the various steps in program development.
- To learn the syntax and semantics of C programming language.
- To learn the usage of structured programming approach in solving problems.

Course Outcomes: At the end of this course, students will be able to

- To write algorithms and to draw flowcharts for solving problems.
- To convert the algorithms/flowcharts to C programs.
- To code and test a given logic in C programming language.
- To decompose a problem into functions and to develop modular reusable code.
- Searching and sorting problems.

UNIT-I:Introduction to Programming

Introduction to computers: disks, primary and secondary memory, processor, operating system, compilers, creating and running of program, Number systems, Pseudo code, algorithm, flowchart.

Introduction to C Programming Language: Basic structure of C program, Syntax and Logical Errors in compilation, "C" tokens: Identifiers, variables, Data types, Operators(Arithmetic, Relational, Logical, Bit-wise, Increment and Decrement, size of, Conditional operator, Assignment, Special operator), expressions and precedence, Expression evaluation, Precedence and Associativity, type conversion, Command line arguments.

UNIT-II: Control statements, Arrays

Conditional statements: Writing and evaluation of conditionals and consequent branching with if, if-else, nested if-else and switch statements.

Iterative Statements: while, do-while, for, Nested loops

Jumping Statements: break, continue and goto

I/O: Simple input and output with scanf and printf, formatted I/O, stdin, stdout, stderr.

Arrays: Types of arrays, creating, accessing and manipulating elements of arrays.

UNIT-III: Strings, structures and Unions, Pointers

Strings: Introduction to strings, handling strings as array of characters, string I/O functions, string handling functions, arrays of strings

Structures and unions: Defining structures, Initializing structures, Array of structures, nested structures, Bit Fields, unions.

Pointers: Defining pointers, Address and Indirection operators, pointers to arrays and structures, use of pointers in self-referential structures, Enumeration Data types

UNIT-IV: Functions and Dynamic Memory Allocation

Functions: Designing structured programs, Declaring a function, Signature of a function, Parameters and return type of a function, passing parameters to functions, call by value, Passing

arrays to functions, call by reference, void function, Structure to functions, Some C standard functions and libraries, Storage classes (auto, extern, static and register)

Recursion: Simple programs, such as Finding Factorial, Fibonacci series etc., Limitations of Recursive functions

Dynamic Memory Allocation: Allocating and freeing memory, Allocating memory for arrays of different data types.

UNIT-V: Preprocessors and File Handling in C

Preprocessor: Commonly used Preprocessor commands like include, define, undef, if, ifdef, ifndef.

Files: Text and Binary files, File structure, Creating, Reading and Writing text and binary files, Appending data to existing files, Writing and Reading structures using binary files, File Status functions, File Positioning functions.

TEXT BOOKS:

1. B.A.Forouzan and R.F.Gilberg C Programming and Data Structures,Cengage Learning,(3rdEdition)
2. Letus C by YashavantKanetkar BPB publications (16thEdition)

REFERENCES:

1. Programming in ANSI C by Balaguruswamy,(7th Edition)
2. Brian W.Kernighan and Dennis M.Ritchie, The C Programming Language, Prentice Hall of India
3. R.G.Dromey, How to solve it by Computer, Pearson(16thImpression)
4. Programming in C, Stephen G. Kochan, Fourth Edition, Pearson Education Herbert Schildt, C:The Complete Reference,Mc GrawHill,4thEdition

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

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2010372 : ENGINEERING WORKSHOP

I Year B.Tech. CSE I – Sem.

L	T	P	C
1	0	3	2.5

Course Objectives:

- To Study of different hand operated power tools, uses and their demonstration.
- To gain a good basic working knowledge required for the production of various engineering products.
- To provide hands on experience about use of different engineering materials, tools, equipment and processes those are common in the engineering field.
- To develop a right attitude, team working, precision and safety at work place.
- It explains the construction, function, use and application of different working tools, Equipment and machines

Course Outcomes: At the end of this course, students will be able to

- Explain the design and model different prototypes in the carpentry trade such as Cross lap joint, Dove tail joint. (L4)
- Demonstrate the design and model various basic prototypes in the trade of fitting such as Straight fit, V- fit. (L4)
- Understand to make various basic prototypes in the trade of Tin smithy such as rectangular tray, and open Cylinder. (L4)
- Demonstrate the design and model various basic prototypes in the trade of Welding. (L4)
- Explain to make various basic prototypes in the trade of Black smithy such as J shape, and S shape. (L4)
- Understand to perform various basic House Wiring techniques such as connecting one lamp with one switch, connecting two lamps with one switch, connecting a fluorescent tube, Series wiring, Go down wiring. (L4)

UNIT-I: CARPENTRY & FITTING

Carpentry – Introduction, Carpentry tools, sequence of operations, Trade importance, advantages, disadvantages and applications

Fitting – Introduction, fitting tools, sequence of operations, Trade importance, advantages, disadvantages and applications

UNIT-II: TIN SMITHY AND BLACKSMITHY

Tin-Smithy – Introduction, Tin smithy tools, sequence of operations, Trade importance, advantages, disadvantages and applications

Black smithy- Introduction, Black smithy tools, sequence of operations, Trade importance, advantages, disadvantages and applications

UNIT-III: **HOUSE WIRING AND WELDING**

House-wiring – Introduction, Electrical wiring tools, sequence of operations and applications (Parallel & Series, Two-way Switch and Tube Light)

Welding Practice – Introduction, electrode, welding tools, and sequence of operations,

advantages and applications (Arc Welding & Gas Welding).

LIST OF EXPERIMENTS:

1. Carpentry
2. Fitting
3. House Wiring
4. Tin smithy
5. Black smithy
6. welding
7. Foundry

TRADES FOR DEMONSTRATION & EXPOSURE:

1. Plumbing
2. Metal Cutting (Water Plasma), PowerTools In Construction And
3. Wood Working

TEXTBOOKS:

1. Workshop Practice /B. L. Juneja / Cengage
2. Workshop Manual / K. Venugopal / Anuradha

REFERENCES:

1. Work shop Manual – P. Kannaiah/ K. L. Narayana/ SciTech
2. Workshop Manual / Venkat Reddy/ BSP

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT
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2010009 : COMMUNICATIVE ENGLISH

I Year B.Tech. CSE I – Sem. **L T P C**

2 0 0 2

Course Objectives:

- Improve language proficiency with emphasis on Vocabulary, Grammar, Reading and Writing skills.
- Apply the theoretical and practical components of English syllabus to study academic subjects more effectively and critically.
- Analyze a variety of texts and interpret them to demonstrate in writing or speech.
- Write clearly and creatively, and adjust writing style appropriately to the content, the context, and nature of the subject.
- Develop language components to communicate effectively in formal and informal situations

Course Outcomes: At the end of this course, students will be able to

- Use English Language effectively in spoken and written forms.
- Comprehend the given texts and respond appropriately.
- Communicate confidently in various contexts in their profession.
- Acquire basic proficiency in English including LSRW skills.
- Use pre writing techniques to develop ideas and produce multiple drafts of different types of paragraphs.
- Recognize and incorporate basic grammar, mechanics, and sentence variety in writing.

UNIT-I:

'The Raman Effect' from the prescribed textbook 'English for Engineers' published by Cambridge University Press

Vocabulary Building: The Concept of Word Formation --The Use of Prefixes and Suffixes.

Grammar: Common Errors: Articles and Prepositions.

Reading: Reading and Its Importance- Techniques for Effective Reading.

Basic Writing Skills: Sentence Structures -Use of Phrases and Clauses in Sentences- Importance of Proper Punctuation- Techniques for writing precisely – Paragraph writing – Types, Structures and Features of a Paragraph - Creating Coherence-Organizing Principles of Paragraphs in Documents.

Learning Outcomes: At the end of the module, the learners will be able to

- Understand the concept of word formation, root words and their usage in English.
- Know the types of sentences and analyze the sentence structure
- Use articles and prepositions appropriately
- Use punctuation marks correctly in writing
- Understand the techniques of effective reading
- Write paragraphs effectively

UNIT-II: Synonyms and Antonyms.
Grammar: Identifying Common Errors in Writing with Reference to Noun-pronoun Agreement and Subject-verb Agreement.
Reading: Improving Comprehension Skills – Techniques for Good Comprehension
Writing: Format of a Formal Letter-Writing Formal Letters E.g.., Letter of Complaint, Letter of Requisition, and Job Application with Resume.

Learning Outcomes: At the end of the module, the learners will be able to

- Enrich their vocabulary using synonyms and antonyms
- Noun ,pronoun and subject verb agreement accurately
- understand the techniques of reading comprehension
- write formal letters in various context

UNIT-III: 'Blue Jeans' from the prescribed textbook 'English for Engineers' published by Cambridge University Press
Vocabulary: Acquaintance with Prefixes and Suffixes from Foreign Languages in English to form Derivatives-Words from Foreign Languages and their Use in English.
Grammar: Identifying Common Errors in Writing with Reference to Misplaced Modifiers and Tenses. **Reading**: Sub-skills of Reading- Skimming and Scanning
Writing: Nature and Style of Sensible Writing- Defining- Describing Objects, Places and Events – Classifying- Providing Examples or Evidence

Learning Outcomes: At the end of the module, the learners will be able to

- Use Prefixes and Suffixes from Foreign Languages in English
- Understand the use misplaced modifiers and uses of tenses
- Skim and scan the given text appropriately
- Write definitions, descriptions and classifications

UNIT –IV: 'What Should You Be Eating' from the prescribed textbook 'English for Engineers' published by Cambridge University Press.
Vocabulary: Standard Abbreviations in English
Grammar: Redundancies and Clichés in Oral and Written Communication.
Reading: Comprehension- Intensive Reading and Extensive Reading
Writing: Writing Practices--Writing Introduction and Conclusion - Essay Writing-Précis Writing.

Learning Outcomes: At the end of the module, the learners will be able to

- Understand the importance of food pyramid in your daily life.
- Explain the Active and passive Voice Subject Verb Agreement (Concord)
- Apply the One word Substitutes in your every day vocabulary.
- Analyze the Intensive and Extensive reading skills.
- Evaluate the importance of Technical Report Writing, and E-mail writing

UNIT –V: 'How a Chinese Billionaire Built Her Fortune' from the prescribed textbook 'English for Engineers' published by Cambridge University Press.
Vocabulary: Technical Vocabulary and their usage

Grammar: Common Errors in English
Reading: Reading Comprehension-Exercises for Practice
Writing: Technical Reports- Introduction – Characteristics of a Report – Categories of Reports Formats- Structure of Reports (Manuscript Format) -Types of Reports - Writing a Report.

Learning Outcomes: At the end of the module, the learners will be able to

- Understand the Technical Vocabulary and their Usage.
- Avoid common errors in English
- Read any text using the sub skills of reading
- Write technical reports using manual script format

TEXT BOOKS:

1. Sudarshan, N. P. and Savitha, C. (2018). English for Engineers, Cambridge University Press
2. Wren & Martin. (2017). High School English Grammar and Composition Book, S Chand Publishing.

REFERENCES:

1. Murphy ,R.(2015).Essential Grammar in Use. Cambridge University Press.
2. Current English Grammar and Usage with Composition by R. P Sinha
3. Wood ,F.T.(2007).Remedial English Grammar. Macmillan.
4. Swan, M. (2016). Practical English Usage. Oxford University Press.
5. Exercises in Spoken English. Parts I–III. CIEFL, Hyderabad. Oxford University Press

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AUTONOMOUS)

2010073 : ENGINEERING CHEMISTRY LAB

I Year B.Tech. CSE I – Sem.

L	T	P	C
0	0	3	1.5

Course Objectives:

- Estimation of hardness and chloride content in water to check its suitability for drinking purpose.
- To determine the rate constant of reactions from concentrations as an function of time.
- The measurement of physical properties like adsorption and viscosity.
- To synthesize the drug molecules and check the purity of organic molecules by thin layer chromatographic (TLC) technique.

Course Outcomes: At the end of this course, students will be able to

- Understand various procedures for performing the experiments.
- Explain the different measuring devices and meters to record the data
- Apply the mathematical concepts and equations to obtain quality results.
- Analyze the analytical techniques and graphical analysis to the experimental data.
- Evaluate the various parameters for different experiments accurately.

List of Experiments:

1. Determination of total hardness of water by complex metric method using EDTA
2. Determination of chloride content of water by Argento metry

Conducto metric titrations

3. Strong acid Vs Strong Base
4. Weak acid Vs Strong Base

Potentio etricitrations

5. Strong acid vs strong base
6. Redoxtitration:-Fe^{2+}usingKMnO4
7. Determination of rate constant of acid catalysed hydrolysis of methy lacetate
8. Synthesis of Aspirin and Paracetamol
9. Thin layer chromatography-calculation of R f values. eg:ortho and paranitrophenols
10. Determination of acid value of coconut oil
11. Determination of viscosity of castor oil and ground nut oil by using Ostwald "svis cometer.
12. Determination of surface tension of a give liquid using stalagnometer

REFERENCES:

1. Senior practical physical chemistry, B.D. Khosla, A. GulatiandV.Garg(R. Chand&Co.,Delhi)
2. An introduction to practical chemistry, K.K. Sharma and D.S.Sharma(Vikaspublishing, N.Delhi)
3. Vogel"stextbookofpracticalorganicchemistry5thedition
4. Text book on Experiments and calculations in Engineering chemistry–S.S.Dara

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

2010074: COMMUNICATIVE ENGLISH LANGUAGE(CEL)LAB

I Year B.Tech. CSE I – Sem.

L	T	P	C
0	0	2	1

Course Objectives:

- Facilitate computer-assisted multi-media instruction enabling individualized and independent language learning.
- Enhance English language skills, communication skills and to practice soft skills.
- Improve fluency and pronunciation intelligibility by providing an opportunity for practice in speaking.
- Train students in different interview and public speaking skills such as JAM, debate, roleplay, group discussion etc.
- Instill confidence and make them competent enough to express fluently and neutralize their mother tongue influence.

Course Outcomes: At the end of this course, students will be able to

- Better perception of nuances of English language through audio- visual experience.
- Neutralization of accent for intelligibility.
- Participate in group activities.
- Speaking skills with clarity and confidence which in turn enhances their employability.
- Apply effective communication skills in a variety of public and interpersonal settings

Communicative English Language Lab(CELL)shall have two parts:

a. Computer Assisted Language Learning(CALL)Lab
b. Interactive Communication Skills(ICS)Lab

Listening Skills Objectives

a. Enable students develop their listening skills to appreciate itsroleinthe LSRW skills approach to language and improve their pronunciation.
b. Equip students with necessary training in listening so that they can comprehend the speech of people of different backgrounds and regions.
c. Students should be given practice in listening to the sounds of the language, to be able to recognize them and find the distinction between different sounds, to be able to mark stress and recognize and use the right in to nation in sentences.
    - Listening for general content
    - Listening to fill up information
    - Intensive listening
    - Listening for specific information

Speaking Skills Objectives

a. Involve students in speaking activities in various contexts.
b. Enable students express themselves fluently and appropriately in social and professional contexts.
    - Oral practice: Just A Minute(JAM)Sessions

- Describing objects/situations/people
- Role play–Individual/Group activities
- Group Discussions
- Debate

Exercise–I

CALL Lab: *Understand:* Listening Skill- Its importance – Purpose- Process- Types- Barriers of Listening. *Practice*: Introduction to Phonetics – Speech Sounds – Vowels and Consonants.

ICS Lab: *Understand:* Communication at Work Place –Spoken vs. Written language.

Practice: Ice-Breaking Activity and JAM Session- Situational Dialogues – Greetings –Taking Leave–Introducing One self and Others.

Exercise–II

CALL Lab: *Understand:* Structure of Syllables – Word Stress and Rhythm– Weak Forms and Strong Forms in Context. *Practice:* Basic Rules of Word Accent - Stress Shift – Weak Forms and Strong Forms in Context.

ICS Lab: *Understand:* Features of Good Conversation – Non-verbal Communication. *Practice:* Situational Dialogues – Role-Play- Expressions in Various Situations –Making Requests and Seeking Permissions-Telephone Etiquette.

Exercise-III

CALL Lab: *Understand:* Intonation-Errors in Pronunciation-the Influence of Mother Tongue (MTI). *Practice:* Common Indian Variants in Pronunciation –Differences in British and American Pronunciation.

ICS Lab: *Understand:* How to make Formal Presentations. *Practice:* Formal Presentations.

Exercise–IV

CALL Lab: *Understand:* Listening for General Details. *Practice:* Listening Comprehension Tests.

ICS Lab: *Understand:* Public Speaking – Exposure to Structured Talks. *Practice:* Making a Short Speech–Extempore.

Exercise–V

CALL Lab: *Understand:* Listening for Specific Details. *Practice:* Listening Comprehension Tests.

ICS Lab: *Understand:* Interview Skills. *Practice:* Mock Interviews.

Reference Books:

1. Kumar, S. & Lata, P. (2011). Communication Skills. Oxford University Press.
2. Bala subramanian, T. (2008). A Text book of English Phonetics for Indian Students, Macmillan.
3. Thorpe, E. (2006). Winning at Interviews, Pearson Education.
4. Sethi, J. et al. (2005). A Practical Course in English Pronunciation (with CD), Prentice Hall of Effective Technical Communication by M Ashraf Rizvi

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

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2010571: PROGRAMMING FOR PROBLEM SOLVING LAB

I Year B.Tech. CSE I – Sem. **L T P C**

0 0 3 1.5

[Note: The programs may be executed using any available Open Source/ Freely available IDE Some of the Tools available are: CodeLite:https://codelite.org/Code::Blocks:http://www.codeblocks.org/DevCpp:http://www.bloodshed.net/devcpp.htmlEclipse:http://www.eclipse.orgThislistisnotexhaustive and is NOT in any order of preference]

Course Objectives:

- To work with an IDE to create, edit, compile, run and debug programs
- To analyze the various steps in program development.
- To develop programs to solve basic problems by understanding basic concepts in C like operators, control statements etc.
- To develop modular, reusable and readable C Programs using the concepts like functions, arrays etc.
- To create, read from and write to text and binary files

Course Outcomes: At the end of this course, students will be able to

- Formulate the algorithms for simple problems
- Able to develop programs based on condition checking
- Implement pyramid programs
- Able to perform matrix applications
- Modularize the code with functions so that they can be reused
- Create, read and write to and from simple text and binary files

Simple numeric problems:

a. Write a program for the simple, compound interest.
b. Write a program for calculating area, perimeter of a rectangle, triangle and square.
c. Write a program for calculating area and perimeter of a circle.
d. Write a program to implement bit-wise operators.
e. Write a program for converting Fahrenheit to Celsius.
f. Write a simple program that converts one given data type to another using auto conversion and casting. Take the values from standard input.
g. Write a simple program to find largest of two and three numbers using conditional operator.
h. Write a program for swapping two numbers with and without using third variable and using bitwise operators.

Condition branching and statements:

a. Write a program for finding largest of three numbers.
b. Write a program that declares Class awarded for a given percentage of marks, where marks<40%=Failed, 40% to<60% = Second class, 60% to<70%=First class, >=70%=Distinction. Read percentage from standard input.
c. Write a C program to find the roots of a Quadratic equation.
d. Write a C program, which takes two integer operands and one operator from the user, use Switch Statement)

Condition branching and loops:

a. Write a program to find whether the given number is a prime or not.
b. Write a C program to find the sum of individual digits of a positive integer and test given number is palindrome.
c. Write a program that prints a multiplication table for a given number and the number of rows in the table. For example, number=5 and no. of rows = 3, the output should be:
   5x1=5
   5x2=10
   5x3=15
d. Write a program that shows the binary equivalent of a given positive number between0to255.
e. A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a C program to generate the first n terms of the sequence.
f. Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.
g. Write a C program to calculate the following,where x is a fractional value.1-x/2+x2/4-x3/6
h. Write a C program to read in two numbers, x and n, and then compute the sum of this geometric progression:1+x+x2+x3+….+xn. For example: if n=3 and x=5, then the program compute 1+5+25+125.
i. Write a C program to construct a pyramid of numbers as follows:

1	*	1	1	*
12	**	23	22	**
123	***	456	333	***
			4444	**
				*

j. Write a C program to find given number is Armstrong number or not.
k. Write a C program to find given number is Perfect number or not.

Arrays ,Strings, Pointers and Structures:

a. Write a C program to find the minimum, maximum and average in an array of integers.
b. Write a program to compute Mean, Variance, Standard Deviation, Sorting of n elements in single dimension array.
c. Write a C program that perform the following:
   i. Addition of Two Matrices
   ii. Multiplication of Two Matrices
   iii. Transpose of a matrix with memory dynamically allocated for the new matrix as row and column counts may not be same.
d. Write a C program that sorts a given array of names.
e. Write a C program that perform the following operations:
   iv. To insert a sub-string in to a given main string from a given position.
   v. To delete n Characters from a given position in a given string.
f. Write a program for reading elements using pointer into array and display the values using array.
g. Write a program for display values reverse order from array using pointer.
h. Write a program through pointer variable to sum of n elements from array.
i. Write a program to implement student information by using structure to function.
j. Write a program to sort student I do r name using structures.

Functions:

a. Write a C program to find factorial of a given number using functions.
b. Write a C program to perform swapping using functions.
c. Write a C program to find LCM ,GCD of two numbers using functions.

d. Write a C program to implement sorting using functions.
e. Write a C program to create and print two dimensional array using functions.
f. Write a C program to find factorial of a given number using recursion.
g. Write a C program to find Fibonacci series using recursion
h. Write a C program to implement Towers of Hanoi problem using recursion.

Files*:*

a. Write a C program to display the contents of a file to standard output device.
b. Write a C program which copies one file to another, replacing all lower case characters with their upper case equivalents.
c. Write a C program to count the occurrence of a character in a text file. The file name and the character are supplied as command line arguments.
d. Write a C program to merge two files into a third file (i.e., the contents of the first file followed by those of these condare put in the third file).

REFERENCES:

1. Byron Gottfried, Schaum"s Outline of Programming with C,McGraw-Hill
2. Let us C by YashavantKanetkar BPB publications (16th Edition)
3. B .A. Forouzan and R.F. Gilberg C Programming and Data Structures, Cengage Learning, (3rdEdition)
4. Brian W. Kernighan and Dennis M.Ritchie, The C Programming Language,Prentice Hall of India
5. R.G. Dromey, How to solve it by Computer, Pearson (16thImpression)
6. Programming in C, Stephen G. Kochan, Fourth Edition, and Pearson Education.
7. Herbert Schildt, C: The Complete Reference, McGrawHill, 4thEdition.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AUTONOMOUS)

2010021: ENVIRONMENTAL SCIENCE

I Year B.Tech. CSE I – Sem.

L	T	P	C
2	0	0	0

Course Objectives:

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures.
- Understanding the environmental policies and regulations
- Understanding the importance of natural resources
- Understanding the different standards of environmental pollution

Course Outcomes: At the end of this course, students will be able to

- Understand the technologies on the basis of ecological principles
- Apply the environmental regulations which in turn helps in sustainable development.
- Understand the various classifications of ecosystems and natural resources.
- Apply environmental regulations to different acts.
- Evaluate the values of social, ethical and aesthetic

UNIT-I:

Ecosystems: Definition, Scope, and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnifications, Field visits.

Learning Outcomes:

- Understand the importance of eco system.
- Explain the various classifications.
- Apply to different cycles.
- Analyse the importance field visit.
- Evaluate the flow of energy

UNIT-II:

Natural Resources: Classification of Resources: Living and Non-Living resources, water resources: use and over utilization of surface and ground water, floods and droughts, **Dams**: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources**: Forest resources, Energy resources: growing energy needs, renewable and non renewable energy sources, use of alternate energy source, case studies.

Learning Outcomes:

- Understand the importance of natural resources.
- Explain the various classifications of natural resources.
- Apply to different renewable resources.
- Analyse the usage of resources.
- Evaluate the value of renewable and non renewable energy sources

UNIT-III:

Biodiversity And Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

Learning Outcomes:

- Understand the importance of Bio diversity.
- Explain the types of Biodiversity.
- Apply to different Biotic Resources.
- Analyse the importance Bio diversity And Biotic Resources.
- Evaluate the values of social, ethical and a esthetic

UNIT-IV:

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, Air Pollution: Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. Water pollution: Sources and types of pollution, drinking water quality standards. **Soil Pollution**: Sources and types, Impacts of modern agriculture, degradation of soil. Noise Pollution: Sources and Health hazards, standards, Solid waste: Municipal Solid Waste management, composition and characteristics of e-Waste and its management**. Pollution control technologies**: Wastewater Treatment methods: Primary, secondary and Tertiary. Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Issues and Global Efforts**: Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol. NAPCC-GoI Initiatives.

Learning Outcomes:

- Understand the importance of Pollution and control technologies.
- Explain the classifications of pollutions.
- Apply to environment.
- Analyse the importance waste management.
- Evaluate the value of Ozone depletion and Ozone depleting substances

UNIT-V:

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act-1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. **EIA:** EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-economical aspects. Concepts of Environmental Management Plan (EMP). Towards Sustainable Future: Concept of Sustainable Development Goals, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building.

Learning Outcomes:

- Understand the importance of Environmental Policy, Legislation.
- Explain the various acts.
- Apply to different Environmental Management Plan.
- Analyse the importance of environmental education.
- Evaluate the value of green building.

TEXTBOOKS:

1. Text book of Environmental Studies for Under graduate Courses by Erach Bharucha for University Grants Commission.
2. Environmental Studies by R. Raja gopalan, Oxford University Press.

REFERENCES:

1. Environmental Science: towards as stainable future by Richard T.Wright .2008 PHL Learning Private Ltd.New Delhi.
2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela.2008PHILearningPvt.Ltd.
3. Environmental Studies by Anubha Kaushik, 4thEdition, New age international publishers.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

2020002: ENGINEERING MATHEMATICS -II

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

3 1 0 4

Course Objectives:

- Methods of solving the differential equations of 1st and higher order.
- The applications of the differential equations to Newton's law of cooling, Natural growth and decay, etc.
- Concept of Sequence and nature of the series.
- The physical quantities involved in engineering field related to vector valued functions
- The basic properties of vector valued functions and their applications to line, surface and volume integrals.

Course Outcomes: At the end of this course, students will be able to

- **Co 1:** Identify whether the given differential equation of first order is exact or not
- **Co 2**: Solve higher differential equation and apply the concept of differential equation. To real world problems.
- **Co3**: Analyse the nature of sequence and series.
- **Co** 4: Apply the del operator to vector and scalar valued functions.
- **Co 5**: Evaluate the line, surface and volume integrals and converting them from on to Another.

UNIT-I: First Order and First-Degree ODE and its applications

Exact, linear and Bernoulli's equations; Applications: Newton's law of cooling, Law of natural growth and decay. Equations not of first degree: equations solvable for p, equations solvable for y, equations solvable for x and Clairaut' s type**.**

Learning outcomes:

- Identify whether the given differential equation of first order is exact or not.
- Apply the concept of differential equation to real world problems.
- Understand the conepts of linear and Non linear differential equations.
- Analyze Exact and Non Exact differential equations.
- Explain formation of differential equations, Homogeneous equations

UNIT-II: Higher Order Linear Differential equations

Linear differential equations of second and higher order with constant coefficients, RHS term of the type e^{ax} , Sin ax, Cos ax, and x^n , e^{ax} V(x), x^n V(x), method of variation of parameters; Equations reducible to linear ODE with constant coefficients: Legendre's equation, Cauchy-Euler equation.

Learning outcomes:

- Identify essential characteristics of linear differential equations with constant coefficients.
- Apply higher order DE's for solving some real world problems.

- Understand the differential equations with constant coefficients by appropriate method.
- Analyse Legendre's equation and Cauchy-Euler equation.
- Explain Method of variation of parameters.

UNIT-III: Sequences & Series

Sequence: Definition of a Sequence, limit; Convergent, Divergent and Oscillatory sequences. Series: Convergent, Divergent and Oscillatory Series; Series of positive terms; Comparison test, p-test, D-Alembert's ratio test; Raabe's test, logarithmic test; Cauchy's Integral test; Cauchy's root test; Alternating series: Leibnitz test; Alternating Convergent series: Absolute and Conditionally Convergence.

Learning outcomes:

- Identify the Sequence, types of sequences.
- Apply the concept of sequence and series to real world problems.
- Understand the logical knowledge of forming the series.
- Analyze the nature of sequence and series.
- Explain Alternating series.

