

BACHELOR OF TECHNOLOGY

CSE (DATA SCIENCE)

COURSE STRUCTURE & SYLLABUS

(Batches admitted from the Academic Year 2020 -2021)



MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(Autonomous Institution-UGC, Govt. of India)

Accredited by NBA & NAAC with 'A' Grade, UGC, Govt. of India

NIRF Indian Ranking-2020, Accepted by MHRD, Govt. of India

Band Excellent- National Ranking by ARIIA, MHRD, Govt. of India

Affiliated to JNTUH, Approved by AICTE, ISO 9001:2015 Certified Institution, 2nd Rank CSR,

AAAA+ Rated by Digital Learning Magazine, AAA+ Rated by Careers 360 Magazine

Platinum Rated by AICTE-CII Survey, National Ranking-Top 100 Rank band by Outlook,

National Ranking-Top 100 Rank band by Times News Magazine,

141 Natinal Ranking by India Today Magazing

Maisammaguda, Dhullapally, Secunderabad, Kompally-500100

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byDigitalLearningMagazine,AAA+RatedbyCareers360Magazine

3rdRankCSR,Platinum RatedbyAICTE-CIISurvey,Top100Rank bandbyARIIA,MHRD,Govt.ofIndia

NationalRanking-Top100 RankbandbyOutlook,NationalRanking-Top100RankbandbyTimesNewsMagazine

COURSESTRUCTURE

IYearB.Tech –ISemester(ISemester)

S. No	SubjectCode	Subject	L	T	P	C	Max.Marks	
							INT	EXT
1	2000BS01	Mathematics –I	3	1	0	4	30	70
2	2000BS05	AppliedPhysics	3	1	0	4	30	70
3	2005ES01	ProgrammingforProblem Solving	3	1	0	4	30	70
4	2003ES01	EngineeringDrawing	1	0	4	3	30	70
5	2000BS61	AppliedPhysicsLab	0	0	3	1.5	30	70
6	2005ES61	Programming for ProblemSolvingLab	-	0	3	1.5	30	70
7	2000MC01	EnvironmentalScience*	3	0	0	0	100	0
		InductionProgramme						
		TOTAL	13	3	10	18	280	420

IYearB.Tech –IISemester (IISemester)

S. No	SubjectCode	Subject	L	T	P	C	Max.Marks	
							INT	EXT
1.	2000BS02	Mathematics– II	3	1	0	4	30	70
2.	2005ES02	PythonProgramming	3	1	0	4	30	70
3.	2000HS01	English	2	0	0	2	30	70
4.	2002ES01	BasicElectricalEngineering	3	0	0	3	30	70
5.	2003ES61	EngineeringWorkshop	1	0	3	2.5	30	70
6.	2002ES61	BasicElectricalEngineeringLab	0	0	2	1	30	70
7.	2005ES62	PythonProgrammingLab	0	0	3	1.5	30	70
8.	2000HS61	English Language &Communication SkillsLab	0	0	2	1	30	70
9.	2000MC02	FrenchLanguage*	2	0	0	0	100	0
		TOTAL	14	2	10	19	340	560

*Mandatorycourse:Non-creditcourse,50%ofscoringisrequiredfortheawardofthedegree

II Year B.Tech – I Semester (III Semester)

S. No	Subject Code	Subject	L	T	P	C	Max.Marks	
							INT	EXT
1	2000BS04	Probability&Statistics	3	1	0	4	30	70
2	2004ES01	AnalogandDigitalElectronicCircuits	3	0	0	3	30	70
3	2005PC01	DataStructures&Algorithms	3	0	0	3	30	70
4	2005PC03	DiscreteMathematics	3	0	0	3	30	70
5	2005PC04	Object Oriented Programming throughJava	3	0	0	3	30	70
6	2005PC61	DataStructures&AlgorithmsLab	0	0	3	1.5	30	70
7	2005PC63	Object Oriented Programming throughJavaLab	0	0	3	1.5	30	70
8	2000MC03`	HumanvaluesandProfessionalEthics*	2	0	0	0	100	0
TOTAL			17	1	6	19	310	490

*Mandatorycourse:Non-creditcourse,50%ofscoringisrequiredfortheawardofthedegree

II Year B. Tech – II Semester (IV Semester)

S. No	Subject Code	Subject	L	T	P	C	Max.Marks	
							INT	EXT
1	2000HS03	ManagerialEconomicsandFinancialAnalysis	3	0	0	3	30	70
2	2005ES03	ComputerOrganization&OperatingSystem	3	0	0	3	30	70
3	2005PC05	SoftwareEngineering	3	0	0	3	30	70
4	2067PC01	IntroductiontoDataScience	3	0	0	3	30	70
5	2067PC02	DataHandlingand Visualization	3	0	0	3	30	70
6	2005PC08	DatabaseManagementSystems	3	0	0	3	30	70
7	2067PC61	DataHandlingandVisualizationLab	0	0	3	1.5	30	70
8	2005PC64	DatabaseManagementSystemsLab	0	0	3	1.5	30	70
9	2000MC04	IndianConstitution*	2	0	0	0	100	0
TOTAL			20	0	6	21	340	560

*Mandatorycourse:Non-creditcourse,50%ofscoringisrequiredfortheawardofthedegree

III Year B.Tech–I Semester (V Semester)

S. No	Subject Code	Subject	L	T	P	C	Max.Marks	
							INT	EXT
1	2066PC01	Artificial Intelligence	3	0	0	3	30	70
2	2067PC03	Statistical Foundations of Data Science	3	0	0	3	30	70
3	2005PC10	Design and Analysis of Algorithms	3	0	0	3	30	70
4	2005PC11	Computer Networks	3	0	0	3	30	70
5		Professional Elective-1	3	0	0	3	30	70
6		Open Elective-I	3	0	0	3	30	70
7	2066PC61	Artificial Intelligence Lab	0	0	3	1.5	30	70
8	2067PC62	Statistical Foundations of Data Science Lab	0	0	3	1.5	30	70
9	2000MC05	Technical Communications and Soft Skills*	2	0	0	0	100	0
TOTAL			20	0	6	21	340	560

*Mandatory course: Non-credit course, 50% of scoring is required for the award of the degree

III Year B.Tech–II Semester (VI Semester)

S. No	Subject Code	Subject	L	T	P	C	Max.Marks	
							INT	EXT
1	2067PC04	Data Science Tools and Techniques	3	0	0	3	30	70
2	2067PC05	Data Privacy and Security	3	0	0	3	30	70
3	2012PC02	Web Technologies	3	0	0	3	30	70
4		Professional Elective-2	3	0	0	3	30	70
5		Professional Elective-3	3	0	0	3	30	70
6		Open Elective -2	3	0	0	3	30	70
7	2067PC63	Data Science Tools and Techniques Lab	0	0	3	1.5	30	70
8	2012PC62	Web Technologies Lab	0	0	3	1.5	30	70
9	2000MC06	Indian Tradition Knowledge*	2	0	0	0	100	0
TOTAL			20	0	6	21	340	560

*Mandatory course: Non-credit course, 50% of scoring is required for the award of the degree Industry Oriented Mini Project/Internship- During Summer Vacation-Evaluation in IV-I

IV Year B.Tech–I Semester (VII Semester)

S. No	Subject Code	Subject	L	T	P	C	Max.Marks	
							INT	EXT
1	2005PC12	Machine Learning	3	0	0	3	30	70
2	2067PC06	Big Data Analytics	3	1	0	4	30	70
3		Professional Elective-4	3	0	0	3	30	70
4		Open Electives-3	3	0	0	3	30	70
5	2005PC67	Machine Learning Lab	0	0	3	1.5	30	70
6	2067PC64	Big Data Analytics Lab	0	0	3	1.5	30	70
7	2067PJ01	Industry Oriented Mini Project/Internship	0	0	0	2	30	70
8	2067PJ02	Project-I	0	0	8	4	30	70
		TOTAL	12	0	14	22	340	560

*Mandatory course: Non-credit course, 50% of scoring is required for the award of the degree

*Summer between III & IV Year: Mini Project

IV

Year B.Tech–II Semester (VIII Semester)

S. No	Subject Code	Subject	L	T	P	C	Max.Marks	
							INT	EXT
1		Professional Elective-V	3	0	0	3	30	70
2		Professional Elective-VI	3	0	0	3	30	70
3		Open Elective -4	3	0	0	3	30	70
4	2067PJ03	Technical Seminar	0	0	0	2	100	0
5	2067PJ05	Project-II	0	0	12	6	30	70
6	2067PJ04	Innovation Startup & Entrepreneurship	0	0	4	2	30	70
		TOTAL	9	0	16	19	220	280

Semester	I-I	I-II	II-I	II-II	III-I	III-II	IV-I	IV-II	TOTAL
Credits	18	19	19	21	21	21	22	19	160

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PROFESSIONAL ELECTIVES

PROFESSIONAL ELECTIVES					
Professional Elective-I		Professional Elective-II		Professional Elective-III	
2005PE22	Principles of Neural Networks	2005PE07	Computer Vision	2005PE03	Principles of Natural Language Processing
2005PE23	Data Modeling and Simulation	2005PE24	Data Mining	2012PE03	Web Mining
2005PE04	Mobile Computing	2005PE16	Software Testing Methodologies	2005PE20	Distributed Systems
Professional Elective-IV		Professional Elective-V		Professional Elective-VI	
2005PE05	Pattern Recognition	2005PE25	Principles of Deep Learning	2005PE11	Web Services
2005PE15	Text Analytics	2012PE04	Business Analytics	2012PE06	Distributed Trust and Block Chain Technology
2005PE08	Cloud Computing	2005PE26	Cyber Security	2005PE12	Internet of Things

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2000BS01) MATHEMATICS-I

B.Tech. I Year I Sem

L T P C

3 1 0 4

COURSE OBJECTIVES:

To learn

- Types of Matrices and their properties, concept of rank of the matrix and applying this concept to know the consistency and solving the system of linear equations.
- Concept of Eigenvalues and Eigenvectors and to reduce the quadratic form to canonical form.
- Geometrical approach to the mean value theorems, their application to the mathematical problems and Evaluation of improper integrals using Beta and Gamma functions
- Partial differentiation, concept of total derivative, finding maxima and minima of function of two and three variables.
- Evaluation of multiple integrals and their applications.

Course Outcomes:

After learning the contents of this paper, the student must be able to

- Write the matrix representation of a set of linear equations and to analyse the solution of the system of equations
- Find the Eigenvalues and Eigenvectors and reduce the quadratic form to canonical form using orthogonal transformations.
- Solve the applications on mean value theorems and evaluate the improper integrals using Beta and Gamma functions
- Find the extreme values of functions of two variables with/ without constraints.
- Evaluate the multiple integrals and apply the concept to find areas, volumes.

UNIT-I:

Matrices: Types of Matrices, Symmetric; Skew-symmetric; Hermitian; Skew-Hermitian; Orthogonal matrices; Unitary Matrices; Rank of a matrix by Echelon form and Normal form, Inverse of Non-singular matrices by Gauss-Jordan method; System of linear equations; Solving system of Homogeneous and Non-Homogeneous equations. Gauss elimination method; Gauss-Seidel Iteration Method.

UNIT-II:

Eigenvalues and Eigenvectors: Eigenvalues and Eigenvectors and their properties; Diagonalization of a matrix; Cayley-Hamilton Theorem (without proof); Finding inverse and power of a matrix by Cayley-Hamilton Theorem; Linear Transformation and Orthogonal Transformation; Quadratic forms and Nature of the Quadratic Forms; Reduction of Quadratic form to Canonical form by Orthogonal Transformation.

UNIT-III:

Differential Calculus: Rolle's mean value theorem (without proof), Lagrange's Mean value theorem (without proof) with their Geometrical Interpretation, Cauchy's Mean value Theorem (without proof). Taylor's series, Maclaurin's

series. Definition of Improper Integral; Definition of Beta and Gamma functions, properties, relation between them and evaluation of integrals using Beta and Gamma functions.

UNIT-IV:

Multivariable Calculus: Definitions of Limit and Continuity. Partial Differentiation; Euler's Theorem; Total derivative; Jacobian; Functional dependence & independence, Maxima and minima of functions of two variables and three variables using method of Lagrange multipliers.

UNIT-V:

Multiple Integrals: Evaluation of Double Integrals (Cartesian and Polar coordinates); Change of order of integration (only Cartesian form); Evaluation of Triple Integrals: Change of variables (Cartesian to polar) for double and (Cartesian to Spherical and Cylindrical polar coordinates) for triple integrals. Areas (by double integrals) and Volumes (by double integrals and triple integrals).

TEXTBOOKS:

1. B.S.Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010.
2. R.K.Jain and S.R.K.Iyengar, Advanced Engineering Mathematics, Narosa Publishers, 4th Edition, 2014.

REFERENCES:

1. Michael Greenberg, Advanced Engineering Mathematics, Pearson Education, 2nd Edition, 1998.
2. Erwin Kreyszig, Advanced Engineering Mathematics, John Wiley & Sons, 9th Edition, 2006.
3. Ramana B.V., Higher Engineering Mathematics, Tata McGraw Hill New Delhi, 11th Reprint, 2017

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2000BS05) APPLIED PHYSICS

B.Tech. I Year I Sem

L T P C

3 1 0 4

COURSE OBJECTIVES:

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

Course Outcomes: Upon graduation:

- The student would be able to learn the fundamental concepts on Quantum behaviour of matter in its micro state.
- The knowledge of fundamentals of Semiconductor physics, Electronic devices, Lasers and fibre optics enable the students to apply to various systems like communications, solar cell, photo cells and so on.
- Design, characterization and study of properties of material help the students to prepare new materials for various engineering applications.
- The course also helps the students to have exposure on dielectric materials and magnetic materials.

UNIT-I

Quantum Mechanics

Introduction to quantum physics, Black body radiation, Photoelectric effect, Compton effect experiment and Compton shift, de-Broglie's hypothesis, Wave particle duality, Davisson and Germer experiment, Heisenberg's Uncertainty principle, Wave function and its physical significance, Schrodinger's time dependent wave equation, Particle in one dimensional box.

UNIT-II

Semi conductor Physics

Intrinsic and Extrinsic semiconductors, Fermi level in intrinsic and extrinsic semi conductors, calculation of carrier concentration in intrinsic and extrinsic semiconductors, Carrier generation and recombination, Carrier transport: diffusion and drift, Hall effect: determination of Hall coefficient and experiment, Hall voltage, direct and indirect band gap semiconductors, p-n junction diode: energy band diagram for open and closed circuits, Zener diode and its V-I characteristics and applications.

UNIT-III

Optoelectronics

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

UNIT-IV

Lasers and Fiber Optics Lasers Characteristics of Lasers, interaction of radiation with matter: stimulated absorption, spontaneous and stimulated emission, Einstein's relations, Principle and working of Laser: Population inversion, Pumping mechanisms, Types of Lasers: Ruby laser, He Ne laser, Semiconductor lasers, Applications of laser. Fiber Optics: Introduction Optical fiber, Optical fiber as a dielectric wave guide, Total internal reflection, Acceptance angle, Acceptance cone and Numerical aperture, mode and transmission of signal through Step and Graded index fibers, Losses associated with optical fibers, Applications of optical fibers in communication system (block diagram) and in other fields.

UNIT-V

Dielectric and Magnetic Properties of Materials, hysteresis curve based on domain theory, soft and hard magnetic materials, applications of magnetic materials. Electric dipole, dipole moment, dielectric constant, polarizability, electric displacement, electric susceptibility, types of polarization: electronic, ionic and orientation (qualitative) polarizations, calculation of polarizabilities of electronic and ionic polarization, Internal fields in a solid, Clausius-Mossotti equation, Ferroelectrics, Piezoelectrics and Pyroelectrics, Applications of dielectrics, Magnetization, field intensity, magnetic field induction, permeability and susceptibility, Bohr magneton, Classification of magnetic materials on the basis of magnetic moment

TEXTBOOKS:

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

REFERENCES:

1. Richard Robinett, Quantum Mechanics
2. J. Singh, Semiconductor Optoelectronics: Physics and Technology, Mc Graw-Hill inc. (1995).
3. Online Course: "Optoelectronic Materials and Devices" by Monica Katiyar and Deepak Gupta on NPTEL
4. "Semiconductor Physics and Devices", Mc Graw Hill, 4th Edition by Donald Neamen
5. Introduction to Solid State Physics by Charles Kittel, Wiley student edition.
6. S.M. Sze, Semiconductor Devices: Physics and Technology, Wiley (2008)

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2005ES01) PROGRAMMING FOR PROBLEM SOLVING

B.Tech. I Year I Sem

L T P C

3 1 0 4

COURSE OBJECTIVES:

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

Course Outcomes: The student will learn

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

UNIT I:

Introduction: Introduction to components of a computer system: disks, primary and secondary memory, processor, operating system, compilers, creating, compiling and executing a program etc., Number systems.

Introduction to Algorithms: steps to solve logical and numerical problems. Representation of Algorithm, Flowchart/Pseudocode with examples, Program design and structured programming. Introduction to C Programming Language:

Structure of a C program, Identifiers, variables (with data types and space requirements), Syntax and Logical Errors in compilation, object and executable code, Operators- Arithmetic operators, relational and logical operators, increment and decrement operators, Bitwise operators, conditional operator, assignment operator, expressions and precedence, Expression evaluation, type conversion, typedef, The main method and command line arguments.

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

UNIT II:

Conditional Branching and Loops: Writing and evaluation of conditionals and consequent branching with if, if-else, switch-case, ternary operator, goto, Iteration with for, while, do while loops

Arrays: one and two dimensional arrays, creating, accessing and manipulating elements of arrays.

Strings: Introduction to strings, handling strings as array of characters, basic string functions available in C (strlen, strcat, strcpy, strcmp), arrays of strings

UNIT- III

Functions: Designing structured programs, declaring a function, Signature of a function, Parameters and return type of a function, passing parameters to functions, call by value, Passing arrays to functions, passing pointers to functions, idea of call by reference, Some C standard functions and libraries, Passing 1-D arrays, 2-D arrays to functions

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

Storage Classes-extern, auto, register, static, scope rules, block structure.

UNIT IV:

Structures: Defining structures, initializing structures, unions, Array of structures

Pointers: Idea of pointers, Defining pointers, Pointers to Arrays and Structures, pointers to pointers, Use of Pointers in self-referential structures, usage of self referential structures in linked list (no implementation) Enumeration data type and bit-fields.

Dynamic Memory Management functions, Preprocessing Directives, Preprocessor: Commonly used Preprocessor commands like include, define, undef, if, if def, ifndef .

UNIT- V

File Handling: Files: Text and Binary files, Creating and Reading and writing text and binary files, Appending data to existing files, Writing and reading structure using binary files, R and oaccess using fseek, ftell and rewind functions

Introduction to Algorithms: Algorithms for finding roots of quadratic equations, finding minimum and maximum numbers of a given set, finding if a number is prime number, etc. Basic searching in an array of elements (linear and binary search techniques), Basic algorithms to sort array of elements (Bubble, Insertion and Selection sort algorithms), Basic concept of order of complexity through the example programs

TEXTBOOKS:

1. Computer Science: A Structured Programming Approach Using C, B.A. Forouzan and R.F. Gilberg, Third Edition, Cengage Learning.
2. Programming in C, P. Dey and M. Ghosh, Second Edition, Oxford University Press.

REFERENCE BOOKS:

1. The C Programming Language, B.W. Kernighan and Dennis M. Ritchie, Second Edition, Pearson Education.
2. Programming with C, B. Gottfried, 3rd edition, Schaum's outlines, McGraw Hill Education (India) Pvt Ltd.
3. C From Theory to Practice, G.S. Tselikis and N.D. Tselikas, CRC Press.
4. Basic computation and Programming with C, Subrata Saha and S. Mukherjee, Cambridge University Press

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2003ES01)ENGINEERINGDRAWING

B.Tech. I Year I Sem

L T P C

1 0 4 3

COURSE OBJECTIVES:

- To provide basic concepts in engineering drawing.
- To impart knowledge about standard principles of orthographic projection of objects.
- To draw sectional views and pictorial views of solids.

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

- Preparing working drawings to communicate the ideas and information.
- Read, understand and interpret engineering drawings.

UNIT- I

Introduction to Engineering Drawing: Principles of Engineering Graphics and their Significance, Conic Sections including the Rectangular Hyperbola - General method only.

Cycloid, Epicycloid and Hypocycloid, Scales - Plain & Diagonal.

UNIT-II

Orthographic Projections: Principles of Orthographic Projections - Conventions - Projections of Points and Lines, Projections of Plane regular geometric figures. - Auxiliary Planes.

UNIT- III

Projections of Regular Solids - Auxiliary Views - Sections or Sectional views of Right Regular Solids - Prism, Cylinder, Pyramid, Cone - Auxiliary views - Sections of Sphere.

UNIT- IV

Development of Surfaces of Right Regular Solids - Prism, Cylinder, Pyramid and Cone, Intersection of Solids: Intersection of - Prism vs Prism-Cylinder Vs Cylinder.

UNIT- V

Isometric Projections: Principles of Isometric Projection - Isometric Scale - Isometric Views

- Conventions - Isometric Views of Lines, Plane Figures, Simple and Compound Solids - Isometric Projection of objects having non-isometric lines. Isometric Projection of Spherical Parts. Conversion of Isometric Views to Orthographic Views and Vice-versa - Conventions Introduction to CAD: (For Internal Evaluation Weightage only):

Introduction to CAD Software Package Commands. - Free Hand Sketches of 2D - Creation of 2D Sketches by CAD Package.

TEXTBOOKS:

1. Engineering Drawing N.D.Bhatt/Charotar
2. Engineering Drawing/N.S.Parthasarathy and VelaMurali/Oxford

REFERENCEBOOKS:

1. Engineering Drawing/BasantAgrawal and McAgrawal/McGrawHill
2. Engineering Drawing/M.B. Shah, B.C.Rane/Pearson.
3. Computer Aided Engineering Drawing - K Balaveera Reddy et al - CBS Publishers

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2000BS61) APPLIED PHYSICS LAB

B.Tech. I Year I Sem

L T P C

0 0 3 1.5

LIST OF EXPERIMENTS:

Note: Any 8 Experiments to be Performed

1. Energy gap of a PN junction diode

To determine the energy band gap of a semiconductor p-n junction diode

2. Solar Cell

Characteristics of a given Solar Cell

3. Light Emitting Diode

To study the V-I characteristics of a Light Emitting Diode

4. Stewart and Gee's Experiment

To determine the magnetic induction at the center and at several points on the axis of a circular coil

5. HALL Effect Experiment

Determination of Hall coefficient and Hall voltage

To calculate the Hall coefficient and the carrier concentration of the sample material.

6. Photoelectric Effect

To determine the work function of a given material.

7. LASER

To study the characteristics of LASER diode sources.

8. A) Optical Fiber Numerical Aperture

To determine the numerical aperture (NA) of the given optical fiber

B) Optical Fiber Bending Loss

To determine the loss caused in optical fibers in dB due to macro bending of the fiber

9. A) LCR series Circuit

To study the frequency response of LCR series circuits and to determine the Resonant Frequency.

B) LCR Parallel Circuit

To study the frequency response of LCR parallel circuits and to determine the Resonant Frequency.

10. R-CC Circuit

To determine the time constant of the given RC circuit

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2005ES61) PROGRAMMING FOR PROBLEM SOLVING LAB

B.Tech. I Year I Sem

L T P C

0 0 3 1.5

Course Objectives: The students will learn the following:

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

Course Outcomes: The candidate is expected to be able to:

- formulate the algorithms for simple problems
- translate given algorithms to a working and correct program
- correct syntax errors as reported by the compilers
- identify and correct logical errors encountered during execution
- represent and manipulate data with arrays, strings and structures
- use pointers of different types
- create, read and write to and from simple text and binary files
- modularize the code with functions so that they can be reused

Practical sessions:

1. Write a simple program that prints the results of all the operators available in C (including pre/post increment, bitwise and/or/not, etc.). Read required operand values from standard input.
2. Write a simple program that converts one given data type to another using auto conversion and casting. Take the values from standard input.

Simple numeric problems:

- a) Write a program to find the max and min from three numbers.
- b) Write the program for simple, compound interest.
- c) Write a program that declares a class awarded for a given percentage of marks, where mark < 40% = Failed, 40% to < 60% = Second class, 60% to < 70% = First class, >= 70% = Distinction. Read percentage from standard input.
- d) Write a program that prints a multiplication table for a given number and the number of rows in the table.

For example, for a number 5 and rows=3, the output should be: 5 x 1 =5

5 x 2 =10

5 x 3 =15

e) Write a program that shows the binary equivalent of a given positive number between 0 to 255.

Expression Evaluation:

- i) A building has 10 floors with a floor height of 3 meters each. A ball is dropped from the top of the building. Find the time taken by the ball to reach each floor. (Use the formula $s = ut + \frac{1}{2}at^2$ where u and a are the initial velocity in m/sec ($= 0$) and acceleration in $m/sec^2 (= 9.8m/s^2)$).
- ii) Write a C program, which takes two integer operands and one operator from the user, performs the operation and then prints the result. (Consider the operators +, -, *, /, % and use Switch Statement)
- iii) Write a program that finds if a given number is a prime number
- iv) Write a C program to find the sum of individual digits of a positive integer and test given number is palindrome.
- v) A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a C program to generate the first n terms of this sequence.
- vi) Write a C program to generate all the prime numbers between 1 and n , where n is a value supplied by the user.
- vii) Write a C program to find the roots of a Quadratic equation.
- viii) Write a C program to calculate the following, where x is a fractional value. $1 - x/2 + x^2/4 - x^3/6$
- ix) Write a C program to read in two numbers, x and n , and then compute the sum of this geometric progression: $1 + x + x^2 + x^3 + \dots + x^n$. For example: if n is 3 and x is 5, then the program computes $1 + 5 + 25 + 125$.

Arrays and Pointers and Functions:

- a) Write a C program to find the minimum, maximum and average in an array of integers.
- b) Write a function to compute mean, variance, Standard Deviation, sorting of elements in a single dimension array.
- c) Write a C program that uses functions to perform the following:
 - i. Addition of Two Matrices
 - ii. Multiplication of Two Matrices
 - iii. Transpose of a matrix with memory dynamically allocated for the new matrix as row and column counts may not be same.
- d) Write C programs that use both recursive and non-recursive functions to find the factorial of a given integer.
 - i) To find the GCD (greatest common divisor) of two given integers.
 - ii) To find x^n
- e) Write a program for reading elements using pointer into array and display the values using array.
- f) Write a program for displaying values in reverse order from an array using pointer.
- g) Write a program through pointer variable to sum of elements from an array.

Strings

- a) Write a C program to convert a Roman numeral ranging from I to L to its decimal equivalent.
- b) Write a C program that converts a number ranging from 1 to 50 to Roman equivalent.
- c) Write a C program that uses functions to perform the following operations:
 - To insert a sub-string into a given main string from a given position.
 - To delete characters from a given position in a given string.
- d) Write a C program to determine if the given string is a palindrome or not (Spelled same in both directions with or without a meaning like madam, civic, noon, abcba, etc.)
- e) Write a C program that displays the position of a character ch in the string S or -1 if S doesn't contain ch.
- f) Write a C program to count the lines, words and characters in a given text.

Structures & Unions:

- a) Write a C program that uses functions to perform the following operations using Structure
 - Reading a complex number
 - Writing Complex Number
 - Addition of 2 Complex Numbers
 - Multiplication of two complex numbers
- b) Write a C program to store information of 5 students using structures.
- c) Write a C program to access all structure members using pointer structure variable.
- d) Write a C program to access members of union?

