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 – Information Technology

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*

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

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

2030503: DATABASE MANAGEMENT SYSTEMS

II Year B.Tech. IT 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.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

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. IT 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

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

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)

2030504:DIGITAL LOGIC DESIGN

II Year B.Tech. IT 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,

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

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. IT 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:ExceptionsinPython,DetectingandHandlingExceptions,ContextManagement,Exceptio nsasStrings,RaisingExceptions,Assertions,StandardExceptions,CreatingExceptions,Exceptionsan d the sys Module.

UNIT-IV

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

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

Formal Arguments, Variable- Length Arguments, Functional Programming.
Modules –Modules and Files, Name spaces, Importing Modules, Module Built-in Functions, Packages, Related modules.

UNIT– V

Multithreaded 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)

2030004 :PROBABILITY AND STATISTICS

II Year B.Tech. IT 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 (ᴦ known)-central limit theorem, t-distribution, sampling distribution of means (ᴦ 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

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

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)

2030573: DATABASE MANAGEMENT SYSTEMS LAB

II Year B.Tech. IT 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.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

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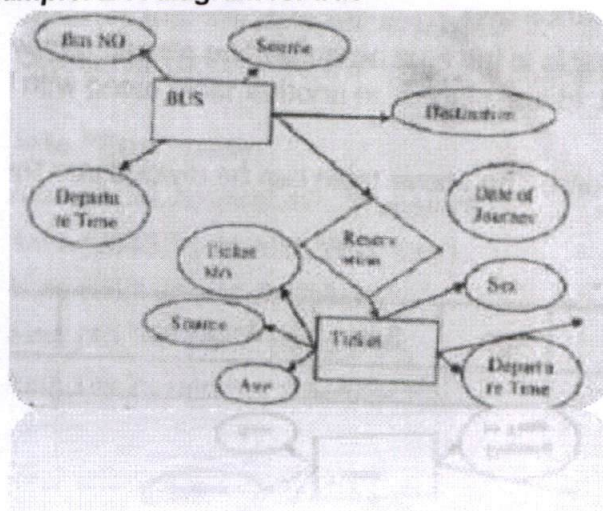
Note: The students is required to submit a document by drawing the E-R Diagram.

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

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

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

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

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.TicketNO> 60 THEN
SET New.TicketNO = TicketNo; ELSE
SET New.TicketNo = 0; END IF;
END
```

Experiment 11; Procedures

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

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

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

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. IT 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 thecomputer 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

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

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)

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

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.

REFERENCES:

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. IT 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

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

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

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)
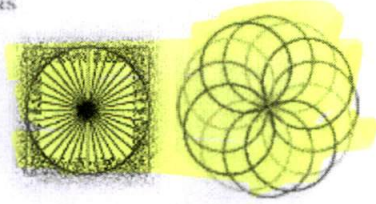
TEXT BOOKS:

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

ll Year B.Tech. IT 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 and Conditions of Work.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

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

(AUTONOMOUS)

2040506: DISCRETE MATHAMATICS

II Year B.Tech. IT 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.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

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. IT 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.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

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

(AUTONOMOUS)

2040507:COMPUTER ORGANIZATION AND MICROPROCESSOR

II Year B.Tech. IT 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.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

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. IT 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

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

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

(AUTONOMOUS)

2040509: JAVA PROGRAMMING

II Year B.Tech. IT 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

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

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. IT 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. IT 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, adda 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 $ax^2 + bx + c = 0$. 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

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

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. IT 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

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

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. IT 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** NO CHANGE

III Year B.Tech. IT 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.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

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. IT 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:

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

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. IT 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,

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

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. IT 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

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

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. IT 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/

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

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. IT 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

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

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

(AUTONOMOUS)

2050543: ARTIFICIAL INTELLIGENCE (Professional Elective-I)

III Year B.Tech. IT 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-

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

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

(AUTONOMOUS)

2050544: INFORMATION RETRIEVAL SYSTEMS (Professional Elective-I)

III Year B.Tech. IT 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

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

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

(AUTONOMOUS)

2050578: COMPUTER NETWORKS LAB

III Year B.Tech. IT I – Sem.   **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

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

- 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

(AUTONOMOUS)

2050579: OPERATING SYSTEMS LAB

III Year B.Tech. IT I – Sem.

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

(AUTONOMOUS)

2050580: SOFTWARE ENGINEERING LAB

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

                                                          0   0   3   1.5

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,

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

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 B.Tech. IT I – Sem.

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 B.Tech. IT II – Sem.   **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

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

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 B.Tech. IT II – Sem.   **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

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

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 B.Tech. IT II – Sem.   **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,

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

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

(AUTONOMOUS)

2060545: LINUX PROGRAMMING *(Professional Elective-II)*

III Year B.Tech. IT II – Sem.   **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.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(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 B.Tech. IT II – Sem.

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 –

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

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

(AUTONOMOUS)

2046208-CRYPTOGRAPHY & NETWORK SECURITY (Professional Elective-II)

III Year B.Tech. IT II – Sem.   **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

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

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

(AUTONOMOUS)

2060548: SOFTWARE PROJECT MANAGEMENT (Professional Elective-II)

III Year B.Tech. IT II – Sem.   **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.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

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.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

2060581: **DATA MINING LAB**

III Year B.Tech. IT II – Sem.		*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

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

(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

(AUTONOMOUS)

2060582: WEB TECHNOLOGIES LAB

III Year B.Tech. IT II – Sem.	*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

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

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

(AUTONOMOUS)

2060075: ADVANCED ENGLISH LANGUAGE COMMUNICATION SKILLS LABORATORY

III Year B.Tech. IT II – Sem.	*L*	*T*	*P*	*C*
	0	*0*	*3*	*1.5*

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.

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

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 ColmDownes, 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

(AUTONOMOUS)

2060025: **PROFESSIONAL ETHICS**

III Year B.Tech. IT II – Sem.

L T P C

2 0 0 0

Prerequisites: 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,

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AUTONOMOUS)

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