UNIT-IV: Vector Differential Calculus

Vector point functions and scalar point functions. Gradient, Divergence and Curl. Directional derivatives. Solenoidal and Irrotational vectors, Scalar potential functions. Vector Identities.

Learning outcomes:

- Identify scalar and vector point functions.
- Apply Del to scalar and vector point functions.
- Understand the concepts of Solenoidal and irrotational vectors.
- Analyze the physical interpretation of Gradient, Divergence and curl.
- Explain vector identies.

UNIT-V: Vector Integral Calculus

Line integral-Work done, Surface Integrals-Flux of a vector valued function and Volume Integrals. Theorems of Green, Gauss and Stokes (without proofs) and their applications.

Learning outcomes:

- Identify the work done in moving a particle along the path over a force field.
- Apply Greens, Stokes and Divergence theorems in evaluation of double and triple integrals.
- Understand the concepts of Line Integral.
- Analyze the Flux of a vector valued function.
- Explain Vector valued theorems to real world problems.

TEXT BOOKS:

1. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010
2. Erwin kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons,2006

3. G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9thEdition, Pearson, Reprint, 2002.

REFERENCES:

1. Paras Ram, Engineering Mathematics, 2nd Edition, CBS Publishes
2. S. L. Ross, Differential Equations, 3rd Ed., Wiley India, 1984.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

2020006: APPLIED PHYSICS

I Year B.Tech. CSE II – Sem.

L	T	P	C
3	1	0	4

Course Objectives:

- Students will demonstrate skills in scientific inquiry, problem solving and laboratory techniques.
- Students will be able to demonstrate competency and understanding of the concepts found in Quantum Mechanics, Fiber optics and lasers, Semiconductor physics, opto electronics and dielectric and magnetic properties and a broad base of knowledge in physics.
- The graduates will be able to solve non-traditional problems that potentially draw on knowledge in multiple areas of physics.
- To study applications in engineering like memory devices, transformer core and electromagnetic machinery.

Course Outcomes: At the end of this course, students will be able to

- The student would be able to learn the fundamental concepts on Quantum behavior of matter in its micro state.
- The knowledge of fundamentals of Semiconductor devices and their applications.
- Design, characterization and study of properties of optoelectronic devices help the students to prepare new materials for various engineering applications.
- Study about Lasers and fiber optics which enable the students to apply to various systems involved with communications.
- The course also helps the students to be exposed to the phenomena of dielectric and magnetic properties.

UNIT-I: Quantum Mechanics

Introduction to quantum physics, Black body radiation, Photoelectric effect, de-Broglie's hypothesis, Wave-particle duality, Davisson and Germer experiment, Heisenberg's Uncertainty principle, Born's interpretation of the wave function, Schrodinger's time independent wave equation, Particle in one dimensional box.

Learning Outcomes:

- **Understand** the fundamental concepts of quantum mechanics.
- **Explain** the physical significance of wave function.
- **Apply** Schrödinger's wave equation for a free particle.
- **Analyze** the particle behavior in different potential regions.
- **Evaluate** the significance of energy values in one dimensional box.

UNIT-II: Semiconductor Physics

Intrinsic and Extrinsic semiconductors, Dependence of Fermi level on carrier-concentration and temperature, Carrier transport: diffusion and drift, p-n junction diode, Zener diode and their V-I Characteristics, Bipolar Junction Transistor (BJT): Construction, Principle of operation, Hall effect.

Learning Outcomes:

- **Understand** the energy band formation of semiconductors.
- **Explain** the properties of n-type and p-type semiconductors.
- **Apply** the Hall effect for various types of semiconductors.
- **Analyze** the various types of diodes**.**
- **Evaluate** the hall coefficient of semiconductors.

UNIT-III: Optoelectronics

Radioative and non-radiative recombination mechanisms in semiconductors, LED : Device structure, Materials, Characteristics and figures of merit, Semiconductor photo detectors: Solar cell, PIN and Avalanche photodiode and their structure, working principle and Characteristics.

Learning Outcomes:

- **Understand** the basic principle involved in LED.
- **Explain** about various types of photodiodes.
- **Apply** the knowledge on various diodes.
- **Analyze** the working of PIN and Avalanche diodes.
- **Evaluate** the characteristics of diodes**.**

UNIT-IV: Lasers and Fibre Optics

Lasers: Introduction to Lasers, Coherence, Population inversion, Pumping, Lasing action, Types of **Lasers**: Ruby laser, Carbon dioxide (CO_2) laser, He-Ne laser, Semiconductor laser; Applications of laser.

Fibre Optics: Introduction, Block diagram of fiber optic communication system, Total internal reflection, Acceptance angle and Numerical aperture, Step and Graded index fibres, Losses associated with optical fibres, Applications of optical fibres.

Learning Outcomes:

- **Understand** about Laser and fiber optics.
- **Explain** the working principle of laser and optical fibers.
- **Apply** optical fibers in communication system.
- **Analyze** the applications of optical fibers in medical, communication and other fields.
- **Evaluate** the laser and fiber optic concepts in various fields.

UNIT-V: Dielctric and Magnetic Properties

Dielectric properties: Introduction to dielectrics, Polarisation, Permittivity and Dielectric constant, Types of polarisation (Qualitative), Internal fields in a solid, Clausius-Mossotti equation, Ferroelectrics and Piezoelectrics.

Magnetic properties: Introduction to magnetism, Magnetisation, permeability and susceptibility, Classification of magnetic materials, Domain theory of ferro magnetism, Hysteresis, Applications of magnetic materials.

Learning Outcomes:

- **Understand** the concept of polarization in dielectric materials.
- **Explain** various types of polarization of dielectrics and classification of magnetic materials.

- **Apply** Lorentz field and Claussius- Mosotti relation in dielectrics.
- **Analyze** the ferromagenetism on the basis of domain theory.
- **Evaluate** the applications of dielectric and magnetic materials**.**

TEXT MBOOKS:

1. Engineering Physics, B.K. Pandey, S. Chaturvedi – Cengage Learing.
2. Halliday and Resnick, Physics - Wiley.
3. A textbook of Engineering Physics, Dr. M. N. Avadhanulu, Dr. P.G. Kshirsagar - S. Chand

REFERENCES:

1. Richard Robinett, Quantum Mechanics
2. J. Singh, Semiconductor Optoelectronics: Physics and Technology, McGraw-Hill inc. (1995). Online Course: “Optoelectronic Materials and Devices” by Monica Katiyar and Deepak Guptha on NPTEL.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

2020502: DATA STRUCTURES

I Year B.Tech. CSE II – Sem.

L	T	P	C
3	0	0	3

Prerequisites: A course on "Programming for Problem Solving "

Course Objectives:

- Exploring basic data structures such as linked list, stacks and queues.
- Describes searching and sorting techniques.
- Introduces trees and graphs.

Course Outcomes: At the end of this course, students will be able to

- Ability to select the data structures that efficiently model the information in a problem.
- Ability to assess efficiency trade-offs among different data structure implementations or combinations.
- Implement and know the application of algorithms for searching and sorting.
- Design programs using a variety of data structures- lists, stacks, queues, trees and graphs.

UNIT-I:

Introduction to Data Structures, Linear list – singly linked list, Doubly linked list, Circular linked list - operations and its applications.

UNIT-II

Stacks- Introduction, Operations, array and linked representations of stacks, stack applications (Infix to postfix conversion and postfix evaluation), Queues-Introduction, operations, array and linked representations of queues and its applications.

UNIT - III

Searching: Linear Search and Binary Search and its applications.

Sorting: Bubble sort, Selection sort, Insertion sort, Merge sort, Quick sort and its applications.

UNIT-IV

Trees - Introduction, Types of trees, Binary tree, recursive and non- recursive Traversals of Binary Tree, Binary search tree- Operations and its applications.

UNIT - V

Graphs: Introduction, Types of graphs, Representation of graphs, Graph Traversal Methods, comparison between trees and graphs and its applications.

TEXT BOOKS:

1. Fundamentals of data structures in C, E.Horowitz, S.Sahni and Susan Anderson Freed, 2nd Edition, Universities Press.
2. Data structures using C, A.S.Tanenbaum, Y. Langsam, and M.J. Augenstein, PHI/pearson education.

REFERENCES:

1. Data structures: A Pseudocode Approach with C, R.F.GilbergAndB.A.Forouzan, 2nd Edition, Cengage Learning.
2. Introduction to data structures in C, Ashok Kamthane, 1st Edition, PEARSON.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

2020009:ENGINEERING DRAWING PRACTICE

I Year B.Tech. CSE II – Sem.

L	T	P	C
1	0	4	3

Prerequisites: Knowledge in dimensions and units, Usage of geometrical instruments and analytical ability.

Course Objectives:

- The course is aimed at developing basic graphic skills so as to enable them to use these skills in preparation of engineering drawings, their reading and interpretation.
- To prepare the student to use the techniques, skills, and modern engineering tools necessary for engineering practice.
- To get exposure to a CAD package

Course Outcomes: At the end of this course, students will be able to

- Familiarize with BIS standards and conventions used in engineering graphics.
- Draw various engineering curves e.g., ellipse, parabola, cycloids and involutes etc and construct various reduced scales e.g., plain and diagonal scale.
- Develop the lateral surfaces of simple solids
- Ability to draw orthographic projections and isometric projections of given engineering components.
- Visualize different views like elevation and plan for a given line, plane figures or solid objects.
- Apply drafting techniques and use 2D software e.g., AutoCAD to sketch 2D plane figures.

UNIT – I: INTRODUCTION TO ENGINEERING DRAWING

Principles of Engineering Graphics and their Significance-Drawing Instruments and their Uses-Conventions in Drawing-BIS -Lettering and Dimensioning.

Geometrical Constructions: Bisecting a Line, Arc. Dividing A Line into 'N' Equal Parts, Construction of Polygons, Division of Circle into Equal Parts (8 And 12)

Construction of Scales: Plain, Diagonal and Vernier Scale.

Conic Sections: Ellipse, Parabola, Hyperbola and Rectangular Hyperbola- General Methods only.

Engineering Curves: Cycloid, Epicycloid, Hypocycloid

Involutes: For Circle, Triangle, Square, Pentagon and Hexagon.

Learning Outcome:

- To understand the basic standards, conventions of engineering drawing and how to use the instruments in drawing.
- Learn and draw the various types of curves used in engineering application.

UNIT – 2: ORTHOGRAPHIC PROJECTIONS

Principles - Assumptions- Different Angles of Projection.

Projections of Points- orientation in all the quadrants

Projections of Lines- Parallel, Perpendicular, Inclined to one plane and Inclined to both planes.

Projections of Planes: Surface Parallel, Perpendicular, Inclined to one plane and Inclined to both planes.

Learning Outcome:

- Knowledge in various planes of projections
- To draw the front view, top view and side views of the given geometrical elements

UNIT – 3 PROJECTIONS OF SOLIDS

Classification of solids- Axis- Parallel, Perpendicular, Inclined to one plane and Inclined to both planes- Prisms, Pyramids, Cylinder and Cone

Learning Outcome:

- To understand the various solid types
- To draw all the views of the given solid in all possible orientations.

UNIT – 4 SECTION OF SOLIDS AND DEVELOPMENT OF SURFACES

Types of Section Planes, Sectioning Prisms, Pyramids, Cylinders and Cones using various planes. Development of surfaces of right Regular Solids- Parallel Line Method, Radial Line Method.

Learning Outcome:

- To identify the cut surfaces and represent the sectional views graphically when the solid is sectioned.
- To develop the surfaces of solid using various methods.

UNIT – 5 ISOMETRIC PROJECTIONS AND PERSPECTIVE PROJECTIONS

Principles, Isometric Views of Planes, Solids- Box Method, Offset Method, Compound solids, Sectioned Solids. Conversion of Isometric to Multi view projection and vice versa.

Learning Outcome:

- Knowledge in principles of isometric projection
- Conversion of isometric to orthographic and vice-versa.

TEXT BOOKS:

1. N.D.Bhatt, Elementary Engineering Drawing, Charotar Publishers,2012.
2. Basanth Agrawal and C M Agrawal –Engineering Drawing 2e –,McGraw-Hill Education(India) Pvt.Ltd.

REFERENCES:

1. Engineering graphics with Auto CAD- R.B. Choudary/ Anuradha Publishers
2. Engineering Drawing- Johle/Tata Macgraw Hill.
3. K.Veenugopal, –Engineering Drawing and Graphics + Auto cad New Age International Pvt.Ltd, 2011

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

2020071: APPLIED PHYSICS LAB

I Year B.Tech. CSE II – Sem.

L	T	P	C
0	0	3	1.5

Course Objectives:

- To gain practical knowledge by applying the experimental methods to correlate with the theoretical knowledge of physics concepts.
- To learn the usage of electrical and optical systems for measurements.
- Apply the analytical techniques and graphical analysis to the experimental data.
- To develop intellectual communication skills through discussion on basic principles of scientific concepts in a group.

Course Outcomes:

- Understand the concepts of the error and analysis.
- Explain the different measuring devices and meters to record the data with precision.
- Apply the experimental skills to design new experiments in engineering.
- Analyze the theoretical knowledge and correlate with the experiment.
- Evaluate the various parameters accurately.

List of Experiments:

1. Energy gap of P-N junction diode:To determine the energy gap of a semiconductor diode.
2. Solar Cell:To study the V-I Characteristics of solar cell.
3. Photoelectric effect:To determine work function of a given material.
4. Light emitting diode:Plot V-I and P-I characteristics of light emitting diode.
5. LASER:To study the V-I characteristics of LASER sources.
6. Optical fibre: To determine the Numerical aperture and bending losses of Optical fibers
7. Stewart – Gee's experiment:
8. Hall effect:To determine Hall co-efficient of a given semiconductor.
9. LCR Circuit: To determine the resonance frequency and Quality factor of LCR Circuit.
10. R-C Circuit: To determine the time constant of R-C circuit.

Note: Any 8 experiments are to be performed

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AUTONOMOUS)

2020572: DATA STRUCTURES LAB

I Year B.Tech. CSE II – Sem.

L	T	P	C
0	0	2	1

Prerequisites: A Course on “Programming for problem solving”.

Course Objectives:

- It covers various concepts of C programming language
- It introduces searching and sorting algorithms
- It provides an understanding of data structures such as stacks and queues.

Course Outcomes:

- Ability to develop C programs for computing and real life applications using basic elements like control statements, arrays, functions, pointers and strings, and data structures like stacks, queues and linked lists.
- Ability to Implement searching and sorting algorithms

List of Experiments

1. Write a program that uses functions to perform the following operations on singly linked list.: i) Creation ii) Insertion iii) Deletion iv) Traversal
2. Write a program that uses functions to perform the following operations on doubly linked list.: i) Creation ii) Insertion iii) Deletion
3. Write a program that uses functions to perform the following operations on circular linked list: i) Creation ii) Insertion iii) Deletion
4. Write a program that implement stack operations using i) Arrays ii) Pointers
5. Write a c program to implement infix to postfix conversion using stack.
6. Write a c program to implement postfix evaluation.
7. Write a program that implement Queue operations using i) Arrays ii) Pointers
8. Write a program that implements the following sorting methods to sort a given list of integers in ascending order i) Bubble sort ii) Selection sort iii) Insertion sort
9. Write a program that implements the following sorting methods to sort a given list of integers in ascending order i) Merge sort ii) Quick sort
10. Write a program that use both recursive and non-recursive functions to perform the following searching operations for a Key value in a given list of integers: i) Linear search ii)

Binary search

11. Write a program to implement the tree traversal methods using both recursive and non-recursive.
12. Write a program to implement the graph traversal methods.

TEXT BOOKS:

1. Fundamentals of data structures in C, E.Horowitz, S.Sahni and Susan Anderson Freed, 2nd Edition, Universities Press.
2. Data structures using C, A.S.Tanenbaum, Y. Langsam, and M.J. Augenstein, PHI/pearson education.

REFERENCES:

1. Data structures: A Pseudocode Approach with C, R.F.GilbergAndB.A.Forouzan, 2nd Edition, Cengage Learning.
2. Introduction to data structures in C, Ashok Kamthane, 1st Edition, PEARSON.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

2030503: DATABASE MANAGEMENT SYSTEMS

II Year B.Tech. CSE I – Sem.

L	T	P	C
3	0	0	3

Prerequisites: A Course on “Data Structure and Linear Algebra”.

Course Objectives:

- To understand the basic concepts and the applications of database systems.
- To master the basics of SQL and construct queries using SQL.
- Topics include data models ,data base design, relational model, relational algebra, transaction control, concurrency control, storage structures and access techniques.

Course Outcomes:

- Gain knowledge of fundamentals of DBMS, data base design and normal forms
- Master the basics of SQL for retrieval and management of data.
- Be acquainted with the basics of transaction processing and concurrency control.
- Familiarity with database storage structures and access techniques.

UNIT-I

Database Systems: A Historical Perspective, File Systems versus a DBMS, Relational Model, Levels of Abstraction in a DBMS, Data Independence, Structure of DBMS.

Introduction to Database Design: Database Design and ER Diagrams, Entities, Attributes, and Entity Sets, Relationships and Relationship Sets, Additional Features of the ER Model, Conceptual Design With ER Model.

UNIT-II

Relational Model: Introduction, Integrity constraints over relations, Enforcing integrity constraints, querying relational data, logical database design, introduction to views, destroying/altering tables and views.

Relational Algebra and Calculus: Relational Algebra, Tuple relational Calculus, Domain relational calculus.

UNIT-III

SQL: Queries, Constraints, Triggers: Form of basic SQL query, UNION, INTERSECT, and EXCEPT, Nested Queries, aggregation operators, NULL values, complex integrity constraints in SQL, triggers and active data bases.

Schema refinement: Problems caused by redundancy, Decompositions, problems related to decomposition, Reasoning about Functional Dependencies, FIRST, SECOND, THIRD normal forms, BCNF, Loss less join decomposition, Multi-valued dependencies, FOURTH normal form, FIFTH normal form.

UNIT-IV

Transaction Management: ACID properties, Transactions and Schedules, Concurrent execution of transactions, Lock-based Concurrency control, Performance of locking, Transaction support in

SQL, Introduction to crash recovery.

Concurrency control: Serializability and Recoverability, Introduction to lock management, Lock conversions, Dealing with dead locks, Spealized locking techniques, Concurrency control without locking.

UNIT– V

Storage and Indexing: Data on External Storage, File Organization and Indexing, Cluster Indexes, Primary and Secondary Indexes, Index data Structures, Hash Based Indexing, Tree base Indexing, Comparison of File Organizations, Indexes and Performance Tuning

Tree structured Indexing: Intuitions for tree Indexes, Indexed Sequential Access Methods (ISAM), B+Trees: A Dynamic Index Structure.

TEXT BOOKS:

1. DatabaseManagementSystems,RaghuRamakrishanan,JohannesGehrke,TataMcGraw Hill 3rd Edition
2. Database System Concepts, Silberschatz, Korth, McGrawhill, Vthedition.

REFERENCE:

1. Database Systems design, Implementation, and Management, Peter Rob & Carlos Coronel, 7th Edition.
2. SQL The Complete Reference, James R.Groff, Paul N. Weinberg, 3rdEdition,
3. Oracle for Professionals, The X Team,S.Shah and V. Shah, SPD.
4. Database Systems Using Oracle: A Simplified guide to SQL and PL/SQL, Shah ,PHI

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

2030010: BUSINESS ECONOMICS AND FINANCIAL ANALYSIS

II Year B.Tech. CSE I – Sem.

L	T	P	C
3	0	0	3

Prerequisites: A Course on "Data Structure and Linear Algebra".

Course Objectives:

- To learn the basic Business types, impact of the Economy on Business and Firms specifically.
- To analyze the Business from the Financial Perspective.

Course Outcomes:

- The students will understand the various Forms of Business and the impact of economic variables on the Business. The Demand, Supply, Production, Cost, Market Structure, Pricing aspects are learnt. The Students can study the firm„s financial position by analyzing the Financial Statements of a Company

UNIT-I

Introduction to Business and Economics: Business: Structure of Business Firm, Types of Business Entities, Limited Liability Companies, Economics: Significance of Economics, Micro and Macro Economic Concepts, Business Cycle, Features and Phases of Business Cycle. Nature and Scope of Business Economics, Role of Business Economist

Course outcomes:

By going through this unit, technical students can have the scope of learning about different economic concepts, business cycles and nature of business economists.

UNIT – II

Demand Analysis: Elasticity of Demand: Elasticity, Types of Elasticity, Law of Demand, Measurement and Significance of Elasticity of Demand, Factors affecting Elasticity of Demand, Demand Forecasting: Steps in Demand Forecasting, Methods of Demand Forecasting.

Course outcomes:

By going through this content, student can learn about different types of demand, its determinants and elasticity of demand concepts thoroughly and how to forecast the demand of different things by using different agreed upon techniques.

UNIT - III

Production, Cost, Market Structures & Pricing: Production Analysis: Factors of Production, Production Function, Different Types of Production Functions. Cost analysis: Types of Costs, Short run and Long run Cost Functions. Market Structures: Features of Perfect competition, Monopoly, Oligopoly, and Monopolistic Competition. Pricing: Types of Pricing, Break Even Analysis, and Cost Volume Profit Analysis.

Course outcomes:

By reading this chapter, student can learn different pricing techniques in different market structures and different cost functions that determine products life cycle in a long term basis.

UNIT – IV

Capital Budgeting: Importance of Capital Budgeting, methods of Capital Budgeting: Traditional Methods: Pay Back Period, Accounting Rate of Return, and Discounting Methods: Net Present Value, Profitability Index, Internal Rate of Return; Financial Analysis through Ratios: Concept of Ratio Analysis, Liquidity Ratios, Turnover Ratios, Profitability Ratios, Proprietary Ratios, Solvency, Leverage Ratios (simple problems).

Course outcomes:

By going thoroughly through this unit, students can have the scope of learning about different techniques by which a project can be evaluated from financials perspective and utilization of ratios at different times to assess the business position for decision making.

UNIT - V

Financial Accounting: Accounting concepts and Conventions, Accounting Equation, Double-Entry system of Accounting, Rules for maintaining Books of Accounts, Journal, Posting to Ledger, Preparation of Trial Balance, Elements of Financial Statements, and Preparation of Final Accounts.

Course outcomes:

Students can learn the methodology of accounting cycle which is valid from stakeholders„ point of view and they can learn the comparison of the different firms at a time, so that they can take appropriate decision of either investment or to become an entrepreneur.

TEXT BOOKS:

1. D. D. Chaturvedi, S. L. Gupta, Business Economics - Theory and Applications, International Book House Pvt. Ltd. 2013.
2. Dhanesh K Khatri, Financial Accounting, Tata McGraw Hill, 2011.
3. Geethika Ghosh, Piyali Gosh, Purba Roy Choudhury, Managerial Economics, 2e, Tata McGraw Hill Education Pvt. Ltd. 2012.
4. I.M. Pandey, Financial Management, 11th Edition, Kindle Edition, 2015.

REFERENCE:

1. Paresh Shah, Financial Accounting for Management 2e, Oxford Press, 2015.
2. S. N. Maheshwari, Sunil K Maheshwari, Sharad K Maheshwari, Financial Accounting, 5e, Vikas Publications, 2013

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AUTONOMOUS)

2030004 :PROBABILITY AND STATISTICS

II Year B.Tech. CSE II – Sem.

L	T	P	C
3	0	0	3

Prerequisites: NIL

Course Objectives:

- The ideas of probability and random variables and various discrete and continuous probability distributions and their properties.
- The basic ideas of statistics including measures of central tendency.
- The statistical methods of studying data samples.
- The sampling theory and testing of hypothesis and making inferences.

Course Outcomes: After learning the contents of this paper the student must be able to

- Formulate and solve problems involving random variables and apply statistical methods for analysing experimental data.
- Apply discrete and continuous probability distributions.
- Classify the concepts of data science and its importance.
- Infer the statistical inferential methods based on small and large sampling tests.
- Interpret the association of characteristics through correlation and regression tools.

UNIT-I: Probability and Random Variables

Probability: Sample Space, Events, Probability of an Event, Additive Rules, conditional probability, independent events, Product Rule and Bayes„ theorem.

Random variables: Discrete and continuous random variables. Expectation, Mean and Variance of random variables. Chebyshev„s inequality.

UNIT-II: Probability Distributions & Estimation

Probability distribution-Binomial, Poisson approximation to the binomial distribution, uniform, exponential and Normal distribution. Estimation.: Estimating the Mean, Standard Error of a Point Estimate, Prediction Intervals, Tolerance Limits, Estimating the Variance, Estimating a Proportion for single mean, Difference between Two Means, between Two Proportions for Two Samples and Maximum Likelihood Estimation.

UNIT-III: Sampling theory and Small samples

Population and sample, parameters and statistics; sampling distribution of means (⌐ known)- central limit theorem, t-distribution, sampling distribution of means (⌐ unknown)- sampling distribution of variances-chi-square and F-distributions.

UNIT-IV: Testing of Hypothesis & Stochastic Process:

Testing of Hypothesis: Large sample test for single proportion, difference of proportions,single mean, difference of means.

Stochastic process: Introduction to Stochastic processes- Markov process. Transition

Probability, Transition Probability Matrix, First order and Higher order Markov process, n- step transition probabilities, Markov chain, Steady state condition, Markov analysis.

UNIT-V: Curve Fitting for Statistical Data

Curve fitting by the method of least squares- fitting of straight lines, second degree parabolas and more general curves; Correlation and regression – Rank correlation.

TEXTBOOKS:

1. Ronald E. Walpole, Raymond H. Myers, Sharon L. Myers, keying Ye, Probability and statistics for engineers and scientists, 9th Edition, Pearson Publications.
2. Fundamentals of Mathematical Statistics, Khanna Publications, S C Guptas and V.K. Kapoor.

REFERENCE:

1. Miller and Freund„s, Probability and Statistics for Engineers, 8th Edition, Pearson Educations S. Ross, A First Course in Probability, 6th Ed., Pearson Education India,2002

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

2030504:DIGITAL LOGIC DESIGN

II Year B.Tech. CSE I – Sem.

L	T	P	C
3	1	0	4

Prerequisites: NIL

Course Objectives:

- To understand basic number systems, codes and logical gates.
- To understand the concepts of Boolean algebra.
- To understand the use of minimization logic to solve the Boolean logic expressions..
- To understand the design of combinational and sequential circuits.
- To understand the state reduction methods for Sequential circuits.
- To understand the basics of various types of memories

Course Outcomes: The students should be able to

- .Understand and explore the basics of computer networks and various protocols.
- Understand number systems and codes.
- Solve Boolean expressions using Minimization methods.
- Design the sequential and combinational circuits.
- State reduction methods to solve sequential circuits.
- Understand and apply the memory and error detection and correction

UNIT-I

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

Boolean Algebra And Logic Gates: Basic Definitions, Axiomatic definition of Boolean Algebra, Basic theorems and properties of Boolean algebra, Boolean functions canonical and standard forms, other logic operations, Digital logic gates, integrated circuits.

UNIT-II

Gate–Level Minimization: The map method, Four-variable map, Five-Variable map, product of sums simplification, Don"t-care conditions, NAND and NOR implementation, other Two-level implementations, Exclusive – OR function.

UNIT-III

Combinational Logic : Combinational Circuits, Analysis procedure, Design procedure, Binary Adder-Subtractor, Decimal Adder, Binary multiplier, Magnitude comparator, Decoders, Encoders, Multiplexers, HDL for combinational circuits.

UNIT-IV

Synchronous Sequential Logic: Sequential circuits, latches, Flip-Flops, Analysis of clocked sequential circuits, HDL models for sequential circuits, State Reduction and Assignment, Design Procedure.

Registers and Counters: Registers, shift Registers, Ripple counters, synchronous counters, other counters, HDL for Registers and counters.

TEXT BOOKS:

1. Digital Design–Fourth Edition, M. Morris Mano, Pear son Education/PHI.
2. Fundamentals Of Logic Design,Roth,5th Edition, Thomson.

REFERENCE:

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

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AUTONOMOUS)

2030505:PYTHON PROGRAMMING

II Year B.Tech. CSE II – Sem.