Files

- a) Write a C program to display the contents of a file to standard output device.
- b) Write a C program which copies one file to another, replacing all lowercase characters with their uppercase equivalents.
- c) Write a C program to count the number of times a character occurs in a text file. The filename and the character are supplied as command line arguments.
- d) Write a C program that does the following:
 - e) It should first create a binary file and store 10 integers, where the filename and 10 values are given in the command line. (hint: convert the strings using atoi function) Now the program asks for an index and a value from the user and the value at that index should be changed to the new value in the file. (hint: use fseek function). The program should then read all 10 values and print them back.
- f) Write a C program to merge two files into a third file (i.e., the contents of the first file followed by those of the second are put in the third file).

Miscellaneous:

- a. Write a menu driven C program that allows a user to enter n numbers and then choose between finding the smallest, largest, sum, or average. The menu and all the choices are to be functions. Use a switch statement to

determine what action to take. Display an error message if an invalid choice is entered.

b. Write a C program to construct a pyramid of numbers as follows:

```
* 1 1 *
**2 3 2**
*** 4 5 6 3 3 3 ***
    4 4 4 4 ****
```

c. Write a C program to implement a Student Database System using Files & Structures.

Sorting and Searching:

- Write a C program that uses a non-recursive function to search for a key value in a given list of integers using a linear search method.
- Write a C program that uses a non-recursive function to search for a key value in a given sorted list of integers using a binary search method.
- Write a C program that implements the Bubble Sort method to sort a given list of integers in ascending order.
- Write a C program that sorts the given array of integers using selection sort in descending order.
- Write a C program that sorts the given array of integers using insertion sort in ascending order.
- Write a C program that sorts a given array of names.

Suggested Reference Books for solving the problems:

- Byron Gottfried, Schaum's Outline of Programming with C, McGraw-Hill
- B.A. Forouzan and R.F. Gilberg, C Programming and Data Structures, Cengage Learning, (3rd Edition)
- Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, Prentice Hall of India
- R.G. Dromey, How to solve it by Computer, Pearson (16th Impression)
- Programming in C, Stephen G. Kochan, Fourth Edition, Pearson Education.
- Herbert Schildt, C: The Complete Reference, McGraw Hill, 4th Edition

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2000MC01) ENVIRONMENTAL SCIENCE

B.Tech. I Year I Sem

L T P C

3 0 0 0

COURSE OBJECTIVES:

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

Course Outcomes:

Based on this course, the Engineering graduate will understand/evaluate/develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development.

UNIT-I

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

UNIT-II

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

UNIT-III

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

UNIT-IV

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

Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol. NAPCC-GoI initiatives.

UNIT-V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan (EMP).

Towards Sustainable Future: Concept of Sustainable Development Goals, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon lifestyle.

TEXTBOOKS:

1. Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
2. Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHI Learning Private Ltd. New Delhi.
2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley India edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New Age International publishers.
5. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.
6. Introduction to Environmental Science by Y. Anjaneyulu, BS Publications.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2000BS02) MATHEMATICS-II

B.Tech. I Year II Sem

L T P C

3 1 0 4

COURSE OBJECTIVES:

- To learn Methods of solving the differential equations of first and higher order
- Evaluation of multiple integrals and their applications
- The physical quantities involved in engineering field related to vector valued functions
- The basic properties of vector valued functions and their application to line, surface and volume integrals

Course Outcomes:

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

- Identify whether the given differential equation of first order is exact or not
- Solve higher differential equation and apply the concept of differential equation to real world problems
- Evaluate the multiple integrals and apply the concept to find areas, volumes, centre of mass and Gravity for cubes, sphere and rectangular parallelepiped
- Evaluate the line, surface and volume integrals and converting them from one to another

UNIT-I:

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

UNIT-II:

Ordinary Differential Equations of Higher Order Second order linear differential equations with constant coefficients: Non-Homogeneous terms of the type e^{ax} , $\sin ax$, $\cos ax$, polynomials in x , $e^{ax}V(x)$ and $xV(x)$, method of variation of parameters. Equations reducible to linear ODE with constant coefficients: Legendre's equation, Cauchy-Euler equation.

UNIT-III:

Multivariable Calculus (Integration): Evaluation of Double Integrals (Cartesian and polar coordinates); change of order of integration (only Cartesian form); Evaluation of Triple Integrals: Change of variables (Cartesian to polar) for double and (Cartesian to Spherical and Cylindrical polar coordinates) for triple integrals.

Applications: Areas (by double integrals) and volumes (by double integrals and triple integrals), Centre of mass and Gravity (constant and variable densities) by double and triple integrals (applications involving cubes, sphere and rectangular parallelepiped).

UNIT-IV:

Vector Differentiation: Vector point functions and scalar point functions. Gradient, Divergence and Curl. Directional derivatives, Tangent plane and normal line. Vector Identities. Scalar potential functions. Solenoidal and Irrotational vectors.

UNIT-V:

Vector Integration: Line, Surface and Volume Integrals. Theorems of Green, Gauss and Stokes (without proofs) and their applications.

TEXTBOOKS:

1. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010
2. Erwin Kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006
3. G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition, Pearson, Reprint, 2002.

REFERENCES:

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

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2000BS02) MATHEMATICS-II

B.Tech. I Year II Sem

L T P C

3 1 0 4

COURSE OBJECTIVES:

- To learn Methods of solving the differential equations of first and higher order
- Evaluation of multiple integrals and their applications
- The physical quantities involved in engineering field related to vector valued functions
- The basic properties of vector valued functions and their application to line, surface and volume integrals

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

- Identify whether the given differential equation of first order is exact or not
- Solve higher differential equation and apply the concept of differential equation to real world problems
- Evaluate the multiple integrals and apply the concept to find areas, volumes, centre of mass and Gravity for cubes, sphere and rectangular parallelepiped
- Evaluate the line, surface and volume integrals and converting them from one to another

UNIT-I:

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

UNIT-II:

Ordinary Differential Equations of Higher Order Second order linear differential equations with constant coefficients: Non-Homogeneous terms of the type e^{ax} , $\sin ax$, $\cos ax$, polynomials in x , $e^{ax}V(x)$ and $x V(x)$, method of variation of parameters. Equations reducible to linear ODE with constant coefficients: Legendre's equation, Cauchy-Euler equation.

UNIT-III:

Multivariable Calculus (Integration): Evaluation of Double Integrals (Cartesian and polar coordinates); change of order of integration (only Cartesian form); Evaluation of Triple Integrals: Change of variables (Cartesian to polar) for double and (Cartesian to Spherical and Cylindrical polar coordinates) for triple integrals.

Applications: Areas (by double integrals) and volumes (by double integrals and triple integrals), Centre of mass and Gravity (constant and variable densities) by double and triple integrals (applications involving cubes, sphere and rectangular parallelepiped).

UNIT-IV:

Vector Differentiation: Vector point functions and scalar point functions. Gradient, Divergence and Curl. Directional

derivatives, Tangent plane and normal line. Vector Identities. Scalar potential functions. Solenoidal and Irrotational vectors.

UNIT-V:

Vector Integration: Line, Surface and Volume Integrals. Theorems of Green, Gauss and Stokes (without proofs) and their applications.

TEXTBOOKS:

1. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010
2. Erwin Kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006
3. G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition, Pearson, Reprint, 2002.

REFERENCES:

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

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2005ES02) PYTHON PROGRAMMING

B.Tech. I Year II Sem

L T P C

3 1 0 4

COURSE OBJECTIVES:

This course will enable students to

- Learn Syntax and Semantics and create Functions in Python.
- Handle Strings and Files in Python.
- Understand Lists, Dictionaries and Regular expressions in Python.
- Implement Object Oriented Programming concepts in Python.
- Build GUI Programming in Python.

Course Outcomes:

The students should 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 and use Regular Expressions.
- Interpret the concepts of Object-Oriented Programming as used in Python.
- Implement exemplary applications related to Graphical User Interface (GUI) in Python.

UNIT I

PYTHON Programming Introduction, History of Python, Python is Derived from?, Python Features, Python Applications, Why Python is Becoming Popular Now a Day?, Existing Programming Vs Python Programming, Writing Programs in Python, Top Companies Using Python, Python Programming Modes, Interactive Mode Programming, Scripting Mode Programming, Flavors in Python, Python Versions, Download & Install the Python in Windows & Linux, How to set Python Environment in the System?, Anaconda - Data Science Distributor, Downloading and Installing Anaconda, Jupyter Notebook & Spyder, Python IDE - Jupyter Notebook Environment, Python IDE - Spyder Environment, Python Identifiers (Literals), Reserved Keywords, Variables, Comments, Lines and Indentations, Quotations, Assigning Values to Variables

UNIT II

Data Types in Python, Mutable Vs Immutable, Fundamental Data Types: int, float, complex, bool, str, Number Data Types: Decimal, Binary, Octal, HexaDecimal & Number Conversions, Inbuilt Functions in Python, Data Type Conversions, Priorities of Data Types in Python, Python Operators, Arithmetic Operators, Comparison (Relational) Operators, Assignment Operators, Logical Operators, Bitwise Operators, Membership Operators, Identity Operators, Slicing & Indexing, Forward Direction Slicing with +ve Step, Backward

Direction Slicing with -ve Step, Decision Making Statements, if Statement, if-else Statement, elif Statement, Looping Statements, Why we use Loops in Python?, Advantages of Loops for Loop, Nested for Loop, Using else Statement with for Loop, while Loop, Infinite while Loop, Using else with Python while Loop, Conditional Statements, break Statement, continue Statement, Pass Statement for Loop, Nested for Loop, Using else Statement with for Loop, while Loop, Infinite while Loop, Using else with Python while Loop, Conditional Statements, break Statement, continue Statement, Pass Statement

UNIT III

Advanced Data Types: List, Tuple, Set, Frozenset, Dictionary, Range, Bytes & Bytearray, None, List Data Structure, List indexing and splitting

Updating List values, List Operations, Iterating a List, Adding Elements to the List, Removing Elements from the List, List Built-in Functions, List Built-in Methods, Tuple Data Structure, Tuple Indexing and Splitting, Tuple Operations, Tuple In built Functions, Where use Tuple, List Vs Tuple, Nesting List and Tuple, Set Data Structure, Creating a Set, Set Operations, Adding Items to the Set, Removing Items from the Set, Difference Between discard() and remove(), Union of Two Sets, Intersection of Two Sets, Difference of Two Sets, Set Comparisons, Frozenset Data Structure, Dictionary Data Structure, Creating the Dictionary, Accessing the Dictionary Values, Updating Dictionary Values, Deleting Elements Using del Keyword, Iterating Dictionary, Properties of Dictionary Keys, Built-in Dictionary Functions, Built-in Dictionary Methods, List Vs Tuple Vs Set Vs Frozenset Vs Dictionary

Range, Bytes, Bytearray & None

UNIT IV

Python Functions, Advantage of Functions in Python, Creating a Function, Function Calling, Parameters in Function, Call by Reference in Python, Types of Arguments, Required Arguments, Keyword Arguments, Default Arguments, Variable-Length Arguments, Scope of Variables, Python Built-in Functions, Python Lambda Functions, String with Functions, Strings Indexing and Splitting

String Operators, Python Formatting Operator, Built-in String Functions, Python File Handling, Opening a File, Reading the File, Read Lines of the File, Looping through the File, Writing the File, Creating a New File Using with Statement with Files, File Pointer Position, Modifying File Pointer Position

Renaming the File & Removing the File, Writing Python Output to the Files

File Related Methods, Python Exceptions, Common Exceptions, Problem without Handling Exceptions, except Statement with no Exception, Declaring Multiple Exceptions, Finally Block, Raising Exceptions, Custom Exception,

UNIT V

Python Packages, Python Libraries, Python Modules, Collection Module, Math Module, OS Module, Random Module, Statistics Module, Sys Module, Date & Time Module, Loading the Module in our Python Code, import Statement, from-import Statement, Renaming a Module, Regular Expressions, Command Line Arguments, Object Oriented Programming (OOPs), Object-oriented vs Procedure-oriented Programming languages, Object, Class, Method,

Inheritance, Polymorphism, Data Abstraction, Encapsulation, Python Class and Objects, Creating Classes in Python, Creating an Instance of the Class, Python Constructor, Creating the Constructor in Python, Parameterized Constructor, Non-Parameterized Constructor, In-built Class Functions, In-built Class Attributes, Python Inheritance, Python Multi-Level Inheritance, Python Multiple Inheritance, Method Overriding, Data Abstraction in Python, Graphical User Interface (GUI) Programming, Python Tkinter, Tkinter Geometry, pack() Method, grid() Method, place()

Method, Tkinter Widgets

TEXT BOOK:

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

REFERENCE BOOK:

1. Programming Languages, A. B. Tucker, R. E. Noonan, TMH.
2. Programming Languages, K. C. Louden and K. A. Lambert., 3rd edition, Cengage Learning.
3. Programming Language Concepts, C. Ghezzi and M. Jazayeri, Wiley India.
4. Programming Languages 2nd Edition Ravi Sethi Pearson.
5. Introduction to Programming Languages Arvind Kumar Bansal CRC Press.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2000HS01) ENGLISH

B.Tech. I Year II Sem

L T P C

2 0 0 2

INTRODUCTION

In view of the growing importance of English as a tool for global communication and the consequent emphasis on training students to acquire language skills, the syllabus of English has been designed to develop linguistic, communicative and critical thinking competencies of Engineering students.

In English classes, the focus should be on the skills development in the areas of vocabulary, grammar, reading and writing. For this, the teachers should use the prescribed text for detailed study. The students should be encouraged to read the texts leading to reading comprehension and different passages may be given for practice in the class. The time should be utilized for working out the exercises given after each excerpt, and also for supplementing the exercises with authentic materials of a similar kind, for example, newspaper articles, advertisements, promotional material etc. The focus in this syllabus is on skill development, fostering ideas and practice of language skills in various contexts and cultures.

Course Objectives:

The course will help to

- Improve the language proficiency of students in English with an emphasis on Vocabulary, Grammar, Reading and Writing skills.
- Enhance competencies in writing essays and gist of the passage in words.
- Equip students to study academic subjects more effectively and critically, using the theoretical and practical components of English syllabus.
- Develop study skills and communication skills in formal and informal situations.

Course Outcomes:

Students should be able to

- Use English Language effectively in spoken and written forms.
- Comprehend the given texts and respond appropriately.
- Communicate confidently in various contexts and different cultures.
- Acquire basic proficiency in English including reading and listening comprehension, writing and speaking skills.

UNIT-I

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

Vocabulary Building: The Concept of Word Formation--The Use of Prefixes and Suffixes. Grammar: Identifying Common Errors in Writing with Reference to Articles and Prepositions. Reading: Reading and its Importance-Techniques

for Effective Reading.

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

UNIT-II

'Ancient Architecture in India' from the prescribed textbook 'English for Engineers' published by Cambridge University Press.

Vocabulary: Homonyms, Homophones and Homographs. Acquaintance with Prefixes and Suffixes from Foreign Languages in English to form Derivatives- Words from Foreign Languages and their Use in English.

Grammar: Identifying Common Errors in Writing with Reference to Noun-pronoun Agreement and Subject-verb Agreement.

Reading: Improving Comprehension Skills - Techniques for Good Comprehension

Writing: Format of a Formal Letter- Writing Formal Letters - E.g., Letter of Complaint, Letter of Requisition, Job Application with Resume.

UNIT-III

'Blue Jeans' from the prescribed textbook 'English for Engineers' published by Cambridge University Press.

Vocabulary: Synonyms and Antonyms

Grammar: Identifying Common Errors in Writing with Reference to Misplaced Modifiers and Tenses and Question Tags

Reading: Sub-skills of Reading- Skimming and Scanning

Writing: Nature and Style of Sensible Writing- Defining- Describing Objects, Places and Events- Classifying- Providing Examples or Evidence, E-mail writing and practices.

UNIT-IV

'What Should You Be Eating' from the prescribed textbook 'English for Engineers' published by Cambridge University Press.

Vocabulary: Idioms and phrases, Phrasal Verbs and One word substitutions

Grammar: Active voice and Passive voice- Redundancies and Clichés in Oral and Written Communication.

Reading: Comprehension- Intensive Reading and Extensive Reading

Writing: Writing Practices-- Writing Introduction and Conclusion- Essay Writing- Précis Writing.

UNIT-V

'How a Chinese Billionaire Built Her Fortune' from the prescribed textbook 'English for Engineers' published by Cambridge University Press.

Vocabulary: Standard Abbreviations in English and Technical Vocabulary and their usage Grammar:

Reported speech and Common Errors in English

Reading: Reading Comprehension- Exercises for Practice

Writing: Report writing- Introduction- Characteristics of a Report- Categories of Reports, Formats- Structure of Reports (Manuscript Format)- Types of Reports - Writing a Report.

PRESCRIBEDTEXTBOOK:

1.Sudarshana,N.P.andSavitha,C.(2018).EnglishforEngineers.CambridgeUniversityPress.

REFERENCES:

1. Swan,M.(2016).PracticalEnglishUsage.OxfordUniversityPress.
2. Kumar,SandLata,P.(2018).CommunicationSkills.OxfordUniversityPress.
3. Wood,F.T. (2007).Remedial English Grammar.Macmillan.
4. Zinsser, William. (2001). On Writing Well. Harper ResourceBook.
5. Hamp-Lyons,L.(2006). StudyWriting.CambridgeUniversityPress.
7. ExercisesinSpokenEnglish.PartsI-III.CIEFL,Hyderabad.OxfordUniversityPress.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2002ES01) BASIC ELECTRICAL ENGINEERING

B.Tech. I Year II Sem

L T P C

3 0 0 3

COURSE OBJECTIVES:

- To introduce the concepts of electrical circuits and its components
- To understand magnetic circuits, DC circuits and AC single phase & three phase circuits
- To study and understand the different types of DC/AC machines and Transformers.
- To impart the knowledge of various electrical installations.
- To introduce the concept of power, power factor and its improvement.

Course Outcomes:

- To analyze and solve electrical circuits using network laws and theorems.
- To understand and analyze basic Electric and Magnetic circuits
- To study the working principles of Electrical Machines
- To introduce components of Low Voltage Electrical Installations

UNIT-I: D.C. Circuits

Electrical circuit elements (R, L and C), voltage and current sources, KVL & KCL, analysis of simple circuits with dc excitation. Superposition, Thevenin and Norton Theorems. Time-domain analysis of first-order RL and RC circuits.

UNIT-II: A.C. Circuits

Representation of sinusoidal waveforms, peak and rms values, phasor representation, real power, reactive power, apparent power, power factor, Analysis of single-phase ac circuits consisting of R, L, C, RL, RC, RLC combinations (series and parallel), resonance in series RL-C circuit.

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 dc motor. Construction and working of synchronous generators.

UNIT-V:ElectricalInstallations

Components of LTS with gear:SwitchFuse Unit(SFU), MCB,ELCB,MCCB,Types of Wires and Cables, Earthing.Types of Batteries, Important Characteristics for Batteries.Elementary calculations for energy consumption, power factor improvement and battery backup.

TEXT-BOOKS/REFERENCE-BOOKS:

1. Basic Electrical Engineering - D.P. Kothari and I.J. Nagrath, 3rd edition 2010,TataMcGraw Hill.
2. D.C.Kulshreshtha,"BasicElectricalEngineering",McGrawHill,2009.
3. L.S.Bobrow,FundamentalsofElectricalEngineering",OxfordUniversityPress,2011
4. Electricaland ElectronicsTechnology, E.Hughes, 10thEdition,Pearson,2010
5. ElectricalEngineeringFundamentals,VincentDeltoro, SecondEdition,PrenticeHallIndia,1989.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2003ES61) ENGINEERING WORKSHOP

B.Tech. I Year II Sem

L T P C

3 0 0 3

COURSE OBJECTIVES:

- To Study of different hand operated power tools, uses and their demonstration.
- To gain a good basic working knowledge required for the production of various engineering products.
- To provide hands on experience about use of different engineering materials, tools, equipments and processes those are common in the engineering field.
- To develop a right attitude, team working, precision and safety at workplace.
- To explain the construction, function, use and application of different working tools, equipment and machines.
- To study commonly used carpentry joints.
- To have practical exposure to various welding and joining processes.
- Identify and use marking out tools, hand tools, measuring equipment and to work to prescribed tolerances.

Course Outcomes:

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

- Study and practice on machine tools and their operations
- Practice on manufacturing of components using workshop trades including plumbing, fitting, carpentry, foundry, house wiring and welding.
- Identify and apply suitable tools for different trades of Engineering processes including drilling, material removing, measuring, chiseling.
- Apply basic electrical engineering knowledge for house wiring practice.

1. TRADES FOR EXERCISES:

At least two exercises from each trade:

- i) Carpentry- (T-Lap Joint, Dovetail Joint, Mortise & Tenon Joint)
- ii) Fitting- (V-Fit, Dovetail Fit & Semi-circular fit)
- iii) Tin-Smithy- (Square Tin, Rectangular Tray & Conical Funnel)
- iv) Foundry- (Preparation of Green Sand Mould using Single Piece and Split Pattern)
- v) Welding Practice- (Arc Welding & Gas Welding)
- vi) House-wiring- (Parallel & Series, Two-way Switch and Tube Light)
- vii) Black Smithy- (Round to Square, Fan Hook and S-Hook)

2. TRADES FOR DEMONSTRATION & EXPOSURE:

Plumbing, Machine Shop, Metal Cutting (Water Plasma), Power tools in construction and Wood Working Experiments beyond the Syllabus:

Machine Shop - {lathe machine, drilling machine}

TEXTBOOKS:

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

REFERENCE BOOKS:

1. Workshop Manual - P. Kannaiah/K.L. Narayana/Sci Tech Workshop Manual / Venkat Reddy/BSP

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2003ES61) ENGINEERING WORKSHOP

B.Tech. I Year II Sem

L T P C

3 0 0 3

COURSE OBJECTIVES:

- To Study of different hand operated power tools, uses and their demonstration.
- To gain a good basic working knowledge required for the production of various engineering products.
- To provide hands on experience about use of different engineering materials, tools, equipments and processes those are common in the engineering field.
- To develop a right attitude, team working, precision and safety at workplace.
- To explain the construction, function, use and application of different working tools, equipment and machines.
- To study commonly used carpentry joints.
- To have practical exposure to various welding and joining processes.
- Identify and use marking out tools, hand tools, measuring equipment and to work to prescribed tolerances.

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

- Study and practice on machine tools and their operations
- Practice on manufacturing of components using workshop trades including plumbing, fitting, carpentry, foundry, house wiring and welding.
- Identify and apply suitable tools for different trades of Engineering processes including drilling, material removing, measuring, chiseling.
- Apply basic electrical engineering knowledge for house wiring practice.

1. TRADES FOR EXERCISES:

At least two exercises from each trade:

- i) Carpentry- (T-Lap Joint, Dovetail Joint, Mortise & Tenon Joint)
- ii) Fitting- (V-Fit, Dovetail Fit & Semi-circular fit)
- iii) Tin-Smithy- (Square Tin, Rectangular Tray & Conical Funnel)
- iv) Foundry- (Preparation of Green Sand Mould using Single Piece and Split Pattern)
- v) Welding Practice- (Arc Welding & Gas Welding)
- vi) House-wiring- (Parallel & Series, Two-way Switch and Tube Light)
- vii) Black Smithy- (Round to Square, Fan Hook and S-Hook)

2. TRADES FOR DEMONSTRATION & EXPOSURE:

Plumbing, Machine Shop, Metal Cutting (Water Plasma), Power tools in construction and Wood Working
Experiments beyond the Syllabus:

Machine Shop - {lathe machine, drilling machine}

TEXTBOOKS:

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

REFERENCE BOOKS:

Workshop Manual - P. Kanniah / K. L. Narayana / SciTech Workshop Manual / Venkat Reddy / BSP

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2000HS61) ENGLISH LANGUAGE AND COMMUNICATIONS SKILLS LAB

B.Tech. I Year II Sem

L T P C

0 0 2 1

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

COURSE OBJECTIVES:

1. To facilitate computer-assisted multi-media instruction enabling individualized and independent language learning
2. To sensitize students to the nuances of English speech sounds, word accent, intonation and rhythm
3. To bring about a consistent accent and intelligibility in students' pronunciation of English by providing an opportunity for practice in speaking
4. To improve the fluency of students in spoken English and neutralize their mother tongue influence
5. To train students to use language appropriately for public speaking and interviews
6. To foster better understanding of nuances of English language through audio-visual experience and group activities
7. To inculcate Neutralization of accent for intelligibility
8. To enhance students' speaking skills with clarity and confidence which in turn enhances their employability skills

Syllabus

English Language and Communication Skills Lab (ELCS) shall have two parts: a. Computer Assisted Language Learning (CALL) Lab

b. Interactive Communication Skills (ICS) Lab

Listening Skills Objectives

1. To enable students develop their listening skills so that they may appreciate its role in the LSRW skills approach to language and improve their pronunciation
2. To equip students with necessary training in listening so that they can comprehend the speech of people of different backgrounds and regions

Students should be given practice in listening to the sounds of the language, to be able to recognize them and find the distinction between different sounds, to be able to mark stress and recognize and use the right intonation in sentences.

- Listening for general content
- Listening to fill up information
- Intensive listening
- Listening for specific information

Speaking Skills Objectives

1. To involve students in speaking activities in various contexts
2. To enable students express themselves fluently and appropriately in social and professional contexts
 - Oral practice: Just A Minute (JAM) Sessions
 - Describing objects/situations/people
 - Roleplay-Individual/Group activities
 - Group Discussion-Group activities

The following course content is prescribed for the English Language and Communication Skills Lab based on Unit-6 of AICTE Model Curriculum 2018 for B.Tech First Year English. As the syllabus is very limited, it is required to prepare teaching/learning materials by the teachers collectively in the form of handouts based on the needs of the students in their respective colleges for effective teaching/learning and time saving in the Lab)

Exercise- ICALL Lab:

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

ICS Lab:

Understand: Communication at Work Place-Spoken vs. Written language.

Practice: Ice-Breaking Activity and JAM Session-Situational Dialogues-Greetings-Taking Leave

-Introducing Oneself and Others.

Exercise- II CALL Lab:

Understand: Structure of Syllables-Word Stress and Rhythm-Weak Forms and Strong Forms in Context.

Practice: Basic Rules of Word Accent-Stress Shift-Weak Forms and Strong Forms in Context.

ICS Lab:

Understand: Features of Good Conversation-Non-verbal Communication.

Practice: Situational Dialogues-Role-Play-Expressions in Various Situations-Making Requests and Seeking Permissions-Telephone conversation.

Exercise -III CALL Lab:

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

ICS Lab:

Understand: Telephonic Etiquette, How to make Formal Presentations. Practice: Formal Telephone conversation and Formal Presentations.

Exercise- IV CALL Lab:

Understand: Consonant Clusters, Plural and Past Tense Markers Practice: Words often Misspelled- Confused/Misused.

ICS Lab:

Understand: Public Speaking -Exposure to Structured Talks. Practice: Making a Short Speech- Extempore.

Exercise- V CALL Lab:

Understand: Listening for General and Specific Details. Practice: Listening Comprehension Tests.

ICS Lab:

Understand: Group Discussion and Interview Skills.

Practice: Case study, Group Discussions and Mock Interviews.

Minimum Requirement of infrastructural facilities for ELCS**Lab:1. Computer Assisted Language Learning (CALL) Lab:**

The Computer Assisted Language Learning Lab has to accommodate 40 students with 40 systems, with one Master Console, LAN facility and English language learning software for self-study by students.