L	T	P	C
3	0	0	3

Prerequisites: NIL

Course Objectives:

- Handle Strings and Files in Python.
- Understand Lists, Dictionaries and Regular expressions in Python.
- Understand FILES, Multithread programming in Python.
- Understand GUI in Python.

Course Outcomes:

- Examine Python syntax and semantics and be fluent in the use of Python flow control and functions.
- Demonstrate proficiency in handling Strings and File Systems.
- Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries.
- Develop programs using graphical user interface.

UNIT-I

Python Basics

Python Objects: Standard Types, Built-in Types, Internal Types, Standard Type Operators, Standard Type Built-in Functions, Categorizing the Standard Types, Unsupported Types.

Python Numbers: Introduction to Numbers, Integers, Floating Point Real Numbers, Complex Numbers, Operators, Built-in Functions.

UNIT-II

Conditionals and Loops-if, else, elif, for, while, break, continue, pass, List comprehensions, Generator expressions.

Sequences: Strings, Lists, and Tuples -Built-in Functions, Special features.

Mapping and Set Types: Dictionaries, Sets-Built-in Functions.

UNIT-III

Files and Input / Output: File Objects, File Built-in Functions, File Built-in Methods, File Built-in Attributes, Standard Files, Command-line Arguments, File System, File Execution, Persistent Storage Modules, Related Modules.

Exceptions:Exceptions in Python, Detecting and Handling Exceptions, Context Management, Exceptions as Strings, Raising Exceptions, Assertions, Standard Exceptions, Creating Exceptions, Exceptions and the sys Module.

UNIT-IV

Functions and Functional Programming–Calling Functions , Creating Functions, Passing Functions,

Formal Arguments, Variable- Length Arguments, Functional Programming.

Modules –Modules and Files, Name spaces, Importing Modules, Module Built-in Functions, Packages, Related modules.

UNIT– V

Multi-threaded Programming: Introduction, Threads and Processes, Python Threads, the Global Interpreter Lock, Thread Module, Threading Module.

GUI Programming: Introduction, Tkinter and Python Programming, Brief Tour of Other GUIs, Related Modules and Other GUIs.

TEXTBOOKS:

1. Core Python Programming, WesleyJ. Chun, SecondEdition, Pearson.

REFERENCE:

1. Think Python, Allen Downey, Green Tea Press
2. Introduction to Python, Kenneth A. Lambert, Cengage
3. Python Programming: A Modern Approach, Vamsi Kurama, Pearson
4. Learning Python, Mark Lutz, O" Really.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AUTONOMOUS)

2030573: DATABASE MANAGEMENT SYSTEMS LAB

II Year B.Tech. CSE I – Sem.	L	T	P	C
	0	0	3	1.5

Prerequisites: A Course on Data Structures

Course Objectives:

- Introduce ER data model, database design and normalization
- Learn SQL basics for data definition and data manipulation

Course Outcomes: After learning the contents of this paper the student must be able to

- Understand and explore the basics of computer networks and various protocols.
- Design database schema for a given application and apply normalization
- Acquire skills in using SQL commands for data definition and data manipulation.
- Develop solutions for database applications using procedures, cursors and triggers.

Problem statement

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

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

- Reservation and Ticketing
- Cancellations

Reservation & 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 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 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 others keys like candidate keys, partial keys, if any.

Example: Entities:

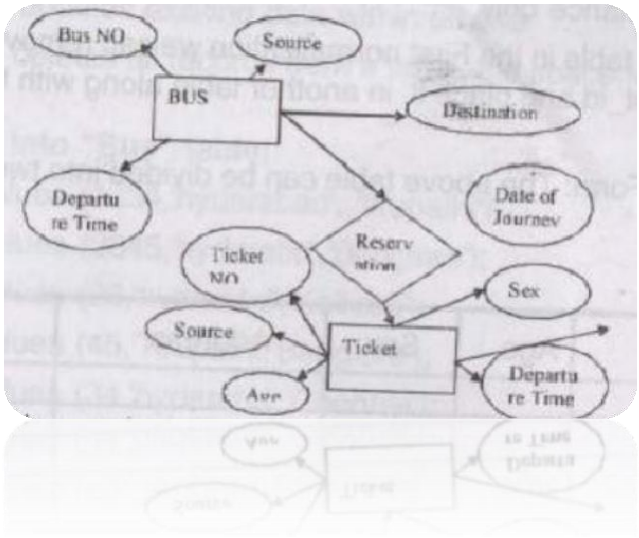
1. BUS
2. Ticket
3. Passenger

Relationships:

1. Reservation
2. Cancellation

PRIMARY KEY ATTRIBUTES:
Ticket ID (Ticket Entity)
Passport ID (Passenger Entity)
Bus_No (Bus Entity)
A part from the above mentioned entities you can identify more. The above mentioned are few.
Note: The students 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.
Example: E-R diagram for bus



Note: The students is required to submit a document by drawing the E-R Diagram.

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 requirement. Different types of attributes (Composite, Multi-valued, and Derived) have different way of representation.
Example: The passenger tables look as below. This is an example. You can add more attributes

based on E-R model. This is not a normalized table.

Passenger

Name			Address	Ticket_id	Passport ID

Note: The students 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.

For the above table in the First normalization we can remove the multiple valued attribute Ticket_id and place it in another table along with the primary key of passenger.

First Normal Form: The above table can divided into two tables as shown below. Passenger

Name	Age	Sex	Address	Passport ID

Passport ID	Ticket_id

You can do the second and third normal forms if required. Any how Normalized tables are given at the end.

Experiment 5: Installation of MySQL and practice DDL commands

Installation of MySQL. In this week you will learn Creating databases, How to create tables, altering the database, droping tables and databases if not required. You will also try truncate, rename commands etc.

Example for creation of a normalized "Passenger" table. CREATE TABLE Passenger(Passport_id INTEGER PRIMARY KEY, Name VARCHAR(50) NOT NULL, Age INTEGER NOT NULL,Sex CHAR,Address VARCHAR(50) NOT NULL);

Similarly create all other tables.

Note: Detailed creation of tables is given at the end.

Experiment 6: Practicing DML commands

DML commandsare used for managing data within schema objects. Some examples:

SELECT - retrieve data from the database

INSERT - insert data into a table

UPDATE - updates existing data within a table
DELETE - deletes all records from a table, the space for the records remain
insert values into "Bus" table:
insert into Bus values (1234, 'hyderabad', 'tirupathi');

insert values into "Passenger" table:
insert into Passenger values(1, 45, 'ramesh', 45, 'M', 'abc123'); insert into Passenger values(56, 22, 'seetha', 32, 'F', 'abc55');

Few more Examples of DML commands:
SELECT * FROM Bus; (selects all the attributes and displays) UPDATE Bus SET Bus_No = 1 WHERE Bus_No = 2;

Experiment 7: Querying
In this week you are going to practice queries(along with sub queries) using ANY, ALL, IN, EXISTS, NOT EXIST, UNION, INTERSECT, Constraints etc.
Practice the following Queries:
Display unique PNR_No of all passengers.
Display all the names of male passengers.
Display the ticket numbers and names of all the passengers.
Find the ticket numbers of the passengers whose name start with 'r' and ends with 'h'.
Find the names of passengers whose age is between 30 and 45.
Display all the passengers names beginning with 'A'
Display the sorted list of passengers names.

Experiment 8 and Experiment 9: Querying (continued...)
You are going to practice queries using Aggregate functions (COUNT, SUM, AVG, MAX,and MIN), GROUP BY, HAVING and Creation and dropping of VIEWS.
Write a Query to display the information present in the Passenger and cancellation tables. Hint: Use UNION Operator.
Display the number of days in a week on which the 9W01 bus is available.
Find number of tickets booked for each PNR_No using GROUP BY CLAUSE. Hint: Use GROUP BY on PNR_No.
Find the distinct PNR numbers that are present.
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.
Find the total number of cancelled seats.

Experiment 10: 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.
E.g:
CREATE TRIGGER updatecheck BEFORE UPDATE ON passenger FOR EACH ROW BEGIN
IF NEW.TickentNO> 60 THEN
SET New.TickentNO = TicketNo; ELSE
SET New.TicketNo = 0; END IF;
END

Experiment 11; Procedures

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

E.g:

```
CREATE PROCEDURE myproc() BEGIN
SELECT COUNT(Tickets) FROM Ticket
WHERE age >= 40; END;
```

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

```
CREATE PROCEDURE myproc(in_customer_id INT) BEGIN
DECLARE v_id INT;
DECLARE v_nameVARCHAR(30);

DECLARE c1 CURSOR FOR
SELECT stdid, stdFirstname FROM studentsss WHERE stdid - in_customer_id;

OPEN c1;
FETCH c1 INTO v_id, v_name; CLOSE c1;
END;
```

Tables:

BUS

Bus No: VARCAHR : PK(primary key) Source: VARCHAR

Destination: VARCHAR

Passenger

PPNO: VARCHAR(15) : PK Name: VARCHAR(15)

Age: INT(4)

Sex: CHAR(10) : Male/Female Address: VARCHAR(20) Passenger_Tickets

PPNO: VARCHAR(15) : PK

Ticket_No: NUMERIC(9)

Reservation

PNR_No: NUMERIC(9) : FK

Journey_date: DATETIME(8) No_of_seats: INT(8) Address: VARCHRA(50)

Contact_No: NUMERIC(9) --> Should not less than 9 and Should not accept any other character other than interger

STATUS: CHAR(2) : Yes/No

Cancellation

PNR_No: NUMERIC(9) : FK

Journey_date: DATETIME(8) No_of_seats: INT(8) Address: VARCHRA(50)

Contact_No: NUMERIC(9) --> Should not less than 9 and Should not accept any other character other than interger

STATUS: CHAR(2) : Yes/No

Ticket

Ticket_No: NUMERIC(9) : FK Journey_date: DATETIME(8) Age: INT(4)

Sex: CHAR(10) : Male/Female Source: VARCHAR Destination: VARCHAR Dep_time: VARCHAR

REFERENCE BOOKS:

1. Introduction to SQL, Rick F.vanderLans, 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 11g PL/SQL Programming, M. Mc Laughlin, TMH.
6. SQL Fundamentals, J.J. Patrick, Pearson Education.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

2030574: IT WORKSHOP LAB

II Year B.Tech. CSE I – Sem.

L	T	P	C
0	0	3	1.5

Prerequisites: NIL

Course Objectives:

- To train students on PC Hardware, Internet & World Wide Web and Productivity tools including Word, Excel, Power Point and Publisher

Course Outcomes: After learning the contents of this paper the student must be able to

- Understand PC hardware.
- Use tools MS-word and LATEX.

PC Hardware introduces the students to a personal computer and its basic peripherals, the process of assembling a personal computer, installation of system software like MS Windows, Linux and the required device drivers. In addition hardware and software level troubleshooting process, tips and tricks would be covered. **The students should work on working PC to disassemble and assemble to working condition and install Windows and Linux on the same PC. Students are suggested to work similar tasks in the Laptop scenario wherever possible. Internet & World Wide Web** module introduces the different ways of hooking the PC on to the internet from home and workplace and effectively usage of the internet. Usage of web browsers, email, newsgroups and discussion forums would be covered. In addition, awareness of cyber hygiene, i.e., protecting the personal computer from getting infected with the viruses, worms and other cyber attacks would be introduced. **Productivity tools** module would enable the students in crafting professional word documents, excel spread sheets, power point presentations and personal web sites using the Microsoft suite of office tools and LaTeX. (**Recommended to use Microsoft office 2007 in place of MS Office2003)**

PC Hardware

Task 1: Identify the peripherals of a computer, components in a CPU and its functions. Draw the block diagram of the CPU along with the configuration of each peripheral.

Task 2: Disassemble and assemble the PC back to working condition.

Task 3: Installation of MS windows on the personal computer or Laptop.

Task 4: Installation of Linux on the computer or Laptop. This computer should have windows installed. The system should be configured as dual boot with both windows and Linux.

Task 5: Hardware Troubleshooting: Sample PC which does not boot due to improper assembly or defective peripherals, identify the problem and fix it to get the computer back to working condition.

Task 6: Software Troubleshooting: Students should identify the problem and fix it to get the computer back to working condition if malfunction CPU is given.

Internet & World Wide Web

Task1: **Orientation & Connectivity Boot Camp: G**et connection of Local Area Network and access the Internet, website and email. Students have to simulate the WWW on LAN without internet connection.

Task 2: Web Browsers, Surfing the Web: Customize the web browsers with the LAN proxy settings, bookmarks, search toolbars and pop up blockers. Configure the plug-ins like Macromedia Flash and JRE for applets.

Task 3: **Search Engines & Netiquette:** Basic concept of search engines and how to use the search engines(GOOGLE, YAHOO etc)

Task 4: Cyber Hygiene: Installation of antivirus software and firewall.

LaTeX and Word

Task 1:Word Orientation: Accessing and overview of Toolbars, saving files, Using help and resources, rulers, format painter.

Task 2: To create sample certificate: Features to be covered - Formatting Fonts, Drop Cap, Applying Text effects, Character Spacing, Borders , Colors, Header , Footer, Date and Time. (Ex:Prize certificate, Participation certificate etc)

Task 3: Creating sample Bio-data: Features to be covered -Formatting Styles, Inserting table, Bullets and Numbering, Changing Text Direction, Cell alignment, Footnote, Hyperlink, Symbols, Spell Check, Track Changes.

Task 4 : Creating a Newsletter : Features to be covered - Table of Contents, Newspaper columns, Images from files and clipart, Drawing toolbar and Word Art, Formatting Images, Textboxes, Paragraphs.

Excel

Task 1:Excel Orientation: Accessing, overview of toolbars, saving excel files, Using help and resources.

Task 2: Creating a Scheduler - Features to be covered: Gridlines, Format Cells, Summation, auto fill, Formatting Text

Task 3 : Calculating GPA - .Features to be covered:- Cell Referencing, Formulae in excel – average, standard deviation, Charts, Renaming , Inserting worksheets, Hyper link, Count function, LOOKUP/VLOOKUP(Use Autonomous college CGPA)

Task 4: Performance Analysis - Features to be covered - Split cells, freeze panes, group, outline,Sorting, Boolean operators, logical operators, Conditional formatting.

Power Point(LaTeX/MS)

Task 1: Power point orientation: Features to be covered - PPT Orientation, Slide Layouts, Inserting Text, Word Art, Formatting Text, Bullets, Numbering, Auto Shapes, Lines and Arrows.

Task 2: Interactive presentation: Features to be covered-Hyperlinks, Inserting – Images, ClipArt, Audio, Video, Objects, Tables and Charts.

Task 3: Design: Features to be covered - Master Layouts, views, Insert, Background, Animations, Slide-show.

REFERENCE BOOKS:

1. Comdex Information Technology course tool kit, Vikas Gupta, WILEYDreamtech
2. The Complete Computer upgrade and repair book, 3rd Edition, CherylA Schmidt, WILEY Dreamtech
3. Introduction to Information Technology, ITL Education Solutions limited, Pearson Education.
4. PC Hardware and A+ Handbook, Kate J. Chase, PHI(Microsoft)
5. LaTeX Companion, Leslie Lamport, PHI/Pearson.
6. IT Essentials PC Hardware and Software Companion Guide Third Edition by David Anfinson and Ken Quamme. – CISCO Press, Pearson Education. IT Essentials PC Hardware and Software Labs and Study Guide Third Edition by Patrick Regan – CISCO Press , Pearson Education. Microsoft Office 2007: The Missing Manual - Chris Grover, Mathew MacDonald, E.A.Vander Veer O"reillyMedia

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AUTONOMOUS)

2030575: PYTHON PROGRAMMING LAB

II Year B.Tech. CSE I – Sem.

L	T	P	C
0	0	3	1.5

Prerequisites: NIL

Course Objectives:

- Handle Strings and Files in Python.
- Understand Lists, Dictionaries and Regular expressions in Python.
- Understand FILES, Multithread programming in Python.
- Understand GUI in python.

Course Outcomes: After learning the contents of this paper the student must be able to

- Examine Python syntax and semantics and be fluent in the use of Python flow control and functions.
- Demonstrate proficiency in handling Strings and File Systems.
- Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries .
- Develop programs using Graphical user interface.

Exercise 1 –Python Numbers

a) Write a program to determine whether a given year is a leap year, using the following formula: a leap year is one that is divisible by four, but not by one hundred, unless it is also divisible by four hundred. For example, 1992, 1996, and 2000 are leap years, but 1967 and 1900 are not. The next leap year falling on a century is 2400.

b) Write a program to determine the greatest common divisor and least common multiple of a pair of integers.

c) Create a calculator application. Write code that will take two numbers and an operator in the format: N1 OP N2, where N1 and N2 are floating point or integer values, and OP is one of the following: +, -, *, /, %, **, representing addition, subtraction, multiplication, division, modulus/remainder, and exponentiation, respectively, and displays the result of carrying out that operation on the input operands.
Hint: You may use the string split() method, but you cannot use the exal () built-in function.

Exercise –2 Control Flow

a) Write a Program for checking whether the given number is a prime number or not.

b) Write a program to print Fibonacci series upto given n value.

c) Write a program to calculate factorial of given integer number.

Exercise 3 Control Flow -Continued

a) Write a program to calculate value of the following series 1+x-x2+x3-x4+----- xn.

b) Write a program to print pascal triangle.

Exercise 4 – Python Sequences

a) Write a program to sort the numbers in ascending order and strings in reverse alphabetical

order.

Given an integer value, return a string with the equivalent English text of each digit. For example, an input of 89 results in "eight-nine" being returned. Write a program to implement it.

Exercise 5– Python Sequences

a) Write a program to create a function that will return another string similar to the input string, but with its case inverted. For example, input of "Mr. Ed" will result in "mR.eD" as the output string.
b) Write a program to take a string and append a backward copy of that string, making a palindrome.

Exercise 6– Python Dictionaries

a) Write a program to create a dictionary and display its keys alphabetically.
b) Write a program to take a dictionary as input and return one as output, but the values are now the keys and vice versa.

Exercise - 7 Files

a) Write a program to compare two text files. If they are different, give the line and column numbers in the files where the first difference occurs.
b) Write a program to compute the number of characters, words and lines in a file.

Exercise - 8 Functions

a) Write a function ball collide that takes two balls as parameters and computes if they are colliding. Your function should return a Boolean representing whether or not the balls are colliding.
Hint: Represent a ball on a plane as a tuple of (x, y, r), r being the radius
b) If (distance between two balls centers) <= (sum of their radii) then (they are colliding)
c) Find mean, median, mode for the given set of numbers in a list.
d) Write simple functions max2() and min2() that take two items and return the larger and smaller item, respectively. They should work on arbitrary Python objects. For example, max2(4, 8) and min2(4, 8) would each return 8 and 4, respectively.

Exercise - 9 Functions - Continued

a) Write a function nearly equal to test whether two strings are nearly equal. Two strings a and b are nearly equal when a can be generated by a single mutation on b.
b) Write a function dups to find all duplicates in the list.
c) Write a function unique to find all the unique elements of a list.

Exercise - 10 - Functions - Problem Solving

a) Write a function cumulative_ product to compute cumulative product of a list of numbers.
b) Write a function reverse to reverse a list. Without using the reverse function.
c) Write function to compute GCD, LCM of two numbers. Each function shouldn‟t exceed one line.

Exercise - 11 GUI, Graphics

a) Write a GUI for an Expreson Calculator using tk
b) Write a program to implement the following figures using turtle

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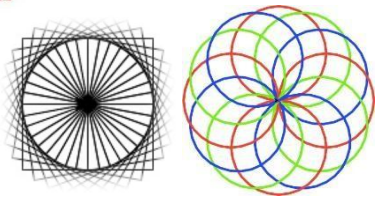

TEXT BOOKS:

1. Core Python Programming, Wesley J. Chun, Second Edition, Pearson.

REFERENCES:

1. Think Python, Allen Downey, Green Tea Press
2. Introduction to Python, Kenneth A. Lambert, Cengage
3. Python Programming: A Modern Approach, VamsiKurama, Pearson
4. Learning Python, Mark Lutz, O"Really.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

2030022:GENDER SENSITIZATION

II Year B.Tech. CSE I – Sem.

L	T	P	C
2	0	0	0

Prerequisites: NIL

Course Objectives:

- To develop students„ sensibility with regard to issues of gender in contemporary India.
- To provide a critical perspective on the socialization of men and women.
- To introduce students to information about some key biological aspects of genders.
- To expose the students to debates on the politics and economics of work.
- To help students reflect critically on gender violence.
- To expose students to more egalitarian interactions between men and women

Course Outcomes: After learning the contents of this paper the student

- Students will have developed a better understanding of important issues related to gender in contemporary India.
- Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature and film.
- Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
- Students will acquire insight into the gendered division of labour and its relation to politics and economics.
- Men and women students and professionals will be better equipped to work and live together as equals.

UNIT – I

UNDERSTANDING GENDER

Gender: Why Should We Study It? (*Towards a World of Equals:* Unit -1)

Socialization: Making Women, Making Men (*Towards a World of Equals:* Unit -2) Introduction. Preparing for Womanhood. Growing up Male. First lessons in Caste. Different Masculinities.

UNIT - II

GENDER AND BIOLOGY

Missing Women: Sex Selection and Its Consequences (*Towards a World of Equals:* Unit -4) Declining Sex Ratio. Demographic Consequences**.**

Gender Spectrum: Beyond the Binary (*Towards a World of Equals:* Unit -10) Two or Many? Struggles with Discrimination.

UNIT - III

GENDER AND LABOUR

Housework: the Invisible Labour (*Towards a World of Equals:* Unit -3) **-**My Mother doesn„t Work.‖ –Share the Load.‖

Women's Work: Its Politics and Economics (*Towards a World of Equals:* Unit -7) Fact and Fiction. Unrecognized and Unaccounted work. Additional Reading: Wages andConditions of Work.

UNIT - IV

ISSUES OF VIOLENCE

Sexual Harassment: Say No! (*Towards a World of Equals:* Unit -6)

Sexual Harassment, not Eve-teasing- Coping with Everyday Harassment- FurtherReading: –Chupulu

Domestic Violence: Speaking Out (Towards a World of Equals: Unit -8)

Is Home a Safe Place? -When Women Unite [Film]. Rebuilding Lives. Additional Reading: New Forums for Justice.

Thinking about Sexual Violence (Towards a World of Equals: Unit -11)

Blaming the Victim-—I Fought for my Life….‖ - Additional Reading: The Caste Face of Violence.

UNIT – V

GENDER: CO - EXISTENCE

Just Relationships: Being Together as Equals (Towards a World of Equals: Unit -12) Mary Kom and Onler. Love and Acid just do not Mix. Love Letters. Mothers and Fathers. Additional Reading: Rosa Parks-The Brave Heart.

TEXTBOOKS:

1. All the five Units in the Textbook, “Towards a World of Equals: A Bilingual Textbook on Gender” written by A. Suneetha, Uma Bhrugubanda, Duggirala Vasanta, Rama Melkote, Vasudha Nagaraj, Asma Rasheed, Gogu Shyamala, Deepa Sreenivas and Susie Tharu and published by Telugu Akademi, Hyderabad,Telangana State in the year 2015.

REFERENCES:

1. Menon, Nivedita. Seeing like a Feminist. New Delhi: Zubaan-Penguin Books, 2012
2. Abdulali Sohaila. —I Fought For My Life…and Won.‖Available online at: http://www.thealternative.in/lifestyle/i-fought-for-my-lifeand-won-sohaila-abdulal/

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT
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2040506: DISCRETE MATHAMATICS

II Year B.Tech. CSE II – Sem.

L	T	P	C
3	1	0	4

Prerequisites: A course on Data Structures and Mathematics**.**

Course Objectives:

- To introduce the concepts of mathematical logic.
- To introduce the concepts of sets, relations, and functions.
- To perform the operations associated with sets, functions, and relations.
- To introduce generating functions and recurrence relations.
- To use Graph Theory for solving problems.

Course Outcomes: The students should be able to.

- Apply mathematical logic to solve problems.
- Understand sets, relations, functions, and discrete structures.
- Use logical notation to define and reason about fundamental mathematical concepts such as sets, relations, and functions.
- Formulate problems and solve recurrence relations.
- Model and solve real-world problems using graphs and trees.

UNIT - I

Mathematical logic: Introduction, Statements and Notation, Connectives, well formed formula, Equivalence of formulas, Normal forms, Theory of inference for the statement calculus, predicate calculus, Inference theory of predicate calculus.

UNIT - II

Set theory: Basic concepts of set theory, Set and Operations on sets, Relations and ordering, properties of binary relations in a set, Equivalence relation, Compatibility of relation, partial order relation, partial order set, Functions, Composition of functions, Inverse function, Recursive functions.

UNIT-III

Elementary Combinatorics: Basics of Counting, Combinations and Permutations, Enumeration of Combinations and permutations, Binomial Coefficients, Binomial and Multinational Theorems, Principle of Inclusion-Exclusion.

UNIT-IV

Recurrence Relations: Generating Functions of Sequences, Calculating Coefficients of generating functions, Recurrence relations, Solving recurrence relations by substitution and generating functions, Method of Characteristic roots, Solutions of Inhomogeneous Recurrence Relations.

UNIT – V

Graph Theory: Basic Concepts, Isomorphism and Sub graphs, Trees and their Properties, Spanning Trees, Directed Trees, Binary Trees, Planar Graphs, Euler"s Formula, Multi graphs and Euler Circuits, Hamiltonian Graphs, Chromatic Numbers, Four color problems**.**

TEXT BOOKS:

1. Discrete Mathematical Structures with Applications to Computer Science, J.P. Tremblay, R. Manohar, McGraw Hill education (India) Private Limited. (UNITS - I ,II)
2. Discrete Mathematics for Computer Scientists & Mathematicians, Joe L. Mott, Abraham Kandel, Theodore P. Baker, Pearson , 2nd ed. (Units - III, IV, V)

REFERENCE:

1. Discrete Mathematics and its Applications, Kenneth H. Rosen, 7th Edition, McGraw Hill education (India) Private Limited.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

2040201:BASIC ELECTRICAL ENGINEERING

II Year B.Tech. CSE II – Sem.

L	T	P	C
3	0	0	3

Prerequisites: NIL

Course Objectives:

- To analyse and solve electric circuits.
- To provide an understanding of basics in Electrical circuits.
- To identify the types of electrical machines for a given application.
- To explain the working principles of Electrical Machines and single phase transformers.

Course Outcomes:

After completion of this course the student is able to

- Analyse Electrical circuits to compute and measure the parameters of Electrical Energy.
- Comprehend the working principles of Electrical DC Machines.
- Identify and test various electrical switchgear, single phase transformers and assess the ratings needed in given application.
- Comprehend the working principles of electrical AC machines.

UNIT-I DC Circuits:

Electrical circuit elements (R, L and C), voltage and current sources, Kirchhoff current and voltage laws, analysis of simple circuits with dc excitation. Superposition, Thevenin„s and Norton„s Theorems.

Unit-II AC Circuits:

Representation of sinusoidal waveforms, peak and rms values, phasor representation, real power, reactive power, apparent power and power factor. Analysis of single-phase ac circuits consisting of R, L, C, and RL, RC, RLC combinations (series only). Three phase balanced circuits, voltage and current relations in star and delta connections.

UNIT-III Transformers:

Ideal and practical transformer, equivalent circuit, losses in transformers, regulation and efficiency. Auto-transformer and three-phase transformer connections.

UNIT-IV: Electrical Machines:

Generation of rotating magnetic fields, Construction and working of a three-phase induction motor, Significance of torque-slip characteristic. Loss components and efficiency, starting and speed control of induction motor. Single-phase induction motor. Construction, working, torque-speed characteristic and speed control of separately excited dcmotor. Construction and working of synchronous generators.

UNIT-V Electrical Installations:

Components of LT Switchgear: Switch Fuse Unit (SFU), MCB, ELCB, MCCB, Types of Wires and Cables, Earthing. Types of Batteries, Important Characteristics for Batteries. Elementary

calculations for energy consumption, power factor improvement and battery backup.

TEXT BOOKS:

1. Basic Electrical Engineering - By M.S.Naidu and S. Kamakshaiah – TMH.
2. Basic Electrical Engineering –By T.K.Nagasarkar and M.S. Sukhija Oxford University Press.

REFERENCES:

1. Theory and Problems of Basic Electrical Engineering by D.P.Kothari & I.J. Nagrath PHI.
2. Principles of Electrical Engineering by V.K Mehta, S.Chand Publications.
3. Essentials of Electrical and Computer Engineering by David V. Kerns, JR. J. David Irwin Pearson.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT
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2040507:COMPUTER ORGANIZATION AND MICROPROCESSOR

II Year B.Tech. CSE II – Sem.

L	T	P	C
3	1	0	4

Prerequisites: A Course on Digital Logic Design

Course Objectives:

- To understand basic components of computers.
- To understand the architecture of 8086 processor.
- To understand the instruction sets, instruction formats and various addressing modes of 8086.
- To understand the representation of data at the machine level and how computations are performed at machine level.
- To understand the memory organization and I/O organization.
- To understand the parallelism both in terms of single and multiple processors.

Course Outcomes: The students should be able to

- Understand the basic components and the design of CPU, ALU and Control Unit.
- Understand memory hierarchy and its impact on computer cost/performance.
- Understand the advantage of instruction level parallelism and pipelining for high performance Processor design.
- Understand the instruction set, instruction formats and addressing modes of 8086.
- Write assembly language programs to solve problems.

UNIT - I

Basic Computer Organization and Design: Instruction codes, Computer Registers, Computer instructions, Timing and Control, Instruction cycle, Memory Reference Instructions, Input – Output andInterrupt, Complete Computer Description.

Micro Programmed Control: Control memory, Address sequencing, micro program example, design of control unit.

UNIT - II

8086 Architecture: 8086 Processor Architecture, Register organization, Physical memory organization, General Bus Operation, I/O Addressing Capability, Special Processor Activities, Minimum and Maximum mode system and timings.

8086 Instruction Set and Assembler Directive:

Machine language instruction formats, Addressing modes, Instruction set of 8086, Assembler directivesand operators.

UNIT – III

Assembly Language Programming with 8086- Machine level programs, Machine coding the programs, Programming with an assembler, Assembly Language example programs.

Stack structure of 8086, Interrupts and Interrupt service routines, Interrupt cycle of 8086, Interruptprogramming, Passing parameters to procedures, Macros, Timings and Delays.

UNIT - IV

Computer Arithmetic: Introduction, Addition and Subtraction, Multiplication Algorithms, Division Algorithms, Floating - point Arithmetic operations.

Input-Output Organization: Peripheral Devices, Input-Output Interface, Asynchronous data transfer, Modes of Transfer, Priority Interrupt, Direct memory Access, Input –Output Processor (IOP).

UNIT - V

Memory Organization: Memory Hierarchy, Main Memory, Auxiliary memory, Associate Memory, Cache Memory, Virtual memory.

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

TEXT BOOKS:

1. Computer System Architecture, M. Moris Mano, Third Edition, Pearson. (UNIST-I, IV, V)
2. Advanced Microprocessors and Peripherals, K M Bhurchandi, A.K Ray ,3rd edition, McGraw Hill India Education Private Ltd. (UNITS - II, III).

REFERENCES:

1. Microprocessors and Interfacing, D V Hall, SSSP Rao, 3rd edition, McGraw Hill India Education Private Ltd.
2. Carl Hamacher, ZvonkoVranesic, SafwatZaky: Computer Organization, 5th Edition, Tata McGraw Hill, 2002.
3. Computer Organization and Architecture, William Stallings, 9th Edition, Pearson.
4. David A. Patterson, John L. Hennessy: Computer Organization and Design – The Hardware / Software Interface ARM Edition, 4th Edition, Elsevier, 2009.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

2040508: DESIGN AND ANALYSIS OF ALGORITHMS

II Year B.Tech. CSE II – Sem.	L	T	P	C
	3	0	0	3

Prerequisites: A Course on Programming for problem solving and Data Structures

Course Objectives:

- Introduces the notations for analysis of the performance of algorithms.
- Introduces the data structure disjoint sets.
- Describes major algorithmic techniques (divide-and-conquer, backtracking, dynamic programming, greedy, branch and bound methods) and mention problems for which each technique is appropriate.
- Describes how to evaluate and compare different algorithms using worst-, average-, and best- case analysis.
- Explains the difference between tractable and intractable problems, and introduces the problems that are P, NP and NP complete.

Course Outcomes: The students should be able to

- Analyze the performance of algorithms
- Choose appropriate data structures and algorithm design methods for a specified application
- Understand how the choice of data structures and the algorithm design methods impact the performance of programs.

UNIT - I

Introduction: Algorithm, Performance Analysis-Space complexity, Time complexity, AsymptoticNotations- Big oh notation, Omega notation, Theta notation and little ohnotation.

Disjoint Sets: Introduction, union and find Operations.

Divide and conquer: General method, applications-Binary search, Quick sort, Merge sort, Strassen"smatrix multiplication

UNIT - II

Greedy method: General method, applications- knapsack problem, Job sequencing with deadlines,Minimum cost spanning trees, Single source shortest path problem.

UNIT-III

Dynamic Programming: General method, applications- All pairs shortest path problem, Optimal binary search trees, 0/1 knapsack problem, Reliability design ,Traveling sales person problem.

UNIT-IV

Backtracking: General method, applications, n-queen"s problem, sum of subsets problem, graph coloring, Hamiltonian cycles, knapsack problem.

UNIT – V

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

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

TEXT BOOKS:

1. Fundamentals of Computer Algorithms, Ellis Horowitz, SatrajSahni and Rajasekharan, University Press.

REFERENCE S:

1. Design and Analysis of algorithms, Aho, Ullman and Hopcroft, Pearson education.
2. Introduction to Algorithms, second edition, T.H.Cormen, C.E.Leiserson, R.L.Rivest, and C.Stein, PHI Pvt. Ltd./ Pearson Education.
3. Algorithm Design: Foundations, Analysis and Internet Examples, M.T. Goodrich and R. Tamassia, John Wiley and sons.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT
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2040509: JAVA PROGRAMMING

II Year B.Tech. CSE II – Sem.

L	T	P	C
3	0	0	3

Prerequisites: A Course on Programming for problem solving.

Course Objectives:

- To introduce the object-oriented programming concepts.
- To understand object-oriented programming concepts, and apply them in solving problems.
- To introduce the principles of inheritance and polymorphism; and demonstrate how they relate to the design of abstract classes.
- To introduce the implementation of packages and interfaces.
- To introduce the concepts of exception handling and multithreading.
- To introduce the design of Graphical User Interface using applets and swing controls.

Course Outcomes: The students should be able to

- Solve real world problems using OOP techniques.
- Understand the use of abstract classes.
- Solve problems using java collection framework and I/o classes.
- Develop multithreaded applications with synchronization.
- Develop applets for web applications.
- Design GUI based applications

UNIT - I

Object oriented thinking: A way of viewing world – Agents, responsibility, messages, methods,

Classes and instances, class hierarchies – inheritance, method binding, overriding and exceptions summary of oop concepts.

History of Java, Java buzzwords, data types, variables, scope and life time of variables, Type conversion and casting, arrays, operators, Operator Precedence, control statements.

Classes: Class fundamentals, Declaring Objects, methods, Constructors, this keyword, garbage collection, Overloading methods and constructors, Recursion.

UNIT - II

Inheritance, Packages and Interfaces – Inheritance basics, Using super, Creating a multilevel hierarchy, method overriding, Dynamic method dispatch, abstract classes, Using final with inheritance, Defining a package, Finding package and classpath, Access protection, importing packages, Defining an interface, implementing interface, applying interfaces, variables in interface and extending interfaces.

UNIT-III

Exception handling and Multithreading- Exception types, uncaught exceptions, using try and catch, Multiple catch classes, nested try statements, throw, throws and finally. Java‟s built-in exceptions, chained exceptions, creating own exception sub classes. Java thread model, thread

priorities, synchronization, messaging, thread class and runnable interface, creating thread, creating multiple threads, thread priorities, synchronizing threads, inter thread communication, thread life cycle.

UNIT-IV

Event Handling : Events, Event sources, Event Listeners, Event classes, Event listener interface, Handling mouse and keyboard events, Adapter classes, The AWT class hierarchy, AWT controls-labels, buttons, scrollbars, text field, check box, check box groups, choices, handling lists, dialogs, Menubar, layout manager – layout manager types – border, grid, flow, card and grid bag.

UNIT – V

Applets – Types, Applet basics, Applet architecture, applet skleton, simple applet display methods, passing parameters to applets. Swing – Introduction, MVC connection, components, containers, exploring swing- Japplet, Jframe and Jcomponent, Icons and Labels, text fields, buttons – The Jbutton class, Check boxes, Radio buttons, Combo boxes, Tabbed Panes, Scroll Panes, Trees, and Tables.

TEXT BOOKS:

1. Java The complete reference, 9th edition, Herbert Schildt, McGraw Hill Education (India) Pvt.Ltd.
2. Understanding Object-Oriented Programming with Java, updated edition, T. Budd, PearsonEducation.(UNIT-I first part)

REFERENCES:

1. An Introduction to programming and OO design using Java, J. Nino and F.A. Hosch, JohnWiley & sons
2. Introduction to Java programming, Y. Daniel Liang, Pearson Education.
3. Object Oriented Programming through Java, P. Radha Krishna, University Press.
4. Programming in Java, S. Malhotra, S. Chudhary, 2nd edition, Oxford Univ. Press.
5. Java Programming and Object-oriented Application Development, R. A. Johnson, CengageLearning.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

2040271: BASIC ELECTRICAL ENGINEERING LAB

II Year B.Tech. CSE II – Sem.

L	T	P	C
0	0	2	1

Prerequisites: **NIL**

Course Objectives:

To analyze a given network by applying various electrical laws and network theorems

- To know the response of electrical circuits for different excitations
- To calculate, measure and know the relation between basic electrical parameters.
- To analyze the performance characteristics of DC and AC electrical machines.

Course Outcomes:

- Get an exposure to basic electrical laws.
- Understand the response of different types of electrical circuits to different excitations.
- Understand the measurement, calculation and relation between the basic electrical parameters
- Understand the basic characteristics of transformers and electrical machines.

List of experiments/demonstrations:

1. Verification of Ohms Law
2. Verification of KVL and KCL
3. Verification of superposition theorem.
4. Verification of Thevenin„s and Norton„s theorem.
5. Resonance in series RLCcircuit.
6. Calculations and Verification of Impedance and Current of RL, RC and RLCseriescircuits.
7. Measurement of Voltage, Current and Real Power in primary and Secondary Circuits of a Single Phase Transformer.
8. Load Test on Single Phase Transformer (Calculate Efficiency and Regulation)
9. Three Phase Transformer: Verification of Relationship between Voltagesand Currents (Star-Delta, Delta-Delta, Delta-star, Star-Star)
10. Measurement of Active and Reactive Power in a balanced Three-phase circuit.
11. Performance Characteristics of a Separately/Self Excited DC Shunt/Compound Motor.
12. Torque-Speed Characteristics of a Separately/Self Excited DCShunt/Compound Motor.
13. Performance Characteristics of a Three-phase Induction Motor.
14. Torque-Speed Characteristics of a Three-phase Induction Motor.
15. No-Load Characteristics of a Three-phase Alternator.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AUTONOMOUS)

2040576: DESIGN AND ANALYSIS OF ALGORITHMS LAB USING JAVA

II Year B.Tech. CSE II – Sem.

L	T	P	C
0	0	3	1.5

Prerequisites: A Course on Programming for problem solving

Course Objectives:

- It covers various concepts of java programming language
- It introduces the feasible and optimal solutions by using the different design methods

Course Outcomes:

. The students should be able to

- Develop the feasible and optimal solutions using Greedy and dynamic programming.
- Develop the feasible and optimal solutions using Backtracking and Dynamic programming

List of Programs:

1.

a. Use Eclipse or Net bean platform and acquaint with the various menus. Create a test project, add a test class, and run it. See how you can use auto suggestions, auto fill. Try code formatter and code refactoring like renaming variables, methods, and classes. Try debug step by step with a small program of about 10 to 15 lines which contains at least one if else condition and a for loop.

b. Write a java program that prints all real solutions to the quadratic equation ax2 +bx+c=0. Readin a, b, c and use the quadratic formula.

c. Write a java program to implement Fibonacci series.

2.

a. Write a java program to implement method overloading and constructors overloading.

b. Write a java program to implement method overriding.

c. Write a Java program to create an abstract class named Shape that contains two integers and an empty method named print Area (). Provide three classes named Rectangle, Triangle, and Circle such that each one of the classes extends the class Shape. Each one of the classes contains only the method print Area () that prints the area of the given shape.

3.

a. Write a java program to check whether a given string is palindrome.

b. Write a Java program to create an abstract class named Shape that contains two integers and an empty method named print Area (). Provide three classes namedRectangle, Triangle, and Circle such that each one of the classes extends the classShape. Each one of the classes contains only the method print Area () that prints thearea of the given shape.

4. Write a program to implement Knapsack problem using greedy method.

5. Write a program to implement Prim"s minimum cost spanning tree using Greedy Method

6. Write a program to implement Kruskal"s minimum cost spanning tree using Greedy Method

7. Write a program to implement Job sequencing with deadlines using Greedy Method

8. Write a program to implement Single source shortest path problem using Greedy Method
9. Write a program to implement All pairs Shortest path using Dynamic Programming
10. Write a program to implement Optimal Binary Search Tree using Dynamic Programming
11. Write a program to implement 0/1 Knapsack problem using Dynamic Programming
12. Write a program to implement n-Queen‟s problem using backtracking method.
13. Write a program to implement Sum of subsets using backtracking method.
14. Write a program to implement Graph Coloring using backtracking method.
15. Write a program to implement Travelling sales person using branch and bound, dynamicprogramming

TEXT BOOKS:

1. Fundamentals of Computer Algorithms, Ellis Horowitz, SatrajSahni and Rajasekharan, University Press.

REFERENCE:

1. Design and Analysis of algorithms, Aho, Ullman and Hopcroft,Pearson education.
2. Introduction to Algorithms, second edition,T.H.Cormen, C.E.Leiserson, R.L.Rivest, and C.Stein, PHI Pvt. Ltd./ PearsonEducation.
3. Algorithm Design: Foundations, Analysis and Internet Examples, M.T. Goodrich and R. Tamassia, John Wiley andsons
4. Java The Complete Reference, Herbert Schildt‟s, 9th Edition, TATA McGRAW –HILL.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AUTONOMOUS)

2040577:COMPUTER ORGANIZATION AND MICROPROCESSORS USING MASAM

II Year B.Tech. CSE II – Sem.

L	T	P	C
0	0	2	1

Prerequisites: NIL

Course Objectives:

- Implement assembly language programs in MASM software

Course Outcomes: The students should be able to

- Understand and apply the MASM software
- Implement assembly language programs

List of Experiments

1. Write assembly language programs to evaluate the expressions:
   i) a = b + c –d * e ii) z = x * y + w – v +u / k
   a. Considering 8-bit, 16 bit and 32-bit binary numbers as b, c, d, e.
   b. Considering 2-digit, 4 digit and 8-digit BCD numbers.
   Take the input in consecutive memory locations and results also Display the results by using “intxx” of 8086. Validate program for the boundary conditions.
2. Write an ALP of 8086 to take N numbers as input and do the following operations on them. a. Arrange in ascending and descending order.
3. Find maximum and minimum a. Find average Considering 8-bit, 16-bit binary numbers and 2- digit, 4 digit and 8-digit BCD numbers. Display the results by using “int xx” of 8086. Validate program for the boundary conditions.
4. Write an ALP program to print the Fibonacci series.
5. Write an ALP Program to find even or odd number using macros.
6. Write a simple program in ALP using procedures with arguments.
7. Write an ALP program to find prime no in a list.
8. Write an ALP of 8086 to take a string of as input (in „C‟ format) and do the following Operations on it. a. Find the length b. Find it is Palindrome or not
9. Write an ALP of 8086 to do following operations.
   a) Find whether given string substring or not.
   b) Reverse of a string
   c) Concatenate by taking another sting Display the results by using “int xx” of 8086.
10. Write the ALP to implement the above operations as procedures and call from the main procedure.
11. Write an ALP of 8086 to find the factorial of a given number as a Procedure and call from the main program which display the result.

TEXT BOOKS:

1. Switching theory and logic design –A. Anand Kumar PHI, 2013

2. Advanced microprocessor & Pieperar-A. K. Ray and K. M. Bherchandavi, TMH, 2nd edition.

REFERENCES:

1. Switching and Finite Automatic theory-ZviKohavi, NirajK.JhaCambridge ,3rd edition
2. Digital Design –Morris Mano, PHI, 3rd edition
3. Microprocessor and Interfacing –Douglas V. Hall, TMGH 2nd edition.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

2040023: CONSTITUTION OF INDIA

II Year B.Tech. CSE II – Sem.

L	T	P	C
2	0	0	0

The Constitution of India is the supreme law of India. Parliament of India cannot make any law which violates the Fundamental Rights enumerated under the Part III of the Constitution. The Parliament of India has been empowered to amend the Constitution under Article 368, however, it cannot use this power to change the ―basic structure‖ of the constitution, which has been ruled and explained by the Supreme Court of India in its historical judgments. The Constitution of India reflects the idea of Constitutionalism‖ – a modern and progressive concept historically developed by the thinkers of ―liberalism‖ – an ideology which has been recognized as one of the most popular politicalideology and result of historical struggles against arbitrary use of sovereign power by state. The historic revolutions in France, England, America and particularly European Renaissance and Reformation movement have resulted into progressive legal reforms in the form of ―constitutionalism‖ in many countries. The Constitution of India was made by borrowing models and principles from many countries including United Kingdom and America.

The Constitution of India is not only a legal document but it also reflects social, political and economic perspectives of the Indian Society. It reflects India‟s legacy of ―diversity‖. It has been said that Indian constitution reflects ideals of its freedom movement; however, few critics have argued that it does not truly incorporate our own ancient legal heritage and cultural values. No law can be ―static‖ and therefore the Constitution of India has also been amended more than one hundred times. These amendments reflect political, social and economic developments since the year 1950. The Indian judiciary and particularly the Supreme Court of India has played an historic role as the guardian of people. It has been protecting not only basic ideals of the Constitution but also strengthened the same through progressive interpretations of the text of the Constitution. The judicial activism of the Supreme Court of India and its historic contributions has been recognized throughout the world and it gradually madeit ―as one of the strongest court in the world‖.

Course content

1. Meaning of the constitution law and constitutionalism
2. Historical perspective of the Constitution of India
3. Salient features and characteristics of the Constitution of India
4. Scheme of the fundamental rights
5. The scheme of the Fundamental Duties and its legal status
6. The Directive Principles of State Policy – Its importance and implementation
7. Federal structure and distribution of legislative and financial powers between theUnion and the States
8. Parliamentary Form of Government in India – The constitution powers and status ofthe President of India
9. Amendment of the Constitutional Powers and Procedure
10. The historical perspectives of the constitutional amendments in India
11. Emergency Provisions: National Emergency, President Rule, Financial Emergency
12. Local Self Government – Constitutional Scheme in India
13. Scheme of the Fundamental Right to Equality
14. Scheme of the Fundamental Right to certain Freedom under Article 19

15. Scope of the Right to Life and Personal Liberty under Article 21

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AUTONOMOUS)

2050510: OPERATING SYSTEMS

III Year B.Tech. CSE I – Sem.

L	T	P	C
3	0	0	3

Prerequisites:

- A course on “Programming for Problem Solving”.
- A course on “Computer Organization and Architecture

Course Objectives:

- Provide an in introduction to operating system concepts (i.e., processes, threads, scheduling, synchronization, deadlocks, memory management, file and I/O subsystems and protection)
- Introduce the issues to be considered in the design and development of operating system
- Introduce basic Unix commands, system call interface for process management, interposes communication and I/O in Unix

Course Outcomes: The students should be able to

- .Control access to a computer and the files that may be shared
- Demonstrate the knowledge of the components of computer and their respective roles in computing.
- Recognize and resolve user problems with standard operating environments.
- Gain practical knowledge of how programming languages, operating systems, and architectures interact and how to use each effectively.

UNIT-I

Operating System Introduction: What is an operating system do, computer system organization, computer system architecture, operating system structure- operating system operations, process management, memory management, operating system services, System Calls, types of system calls.

UNIT-II

Process :.-process concepts, process scheduling, operations on processes ,Inter processes communication, multithreading models, thread libraries.

Process Scheduling:-Scheduling criteria, scheduling algorithms, thread scheduling Multiple-Processor Scheduling.

UNIT–III

Deadlocks - System Model, Deadlocks Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, and Recovery from Deadlock.

Synchronization: - back ground, the critical section problem, peter’s solution, Synchronization hardware, semaphores, Classical Problems of Synchronization, Monitors.

UNIT–IV

Memory Management and Virtual Memory –background, Swapping, Contiguous Allocation, Paging structure of the page table, Segmentation.

Virtual memory:-background, demand paging page replacement allocation of frames thrashing.

UNIT-V

File System : –File system and implementing file system, file concept access methods, directory and file system structure, File system implementation, Directory implementation, Allocation methods, Free-space Management, efficiency and performance, recovery, NFS.

TEXTBOOKS:

1. Operating System Principles- Abraham Silberchatz, Peter B. Galvin, Greg Gagne 7th Edition, John Wiley
2. Advanced programming in the Unix environment, W.R. Stevens, Pearson education.

REFERENCES:

1. Operating Systems – Internals and Design Principles, Stallings, 5th Edition, Pearson Education/PHI,2005.
2. Operating System A Design Approach-Crowley, TMH.
3. Modern Operating Systems, Andrew S Tanenbaum 2nd edition, Pearson/PHI
4. Unix programming environment, Kernighan and Pike, PHI. / Pearson Education
5. Unix Internals The New Frontiers, U.Vahalia, Pearson Education

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AUTONOMOUS)

2050511- COMPUTER NETWORKS

III Year B.Tech. CSE I – Sem.

L	T	P	C
3	0	0	3

Prerequisites: NIL

Course Objectives:

- To introduce the fundamental various types of computer networks.
- To demonstrate the TCP/IP and OSI models with merits and demerits.
- To introduce UDP and TCP Models.

Course Outcomes: The students should be able to

- Understand and explore the basics of computer networks and various protocols.
- Understand the World Wide Web concepts.
- Administrate a network and flow of information further
- Understand easily the concept of network security, mobile and ad hoc networks.

UNIT-I

Data Communications: Components – Direction of Data flow – Networks – Components and Categories – Types of Connections – Topologies –Protocols and Standards – ISO / OSI model, **Physical layer:** Transmission modes, Multiplexing, Transmission Media, Switching, Circuit Switched Networks, Datagram Networks, and Virtual Circuit Networks.

UNIT-II

Data link layer: Introduction, Framing, and Error – Detection and Correction – Parity – LRC

CRC Hamming code, Flow and Error Control, Noiseless Channels, Noisy Channels, HDLC, Point to Point Protocols. 111 Medium Access sub layer: ALOHA, CSMA/CD, LAN

Ethernet IEEE 802.3, IEEE 802.5 – IEEE 802.11, Random access, Controlled access, Channelization.

UNIT–III

Network layer: Logical Addressing, Internetworking, Tunneling, Address mapping, ICMP, IGMP, Forwarding, Routing Protocols: Distance Vector Routing, Link state Routing, Path vector Routing.

UNIT–IV

Transport Layer: Process to Process Delivery, UDP, TCP: TCP Segments, TCP Connection, TCP sliding window, Data Traffic, Congestion, Congestion Control, QoS, QoS in Switched Networks.

UNIT-V

Application Layer: Domain name space, DNS in internet, electronic mail, SMTP, FTP, WWW, HTTP, SNMP.

TEXT BOOKS:

1. Data Communications and Networking - Behrouz A. Forouzan, Fifth Edition TMH, 2013.
2. Computer Networks - Andrew S Tanenbaum, 4th Edition, Pearson Education.

REFERENCES:

1. An Engineering Approach to Computer Networks - S. Keshav, 2nd Edition, Pearson Education.
2. Understanding communications and Networks, 3rd Edition, W. A. Shay, Cengage Learning.
3. Introduction to Computer Networks and Cyber Security, Chwan-Hwa (John) Wu, J. David Irwin, CRC Press.
4. Computer Networks, L. L. Peterson and B. S. Davie, 4th edition, ELSEVIER.
5. Computer Networking: A Top-Down Approach Featuring the Internet, James F. Kurose, K. W. Ross, 3rd Edition, Pearson Education.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AUTONOMOUS)

2050512: FORMAL LANGUAGES AND AUTOMATA THEORY

III Year B.Tech. CSE I – Sem.

L	T	P	C
3	0	0	3

Prerequisites:

- A course on “Discrete Mathematics”
- A course on “Data structures”

Course Objectives:

- To provide introduction to some of the central ideas of theoretical computer science from the perspective of formal languages.
- To introduce the fundamental concepts of formal languages, grammars and automata theory.
- To classify machines by their power to recognize languages.
- To employ finite state machines to solve problems in computing.
- To understand deterministic and non-deterministic machines.
- To understand the differences between decidability and undecidability.

Course Outcomes: The students will be able to**:**

- Understand the concept of abstract machines and their power to recognize the languages.
- Employ finite state machines for modeling and solving computing problems.
- Design context free grammars for formal languages.
- Gain proficiency with mathematical tools and formal methods.

UNIT-I

Introduction to Finite Automata: Structural Representations, Automata and Complexity, the Central Concepts of Automata Theory – Alphabets, Strings, Languages, Problems.

Non deterministic Finite Automata: Formal Definition, an application, Text Search, Finite Automata with Epsilon-Transitions. Deterministic Finite Automata: Definition of DFA, How A DFA Process Strings, The language of DFA, Conversion of NFA with €-transitions to NFA without €-transitions. Conversion of NFA to DFA.

UNIT–II

Regular Expressions: Finite Automata and Regular Expressions, Applications of Regular Expressions, Algebraic Laws for Regular Expressions, Conversion of Finite Automata to Regular Expressions. Pumping Lemma for Regular Languages, Statement of the pumping lemma, Applications of the Pumping Lemma. **Closure Properties of Regular Languages**: Closure properties of Regular languages, Decision Properties of Regular Languages, Equivalence and Minimization of Automata.

UNIT–III

Context-Free Grammars: Definition of Context-Free Grammars, Derivations Using a Grammar, Leftmost and Rightmost Derivations, the Language of a Grammar, Sentential Forms, Parse Tress,

Applications of Context-Free Grammars, Ambiguity in Grammars and Languages.

Push Down Automata: Definition of the Pushdown Automaton, the Languages of a PDA, Equivalence of PDA's and CFG's, Acceptance by final state, Acceptance by empty stack, Deterministic Pushdown Automata. Conversion of CFG to PDA.

UNIT–IV

Normal Forms for Context- Free Grammars: Eliminating useless symbols, Eliminating €-Productions. Chomsky Normal form Griebech Normal form. Pumping Lemma for Context-Free Languages: Statement of pumping lemma, Applications Closure Properties of Context-Free Languages: Closure properties of CFL's, Decision Properties of CFL's Turing Machines: Introduction to Turing Machine, Formal Description, Instantaneous description, The language of a Turing machine

UNIT–V

Types of Turing machine: Turing machines and halting Undecidability: Undecidability, A Language that is Not Recursively Enumerable, An Undecidable Problem That is RE, Undecidable Problems about Turing Machines, Recursive languages, Properties of recursive languages, Post's Correspondence Problem, Modified Post Correspondence problem, Other Undecidable Problems, Counter machines.

TEXT BOOKS:

1. Introduction to Automata Theory, Languages, and Computation, 3nd Edition, John E. Hopcroft, Rajeev Motwani, Jeffrey D. Ullman, Pearson Education.
2. Theory of Computer Science – Automata languages and computation, Mishra and Chandra shekaran, 2nd edition, PHI.

REFERENCES:

1. Introduction to Languages and The Theory of Computation, John C Martin, TMH.
2. Introduction to Computer Theory, Daniel I.A. Cohen, John Wiley.
3. A Text book on Automata Theory, P. K. Srimani, Nasir S. F. B, Cambridge University Press.
4. Introduction to the Theory of Computation, Michael Sipser, 3rd edition, Cengage Learning.
5. Introduction to Formal languages Automata Theory and Computation Kamala Krithivasan, Rama R, Pearson.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AUTONOMOUS)

2050513: SOFTWARE ENGINEERING

III Year B.Tech. CSE I – Sem.