System Requirement (Hardware component):

Computer network with LAN facility (minimum 40 systems with multimedia) with the following specifications:

- i) Computers with Suitable Configuration
- ii) High Fidelity Headphones

2. Interactive Communication Skills (ICS) Lab:

The Interactive Communication Skills Lab: A Spacious room with movable chairs and audio-visual aids with a Public-Address System, LCD and a projector etc.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2005ES62) PYTHON PROGRAMMING LAB

B.Tech. I Year II Sem

L T P C

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COURSE OBJECTIVES:

- Introduce core programming basics and program design with functions using Python programming language.
- To understand a range of Object-Oriented Programming, as well as in-depth data and information processing techniques.
- To understand the high-performance programs designed to strengthen the practical expertise.

Course Outcomes:

- Student able to understand the basic concepts scripting and the contributions of scripting language
- Ability to explore python especially the object oriented concepts, and the built in objects of Python.
- Ability to create practical and contemporary applications such as TCP/IP network programming, Web applications, discrete events simulations

Week1:

1. Python program to print "Hello Python"
2. Write a program that computes and prints the result of $512 \cdot 282/47 \cdot 48+5$. It is roughly .1017
3. Ask the user to enter a number. Print out the square of the number but use the optional argument to print it out in a full sentence that ends in a period. Sample output is shown below. Enter a number: 5 The square of 5 is 25.
4. Ask the user to enter a number x. Use the optional argument to print out x, 2x, 3x, 4x, and 5x, each separated by three dashes, like below.

Enter a number: 7

7---14---21---28---35

Week2:

1. Write a program that asks the user to enter three numbers (use three separate input statements). Create variables called total and average that hold the sum and average of the three numbers and print out the values of total and average.
2. A lot of cell phones have tip calculators. Write one. Ask the user for the price of the meal and the percent tip they want to leave. Then print both the tip amount and the total bill with the tip included.
3. Write a program which will find all such numbers which are divisible by 7 but are not a multiple of 5, between 2000 and 3200 (both included). The numbers obtained should be printed in a comma-separated sequence on a single line.

Hints: Consider `userange(begin, end)` method

4. Write a program that calculates and prints the value according to the given formula: $Q = \sqrt{(2 * C * D)/H}$

Following are the fixed values of C and H: C is 50. H is 30. D is the variable whose values should be input to your program in a comma-separated sequence, let us assume the following comma-separated inputs sequence is given to the program: 100, 150, 180 The output of the program

Hint:

If the output received is in decimal form, it should be rounded off to its nearest value (for example, if the output received is 26.0, it should be printed as 26) 18, 22, 24 should be:

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Week3:

- Write a program that asks the user to enter a length in centimeters. If the user enters a negative length, the program should tell the user that the entry is invalid. Otherwise, the program should convert the length to inches and print out the result. There are 2.54 centimeters in an inch.
- Ask the user for a temperature. Then ask them what units, Celsius or Fahrenheit, the temperature is in. Your program should convert the temperature to the other unit. The conversions are $F = 9/5 C + 32$ and $C = 5/9 (F - 32)$
- Ask the user to enter a temperature in Celsius. The program should print a message based on the temperature:
 - If the temperature is less than -273.15, print that the temperature is invalid because it is below absolute zero.
 - If it is exactly -273.15, print that the temperature is absolute 0.
 - If the temperature is between -273.15 and 0, print that the temperature is below freezing.
 - If it is 0, print that the temperature is at the freezing point.
 - If it is between 0 and 100, print that the temperature is in the normal range. o If it is 100, print that the temperature is at the boiling point.
 - If it is above 100, print that the temperature is above the boiling point
- Write a program that asks the user how many credits they have taken. If they have taken 23 or less, print that the student is a freshman. If they have taken between 24 and 53, print that they are a sophomore. The range for juniors is 54 to 83, and for seniors it is 84 and over.

Week4:

- A year is a leap year if it is divisible by 4, except that years divisible by 100 are not leap years unless they are also divisible by 400. Write a program that asks the user for a year and prints out whether it is a leap year or not
- Write a multiplication game program for kids. The program should give the player ten randomly generated multiplication questions to do. After each, the program should tell them whether they got it right or wrong and what the correct answer is.

Question 1: $3 \times 4 = 12$ Right!

Question 2: $8 \times 6 = 44$ Wrong.

The answer is 48.

...

...

Question 10: $7 \times 7 = 49$ Right.

3. A jar of Halloween candy contains an unknown amount of candy and if you can guess exactly how much candy is in the bowl, then you win all the candy. You ask the person in charge the following: If the candy is divided evenly among 5 people, how many pieces would be left over? The answer is 2 pieces. You then ask about dividing the candy evenly among 6 people, and the amount left over is 3 pieces. Finally, you ask about dividing the candy evenly among 7 people, and the amount left over is 2 pieces. By looking at the bowl, you can tell that there are less than 200 pieces. Write a program to determine how many pieces are in the bowl

Write a program that asks the user to enter a value n , and then computes $(1 + 2 + 3 + \dots + n) \ln(n)$. The \ln function is `log` in the `math` module

Week 5:

- A number is called a perfect number if it is equal to the sum of all of its divisors, not including the number itself. For instance, 6 is a perfect number because the divisors of 6 are 1, 2, 3, 6 and $6 = 1 + 2 + 3$. As another example, 28 is a perfect number because its divisors are 1, 2, 4, 7, 14, 28 and $28 = 1 + 2 + 4 + 7 + 14$. However, 15 is not a perfect number because its divisors are 1, 3, 5, 15 and $15 \neq 1 + 3 + 5$. Write a program that finds all four of the perfect numbers that are less than 10000.
- Ask the user to enter 10 test scores. Write a program to do the following:
 - Print out the highest and lowest scores.
 - Print out the average of the scores.
 - Print out the second largest score.
 - If any of the scores is greater than 100, then after all the scores have been entered, print a message warning the user that a value over 100 has been entered.
 - Drop the two lowest scores and print out the average of the rest of them
- Write a program that computes the factorial of a number. The factorial, $n!$, of a number n is the product of all the integers between 1 and n , including n . For instance, $5! = 1 \cdot 2 \cdot 3 \cdot 4 \cdot 5 = 120$. [Hint: Try using a multiplicative equivalent of the summing technique.]

Week 6:

- Write a program that asks the user for a number and then prints out the sine, cosine, and tangent of that number.
- The Fibonacci numbers are the sequence below, where the first two numbers are 1, and each number thereafter is the sum of the two preceding numbers. Write a program that asks the user how many Fibonacci numbers to print and then prints that many.

1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89 . . .

- Use a for loop to print a triangle like the one below. Allow the user to specify how high the triangle should be.

*

**

Week7:

1. Use for loop to print a diamond like the one below. Allow the user to specify how high the diamond should be.

*

 *

2. Write a program that asks the user to enter an angle between 180° and 180° . Using an expression with the modulo operator, convert the angle to its equivalent between 0° and 360° .

3.

- (a) One way to find out the last digit of a number is to mod the number by 10. Write a program that asks the user to enter a power. Then find the last digit of 2 raised to that power.
- (b) One way to find out the last two digits of a number is to mod the number by 100. Write a program that asks the user to enter a power. Then find the last two digits of 2 raised to that power.
- (c) Write a program that asks the user to enter a power and how many digits they want.

Find the last that many digits of 2 raised to the power the user entered

Week8:

1. The GCD (greatest common divisor) of two numbers is the largest number that both are divisible by. For instance, $\text{gcd}(18, 42)$ is 6 because the largest number that both 18 and 42 are divisible by is 6. Write a program that asks the user for two numbers and computes their gcd. Shown below is a way to compute the GCD, called Euclid's Algorithm.
 - First compute the remainder of dividing the larger number by the smaller number
 - Next, replace the larger number with the smaller number and the smaller number with the remainder.
 - Repeat this process until the smaller number is 0. The GCD is the last value of the larger number.
2. Write a program that asks the user to enter a string. The program should then print the following:
 - (a) The total number of characters in the string
 - (b) The string repeated 10 times
 - (c) The first character of the string (remember that string indices start at 0)
 - (d) The first three characters of the string

- (e) The last three characters of the string
- (f) The string backwards
- (g) The seventh character of the string if the string is long enough and a message otherwise
- (h) The string with its first and last characters removed
- (i) The string in all caps
- (j) The string with every 'a' replaced with an 'e'
- (k) The string with every letter replaced by a space

Week 9:

1. Write a program that asks the user to enter a string. The program should create a new string called new_string from the user's string such that the second character is changed to an asterisk and three exclamation points are attached to the end of the string. Finally, print new_string. Typical output is shown below: Enter your string: Qbert Q*ert!!!
2. Write a program that computes the net amount of a bank account based on a transaction log from console input. The transaction log format is shown as following:
D100 W200D means deposit while W means withdrawal.
Suppose the following input is supplied to the program: D 300D 300 W200D 100 Then, the output should be: 500

Week 10:

1. A website requires the user to input a username and password to register. Write a program to check the validity of password input by users.

Following are the criteria for checking the password:

1. At least 1 letter between [a-z]
2. At least 1 number between [0-9]
1. At least 1 letter between [A-Z]
3. At least 1 character from [!@#]
4. Minimum length of transaction password: 6
5. Maximum length of transaction password: 12

Your program should accept a sequence of comma-separated passwords and will check them according to the above criteria. Passwords that match the criteria are to be printed, each separated by a comma.

Example

If the following passwords are given as input to the program:

ABd1234@1,aF1#,2w3E*,2We3345

2. Write a program that accepts a sequence of lines as input and prints the lines after making all characters in the sentence capitalized.
Suppose the following input is supplied to the program:
Hello world

Practice makes perfect Then, the output should be:

HELLOWORLD

PRACTICE MAKES PERFECT

3. The goal of this exercise is to see if you can mimic the behavior of the `in` operator and the `count` and `index` methods using only variables, for loops, and if statements.
- (a) Without using the `in` operator, write a program that asks the user for a string and a letter and prints out whether the letter appears in the string.
 - (b) Without using the `count` method, write a program that asks the user for a string and a letter and counts how many occurrences there are of the letter in the string.
 - (c) Without using the `index` method, write a program that asks the user for a string and a letter and prints out the index of the first occurrence of the letter in the string. If the letter is not in the string, the program should say so.

TEXTBOOK:

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

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2002ES61) BASIC ELECTRICAL ENGINEERING LAB

B.Tech. I Year II Sem

L T P C

0 0 2 1

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 Ohm's Law
2. Verification of KVL and KCL
3. Transient Response of Series RL and RC circuits using DC excitation
4. Transient Response of RLC Series circuit using DC excitation
5. Resonance in series RLC circuit
6. Calculations and Verification of Impedance and Current of RL, RC and RLC series circuits
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 Voltages and 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 DC Shunt/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

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2000MC02) FRENCH LANGUAGE

B.Tech. I Year II Sem

L T P C

2 0 0 0

INTRODUCTION:

In view of the growing importance of foreign languages as a communication tool in some countries of the world, French has been identified as one of the most popular languages after English. As a result, French program is introduced to develop the linguistic and communicative skills of engineering students and to familiarize them to the French communication skills. This course focuses on basic oral skills.

Course Objectives:

- To inculcate the basic knowledge of the French language.
- To hone the basic sentence constructions in day to day expressions for communication in their vocation.

Course Outcomes

- The students will be able to communicate in French at A1 level.
- The student will have an advantage in the competitive job market.
- This course benefits the graduates when pursuing study opportunities in the countries where French is the official language.

UNIT-I:

Speaking: Introduction to the French language and culture - Salutations - French alphabet - Introducing people

Writing: Understand and fill out a form

Grammar: The verbs "to be" and "to have" in the present tense of the indicative
Vocabulary: The numbers from 1 to 20 - Professions - Nationalities

UNIT-II:

Speaking: Talk about one's family - description of a person - express his tastes and preferences - express possession - express negation
Writing: Write and understand a short message

Grammar: Nouns (gender and number) - Articles - The -er verbs in the present - Possessive adjectives - Qualifying adjectives

Vocabulary: The family - Clothes - Colors - The numbers from 1 to 100 - The classroom

UNIT-III

Speaking: Talk about your daily activities - be in time - ask and indicate the date and time - talk about sports and recreation - express the frequency
Writing: A letter to a friend

Grammar: The expression of time - Their verbs in the present - The verbs do, go, take, come,

-Adverbs - Reflexive verbs

Vocabulary-The days and months of the year - The sports - Hobbies

UNIT-IV

Speaking: Express the quantity - ask and give the price - express the need, the will and the capacity - compare (adjective) - speak at the restaurant / in the shops

Writing: A dialogue between a vendor and a customer at the market

Grammar: Verbs "to want", "to can" - Express capacity / possibility - Express will / desire - the future tense

Vocabulary: The food - Meals - Fruits and vegetables - The parts of the body

UNIT-V

Speaking: Express the prohibition and the obligation - describe an apartment - talk about the weather / ask the weather - ask the opinion - give your opinion - express your agreement or disagreement

Writing: Descriptions

Grammar: Demonstrative adjectives - Prepositions - The verb 'must' to indicate obligation and necessity in the present

Vocabulary: Seasons - Holidays - The city - Furniture

NOTE: The students are exposed to simple listening and reading activities.

REFERENCE BOOKS

1. Apprenons le Français 1 & 2, New Saraswati House, 2015
2. A propos, A1, Langers International, 2010
3. Easy French Step-by-step by Myrna Bell Rochester
4. Ultimate French Beginner-Intermediate (Coursebook) By Livid Language
5. *À l'Aventure: An Introduction to French Language and Francophone Cultures* by Evelyne Charvier-Berman, Anne C. Cummings.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2000BS04) PROBABILITY AND STATISTICS

B.Tech. II Year I Sem

L T P C

3 1 0 4

COURSE OBJECTIVES:

- Understand a random variable that describes randomness or an uncertainty in a certain realistic situation. It can be of either discrete or continuous type.
- In the discrete case, study of the binomial and the Poisson random variables and the Normal random variable for the continuous case predominantly describe important probability distributions. Important statistical properties for these random variables provide every good insight and are essential for industrial applications.
- Most of the random situations are described as functions of many single random variables.
- The types of sampling, Sampling distribution of means, Sampling distribution of variance, Estimations of statistical parameters, Testing of hypothesis of few unknown statistical parameters.

Course Outcomes:

- Students would be able to identify distribution in certain realistic situation. It is mainly useful for circuits as well as non-circuit branches of engineering. Also able to differentiate among many random variables involved in the probability models. It is quite useful for all branches of engineering.
- The student would be able to calculate mean and proportions (small and large sample) and to make important decisions from few samples which are taken out of unmanageably huge populations.

UNIT-I

Probability and Discrete Probability Distributions:

Probability Definition, conditional probability, Baye's theorem (without proof) ; Discrete Random variables, Binomial and Poisson distributions and their properties. (Without proof)

UNIT-II

Continuous Probability Distributions: Continuous random variables and their properties (without proof), distribution functions, Normal distribution.

Curve Fitting: Curve fitting by the method of least squares- fitting of straight lines, second degree parabolas and exponential curves.

UNIT-III

Sampling Distribution: Definitions of population, sample, statistic, parameter. Types of sampling, Expected values of Sample mean and variance, sampling distribution, Standard error, Sampling distribution of mean and sampling distribution of variance.

UNIT-IV

Testing of hypothesis: Null hypothesis, Alternate hypothesis, type I, & type II errors - critical region, confidence

interval, Level of significance, one tailed test and two tailed test. Large sample tests:

- i. Test of Equality of means of two sample equality of sample mean and population mean (cases of known variance & unknown variance, equal and unequal variances)
- ii. Tests of significance difference between sample proportion and population proportion & difference between two sample proportions.

UNIT-V

Small sample tests: Student t-distribution, its properties; Test of significant difference between sample mean and population mean; difference between means of two small samples. Snedecor's F-distribution and its properties. Test of equality of two population variances. Chi-square distribution, its properties, Chi-square test of goodness of fit.

TEXTBOOKS:

1. Higher Engineering Mathematics by Dr. B. S. Grewal, Khanna Publishers
2. Probability and Statistics for Engineers and Scientists by Sheldon M. Ross, Academic Press

REFERENCE BOOKS:

1. Mathematics for Engineers by K. B. Datta and M. S. Sriniva, Cengage Publications
2. Probability and Statistics by T. K. V. Iyengar & B. Krishna Gandhi Et
3. Fundamentals of Mathematical Statistics by S. C. Gupta and V. K. Kapoor
4. O. Neil by P & Sons applications
5. Veerajan T., Engineering Mathematics (for semester III), Tata McGraw-Hill, New Delhi, 2010. Erwin Kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006.
6. P. G. Hoel, S. C. Port and C. J. Stone, Introduction to Probability theory, Universal Book Stall, 2003 (Reprint).

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2000MC02) FRENCH LANGUAGE

B.Tech. I Year II Sem

L T P C

2 0 0 0

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MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2000BS04) PROBABILITY AND STATISTICS

B.Tech. II Year I Sem

L T P C

3 1 0 4

COURSE OBJECTIVES:

Understand a random variable that describes randomness or an uncertainty in certain realistic situation. It can be of either discrete or continuous type.

In the discrete case, study of the binomial and the Poisson random variables and the Normal random variable for the continuous case predominantly describe important probability distributions. Important statistical properties for these random variables provide every good insight and are essential for industrial applications.

Most of the random situations are described as functions of many single random variables.

The types of sampling, Sampling distribution of means, Sampling distribution of variance, Estimations of statistical parameters, Testing of hypothesis of few unknown statistical parameters.

Course Outcomes:

Students would be able to identify distribution in certain realistic situation. It is mainly useful for circuits as well as non-circuit branches of engineering. Also able to differentiate among many random variables involved in the probability models. It is quite useful for all branches of engineering.

The student would be able to calculate mean and proportions (small and large sample) and to make important decisions from few samples which are taken out of unmanageably huge populations.

UNIT-I

Probability and Discrete Probability Distributions:

Probability Definition, conditional probability, Baye's theorem (without proof) ; Discrete R and O variables, Binomial and Poisson distributions and their properties. (Without proof)

UNIT-II

Continuous Probability Distributions: Continuous random variables and their properties (without proof), distribution functions, Normal distribution.

Curve Fitting: Curve fitting by the method of least squares- fitting of straight lines, second degree parabolas and exponential curves.

UNIT-III

Sampling Distribution: Definitions of population, sample, statistic, parameter. Types of sampling, Expected values of Sample mean and variance, sampling distribution, Standard error, Sampling distribution of mean and sampling distribution of variance.

UNIT-IV

Testing of hypothesis: Null hypothesis, Alternate hypothesis, type I, & type II errors - critical region, confidence

interval, Level of significance, one tailed test and two tailed test. Large sample tests:

- i. Test of Equality of means of two samples equality of sample mean and population mean (cases of known variance & unknown variance, equal and unequal variances)
- ii. Tests of significance difference between sample proportion and population proportion & difference between two sample proportions.

UNIT-V

Small sample tests: Student-t-distribution, its properties; Test of significant difference between sample mean and population mean; difference between means of two small samples. Snedecor's F-distribution and its properties. Test of equality of two population variances. Chi-square distribution, its properties, Chi-square test of goodness of fit.

TEXTBOOKS:

1. Higher Engineering Mathematics by Dr. B. S. Grewal, Khanna Publishers
2. Probability and Statistics for Engineers and Scientists by Sheldon M. Ross, Academic Press

REFERENCE BOOKS:

1. Mathematics for Engineers by K. B. Datta and M. S. Sriniva, Cengage Publications
2. Probability and Statistics by T. K. V. Iyengar & B. Krishna Gandhi Et
3. Fundamentals of Mathematical Statistics by S. C. Gupta and V. K. Kapoor
4. O. Neil by P & S only applications
5. Veerajan T., Engineering Mathematics (for semester III), Tata McGraw-Hill, New Delhi, 2010. Erwin Kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006.
6. P. G. Hoel, S. C. Port and C. J. Stone, Introduction to Probability theory, Universal Book Stall, 2003 (Reprint).

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2004ES01) ANALOG AND DIGITAL CIRCUITS

B.Tech. II Year I Sem

L T P C

3 0 0 3

COURSE OBJECTIVES:

- To familiarize the student with the principle of operation, analysis and design of Junction diode, BJT and FET amplifier circuits, transistors and field effect transistors.
- To understand diode as rectifier.
- To apply principles of Boolean algebra to minimize logic expressions using minimization techniques.
- To outline the formal procedure to design the combinational and sequential circuits of desired functionality.

Course Outcomes:

Upon successful completion of this course, the student will be able to:

- Understand and analyze the different types of diodes, operation and its characteristics.
- Design and analyze the DC bias circuitry of BJT and FET.
- Perform arithmetic operations on different number systems and to apply the principles of Boolean algebra to minimize logic expressions.
- Analyze some basic components used in digital systems such as adder and subtractor, decoder, encoder, multiplexer, flip-flops, registers and counters.
- Design various combinational PLDs such as ROMs, PALs, PALs.

UNIT-I

Junction Diode: P-N Junction as a Diode, Volt-Ampere Characteristics, Temperature dependence of V characteristics, Transition and Diffusion Capacitances, Break down Mechanisms in Semiconductor Diodes, Zener Diode Characteristics.

Rectifiers and Filters: The P-N junction as a Rectifier, Halfwave Rectifier, Full wave Rectifier, Inductor Filters, and Capacitor Filters.

UNIT-II

Bipolar Junction Transistor: The Junction Transistor, Transistor as an Amplifier, Common Base, Common Emitter and Common Collector Configurations, BJT Specifications, BJT Hybrid Model, Comparison of CB, CE, and CC Amplifier Configurations.

Transistor Biasing and Stabilization: Operating Point, The DC and AC Load lines, Need for Biasing, Bias Compensation using Diodes and Transistors, Thermal Runaway, Analysis of a Transistor Amplifier Circuit using h-Parameters,

UNIT-III

Field Effect Transistor: The Junction Field Effect Transistor, Volt-Ampere characteristics, MOSFET: MOSFET Characteristics in Enhancement and Depletion modes, Comparison of BJT and FET.

Digital Systems: Binary Numbers, Number base conversions, Octal, Hexadecimal and other base numbers, complements, binary codes, Error detection and correction, Basic theorems and properties of Boolean Algebra, Boolean functions, canonical and standard forms.

UNIT-IV

Gate-Level Minimization: The K-Map Method, Three-Variable Map, sum of products, product of sums simplification, Don't care conditions, NAND and NOR implementation, Exclusive-OR function.

Combinational Logic Circuits: Combinational circuit for different code converters, Binary Adder-Subtractor, Decimal Adder, Binary Multiplier, Decoders, Encoders, Multiplexers, De-multiplexers.

UNIT-V

Sequential Logic Circuits: Sequential Circuits, Latches, Flip-flops, analysis of clocked sequential circuits, Registers, Shift registers, Ripple counters, Synchronous counters.

Memory: Introduction, Random-Access memory, ROM, Programmable Logic Array, Programmable Array Logic.

TEXTBOOKS:

1. Millman's Electronic Devices and Circuits - J. Millman, C.C. Halkias, and Satyabrata Jit, 2 Ed., 1998, TMH
2. Electronic Devices and Circuits - David A. Bell, 5 Ed, Oxford.
3. M. Morris Mano, Michael D. Ciletti (2008), Digital Design, 4th edition, Pearson Education/PHI, India.
4. Thomas L. Floyd (2006), Digital Fundamentals, 9th edition, Pearson Education International.

REFERENCE BOOKS:

1. Integrated Electronics - J. Millman and Christos C. Halkias, 1991 Ed., 2008, TMH.
2. Electronic Devices and Circuits - K. Lal Kishore, 2nd Ed., 2005, BSP.
3. Electronic Devices and Circuits - S. Salivahanan, N. Suresh Kumar, A. Vallavaraj, 2nd Ed., 2008, TMH.
4. Zvi. Kohavi (2004), Switching and Finite Automata Theory, Tata McGraw Hill, India.
5. C. V. S. Rao (2009), Switching and Logic Design, 3rd edition, Pearson Education, India

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2005PC01) DATASTRUCTURES & ALGORITHMS

B.Tech. II Year I Sem

L T P C

3 0 0 3

OBJECTIVES:

- To impart the basic concepts of data structures and algorithms.
- To understand concepts about searching and sorting techniques
- To understand basic concepts about stacks, queues, list trees and graphs.
- To enable them to write algorithms for solving problems with the help of fundamental data Structures

Outcomes:

At the end of the course the students are able to:

- For a given Algorithm student will be able to analyze the algorithm to determine time & computation complexity and justify the correctness.
- For a given Search problem (Linear Search and Binary Search) student will be able to implement it. For a given problem of Stacks, Queues and linked list student will be able to implement it and analyze the same to determine the time and computation complexity.
- Student will be able to write an algorithm Selection Sort, Bubble Sort, Insertion Sort, Quick Sort, Merge Sort, Heap Sort and compare their performance in terms of Space and Time complexity. Student will be able to implement Graph search and traversal algorithms and determine the time and computation complexity.

UNIT-I

Introduction: Basic Terminologies: Elementary Data Organizations. Data Structure Operations: insertion, deletion, traversal etc. Analysis of an Algorithm, Asymptotic Notations, Time-Space trade off. Searching: Linear Search and Binary Search Techniques and their complexity analysis.

UNIT-II

Stacks and Queues: ADT Stack and its operations: Algorithms and their complexity analysis, Applications of Stacks: Expression Conversion and evaluation - corresponding algorithms and complexity analysis. ADT Queue: Types of Queue: Simple Queue, Circular Queue, Priority Queue. Operations on each type of Queues, Algorithms and their analysis.

UNIT-III

LinkedLists: Singly linked lists: Representation in memory, Algorithms of several operations Traversing, Searching, Insertion into, Deletion from linked list; Linked representation of Stack and Queue, Header nodes. Doubly Linked List: operations on it and algorithmic analysis. Circular Linked List: all operations their algorithms and complexity analysis.

UNIT-IV

Trees: Basic Tree Terminologies: Different types of Trees: Binary Tree, Threaded Binary Tree, Binary Search Tree, AVL Tree: Tree operations on each of the trees and their algorithm with complexity analysis. Applications of Binary Trees, B-Tree, B+Tree: definitions, algorithms and analysis.

UNIT-V

Sorting and Hashing: Objective and properties of different sorting algorithms: Selection Sort, Bubble Sort, Insertion Sort, Quick Sort, Merge Sort, Heap Sort. Performance and Comparison among all the methods, Hashing.

Graph: Basic Terminologies & Representations, Graph search and traversal algorithms & complexity analysis.

TEXT BOOKS:

1. "Fundamentals of Data Structures", Illustrated Edition by Ellis Horowitz, Sartaj Sahni, Computer Science Press.

REFERENCE BOOKS:

1. Algorithms, Data Structures, and Problem Solving with C++, Illustrated Edition by Mark Allen Weiss, Addison-Wesley Publishing Company
2. "How to Solve it by Computer", 2nd Impression by R.G. Dromey, Pearson Education.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2005PC03) DISCRETE MATHEMATICS

B.Tech. II Year I Sem

L T P C

3 0 0 3

COURSE OBJECTIVES:

- Use mathematically correct terminology and notation.
- Construct correct direct and indirect proofs.
- Use division into cases in a proof.
- Use counterexamples.
- Apply logical reasoning to solve a variety of problems.

Course Outcomes:

At the end of the course the students are able to:

- For a given logic sentence express it in terms of predicates, quantifiers, and logical connectives
- For a given a problem, derive the solution using deductive logic and prove the solution based on logical inference
- For a given a mathematical problem, classify its algebraic structure Evaluate Boolean functions and simplify expressions using the properties of Boolean algebra Develop the given problem as graph networks and solve with techniques of graph theory.

UNIT-I

Propositional Logic: Syntax, Semantics, Validity and Satisfiability, Basic Connectives and Truth Tables, Logical Equivalence: The Laws of Logic, Logical Implication, Rules of Inference, Normal Forms, Disjunctive and Conjunctive Normal Form, The use of Quantifiers.