L	T	P	C
3	0	0	3

Prerequisites:

- A course on "Data Base Management Systems"

Course Objectives:

- To provide an understanding of the working knowledge of the techniques for estimation, design, testing and quality management of large software development projects.
- To understand process models, software requirements, software design, software testing, software process/product metrics, risk management, quality management and UML diagrams.

Course Outcomes: The students will be able to:

- Translate end-user requirements into system and software requirements, using e.g. UML, and structure the requirements in a Software Requirements Document (SRD).
- Identify and apply appropriate software architectures and patterns to carry out high level design of a system and be able to critically compare alternative choices.
- Develop a simple testing report

UNIT-I

INTRODUCTION TO SOFTWARE ENGINEERING: The Evolving Role of Software, Software, Characteristics of Software, The Changing Nature of Software, Legacy Software, Software Myths.

A Generic view of process: Software engineering- a layered technology, a process framework, the capability maturity model integration (CMMI), process patterns, process assessment, personal and team process models.

Process models: The waterfall model, incremental process models, evolutionary process models, the unified process, Agile models: Extreme Programming, and Scrum.

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, behavioral models, data models, object models, structured methods

Design Engineering: Design process and design quality, design concepts, the design model, software architecture, Architectural styles and patterns.

Introduction to UML: Basic Building Blocks of UML- Things, Relationships and Diagrams**.**

UNIT–IV

Testing Strategies: A strategic approach to software testing, test strategies for conventional software, black-box and white-box testing, verification and validation testing, system testing, the art of debugging.

Metrics for Process and Products: Software quality, metrics for analysis model, metrics for design model, metrics for source code, metrics for testing, metrics for maintenance, 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, software reliability, the ISO 9000 quality standards**.**

TEXTBOOKS:

1. Software Engineering, A practitioner's Approach- Roger S. Pressman, 6th edition, McGraw Hill International Edition.
2. Software Engineering- Sommer ville, 7th edition, Pearson Education.
3. The unified modelling language user guide Grady Booch, James Rambaugh, Ivar Jacobson, Pearson Education.

REFERENCES:

1. Software Engineering, an Engineering approach- James F. Peters, WitoldPedrycz, John Wiley.
2. Software Engineering principles and practice- Waman S Jawadekar, The McGraw-Hill Companies.
3. Fundamentals of object-oriented design using UML Meiler page-Jones: Pearson Education.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AUTONOMOUS)

2050541: EMBEDDED SYSTEMS (Professional Elective-I)

III Year B.Tech. CSE I – Sem.

L	T	P	C
3	0	0	3

Prerequisites:

- A course on “Digital Logic Design”
- A course on “Computer Organization and Microprocessors”
- A course on “Programming for Problem Solving”

Course Objectives:

- To provide an overview of principles of Embedded System
- To provide a clear understanding of role of firmware, operating systems in correlation with hardware systems.

Course Outcomes: The students will be able to:

- Understand the selection procedure of processors in the embedded domain.
- Design procedure of embedded firm ware.
- Visualize the role of Real time operating systems in embedded systems.
- Evaluate the correlation between task synchronization and latency issues.

UNIT-I

Introduction to Embedded Systems: Definition of Embedded System, Embedded Systems Vs General Computing Systems, History of Embedded Systems, Classification of Embedded Systems, Major application areas, Purpose of E bedded Systems, Characteristics and Quality attributes of Embedded Systems.

UNIT-II

The Typical Embedded System: Core of the Embedded System, Memory, Sensors and Actuators, Communication Interface, Embedded Firmware, Other System components.

UNIT–III

Embedded Firmware Design and Development: Embedded Firmware Design Approaches: The Super Loop Based Approach, Embedded OS based Approach,

Embedded Firmware Development Languages: Assembly Language based Development, High Level Language Based Development, Programming in Embedded C.

UNIT–IV

RTOS Based Embedded System Design: Operating System basics, Types of Operating Systems, Tasks, Process, Threads, Multiprocessing and Multi-tasking, Task Scheduling, Threads-Processes-Scheduling putting them together, Task Communication, Task Synchronization, Device Drivers, How to choose an RTOS

UNIT-V

Integration and Testing of Embedded Hardware and Firmware: Integration of Hardware and Firmware, Boards Bring up The Embedded System Development Environment: The Integrated

Development Environment (IDE), Types of files generated on Cross-Compilation, Disassembler/ Decompiler, Simulators, Emulators and Debugging, Target Hardware Debugging, Boundary Scan.

TEXT BOOKS:

1. Shibu K V, “Introduction to Embedded Systems”, Second Edition, McGraw

REFERENCES:

1. Rajkamal, Embedded Systems Architecture, Programming and Design, TATA McGraw-Hill
2. Frank Vahid and Tony Givargis, “Embedded Systems Design” - A Unified Hardware/Software Introduction, John Wiley
3. Lyla, “Embedded Systems” –Pearson
4. David E.Simon, An Embedded Software Primer, Pearson Education Asia, First Indian Reprint 2000.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AUTONOMOUS)

2050542: COMPUTER GRAPHICS (Professional Elective-I)

III Year B.Tech. CSE I – Sem.

L	T	P	C
3	0	0	3

Prerequisites:

- A course on “Data structures”
- A course on “ Design and analysis of Algorithms”
- A course on “Mathematics-1”.

Course Objectives:

- To gain knowledge about graphics hardware devices and software used.
- To understand the three dimensional graphics and their transformations.
- To appreciate illumination and color models.
- To understand clipping techniques.

Course Outcomes: The students will be able to:

- Acquire familiarity with the relevant mathematics of computer graphics.
- Design basic graphics application programs, including animation
- Design applications that display graphic images to given specifications

UNIT-I

Introduction: Application Areas of Computer Graphics, Overview of Graphics Systems, Video-display Devices, Raster-scan Systems, Random Scan Systems, Graphics Monitors and Work Stations and Input Devices. Output Primitives: Points and Lines, Line Drawing Algorithms (Bresenham’s and DDA Algorithm), Midpoint Circle and Ellipse Algorithms. Polygon Filling: Scan Line Algorithm, Boundary-fill and Flood-fill Algorithms.

UNIT-II

2-D Geometrical transforms: Translation, Scaling, Rotation, Reflection and Shear Transformations, Matrix Representations and Homogeneous Coordinates, Composite Transforms, **Transformations between Coordinate Systems. 2-D Viewing**: The Viewing Pipeline, Viewing Coordinate Reference Frame, Window to View-port Coordinate Transformation, Viewing Functions, Cohen-Sutherland line clipping, Sutherland-Hodgeman Polygon Clipping Algorithm.

UNIT–III

3-D Object representation: Polygon Surfaces, Quadric Surfaces, Spline Representation, Hermite Interpolation, Bezier Curve and B-spline Curves, Bezier and B-spline Surfaces, Basic Illumination Models**.**

UNIT–IV

3-D Geometric Transformations: Translation, Rotation, Scaling, Reflection and Shear Transformations, Composite Transformations. 3-D Viewing: Viewing Pipeline, Viewing Coordinates, View Volume and General Projection Transforms and Clipping**.**

UNIT-V

Computer Animation: Design of Animation Sequence, General Computer Animation Functions, Raster Animation, Computer Animation Languages, Key Frame Systems, Motion Specifications.
Visible Surface detection methods: Classification, Back-Face Detection, Depth-buffer, Scan-line, Depth Sorting, BSP-tree Methods.

TEXT BOOKS:

1. Donald Hearn and Pauline Baker M, “Computer Graphics”, C Version, 2nd Edition, Pearson, 2007.
2. John F. Hughes, Andries Van Dam, Morgan McGuire ,David F. Sklar , James D. Foley, Steven K. Feiner and Kurt Akeley ,”Computer Graphics: Principles and Practice in C”, 2nd Edition, Addison- Wesley Professional,2013.

REFERENCES:

1. Donald Hearn and M. Pauline Baker, Warren Carithers, “Computer Graphics With Open GL”, 4th Edition, Pearson Education, 2010.
2. Jeffrey McConnell, “Computer Graphics: Theory into Practice”, Jones and Bartlett Publishers, 2006.
3. Hill F S Jr., “Computer Graphics”, Maxwell Macmillan” , 1990.
4. Peter Shirley, Michael Ashikhmin, Michael Gleicher, Stephen R Marschner, Erik Rein hard, Kelvin Sung, and AK Peters, Fundamental of Computer Graphics, CRC Press, 2010.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT
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2050543: ARTIFICIAL INTELLIGENCE (Professional Elective-I)

III Year B.Tech. CSE I – Sem.

L	T	P	C
3	0	0	3

Prerequisites:

- A course on “Data Structures”
- A course on “Design and Analysis of Algorithms”
- A course on “Probability & Statistics”

Course Objectives:

- To learn the distinction between optimal reasoning Vs. human like reasoning
- To understand the concepts of state space representation, exhaustive search, heuristic search together with the time and space complexities.
- To learn different knowledge representation techniques.
- To understand the applications of AI, namely game playing, theorem proving, and machine learning.

Course Outcomes: The students will be able to:

- Frame an efficient problem space for a problem expressed in natural language.
- Finalize a search algorithm for a problem and estimate its time and space complexities.
- Possess the skill for representing knowledge using the appropriate technique for a given problem.
- Apply AI techniques to solve problems of game playing, and machine learning.

UNIT-I

Artificial Intelligence: What is AI, Foundations and History of AI.

Intelligent Agents: Introduction, how Agents Should Act, Structure of Intelligent Agents, Agent programs, Simple reflex agents, Goal based agents, Utility based agents, Environments and Environment programs.

Problem Solving by Search: Problem-Solving Agents, Formulating Problems, Example Problems, Searching for Solutions, Search Strategies (Breadth-first search, Uniform cost search, Depth-First
Search, Iterative deepening Depth-First search, Bidirectional search).

UNIT-II

Informed Search Methods: Best-First Search, Heuristic Functions, Memory Bounded Search, Iterative Improvement Algorithms.

Game Playing: Introduction, Games as Search Problems, Perfect Decisions in Two-Person Games, Imperfect Decisions, Alpha-Beta Pruning, Games That Include an Element of Chance, State-of-the- Art Game Programs.

UNIT–III

Knowledge and Reasoning: A Knowledge-Based Agent, The Wumpus World Environment, Representation, Reasoning, and Logic, Prepositional Logic, An Agent for the Wumpus World.
First-Order Logic: Syntax and Semantics, Extensions and Notational Variations, Using First-Order Logic, Logical Agents for the Wumpus World, A Simple Reflex Agent, Representing Change in the World Building a Knowledge Base: Properties of Good and Bad Knowledge Bases, Knowledge Engineering, The Electronic Circuits Domain, General Ontology, **Application:** The Grocery Shopping World.

UNIT–IV
Inference in First-Order Logic: Inference Rules Involving Quantifiers, An Example Proof, Generalized Modus Ponens, Forward and Backward Chaining, Resolution: A Complete Inference Procedure, Completeness of resolution.
Logical Reasoning Systems: Introduction, Indexing, Retrieval, and Unification, Logic Programming Systems, Theorem Provers, Forward-Chaining Production Systems, Frame Systems and Semantic Networks, Description Logics, Managing Retractions, Assumptions, and Explanations.

UNIT-V
Planning: A Simple Planning Agent, From Problem Solving to Planning, Planning in Situation Calculus, Basic Representations for Planning, A Partial-Order Planning Example, A Partial-Order Planning Algorithm, Knowledge Engineering for Planning.
Practical Planning: Practical Planners, Hierarchical Decomposition, Analysis of Hierarchical Decomposition, Resource Constraints.

TEXT BOOKS:

1. Artificial Intelligence A Modern Approach, Stuart Russell and Peter Norvig, 3rd Edition, Pearson Education.

REFERENCES:

1. Artificial Intelligence, E.Rich and K.Knight, , 3rd Edition, TMH
2. Artificial Intelligence, Patrick Henny Winston, 3rd Edition, Pearson Education.
3. Artificial Intelligence, ShivaniGoel, Pearson Education.
4. Artificial Intelligence and Expert systems – Patterson, Pearson Education

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT
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III Year B.Tech. CSE I – Sem.

L	T	P	C
3	0	0	3

Prerequisites:

- A course on “Data Structures”.
- A course on “DBMS”

Course Objectives:

- To learn the important concepts and algorithms in IRS.
- To understand the data/file structures that are necessary to design, and implement information retrieval (IR) systems.

Course Outcomes: The students will be able to:

- Apply IR principles to locate relevant information large collections of data
- Design different document clustering algorithms
- Implement retrieval systems for web search tasks.
- Design an Information Retrieval System for web search tasks.

UNIT-I

Introduction to Information Retrieval Systems: Definition of Information Retrieval System, Objectives of Information Retrieval Systems, Functional Overview, Relationship to Database Management Systems, Digital Libraries and Data Warehouses Information Retrieval System **Capabilities**: Search Capabilities, Browse Capabilities, Miscellaneous Capabilities.

UNIT-II

Cataloging and Indexing: History and Objectives of Indexing, Indexing Process, Automatic Indexing, Information Extraction Data Structure: Introduction to Data Structure, Stemming Algorithms, Inverted File Structure, N-Gram Data Structures, PAT Data Structure, Signature File Structure, Hypertext and XML Data Structures, Hidden Markov Models.

UNIT–III

Automatic Indexing: Classes of Automatic Indexing, Statistical Indexing, Natural Language, Concept Indexing, Hypertext Linkages Document and Term Clustering: Introduction to Clustering, Thesaurus Generation, Item Clustering, Hierarchy of Clusters.

UNIT–IV

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 Information Visualization: Introduction to Information Visualization, Cognition and Perception, Information Visualization Technologies.

UNIT-V

Text Search Algorithms: Introduction to Text Search Techniques, Software Text Search

Algorithms, Hardware Text Search Systems Multimedia Information Retrieval: Spoken Language Audio Retrieval, Non-Speech Audio Retrieval, Graph Retrieval, Imagery Retrieval, Video Retrieval.

TEXT BOOKS:

1. Information Storage and Retrieval Systems – Theory and Implementation, Second Edition, Gerald J. Kowalski, Mark T. Maybury, Springer.

REFERENCES:

1. Frakes, W.B., Ricardo Baeza-Yates: Information Retrieval Data Structures and Algorithms, Prentice Hall, 1992.
2. Information Storage & Retrieval By Robert Korfhage – John Wiley & Sons.
3. Modern Information Retrieval By Yates and Neto Pearson Education.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

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2050578: COMPUTER NETWORKS LAB

III YEAR I SEMESTER

L	T	P	C
0	0	3	1.5

Course Objectives

- To understand the working principle of various communication protocols.
- To understand the network simulator environment and visualize a network topology and observe its performance.
- To analyze the traffic flow and the contents of protocol frames.

Course Outcomes: The students will be able to:

- Implement data link layer farming methods
- Analyze error detection and error correction codes.
- Implement and analyze routing and congestion issues in network design.
- Implement Encoding and Decoding techniques used in presentation layer
- Work with different network tools

LIST OF EXPERIMENTS

1. Implement the data link layer framing methods such as character, character-stuffing and bit stuffing.
2. Write a program to compute CRC code for the polynomials CRC-12 andCRC-16
3. Develop a simple data link layer that performs the flow control using the sliding window protocol, and loss recovery using the Go-Back-N mechanism.
4. Implement Dijsktra‟s algorithm to compute the shortest path through a network
5. Take an example subnet of hosts and obtain a broadcast tree for the subnet.
6. Implement distance vector routing algorithm for obtaining routing tables at each node.
7. Implement data encryption and data decryption
8. Write a program for congestion control using Leaky bucket algorithm.
9. Write a program for frame sorting technique used in buffers.
10. Wire shark
    - Packet Capture Using Wire shark
    - Starting Wire shark
    - Viewing Captured Traffic
    - Analysis and Statistics & Filters.
11. How to run Nmap scan
12. Operating System Detection using Nmap
13. **Do the following using NS2 Simulator**
    - NS2Simulator-Introduction
    - Simulate to Find the Number of Packets Dropped
    - Simulate to Find the Number of Packets Dropped by TCP/UDP
    - Simulate to Find the Number of Packets Dropped due to Congestion
    - Simulate to Compare Data Rate & Throughput.
    - Simulate to Plot Congestion for Different Source/Destination
    - Simulate to Determine the Performance with respect to Transmission of Packets.

TEXTBOOKS:

1. Computer Networks, Andrew S Tanenbaum, David. j. Wetherall, 5th Edition. Pearson Education/PHI.

REFERENCES:

1. An Engineering Approach to Computer Networks, S. Keshav, 2ndEdition, Pearson Education
2. Data Communications and Networking– Behrouz A. Forouzan.3rd Edition, TMH.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT
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2050579: OPERATING SYSTEMS LAB

III YEAR I SEMESTER

L	T	P	C
0	0	3	1.5

Prerequisites:

- A course on “Programming for Problem Solving”
- A course on “Computer Organization and Architecture”.

Course Objectives

- To provide an understanding of the design aspects of operating system concepts through simulation.
- Introduce basic Unix commands, system call interface for process management, interposes communication and I/O in Unix.

Course Outcomes: The students will be able to:

- Simulate and implement operating system concepts such as scheduling, deadlock management, file management and memory management.
- Implement C programs using Unix system calls.

LIST OF EXPERIMENTS

1. Write C programs to simulate the following CPU Scheduling algorithms
   a) FCFS b) SJF c) Round Robin d) priority
2. Write programs using the I/O system calls of UNIX/LINUX operating system
   (open, read, write, close, fcntl, seek, stat, opendir, readdir)
3. Write a C program to simulate Bankers Algorithm for Deadlock Avoidance and Prevention.
4. Write a C program to implement the Producer – Consumer problem using semaphores using UNIX/LINUX system calls.
5. Write C programs to illustrate the following IPC mechanisms
   a) Pipes b) FIFOs c) Message Queues d) Shared Memory
6. Write C programs to simulate the following memory management techniques
   a) Paging b) Segmentation

TEXTBOOKS:

1. Operating System Principles- Abraham Silberchatz, Peter B. Galvin, Greg Gagne 7th Edition, John Wiley
2. Advanced programming in the Unix environment, W.R.Stevens, Pearson education.

REFERENCEBOOKS:

1. Operating Systems – Internals and Design Principles Stallings, Fifth Edition–2005, Pearson Education/PHI
2. Operating System A Design Approach-Crowley,TMH.
3. Modern Operating Systems, Andrew S Tanenbaum 2nd edition, Pearson/PHI
4. Unix programming environment, Kernighan and Pike, PHI. / Pearson Education
5. Unix Internals The New Frontiers, U.Vahalia, Pearson Education

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

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2050580: SOFTWARE ENGINEERING LAB

III YEAR I SEMESTER

L	T	P	C
0	0	2	1

Prerequisites:

- A course on “Data Base Management Systems”

Course Objectives

- To write the problem statement for the given system.
- To specify software requirement using data flow diagram.
- To draw the structural and behavioral diagrams for the given specifications

Course Outcomes: The students will be able to:

- Develop the problem statement for the given system.
- Capture the requirements specification for an intended software system using DFD
- Capture the requirements specification for an intended software system using Use case modeling.
- Draw the Structural and behavioral diagrams for the given specification.

Sample Domains

1. Online course reservation system
2. Airline/Railway reservation systems
3. Exam Registrations
4. Stock Maintenance Systems.
5. Recruitment Systems
6. Library Management Systems
7. Student Information Systems
8. ATM.

Perform the following EXPERIMENTS on the above domains:

1. Identify the software system that needs to be developed.
2. Document the Software Requirement Specification (SRS) for the identified System.
3. Draw the level 0, level 1 and level 2 Data Flow Diagram (DFD) for the identified System.
4. Draw the class diagrams and show various class relationships, draw package diagram.
5. Draw the UML component and deployment diagram for the identified system
6. Identify the use cases and develop the Use case model with include and external relationships.
7. Using the identified scenarios find interaction between objects and represents using Sequence Diagram.
8. Using the identified scenarios find interaction between objects and represents using Collaboration Diagram.
9. Draw the relevant Activity diagram for same system.
10. Draw the relevant State chart diagram for same system.

TEXT BOOKS:

1. Software Engineering, A practitioner’s Approach- Roger S. Pressman, 6th edition,

McGraw Hill International Edition.

2. Software Engineering- Sommerville, 7th edition, Pearson Education.
3. The unified modeling language user guide Grady Booch, James Rambaugh, Ivar Jacobson, Pearson Education.

REFERENCES:

1. Software Engineering, an Engineering approach- James F. Peters, WitoldPedrycz, John Wiley.
2. Software Engineering principles and practice- Waman S Jawadekar, The McGraw-Hill Companies.
3. Fundamentals of object-oriented design using UML Meiler page-Jones: Pearson Education.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

2020024: INTELLECTUAL PROPERTY RIGHTS

III YEAR I SEMESTER

L	T	P	C
2	0	0	0

UNIT – I

Introduction to Intellectual property: Introduction, types of intellectual property, international organizations, agencies and treaties, importance of intellectual property rights.

UNIT – II

Trade Marks: Purpose and function of trademarks, acquisition of trade mark rights, protectable matter, selecting, and evaluating trade mark, trade mark registration processes.

UNIT – III

Law of copy rights: Fundamental of copy right law, originality of material, rights of reproduction, rights to perform the work publicly, copy right ownership issues, copy right registration, notice of copy right, international copy right law. Law of patents: Foundation of patent law, patent searching process, ownership rights and transfer.

UNIT – IV

Trade Secrets: Trade secrete law, determination of trade secrete status, liability for misappropriations of trade secrets, protection for submission, trade secrete litigation. Unfair competition: Misappropriation right of publicity, false advertising.

UNIT – V

New development of intellectual property: new developments in trade mark law; copy right law, patent law, intellectual property audits. International overview on intellectual property, international – trade mark law, copy right law, international patent law, and international development in trade secrets law.

TEXT & REFERENCE BOOKS:

1. Intellectual property right, Deborah. E. Bouchoux, Cengage learning.
2. Intellectual property right – Unleashing the knowledge economy, prabuddha ganguli, Tata McGraw Hill Publishing company ltd

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

2060514: DATA MINING

III YEAR II SEMESTER

L	T	P	C
3	0	0	3

Prerequisites:

- A course on “Design and Analysis of Algorithms”
- A course on “Database Management Systems”
- A course on “Probability and Statistics”

Course Objectives:

- To presents methods for mining frequent patterns, associations, and correlations.
- To describes methods for data classification and prediction, and data–clustering approaches.
- To perform Mining various types of data stores such as spatial, textual, multimedia, streams.

Course Outcomes: The students will be able to:

- Understand the types of the data to be mined and present a general classification of tasks and primitives to integrate a data mining system.
- Apply pre-processing methods for any given raw data.
- Extract interesting patterns from large amounts of data.
- Discover the role played by data mining in various fields.
- Choose and employ suitable data mining algorithms to build analytical applications
- Evaluate the accuracy of supervised and unsupervised models and algorithms

UNIT-I

Introduction to Data Mining: Introduction, Data Objects and attribute types, Basic Statistical Descriptions Of data, Data Visualization, Data Pre-processing, Data Cleaning, Data Integration, Data Reduction, Data Transformation and data discretization**.**

UNIT-II

Association Rules: Introduction, Large item sets, Basic Algorithms, Parallel and Distributed algorithms, Comparing approaches, Incremental Rules, Advanced Association Rule Techniques, Measuring the Quality of Rules.

UNIT–III

Classification: Introduction, Statistical-Based Algorithms, Distance-Based Algorithms, Decision Tree-Based Algorithms, Neural Network-Based Algorithms, Rule-Based Algorithms, Generating Rules from a DT, Generating Rules from a Neural Net, Generating Rules Without a DT or N, Combining Techniques**.**

UNIT–IV

Clustering: Introduction, Similarity and Distance Measure, Outliers, Hierarchical Algorithms, Partitional Algorithms, Minimum Spanning Tree, Squared Error Clustering Algorithm, K -Means Clustering, Nearest Neighbor Algorithm, PAM Algorithm, Bond Energy Algorithm, Clustering with Genetic Algorithms, Clustering with Neural Networks, Clustering Large Databases, Clustering with

Categorical Attributes, Comparison**.**

UNIT-V

Web and Text Mining: Introduction, web mining, web content mining, web structure mining, web usage mining, Spatial Mining introduction, Spatial Data Overview, Spatial Data Mining Primitives, Generalization and Specialization, Spatial Rules, Spatial Classification Algorithm, Spatial Clustering Algorithms.

TEXT BOOKS:

1. Data Mining – Concepts and Techniques – Jiawei Han &MichelineKamber, 3rd Edition Elsevier.
2. Data Mining Introductory and Advanced topics –Margaret H Dunham, PEA.

REFERENCES:

1. Data Mining: Practical Machine Learning Tools and Techniques, Ian H. Witten and Eibe Frank, 2nd Edition, Morgan Kaufmann, 2005.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

2060515: COMPILER DESIGN

III YEAR II SEMESTER

L	T	P	C
3	0	0	3

Prerequisites:

- A course on “Formal Languages and Automata Theory”
- A course on “Computer Organization”

Course Objectives:

- Provide an understanding of the fundamental principles in compiler design
- Provide the skills needed for building compilers for various situations that one may encounter in a career in Computer Science.
- Learn the process of translating a modern high-level language to executable code required for compiler construction.

Course Outcomes: The students will be able to:

- Design a compiler given a set of language features.
- Acquire skills in using lex tool &yacc tool for developing a scanner and parser.
- Design and implement LL and LR parsers
- Design algorithms to do code optimization in order to improve the performance of a program in terms of space and time complexity.
- Design algorithms to generate machine code.

UNIT-I

Introduction: The structure of a compiler, the science of building a compiler, programming language basics Lexical Analysis: The Role of the Lexical Analyzer, Input Buffering, Recognition of Tokens, The Lexical-Analyzer Generator Lex, Finite Automata, From Regular Expressions to Automata, Design of a Lexical-Analyzer Generator, Optimization of DFA-Based Pattern Matchers.

UNIT-II

Syntax Analysis: Introduction, Context-Free Grammars, Writing a Grammar, Top-Down Parsing, Bottom-Up Parsing, Introduction to LR Parsing: Simple LR, More Powerful LR Parsers, Using Ambiguous Grammars and Parser Generators**.**

UNIT–III

Syntax-Directed Translation: Syntax-Directed Definitions, Evaluation Orders for SDD's, Applications of Syntax-Directed Translation, Syntax-Directed Translation Schemes, Implementing L-Attributed SDD's. **Intermediate-Code Generation**: Variants of Syntax Trees, Three-Address Code, Types and Declarations, Type Checking, Control Flow, Switch-Statements, Intermediate Code for Procedures**.**

UNIT–IV

Run-Time Environments: Stack Allocation of Space, Access to Nonlocal Data on the Stack, Heap Management, Introduction to Garbage Collection, Introduction to Trace-Based Collection. Code Generation: Issues in the Design of a Code Generator, The Target Language, Addresses in the Target Code, Basic Blocks and Flow Graphs, Optimization of Basic Blocks, A Simple Code Generator, Peephole Optimization, Register Allocation and Assignment, Dynamic Programming

Code-Generation.

UNIT-V

Machine-Independent Optimization: The Principal Sources of Optimization, Introduction to Data-Flow Analysis, Foundations of Data-Flow Analysis, Constant Propagation, Partial-Redundancy Elimination, Loops in Flow Graphs.

TEXT BOOKS:

1. Compilers: Principles, Techniques and Tools, Second Edition, Alfred V. Aho, Monica S. Lam, Ravi Sethi, Jeffry D. Ullman.

REFERENCES:

1. Lex&Yacc – John R. Levine, Tony Mason, Doug Brown, O'reilly
2. Compiler Construction, Louden, Thomson.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

2060516: WEB TECHNOLOGIES

III YEAR II SEMESTER

L	T	P	C
3	1	0	4

Prerequisites:

- A course on “Java Programming”.
- A course on “Data Base Management Systems”.

Course Objectives:

- To introduce PHP Language for server side scripting
- To introduce XML and Processing of XML data
- To introduce server side programming with java servlets and JSP
- To introduce client side scripting with java scripts

Course Outcomes: The students will be able to:

- Gain knowledge of client side scripting validation of forms and AJAX programming
- Understand server side scripting with PHP language
- Understand XML and how to parse and use XML data with java.
- Do server side programming with java servlets and JSP.

UNIT-I

Introduction to PHP: Declaring variables, data types, arrays, strings, operators, expressions, control structures, functions, Reading data from web form controls like text boxes, radio buttons, lists etc., Handling File Uploads. Connecting to database (MySQL as reference), executing simple queries, handling results, Handling sessions and cookies.

File Handling in PHP: File operations like opening, closing, reading, writing, appending, deleting etc. on text and binary files, listing directories.

UNIT-II

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

XML: Introduction to XML, Defining XML tags, their attributes and values, Document Type Definition, XML Schemes, Document Object Model, XHTML Parsing XML Data – DOM and SAX Parsers in java

UNIT–III

Introduction to Servlets: Common Gateway Interface (CGt), Life cycle of a Servlet, deploying a servlet, The Servlet API, Reading Servlet parameters, Reading Initialization parameters, Handling Http Request & Responses, Using Cookies and Sessions, connecting to a database using JDBC.

UNIT–IV

Introduction to JSP: The Anatomy of a JSP Page, JSP Processing, Declarations, Directives, Expressions, Code Snippets, implicit objects, Using Beans in JSP Pages, Using Cookies and session for session tracking, connecting to database in JSP.

UNIT-V

Client-side Scripting: Introduction to JavaScript, JavaScript language – declaring variables, scope of variables, functions. event handlers (onclick, onsubmit etc.), Document Object Model,

Form validation.

TEXT BOOKS:

1. Web Technologies, Uttam K Roy, Oxford University Press
2. The Complete Reference PHP — Steven Holzner, Tata McGraw-Hill

REFERENCES:

1. Web Programming, building internet applications, Chris Bates 2″edition, Wiley Dreamtech
2. Java Server Pages —Hans Bergsten, SPD O'Reilly,
3. Java Script, D.Flanagan
4. Beginning Web Programming-Jon Duckett WROX

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

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2060545: LINUX PROGRAMMING (Professional Elective-II)

III YEAR II SEMESTER

L	T	P	C
3	0	0	3

Prerequisites:

- A course on “Operating Systems”.
- A course on “Computer Organization”

Course Objectives:

- To teach principles of operating system including File handling utilities, Security by file permissions, Process utilities, Disk utilities, Networking Commands, Basic Linux commands, Scripts and filters.
- To familiarize fundamentals of the Bourne again shell (bash), shell programming, pipes, input and output redirection Control structures, arithmetic in shell interrupt processing, functions, debugging shell scripts.
- To facilitate students in understanding Inter process communication.
- To facilitate students in understanding semaphore, shared memory and process.

Course Outcomes: The students will be able to**:**

- Use various Linux commands that are used to manipulate system operations at admin level and a prerequisite to pursue job as a Network administrator.
- Write Shell Programming using Linux commands.
- Design and write application to manipulate internal kernel level Linux File System.
- Develop IPC-API’s that can be used to control various processes for synchronization.
- Develop Network Programming that allows applications to make efficient use of resources available on different machines in a network.

UNIT-I

INTRODUCTION TO LINUX AND LINUX UTILITIES: A brief history of LINUX, architecture of LINUX, features of LINUX, introduction to vi editor. Linux commands- PATH, man, echo, printf, script, passwd, uname, who, date, stty, pwd, cd, mkdir, rmdir, ls, cp, mv, rm, cat, more, wc, lp, od, tar, gzip, file handling utilities, security by file permissions, process utilities, disk utilities, networking commands, unlink, du, df, mount, umount, find, unmask, ulimit, ps, w, finger, arp, ftp, telnet, rlogin.Text Processing utilities and backup utilities , tail, head , sort, nl, uniq, grep, egrep, fgrep, cut, paste, join, tee, pg, comm, cmp, diff, tr, awk, cpio**.**

UNIT-II

Introduction to Shells: Linux Session, Standard Streams, Redirection, Pipes, Tee Command, Command Execution, Command-Line Editing, Quotes, Command Substitution, Job Control, Aliases, Variables, Predefined Variables, Options, Shell/Environment Customization. Filters: Filters and Pipes, Concatenating files, Display Beginning and End of files, Cut and Paste, Sorting, Translating Characters, Files with Duplicate Lines, Count Characters, Words or Lines, Comparing Files.

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(AUTONOMOUS)

UNIT–III

Grep: Operation, grep Family, Searching for File Content. Sed :Scripts, Operation, Addresses, commands, Applications, grep and sed. UNIX FILE STRUCTURE: Introduction to UNIX file system, inode (Index Node), file descriptors, system calls and device drivers. File Management :File Structures, System Calls for File Management – create, open, close, read, write, lseek, link, symlink, unlink, stat, fstat, lstat, chmod, chown, Directory API – opendir, readdir, closedir, mkdir, rmdir, umask.

UNIT–IV

PROCESS AND SIGNALS: Process, process identifiers, process structure: process table, viewing processes, system processes, process scheduling, starting new processes: waiting for a process, zombie processes, orphan process, fork, vfork, exit, wait, waitpid, exec, signals functions, unreliable signals, interrupted system calls, kill, raise, alarm, pause, abort, system, sleep functions, signal sets. File locking: creating lock files, locking regions, use of read and write with locking, competing locks, other lock commands, deadlocks.

UNIT-V

INTER PROCESS COMMUNICATION: Pipe, process pipes, the pipe call, parent and child processes, and named pipes: fifos, semaphores: semget, semop, semctl, message queues: msgget, msgsnd, msgrcv, msgctl, shared memory: shmget, shmat, shmdt, shmctl, ipc status commands. INTRODUCTION TO SOCKETS: Socket, socket connections - socket attributes, socket addresses, socket, connect, bind, listen, accept, socket communications.

TEXTBOOKS:

1. W. Richard. Stevens (2005), Advanced Programming in the UNIX Environment, 3rd edition, Pearson Education, New Delhi, India.
2. Unix and shell Programming Behrouz A. Forouzan, Richard F. Gilberg.Thomson

REFERENCES:

1. Linux System Programming, Robert Love, O'Reilly, SPD.
2. Advanced Programming in the UNIX environment, 2nd Edition, W.R.Stevens, Pearson Education.
3. UNIX Network Programming, W.R. Stevens, PHI. UNIX for Programmers and Users, 3rd Edition, Graham Glass, King Ables, Pearson Education

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

2060546: MOBILE COMPUTING (Professional Elective-II)

III YEAR II SEMESTER

L	T	P	C
3	0	0	3

Prerequisites:

- A course on “Computer networks”.
- A course on “Data Structures”.
- A course on “Operating Systems”.

Course Objectives:

- To understand the basic concepts of mobile computing.
- To learn the basics of mobile telecommunication system.
- To be familiar with the network layer protocols and Ad-Hoc networks.
- To know the basis of transport and application layer protocols.
- To gain knowledge about different mobile platforms and application development.

Course Outcomes: The students will be able to:

- Learn basics of mobile telecommunication systems.
- Understand functionality of MAC, network layer and identify a routing protocol for a given Ad hoc network.
- Learn the functionality of Transport and Application layers.
- Develop a mobile application using android/blackberry/ios/Windows SDK

UNIT-I

INTRODUCTION

Introduction to Mobile Computing – Applications of Mobile Computing- Generations of Mobile Communication Technologies- Multiplexing – Spread spectrum -MAC Protocols – SDMA- TDMA- FDMA- CDMA.

UNIT-II

MOBILE TELECOMMUNICATION SYSTEM

Introduction to Cellular Systems – GSM – Services - Architecture - Protocols – Security – Satellite Systems – History – Applications – GEO – LEO - MEO – GPRS- Services – Architecture - UMTS – Network Architecture.

UNIT–III

MOBILE NETWORK LAYER

MANET, Mobile IP, Classification of Multicast Routing Protocols, Multicast Routing Protocols: DSDV, DSR, AODV ,ZRP, DHCP, Security issues in MANETs, Introduction to Vehicular AdHoc networks (VANET) – MANET Vs VANET.

UNIT–IV

MOBILE TRANSPORT AND APPLICATION LAYER

Classical TCP Improvements – Inderect TCP - Mobile TCP – Transaction Oriented TCP – Wireless Application Protocols – Architecture – WDP – WTLS – WTP –WSP – WAE – WML – WML Script.

UNIT-V

MOBILE PLATFORMS AND APPLICATIONS

Operating Systems for Mobile Computing – Special Constraints & Requirements – Commercial Mobile Operating Systems – Windows Mobile, iOS, Android, BlackBerry – Mobile Commerce – Applications – Structure.

TEXT BOOKS:

1. Jochen Schiller, —Mobile Communications, PHI, Second Edition, 2003.
2. Prasant Kumar Pattnaik, Rajib Mall —Fundamentals of Mobile Computing, PHI Learning Pvt.Ltd, New Delhi – 2012 .

REFERENCES:

1. Dharma Prakash Agarval, Qing and An Zeng, “Introduction to Wireless and Mobile systems”, Thomson Asia Pvt Ltd, 2005.
2. Uwe Hansmann, Lothar Merk, Martin S. Nicklons and Thomas Stober, —Principles of Mobile Computing, Springer, 2003.
3. William.C.Y.Lee,—Mobile Cellular Telecommunications-Analog and Digital Systems‖, Second Edition, Tata McGraw Hill Edition ,2006.
4. C.K. Toh, —Ad Hoc Mobile Wireless Networks‖, First Edition, Pearson Education, 2002.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT
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2060547-CRYPTOGRAPHY & NETWORK SECURITY (Professional Elective-II)

III YEAR II SEMESTER

L	T	P	C
3	0	0	3

Prerequisites:

- Basic concepts of Data communication and Computer Networks.

Course Objectives:

- To impart knowledge on network security issues, services, goals and mechanisms.
- To analyze the security of communication systems, networks and protocols.
- To apply algorithms used for secure transactions in real world applications

Course Outcomes: The students will be able to:

- Demonstrate the knowledge of cryptography and network security concepts and applications.
- Understand and apply the concepts of symmetric encryption.
- Identify and investigate of Cryptographic Hash Functions.
- Understand the concepts of email security and PGP.
- Understand and apply web security mechanisms.

UNIT-I

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, Cryptography Concepts and Techniques: Introduction, plain text and cipher text, substitution techniques, transposition techniques, encryption and decryption, symmetric and asymmetric key cryptography, steganography, key range and key size, possible types of attacks.

UNIT-II

Symmetric key Ciphers: Block Cipher principles, DES, AES, Blowfish, RC4, RC5, Block cipher operation, Stream ciphers, Asymmetric key Ciphers: Principles of public key cryptosystems, RSA algorithm, Elgamal Cryptography, Diffie-Hellman Key Exchange, Knapsack Algorithm.

UNIT–III

Cryptographic Hash Functions: Message Authentication, Secure Hash Algorithm (SHA512), Message authentication codes: Authentication requirements, HMAC, CMAC, Digital signatures, Elgamal Digital Signature Scheme. Key Management and Distribution: Symmetric Key Distribution Using Symmetric & Asymmetric Encryption, Distribution of Public Keys, Kerberos, X.509 Authentication Service, Public – Key Infrastructure

UNIT–IV

Email privacy: Pretty Good Privacy (PGP) and S/MIME. IP Security: Overview, IP Security Architecture, Authentication Header, Encapsulating Security Payload, Combining Security Associations and Key Management.

UNIT-V

Web Security: Requirements, Secure Socket Layer (SSL) and Transport Layer Security (TLS),

Secure Electronic Transaction (SET). Intruders, Viruses and related threats, Firewall Design principles, Trusted Systems, Intrusion Detection Systems.

TEXT BOOKS:

1. Cryptography and Network Security by AtulKahathe MC Graw Hill, 2ndedition.
2. Cryptography and Network Security by William Stallings 6th Edition, Pearson Education.

REFERENCES:

1. Cryptography and Network Security by Behrouz A. Forouzan.
2. Applied Cryptography" by Bruce Schneier.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT
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2060548: SOFTWARE PROJECT MANAGEMENT (Professional Elective-II)

III YEAR II SEMESTER

L	T	P	C
3	0	0	3

Prerequisites:

- A course on “Software Engineering”.
- A course on “Business Economics and Financial Management”.

Course Objectives:

- To acquire knowledge on software process management
- To acquire managerial skills for software project development
- To understand software economics

Course Outcomes: The students will be able to:

- Apply phases in the life cycle of software development
- Analyze the major and minor milestones, artifacts and metrics from management and technical perspective
- Design and develop software product using conventional and modern principles of software project management

UNIT-I

Software Process Maturity Software maturity Framework, Principles of Software Process Change, Software Process Assessment, The Initial Process, The Repeatable Process, The Defined Process, The Managed Process, The Optimizing Process. Process Reference Models Capability Maturity Model (CMM), CMMI, PCMM, PSP, TSP).

UNIT-II

Software Project Management Renaissance Conventional Software Management, Evolution of Software Economics, Improving Software Economics, The old way and the new way. Life-Cycle Phases and Process artifacts Engineering and Production stages, inception phase, elaboration phase, construction phase, transition phase, artifact sets, management artifacts, engineering artifacts and pragmatic artifacts, model-based software architectures.

UNIT–III

Workflows and Checkpoints of process Software process workflows, Iteration workflows, Major milestones, minor milestones, periodic status assessments. Process Planning Work breakdown structures, Planning guidelines, cost and schedule estimating process, iteration planning process, Pragmatic planning.

UNIT–IV

Project Organizations Line-of- business organizations, project organizations, evolution of organizations, process automation. Project Control and process instrumentation The seven-core metrics, management indicators, quality indicators, life-cycle expectations, Pragmatic software metrics, metrics automation.

UNIT-V

CCPDS-R Case Study and Future Software Project Management Practices Modern Project

Profiles, Next-Generation software Economics, Modern Process Transitions.

TEXT BOOKS:

1. Managing the Software Process, Watts S. Humphrey, Pearson Education
2. Software Project Management, Walker Royce, Pearson Education

REFERENCES:

1. An Introduction to the Team Software Process, Watts S. Humphrey, Pearson Education, 2000.
2. Process Improvement essentials, James R. Persse, O'Reilly, 2006
3. Software Project Management, Bob Hughes & Mike Cotterell, fourth edition, TMH, 2006.
4. Applied Software Project Management, Andrew Stellman& Jennifer Greene, O'Reilly, 2006.
5. Head First PMP, Jennifer Greene & Andrew Stellman, O'Reilly, 2007
6. Software Engineering Project Management, Richard H. Thayer & Edward Yourdon, 2 nd edition, Wiley India, 2004.
7. Agile Project Management, Jim Highsmith, Pearson education, 2004.

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2060581: DATA MINING LAB

III YEAR II SEMESTER

L	T	P	C
0	0	3	1.5

Prerequisites:

- A course on “Data Base Management Systems”.

Course Objectives:

- To obtain practical experience using data mining techniques on real world data sets.
- Emphasize hands-on experience working with all real datasets.

Course Outcomes: The students will be able to:

- Understand the types of the data to be mined and present a general classification of tasks and primitives to integrate a data mining system.
- Apply pre-processing methods for any given raw data.
- Extract interesting patterns from large amounts of data.
- Discover the role played by data mining in various fields.
- Choose and employ suitable data mining algorithms to build analytical applications

LISTOFEXPERIMENTS:

Task 1: Credit Risk Assessment

Description:

The business of banks is making loans. Assessing the credit worthiness of an applicant is of crucial importance. You have to develop a system to help a loan officer decide whether the credit of a customer is good, or bad. A bank's business rules regarding loans must consider two opposing factors. On the one hand, a bank wants to make as many loans as possible.

Interest on these loans is the banks profit source. On the other hand, a bank cannot afford to make too many bad loans. Too many bad loans could lead to the collapse of the bank. The bank's loan policy must involve a compromise: not too strict, and not too lenient. To do the assignment, you first and foremost need some knowledge about the world of credit. You can acquire such knowledge in a number of ways.

1. Knowledge Engineering. Find a loan officer who is willing to talk. Interview her and try to represent the knowledge in the form of production rules.
2. Books. Find some training manuals for loan officers or perhaps a suitable textbook onfinance.Translatethisknowledgefromtextformtoproductionruleform.
3. Common sense. Imagine yourself as a loan officer and make up reasonable rules which can be used to judge the credit worthiness of a loan applicant.
4. Case histories. Find records of actual cases where competent loan officers correctly judged when, and when not to approve a loan application.

The German Credit Data:

Actual historical credit data is not always easy to come by because of confidentiality rules. Here is one such dataset, consisting of 1000 actual cases collected in Germany. Credit dataset

(original)Excel spread sheet version of the German credit data.
In spite of the fact that the data is German, you should probably make use of it for this assignment.
A few notes on the German dataset

1. DM stands for Deutsche Mark, the unit of currency, worth about 90 cents Canadian (but looks and acts like a quarter).
2. owns_telephone.GermanphoneratesaremuchhigherthaninCanadasoftware people own telephones.
3. foreign_worker. There are millions of these in Germany (many from Turkey). It is very hard to get German citizenship if you were not born of German parents.
4. There are 20 attributes used in judging a loan applicant. The goal is to class if the application to one of two categories, good or bad.

TEXTBOOKS:

1. Data Mining – Concepts and Techniques – Jiawei Han &Miche line Kamber, 3rd Edition Elsevier.
2. Data Mining Introductory and Advanced topics –Margaret H Dunham, PEA.

REFERENCES:

1. Data Mining: Practical Machine Learning Tools and Techniques, Ian H. Witten and Eibe Frank, 2nd Edition, Morgan Kaufmann, 2005.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

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2060582: WEB TECHNOLOGIES LAB

III YEAR II SEMESTER

L	T	P	C
0	0	3	1.5

Prerequisites:

- A course on “Java Programming”.
- A course on “Data Base Management Systems”.

Course Objectives:

- To introduce PHP Language for server side scripting
- To introduce XML and Processing of XML data
- To introduce server side programming with java servlets and JSP
- To introduce client side scripting with java scripts

Course Outcomes: The students will be able to:

- Do client side scripting validation of forms and AJAX programming
- Understand server side scripting with PHP language
- Understand XML and how to parse and use XML data with java.
- Do server side programming with java servlets and JSP.

List of Experiments

1. Write a PHP script to print prime numbers between 1-50.
2. PHP script to
   a. Find the length of a string.
   b. Count no of words in a string.
   c. Reverse a string.
   d. Search for a specific string.
3. Write a PHP script to merge two arrays and sort them as numbers, in descending order.
4. Write a PHP script that reads data from one file and write into another file.
5. Develop static pages (using Only HTML) of an online book store. The pages should resemble: www.amazon.com. The website should consist the following pages.
   a. Home page
   b. Registration and user Login
   c. User Profile Page
   d. Books catalog
   e. Shopping Cart
   f. Payment By credit card
   g. Order Conformation
6. Validate the Registration, user login, user profile and payment by credit card pages using JavaScript.
7. Create and save an XML document on the server, which contains 10 users information. Write a program, which takes User Id as an input and returns the user details by taking the user information from the XML document.
8. Install TOMCAT web server. Convert the static web pages of assignments 2 into dynamic web pages using servlets and cookies. Hint: Users information (user id, password, credit card number) would be stored in web.xml. Each user should have a separate Shopping Cart.

9. Redo the previous task using JSP by converting the static web pages of assignments 2 into dynamic web pages. Create a database with user information and books information. The books catalogue should be dynamically loaded from the database. Follow the MVC architecture while doing the website.

TEXT BOOKS:

1. WEB TECHNOLOGIES: A Computer Science Perspective, Jeffrey C. Jackson, Pearson Education

REFERENCES:

2. Deitel H.M. and Deitel P.J., “Internet and World Wide Web How to program”, Pearson
3. International, 2012, 4th Edition.
4. J2EE: The complete Reference By James Keogh, McGraw-Hill
5. Bai and Ekedhi, The Web Warrior Guide to Web Programming, Thomson
6. Paul Dietel and Harvey Deitel,” Java How to Program”, Prentice Hall of India, 8th Edition
7. Web technologies, Black Book, Dream tech press.
8. Gopalan N.P. and Akilandeswari J., “Web Technology”, Prentice Hall of India

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT
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2060075: ADVANCED ENGLISH LANGUAGE COMMUNICATION SKILLS LABORATORY

III YEAR II SEMESTER

L	T	P	C
0	0	2	1

INTRODUCTION:

The introduction of the Advanced Communication Skills Lab is considered essential at 3rd year level. At this stage, the students need to prepare themselves for their careers which may require them to listen to, read, speak and write in English both for their professional and interpersonal communication in the globalized context.

The proposed course should be a laboratory course to enable students to use 'good' English and perform the following:

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

OBJECTIVES:

This Lab focuses on using multi-media instruction for language development to meet the following targets:

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

Further, they would be required to communicate their ideas relevantly and coherently in writing.

To prepare all the students for their placements.

SYLLABUS:

The following course content to conduct the activities is prescribed for the Advanced English Communication Skills (AECS) Lab:

Activities on Fundamentals of Inter-personal Communication and Building Vocabulary - Starting a conversation – responding appropriately and relevantly – using the right body language – Role Play in different situations & Discourse Skills- using visuals - Synonyms and antonyms, word roots, one-word substitutes, prefixes and suffixes, study of word origin, business vocabulary, analogy, idioms and phrases, collocations & usage of vocabulary.

Activities on Reading Comprehension –General Vs Local comprehension, reading for facts, guessing meanings from context, scanning, skimming, inferring meaning, critical reading&

effective googling.

Activities on Writing Skills – Structure and presentation of different types of writing – letter writing/Resume writing/ e-correspondence/Technical report writing/ – planning for writing – improving one's writing. Activities on Presentation Skills – Oral presentations (individual and group) through JAM sessions/seminars/PPTs and written presentations through posters/projects/reports/emails/assignments etc.

Activities on Group Discussion and Interview Skills – Dynamics of group discussion, intervention, summarizing, modulation of voice, body language, relevance, fluency and organization of ideas and rubrics for evaluation- Concept and process, pre-interview planning, opening strategies, answering strategies, interview through tele-conference & video-conference and Mock Interviews.

TEXT BOOKS:

1. Effective Technical Communication by M Asharaf Rizvi. McGraw Hill Education (India) Pvt. Ltd. 2nd Edition
2. Academic Writing: A Handbook for International Students by Stephen Bailey, Routledge, 5th Edition.

REFERENCES:

1. Learn Correct English – A Book of Grammar, Usage and Composition by Shiv K. Kumar and Hemalatha Nagarajan. Pearson 2007
2. Professional Communication by Aruna Koneru, McGraw Hill Education (India) Pvt. Ltd, 2016.
3. Technical Communication by Meenakshi Raman & Sangeeta Sharma, Oxford University Press 2009.
4. Technical Communication by Paul V. Anderson. 2007. Cengage Learning pvt. Ltd. New Delhi.
5. English Vocabulary in Use series, Cambridge University Press 2008.
6. Handbook for Technical Communication by David A. McMurrey & Joanne Buckley. 2012. Cengage Learning.
7. Communication Skills by Leena Sen, PHI Learning Pvt Ltd., New Delhi, 2009.
8. Job Hunting by Colm Downes, Cambridge University Press 2008.
9. English for Technical Communication for Engineering Students, Aysha Vishwamohan, Tata Mc Graw-Hill 2009.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

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2060025: PROFESSIONAL ETHICS

III YEAR II SEMESTER

L	T	P	C
2	0	0	0

Prerequisite: Nil

Course Objectives:

- To make the students understand the types of roles they are expected to play in the society as practitioners of the civil engineering profession
- To develop some ideas of the legal and practical aspects of their profession.

Course Outcomes:

- To understand the importance of professional practice, Law and Ethics in their personal lives and professional careers.
- To learn the rights and responsibilities as an employee, team member and a global citizen

UNIT – I

Professional Practice and Ethics: Definition of Ethics, Professional Ethics - Engineering Ethics, Personal Ethics; Code of Ethics - Profession, Professionalism, Professional Responsibility, Conflict of Interest, Gift Vs Bribery, Environmental breaches, Negligence, Deficiencies in state-of-the-art; Vigil Mechanism, Whistle blowing, protected disclosures. Introduction to GST- Various Roles of Various Stake holders.

UNIT - II

Law of Contract: Nature of Contract and Essential elements of valid contract, Offer and Acceptance, Consideration, Capacity to contract and Free Consent, Legality of Object. Unlawful and illegal agreements, Contingent Contracts, Performance and discharge of Contracts, Remedies for breach of contract. **Contracts-II:** Indemnity and guarantee, Contract of Agency, Sale of goods Act -1930: General Principles, Conditions & Warranties, Performance of Contract of Sale.

UNIT – III

Arbitration, Conciliation and ADR (Alternative Dispute Resolution) system: Arbitration – meaning, scope and types – distinction between laws of 1940 and 1996; UNCITRAL model law – Arbitration and expert determination; Extent of judicial intervention; International commercial arbitration; Arbitration agreements – essential and kinds, validity, reference and interim measures by court; Arbitration tribunal appointment, challenge, jurisdiction of arbitral tribunal, powers, grounds of challenge, procedure and court assistance; Distinction between conciliation, negotiation, mediation and arbitration, confidentiality, resort to judicial proceedings, costs; Dispute Resolution Boards; Lok Adalats.

UNIT – IV

Engagement of Labour and Labour & other construction-related Laws: Role of Labour in Civil Engineering; Methods of engaging labour- on rolls, labour sub-contract, piece rate work; Industrial Disputes Act, 1947; Collective bargaining; Industrial Employment (Standing Orders) Act, 1946; Workmen's Compensation Act, 1923; Building & Other - Construction Workers (regulation of employment and conditions of service) Act (1996) and Rules (1998); RERA Act 2017, NBC 2017.

UNIT - V

Law relating to Intellectual property: Introduction – meaning of intellectual property, main forms of IP, Copyright, Trademarks, Patents and Designs, Secrets; Law relating to Copyright in India including

Historical evolution of Copy Rights Act, 1957, Meaning of copyright – computer programs, Ownership of copyrights and assignment, Criteria of infringement, Piracy in Internet – Remedies and procedures in India; Law relating to Patents under Patents Act, 1970

TEXT BOOKS:

1. Professional Ethics: R. Subramanian, Oxford University Press, 2015.
2. Ravinder Kaur, Legal Aspects of Business, 4e, Cengage Learning, 2016.

REFERENCES:

1. Wadhera (2004), Intellectual Property Rights, Universal Law Publishing Co. RERA Act, 2017
2. T. Ramappa (2010), Intellectual Property Rights Law in India, Asia Law House.
3. O.P. Malhotra, Law of Industrial Disputes, N.M. Tripathi Publishers

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT
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2070011: FUNDAMENTALS OF MANAGEMENT

IV Year B.Tech. CSE I – Sem.

L	T	P	C
3	0	0	3

Prerequisites:

Course Objectives:

- To understand the Management Concepts, applications of Concepts in Practical aspects of business and development of Managerial Skills for Engineers.

Course Outcomes: The students will be able to:

- The students understand the significance of Management in their Profession. The various Management Functions like Planning, Organizing, Staffing, Leading, Motivation and Control aspects are learnt in this course. The students can explore the Management Practices in their domain area.

UNIT-I

Introduction to Management: Definition, Nature and Scope, Functions, Managerial Roles, Levels of Management, Managerial Skills, Challenges of Management; Evolution of Management- Classical Approach- Scientific and Administrative Management; The Behavioral approach; The Quantitative approach; The Systems Approach; Contingency Approach, IT Approach.

UNIT-II

Planning and Decision Making: General Framework for Planning - Planning Process, Types of Plans, Management by Objectives; Production Planning and Control. Decision making and Problem Solving - Programmed and Non Programmed Decisions, Steps in Problem Solving and Decision Making; Bounded Rationality and Influences on Decision Making; Group Problem Solving and Decision Making, Creativity and Innovation in Managerial Work.

UNIT–III

Organization and HRM: Principles of Organization: Organizational Design & Organizational Structures; Departmentalization, Delegation; Empowerment, Centralization, Decentralization, Recentralization; Organizational Culture; Organizational Climate and Organizational Change.

Human Resource Management & Business Strategy: Job Satisfaction, Job Enrichment, Job Enlargement, Talent Management, Strategic Human Resource Planning; Recruitment and Selection; Training and Development; Performance Appraisal.