UNIT-II

Sets, Relation and Function: Operations and Laws of Sets, Cartesian Products, Binary Relation, Partial Ordering Relation, Equivalence Relation, Image of a Set, Sum and Product of Functions, Bijective functions, Inverse and Composite Function, Size of a Set, Finite and infinite Sets, Countable and uncountable Sets.

Principles of Mathematical Induction: The Well-Ordering Principle, Recursive definition, The Division Algorithm: Prime Numbers, The Greatest Common Divisor: Euclidean Algorithm, The Fundamental Theorem of Arithmetic.

UNIT-III

Algebraic Structures and Morphism: Algebraic Structures with one Binary Operation, Semi Groups, Monoids, Groups, Congruence Relation and Quotient Structures, Free and Cyclic Monoids and Groups, Permutation Groups, Substructures, Normal Subgroups, Algebraic Structures with two Binary Operation, Rings, Integral Domain and Fields. Boolean Algebra and Boolean Ring, Identities of Boolean Algebra, Duality, Representation of Boolean Function.

UNIT-IV

Elementary Combinatorics: Basic counting techniques-inclusion and exclusion, pigeon-hole principle, permutations and combinations With Repetition and Without Repetition.

UNIT-V

Graphs and Trees: Graphs and their properties, Degree, Connectivity, Path, Cycle, Sub Graph, Isomorphism, Eulerian and Hamiltonian Walks, Graph Colouring, Colouring maps and Planar Graphs, Colouring Vertices, Colouring Edges, List Colouring, Perfect Graph, definition properties and Example, rooted trees, trees and sorting, weighted trees and prefix codes, Bi-connected component and Articulation Points, Shortest distances.

TEXTBOOKS:

1. Kenneth H. Rosen, Discrete Mathematics and its Applications, Tata McGraw-Hill
2. Susanna S. Epp, Discrete Mathematics with Applications, 4th edition, Wadsworth Publishing Co. Inc.
3. CLLiu and DPMohapatra, Elements of Discrete Mathematics A Computer Oriented Approach, 3rd Edition by, Tata McGraw-Hill.

REFERENCE BOOKS:

1. J.P. Tremblay and R. Manohar, "Discrete Mathematical Structure and Its Application to Computer Science", TMG Edition, Tata McGraw-Hill
2. Norman L. Biggs, Discrete Mathematics, 2nd Edition, Oxford University Press. Schaum's Outlines Series, Seymour Lipschutz, Marc Lipson,
3. Discrete Mathematics, Tata McGraw-Hill

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2005PC04) OBJECT ORIENTED PROGRAMMING THROUGH JAVA

B.Tech. II Year I Sem

L T P C

3 0 0 3

COURSE OBJECTIVE:

- The objective of this course is to provide object-oriented concepts through which robust, secured and reusable software can be developed.
- To understand object-oriented principles like abstraction, encapsulation, inheritance and polymorphism and apply them in solving problems.
- To understand the principles of inheritance and polymorphism and demonstrate how they relate to the design of abstract classes.
- To understand the implementation of packages and interfaces.
- To understand the concepts of exception handling, multithreading and collection classes.
- To understand the design of Graphical User Interface using applets and swing controls.

Course Outcomes:

At the end of the course the students are able to:

- An understanding of the principles and practice of object oriented analysis and design in the construction of robust, maintainable programs which satisfy their requirements;
- A competence to design, write, compile, test and execute straightforward programs using a high-level language;
- An appreciation of the principles of object-oriented programming;
- An awareness of the need for a professional approach to design and the importance of good documentation to the finished programs.
- Be able to implement, compile, test and run Java programs comprising more than one class, to address a particular software problem.
- Demonstrate the ability to use simple data structures like arrays in a Java program.
- Be able to make use of members of classes found in the Java API.
- Demonstrate the ability to employ various types of selection constructs in a Java program. Be able to employ a hierarchy of Java classes to provide a solution to a given set of requirements.
- Able to develop applications using Applet and Swings.

UNIT-I

Object-oriented thinking- A way of viewing world - Agents and Communities, messages and methods, Responsibilities, Classes and Instances, Class Hierarchies-Inheritance, Methodbinding, Overriding and Exceptions, Summary of Object-Oriented concepts.

An Overview of Java ? History of Java, comments, Data types, Variables, Constants, Scope and Life time of variables, Operators, Type conversion and casting, Enumeration, Controlflow? block scope, conditional statements, loops, break and continue statements, simple java standaloneprograms, arrays, console input and output, classes, methods, constructors, static, this keyword, recursion, exploring string classes and garbage collection.

UNIT-II

Inheritance-Inheritancehierarchy,superkeyword,preventinginheritance:finalclassesandmethods,the Objectclassand its methods.

Polymorphism-dynamicbinding,Constructorandmethodoverloading,methodoverriding,abstractclasses.

Interfaces?InterfacesVsAbstractClasses,defininganinterface,implementinginterfaces,accessing implementations through interface references, extending interface, inner class.Packages?Defining, creating and accessing a package, CLASSPATH, Access modifiers,importingpackages.

UNIT-III

Exception Handling - Dealing with errors, benefits of exception handling, the classification of exceptions?exception hierarchy, checked exceptions and unchecked exceptions, usageoftry, catch, throw, throws and finally, creatingown exception sub classes.

Multithreading - Differences between multiple processes and multiple threads, thread lifecycle, creating threads, interrupting threads, thread priorities, synchronizing threads, inter?thread communication-producerconsumer problem.

UNIT-IV

Collection Framework in Java - Introduction to java collections, Overview of java collectionframework, Commonly used collection classes?ArrayList, LinkedList, HashSet, TreeSet, Map-HashMap,TreeMap, Legacy Classes-Vector, Stack,Hashtable.

OtherUtilities-Scanner, StringTokenizer,Random,Date.

Files-Streams-Byte Streams, Character Streams, Text input/output, Binary input /output ,FileManagement usingFile class.

UNIT-V

Applets - Inheritance hierarchy for applets, differences between applets and applications, Lifecycleof an applet and Passing parameters to applets

GUI Programming - Swing ?The AWT class hierarchy, Introduction to Swing, Swing VsAWT, Hierarchy for Swing components, Overview of Swing components-JButton,JLabel,JTextField,JCheckBox,RadioButton, JTextArea,etcsimpleSwingapplications,Layoutmanagers- Flow Layout, Border Layout, Grid Layout and Gridbag Layout.

Event Handling-Events, Event sources, Event classes, Event Listeners, Delegation event model, Handling Mouse and Key events, Adapter classes.

TEXTBOOKS:

1. Java Fundamentals-A Comprehensive Introduction, Herbert Schildt and Dale Skrien, TMH.
2. Understanding Object-Oriented Programming with Java, updated edition, T. Budd, Pearson Education

REFERENCE BOOKS:

1. Java for Programmers, P.J. Deitel and H.M. Deitel, PEA (or) Java: How to Program, P.J. Deitel and H.M. Deitel, PHI
2. Object Oriented Programming through Java, P. Radha Krishna, Universities Press.
3. Thinking in Java, Bruce Eckel, PE
4. Programming in Java, S. Malhotra and S. Choudhary, Oxford Universities Press.
5. Design Patterns Erich Gamma, Richard Helm, Ralph Johnson and John Vlissides

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2005PC61) DATA STRUCTURES & ALGORITHMS LAB

B.Tech. II Year I Sem

L T P C

0 0 3 1.5

COURSE OBJECTIVES:

- To make the student learn an object-oriented way of solving problems.
- To make the student write ADTs for all data structures.

Course Outcomes:

At the end of the course the students are able to:

- For a given algorithm student will be able to analyze the algorithms to determine time & computation complexity and justify the correctness.
- For a given search problem (Linear Search and Binary Search) student will be able to implement it.
- For a given problem of Stacks, Queues and linked list student will be able to implement it and analyze the same to determine the time and computation complexity.
- Student will be able to write an algorithm Selection Sort, Bubble Sort, Insertion Sort, Quick Sort, Merge Sort, Heap Sort and compare their performance in terms of Space and Time complexity.

Week 1: Write C programs to implement recursive and non-recursive

- i) Linear search ii) Binary Search.

Week 2: Write C programs to implement

- i) Bubble sort ii) Selection sort
iii) Quick sort iv) Insertion sort

Week 3: Write C programs to implement the following using an array.

- a) Stack ADT b) Queue ADT

Week 4: Write C programs to implement list ADT to perform following operations

- a) Insert an element into a list. b) Delete an element from list
c) Search for a key element in list d) count number of nodes in list.

Week 5: Write C programs to implement the following using a singly linked list.

- a) Stack ADT b) Queue ADT.

Week 6: Write C programs to implement the Deque (double ended queue) ADT using a doubly linked list and an array.

Week 7: Write a C program to perform the following operations:

- a) Insert an element into a binary search tree.
- b) Delete an element from a binary search tree.
- c) Search for a key element in a binary search tree.

Week 8:

Write C programs for implementing the following sorting methods: a) Merge sort b) Heap sort

Week 9:

Write C programs that use recursive functions to traverse the given binary tree in a) Preorder b) Inorder and c) Postorder.

Week 10:

Write a C program to perform the following operations

- a) Insertion into a B⁺ tree
- b) Deletion from a B⁺ tree

Week 11:

Write a C program to perform the following operation

- a) Insertion into an AVL⁺ tree

Week 12:

Write a C program to implement all the functions of a dictionary (ADT) using hashing.

TEXTBOOKS:

- C and Data Structures, Third Edition, P. Padmanabham, BS Publications.
- C and Data Structures, Prof. P.S. Deshpande and Prof. O.G. Kakde, Dreamtech Press.
- Data Structures using C, A.K. Sharma, 2nd edition, Pearson.
- Data Structures using C, R. Thareja, Oxford University Press.
- C and Data Structures, N.B. Venkateswarlu and E. V. Prasad, S. Chand.
- C Programming and Data Structures, P. Radha Krishna, Hi-Tech Publishers.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2005PC63) OBJECT ORIENTED PROGRAMMING THROUGH JAVA LAB

B.Tech. II Year I Sem

L T P C

0 0 3 1.5

COURSE OBJECTIVES:

- To prepare students to become familiar with the Standard Java technologies of J2SE
- To prepare students to excel in Object Oriented programming and to succeed as a Java Developer through global rigorous education.
- To provide Students with a solid foundation in OOP fundamentals required to solve programming problems and also to learn Advanced Java topics like J2ME, J2EE, JSP and JavaScript
- To train Students with good OOP programming breadth so as to comprehend, analyze, design and create novel products and solutions for the real life problems.
- To inculcate in students professional and ethical attitude, multidisciplinary approach and an ability to relate java programming issues to broader application context.
- To provide student with an academic environment aware of excellence, written ethical codes and guidelines and lifelong learning needed for a successful professional career.

Course Outcomes:

- Able to analyze the necessity for Object Oriented Programming paradigm and over structured programming and become familiar with the fundamental concepts in OOP.
- Demonstrate an ability to design and develop java programs, analyze, and interpret object oriented data and report results.
- Demonstrate an ability to design an object oriented system, Swing components or multithreaded process as per needs and specifications.
- Demonstrate an ability to visualize and work on laboratory and multidisciplinary tasks like console and windows applications both for standalone and Applets program

Week1:

- a) Write a java program to find the Fibonacci series using recursive and non recursive functions.
- a) Write a java program to multiply two given matrices.

Week2:

- a) Write a java program for Method overloading and Constructor overloading.
- b) Write a java program to display the employee details using Scanner class.
- c) Write a java program that checks whether a given string is a palindrome or not.

Week3:

- a) Write a java program to represent Abstract class with example.
- b) Write a java program to implement Interface using extends keyword.

Week4:

- a) Write a java program to create user defined package.

Week5:

- a) Write a java program to create inner classes.
- b) Write a java program for creating multiple catch blocks.
- c) Write a Java Program for creating User Defined Exception.

Week6:

- a) Write a java program for producer and consumer problem using Threads.
- b) Write a Java program that implements a multi-thread application that has three threads.

Week7:

- a) Write a java program to implement all file operations.
- b) Write a Java Program to list all the files in a directory including the files present in all its sub directories.

Week8:

- a) Write a java program to represent ArrayList class.
- b) Write a Java program to load phone number, name from a text file using Hashtable.

Week9:

- a) Write an applet program that displays a simple message.
- b) Write a Java program to compute factorial value using Applet.
- c) Write a program for passing parameters using Applet.

Week10:

Write a java program for handling Mouse events and Key events

Week11:

Write a java program that works as a simple calculator. Use a GridLayout to arrange buttons for digits and for the + - * % operations. Add a text field to display the result.

TEXTBOOK/REFERENCE BOOKS:

1. Java Fundamentals - A Comprehensive Introduction, Herbert Schildt and Dale Skrien, TMH.
2. Java for Programmers, P.J. Deitel and H.M. Deitel, PEA (or) Java: How to Program, P.J. Deitel and H.M. Deitel, PHI

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2000MC03) HUMAN VALUES AND PROFESSIONAL ETHICS

B.Tech. II Year I Sem

L T P C

2 0 0 0

COURSE OBJECTIVE:

To enable the students to imbibe and internalize the Values and Ethical Behaviour in the personal and Professional lives.

Course Outcome:

The students will understand the importance of Values and Ethics in their personal lives and professional careers. The students will earn the rights and responsibilities as an employee, team member and a global citizen.

UNIT-I:

Introduction to Human Values: Need, basic Guidelines, Content and Process for Value Education, Self Exploration - 'Natural Acceptance' and Experiential Validation. Continuous Happiness and Prosperity - A look at basic Human Aspirations. Right understanding, Relationship and Physical Facilities. Understanding Happiness and Prosperity correctly

UNIT-II:

Understanding Harmony in the Family and Society: Harmony in Human - Human Relationship: Understanding harmony in the Family the basic unit of human interaction. Understanding values in human - human relationship; meaning of Nyaya and program for its fulfillment to ensure Ubhay-tripti; Trust (Vishwas) and Respect (Samman) as the foundational values of relationship. Understanding the harmony in the society (society being an extension of family). Visualizing a universal harmonious order in society-Undivided Society (Akhand Samaj), Universal Order (SarvabhaumVyawastha)-from family to world family!

UNIT-III:

Introduction to Professional Ethics: Basic Concepts, Governing Ethics, Personal & Professional Ethics, Ethical Dilemmas, Life Skills, Emotional Intelligence, Thoughts of Ethics, Value Education, Dimensions of Ethics, Profession and professionalism, Professional Associations, Professional Risks, Professional Accountabilities, Professional Success, Ethics and Profession.

UNIT-IV:

Professional Practices in Engineering: Work Place Rights & Responsibilities, Professions and Norms of Professional Conduct, Norms of Professional Conduct vs. Profession; Responsibilities, Obligations and Moral Values in Professional Ethics, Professional codes of ethics, the limits of predictability and responsibilities of the engineering profession. Central Responsibilities of Engineers-The Centrality of Responsibilities of Professional Ethics; lessons from 1979 American Airlines DC-10 Crash and Kansas City Hyatt Regency Walk away Collapse.

UNIT-V:

Global issues in Professional Ethics: Introduction - Current Scenario, Technology Globalization of MNCs,

International Trade, World Summits, Issues, Business Ethics and Corporate Governance, Sustainable Development Ecosystem, Energy Concerns, Ozone Depletion, Pollution, Ethics in Manufacturing and Marketing, Media Ethics, War Ethics, Bio Ethics, Intellectual Property Rights.

TEXT BOOKS:

1. R.R. Gaur, R Sangal, GPB agaria, 2009, A Foundation Course in Human Values and Professional Ethics.
2. Professional Ethics: R. Subramanian, Oxford University Press, 2015.
3. Ethics in Engineering Practice & Research, Caroline Whitbeck, 2e, Cambridge University Press 2015.

REFERENCE BOOKS:

1. Prof. K. V. Subba Raju, 2013, Success Secrets for Engineering Students, Smart Student Publications, 3rd Edition.
2. Ivan Illich, 1974, Energy & Equity, The Trinity Press, Worcester, and Harper Collins, USA
3. Engineering Ethics, Concepts Cases: Charles E Harris Jr., Michael S Pritchard, Michael J Rabins, 4e, Cengage learning, 2015.
4. Business Ethics concepts & Cases: Manuel G Velasquez, 6e, PHI, 2008.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2000HS03) MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS

B.Tech. II Year I Sem

L T P C

3 0 0 3

COURSE OBJECTIVES:

To enable the student to understand and appreciate, with a particular insight, the importance of certain basic issues governing the business operations namely; demand and supply, production function, cost analysis, markets, forms of business organizations, capital budgeting, financial accounting and financial analysis.

Course Outcomes:

At the end of the course, the student will understand the market dynamics namely, demand and supply, demand forecasting, elasticity of demand and supply, pricing methods and pricing indifferent market structures, gain an insight into how production function is carried out to achieve least cost combination of inputs and cost analysis, develop an understanding of how capital budgeting decisions are carried out, understanding the framework for both manual and computerized accounting process, know how to analyze and interpret the financial statements through ratio analysis.

UNIT I:

Introduction & Demand Analysis: Definition, Nature and Scope of Managerial Economics. Demand Analysis: Demand Determinants, Law of Demand and its exceptions. Elasticity of Demand: Definition, Types, Measurement and Significance of Elasticity of Demand. Demand Forecasting, Factors governing demand forecasting, methods of demand forecasting.

UNIT II:

Production & Cost Analysis: Production Function - MRTS, Least Cost Combination of Inputs, Laws of Returns, Internal and External Economies of Scale. Cost Analysis: Cost concepts. Break-even Analysis (BEA)-Determination of Break-Even Point (simple problems) -Managerial Significance.

UNIT III

Markets & New Economic Environment: Types of competition and Markets, Features of Perfect competition, Monopoly and Monopolistic Competition. Pricing: Objectives and Policies of Pricing. Methods of Pricing. Business: Features and evaluation of different forms of Business Organization: Sole Proprietorship, Partnership, Joint Stock Company, Public Enterprises and their types, New Economic Environment: Changing Business Environment in Post-liberalization scenario.

UNIT IV

Capital Budgeting: Capital and its significance, Types of Capital, Estimation of Fixed and Working capital requirements, Methods and sources of raising capital - Capital Budget, Cash Budget. Capital Budgeting: features of capital budgeting proposals, Methods of Capital Budgeting: Payback Method, Accounting Rate of return (ARR) and Net Present Value Method (simple problems).

UNIT V

Introduction to Financial Accounting & Financial Analysis: Accounting concepts and Conventions - Double-Entry Book Keeping, Journal, Ledger, Trial Balance - Final Accounts (Trading Account, Profit and Loss Account and Balance Sheet with simple adjustments). Financial Analysis: Analysis and Interpretation of Liquidity Ratios, Activity Ratios, and Capital structure Ratios and Profit ability ratios.

TEXT BOOKS:

1. Varshney & Maheswari: Managerial Economics, Sultan Chand, 2009.
2. S.A.Siddiqui & A.S.Siddiqui, Managerial Economics and Financial Analysis, New Age international Publishers, Hyderabad 2013.
3. M.KasiReddy & Saraswathi, Managerial Economics and Financial Analysis, PHI New Delhi, 2012.

REFERENCES:

1. Ambrish Gupta, Financial Accounting for Management, Pearson Education, New Delhi, 2012.
2. H.Craig Peterson & W. Cris Lewis, Managerial Economics, Pearson, 2012.
3. Lipsey & Chrystel, Economics, Oxford University Press, 2012.
4. Domnick Salvatore: Managerial Economics In a Global Economy, Thomson, 2012.
5. Narayanaswamy: Financial Accounting - A Managerial Perspective, Pearson, 2012.
6. S.N.Maheswari & S.K.Maheswari, Financial Accounting, Vikas, 2012.
7. Truet and Truet: Managerial Economics: Analysis, Problems and Cases, Wiley, 2012.
8. Dwivedi: Managerial Economics, Vikas, 2012.
9. Shailaja & Usha: MEFA, University Press, 2012.
10. Aryasri: Managerial Economics and Financial Analysis, TMH, 2012.
11. Vijay Kumar & Appa Rao, Managerial Economics & Financial Analysis, Cengage 2011.
12. J.V.Prabhakar Rao & P.V.Rao, Managerial Economics & Financial Analysis, Maruthi Publishers, 2011.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2005ES03) COMPUTER ORGANIZATION & OPERATING SYSTEMS

B.Tech. II Year II Sem

L T P C

3 0 0 3

The main objectives of the course are:

1. To have a thorough understanding of the basic structure and operation of a digital computer.
2. To discuss in detail the operation of the arithmetic unit including the algorithms & implementation of fixed-point and floating-point addition, subtraction, multiplication & division.
3. To study the different ways of communicating with I/O devices and standard I/O interfaces.
4. To study the hierarchical memory system including cache memories and virtual memory.
5. To demonstrate the knowledge of functions of operating system memory management scheduling, file system and interface, distributed systems, security and deadlocks.
6. To implement a significant portion of an Operating System.

COURSE OUTCOMES:

Upon completion of the Course, the students will be able to:

1. Basic structure of a digital computer
2. Arithmetic operations of binary number system
3. The organization of the Control Unit, Arithmetic and Logical Unit, Memory Unit and the I/O unit.
4. Operating system functions, types, system calls.
5. Memory management techniques and deadlock avoidance
6. Operating system file system and implementation and its interface.

UNIT-I:

Basic Structure of Computers: Computer Types, Functional UNIT, Basic Operational Concepts, Bus Structures, Software, Performance, Multiprocessors and Multi Computers, Data Representation, Fixed Point Representation, Floating-Point Representation.

Register Transfer Language and Micro Operations: Register Transfer Language, Register Transfer Bus and Memory Transfers, Arithmetic Micro Operations, Logic Micro Operations, Shift Micro Operations, Arithmetic Logic Shift Unit, Instruction Codes, Computer Registers Computer Instructions-Instruction Cycle.

Memory - Reference Instructions, Input- Output and Interrupt, STACK Organization, Instruction Formats, Addressing Modes, DATA Transfer and Manipulation, Program Control, Reduced Instruction Set Computer.

UNIT- II:

Micro Programmed Control: Control Memory, Address Sequencing, Microprogram Examples, Design of Control

Unit, HardWired Control, Micro programmed Control.

The Memory System: Basic Concepts of Semiconductor RAM Memories, Read-Only Memories, Cache Memories Performance Considerations, Virtual Memories secondary Storage, Introduction to RAID.

UNIT- III:

Input-Output Organization: Peripheral Devices, Input-Output Interface, Asynchronous Data Transfer Modes, Priority Interrupt, Direct Memory Access, Input-Output Processor (IOP), Serial Communication; Introduction to Peripheral Components, Interconnect (PCI) Bus, Introduction to Standard Serial Communication Protocols like RS232, USB, IEEE1394.

UNIT- IV:

Operating Systems Overview: Overview of Computer Operating Systems Functions, Operating Systems Structures- Systems Calls, System Programs Process Management: Process, Process States, Process Control Block, CPU Scheduling Algorithms

Memory Management: Swapping, Contiguous Memory Allocation, Paging, Structure of the Page Table, Segmentation, Virtual Memory, Demand Paging, Page-Replacement Algorithms, Allocation of Frames, Thrashing

UNIT-V:

Principles of Deadlock: System Model, Deadlock Characterization, Deadlock Prevention, Detection and Avoidance, Recovery from Deadlock.

File System Interface: The Concept of a File, Access Methods, Directory Structure, File System Mounting, File Sharing, Protection.

TEXTBOOKS:

1. Computer Organization - Carl Hamacher, Zvonks Vranesic, Safea Zaky, 5th Edition, McGraw Hill.
2. Computer System Architecture - M. Moris Mano, 3rd edition, Pearson

REFERENCE BOOKS:

1. Computer Organization and Architecture - William Stallings 6th Edition, Pearson
2. Operating System Concepts - Abraham Silberchatz, Peter B. Galvin, Greg Gagne, 8th Edition, John Wiley.
3. Structured Computer Organization - Andrew S. Tanenbaum, 4th Edition, PHI
4. Operating Systems - Internals and Design Principles, Stallings, 6th Edition - 2009, Pearson Education.
5. Modern Operating Systems, Andrew S. Tanenbaum 2nd Edition, PHI
6. Principles of Operating System, B.L. Stuart, Cengage Learning, India Edition.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2005PC05) SOFTWARE ENGINEERING

B.Tech. II Year II Sem

L T P C

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COURSE OBJECTIVES:

- To comprehend the various software process models.
- To understand the types of software requirements and SRS document.
- To know the different software design and architectural styles.
- To learn the software testing approaches and metrics used in software development.
- To know about quality control and risk management.

Course Outcomes:

At the end of the course the students are able to:

- To compare and select a process model for a business system.
- To identify and specify the requirements for the development of an application.
- To develop and maintain efficient, reliable and cost-effective software solutions.
- To critically think and evaluate assumptions and arguments of the client.

UNIT-I:

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

A Generic view of process: 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, Agility and Agile Process models of Agile Development and Tools

UNIT-II:

Software Requirements: Functional and non-functional requirements, User requirements, System requirements, Interface specification, the software requirements document (IEEE FORMAT) and its contents.

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

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

UNIT-III:

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

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

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

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

UNIT-IV:

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

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

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

UNIT-V:

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

Quality Management: Quality concepts, Software quality assurance, Software Reviews, Formal technical reviews, Statistical Software quality Assurance, Software reliability, The ISO9000 quality standards.

TEXTBOOKS:

1. Software Engineering A Practitioner's Approach, Roger S Pressman, 6th edition, McGraw Hill International Edition.
2. Software Engineering, Ian Sommerville, 7th edition, Pearson Education.

REFERENCE BOOKS:

1. Software Engineering, A Precise Approach, Pankaj Jalote, Wiley India, 2010.
2. Software Engineering: A Primer, Waman S Jawadekar, Tata McGraw-Hill, 2008
3. Software Engineering, Principles and Practices, Deepak Jain, Oxford University Press.
4. Software Engineering 1: Abstraction and modeling, Diner Bjorner, Springer International Edition, 2006.
5. Software Engineering 2: Specification of systems and languages, Diner Bjorner, Springer International Edition 2006.
6. Software Engineering Principles and Practice, Hans Van Vliet, 3rd edition, John Wiley & Sons Ltd.
7. Software Engineering 3: Domains, Requirements, and Software Design, D. Bjorner, Springer International Edition.
8. Introduction to Software Engineering, R.J. Leach, CRC Press.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2067PC01) INTRODUCTION TO DATASCIENCE

B.Tech. II Year II Sem

L T P C

3 0 0 3

COURSE OBJECTIVES:

1. To gain strong foundation of fundamental concepts of data science and types of data.
2. To provide a basic exposition to Sources of data, Data collection and APIs.
3. Investigate the basic concepts of data analysis.
4. Experience the basic concepts of data visualization techniques.
5. Explore the current scope, potential, limitations, and implications of Data Science.

Course Outcomes:

Upon successful completion of this course, the students shall be able to:

1. Demonstrate the fundamental concepts, applications of data science.
2. Apply basic principles of data collection and APIs.
3. Ability to apply knowledge of different statistical methods in data science.
4. Demonstrate ability to analyse the latest trends in data science.

UNIT I

Introduction to core concepts and technologies: Introduction, Terminology, data science process, data science toolkit, Types of data, Example applications.

UNIT II

Data collection and management: Introduction, Sources of data, Data collection and APIs, Exploring and fixing data, Data storage and management, using multiple data sources.

UNIT III

Data analysis: Introduction, Terminology and concepts, Introduction to statistics, Central tendencies and distributions, Variance, Distribution properties and arithmetic, Samples/CLT, Basic machine learning algorithms, Linear regression, SVM, Naïve Bayes.