UNIT–IV

Leading and Motivation: Leadership, Power and Authority, Leadership Styles; Behavioral Leadership, Situational Leadership, Leadership Skills, Leader as Mentor and Coach, Leadership during adversity and Crisis; Handling Employee and Customer Complaints, Team Leadership.

Motivation - Types of Motivation; Relationship between Motivation, Performance and Engagement, Content Motivational Theories - Needs Hierarchy Theory, Two Factor Theory, Theory X and Theory Y.

UNIT-V

Controlling: Control, Types and Strategies for Control, Steps in Control Process, Budgetary and Non- Budgetary Controls. Characteristics of Effective Controls, Establishing control systems,

Control frequency and Methods

TEXT BOOKS:

1. Management Essentials, Andrew DuBrin, 9e, Cengage Learning, 2012.
2. Fundamentals of Management, Stephen P. Robbins, Pearson Education, 2009.

REFERENCES:

1. Essentials of Management, Koontz Kleihrich, Tata Mc - Graw Hill.
2. Management Fundamentals, Robert N Lussier, 5e, Cengage Learning, 2013.
3. Industrial Engineering and Management: Including Production Management, T.R. Banga, S.C. Sharma, Khanna Publishers

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT
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2070517:FULL STACK DEVELOPMENT

IV Year B.Tech. CSE I – Sem.

L	T	P	C
3	0	0	3

Prerequisites:

Course Objectives:

- To learn Middle-ware Java Technologies
- To learn Back-End Java Technologies

Course Outcomes: The students will be able to:

- Implement MVC architecture
- Build an end-to-end application
- Test, deploy and store data the application

UNIT-I: Introduction To Full Stack Development

Introduction to Full Stack Web Development, Front-End Technologies, Back-End Technologies (Server-Side), Back-end Development with Java 11, Model View Controller (MVC), Web Services: API-Based Architecture with REST, Communication Between Front-End and Back-End, Object Relational Mapping (ORM) with Hibernate.

UNIT-II: Multithreading and Reactive Programming in JAVA

Multithreading, Concurrency, Deadlock, Concurrent Data Structures, Multithreading Examples, Reactive Programming,

Designing Concurrent Java Programs -Functional Programming in Java, Object-Oriented versus Functional Programming, Lambdas, Date and Time API

UNIT–III: Spring and Spring MVC

Spring Framework, Spring Architecture, Spring MVC, Interception, Chain of Resolvers, View Resolution, Multiple View Pages, Multiple Controllers, Model Interface, Request Param, Form Tag Library, Form Text Field, CRUD Example, File Upload in Spring MVC, Validation in Spring MVC, Validation with Regular Expression, Validation with Numbers

UNIT–IV: Hibernate

Hibernate Architecture, Installation and Configuration, Java Objects in Hibernate, Inheritance Mapping Collection Mapping, Mapping with Map, Hibernate Query Language, Caching, Spring Integration

UNIT-V:Web Services for the APIs

Setting up Environment, creating a New Project, Creating Models, Creating Data Access Object, Creating Controller, Develop Models with Hibernate, Installing MySQL, Create Database and Tables, Making DAO to Perform CRUD.

TEXT BOOKS:

1. Full Stack Java Development with Spring MVC, Hibernate, jQuery, and Bootstrap Mayur Ramgir, Wiley Learning Techology Series

REFERENCES:

1. FULL STACK WEB DEVELOPMENT GUIDE: Everything HTML 5, CSS 3, Bootstrap 4, JavaScript, jQuery, GIT, GITHUB, and Version Control for Modern Web Development by SAMMIE SMITH
2. Java Complete Reference 11th Edition by Herbert Schildt

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AUTONOMOUS)

2070518: MACHINE LEARNING

IV Year B.Tech. CSE I – Sem.

L	T	P	C
3	0	0	3

Prerequisites:

Course Objectives:

- To be able to formulate machine learning problems corresponding to different applications.
- To understand and analyze the basic concepts of machine learning and machine learning system design.
- To analyze the fundamentals of different types supervised learning methods and algorithms.
- To evaluate the various association analysis learning basis.
- To learn unsupervised learning algorithms and methods.
- To visualize reinforcement learning methods.

Course Outcomes: The students will be able to:

- Thoroughly understand and analyze the basic concepts of machine learning and machine learning system design.
- Understand analyze the fundamentals of different types supervised learning methods and algorithms.
- Evaluate the various association analysis learning basis.
- Learn unsupervised learning algorithms and methods.
- Visualize reinforcement learning methods

UNIT-I

Introduction to Machine Learning – Types of Learning - Well-posed learning problems, Designing a learning system, Perspectives and issues in machine learning Concept learning and the general to specific ordering – Introduction, A concept learning task, Concept learning as search, Find-S: finding a maximally specific hypothesis, Version spaces and the candidate elimination algorithm, Remarks on version spaces and candidate elimination, Inductive bias.

UNIT-II

Decision Tree learning – Introduction, Decision tree representation, Appropriate problems for decision tree learning, The basic decision tree learning algorithm, Hypothesis space search in decision tree learning, Inductive bias in decision tree learning, Issues in decision tree learning.

Artificial Neural Networks – Introduction, Neural network representation, Appropriate problems for neural network learning, Perceptions, Multilayer networks and the back propagation algorithm, Remarks on the back propagation algorithm, An illustrative example face recognition Advanced topics in artificial neural networks.

Evaluation Hypotheses – Motivation, Estimation hypothesis accuracy, Basics of sampling theory, A general approach for deriving confidence intervals, Difference in error of two hypotheses, Comparing learning algorithms.

UNIT–III

Bayesian learning – Introduction, Bayes theorem, Bayes theorem and concept learning,

Maximum likelihood and least squared error hypotheses, Maximum likelihood hypotheses for predicting probabilities, Minimum description length principle, Bayes optimal classifier, Gibs algorithm, Naïve Bayes classifier, An example learning to classify text, Bayesian belief networks The EM algorithm.

Computational learning theory – Introduction, Probability learning an approximately correct hypothesis, Sample complexity for Finite Hypothesis Space, Sample Complexity for infinite Hypothesis Spaces, The mistake bound model of learning.

Instance-Based Learning- Introduction, k -Nearest Neighbour Learning, Locally Weighted Regression, Radial Basis Functions, Case-Based Reasoning, Remarks on Lazy and Eager Learning.

Genetic Algorithms – Motivation, Genetic Algorithms, An illustrative Example, Hypothesis Space Search, Genetic Programming, Models of Evolution and Learning, Parallelizing Genetic Algorithms.

UNIT–IV

Learning Sets of Rules – Introduction, Sequential Covering Algorithms, Learning Rule Sets: Summary, Learning First Order Rules, Learning Sets of First Order Rules: FOIL, Induction as Inverted Deduction, Inverting Resolution.

Analytical Learning - Introduction, Learning with Perfect Domain Theories: Prolog-EBG Remarks on Explanation-Based Learning, Explanation-Based Learning of Search Control Knowledge.

UNIT-V

Combining Inductive and Analytical Learning – Motivation, Inductive-Analytical Approaches to Learning, Using Prior Knowledge to Initialize the Hypothesis, Using Prior Knowledge to Alter the Search Objective, Using Prior Knowledge to Augment Search Operators.

Reinforcement Learning – Introduction, The Learning Task, Q Learning, Non-Deterministic, Rewards and Actions, Temporal Difference Learning, Generalizing from Examples, Relationship to Dynamic Programming.

TEXT BOOKS:

1. Tom M. Mitchell, Machine Learning,McGraw-Hill, First Edition, 1997.
2. Marsland, S. Machine Learning: An Algorithmic Perspective, Second Edition. Boca Raton, FL: CRC Press, 2015.

REFERENCES:

1. Hsieh, W. W., Machine Learning Methods in the Environmental Sciences: Neural Networks and Kernels. Cambridge, England: Cambridge University Press, 2009.
2. Duda, R. O., Hart, P. E., & Stork, D. G., Pattern Classification. Hoboken, NJ: John Wiley & Sons, 2012.
3. Bishop, C. M., Neural Networks for Pattern Recognition. New York, NY: Oxford University Press, 1995.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AUTONOMOUS)

2070549: WIRELESS SENSOR NETWORKS (Professional Elective-III)

IV Year B.Tech. CSE I – Sem.

L	T	P	C
3	0	0	3

Prerequisites:

Course Objectives:

- To acquire the knowledge about various architectures and applications of Sensor Networks
- To understand issues, challenges and emerging technologies for wireless sensor networks
- To learn about various routing protocols and MAC Protocols
- To understand various data gathering and data dissemination methods
- To Study about design principals, node architectures, hardware and software required for implementation of wireless sensor networks.

Course Outcomes: The students will be able to:

- Analyze and compare various architectures of Wireless Sensor Networks
- Understand Design issues and challenges in wireless sensor networks
- Analyze and compare various data gathering and data dissemination methods.
- Design, Simulate and Compare the performance of various routing and MAC protocol

UNIT-I

Introduction to Sensor Networks, unique constraints and challenges, Advantage of Sensor Networks, Applications of Sensor Networks, Types of wireless sensor networks

UNIT-II

Mobile Ad-hoc Networks (MANETs) and Wireless Sensor Networks, Enabling technologies for Wireless Sensor Networks. Issues and challenges in wireless sensor networks

UNIT–III

Routing protocols, MAC protocols: Classification of MAC Protocols, S-MAC Protocol, B-MAC protocol, IEEE 802.15.4 standard and ZigBee

UNIT–IV

Dissemination protocol for large sensor network. Data dissemination, data gathering, and data fusion; Quality of a sensor network; Real-time traffic support and security protocols

UNIT-V

Design Principles for WSNs, Gateway Concepts Need for gateway, WSN to Internet Communication, and Internet to WSN Communication. Single-node architecture, Hardware components & design constraints, Operating systems and execution environments, introduction to TinyOS and nesC.

TEXT BOOKS:

1. Ad-Hoc Wireless Sensor Networks- C. Siva Ram Murthy, B. S. Manoj, Pearson
2. Principles of Wireless Networks – Kaveh Pah Laven and P. Krishna Murthy, 2002, PE

REFERENCES:

1. Wireless Digital Communications – Kamilo Feher, 1999, PHI.
2. Wireless Communications-Andrea Goldsmith, 2005 Cambridge University Press.
3. Mobile Cellular Communication – Gottapu Sasibhushana Rao, Pearson Education, 2012.
4. Wireless Communication and Networking – William Stallings, 2003, PHI.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT
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2070550:DESIGN THINKNG (Professional Elective-III)

IV Year B.Tech. CSE I – Sem.

L	T	P	C
3	0	0	3

Prerequisites: NIL

Course Objectives:

- To inculcate core design principles and applied creativity to develop innovative strategies that better connect engineers with their end users
- To build mindset leading to flow of creative ideas, validating those ideas and prioritizing the best ones
- To incorporate tools that designers need to take a design project from inspiration and insights to ideation and implementation
- To instill full scope of organizational innovation and strategy through knowledge, insight and analytical skills

Course Outcomes: The students will be able to:

- Use design thinking and hypothesis-driven innovation processes to develop viable solutions to user challenges.
- Use multiple brainstorming techniques to find innovative solutions.
- Develop and test a business model or business case to support the viability of the solution.
- Prototype a solution to a user challenge.
- Investigate the cultural, emotional, technological and business factors relevant to developing new product or service design concept

UNIT-I

Revisiting Design Thinking: Creative thinking as basis of innovation; Empathy process for deep understanding of challenge with practical ingenuity; Making sense of observations and insights; Defining a point of view and context Design thinking skills for Problem Discovery, Definition, and Ideation – Identifying problems in daily lives and in the world at large, Understanding user and customer perspectives, Thinking from the problem before thinking of a solution

UNIT-II

Ideation Process: Clear Articulation of problem statement with focus on latent needs; Brainstorming potential solutions; Ideation methods with case-study based approach to using Systematic Inventive Thinking (SIT) Methods such as Addition, Subtraction, Multiplication, Division and Task Unification Strategic Innovation for competition in future: Linear Innovation vs. non-linear innovation, Understanding and identifying weak signals, 3-box thinking, 3-Box framework and Box-3 ideation

UNIT–III

Designing Customer Experience: Understanding Innovation through Design Thinking; Enhancing Customer Experience; Service Design and Development Process and Case Studies; Service Experience Cycle and Case Studies.

UNIT IV

Sustainable Design Approaches: Concern for Environment and Sustainability in Design, Case Studies to understand good Design For Environment (DFE) Decisions; Design Considerations in the five stages of the Product Life Cycle.

UNIT V

Integrative Engineering Design Solutions: Identifying and resolving issues with working in diverse teams, Modularising, prototype building by different engineering disciplines within the team, validated learning with accessible metrics

Capstone Project (Interdisciplinary) Applying Design Thinking Principles and Methods for Ideation and Prototyping, Testing Solution, Refining Solution, and Taking the Solution to the Users

TEXT BOOKS:

1. 101 Design Methods: A Structured Approach for Driving Innovation in Your Organization, Vijay Kumar, John Wiley & Sons, ISBN: 978-1118083468, 2012.
2. Living with Complexity, Donald A Norman, MIT Press, ISBN: 978-0262528948, 2016.
3. Design Thinking for Entrepreneurs and Small Businesses: Putting the Power of Design to Work, Beverly Rudkin Ingle, A Press, ISBN: 978-1430261810, 2013

REFERENCES:

1. Emotionally Durable Design: Objects, Experiences and Empathy, Jonathan Chapman, 2nd Edition, Routledge, ISBN: 978-0415732161, 2015.
2. Innovation Design: How Any Organization Can Leverage Design Thinking to Produce Change, Drive New Ideas, and Deliver Meaningful Solutions, Thomas Lockwood, Edgar Papke, New Page Books, ISBN: 978-1632651167, 2017.
3. Design Thinking Business Analysis: Business Concept Mapping Applied, Thomas Frisendal, Springer, ISBN: 978-3642434822, 2012.
4. Chapter 1: A Simple Framework for Leading Innovation, The Three Box Solution, HBR Press, 2016.
5. Design a Better Business: New Tools, Skills and Mindset for Strategy and Innovation, Patrick Van Der Pijl, Justin Lokitz, Lisa Kay Solomon, Erik van der Pluijm, Maarten van Lieshout, Wiley, ISBN: 978-8126565085, 2016.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT
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2070551:CYBER FORENSICS (Professional Elective-III)

IV Year B.Tech. CSE I – Sem.

L	T	P	C
3	0	0	3

Prerequisites:

Course Objectives:

- To learn computer forensics
- To become familiar with forensics tools
- To learn to analyze and validate forensics data

Course Outcomes: The students will be able to:

- Understand the basics of computer forensics
- Apply a number of different computer forensic tools to a given scenario
- Analyze and validate forensics data
- Identify the vulnerabilities in a given network infrastructure
- Implement real-world hacking techniques to test system security

UNIT-IINTRODUCTION TO COMPUTER FORENSICS

Introduction to Traditional Computer Crime, Traditional problems associated with Computer Crime. Introduction to Identity Theft & Identity Fraud. Types of CF techniques - Incident and incident response methodology - Forensic duplication and investigation. Preparation for IR: Creating response tool kit and IR team. - Forensics Technology and Systems - Understanding Computer Investigation – Data Acquisition.

UNIT-IIEVIDENCE COLLECTION AND FORENSICS TOOLS

Processing Crime and Incident Scenes – Working with Windows and DOS Systems. Current Computer Forensics Tools: Software/ Hardware Tools.

UNIT–IIIANALYSIS AND VALIDATION

Validating Forensics Data – Data Hiding Techniques – Performing Remote Acquisition – Network Forensics – Email Investigations – Cell Phone and Mobile Devices Forensics

UNIT–IVETHICAL HACKING

Introduction to Ethical Hacking - Footprinting and Reconnaissance - Scanning Networks - Enumeration - System Hacking - Malware Threats - Sniffing

UNIT-VETHICAL HACKING IN WEB

Social Engineering - Denial of Service - Session Hijacking - Hacking Web servers - Hacking Web Applications – SQL Injection - Hacking Wireless Networks - Hacking Mobile Platforms.

TEXT BOOS:

1. Bill Nelson, Amelia Phillips, Frank Enfinger, Christopher Steuart, —Computer Forensics and Investigationsǁ, Cengage Learning, India Edition, 2016.
2. CEH official Certfied Ethical Hacking Review Guide, Wiley India Edition, 2015.

REFERENCES:

1. John R.Vacca, —Computer Forensicsǁ, Cengage Learning, 2005
2. MarjieT.Britz, —Computer Forensics and Cyber Crimeǁ: An Introductionǁ, 3rd Edition, Prentice Hall, 2013.
3. AnkitFadia — Ethical Hackingǁ Second Edition, Macmillan India Ltd, 2006
4. Kenneth C.Brancik —Insider Computer Fraudǁ Auerbach Publications Taylor & Francis Group–2008

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT
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2070552:NATURAL LANGUAGE PROSESSING (Professional Elective-III)

IV Year B.Tech. CSE I – Sem.

L	T	P	C
3	0	0	3

Prerequisites:

Course Objectives:

- To provide an overview of principles of Embedded System

Course Outcomes: The students will be able to:

- Understand the selection procedure of processors in the embedded domain.

UNIT-I

Finding the Structure of Words: Words and Their Components, Issues and Challenges, Morphological Models Finding the Structure of Documents: Introduction, Methods, Complexity of the Approaches, Performances of the Approaches

UNIT-II

Syntax Analysis: Parsing Natural Language, Treebanks: A Data-Driven Approach to Syntax, Representation of Syntactic Structure, Parsing Algorithms, Models for Ambiguity Resolution in Parsing, Multilingual Issues

UNIT–III

Semantic Analysis: Introduction, Meaning Representation, Lexical Semantics, Ambiguity, Word Sense Disambiguation.

UNIT–IV

Discourse Processing: Cohesion, Reference Resolution, Discourse Cohesion and Structure. **Language Modeling**: Introduction, N-Gram Models, Language Model Evaluation, Parameter Estimation, Language Model Adaptation, Types of Language Models, Language-Specific Modeling Problems.

UNIT-V

Natural Language Generation: Introduction, Architectures of NLG systems, Generation tasks and Representations, Applications of NLG.

Machine Translation: Introduction, Problems in Machine Translation, Characteristics of Indian Languages, Machine Translation approaches, Direct Machine Translation, Rule-Based Machine Translation, Corpus-based Machine Translation, Knowledge- based Machine Translation systems.

TEXT BOOKS:

1. “Natural Language Processing with Python” Analyzing text with Natural Language Toolkit, Steven Biord, Ewan Klein and Edward Loper.
2. Natural Language Processing and Information Retrieval: Tanvier Siddiqui, U.S. Tiwary.

REFERENCES:

1. Speech and Natural Language Processing - Daniel Jurafsky & James H Martin, Pearson Publications.

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2070553: DISTRIBUTED SYSTEMS (Professional Elective-IV)

IV Year B.Tech. CSE I – Sem.

L	T	P	C
3	0	0	3

Prerequisites:

Course Objectives:

- To understand what and why a distributed system
- To understand theoretical concepts, namely, virtual time, agreement and consensus protocols.
- To understand IPC, Group Communication & RPC Concepts.
- To understand the DFS and DSM Concepts.
- To understand the concepts of transaction in distributed environment and associated concepts, namely, concurrency control, deadlocks and error recovery.

Course Outcomes: The students will be able to:

- Able to comprehend and design a new distributed system with the desired features.
- Able to start literature survey leading to further research in any subarea.
- Able to develop new distributed applications.

UNIT-I

Characterization of Distributed Systems: Introduction, Examples of Distributed Systems Resource Sharing and the Web, Challenges. System Models: Introduction, Architectural Models, Fundamental Models.

UNIT-II

Time and Global States: Introduction, Clocks Events and Process States, Synchronizing Physical Clocks, Logical Time and Logical Clocks, Global States, Distributed Debugging. **Coordination and Agreement:** Introduction, Distributed Mutual Exclusion, Elections, Multicast Communication, Consensus and Related Problems.

UNIT–III

Inter Process Communication: Introduction, The API for the Internet Protocols, External Data Representation and Marshalling, Client-Server Communication, Group Communication, Case Study: IPC in UNIX. Distributed Objects and Remote Invocation: Introduction, Communication between Distributed Objects, Remote Procedure Call, Events and Notifications, Case Study: JAVA RMI.

UNIT–IV

Distributed File Systems: Introduction, File Service Architecture, Case Study 1: Sun Network File System, Case Study 2: The Andrew File System. Name Services: Introduction, Name Services and the Domain Name System, Directory Services, Case Study of the Global Name Services.

Distributed Shared Memory: Introduction, Design and Implementation Issues, Sequential Consistency and IVY case study, Release Consistency, Munin Case Study, Other Consistency Models.

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UNIT-V

Transactions and Concurrency Control: Introduction, Transactions, Nested Transactions, Locks, Optimistic Concurrency Control, Timestamp Ordering, Comparison of Methods for Concurrency Control. **Distributed Transactions:** Introduction, Flat and Nested Distributed Transactions, Atomic Commit Protocols, Concurrency Control in Distributed Transactions, Distributed Deadlocks, Transaction Recovery.

TEXT BOOKS:

1. Distributed Systems, Concepts and Design, George Coulouris, J Dollimore and Tim Kindberg, Pearson Education, 4th Edition, 2009.

REFERENCES:

1. Distributed Systems, Principles and Paradigms, Andrew S. Tanenbaum, Maarten Van Steen, 2nd Edition, PHI.
2. Distributed Systems, An Algorithm Approach, SukumarGhosh, Chapman & Hall/CRC, Taylor &Fransis Group, 2007.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT
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2070554: IMAGE PROCESSING (Professional Elective-IV)

IV Year B.Tech. CSE I – Sem.

L	T	P	C
3	0	0	3

Prerequisites:

Course Objectives:

- To impart adequate background knowledge about image processing and pattern recognition
- To demonstrate knowledge and skills required for image processing and pattern recognition tools
- To offer necessary knowledge to design and implements a prototype of an image processing and pattern recognition application.

Course Outcomes: The students will be able to:

- Apply pixel relationship and color model to images
- Outline the basics of filtering for image enhancement in the spatial and frequency domain
- Summarize the procedure for restoring degraded images and segmentation
- Do image representation and description.
- Perform the classification of patterns

UNIT-IFUNDAMENTAL OF DIGITAL IMAGE PROCESSING

Fundamental steps of image processing, components of an image processing of system. The image model and image acquisition, sampling and quantization, relationship between pixels, distance functions, Statistical and spatial operations, Intensity functions transformations, histogram processing, smoothing & sharpening – spatial filters. Frequency domain filters, homomorphic filtering, image filtering & restoration. Inverse and Weiner filtering, FIR Weiner filter.

UNIT II - IMAGE SEGMENTATION

Morphological and other area operations, basic morphological operations, opening and closing operations, dilation erosion, Hit or Miss transform, morphological algorithms, extension to grey scale images. Segmentation and Edge detection region operations, basic edge detection, second order detection, crack edge detection, gradient operators, compass and Laplace operators, edge linking and boundary detection, thresholding, region-based segmentation, segmentation by morphological watersheds.

UNIT III – IMAGE COMPRESSION AND SECURITY

Image compression: Types and requirements, statistical compression, spatial compression, contour coding, quantizing compression, image data compression-predictive technique, pixel coding, transfer coding theory, lossy and lossless predictive type coding, Digital Image Water marking.

UNIT IV – IMAGE REPRESENTATION AND DESCRIPTION

Representation and Description: Chain codes, Polygonal approximation, Signature Boundary Segments, Skelton's, Boundary Descriptors, Regional Descriptors, Relational Descriptors, Principal components for Description, Relational Descriptors

UNIT V - PATTERN RECOGNITION AND CLASSIFICATION

Pattern Recognition Fundamentals: Basic Concepts of pattern recognition, Fundamental problems in pattern recognition system, design concepts and methodologies, example of automatic pattern recognition systems, a simple automatic pattern recognition model

Pattern classification: Pattern classification by distance function: Measures of similarity, Clustering criteria, K-Means algorithm, Pattern classification by likelihood function: Pattern classification as a Statistical decision problem, Bayes classifier for normal patterns.

TEXT BOOKS:

1. Rafael C. Gonzalez and Richard E. Woods, Digital Image Processing, Third edition, Pearson Education, 2017

REFERENCES:

2. Anil K. Jain, Fundamentals of digital image processing, 1st Edition, Prentice Hall of India, 200
3. Richard Duda, Hart and David Strok, Pattern classification, 2nd Edition, John Wiley publishers, 2001.
4. S.Jayaraman, S. Esakkirajan and T.Veerakumar, Digital Image Processing, 1st Edition, TMH, 2016

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AUTONOMOUS)

2070555: SYMANTIC WEB (Professional Elective-IV)

IV Year B.Tech. CSE I – Sem.

L	T	P	C
3	0	0	3

Prerequisites:

Course Objectives:

- To learn Web Intelligence
- To learn Knowledge Representation for the Semantic Web
- To learn Ontology Engineering
- To learn Semantic Web Applications, Services and Technology
- To learn Social Network Analysis and semantic web

Course Outcomes: The students will be able to:

- Understand the basics of Semantic Web and Social Networks.
- Understand and knowledge representation for the semantic web.
- Create ontology.
- Develop social-semantic applications.
- Build blogs and social networks.

UNIT I: Web Intelligence

Thinking and Intelligent Web Applications, The Information Age ,The World Wide Web, Limitations of Today's 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: Knowledge Representation for the Semantic Web

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.

UNIT III: Ontology Engineering

Ontology Engineering, Constructing Ontology, Ontology Development Tools, Ontology Methods, Ontology Sharing and Merging, Ontology Libraries and Ontology Mapping, Logic, Rule and Inference Engines.

UNIT IV: Semantic Web Applications, Services and Technology

Semantic Web applications and services, Semantic Search, e-learning, Semantic Bioinformatics, Knowledge Base ,XML Based Web Services, Creating an OWL-S Ontology for Web Services, Semantic Search Technology, Web Search Agents and Semantic Methods.

UNIT V: semantic web and Social Network Analysis

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.

TEXT BOOKS:

1. Berners Lee, Godel and Turing, Thinking on the Web, Wiley inter science, 2008.
2. Peter Mika, Social Networks and the Semantic Web, Springer, 2007.

REFERENCES:

1. J. Davies, R. Studer, P. Warren, Semantic Web Technologies, Trends and Research in Ontology Based Systems, John Wiley & Sons. 2006
2. Heiner Stuckenschmidt, Frank Van Harmelen, Information sharing on the semantic Web, Springer Publications. 2005 Edition.
3. T. Segaran, C. Evans, J. Taylor, Programming the Semantic Web, O'Reilly, SPD. 2009

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AUTONOMOUS)

2070556: DATA ANALYTICS (Professional Elective-IV)

IV Year B.Tech. CSE I – Sem.

L	T	P	C
3	0	0	3

Prerequisites:

Course Objectives:

- To learn techniques adopted to Preprocess Data.
- To learn and analyze data using intelligent techniques.
- To Understand the Predictive Models for Real World Data.

Course Outcomes: The students will be able to:

- Know the concepts and techniques to Preprocess Data.
- Analyze Real time data using Real world Datasets.
- Get Experience on Markov Chains.
- Acquire knowledge on the Basics of Neural Networks.
- Explore the essentials of Fuzzy set and Systems in the Analytics Domain.

UNIT-I

Introduction to Data Preprocessing: Data Cleaning, Data Integration and Transformation, Data Reduction, Discretization and Concept Hierarchy Generation.

Data Characterization and Comparison: Data Generalization and Summarization-Based Characterization ,Analytical Characterization, Mining Class Comparison, Mining Descriptive Statistical Measures in Large Databases, Discussion.

UNIT-II

Introduction to Simple Linear Regression, Model Building, Estimation of Parameters using Ordinary Least Squares.

Introduction to Logistic Regression, Model Building, Interpretation of Logistic Regression Parameters.

UNIT-III

Markov Chains, Estimating Properties of Markov Chains, Ranking the Web by simulating a Markov Chain, Hidden Markov Models and Dynamic Programming.

UNIT-IV

Introduction to Artificial Intelligence Systems: Neural Networks, Fuzzy Logic, Genetic Algorithms.

Fundamentals of Neural Networks: Basic Concepts of Neural Networks, Human Brain, Mode of an Artificial Neuron, Neural Network Architectures, Characteristics of Neural Networks, Learning Methods, Taxonomy of Neural Network Architectures, History of Neural Network Research, Early Neural Network Architectures.