UNIT IV

Data visualization: Introduction, Types of data visualization, Data for visualization: Data types, Data encodings, Retinal variables, mapping variables to encodings, Visual encodings.

Unit V

Applications of Data Science, Technologies for visualization, Bokeh (Python), recent trends in various data

collection and analysis techniques, various visualization techniques, application development methods of used in data science.

TEXTBOOKS (S)

1. Cathy O'Neil, Rachel Schutt, Doing Data Science, Straight Talk from the Frontline. O'Reilly, 2013.

REFERENCES:

1. Jure Leskovek, Anand Rajaraman, Jeffrey Ullman, Mining of Massive Datasets. v2.1, Cambridge University Press, 2014.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2067PC02) DATA HANDLING AND VISUALIZATION

B.Tech. II Year II Sem

L T P C

3 0 0 3

COURSE OBJECTIVES:

1. To understand the process of gathering, filtering, and cleaning data before the data is put in a data warehouse or any other storage solution.
2. To gain strong foundation off undamental conceptsin ETLD ata structures.
3. To provide a basic exposition to knowledge representation of data map and logical data.
4. Experience the current approaches used for data acquisition.
5. Explore the use of visualization techniques used during the data acquisition

COURSE OUTCOMES:

Upon successful completion of this course, the student shall be able to:

1. Explain the basic requirements for designing the efficient data warehousing.
2. Demonstrate the process of ETL.
3. Apply the Extracting techniques for data map and logical data.
4. Determine cleaning and confirming techniques for data warehousing.
5. Explain the fundamental sof visualization techniques.

UNIT-I

Introduction:Requirements, Realities, and Architecture, Surrounding the Requirements, Architecture, The Mission of the Data Warehouse. ETL Data Structures: To Stage or Not toStage, Designing the Staging Area, Data Structures in the ETL System, Planning and DesignStandards.

UNIT-II

Extracting: The Logical Data Map, Inside the Logical Data Map, Building the Logical Data Map,Integrating Heterogeneous Data Sources,MainframeSources, Extracting Changed Data.

UNIT- III

Cleaning and Conforming: Defining Data Quality, Assumptions, Design Objectives, Cleaning Deliverables, Screens andTheir Measurements, Conforming Deliverables.

Unit IV:

Introduction of visual perception, visual representation of data, Gestalt principles, informationoverloads.Creating visual representations, visualization reference model, visual mapping, visualanalytics, Design of visualization applications.

Unit V:

Classification of visualization systems, Interaction and visualization techniques misleading, Visualization of one, two and multi-dimensional data, text and text documents. Visualization of groups, trees, graphs, clusters, networks, software, Metaphorical visualization. Visualization of volumetric data, vector fields, processes, and simulations,

TEXTBOOKS:

1. Ralph Kimball, Joe Caserta, The Data Warehouse ETL Toolkit: Practical Techniques for Extracting, Cleaning, Conforming and Delivering Data, Wiley (2004)
2. Tan, Steinbach, Kumar, Introduction to Data Mining, Addison Wesley, 2006.
3. Ward, Grinstein Keim, Interactive Data Visualization: Foundations, Techniques, and Applications. Natick: AK Peters, Ltd.

REFERENCE BOOKS:

1. E. Tufte, The Visual Display of Quantitative Information, Graphics Press
2. Glenn J. Myatt, Making Sense of Data: A Practical Guide to Exploratory Data Analysis and Data Mining, John Wiley Publishers, 2007.
3. Ward, Grinstein Keim, Interactive Data Visualization: Foundations, Techniques, and Applications. Natick: AK Peters, Ltd.
4. E. Tufte, The Visual Display of Quantitative Information, Graphics Press

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2005PC08) DATABASE MANAGEMENT SYSTEMS

B.Tech. II Year II Sem**L T P C****3 0 0 3****COURSE OBJECTIVES:**

- To understand the basic concepts and the applications of data base systems.
- To master the basics of SQL and construct queries using SQL.
- To understand the relational data base design principles.
- To become familiar with the basic issues of transaction processing and concurrency control.
- To become familiar with data base storage structures and access techniques.

Course Outcomes:

Demonstrate the basic elements of a relational database management system and Ability to identify the data models for relevant problems.

Ability to design entity relationship model and convert entity relationship diagrams into RDBMS and formulate SQL queries on the data.

Apply normalization for the development of application software.

UNIT - I:

Introduction: Database System Applications, Purpose of Database Systems, View of Data, Database Languages - DDL, DML, Relational Databases, Database Design, Database Architecture, Data Mining and Information Retrieval, Database Users and Administrators, History of Database Systems.

Introduction to Data base design: Database Design and ER diagrams, Entities, Attributes and Entity sets, Relationships and Relationship sets, Additional features of ER Model, Conceptual Design with the ER Model, Conceptual Design for Large enterprises.

UNIT - II:

Relational Model: Introduction to the Relational Model, Integrity Constraints over Relations, Enforcing Integrity constraints, Querying relational data, Logical data base Design: ER to Relational, Introduction to Views, Destroying / Altering Tables and Views.

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

UNIT-III:

SQL: Queries, Constraints, Triggers: Form of Basic SQL Query, UNION, INTERSECT, and EXCEPT, Nested Queries, Aggregate Operators, NULL values, Natural JOINS, Complex Integrity Constraints in SQL, Triggers and Active Databases.

Schema Refinement and Normal Forms: Introduction to Schema Refinement, Functional Dependencies - Reasoning about FDs, Normal Forms, Properties of Decompositions,

Normalization, Schema Refinement in Database Design, Other Kinds of Dependencies.

UNIT-IV:

Transaction Management: Transactions, Transaction Concept, A Simple Transaction Model, Storage Structure, Transaction Atomicity and Durability, Transaction Isolation, Serializability.

Concurrency Control: Lock - Based Protocols, Multiple Granularity, Timestamp -Based Protocols, Validation-Based Protocols.

Recovery System-Failure Classification, Recovery and Atomicity, Recovery Algorithm, Buffer Management, Failure with loss of nonvolatile storage, Remote Backup systems.

UNIT - V:

Storage and Indexing: Overview of Storage and Indexing: Data on External Storage, File Organization and Indexing, Index Data Structures, Comparison of File Organizations. Tree-Structured Indexing: Intuition for tree Indexes, Indexed Sequential Access Method (ISAM), B+ Trees: A Dynamic Index Structure, Search, Insert, Delete.

TEXTBOOKS:

1. Data base Management Systems, Raghu Ramakrishnan, Johannes Gehrke, McGraw Hill Education (India) Private Limited, 3rd Edition. (Part of UNIT-I, UNIT-II, UNIT-III, UNIT-V)
2. Database System Concepts, A.Silberschatz, Henry.F.Korth, S.Sudarshan, McGraw Hill Education (India) Private Limited, 6th edition. (Part of UNIT-I, UNIT-IV)

REFERENCEBOOKS:

2. Database Systems, 6th edition, R.Elmasri, Shamkant B.Navathe, Pearson Education.
3. Database System Concepts, Peter Rob & Carlos Coronel, Cengage Learning.
4. Introduction to Database Management, M.L. Gillenson and others, Wiley Student Edition.
5. 4. Database Development and Management, Lee Chao, Auerbach publications, Taylor & Francis Group. Introduction to Database Systems, C.J. Date, Pearson Education.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2067PC61) DATA HANDLING AND VISUALIZATION LAB

B.Tech. II Year II Sem

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COURSE OBJECTIVES:

1. Provide abroad understanding of Installation of Python environment.
2. Gain knowledge to execute various python commands.
3. Understand and to implement various advanced algorithms for data prediction, clustering and Classification.

COURSE OUTCOMES:

After completion of course, students will be able to

1. Use python language and Anaconda, Jupyter, Spyder, Pycharm for Data Analysis.
2. Student Canimplement python Functions for Data analysis.
3. Develop and test different data analysis models using python.
4. Import external data sets and prepared it for analysis using python.
5. Plot various graphs of analyzed data.

Expt. No. 1:

Installation of Python, Anaconda, Pycharm on Windows/Linux/MAC Platform Student should download Python, Anaconda and Pycharm. Install it on the available platforms and prepare a small write - up / presentation of 10 to 15 pages detailing the complete installation instructions and how to use Anaconda/ pycharm for python.

Expt. No. 2:

Practicing the basic operations and commands of Python Language. How to declare variables in Python. How to manipulate strings and arrays in Python. How to use if, if else and loop sin Python. How to define function sin Python? Student should prepare a write - up of at least 3 to 4 pages for each exercise.

Expt.No.3:

Import a dataset in Python and prepare it for data analysis. Student must import a .csv file of data set, clean the data for data analysis. Exercise involve sreading and filtering data.

Expt. No. 4:

Apply linear regression on the dataset for prediction. Instructor should provide a suitable data set for line arregression analysis using Python to the students. Students should implement the programand prepare the linear regression model for data analysis with write-up.

Expt. No. 5:

Apply logistic regression on the dataset for prediction. Instructor should provide a suitable dataset for logistic regression analysis using Python to the students. Students should implement the programand prepare the logistic

regression model for data analysis with write-up.

Expt. No. 6:

Apply classification and clustering techniques on the dataset. Instructor should provide a suitable data set to the students. Students should implement the program for classification and clustering model for data analysis with write-up.

Expt. No. 7:

Implement KNN algorithm in Python for the given dataset. Instructor should provide a suitable dataset for KNN analysis using R to the students. Students should implement the program and prepare the KNN model for data analysis with write-up.

Expt. No. 8:

Apply time series analysis techniques on the dataset. Instructor should provide a suitable dataset for time series analysis using Python to the students. Students should implement the program and prepare the time series analysis for given dataset with write-up.

Expt. No. 9:

Plot different types of graphs/charts for a given dataset using Python. Instructor should provide a suitable dataset for plotting different graphs/charts using Python to the students. Students should implement the program and plot different graphs for the given dataset.

Expt. No. 10:

Implement a functional program in Python for data analysis 2. Instructor should provide a suitable data set to students. Students should implement the functional program in Python for data analysis with write-up.

Expt.No.11:

Find and describe 3 data sets that you'd like to potentially visualize for your project: The term "dataset" here means: a data table relating to a certain topic, issue, or situation. Often a "dataset" could also mean a collection of multiple related tables or files, but usually there is one "main" or "primary" table (e.g. the "fact table" of a star schema (Links to an external site.)) that is the largest in the collection. That "main" table is the one that needs to meet the criteria below.

Expt. No. 12:

In this assignment, you'll create a Scatter Plot by forking Cars Scatter Plot (Links to an external site.) and modifying it to visualize one of the datasets from your "Find 3 Datasets" assignment. At the very least you will need to update the data loading, data parsing, X and Y accessors, X and Y labels, and title. Also feel free to be creative and tweak things like color, size, stroke, opacity, and font!

REFERENCE BOOK

1. www.anaconda.com
2. Scikit-learn user guide Python Data Science Handbook Essential Tools for Working with Data, O'Reilly Publication

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2005PC64) DATABASE MANAGEMENT SYSTEMS LAB

B.Tech. II Year II Sem

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COURSE OBJECTIVES:

Students will have the ability to:

- Keep a breast of current developments to continue their own professional development.
- To engage themselves in lifelong learning of Database management systems the ories and technologies this enables them to purse higher studies.
- To interact professionally with colleagues or clients located abroad and the ability to overcome challenges that arises from geographic distance, cultural differences, and multiple languages in the context of computing.
- Develop team spirit, effective work habits, and professional attitude in written and oral forms, towards the development of data base applications

Course Outcomes:

Students will be able to demonstrate their skills

- In drawing the ER, EER, and UML Diagrams.
- In analyzing the business requirements and producing a viable model for the implementation of the database.
- In converting the entity-relationship diagrams in to relational tables.
- To develop appropriate Databases to a given problem that integrates ethical, social, legal, and economic concerns.

A. Practice on SQL Queries to acquire knowledge on RDBMS.

B. Case Study:

Objective: This lab enables the students to practice the concepts learnt in the subject DBMS by developing a database for an example company named "Roadway Travels "whose description is as follows. The student is expected to practice the designing, developing and querying a database in the context of example database "Roadway travels ".Students are expected to use "Mysql" database.

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

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

- Reservations and Ticketing
- Cancellations
- Reservations & Cancellation:

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

Cancellations are also directly handed at the booking office.

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

The above Process involves many steps like

1. Analyzing the problem and identifying the Entities and Relationships,
2. E-R Model,
3. Relational Model
4. Normalization
5. Creating the database
6. Querying. Students are supposed to work on these steps week wise and finally create a complete "Data base System" to Roadway Travels. Examples are given at every experiment for guidance to students.

Experiment 1:E-RModel

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

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

Example:

Entities:

1. BUS
2. Ticket
3. Passenger

Relationships:

1. Reservation
2. Cancellation

PRIMARYKEYATTRIBUTES:

1. Ticket ID (TicketEntity)
2. Passport ID (PassengerEntity)
3. Bus_NO (BusEntity)

Apart from the above mentioned entities you can identify more. The above mentioned are few.

Ex:Bus Entity

Ex:Reservation relationship

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

BUS

Experiment2:Installation of Mysql and practicing DDL, commands

Installation of MySQL. In this week you will learn Creating databases, How to create tables, altering the database, dropping 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 INTEGERPRIMARY KEY,Name VARCHAR(50) NotNULL,
AgeIntegerNotNULL,SexChar,
AddressVARCHAR(50)NotNULL);
```

Similarly create all other tables.

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

Experiment 3: Practicing DML commands

DMLcommandsareusedtoformanagingdatawithinschemaobjects.Someexamples:

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

Inserting values into "Bus" table:

Insert into Bus values (1234,'hyderabad', 'tirupathi'); Insert into Bus values (2345,'hyderabad','Banglore'); Insert into Bus values (23,'hyderabad','Kolkata'); Insert into Bus values (45,'Tirupathi','Banglore'); Insert into Bus values (34,'hyderabad','Chennai');

Inserting values into "Passenger" table:

Insert into Passenger values (1,45,'ramesh',45,'M','abc123'); Insert into Passenger values (2, 78,'geetha', 36,'F','abc124'); Insert into Passenger values (45, 90,' ram', 30,'M','abc12');Insert into Passenger values (67, 89,' ravi', 50,'M','abc14'); Insert into Passengervalues(56,22,'seetha',32,'F','abc55');

Few more Examples of DML commands:

Select*from Bus; (selects all the attributes and display) UPDATE BUS SET Bus No= 1 WHERE BUS NO=2;

Experiment4: Querying

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

Practice the following Queries:

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 5: Aggregate Functions and Number Functions, Nested Query and Co?related Queries You are going to practice queries using Aggregate functions and number functions (COUNT, SUM, AVG, and 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.

Nested Query and Co?related Queries

Use the tables sailors, reserves, boats for implementing the following Sailors (sid:integer,sname:string,rating: integer, age:real);

Boats(bid:integer,bname:string,color:string);Reserves(sid:integer,bid:integer,day:date).

Find the names of sailorswhohavereservedboat103

Find the name and the age of the youngest sailor

Find the names and ratings of sail or whose rating is better than some sailor called Horatio

Find the names of sailors who have reserved all boats

Experiment 6: VIEWS and JOIN

In this week, we are going to implement views and also perform various operations like alter, update and delete commands.

View:

Write a query to execute and verify the SQL commands using Views (UseEmployeeTable)

(a)Alter(b)Update(c)Delete

Join:

Write aquery to execute and verify the SQL commands using Join(UseCustomer Table)

(a)Inner join,(b).Leftjoin,(c).Rightjoin(d).Fulljoin

Experiment7: 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.

Eg: CREATE TRIGGER updcheck BEFORE UPDATE ON passenger FOR EACH ROW BEGIN

```
IFNEW.TickentNO> 60THENSET
New.Tickentno=Ticketno;ELSESETNew.Tickentno=0; END IF;
END;
```

Experiment8: Procedures

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

Eg: CREATE PROCEDURE myProc()

BEGIN

```
SELECT COUNT(Tickets) FROM Ticket WHERE Age >= 40; End;
```

Experiment 9: 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_name VARCHAR (30);
```

```
DECLARE c1 CURSOR FOR SELECT ppno, name FROM Passenger WHERE ppno = in_customer_id; OPEN c1;
```

```
FETCH c1
```

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

BusNo: Varchar:

PK(Primary key) Source: Varchar Destination:

Varchar Dept Time: 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): FK TicketNo: Numeric(9)

Reservation

PNR_No: Numeric(9):

PK Journey_date: datetime(8) No_of_seats: int (8) Address: Varchar(50) Contact_No: Numeric (9) -> Should not be less than 9 and Should not accept any other character other than Integer Status: Char(2): Yes/No

Cancellation

PNR_No: Numeric(9):

FKJourney_date:datetime(8)No_of_seats:int(8)Address:Varchar (50)

Contact_No:Numeric(9)->Should not be less than 9 and should not accept any other character other than Integer

Status:Char(2):Yes/No

Ticket

Ticket_No:Numeric(9):

PKJourney_date:datetime(8)Age:int (4)

Sex:Char(10):Male/Female

Source:VarcharDestination:VarcharDep_time:Varchar

Experiment 10: 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 multi-valued attribute Ticket_id and place it in another table along with the primary key of passenger.

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

Passenger				
Name	→	Age	→	Sex
			→	Address
				PassportID

Passport_id	Ticket_id

Experiment 11: PL/SQL Programs

In this week, you are going to learn and work on PL/SQL procedures.

Write a PL/SQL procedure to find the average of marks?

Write a PL/SQL procedure to find the factorial of a number?

Write a PL/SQL code to calculate tax for an employee of an organization-XYZ and to display his/her name & tax, by creating table under employee database as below.

Employee_salary	Emp_no	Basic	HRADA	Total_deduction

Net_salary	Gross_salary

Experiment 12:Revoke/Grant/Commit/Rollback

In this week, you need to do the following: Declare a table that defines a result set using revoke, grant, save point,commit, rollback operations

Consider the following tables namely "DEPARTMENTS" and "EMPLOYEES" Their schemas are as follows, Departments (dept_no , dept_name , dept_location); Employees(emp_id,emp_name, emp_salary);

1. Develop a query to grant all privileges of employee stable into department stable
2. Develop a query to grant some privileges of employees table into department stable
3. Develop a query to revoke all privileges of employees table from department stable
4. Develop a query to revoke some privileges of employee stable from department stable
5. Write a query to implement the save point
6. Write a query to implement the commit
7. Write a query to implement roll back

REFERENCE BOOKS:

1. Introductionto SQL,RickF.VanderLans,Pearsoneducation..
2. OraclePL/SQL,B.RosenzweigandE.Silvestrova,Pearsoneducation.
3. OraclePL/SQLProgramming,StevenFeuerstein,SPD.
4. SQL&PL/SQLforOracle10g,BlackBook,Dr.P.S.Deshpande,DreamTech
5. OracleDatabase11gPL/SQLProgramming,M.McLaughlin,TMH
6. SQLFundamentals,J.J.Patrick,PearsonEducation

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2000MC04) INDIAN CONSTITUTION

B.Tech. II Year II Sem

L T P C

2 0 0 0

COURSE OBJECTIVE:

To enable the students to be aware of emergence and evolution of Indian Constitution, to understand their fundamental rights and duties and to understand the structure and composition of Election Commission.

Course Outcome:

Students will be able to understand and discuss about Indian constitution. The students will learn their Rights and Responsibilities as an Indian citizen.

UNIT-I

Meaning and Importance of Constitution, Evolution of the constitution of India. Salient features of the constitution of India

UNIT-II

Scheme of fundamental rights, fundamental duties and its legal status. The Directive Principles of State Policy- Significance and implementation

UNIT-III

Government of the Union : President of India - Election and Powers, Prime Minister and Council of Ministers, Lok Sabha - Composition and Powers, Rajya Sabha - Composition and Powers

UNIT-IV

The historical perspectives of the constitutional amendments in India. Emergency provisions: National Emergency, President Rule, Financial Emergency, Local self-government-Constitutional scheme in India

UNIT-V

Election Commission: Role and Functioning, Chief Election Commissioner and Election Commissioners, State Election Commission: Role and Functioning, Institute and Bodies for the welfare of SC/ST/OBC and women.

TEXTBOOKS:

1. The Constitution of India, 1950 (Bare Act), Government Publication.
2. M.P. Jain, Indian Constitution Law, 7th Edn., Lexis Nexis, 2014.

REFERENCES:

1. D.D. Basu, Introduction to the Constitution of India, Lexis Nexis, 2015
2. 'Indian Administration' by Avasthi and Avasthi

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2066PC01) ARTIFICIAL INTELLIGENCE

B.Tech. III Year I Sem

L T P C

3 0 0 3

COURSE OBJECTIVES:

- To learn the significance of intelligence systems.
- To understand the concepts of heuristic search techniques & logic programming.
- To know the various knowledge representation techniques.
- To understand the applications of artificial intelligence i.e Expert systems, game playing, Machine learning and natural language processing.

Course Outcomes:

1. Ability to analyze & select a search algorithm for problem.
2. Formalize a given problem using a suitable AI representation.
3. Ability to apply AI techniques to solve problems of expert systems, game playing, machine learning & neural networks.

UNIT-I

Introduction, History, Intelligent Systems, Foundations of AI, Sub areas of AI, Applications. Problem Solving- State-Space Search and Control Strategies: Introduction, General Problem Solving, Characteristics of Problem, Exhaustive Searches, Heuristic Search Techniques, Iterative-Deepening A*, Constraint Satisfaction. Game Playing, Bounded Look-ahead Strategy and use of Evaluation Functions, Alpha-Beta Pruning

UNIT-II

Logic Concepts and Logic Programming: Introduction, Propositional Calculus, Propositional Logic, Resolution Refutation in Propositional Logic, Predicate Logic, Logic Programming. Knowledge Representation: Introduction, Approaches to Knowledge Representation, Knowledge Representation using Semantic Network, Extended Semantic Networks for KR, Knowledge Representation using Frames.

UNIT-III

Expert System and Applications: Introduction, Phases in Building Expert Systems, Expert System Architecture, Expert Systems Vs Traditional Systems, Truth Maintenance Systems, Application of Expert Systems, List of Shells and Tools. Uncertainty Measure - Probability Theory: Introduction, Probability Theory, Bayesian Belief Networks, Certainty Factor Theory, Dempster-Shafer Theory.

UNIT-IV

Machine-Learning Paradigms: Introduction. Machine Learning Systems. Supervised and Unsupervised Learning. Inductive Learning. Learning Decision Trees (Text Book 2), Deductive Learning. Clustering, Support Vector Machines.

Artificial Neural Networks: Introduction, Artificial Neural Networks, Single- Layer Feed-Forward Networks, Multi-Layer Feed-Forward Networks, Design Issues of Artificial Neural Networks.

UNIT-V

Natural Language Processing: Introduction, Sentence Analysis Phases, Grammars and Parsers, Types of Parsers, Semantic Analysis, Universal Networking Knowledge, Semantic web.

TEXTBOOKS:

1. Saroj Kaushik. Artificial Intelligence. Cengage Learning. 2011
2. Russell, Norvig: Artificial Intelligence, A Modern Approach, Pearson Education, Second Edition. 2004

REFERENCE BOOK:

1. Rich, Knight, Nair: Artificial Intelligence, Tata McGraw Hill, Third Edition 2009.
2. Introduction to Artificial Intelligence by Eugene Charniak, Pearson.
3. Introduction to Artificial Intelligence and expert systems Dan W. Patterson. PHI.
4. Artificial Intelligence by George Fluger rears on Fifth Edition.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2067PC03) STATISTICAL FOUNDATIONS OF DATASCIENCE

B.Tech. III Year I Sem

L T P C

3 0 0 3

COURSE OBJECTIVES:

- To learn different statistical methods in Data Science
- To understand Probability Distribution, Sampling, Hypothetical Analysis
- To understand the sampling distributions, hypothesis
- To understand statistical inference
- Acquire knowledge on different packages to generate the statistical analysis in Data Science and generate and analyze the different graphs/plotting using R and Python

COURSE OUTCOMES:

- At Completion of this course, students would be able to-
- Apply statistical methods for Data Science.
- Gain knowledge of probability distribution using R and Python.
- Able to write algorithms or programs based on statistical principles.
- Understand the Inferences, Sampling, Scaling, Hypothesis.
- Understand usage of various packages used in R and Python to analyze the data.

Unit-I:

Introduction to data: Types of variables, data collection principles, types of studies.

Introduction to Statistics: Introduction, Inferential statistics and Descriptive statistics, Inferential Statistics- Drawing Inferences from Data, cumulative distribution functions.

Unit-II:

One dimensional change of variable, joint distributions, Probability Distribution: Normal Probability Distribution, Probability models, their properties, combinatorial principle, conditional probability, independence of events.

Unit-III:

Sampling distributions; Point estimation - estimators, minimum variance unbiased estimation, maximum likelihood estimation, method of moments, consistency; Interval estimation; Testing of hypotheses - tests and critical regions, likelihood ratio tests; Linear regression. Monte Carlo approximations.

Unit-IV:

Statistical inference. Models for inference. Data collection: finite population, simple random sampling, histograms, survey sampling. Likelihood inference. Maximum likelihood estimation, inference based on MLE. Bayesian Inference, prior and posterior distributions, inference estimation, Bayesian computations, optimal inference.

Unit-V:

Model checking, sample model, residual probability plots, distribution, Markov chains. Poisson processes.

TEXT/REFERENCES:

1. Hastie, Trevor, et al., The elements of statistical learning. Vol.2.No.1.New York: springer, 2009.
2. Montgomery, Douglas C., and George C. Runger. Applied statistics and probability for engineers. John Wiley & Sons, 2010.
3. Probability and Statistics The Science of Uncertainty Second Ed., Michael J. Evans and Jeffrey S. Rosenthal.
4. B.L.S. Prakasa Rao, A First Course in Probability and Statistics, World Scientific/Cambridge University Press India, 2009.
5. R. V. Hogg, J. W. McKean and A. Craig, Introduction to Mathematical Statistics, 6th Ed., Pearson Education India, 2006

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2005PC10) DESIGN AND ANALYSIS OF ALGORITHMS

B.Tech. III Year I Sem

L T P C

3 0 0 3

COURSE OBJECTIVES:

- To analyze performance of algorithms.
- To choose the appropriate data structure and algorithm design method for a specified application.
- To understand how the choice of data structures and algorithm design methods impacts the performance of programs.
- To solve problems using algorithm design methods such as the greedy method, divide and conquer, dynamic programming, backtracking and branch and bound.
- Prerequisites(Subjects) Data structures, Mathematical foundations of computer science.

Course Outcomes:

- Be able to analyze algorithms and improve the efficiency of algorithms.
- Apply different designing methods for development of algorithms to realistic problems, such as divide and conquer, greedy and etc. Ability to understand and estimate the performance of algorithm.

UNIT-I

Introduction-Algorithm definition, Algorithm Specification, Performance Analysis-Space complexity, Time complexity, probabilistic analysis Randomized Algorithms.

Divide and conquer- General method, applications - Binary search, Merge sort, Quick sort, Strassen's Matrix Multiplication.

UNIT-II

Disjoint set operations- union and find algorithms, Efficient non-recursive binary tree traversal algorithms, spanning trees, graph traversals-BFS and DFS, AND/OR graphs, Game Tree, Connected Components and Spanning trees, Bi-connected components

UNIT-III

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

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

Back tracking-General method, applications-The 8- queen problem, sum of subsets problem, Graph coloring, Hamiltonian cycles.

Branch and Bound - General Method, applications - 01 Knapsack problem, LC Branch and Bound solution, traveling sales person problem.

UNIT-V

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

TEXTBOOKS:

1. Fundamentals of Computer Algorithms, 2nd Edition, Ellis Horowitz, Sartaj Sahni and S. Rajasekharan, Universities Press.
2. Design and Analysis of Algorithms, P. H. Dave, H. B. Dave, 2nd edition, Pearson Education.

REFERENCEBOOKS:

1. Algorithm Design: Foundations, Analysis and Internet examples, M. T. Goodrich and R. Tomassia, John Wiley and Sons.
2. Design and Analysis of Algorithms, S. Sridhar, Oxford Univ. Press
3. Design and Analysis of algorithms, Aho, Ullman and Hopcroft, Pearson Education.
4. Foundations of Algorithms, R. Neapolitan and K. Naimipour, 4th edition, Jones and Bartlett Student edition.
5. Introduction to Algorithms, 3rd Edition, T. H. Cormen, C.E. Leiserson, R.L. Rivest, and C. Stein, PHI

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2005PC11) COMPUTER NETWORKS

B.Tech. III Year I Sem**L T P C****3 0 0 3**

COURSE OBJECTIVES:

- To introduce the fundamental various types of computer networks.
- To demonstrate the TCP/IP and OSI models with merits and demerits.
- To explore the various layers of OSI Model.
- To introduce UDP and TCP Models.
- To introduce Encryption Security Mechanism

Course Outcomes:

- Students should be understand and explore the basics of Computer Networks and various Protocols. She will be in a position to understand the World Wide Web concepts.
- Students will be in a position to administrate a network and flow of information further he/she can understand easily the concepts of network security, Mobile and Adhoc 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-EthernetIEEE802.3, IEEE802.5-IEEE802.11, Random access, Controlled access

UNIT- III

Network layer: Logical Addressing, Internet working, Tunneling, Address mapping, ICMP, IGMP, Forwarding, Uni-Cast Routing Protocols, Multicast Routing Protocols.

UNIT- IV

Transport Layer: Process to Process Delivery, UDP and TCP protocols, Data Traffic, Congestion, Congestion Control, QoS, Integrated Services, Differentiated Services, QoS in Switched Networks.

UNIT- V

Application Layer: Domain name space, DNS in internet, electronic mail, SMTP, FTP, WWW, HTTP, SNMP, Security - PGP - SSH

TEXTBOOKS:

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

REFERENCES:

1. Data communications and Computer Networks, P.C.Gupta, PHI.
2. An Engineering Approach to Computer Networks, S.Keshav, 2nd Edition, Pearson Education.
3. Understanding communications and Networks, 3rd Edition, W.A.Shay, Cengage Learning.
4. Computer Networking: Atop - Down Approach Featuring the Internet. James F.Kurose & Keith W. Ross, 3rd Edition, Pearson Education.
5. Data and Computer Communication, William Stallings, Sixth Edition, Pearson Education, 2000

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN**PROFESSIONAL ELECTIVE - I****(2005PE22) PRINCIPLES OF NEURAL NETWORKS****B.Tech. III Year I Sem****L T P C****3 0 0 3****COURSE OBJECTIVE:**

- The main objective of this course is to provide the student with the basic understanding of neural networks fundamentals,
- Program there lated algorithms and Design the required and related systems

Course Outcomes:

- Demonstrate ANN structure and activation Functions
- Define foundations and learning mechanisms and state-space concepts
- Identify structure and learning of perceptions
- Explain Feed forward, multi-layer feed forward networks and Back propagation algorithms
- Analyze Radial Basis Function Networks, Their Regularization and RBF networks

UNIT-I

Introduction and ANN Structure, Biological neurons and artificial neurons. Model of an ANN. Activation functions used in ANNs. Typical classes of network architectures.

UNIT-II

Mathematical Foundations and Learning mechanisms. Re-visiting vector and matrix algebra, State-space concepts, Concepts of optimization, Error-correction learning. Memory based learning, Hebbian learning. Competitive learning.

UNIT-III

Single layer perceptrons, Structure and learning of perceptrons, Pattern classifier, introduction and Bayes' classifiers, Perceptron as a pattern classifier, Perceptron convergence. Limitations of a perceptrons.

UNIT-IV

Feed forward ANN, Structures of Multi-layer feed forward networks. Back propagation algorithm, Back propagation - training and convergence, Functional approximation with back propagation. Practical and design issues of back propagation learning.

UNIT-V

Radial Basis Function Networks, Pattern separability and interpolation, Regularization Theor Regularization and RBF networks. RBF network design and training. Approximation properties of RBF.

TEXTBOOKS:

1. Simon Haykin, "Neural Networks: A comprehensive foundation", Second Edition, Pearson Education Asia.
 2. SatishKumar, "Neural Networks: A class room approach", Tata McGraw Hill, 2004.
- Reference Books:
1. Robert J.Schalkoff, "Artificial Neural Networks", McGraw-Hill International Editions, 1997.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN**PROFESSIONAL ELECTIVE - I****(2005PE23) DATA MODELING AND SIMULATION****B.Tech. III Year I Sem****L T P C****3 0 0 3****COURSE OBJECTIVES:**

1. To provide computers imulation needs, and to implement it.
2. To provide skills and knowledge to test a variety of simulation an data analysis libraries and programs.
3. To provide skills to use tools to view and control simulations and their results.

Course Outcome:

1. Understand basic probability and Statistics, perform Hypothesis Tests
2. Assess Homogeneity of Different Data Sets.
3. Test Generators and Generate Random variates
4. Understand the nature of Simulation and simulate a study
5. Design a complex Simulation model

Unit I :

Basic Statistics and System Concepts : Introduction - Random Variables and Their Properties -Simulation Output Data and Stochastic Processes - System and System Environment: Component of a System - Continuous and discrete systems - Types of model; Steps in Simulation study; Simulation of an event occurrence using random number table -Single server queue-two server queues- inventory system

Unit II:

Probability Distributions: Introduction - Continuous Distributions - Discrete Distributions - Empirical Distributions - Hypothesizing Families of Distributions - Estimation of Parameters - Fitted Distributions - Assessing the Homogeneity of Different Data Sets

UnitIII:

Random Number Generators and Generating Random Variates: Linear Congruential Generators - Testing Random - Number Generators -General Approaches to Generating Random Variates - Generating Continuous, Discrete, Correlated Random Variates

Unit IV :

Basic Simulation Modeling : The Nature of Simulation- Discrete-Event Simulation-Event Scheduling / Time Advance Mechanism - Distributed Simulation- Steps in a Simulation Study-Advantages, Disadvantages, and Pitfalls of Simulation

Unit V:

Simulation Software :Simulation Software-Comparison and Classification of Simulation Languages - General Purpose Simulation Package - Arena/Extend - Object Oriented Simulation

Modeling Complex Systems: List Processing in Simulation- A Simple Simulation Language, SIMLIB - Single-Server Queueing Simulation with SIMLIB - Time-Shared Computer Model

TEXTBOOK(S):

1. Averill M.Law, Simulation Modeling and Analysis, Fifth Edition, McGraw-Hill Education,2015

REFERENCE BOOKS:

1. Steven I. Gordon, Brian Guilfoos, Introduction to Modeling and Simulation with MATLAB® and Python, Chapman and Hall/CRC, 2020.
2. John A. Sokolowski, Catherine M.Banks,Principles of Modeling and Simulation: A Multidisciplinary Approach, Wiley, 2011
3. John A. Sokolowski, Catherine M.Banks, Modeling and Simulation Fundamentals: Theoretical Underpinnings and Practical Domains, Wiley, 2010.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN**PROFESSIONAL ELECTIVE - I****(2005PE04) MOBILE COMPUTING****B.Tech. III Year I Sem****L T P C****3 0 0 3****COURSE OBJECTIVES**

To make the student understand the concept of mobile computing paradigm, its novel applications and limitations.

- To understand the typical mobile networking infrastructure through a popular GSM proto-col
- To understand the issues and solutions of various layers of mobile networks, namely MAC layer, Network Layer & Transport Layer
- To understand the database issues in mobile environments & data delivery models.
- To understand the adhoc networks and related concepts.
- To understand the platforms and protocols used in mobile environment.

Course Outcomes:

- Able to think and develop new mobile application.
- Able to take any new technical issue related to this new paradigm and come up with a solution (s).
- Able to develop new adhoc network applications and/or algorithms/protocols.
- Able to understand & develop any existing or new protocol related to mobile environment

Unit I: UNIT I WIRELESS COMMUNICATION

Introduction -Frequencies and Regulations - Signals - Antennas - Propagation Ranges and Effects - Multipath Propagation - Effects of Mobility - Multiplexing - Modulation and Shift Keying-Spread Spectrum-Frequency Hopping and Direct Sequence-Medium Access Control-Specialized MAC-SDMF-FDMA-TDMA-CDMA-Mobile Computing-Paradigm, Promises/Novel Applications and Impediments and Architecture; Mobile and Handheld Devices, Limitations of Mobile and Handheld Devices.

Unit II: TELECOMMUNICATION SYSTEMS

GSM-Services, System Architecture, Radio Interfaces, Protocols, Localization, Calling, Handover, Security, New Data Services, GPRS, CSHSD, DECT-UMTS and IMT - 2000 -Architecture, User Equipment, RNS, UTRAN, Node B, RNC functions - W-CDMA - HSPA+, HSUPA, HSDPA+ - Satellite systems - History- Applications-Basics- Routing-Localization-Handover-Examples

UNITIII: Wireless LAN and Mobile Network Layer

Wireless LAN -Infra red vs radio transmission - Infrastructure and ad-hoc network 205-IEEE802.11-HIPERLAN-Bluetooth Mobile Network Layer - Mobile IP-Dynamic host configuration protocol - Mobile ad-hoc networks-

Unit IV: Mobile Transport Layer & Data base issues:

Mobile Transport Layer: Conventional TCP/IP Protocols, Indirect TCP, Snooping TCP, Mobile TCP, Other Transport Layer Protocols for Mobile Networks.

Data Base Issues: Database Hoarding & Caching Techniques, Client-Server Computing & Adaptation, Transactional Models, Query processing, Data Recovery Process & QoS Issues.

Unit V: Mobile Application Development:

File systems- World wide web- Wireless application protocol (version 1.x)- i-mode- SyncML-WAP 2.0- Mobile Platform- Palm OS, Windows CE, Symbian OS, Linux for Mobile Devices, Android.

TEXT BOOKS:

1. Jochen Schiller, "Mobile Communications", Addison-Wesley, Second Edition, 2009.
2. Raj Kamal, "Mobile Computing", Oxford University Press, 2007, ISBN: 0195686772.

REFERENCE BOOKS:

1. Jochen Schiller, "Mobile Communications", Addison-Wesley, Second Edition, 2004.
2. Stojmenovic and Cacute, "Handbook of Wireless Networks and Mobile Computing", Wiley, 2002, ISBN: 0471419028.
3. Reza Behravanfar, "Mobile Computing Principles: Designing and Developing Mobile Applications with UML and XML", ISBN: 0521817331, Cambridge University Press, Oct 2004.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN**PROFESSIONAL ELECTIVE - I****(2066PC61) ARTIFICIAL INTELLIGENCE LAB****B.Tech. III Year I Sem****L T P C****0 0 3 1.5****LIST OF PRACTICAL EXPERIMENTS**

1. Week 1: Artificial Intelligence Problem identification and PEAS description.
2. Week 2: Introduction to AI programming Language PROLOG
3. Week3: Study of facts, objects, predicates and variables in PROLOG
4. Week4: Study of arithmetic operators, simple input/output and compound goal sin PROLOG.
5. Week 5: Study of string operations in PROLOG. Implement string operations like substring,
6. String position, palindrome etc.
7. Week 6: Write a prolog program to implement all set operations (Union, intersection,
8. Complement etc.
9. Week 7:
Write a program for Usage of rules in Prolog. Create a family tree program to include following rules 1. M is the mother of P if she is a parent of P and is female 2. F is the father of P if he is a parent of P and is male 3. X is a sibling of Y if they both have the same parent. 4. Then add rules for grandparents, uncle-aunt, sister and brother. Based on the facts, define goals to answer questions related to
10. Week 8:
Write programs for studying Usage of arithmetic operators in Prolog. Accept name of the student, roll no, his/her subject name, maximum marks and obtained marks in the subject.(Take marks of at least 6 subjects). Compute the percentage of a student. Display his result with other information. Accept department, designation, name, age, basic salary, house rent allowance (HRA) of an employee. Computed earness allowance (DA) which is 15 % of basic salary. Determine the gross salary (basic salary+HRA+DA) of the employee. Display all information of the employee (Generate Pay slip).
11. Week 9: Implement a program for recursion and list in PROLOG.
12. Week 10: WAP for studying usage of compound object and list in Prolog. Write a program to maintain inventory items using a compound object: (i) Accept from user the details of at least 10objects. (ii)Display from user the details of objects entered by user (2) Find and display odd and even numbers from a given input list.

13. Week11: Write a prolog program to solve "Water Jug Problem".
14. Week12: Write a program to implement a monkey banana problem.
15. Week13: Write a program to implement 8 Queens Problem.
16. Week14: Write a program to solve traveling salesman problem.
17. Week15: Write a program to solve water jug problem using LISP

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN**PROFESSIONAL ELECTIVE - I****(2067PC62) STATISTICAL FOUNDATIONS OF DATA SCIENCE LAB****B.Tech. III Year I Sem****L T P C****0 0 3 1.5****COURSE OBJECTIVES:**

- The students are exposed to various experimental skills in data analytics which is very essential for Data Science.
- Students are exposed to the Probability distribution using R & Python Programming.
- Students are able to use R and Python Programming and perform all types of operators and functions to generate the effective reports.
- To inculcate in students professional and ethical attitude, multidisciplinary approach and an ability to relate statistical analysis in data science by using various statistical methods or principles.
- Students should aware of Hypothetical Tests, Regression Analysis and Monte Carlo Integration.
- To provide student with an academic environment aware of excellence, written ethical codes and guidelines and lifelong learning needed for a successful bright and professional career.

Required Software Tools: R and Python (numpy, scipy, matplotlib) Also required: Pandas, Stats models and Sea born.

COURSE OUTCOMES:

- The student learns the concept of R and Python Programming and Statistical analysis and try formulate new solutions or programs.
- Demonstrate an ability to design and develop R and Python programs with this, analysis the data and generate the related report or results.
- Demonstrate an ability to design programming on probability distribution and compute all possible outcomes or required reports.
- Able to do hypothetical analysis and transformation of data into useful manner using Python Programming
- Able to generate the linear algebra, Monte Carlo Integrations etc by using Python programming.

WEEK1: Study R Languages, Commands, etc

Consider 50 observations (dataset), generating random data using functions provided, like rbinom, performing basic statistical computations using built-in functions of R. Discussion of R graphics. Histograms. Stem and leaf plots. Boxplots. Scatterplots. Bar graphs plotting the data using line graph, histograms, multiple graphs, etc. Generate 3 D graphs or plots.

WEEK 2: Measures of Central Tendency: Given a sample of 50 Observations (from any dataset), use possible

functions R or Python and calculate mean, sd, var, min, max, median, range, and quantile. Discuss the properties of this distribution. generate bell curve of a random normal distribution.

WEEK3:

Pragmatic matters. Tabulating data. Transforming a variable. Subsetting vectors and data frames.

WEEK4:

(i) Consider 100 observations, find out Correlation "cor()" and Covariance "cov()" and program on Frequencies and Crosstabs.

(ii) Finding and analyze the missing data.

WEEK5:

Sorting, transposing and merging data. Reshaping a data frame. Basics of text processing. Reading unusual data files. Basics of variable coercion.

WEEK 6:

Hypothesis testing and t-test for any given dataset. Find out null hypothesis, alternate hypothesis, draw the picture (graph) to visualize problem. Test the value of population mean.

WEEK7:

State alpha level and rejection region, estimate the maximum likelihood and inference.

WEEK 8:

Binomial simulation: Making the computer flip coins for you. Make use of rbinom function of R to generate samples, and other functions: counts, avgs, mean, sd, sqrt, hist (histogram).

WEEK9:

Bayesian Hypothesis testing on any given data set or data frame.

WEEK10:

Uses eaborn and combines simplest statistical fits with plotting on pandas data frames.

WEEK11:

Working on Linear Algebra and Linear Systems

WEEK12:

Working on Monte Carlo Integration (Quasi-random numbers and find out the variance on any data frame)

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN**PROFESSIONAL ELECTIVE - I****(2000MC05) TECHNICAL COMMUNICATIONS AND SOFT SKILLS****B.Tech. III Year I Sem****L T P C****2 0 0 0****INTRODUCTION:**

Technical Communication and Softskills focuses on enhancing students' communication. A thorough drill in grammar exercises is given. Various technical writing styles and skills are developed. The future placement needs of the students are met by giving them an exposure to group discussions and mock interviews.

The students hone these skills under the guidance of instructor whose constant evaluation helps in the professional development. This course fulfills the need of the aspirants in acquiring and improving the skills required for placements and professional success.

COURSE OBJECTIVES:

- To make the students recognize the role of Technical English in their academic and professional fields.
- To improve language proficiency and develop the required professional skills.
- To equip students with tools to organize, comprehend, draft short and long forms of technical work.

OUTCOMES:

- The students will be able to understand information which assists in completion of the assigned job tasks more successfully.
- Students will be able to communicate their ideas by writing projects, reports, instructions, diagrams and many other forms of professional writing.
- Students will also be able to adhere to ethical norms of scientific communication.
- Students will be able to strengthen their individual and collaborative work strategies

UNIT1-Personal Evaluation

Self-Assessment and Self-Awareness-Self-Esteem-Perception and Attitudes-Values and Beliefs-Time Management- Concord

UNIT2-Professional Communication

Extempore-Oral Presentations-Presentation Aids-Email Writing, Business Letter

Writing-Memo Writing-Transformation of Sentences

UNIT3-Career Planning

Group Discussion, Interviews - Leadership Skills & Team Building - Personal Goal Setting and Career Planning - Complex Problem Solving - Creativity - Role and Responsibilities of an Engineer- Tenses

UNIT 4-Technical Writing

Principles of Effective Writing - Editing Strategies to Achieve Appropriate Technical Style- Technical Report Writing - Voice

UNIT 5-Ethics and Responsibilities

Personality Development in Social and Office Settings - Netiquettes - Work Culture and Cubicle Etiquettes- Correction of Sentences

TEXT BOOKS:

1. David F. Beer and David McMurrey, *Guide to Writing as an Engineer*, John Wiley, New York, 2004
2. Diane Hacker, *Pocket Style Manual*, Bedford Publication, New York, 2003. (ISBN 0312406843)
3. Shiv Khera, *You Can Win*, Macmillan Books, New York, 2003.

REFERENCES:

4. Raman Sharma, *Technical Communications*, Oxford Publication, London, 2004.
5. Meenakshi Raman, Prakash Singh, *Business Communication*, Oxford Publication, New Delhi 2012.
6. Dale Jungk, *Applied Writing for Technicians*, McGraw Hill, New York, 2004. (ISBN: 07828357-4)
7. Sharma, R. and Mohan, K. *Business Correspondence and Report Writing*, TMH New Delhi 2002.
8. Xebec, *Presentation Book*, TMH New Delhi, 2000. (ISBN 0402213)

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN**PROFESSIONAL ELECTIVE - I****(2067PC04) DATA SCIENCE TOOLS AND TECHNIQUES**

B.Tech. III Year II Sem

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COURSE OBJECTIVES:

1. To gain strong foundation of fundamental concepts of data science and python.
2. To provide a basic exposition to machine learning.
3. Investigate the basic concepts of tree models, time series analysis & Neural Networks.
4. Experience the basic concepts of business Intelligence and schema Design.
5. Explore the current scope, potential, limitations, and implications of Data Science tools python, Tensor flow and tableau, Spark, PySpark and Hive.

Course Outcomes:

Upon successful completion of this course, the student shall be able to:

1. Demonstrate the fundamental concepts, applications of data science and python.
2. Apply basic principles of machine learning for various applications.
3. Ability to apply knowledge of tree Models, time Series Analysis & Neural Networks.
4. Ability to carry out the business Intelligence and schema Design.
5. Demonstrate ability to analyses the latest trends in data science of Data Science tool spython, Tensor flow and tableau, Spark, PySpark and Hive.

Unit I DataTool kit

Introduction to Python, Programming in Python, Python for Data Science, Visualization in Python, Exploratory Data Analysis, Inferential Statistics, Hypothesis Testing, Tools Covered: Python.

Unit II Machine Learning

Introduction to Machine Learning and Linear Regression, Logistic Regression, Unsupervised learning: Clustering, Business Problem Solving, Lead Scoring Case Study, Tools Covered: Python, Excel.

Unit III Deep Learning

Tree Models, Model Selection & General ML Techniques, Bagging and Boosting, Advanced Regression, Advanced Regression Assignment, Principal Component Analysis, Time Series Analysis, Telecom Churn Case Study ,Introduction to Neural Networks, Neural Networks Assignment, Convolutional Neural Networks, Industry Applications, Recurrent Neural Networks, Gesture Recognition, Tools Covered: Tensor flow and tableau.

Unit IV Business Intelligence

Introduction to Databases, Advanced SQL and Best Practices, Schema Design and Retrieval Assignment, NoSQL Databases and Best Practices, Introduction to Cloud and Hive,

SQL Case

Study: Analyzing BigData in Retail, Visualization using Tableau, Interactive Marketing Campaign Analysis, Visualization using Power BI, Business Case Study: Tools Covered: MySql, tableau, mangoDB, Power BI.

UNIT V Data Engineering

Introduction to Hadoop and MapReduce Programming, Data Management and Relational Database Modelling, NoSQL Databases and Apache HBase, Data Ingestion with Apache Sqoop and Apache Flume, Building and Querying Data Warehouse with Apache Hive, Data Processing with PySpark, Real-Time Data Streaming with Apache Kafka Real-Time Data Processing using Spark Streaming, Business Problem Assignment, Building Automated Data Pipelines with Oozie/Airflow, Analytics using PySpark, Case Study: Kafka, Spark Streaming and PySpark, Tools Covered: Spark, PySpark and Hive.

TEXTBOOKS(S)

1. Cathy O'Neil, Rachel Schutt, Doing Data Science, Straight Talk from The Frontline.O'Reilly,2013.

REFERENCES:

1. JureLeskovek,AnandRajaraman,JeffreyUllman,MiningofMassiveDatasets.v2.1,CambridgeUniversity Press, 2014.
2. Ward,GrinsteinKeim,InteractiveDataVisualization:Foundations,Techniques,andApplications.Natick:AKPeters, Ltd.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN**PROFESSIONAL ELECTIVE - I****(2067PC05) DATA PRIVACY AND SECURITY**

B.Tech. III Year II Sem

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COURSE OBJECTIVES:

- Understand the different Data Security technologies.
- Learn the different ways of backing up data and information.
- Learn the different software available for protecting and securing data.
- Be aware of the different companies and organizations that track secure and protected data and information

Course Outcomes:

Upon successful completion of this course, the student shall be able to:

- Describe the concept of privacy including personally private information, potential violations of privacy due to security mechanisms
- Describe how privacy protection mechanisms run in conflict with security mechanisms.
- Describe how an attacker can infer a secret by interacting with a database.
- Explain how to set a data backup policy or password refresh policy.
- Discuss how to set a breach disclosure policy.
- Describe the consequences of data retention policies.
- Identify the risks of relying on outsourced manufacturing.
- Identify the risks and benefits of outsourcing to the cloud.

UNIT-I:

Fundamentals of Data Privacy & Security : Databases and Exploratory Data Analysis, Data Representation and Storage, Authentication and Authorization, Database Security , problems in data security controls, security models

UNIT-II:

Privacy Issues : Basic Data Privacy Concepts: Fundamental Concepts, Data Privacy Attacks, Data linking and profiling, privacy policies and their specifications, privacy policy languages, privacy in different domains- medical, financial, etc.

UNIT-III:

Anonymization : Linkage and re-identification attacks, k-anonymity, l-diversity, t-closeness, Implementing anonymization, Anonymizing complex data, Privacy and anonymity in mobile environments.

UNIT-IV:

Differential Privacy (DP) : Formalism and interpretation of DP, Fundamental DP mechanisms and properties
Interactive and non-interactive DP, DP for complex data, Local Differential Privacy (LDP)

UNIT-V:

Security and Privacy in AI and Machine Learning (AI/ML) : Machine Learning (ML) background, Adversary modeling in AI/ML, Poisoning, evasion, and backdoor attacks, Test-time attacks: Model inversion, model stealing, membership inference, adversarial examples, Architectures and algorithms for privacy-preserving machine learning

TEXT BOOK:

Data Privacy and Security, David Salomon, (Springer Professional Computing) 2003rd Edition, Kindle Edition.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2012PC02) WEBTECHNOLOGIES

B.Tech. III Year II Sem

L T P C

3 0 0 3

COURSE OBJECTIVES:

- To introduce HTML and CSS for webpage designing.
- To introduce XML and processing of XML Data with Java.
- To introduce Client side scripting with Javascript and AJAX.
- To introduce Server side programming with Java Servlets and JSP
- To introduce PHP language for server side scripting

Course Outcomes:

- Able to design web pages using HTML and CSS
- Gain knowledge of client side scripting, validation of forms and AJAX programming
- Have understanding of what is XML and how to parse and use XML Data with Java
- Gain knowledge Server side programming with Java Servlets and JSP
- Have understanding of server side scripting with PHP language

UNIT- I

Introduction to the Web - History of HTML and W3C, Client-Server paradigm, Hyper Text Transfer Protocol (HTTP), Hyper Text Markup Language (HTML), HTML Basics - Elements, Attributes and Tags, Basic Tags, Advanced Tags, Frames, Images, meta tag, multimedia content frames, Cascading Style Sheet (CSS)-types, page layout and selectors.

UNIT- II

XML: Introduction to XML, XML DTD, W3C XML Schema, Parsing XML, XPath, XML Transformation, Document Object Model, XHTML

Client side Scripting: Introduction to Javascript: Javascript language - declaring variables, scope of variables, functions, event handlers (on click, on submit etc.), Form validation, Simple AJAX Application.

UNIT-III

Introduction to Servlets: Common Gateway Interface (CGI), Lifecycle 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

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

TEXTBOOKS:

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

REFERENCEBOOKS:

1. Web Programming, building internet applications, Chris Bates 2nd edition, Wiley Dreamtech
2. Java Server Pages - Hans Bergsten, SPDO'Reilly
3. JavaScript, D. Flanagan, O'Reilly, SPD.
4. Beginning Web Programming - Jon Duckett WROX.
5. Programming World Wide Web, R. W. Sebesta, Fourth Edition, Pearson.
6. Internet and World Wide Web - How to program, Dietel and Nieto, Pearson.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2005PE07) COMPUTERVISION

B.Tech. III Year II Sem

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COURSE OBJECTIVE:

To Recognize and describe both the theoretical and practical aspects of computing with images and to Connect issues from Computer Vision to Human Vision

Course Outcomes:

1. Provide an introduction to computer vision including fundamentals of image formation
2. Enumerate the concepts of Feature detection and Matching
3. Discuss about Image Segmentation Techniques
4. Discuss applications of Feature based alignment like pose estimation
5. Discuss different recognition techniques.

UNIT-I

Introduction: What is computer vision, A brief history, Image Formation, Geometric primitives and transformations, Photometric image formation, The digital camera.

UNIT-II

Feature detection and matching: Points and patches, Feature detectors, Feature descriptors, Feature matching, Feature tracking, Application: Performance-driven animation, Edges, Application: Edge editing and enhancement, Lines, Application: Rectangle detection.

UNIT-III

Segmentation: Active contours, Split and merge, Mean shift and mode finding, Normalized cuts, Graph cuts and energy-based methods, Application: Medical image segmentation.

UNIT-IV

Feature-based alignment: 2D and 3D feature-based alignment, Pose estimation, Geometric intrinsic calibration, Calibration patterns, Vanishing points, Application: Single view metrology, Rotational motion, Radial distortion.