Back propagation Networks: Architecture of a Backpropagation Network.

UNIT-V

Fuzzy set Theory: Fuzzy versus Crisp, Crisp sets, Fuzzy sets, Crisp Relations, Fuzzy Relations.

Fuzzy Systems: Crisp Logic, Predicate Logic, Fuzzy Logic, Fuzzy Rule Based System.

TEXT BOOKS:

1. Data Mining: Concepts and Techniques, Jiawei Han, Micheline Kamber, Simon Fraser University, Morgan Kaufmann Publishers.
2. Business Analytics: The Science of Data-Driven Decision Making, U.Dinesh Kumar.
3. Probability and Statistics for Computer Science, David Forsyth, Springer.
4. Neural Networks, Fuzzy Logic, and Genetic Algorithms, Synthesis and Applications, S.Rajasekaran, G.A.Vijayalakshmi Pai, PHI Learning Private Limited.

REFERENCES:

1. Probability and Statistics for Computer Scientists, Michael baron, Chapman & Hall/CRC, First Edition, Taylor& Francis Group.
2. Neural Networks: A Comprehensive Foundation, Simon Haykin, Second Education, Pearson Education.
3. Introduction to Fuzzy Logic, Shinghal R,PHI.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

2070583: FULL STACK DEVELOPMENT LAB

IV Year B.Tech. CSE I – Sem.

L	T	P	C
0	0	3	1.5

Prerequisites:

Course Objectives:

- To Introduce the implementation of database connectivity using java server pages.
- To Introduce the implementation of spring boot backend processing.
- To Introduce the hibernate for database connectivity

Course Outcomes: The students will be able to:

- Able to develop web / Enterprise applications using spring boot and front-end technologies.
- Able to design efficient database management using hibernates
- Design efficient Database Management using hibernates.

List of Experiments :

1. Install and Configure Eclipse/Netbeans IDE (J2EE) and run simple java program for printing 1 to 10 even numbers.
2. Install and configure Mysql or related IDE.
3. Write a java program for bank application including with the following services like balance enquiry, withdraw, deposit, pinchange, aadhar update, take different classes for every service.
4. Create a HTML web page for the bank application display login, account details, profile, balanceenquiry, withdraw, deposit , contactus and logout pages.
5. Apply validations for bank application web pages using java script and apply required CSS.
6. Install and configure servers (open source) Apache tomcat or related spring boot server.
7. Install and configure databases using Database drivers or hibernates.
8. Use the following tables in database i. Customer ii. Bank iii. Balance iv. Withdraw and Deposit v. PinChange
9. Write a java program to Connect with database with the server using JDBC drivers.
10. Write a java program to Connect with database with the server using hibernate libraries/sources
11. Write a java server program to add or insert data into created table.
12. Write a java server program to delete the data from the Customer table.
13. Write a java program to perform CRUD operations using spring or spring boot. (Update, Delete)

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT
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2070584: MACHINE LEARNING LAB

IV Year B.Tech. CSE I – Sem.

L	T	P	C
0	0	3	1.5

Prerequisites: Data Structures, Probability and Statistics, Python Programming

Course Objectives:

- To get an overview of the various Machine Learning Techniques and can able to Demonstrate them using Python.

Course Outcomes: The students will be able to:

- Understand complexity of Machine Learning algorithms and their limitations
- Understand modern notions in data analysis-oriented computing;
- Confidently applying common Machine Learning algorithms in practice and implementing their own;
- Apply experiments in Machine Learning using real-world data.

List of Experiments

1. The probability that it is Friday and that a student is absent is 3 %. Since there are 5 school days in a week, the probability that it is Friday is 20 %. What is theprobability that a student is absent given that today is Friday? Apply Baye's rule in python to get the result.(Ans: 15%)
2. Extract the data from database using python
3. Implement Find-S algorithm using python.
4. Implement Candidate-Elimination algorithm using python.
5. Implement Decision-Tree Learning algorithm using python.
6. Implement k-nearest neighbours classification using python
7. Given the following data, which specify classifications for nine combinations of VAR1 and VAR2 predict a classification for a case where VAR1=0.906 and VAR2=0.606, using the result k- means clustering with 3 means (i.e., 3 centroids)

VAR1	VAR2	CLASS
1.713	1.586	0
0.180	1.786	1
0.353	1.240	1
0.940	1.566	0
1.486	0.759	1
1.266	1.106	0
1.540	0.419	1
0.459	1.799	1
0.773	0.186	1

8. The following training examples map descriptions of individuals onto high, medium and low credit-worthiness.

medium skiing design single twenties no -> highRisk
high golf trading married forties yes -> lowRisk
low speedway transport married thirties yes -> medRisk
medium football banking single thirties yes -> lowRisk
high flying media married fifties yes -> highRisk
low football security single twenties no -> medRisk
medium golf media single thirties yes -> medRisk
medium golf transport married forties yes -> lowRisk
high skiing banking single thirties yes -> highRisk

low golf unemployed married forties yes -> highRisk

Input attributes are (from left to right) income, recreation, job, status, age-group, home-owner. Find the unconditional probability of `golf' and the conditional probability of `single' given `medRisk' in the dataset?

9. Implement linear regression using python.
10. Implement Naïve Bayes theorem to classify the English text
11. Implement an algorithm to demonstrate the significance of genetic algorithm
12. Implement the finite words classification system using Back-propagation algorithm

TEXT BOOKS:

1. Machine Learning – Tom M. Mitchell, - MGH

REFERENCES:

1. Machine Learning: An Algorithmic Perspective, Stephen Marshland, Taylor & Francis

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AUTONOMOUS)

2080557: ARTIFICIAL NEURAL NETWORKS (Professional Elective-V)

IV Year B.Tech. CSE II – Sem.

L	T	P	C
3	0	0	3

Prerequisites: Nil

Course Objectives:

- To understand the biological neural network and to model equivalent neuron models.
- To understand the architecture, learning algorithms
- To know the issues of various feed forward and feedback neural networks.
- To explore the Neuro dynamic models for various problems.

Course Outcomes: The students will be able to:

- Explore the similarity of Biological networks and Neural networks
- Perform the training of neural networks using various learning rules.
- Demonstrate the concepts of forward and backward propagations.
- Construct the Hopfield models.

UNIT-I

Introduction: A Neural Network, Human Brain, Models of a Neuron, Neural Networks viewed as Directed Graphs, Network Architectures, Knowledge Representation, Artificial Intelligence and **Neural Networks Learning Process:** Error Correction Learning, Memory Based Learning, Hebbian Learning, Competitive, Boltzmann Learning, Credit Assignment Problem, Memory, Adaption, Statistical Nature of the Learning Process

UNIT-II

Single Layer Perceptrons: Adaptive Filtering Problem, Unconstrained Organization Techniques, Linear Least Square Filters, Least Mean Square Algorithm, Learning Curves, Learning Rate Annealing Techniques, Perceptron –Convergence Theorem, Relation Between Perceptron and **Bayes Classifier for a Gaussian Environment Multilayer Perceptron:** Back Propagation Algorithm XOR Problem, Heuristics, Output Representation and Decision Rule, Computer Experiment, Feature Detection

UNIT–III

Back Propagation: Back Propagation and Differentiation, Hessian Matrix, Generalization, Cross Validation, Network Pruning Techniques, Virtues and Limitations of Back Propagation Learning, Accelerated Convergence, Supervised Learning

UNIT–IV

Self-Organization Maps (SOM): Two Basic Feature Mapping Models, Self-Organization Map, SOM Algorithm, Properties of Feature Map, Computer Simulations, Learning Vector Quantization, Adaptive Patter Classification

UNIT-V

Neuro Dynamics: Dynamical Systems, Stability of Equilibrium States, Attractors, Neuro Dynamical Manipulation of Attractors as a Recurrent Network Paradigm **Hopfield Models** – Hopfield Models, restricted boltzmen machine.

TEXTBOOKS:

1. Simon S Haykin - Neural Networks a Comprehensive Foundations, PHI
2. Jacek M. Zurada - Introduction to Artificial Neural Systems, JAICO Publishing House, 2006.

REFERENCES:

1. Li Min Fu - Neural Networks in Computer Intelligence, TMH 2003
2. James A Freeman David M S Kapura - Neural Networks, Pearson, 2004.
3. B. Vegnanarayana -Artificial Neural Networks, Prentice Hall of India P Ltd, 2005

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT
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2080558: DEEP LEARNING(Professional Elective-V)

IV Year B.Tech. CSE II – Sem.

L	T	P	C
3	0	0	3

Course Objectives:

- Know the Characteristics and principles of Deep neural networks.
- Familiar with learning in CNN and Modeling CSV data
- learns deep learning models and Architectures.
- Model building through different learning techniques .
- Know the Vectorization Deep models and Feature Engineering.

Course Outcomes: The students will be able to:

- After this course, Student will be able to know how to use Deep networks for solving different problems related to data visualization.
- Formalize tasks in terms of Computational Complexity via neural networks and Deep Learning architectures.
- Design deep learning models to solve data-rich tasks
- Build datasets, tune and train deep learning models with deep learning libraries
- Understand the inner mechanisms of Deep learning neural techniques during training process and Vectorization

UNIT-I Foundations of Neural Networks and Deep Learning

Neural Networks, activation function, loss function, hyper parameters, Definition-Deep learning, Architectural Principles, Building blocks of Deep networks, RBMs, Auto encoders.

UNIT-II Architectures of deep Networks

Unsupervised pre-trained Networks, Deep Belief Networks, Generative Adversial Networks, CNN, Architecture, Input layer, Convolution Layers, Recurrent Neural networks, Recursive Neural Networks, Modeling CSV data with Multilayer Perceptron, Modeling Handwritten images using CNN.

UNIT–III Concepts of Tuning Deep Networks

An Intuition for Building Deep Networks, Matching Input data and Network Architectures, Relating Model Goal and Output layers, Weight Initialization, Loss Function, Learning rates and Recommendations, Optimization methods, How to use Regularization.

UNIT–IV Tuning Specific Deep Network Architectures

Common Convolutional Architectural Patterns, Configuring Convolutional Layers, Configuring Pooling Layers, Transfer Learning, Network Input Data and Input Layers, Output Layers and RNN Output Layer, Training the Network, Padding and Masking.

UNIT-V Vectorization:

Introduction to vectorization, Why do we need to Vectorize Data, Feature Engineering and Normalization techniques, Vectorizing Image data, Image data Representation, Working with sequential data, Working with Text in Vectorization.

TEXTBOOKS:

1. Deep Learning-A Practitioners approach, Josh Patterson and Adam Gibson, O'reilly 2017
2. Fundamentals of Deep learning", Nikhil Budum, Nicholas Locascio, 2017.

REFERENCES:

1. Introduction to Artificial Neural Systems, Jacek M.Zurada, PWS Publishing Company,
2. Deep Learning and Neural Networks, Jeff Heaton, Heaton Research, Inc., 2015.
3. Learning Deep Architectures for AI", Foundations and Trends® in Machine Learning,

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT
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2080559: VIRTUAL REALITY(Professional Elective-V)

IV Year B.Tech. CSE II – Sem.

L	T	P	C
3	0	0	3

Course Objectives:

- To understand Virtual reality concepts
- To Demonstrate understanding of the classic components of a VR system, Human Factors, Applications
- Understanding how to do Modeling, model management, VR programming.

Course Outcomes: The students will be able to:

- Know the fundamentals of Virtual Reality
- Understanding the components of VR
- Can exhibit proficiency with Modeling, types, Model management
- Applications of VR and their Issues to be concentrated.
- Understand the Java 3D

UNIT I - INTRODUCTION

The three I's of virtual reality, commercial VR technology and the five classic components of a VR system.

UNIT II - INPUT OUTPUT DEVICES

Trackers, Navigation, and Gesture Interfaces – Three dimensional position trackers, navigation and manipulation, interfaces and gesture interfaces. Graphics displays, sound displays and haptic feedback.

UNIT III - MODELING

Geometric modeling, kinematics modeling, physical modeling, behavior modeling, model management.

UNIT IV - HUMAN FACTORS AND APPLICATIONS

Methodology and terminology, user performance studies, VR health and safety issues. Medical applications, military applications, robotics applications

UNIT V - VR PROGRAMMING

Introducing Java 3D, loading and manipulating external models, using a lathe to make shapes. 3D Sprites, animated 3D sprites, particle systems

TEXTBOOKS:

1. Gregory C. Burdea and Philippe Coiffet, Virtual Reality Technology, John Wiley and Sons, Inc (Wiley Inter Science), Second Edition, 2006
2. Andrew Davison, Killer Game Programming in Java, Oreilly-SPD, 2005.

REFERENCES:

1. William R.Sherman, Alan Craig, Understanding Virtual Reality, interface, Application and

Design, Morgan Kaufmann, 2008

2. Bill Fleming, 3D Modeling and surfacing, 1st Edition, Morgan Kauffman, 2019.
3. David H.Eberly, 3D Game Engine Design, 1st Edition, Elsevier, 2006.

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2080560: BLOCK CHAIN TECHNOLOGY(Professional Elective-V)

IV Year B.Tech. CSE II – Sem.

L	T	P	C
3	0	0	3

Course Objectives:

- This course aims to provide conceptual understanding of the function of Blockchains as a method of securing distributed ledgers, how consensus on their contents is achieved, and the new applications that they enable.
- It covers the technological underpinnings of blockchain operations as distributed data structures and decision making systems, their functionality and different architecture types.
- It provides a critical evaluation of existing “smart contract” capabilities and platforms, and examines their future directions, opportunities, risks and challenges.

Course Outcomes: The students will be able to:

- Understand the structure of a block chain and why/when it is better than a simple distributed database
- Evaluate the setting where a block chain based structure may be applied, its potential and its limitations
- Understand what constitutes a “smart” contract, what are its legal implications and what it can and cannot do, now and in the near future
- Attain awareness of the new challenges that exist in monetizing businesses around block chains and smart contracts.
- Describe and understand the differences between the most prominent block chain structures and permissioned block chain service providers, as well as rising alliances and networks

UNIT I - INTRODUCTION TO BLOCKCHAIN

Introduction to Block chain: The growth of Block chain technology, Distributed systems, The history of Block chain and Bitcoin, Types of Block chain, Consensus, CAP theorem and Block chain Decentralization: Decentralization using block chain, Methods of decentralization, Routes to decentralization, Block chain and full ecosystem decentralization, Smart contracts, Decentralized Organizations, Platforms for decentralization.

UNIT II – BITCOINS

Bit coins: Introducing Bit coin, Digital keys and addresses, Transactions, Block chain: The structure of a block, Mining

Bit coin Network and Payments: The Bit coin network, Wallets, Bit coin payments: Innovation in Bit coin, Bit coin Clients and APIs: Bit coin installation, Alternative Coins, Bit coin limitations.

UNIT III - SMART CONTRACTS

Smart Contracts: History, Definition, Ricardian contracts, Introduction to Ethereum, Components of the Ethereum ecosystem, Further Ethereum, Programming languages.

UNIT IV - ETHEREUM DEVELOPMENT ENVIRONMENT

Ethereum Development Environment: Test networks, Setting up a private net, Starting up the

private network, Development Tools and Frameworks, Compilers, Solidity compiler (solc), Installation on Linux, Installation on macOS, Integrated Development Environments (IDEs)

Solidity language: Solidity language, Types, Value types, Literals, Enums, Function types, Reference types, Global variables, Control structures, Layout of a Solidity

UNIT V - HYPERLEDGER

Hyperledger: Projects under Hyperledger, Hyperledger as a protocol,The reference architecture, Requirements and design goals of Hyperledger Fabric, Hyperledger Fabric, Membership services, Blockchain services, Consensus services, Distributed ledger

Beyond Cryptocurrency: applications of blockchain in cyber security, integrity of information, E-Governance and other contract enforcement mechanisms, Limitations of blockchain as a technology, and myths vs. reality of blockchain technology.

TEXTBOOKS:

1. Imran Bashir, Mastering Blockchain, Second Edition, Packt Publishing, March 2018.
2. Andreas M. Antonopoulos, Mastering Bitcoin Programming the Open Blockchain, 2nd Edition, "O'Reilly Media, Inc.", June,2017

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT
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2080561: ROBOTICS (Professional Elective-VI)

IV Year B.Tech. CSE II – Sem.	L	T	P	C
	3	0	0	3

Prerequisites: Mathematics-I and Probability & Statistics

Course Objectives:

- To understand the Fundamental Concepts Related To sources, shadows and shading.
- To understand the Geometry of Multiple Views.

Course Outcomes: The students will be able to**:**

- Implement fundamental image processing techniques required for computer vision.
- Implement boundary tracking techniques.
- Apply chain codes and other region descriptors, Hough Transform for line, circle, and ellipse detections.
- Apply 3D vision techniques and Implement motion related techniques.
- Develop applications using computer vision techniques.

UNIT-I

CAMERAS: Pinhole Cameras.

Radiometry – Measuring Light: Light in Space, Light Surfaces, Important Special Cases.

Sources, Shadows, And Shading: Qualitative Radiometry, Sources and Their Effects, Local Shading

Models, Application: Photometric Stereo, Interreflections: Global Shading Models.

Color: The Physics of Color, Human Color Perception, Representing Color, A Model for Image Color, Surface Color from Image Color.

UNIT-II

Linear Filters: Linear Filters and Convolution, Shift Invariant Linear Systems, Spatial Frequency and Fourier Transforms, Sampling and Aliasing, Filters as Templates.

Edge Detection: Noise, Estimating Derivatives, Detecting Edges.

Texture: Representing Texture, Analysis (and Synthesis) Using Oriented Pyramids, Application: Synthesis by Sampling Local Models, Shape from Texture

UNIT–III

The Geometry of Multiple Views: Two Views

Stereopsis: Reconstruction, Human Stereposis, Binocular Fusion, Using More Cameras

Segmentation by Clustering: What Is Segmentation? Human Vision: Grouping and Getstalt, Applications: Shot Boundary Detection and Background Subtraction, Image Segmentation by Clustering Pixels, Segmentation by Graph-Theoretic Clustering

UNIT–IV

Segmentation by Fitting a Model: The Hough Transform, Fitting Lines, Fitting Curves, Fitting as a Probabilistic Inference Problem, Robustness

Segmentation and Fitting Using Probabilistic Methods: Missing Data Problems, Fitting, and Segmentation, The EM Algorithm in Practice.

Tracking With Linear Dynamic Models: Tracking as an Abstract Inference Problem, Linear Dynamic

Models, Kalman Filtering, Data Association, Applications and Examples

UNIT-V

Geometric Camera Models: Elements of Analytical Euclidean Geometry, Camera Parameters and the Perspective Projection, Affine Cameras and Affine Projection Equations.

Geometric Camera Calibration: Least-Squares Parameter Estimation, A Linear Approach to Camera Calibration, Taking Radial Distortion into Account, Analytical Photogrammetry, An Application: Mobile Robot Localization.

Model-Based Vision: Initial Assumptions, Obtaining Hypotheses by Pose Consistency, Obtaining Hypotheses by pose Clustering, Obtaining Hypotheses Using Invariants, Verification, Application: Registration In Medical Imaging Systems, Curved Surfaces and Alignment.

TEXTBOOKS:

1. David A. Forsyth and Jean Ponce: Computer Vision – A Modern Approach, PHI Learning (Indian Edition), 2009.

REFERENCES:

1. E. R. Davies: Computer and Machine Vision – Theory, Algorithms and Practicalities, Elsevier (Academic Press), 4th edition, 2013.
2. R. C. Gonzalez and R. E. Woods “Digital Image Processing” Addison Wesley 2008.
3. Richard Szeliski “Computer Vision: Algorithms and Applications” Springer-Verlag London Limited 2011.

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2080562: SOFT COMPUTING (Professional Elective-VI)

IV Year B.Tech. CSE II – Sem.

L	T	P	C
3	0	0	3

Prerequisites:

- A course on “Design and Analysis of Algorithms”.

Course Objectives:

- To give students knowledge of soft computing theories fundamentals, i.e. Fundamentals of artificial Intelligence and neural networks
- To understand the working of fuzzy sets and fuzzy logic.
- To provide the students the fundamentals of genetic algorithms, and to make them to apply to the real world complex environment.
- To solve optimization problems and addressing the large scale classification problems.
- To understand the different searching techniques and apply to the real world problems.

Course Outcomes: The students will be able to:

- Comprehend AI problems and apply various problems solving techniques like Hill climbing, Best first search, Means End Analysis.
- Explain Supervised learning networks and their training algorithms
- Understand Unsupervised learning networks, their specific features and their applications
- Comprehend fuzzy sets, their operations and their applications
- Appreciate and apply fuzzy arithmetic and fuzzy logic control systems

UNITI - AI Problems and Search

AI problems, Techniques to solve AI Problems, Problem Spaces and Search: Heuristic Search Techniques- Generate and Test, Hill Climbing, Best First Search, Problem reduction, Constraint Satisfaction, Means-Ends Analysis. Approaches for Knowledge Representation, Propositional Logic and Predicate Logic.

UNIT II - Artificial Neural Networks

Introduction, Basic models of ANN, important terminologies, Supervised Learning Networks: Perceptron Networks, Adaptive Linear Neuron, Back propagation Network, Associative Memory Networks, Training Algorithms for pattern association, BAM and Hopfield Networks.

UNITIII - Unsupervised Learning Network

Introduction, Fixed Weight Competitive Nets, Maxnet, Hamming Network, Kohonen Self-Organizing Feature Maps, Learning Vector Quantization, Counter Propagation Networks, Adaptive Resonance Theory Networks.

UNITIV – Classical Sets and Fuzzy Sets

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 Features, Fuzzification, membership value assignments, Defuzzification.

UNIT V - Fuzzy Arithmetic

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.

TEXTBOOKS:

1. S N Sivanandam, S N Deepa, Principles of Soft Computing, 2nd Edition, Wiley India, 2007.
2. Fakhreddine 0 Karray, Soft Computing and Intelligent System Design, 3rd Edition, Pearson Edition,2004

REFERENCES:

1. Amit Konar, Artificial Intelligence and Soft Computing-Behavioural and Cognitive Modelling of the Human Brain, 3rd Edition, CRC press, Taylor and Francis Group, 2011.
2. Elaine Rich and Kevin Knight, Artificial Intelligence, 2nd Edition TMH, 1991,rp2008.
3. Patric Henry Winston, Artificial Intelligence,3rdEdition, Pearson Education, 2012.
4. Hung T Nguyen and Elbert A Walker, A first course in Fuzzy Logic, 3rd Edition, CRC Press Taylor and Francis Group, 2008.
5. N.P.Padhy, Artificial Intelligence and Intelligent Systems, 2nd Edition, Oxford University Press, 2013.

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2080563-WEB SERVICES (Professional Elective-VI)

IV Year B.Tech. CSE II – Sem.

L	T	P	C
3	0	0	3

Course Objectives:

- To Understand Web Services and implementation model for SOA
- To Understand the SOA, its Principles and Benefits
- To Understand XML concepts
- To Understand paradigms needed for testing Web Services
- To explore different Test Strategies for SOA-based applications
- To implement functional testing, compliance testing and load testing of Web Services
- To Identify bug-finding ideas in testing Web Services

Course Outcomes: The students will be able to:

- Demonstrate the knowledge of cryptography and network security concepts and applications.
- Understand and apply the concepts of symmetric encryption.
- Identify and investigate of Cryptographic Hash Functions.
- Understand the concepts of email security and PGP.
- Understand and apply web security mechanisms.

UNIT-I

Evolution and Emergence of Web Services - Evolution of distributed computing, Core distributed computing technologies – client/server, CORBA, JAVA RMI, Microsoft DCOM, MOM, Challenges in Distributed Computing, role of J2EE and XML in distributed computing, emergence of Web Services and Service Oriented Architecture (SOA). Introduction to Web Services – The definition of web services, basic operational model of web services, tools and technologies enabling web services, benefits and challenges of using web services.

UNIT-II

Web Services Architecture – Web services Architecture and its characteristics, core building blocks of web services, standards and technologies available for implementing web services, web services communication, basic steps of implementing web services. Describing Web Services – WSDL introduction, nonfunctional service description, WSDL1.1 Vs WSDL 2.0, WSDL document, WSDL elements, WSDL binding, WSDL tools, WSDL port type, limitations of WSDL.

UNIT–III

Brief Over View of XML – XML Document structure, XML namespaces, Defining structure in XML documents, Reuse of XML schemes, Document navigation and transformation. SOAP: Simple Object Access Protocol, Inter-application communication and wire protocols, SOAP as a messaging protocol, Structure of a SOAP message, SOAP envelope, Encoding, Service Oriented Architectures, SOA revisited, Service roles in a SOA, Reliable messaging, The enterprise Service Bus, SOA Development Lifecycle, SOAP HTTP binding, SOAP communication model, Error handling in SOAP.

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UNIT–IV

Registering and Discovering Services: The role of service registries, Service discovery, Universal Description, Discovery, and Integration, UDDI Architecture, UDDI Data Model, Interfaces, UDDI Implementation, UDDI with WSDL, UDDI specification, Service Addressing and Notification, Referencing and addressing Web Services, Web Services Notification.

UNIT-V

SOA and web services security considerations, Network-level security mechanisms, Application-level security topologies, XML security standards, Semantics and Web Services, The semantic interoperability problem, The role of metadata, Service metadata, Overview of .NET and J2EE, SOA and Web Service Management, Managing Distributed System, Enterprise management Framework, Standard distributed management frameworks, Web service management, Richer schema languages, WS-Metadata Exchange.

TEXTBOOKS:

1. Web Services & SOA Principles and Technology, Second Edition, Michael P. Papazoglou.
2. Developing Java Web Services, R. Nagappan, R. Skoczylas, R.P. Sriganesh, Wiley India.
3. Developing Enterprise Web Services, S. Chatterjee, J. Webber, Pearson Education.

REFERENCES:

1. XML, Web Services, and the Data Revolution, F.P. Coyle, Pearson Education.
2. Building web Services with Java, 2nd Edition, S. Graham and others, Pearson Education.
3. Java Web Services, D.A. Chappell & T. Jewell, O'Reilly, SPD.
4. McGovern, et al., "Java web Services Architecture", Morgan Kaufmann Publishers, 2005.
5. J2EE Web Services, Richard Monson-Haefel, Pearson Education.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT
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2080564: VIDEO PROCESSING (Professional Elective-VI)

IV Year B.Tech. CSE II – Sem.

L	T	P	C
3	0	0	3

Prerequisites:

- A course on “Signals & Systems”.
- A course on “Digital signal Processing, Digital Image Processing”.

Course Objectives:

- This course introduces the fundamental knowledge about the processing of digital video signal in its time and frequency domain analysis. It also helps to understand the basic compression and coding techniques required for the transmission of video signal.

Course Outcomes: The students will be able to:

- Identify the importance of digital video applications in today’s world
- Analyze how motion estimation algorithms work in video processing.
- Distinguish the various and recent compression standards that exist.
- Analysis of video communication and types of errors.

UNIT-I Video Formation, Sampling and Fourier analysis

Video Capture and Display, Analog Video Raster, Progressive vs Interlaced scans, Digital Video – notation and formats Fourier Analysis of Video Signals, Spatial and Temporal Frequencies. Sampling Video in Two Dimensions: Progressive versus Interlaced Scans.

UNIT-II Two-Dimensional Motion Estimation

Optical Flow, Optical Flow Equation and Ambiguity in Motion Estimation, Motion Estimation Criteria. Block-Matching Algorithm, Exhaustive and fast algorithms, Multiresolution Motion Estimation, Application of Motion Estimation in Video Coding.

UNIT–III Waveform-Based Video Coding

Block-Based Transform Coding, The Discrete Cosine Transform, DCT-Based Image Coders and the JPEG Standard. Predictive Coding, Spatial-Domain linear Prediction, Motion-Compensated Temporal Prediction.

UNIT–IV Video Compression Standards

Basic compression techniques, Video compression standards (H.261 and H.263-Overview,highlights). MPEG1, MPEG2, MPEG4 profiles and features.

UNIT-V

Error control in video communications ,Digital video system and its applications

TEXTBOOKS:

1. “Digital Video Processing,” by Nurat Tekalp, Prentice Hall Signal Processing Series, 1995.