UNIT-V

Recognition: Object detection, Face detection, Pedestrian detection, Face recognition, Eigen faces, Active appearance and 3D shape models, Application: Personal photo collections, Instance recognition, Category recognition, Context and scene understanding.

TextBooks:

1. Richard Szeliski, "Computer Vision: Algorithms and Applications", Springer, 2010. 2. Rafael C. Gonzalez "Digital Image Processing", Pearson Education; Fourth edition (2018)

ReferenceBooks:

1. Forsyth/Ponce, "Computer Vision: A Modern Approach", Pearson Education India; 2nd edition (2015)
2. S. Nagabhushana, "Computer Vision and Image Processing", New Age International Pvt Ltd

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN**PROFESSIONAL ELECTIVE - II****(2005PE24) DATA MINING**

B.Tech. III Year II Sem

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UNIT I

INTRODUCTION TO DATA MINING What is data mining? Related technologies - Machine Learning, DBMS, OLAP, Statistics. Data Mining Goals. Stages of the Data Mining Process, Data Mining Techniques, Knowledge Representation Methods. Data Warehouse and OLAP: Data Warehouse and DBMS, Multidimensional data model, OLAP operations .

UNIT II

DATA PRE-PROCESSING Data cleaning. Data transformation, Data reduction. Data mining knowledge representation, Attribute oriented analysis. Data mining algorithms: Association rules: Motivation and terminology, Basic idea: item sets, generating item sets and rules efficiently, Correlation analysis.

UNIT III

DATA MINING ALGORITHMS Classification, Basic learning/mining tasks, inferring rudimentary rules: 1R algorithm, Decision trees, Covering rules. Data mining algorithms: Prediction, The prediction task, Statistical (Bayesian) classification, Bayesian networks, Instance-based methods (nearest neighbour), Linear models.

UNIT IV

WEB CRAWLING Basic crawler algorithm, Focused crawlers, Topical crawlers, Web search: Web page pre-processing, Inverted index, HITS algorithm, Page ranking algorithm, Leadership algorithm.

UNIT V

SOCIALNETWORKANALYSIS Co-citation and bibliographic coupling, Community discovery. Web usage mining: Recommender systems. Mining Twitter, Mining Facebook, Mining Instagram.

TEXTBOOKS/REFERENCES

1. Han,J.,Kamber, M.,&Pei,J.(2011). Data mining:Conceptsandtechniques(3rded.). MorganKaufmannpublications.
2. IntroductiontoDataMining, Vipinkumar,MichaelSteinbach,Pang-NingTan,Personpublications,2016
3. MiningtheWeb,SoumenChakrabarti,Elseierpublications, 2002
4. WebDataMining,BingLiu,SecondEdition,Springerpublications,2011.5.MiningtheSocialWeb

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN**PROFESSIONAL ELECTIVE - II****(2005PE16)SOFTWARE TESTING METHODOLOGIES**

B.Tech. III Year II Sem

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PREREQUISITES

1. A course on "Software Engineering"

Course Objectives

1. To provide knowledge of the concepts in software testing such as testing process, criteria, strategies, and methodologies.
2. To develop skills in software test automation and management using latest tools.

Course Outcomes: Design and develop the best test strategies in accordance to the development model.

UNIT-I

Introduction: Purpose of testing, Dichotomies, model for testing, consequences of bugs, taxonomy of Bugs
Flow graphs and Path testing: Basics concepts of path testing, predicates, path predicates and achievable paths, path sensitizing, path instrumentation, application of path testing.

UNIT-II

Transaction Flow Testing: transaction flows, transaction flow testing techniques. Data flow testing: Basics of data flow testing, strategies in data flow testing, application of data flow testing.

Domain Testing: domains and paths, Nice & ugly domains, domain testing, domains and interfaces testing, domain and interface testing, domains and testability.

UNIT-III

Paths, Path products and Regular expressions: path products & path expression, reduction procedure, applications, regular expressions & flow anomaly detection.

Logic Based Testing: overview, decision tables, path expressions, kv charts, specifications.

UNIT-IV

State, State Graphs and Transition testing: state graphs, good & bad state graphs, state testing, Testability tips.

UNIT-V

Graph Matrices and Application: Motivational overview, matrix of graph, relations, power of a matrix, node reduction algorithm, building tools. (Student should be given an exposure to a tool like J Meter or Win-runner).

TEXTBOOKS:

1. SoftwareTestingtechniques -BarisBeizer, Dreamtech,second edition.
2. SoftwareTestingTools -Dr.K. V.K.K.Prasad,Dreamtech.

REFERENCES:

1. Thecraftofsoftwaretesting-BrianMarick,PearsonEducation.
2. SoftwareTestingTechniques -SPD(Oreille)
3. SoftwareTestingintheRealWorld- Edward Kit,Pearson.
4. EffectivemethodsofSoftwareTesting,Perry,JohnWiley.
5. ArtofSoftwareTesting -Meyers,JohnWiley.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN**PROFESSIONAL ELECTIVE - III****(2005PE03) PRINCIPLES OF NATURAL LANGUAGE PROCESSING**

B.Tech. III Year II Sem

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Prerequisites: Data structures, finite automata and probability theory

Course Objectives:

Introduce to some of the problems and solutions of NLP and their relation to linguistics and statistics.

Course Outcomes:

- Show sensitivity to linguistic phenomena and an ability to model them with formal grammars.
- Understand and carry out proper experimental methodology for training and evaluating empirical NLP systems
- Able to manipulate probabilities, construct statistical models over strings and trees, and estimate parameters using supervised and unsupervised training methods.
- Able to design, implement, and analyze NLP algorithms
- Able to design different language modeling Techniques.

UNIT-I

Finding the Structure of Words: Words and Their Components, Issues and Challenges, Morphological Models. Finding the Structure of Documents: Introduction, Methods, Complexity of the Approaches, Performances of the Approaches

UNIT-II

Syntax Analysis: Parsing Natural Language, Treebanks: A Data-Driven Approach to Syntax, Representation of Syntactic Structure, Parsing Algorithms, Models for Ambiguity Resolution in Parsing, Multilingual Issues

UNIT-III

Semantic Parsing: Introduction, Semantic Interpretation, System Paradigms, Word Sense Systems, Software.

UNIT-IV

Predicate-Argument Structure, Meaning Representation Systems, Software.

UNIT-V

Discourse Processing: Cohesion, Reference Resolution, Discourse Cohesion and Structure Language Modeling: Introduction, N-Gram Models, Language Model Evaluation, Parameter Estimation, Language Model Adaptation, Types of Language Models, Language-Specific Modeling Problems, Multilingual and Crosslingual Language Modeling

TEXTBOOKS:

1. Multilingual Natural Language Processing Applications: From Theory to Practice - Daniel M. Bikel and Imed Zitouni, Pearson Publication
2. Natural Language Processing and Information Retrieval: Tanvier Siddiqui, U.S. Tiwary

REFERENCEBOOK:

1. Speech and Natural Language Processing - Daniel Jurafsky & James H Martin, Pearson Publications

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN**PROFESSIONAL ELECTIVE - III****(2012PE03) WEBMINING**

B.Tech. III Year II Sem

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COURSE OBJECTIVES:

- To describe web mining and understand the need for web mining
- To differentiate between Web mining and data mining
- To understand the different application areas for web mining
- To understand the different methods to introduce structure to web-based data
- To describe Web mining, its objectives, and its benefits
- To understand the methods of Web usage mining

UNIT- I :

Introduction to Web Data Mining and Data Mining Foundations, Introduction - World Wide Web(WWW), A Brief History of the Web and the Internet, Web Data Mining-Data Mining, Web Mining. Data Mining Foundations - Association Rules and Sequential Patterns - Basic Concepts of Association Rules, Apriori Algorithm-Frequent Itemset Generation, Association Rule Generation, Data Formats for Association Rule Mining, Mining with multiple minimum supports - Extended Model, Mining Algorithm, Rule Generation, Mining Class Association Rules, Basic Concepts of Sequential Patterns, Mining Sequential Patterns on GSP, Mining Sequential Patterns on PrefixSpan, Generating Rules from Sequential Patterns.

UNIT- II :

Information Retrieval and Web Search: Basic Concepts of Information Retrieval, Information Retrieval Methods - Boolean Model, Vector Space Model and Statistical Language Model, Relevance Feedback, Evaluation Measures,

UNIT- III :

Text and Web Page Preprocessing - Stopword Removal, Stemming, Web Page Preprocessing, Duplicate Detection, Inverted Index and Its Compression - Inverted Index, Search using Inverted Index, Index Construction, Index Compression, Latent Semantic Indexing - Singular Value Decomposition, Query and Retrieval, Web Search, Meta Search, Web Spamming.

UNIT- IV :

Web Crawling - A Basic Crawler Algorithm- Breadth First Crawlers, Preferential Crawlers, Implementation Issues- Fetching, Parsing, Stopword Removal, Link Extraction, Spider Traps, Page Repository, Universal Crawlers, Focused Crawlers, Topical Crawlers, Crawler Ethics and Conflicts.

UNIT-V:

Opinion Mining and Web Usage Mining

Opinion Mining - Sentiment Classification - Classification based on Sentiment Phrases, Classification Using Text Classification Methods, Feature based Opinion Mining and Summarization - Problem Definition, Object feature extraction, Feature Extraction from Pros and Cons of Format 1, Feature Extraction from Reviews of Format 2 and 3, Comparative Sentence and Relation Mining, Opinion Search and Opinion Spam.

Web Usage Mining - Data Collection and Preprocessing- Sources and Types of Data, Key Elements of Web usage Data Preprocessing, Data Modeling for Web Usage Mining, Discovery and Analysis of Web usage Patterns - Session and Visitor Analysis, Cluster Analysis and Visitor Segmentation, Association and Correlation Analysis, Analysis of Sequential and Navigation Patterns.

TEXTBOOK:

- Web Data Mining: Exploring Hyperlinks, Contents, and Usage Data by Bing Liu (Springer Publications)

REFERENCES BOOKS:

- Data Mining: Concepts and Techniques, Second Edition Jiawei Han, Micheline Kamber (Elsevier Publications)
- Web Mining: Applications and Techniques by Anthony Scime
- Mining the Web: Discovering Knowledge from Hypertext Data by Soumen Chakrabarti

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN**PROFESSIONAL ELECTIVE - III****(2005PE20) DISTRIBUTED SYSTEMS**

B.Tech. III Year II Sem

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COURSE OBJECTIVES:

- To learn the principles, architectures, algorithms and programming models used in distributed systems.
- To examine state-of-the-art distributed systems, such as Google File System.
- To design and implement sample distributed systems.

Course Outcomes:

- Students will identify the core concepts of distributed systems: the way in which several machines orchestrate to correctly solve problems in an efficient, reliable and scalable way.
- Students will examine how existing systems have applied the concepts of distributed systems in designing large systems, and will additionally apply these concepts to develop sample systems.

UNIT I

Characterization of Distributed Systems: Introduction, Examples of Distributed Systems, Resource sharing and web, challenges.

System models: Introduction, Architectural and Fundamental models, networking and Internet networking.

UNIT II

Time and Global States: Introduction, Clocks, events and Process states, Synchronizing physical clocks, logical time and logical clocks, global States.

Coordination and Agreement: Introduction, Distributed mutual exclusion, Elections, Multicast communication, consensus and related problems.

UNIT III

Interprocess Communication: Introduction, The API for the Internet Protocols, External Data Representation and Marshalling, Client -Server Communication, Group Communication, Case Study: IPC in UNIX.

Distributed Objects and Remote Invocation: Introduction, Communication between distributed objects, Remote Procedure Call, Events and Notifications, Case Study: JAVARMI

UNIT IV

Distributed File Systems: Introduction, File Service Architecture, Case Study: Sun Network

File System

Name Services: Name Services: Introduction, Name Services and the Domain Name System, Case study of the Global

Name Service

DistributedSharedMemory:Introduction,Designand Implementation issues, Sequential consistency, Releaseconsistency, Other consistency models.

UNIT V

Transactions and Concurrency control: Introduction, Transactions, Nested Transactions,Locks, optimistic concurrency control, Timestamp ordering, Comparison of methods forconcurrencycontrol.

DistributedTransactions:DistributedTransactions:Introduction,FlatandNestedDistributedTransactions, Atomic commit protocols, Concurrency control in distributed transactions,Distributeddeadlocks, Transaction recovery.

TEXTBOOKS:

1. DistributedSystems ConceptsandDesign,GCoulouris,JDollimoreandTKindberg,FourthEdition, PearsonEducation. 2009.

REFERENCES:

1. DistributedSystems,Principlesandparadigms,AndrewS.Tanenbaum, MaartenVanSteen,SecondEdition,PHI.
2. DistributedSystems,AnAlgorithmApproach, SikumarGhosh,Chapman&Hall/CRC,Taylor&Fransis Group,2007.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN**PROFESSIONAL ELECTIVE - III****(2067PC63) DATASCIENCE TOOLS AND TECHNIQUES LAB**

B.Tech. III Year II Sem

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Course Outcomes: After completion of course, students will be able to

1. Use python language and Anaconda, Jupyter, spyder, pycharm for Data Analysis.
2. Student can implement python Functions for Data analysis.
3. Develop and test different data analysis models using python.
4. Import external datasets and prepare it for analysis using python.
5. Plot various graphs of analyzed data.

Course Contents Hrs.

Expt.No.1:

Installation of Python, Anaconda, Pycharm on Windows/Linux/Mac platform.

Expt. No. 2:

Practicing the basic operations and commands of Python Language.

Expt. No. 3

Introduction to Python Libraries- Numpy, Pandas, Matplotlib, Scikit.

Expt.No.4:

Import a dataset in Python and prepare it for data analysis.

Expt.No.5:

Apply linear regression on the dataset for prediction.

Expt. No. 6:

Implement Naive Bayes classifier for dataset stored as CSV file.

Expt. No. 7: Apply classification and clustering techniques on the dataset .

Expt.No.8: Implement K-NN algorithm to classify a dataset.

Expt.No.9: Apply time series analysis techniques on the dataset.

Expt.No.10: Plot different types of graphs/charts for a given dataset using Python.

Expt.No.11: Implement a functional program in Python for data analysis 2.

Expt.No.11: BuildmodelusingSVMwithdifferentkernels.

REFERENCEBOOK

1. www.anaconda.com
2. scikit-learnuserguide,PythonDataScienceHandbookEssentialToolsforWorkingwithData,OReillyPublication.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2012PC62) WEBTECHNOLOGIES LAB

B.Tech. III Year II Sem

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COURSE OBJECTIVES:

- To enable the student to program web applications using the following technologies HTML, Javascript, AJAX, Servlets, JSP and PHP

Course Outcomes:

- Use XAMPP Stack for web applications
- Use Tomcat Server for Servlets and JSPs
- Write simple applications with Technologies like HTML, Javascript, AJAX, PHP, Servlets and JSPs
- Connect to Database and get results

Note:

- Use XAMPP Stack (Cross Platform, Apache, MariaDB, PHP and Perl) for the Lab Experiments. Though not mandatory, encourage the use of Eclipse platform wherever applicable
- The list suggests the minimum program set. Hence, the concerned staff is requested to add more problems to the list as needed.

1. Install the following on the local machine

- Apache Web Server (if not installed)
 - Tomcat Application Server locally
 - Install MariaDB (formerly called as MySQL if not installed)
 - Install PHP and configure it to work with Apache web server and MySQL (if not already configured)
- Design an online shopping website with different web pages. (Note: Use frames, hyperlinks, Images, table etc...)
 - Re-design the above website applying CSS.
 - Design login page, registration page and apply the client side validations using JavaScript.
 - Create an XML document that contains 10 users information. Write a Java program, which takes User Id as input and returns the user details by taking the user information from the XML document using (a) DOM Parser and (b) SAX parser. Implement the following web applications using (a) PHP, (b) Servlets and (c) JSP:
 - A user validation web application, where the user submits the login name and password to the server. The name and password are checked against the data already available in Database and if the data matches, a successful login page is returned. Otherwise a failure message is shown to the user.
 - Modify the above program to use AJAX to show the result on the same page below the submit button.

8. A simple calculator web application that takes two numbers and an operator (+, -, /, * and %) from an HTML page and returns the result page with the operation performed on the operands.
9. A web application takes a name as input and on submit it shows a hello <name> page where <name> is taken from the request. It shows the start time at the right top corner of the page and provides a logout button. On clicking this button, it should show a logout page with Thank You <name> message with the duration of usage (hint: Use session to store name and time).
10. A web application that takes name and age from an HTML page. If the age is less than 18, it should send a page with "Hello <name>, you are not authorized to visit this site" message, where <name> should be replaced with the entered name. Otherwise it should send "Welcome <name> to this site" message.
11. A web application for implementation:
The user is first served a login page which takes user's name and password. After submitting the details the server checks these values against the data from a database and takes the following decisions.
If name and password matches, serves a welcome page with user's full name.
If name matches and password doesn't match, then serves "password mismatch" page
If name is not found in the database, serves a registration page, where user's full name is asked and on submitting the full name, it stores, the login name, password and full name in the database (hint: use session for storing the submitted login name and password)
12. A web application that lists all cookies stored in the browser on clicking "List Cookies" button. Add cookies if necessary.

REFERENCE BOOKS:

1. The Complete Reference PHP - Steven Holzner, Tata McGraw-Hill
2. Web Programming, building internet applications, Chris Bates 2nd edition, Wiley Dreamtech
3. Java Server Pages - Hans Bergsten, SPDO'Reilly
4. JavaScript, D. Flanagan, O'Reilly, SPD.
5. Internet and World Wide Web - How to program, Dietel and Nieto, Pearson

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2000MC06) INDIAN TRADITIONAL KNOWLEDGE*

B.Tech. III Year II Sem

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COURSE OBJECTIVES:

To facilitate the students with the concepts of Indian traditional knowledge and to make them understand the importance of roots of knowledge system

- The course aim of the importing basic principle of third process reasoning and inference "sustainability is at the course of Indian traditional knowledge system
- To understand the legal framework and traditional knowledge and biological diversity act 2002 and geographical indication act 2003
- The courses focus on traditional knowledge and intellectual property mechanism of "traditional knowledge and protection
- To know the student traditional knowledge in different sector

Course Outcomes:

After completion of the course, students will be able to:

- Understand the concept of Traditional knowledge and its importance
- Know the need and importance of protecting traditional knowledge
- Know the various enactments related to the protection of traditional knowledge
- Understand the concept of Intellectual property to protect the traditional knowledge"

UNIT I

Introduction to traditional knowledge: Define traditional knowledge, nature and characteristics, scope and importance, kinds of traditional knowledge, the physical and social contexts in which traditional knowledge develop, the historical impact of social change on traditional knowledge systems. Indigenous Knowledge (IK), characteristics, traditional knowledge vis-à-vis indigenous knowledge, traditional knowledge Vs western knowledge traditional knowledge vis-à-vis formal knowledge.

Learning Outcomes:

At the end of the unit, the student will be able to:

- Understand the traditional knowledge.
- Contrast and compare characteristics importance kinds of traditional knowledge
- Analyze physical and social contexts of traditional knowledge.
- Evaluate social change on traditional knowledge.

UNIT II

Protection of traditional knowledge: the need for protecting traditional knowledge, Significance of TK Protection, value of TK in global economy, Role of Government to harness TK.

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

- Know the need of protecting traditional knowledge.
- Apply significance of TK protection
- Analyze the value of TK in global economy.
- Evaluate the role of government

UNIT III

Legal framework and TK: A: The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, Plant Varieties Protection and Farmers Rights Act 2001 (PPVFR Act); B: The Biological Diversity Act 2002 and Rules 2004, the protection of traditional knowledge bill, 2016. Geographical indications act 2003.

Learning Outcomes: At the end of the unit the student will be able to:

- Understand legal framework of TK
- Contrast and compare the ST and other traditional forest dwellers
- Analyze plant variety protections
- Evaluate farmers' rights act

UNIT IV

Traditional knowledge and intellectual property: Systems of traditional knowledge protection, Legal concepts for the protection of traditional knowledge, Certain non IPR mechanisms of traditional knowledge protection, Patents and traditional knowledge, Strategies to increase protection of traditional knowledge, global legal FORA for increasing protection of Indian Traditional Knowledge.

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

- Understand TK and IPR
- Apply systems of TK protection.
- Analyze legal concepts for the protection of TK
- Evaluate strategies to increase the protection of TK.

UNIT V

Traditional knowledge in different sectors: Traditional knowledge and engineering, Traditional medicines system, TK and biotechnology, TK in agriculture, Traditional societies depend on it for their food and healthcare needs, Importance of conservation and sustainable development of environment, Management of biodiversity, Food security of the country and protection of TK. Learning Outcomes: At the end of the unit, the student will be able to:

- Know TK in different sectors
- Apply TK in engineering.

- Analyze TK in various sectors
- Evaluate food security and protection of TK in the country.

REFERENCE BOOKS:

- 1) Traditional Knowledge System in India, by Amit Jha, 2009.
- 2) Traditional Knowledge System and Technology in India by Basanta Kumar Mohanta and Vipin Kumar Singh, Pratibha Prakashan 2012.
- 3) Traditional Knowledge System in India by Amit Jha Atlantic publishers, 2002
- 4) "Knowledge Traditions and Practices of India" Kapil Kapoor, Michel Danino

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2005PC12) MACHINE LEARNING

B.Tech. IV Year I Sem

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3 0 0 3

COURSE OBJECTIVES:

The course is introduced for students to

- Gain knowledge about basic concepts of Machine Learning
- Study about different learning algorithms
- Learn about evaluation of learning algorithms
- Learn about Dimensionality reduction

Course Outcomes:

- Identify machine learning techniques suitable for a given problem
- Solve the problems using various machine learning techniques
- Apply Dimensionality reduction techniques
- Design application using machine learning techniques

UNIT I

Introduction: Goals and applications of machine learning, Aspects of developing a learning system: training data, concept representation, function approximation. Inductive Classification: The concept learning task, Concept learning as search through a hypothesis space, General-to-specific ordering of hypotheses, Finding maximally specific hypotheses, Version spaces and the candidate elimination algorithm, Learning conjunctive concepts, The importance of inductive bias.

UNIT II

Decision Tree Learning: Representing concepts as decision trees, Recursive induction of decision trees, Picking the best splitting attribute: entropy and information gain, Searching for simple trees and computational complexity, Occam's razor, Overfitting, noisy data, and pruning. Experimental Evaluation of Learning Algorithms: Measuring the accuracy of learned hypotheses. Comparing learning algorithms: cross-validation, learning curves, and statistical hypothesis testing.

UNIT III

Computational Learning Theory: Model of learnability: learning in the limit; probably approximately correct (PAC) learning. Sample complexity for infinite hypothesis spaces, Vapnik-Chervonenkis dimension. Rule Learning: Propositional and First-Order, Translating decision trees into rules, Heuristic rule induction using separate and conquer and information gain, First-order Horn-clause induction (Inductive Logic Programming) and Foil, Learning recursive rules, Inverse resolution, Golem, and Progol.

UNIT IV

Artificial Neural Networks: Neurons and biological motivation, Linear threshold units. Perceptrons: representational limitation and gradient descent training, Multilayer networks and back propagation, Hidden layers and constructing intermediate, distributed representations. Overfitting, learning network structure, recurrent networks. Support Vector Machines: Maximum

UNIT V

Bayesian Learning: Probability theory and Bayes rule. Naive Bayes learning algorithm. Parameter smoothing. Generative vs. discriminative training. Logistic regression. Bayes nets and Markov networks for representing dependencies. Instance-Based Learning: Constructing explicit generalizations versus comparing to past specific examples. k-Nearest-neighbor algorithm. Case-based learning.

Text Books:

- 1) T.M. Mitchell, "Machine Learning", McGraw-Hill, 1997.
- 2) Machine Learning, Saikat Dutt, Subramanian Chandramouli, Amit Kumar Das, Pearson, 2019.

REFERENCE BOOKS:

- 1) Ethem Alpaydin, "Introduction to Machine Learning", MIT Press, 2004.
- 2) Stephen Marsland, "Machine Learning - An Algorithmic Perspective", Second Edition, Chapman and Hall/ CRC Machine Learning and Pattern Recognition Series, 2014.
- 3) Andreas C. Müller and Sarah Guido "Introduction to Machine Learning with Python: A Guide for Data Scientists", O'Reilly.

Resources: 1) Andrew Ng, "Machine Learning Yearning" <https://www.deeplearning.ai/machine-learning-yearning/>

- 2) Shai Shalev-Shwartz, Shai Ben-David, "Understanding Machine Learning: From Theory to Algorithms", Cambridge University Press <https://www.cse.huji.ac.il/~shais/UnderstandingMachineLearning/index.html>

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2067PC06) Big Data Analytics

B.Tech. IV Year I Sem

L T P C

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COURSE OBJECTIVES:

- To understand about big data
- To learn the analytics of Big Data
- To understand the MapReduce fundamentals

Course Outcomes:

- Preparing for data summarization, query, and analysis.
- Applying data modeling techniques to large datasets
- Creating applications for Big Data analytics
- Building a complete business data analytics solution

Unit-I

INTRODUCTION TO BIG DATA AND ANALYTICS

Classification of Digital Data, Structured and Unstructured Data - Introduction to Big Data: Characteristics - Evolution - Definition - Challenges with Big Data - Other Characteristics of Data - Why Big Data - Traditional Business Intelligence versus Big Data - Data Warehouse and Hadoop Environment Big Data Analytics: Classification of Analytics - Challenges - Big Data Analytics important - Data Science - Data Scientist - Terminologies used in Big Data Environments - Basically Available Soft State Eventual Consistency - Top Analytics Tools

UNIT II

INTRODUCTION TO TECHNOLOGY LANDSCAPE

NoSQL, Comparison of SQL and NoSQL, Hadoop-RDBMS Versus Hadoop-Distributed Computing Challenges - Hadoop Overview - Hadoop Distributed File System - Processing Data with Hadoop - Managing Resources and Applications with Hadoop YARN - Interacting with Hadoop Ecosystem

UNIT III

INTRODUCTION TO MONGODB AND CASSANDRA

MongoDB: Why Mongo DB - Terms used in RDBMS and Mongo DB - Data Types - MongoDB Query Language Cassandra: Features - CQL Data Types - CQLSH - Keyspaces - CRUD Operations - Collections - Using a Counter - Time to Live - Alter Commands - Import and Export - Querying System Tables

UNIT IV

INTRODUCTION TO MAPREDUCE PROGRAMMING AND HIVE

MapReduce: Mapper-Reducer-Combiner-Partitioner-Searching-Sorting-Compression Hive: Introduction -

Architecture - Data Types - File Formats - Hive Query Language Statements - Partitions - Bucketing - Views - Sub-Query - Joins - Aggregations - Group by and Having - RCF File Implementation - Hive User Defined Function - Serialization and Deserialization - Hive Analytic Functions

UNIT V

INTRODUCTION TO PIG & JASPER REPORTS

Pig: Introduction - Anatomy - Features - Philosophy - Use Case for Pig - Pig Latin Overview - Pig Primitive Data Types - Running Pig - Execution Modes of Pig - HDFS Commands - Relational Operators - Eval Function - Complex Data Types - Piggy Bank - User-Defined Functions - Parameter Substitution - Diagnostic Operator - Word Count Example using Pig - Pig at Yahoo! - Pig Versus Hive - Jasper Report using JasperSoft.

TEXTBOOK:

1. Seema Acharya, Subhashini Chellappan, "Big Data and Analytics", Wiley Publications, First Edition, 2015

REFERENCE BOOKS:

1. Judith Hurwitz, Alan Nugent, Fern Halper, Marcia Kaufman, "Big Data for Dummies", John Wiley & Sons, Inc. (2013)
2. Tom White, "Hadoop: The Definitive Guide", O'Reilly Publications, Fourth Edition, 2015
3. Dirk Deross, Paul C. Zikopoulos, Roman B. Melnky, Bruce Brown, Rafael Coss, "Hadoop For Dummies", Wiley Publications, 2014
4. Robert D. Schneider, "Hadoop For Dummies", John Wiley & Sons, Inc. (2012)
5. Paul Zikopoulos, "Understanding Big Data: Analytics for Enterprise Class Hadoop and Streaming Data", McGraw Hill, 2012
Chuck Lam, "Hadoop In Action", Dreamtech Publications, 2010

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2005PE05) Pattern Recognition

B.Tech. IV Year I Sem

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COURSE OBJECTIVES:

- To implement pattern recognition and machine learning theories
- To design and implement certain important pattern recognition techniques
- To apply the pattern recognition theories to applications of interest" •
- To implement the entropy minimization, clustering transformation and feature ordering

Course Outcomes:

- Design systems and algorithms for pattern recognition (signal classification), with focus on sequences of patterns that are analyzed using, e.g., hidden Markov models (HMM)
- Analyze classification problems probabilistically and estimate classifier performance
- Understand and analyze methods for automatic training of classification systems
- Apply Maximum-likelihood parameter estimation in relatively complex probabilistic models, such as mixture density models and hidden Markov models
- Understand the principles of Bayesian parameter estimation and apply them in relatively simple probabilistic models

UNIT-I

Introduction-Basic concepts, Applications, Fundamental problems in pattern Recognition system design, Design concepts and methodologies, Examples of Automatic Pattern recognition systems, Simple pattern recognition model, Decision and Distance Functions-Linear and generalized decision functions, Pattern space and weight space, Geometrical properties, implementations of decision functions, Minimum-distance pattern classifications.

UNIT-II

Probability-Probability of events, Random variables, Joint distributions and densities, Movements of random variables, Estimation of parameter from samples, Statistical Decision Making-Introduction, Baye's theorem, Multiple features, Conditionally independent features, Decision boundaries, Unequal cost of error, estimation of error rates, the leaving-one-out techniques, characteristic curves, estimating the composition of populations. Baye's classifier for normal patterns.

UNIT-III

NonParametric Decision Making-Introduction, histogram, kernel and window estimation, nearest neighbor classification techniques. Adaptive decision boundaries, adaptive discriminate functions, Minimum square error Discriminate functions, choosing a decision making techniques.

UNIT-IV

Clustering and Partitioning-Hierarchical Clustering: Introduction, agglomerative clustering algorithm, the single-linkage, complete-linkage and average-linkage algorithm. Ward's method Partition clustering-Forg's algorithm, K-means's algorithm, Isodata algorithm.

UNIT-V

Pattern Preprocessing and Feature Selection: Introduction, distance measures, clustering transformation and feature ordering, clustering in feature selection through entropy minimization, feature selection through orthogonal expansion, binary feature selection.

Application of pattern recognition techniques in bio-metric, facial recognition, IRIS scan, Fingerprints, etc.

TEXTBOOKS:

1. Gose. Johnsonbaugh. Jost. "Pattern recognition and Image Analysis", PHI. Tou. Rafael. Gonzalez. "Pattern Recognition Principle", Pearson Education

REFERENCE BOOK:

1. Richard Duda, Hart., David Strok, "Pattern Classification", John Wiley.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2005PE15)TEXT ANALYTICS

B.Tech. IV Year I Sem

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COURSE OUTCOMES

- Upon completion of this course, the students will be able to
- Understand the basics of Natural language processing
- Analyze the text syntactically
- Analyze the text content Semantically
- Implement recurrent network for language models
- Implement a sentiment classification and chatbot systems

Prerequisites: AI, Python Programming

UNIT I

INTRODUCTION:

Introduction to NLP, Regular Expressions, Words, Corpora, Text Normalization, Minimum Edit Distance, Ngram Language Models, Evaluating Language Models

UNIT II

SYNTACTIC ANALYSIS : English Word Classes, The Penn Treebank Part-of-Speech Tagset, Part-of-Speech Tagging, HMM Part-of-Speech Tagging, Maximum Entropy Markov Models, Grammar Rules for English, Treebanks, Grammar Equivalence and Normal form, Lexicalized Grammar.

UNIT III

SEMANTIC ANALYSIS : Representation of Sentence Meaning: Computational Desiderata for Representations, Model-Theoretic Semantics, First-Order Logic, Event and State Representations, Description Logics, Semantic roles, Semantic role labeling

UNIT IV

SEQUENCE PARSING WITH RECURRENT NETWORKS: Simple Recurrent Networks, Applications of RNNs, Deep Networks: Stacked and Bidirectional RNNs, Managing Context in RNNs: LSTMs and GRUs, Words, Characters and Byte-Pairs.

UNIT V

CASE STUDY: Sentiment Classification, Dialog Systems and Chatbots

TEXTBOOKS

1. Dan Jurafsky and James H. Martin. Speech and Language Processing (3rd ed. draft), 2019.

REFERENCE BOOKS

1. Steven Bird, Ewan Klein, and Edward Loper, Natural Language Processing with Python, First Edition, O'Reilly, 2009
2. Yoav Goldberg, University of Toronto, Neural Network Methods for Natural language Processing, Morgan & Claypool, 2017
3. Christopher D. Manning, and Hinrich Schütze. Foundations of statistical natural language
4. processing. First Edition, MIT press, 1999

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2005PE08) CLOUD COMPUTING

B.Tech. IV Year I Sem**L T P C****3 0 0 3**

UNIT I

Distributed system models: Scalable computing over the internet, Technologies for network-based systems, System models and software environments for distributed and cloud computing, performance, security and Energy Efficiency Computer clusters for Scalable parallel computing: Clustering for Massive parallelism, Computer clusters and MPP Architectures, Design principles of computer clusters, Cluster job and resource management.

UNIT II

Virtual Machines and Virtualization of Data Centres: Implementation levels of virtualization, Virtualization structures, tools and mechanisms, Virtualization of CPU, Memory and I/O devices, Virtual clusters and resource management, Virtualization for Data center automation.

UNIT III

NAMING AND SYNCHRONIZATION Cloud computing and service models, Data center design and interconnection networks, Architectural design of Compute and storage clouds, Public cloud platforms, Inter-cloud resource management, Cloud security and trust management.

UNIT IV

CONSISTENCY AND REPLICATION Services and service-oriented architecture, Message oriented middleware, Portals and science gateways, Discovery, Registries, Metadata and databases. Workflow in service-oriented architectures,

UNIT V

FAULT TOLERANCE AND SECURITY Features of cloud and Grid platforms, Parallel and distributed programming paradigms, Programming support for Google application engine, Programming on Amazon AWS and Microsoft Azure, Emerging cloud software environments.

TEXTBOOKS

1. Cloud Computing, Theory and Practice, Dan C. Marinescu, MK Elsevier.
2. Cloud Computing: Principles and Paradigms, Rajkumar Buyya, James Broberg, Andrzej M. Goscinski, Wiley.

REFERENCES

1. Distributed and Cloud Computing. Kal Hwang. Geoffrey C. Fox. Jack J. Dongarra. Elsevier. 2012.
2. Cloud computing, Black book. Deven Shah, Kailash Jayaswal, Donald J. Houde, Jagannath Kallakurchi.
3. Cloud Computing: Concepts, Technology & Architecture (The Prentice Hall Service Technology Series from Thomas Erl) 1st Edition, Thomas Erl (Author), Ricardo Puttini, Zaigham Mahmood

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2005PC67) MACHINE LEARNING LAB

B.Tech. IV Year I Sem

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COURSE OBJECTIVES:

Course Outcomes:

On completion of this course, the student will be able to

- Implement machine learning algorithms to real world problems
- Choose appropriate machine learning algorithm for a problem
- Interpret the results of two different machine learning algorithms

List of Experiments:

1. Implement Principal Component Analysis (PCA) and Singular Value Decomposition (SVD) using NumPy.
2. Implement and demonstrate the FIND-S algorithm for finding the most specific hypothesis based on a given set of training data samples. Read the training data from a .CSV file.
3. For a given set of training data examples stored in a .CSV file, implement and demonstrate the Candidate-Elimination algorithm to output a description of the set of all hypotheses consistent with the training examples.
4. Write a program to demonstrate the working of the decision tree based ID3 algorithm. Use an appropriate data set for building the decision tree and apply this knowledge to classify a news sample.
5. Build an Artificial Neural Network by implementing the Back propagation algorithm and test the same using appropriate data sets.
6. Write a program to implement the naïve Bayesian classifier for a sample training data set stored as a .CSV file. Compute the accuracy of the classifier, considering few test datasets.
7. Assuming a set of documents that need to be classified, use the naïve Bayesian Classifier model to perform this task. Built-in Java classes/API can be used to write the program. Calculate the accuracy, precision, and recall for your dataset.
8. Write a program to construct a Bayesian network considering medical data. Use this model to demonstrate the diagnosis of heart patients using standard Heart Disease Data Set. You can use Java/Python ML library classes/API.
9. Apply EM algorithm to cluster a set of data stored in a .CSV file. Use the same data set for clustering using k-Means algorithm. Compare the results of these two algorithms and comment on the quality of clustering. You can add Java/Python ML library classes/API in the program.
10. Write a program to implement k-Nearest Neighbour algorithm to classify the iris data set. Print both correct and wrong predictions. Java/Python ML library classes can be used for this problem.
11. Create the following plots using Matplotlib, Pandas Visualization, Seaborn on iris dataset, wine reviews datasets.

a)Scatter Plot b)Linechart c)Histogram d) Heatmap

TEXTBOOKS:

1. Hands-OnMachineLearningwithScikit-LearnandTensorFlow2e:Concepts,Tools,andTechniqueto Build Intelligent Systems, Aurelien Geron,2019.

REFERENCES:

1. <https://scikit-learn.org/stable/tutorial/index.html>
2. <https://archive.ics.uci.edu/ml/index.php>
3. <https://towardsdatascience.com/pca-and-svd-explained-with-numpy-5d13b0d2a4d8>
4. <https://towardsdatascience.com/introduction-to-data-visualization-in-python-89a54c97fbed>

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2067PC64) BIG DATA ANALYTICS LAB

B.Tech. IV Year I Sem

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0 0 3 1.5

Course Outcomes: After completion of course, students will be able to

- Students will be able to understand important concepts of data mining and its various concepts like data-preprocessing, various classification algorithms etc.
- Student will be able to develop a reasonably sophisticated data mining application.
- Student will be able to develop a reasonably sophisticated data mining application.
- Student is able to select methods and techniques appropriate for the task
- Student is able to develop the methods and tools for the given task

List of Experiments:

1. Design and Create Cube by identifying measures and dimensions for Star Schema, Snow-flake
2. Design and Create Cube by identifying measures and dimensions for Design storage for cube using storage
3. Process Cube and Browse Cube Data
 1. By replacing a dimension in the grid, filtering and drill down using cube browser
 2. Browse dimension data and view dimension members, member properties, member property values
 3. Create calculated member using arithmetic operators and member property of dimension Member
4. Create and use Excel Pivot Table Report based on data cube
5. Design and Create data mining models using Analysis Service of SQL server 2005
6. Design and Build targeted mailing data mining model using analysis service of SQL server 2005 and compare their predictive capabilities using the Mining Accuracy Chart View and Create predictions using Prediction Query Builder.
7. Perform various steps of Preprocessing on the given relational database/warehouse.
8. To implement Data Mining Extensions (DMX) language and MDX query language
9. Perform various steps of Preprocessing using WEKA software.
10. Creating Data Mining Structure & Predictive Models (Neural Networks and Decision Tree) using the Excel Add-In for SQL Server 2008.
11. Case Study: To study research papers on the given topic and prepare the report on it.
12. To set up Hadoop.
13. To run sample program using Hadoop.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN**PROFESSIONAL ELECTIVE - V****(2005PE25) PRINCIPLES OF DEEP LEARNING**

B.Tech. IV Year II Sem

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COURSE OBJECTIVES:

By the end of the course, students will be able to:

- Understand complexity of Deep Learning algorithms and their limitations
- Understand modern notions in data analysis oriented computing;
- Be capable of confidently applying common Deep Learning algorithms in practice and implementing their own;
- Be capable of performing distributed computations;
- Be capable of performing experiments in Deep Learning using real-world data.

Course Outcomes:

By the end of this deep learning course with TensorFlow, the student will be able to:

- Understand the concepts of TensorFlow, its main functions, operations and the execution pipeline
- Implement deep learning algorithms, understand neural networks and traverse the layers of data abstraction which will empower the student to understand data more precisely.
- Learn topics such as convolutional neural networks, recurrent neural networks, training deep networks and high-level interfaces
- Build deep learning models in TensorFlow and interpret the results
- Understand the language and fundamental concepts of artificial neural networks
- Troubleshoot and improve deep learning models
- Build a deep learning project
- Differentiate between machine learning, deep learning and artificial intelligence

UNIT I:

Introduction to Tensor Flow: Computational Graph, Key highlights, Creating a Graph, Regression example, Gradient Descent, Tensor Board, Modularity, Sharing Variables, Keras Perceptrons: What is a Perceptron, XOR Gate

UNIT II:

Activation Functions : Sigmoid, ReLU, Hyperbolic Fns, Softmax Artificial Neural Networks: Introduction, Perceptron Training Rule, Gradient Descent Rule

UNIT III:

Gradient Descent and Back propagation: Gradient Descent, Stochastic Gradient Descent, Back propagation, Some problems in ANN Optimization and Regularization: Over fitting and Capacity, CrossValidation, FeatureSelection,Regularization,Hyper parameters

UNIT IV:

Introduction to Convolutional Neural Networks: Introduction to CNNs, Kernel filter , Principles behind CNNs, Multiple Filters, CNN applications. Introduction to Recurrent Neural Networks: Introduction to RNNs, Unfolded RNNs, Seq2SeqRNNs, LSTM, RNNapplications

UNI TV:

DeepLearningapplications:ImageProcessing,NaturalLanguageProcessing,SpeechRecognition,Video Analytics

TEXTBOOK

1. Goodfellow,I.,Bengio,Y.,andCourville,A.,Deep Learning,MITPress,2016.

REFERENCES

1. Bishop,C.,M.,PatternRecognitionandMachineLearning,Springer,2006.
2. Yegnanarayana,B.,ArtificialNeuralNetworksPHILearningPvt.Ltd,2009.
3. Golub,G,H.,andVanLoan,C.,F.,MatrixComputations,JHUPress,2013.
4. SatishKumar,Neural Networks:AClassroomApproach,TataMcGraw-HillEducation,2004.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN**PROFESSIONAL ELECTIVE - V****(2005PE25) PRINCIPLES OF DEEP LEARNING**

B.Tech. IV Year II Sem

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COURSE OBJECTIVES

- To explore the fundamental concepts of data analytics.
- To learn the principles and methods of statistical analysis
- Discover interesting patterns, analyze supervised and unsupervised models and estimate the accuracy of the algorithms.
- To understand the various search methods and visualization techniques.

Course Outcomes

After completion of this course students will be able to

- Understand the impact of data analytics for business decisions and strategy
- Carry out data analysis/statistical analysis
- To carry out standard data visualization and formal inference procedures
- Design Data Architecture
- Understand various Data Sources

UNIT- I

Data Management: Design Data Architecture and manage the data for analysis, understand various sources of Data like Sensors/Signals/GPS etc. Data Management, Data Quality (noise, outliers, missing values, duplicate data) and Data Processing & Processing.

UNIT- II

Data Analytics: Introduction to Analytics, Introduction to Tools and Environment, Application of Modeling in Business, Databases & Types of Data and variables, Data Modeling Techniques, Missing Imputations etc. Need for Business Modeling.

UNIT- III

Regression-Concepts, Blue property assumptions, Least Square Estimation, Variable Rationalization, and Model Building etc.

Logistic Regression: Model Theory, Model fit Statistics, Model Construction, Analytics application to various Business Domains etc.

UNIT- IV

Object Segmentation: Regression Vs Segmentation - Supervised and Unsupervised Learning, Tree Building -

Regression, Classification, Overfitting, Pruning and Complexity, Multiple Decision Trees etc. Time Series Methods: Arima, Measures of Forecast Accuracy, STL approach, Extract features from generated model as Height, Average Energy etc and Analyze for prediction

UNIT- V

Data Visualization: Pixel-Oriented Visualization Techniques, Geometric Projection Visualization Techniques, Icon-Based Visualization Techniques, Hierarchical Visualization Techniques, Visualizing Complex Data and Relations.

TEXTBOOKS

1. Student's Handbook for Associate Analytics - II, III.
2. Data Mining Concepts and Techniques, Han, Kamber, 3rd Edition, Morgan Kaufmann Publishers.

REFERENCE BOOKS

1. Introduction to Data Mining, Tan, Steinbach and Kumar, Addison Wesley, 2006.
2. Data Mining Analysis and Concepts, M. Zaki and W. Meira
3. Mining of Massive Datasets, Jure Leskovec Stanford Univ. Anand Rajaraman Millway Labs Jeffrey D Ullman Stanford Univ.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN
PROFESSIONAL ELECTIVE - V
(2005PE26) CYBER SECURITY

B.Tech. IV Year II Sem

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3 0 0 3

UNIT-I

Introduction to Cybercrime: Introduction, Cybercrime and Information Security, Who are Cybercriminals, Classifications of Cybercrimes, Cybercrime: The legal Perspectives and Indian Perspective, Cybercrime and the Indian ITA 2000, A Global Perspective on Cybercrimes.

UNIT-II

Cyber Offenses: How Criminals Plan Them: Introduction, How Criminals plan the Attacks, Social Engineering, Cyber stalking, Cyber cafe and Cybercrimes, Botnets: The Fuel for Cybercrime, Attack Vector, Cloud Computing.

UNIT-III

Cybercrime: Mobile and Wireless Devices: Introduction, Proliferation of Mobile and Wireless Devices, Trends in Mobility, Credit card Frauds in Mobile and Wireless Computing Era, Security Challenges Posed by Mobile Devices, Registry Settings for Mobile Devices, Authentication service Security, Attacks on Mobile/Cell Phones, Mobile Devices: Security Implications for Organizations, Organizational Measures for Handling Mobile, Organizational Security Policies and Measures in Mobile Computing Era, Laptops.

UNIT-IV

Tools and Methods Used in Cybercrime: Introduction, Proxy Servers and Anonymizers, Phishing, Password Cracking, Key loggers and Spywares, Virus and Worms, Trojan Horse and Backdoors, Steganography, DoS and DDoS attacks, SQL Injection, Buffer Overflow.

UNIT-V

Cyber Security: Organizational Implications, Introduction, Cost of Cybercrimes and IPR issues, Web threats for Organizations, Security and Privacy Implications, Social media marketing: Security Risks and Perils for Organizations, Social Computing and the associated challenges for Organizations.

TEXTBOOK:

1. Cyber Security: Understanding Cyber Crimes, Computer Forensics and Legal Perspectives, Nina Godbole and Sunil Belapure, Wiley INDIA.

REFERENCE BOOKS:

1. Cyber Security Essentials, James Graham, Richard Howard and Ryan Otson, CRC Press.
2. Introduction to Cyber Security, Chwan-Hwa (John) Wu, J. David Irwin. CRC Press T&F Group

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN
PROFESSIONAL ELECTIVE - VI
(2005PE11) WEBSERVICES

B.Tech. IV Year II Sem

L T P C

3 0 0 3

COURSE OBJECTIVES:

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

- To understand the details of webservice technologies like WSDL, UDDI, SOAP
- To learn how to implement and deploy webservice client and server
- To explore interoperability between different frameworks

Course Objectives:

After completing this course the student must demonstrate the knowledge and ability to:

- Employ the publish, find, bind architecture for Webservices and to use the corresponding standards, in particular, WSDL, SOAP, UDDI
- Perform matchmaking on Webservices using SOAP.
- Develop registration and discovery techniques for Webservices
- Implement WS client and server with interoperable systems

UNIT-I

Evolution and Emergence of Web Services - Evolution of distributed computing, Core distributed computing technologies - client/server, CORBA, JAVA RMI, Microsoft DCOM, MOM, Challenges in Distributed Computing, role of J2EE and XML in distributed computing, emergence of Web Services and Service Oriented Architecture (SOA).

Introduction to Web Services - The definition of web services, basic operational model of webservices, tools and technologies enabling web services, benefits and challenges of using webservices.

Web Services Architecture - Web services Architecture and its characteristics, core building blocks of web services, standards and technologies available for implementing web services, webservices communication models, basic steps of implementing web services.

UNIT-II

Fundamentals of SOAP - SOAP Message Structure, SOAP encoding, Encoding of different data types, SOAP message exchange models, SOAP communication and messaging, Java and Axis, limitations of SOAP.

UNIT-III

Describing Web Services - WSDL - WSDL in the world of Web Services, Web Services lifecycle, anatomy of WSDL definition document, WSDL bindings, WSDL Tools, limitations of WSDL.

UNIT-IV

Discovering Web Services - Service discovery, role of service discovery in a SQA, servicediscovery mechanisms, UDDI - UDDI registries, uses of UDDI Registry, Programming withUDDI, UDDI data structures, Publishing API, Publishing, searching and deleting information in aUDDIRegistry, limitations of UDDI.

UNIT-V

Web Services Interoperability- Means of ensuring Interoperability, Overview of .NET, Creating a .NET client for an Axis Web Service, creating Java client for a Web service, Challenges in WebServicesInteroperability.

Web Services Security- XML security frame work, Goals of Cryptography,Digital signature,DigitalCertificate, XMLEncryption.

TEXTBOOK

1. DevelopingJava WebServices,R.Nagappan,R. Skoczylas,R.P.Sriganesh,WileyIndia.

REFERENCEBOOKS

1. JavaWebService Architecture,JamesMcGovern, SameerTyagi etal.,Elsevier
2. BuildingWebServiceswith Java,2Edition, S.Grahamand others,PearsonEdn.
3. JavaWebServices, D.A. Chappell&T.Jewell,O'Reilly,SPD.
4. WebServices,G.Alonso,F.Casatiandothers,Springer.Outcomes
5. BasicdetailsofWSDL, UDDI,SOAP
6. Implement WScientandserver withinteroperablesystems.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

PROFESSIONAL ELECTIVE - VI

(2012PE06) DISTRIBUTED TRUST AND BLOCKCHAIN TECHNOLOGY

B.Tech. IV Year II Sem

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3 0 0 3

COURSE OBJECTIVES

- Understand how blockchain systems (mainly Bitcoin and Ethereum) work,
- To securely interact with them,
- Design, build, and deploy smart contracts and distributed applications,
- Integrate ideas from blockchain technology into their own projects.

COURSE OUTCOMES

- Explain design principles of Bitcoin and Ethereum.
- Explain Nakamoto consensus.
- Explain the Simplified Payment Verification protocol.
- List and describe differences between proof-of-work and proof-of-stake consensus.
- Interact with a blockchain system by sending and reading transactions.
- Design, build, and deploy a distributed application.
- Evaluate security, privacy, and efficiency of a given blockchain system.

Unit I: Basics:

Distributed Database, Two General Problem, Byzantine General problem and Fault Tolerance, Hadoop Distributed File System, Distributed Hash Table, ASIC resistance, Turing Complete. Cryptography: Hash function, Digital Signature ECDSA, Memory Hard Algorithm, Zero Knowledge Proof.

Unit II: Blockchain:

Introduction, Advantage over conventional distributed database, Blockchain Network, Mining Mechanism, Distributed Consensus, Merkle Patricia Tree, Gas Limit, Transactions and Fee, Anonymity, Reward, Chain Policy, Life of Blockchain application, Soft & Hard Fork, Private and Public blockchain.

Unit III: Distributed Consensus:

Nakamoto consensus, Proof of Work, Proof of Stake, Proof of Burn, Difficulty Level, Sybil Attack, Energy utilization and alternate.

Unit IV: Cryptocurrency:

History, Distributed Ledger, Bitcoin protocols - Mining strategy and rewards, Ethereum - Construction, DAO, Smart Contract, GHOST, Vulnerability, Attacks, Sidechain, Namecoin

Unit V: Cryptocurrency Regulation:

Stakeholders, Roots of Bitcoin, Legal Aspects- Cryptocurrency Exchange, Black Market and Global Economy.

Applications: Cloud Computing, Medical Record Management System, Domain Name Service and future of Blockchain.

TEXTBOOK

1. Arvind Narayanan, Joseph Bonneau, Edward Felten, Andrew Miller and Steven Goldfeder, Bitcoin and Cryptocurrency Technologies: A Comprehensive Introduction, Princeton University Press (July 19, 2016).

REFERENCE BOOKS

1. Antonopoulos, Mastering Bitcoin: Unlocking Digital Cryptocurrencies
2. Satoshi Nakamoto, Bitcoin: A Peer-to-Peer Electronic Cash System
3. DR. Gavin Wood, "ETHEREUM: A Secure Decentralized Transaction Ledger," Yellow Paper, 2014.
4. Nicola Atzei, Massimo Bartoletti, and Tiziana Cimoli, A survey of attacks on Ethereum smart contracts

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN**PROFESSIONAL ELECTIVE - VI****(1805PE12) INTERNET OF THINGS**

B.Tech. IV Year II Sem

L T P C

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COURSE OBJECTIVES:

- To introduce the terminology, Technology and its applications.
- To Explain The Concept Of M2M (Machine To Machine) With Necessary Protocols to introduce the python scripting Language which is used
- In many iot devices to Elucidate The Raspberry PI Platform, That Is Widely Used In Iot Applicationstoexplainthe Implementationofwebbased Servicesoniotdevices

Course Outcomes:

- Uponcompletionofthiscourse,studentsshouldbeableto:ExplaintheimportanceandusageofIoT.
- DescribethevariousIoTlevelsandprotocols.Developprograms in Python.
- IllustratethefunctioningofIOTdevices.
- Relate IOTtocloudcomputingandweb applications.

UNIT I

Introduction to Internet of Things -Definition and Characteristics of IoT, Physical Design of IoT -IoT Protocols, IoT communication models, Iot Communication APIs IoT enabled Technologies -Wireless Sensor Networks, Cloud Computing, Big data analytics, Communication protocols, Em-bedded Systems, IoT Levels and Templates Domain Specific IoTs - Home, City, Environment,Energy,Retail, Logistics,Agriculture,Industry, health andLifestyle

UNIT II

IoT andM2M-Softwaredefinednetworks,networkfunctionvirtualization,difference between SDN and NFVforIoTBasicsofIoT System Management with NETCOZF,YANG-NETCONF,YANG,SNMP NETOPEER

UNIT III

IntroductiontoPython-Language featuresofPython,Datatypes,datastructures,Controlofflow,functions, modules, packaging, file handling, data/time operations, classes, Exception handlingPythonpackages -JSON,XML, HTTPLib, URLLib, SMTPLib

UNIT IV

IoT Physical Devices and Endpoints - Introduction to Raspberry PI-Interfaces (serial, SPI, I2C)Programming - Python program with Raspberry PI with focus of interfacing external gadgets,controllingoutput and reading input from pins.

UNIT V

IoT Physical Servers and Cloud Offerings - Introduction to Cloud Storage models and communication APIs
Webserver- Webserver for IoT, Cloud for IoT, Python web application framework
Designing a RESTful web API.

TEXTBOOK:

1. Internet of Things - A Hands-on Approach, Arshdeep Bahga and Vijay Madisetti, Universities Press, 2015, ISBN: 9788173719547
2. Getting Started with Raspberry Pi, Matt Richardson & Shawn Wallace, O'Reilly (SPD), 2014, ISBN: 9789350239759