BACHELOR OF TECHNOLOGY

Computer Science and Engineering (Data Science)

COURSE STRUCTURE

(Batches admitted from the Academic Year 2022 -2023)

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(AutonomousInstitution-UGC, Govt. ofIndia)

Accredited by NBA&NAACwith 'A'Grade

National Ranking by NIRF – Rank band (151-300), MHRD, Govt.ofIndia

Approved by AICTE, Affiliated to JNTUH, ISO 9001:2015 Certified Institution

Maisammaguda, Dhulapally, Kompally, Secunderabad,-500100.

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COURSE STRUCTURE
Year B. Tech – I Semester (I Semester)

S.No	CourseCode	Subject	L	T	P	C	Max.Marks	
							INT	EXT
1	2200BS01	Linear Algebra and Differential Equations	3	1	0	4	40	60
2	2205ES01	Programming for Problem Solving	3	0	0	4	40	60
3	2200BS05	Applied Physics	3	1	0	4	40	60
4	2203ES01	Computer Aided Engineering Graphics	1	0	4	3	40	60
5	2200HS01	English	2	0	0	2	40	60
6	2200BS61	Applied Physics Lab	0	0	3	1.5	40	60
7	2200HS61	English Language & Communication Skills Lab	0	0	2	1	40	60
8	2205ES61	Programming for Problem Solving Lab	0	0	3	1.5	40	60
9	2200MC02	Foreign Language: French *	2	0	0	0	100	-
		Induction Programme						
		TOTAL	14	2	12	20	420	480

Mandatory course: Non-credit course, 50% of scoring is required for the award of the degree
I Year B. Tech – II Semester (II Semester)

S. No	CourseCode	Subject	L	T	P	C	Max.Marks	
							INT	EXT
1	2200BS02	Advanced Calculus and Transformation Techniques	3	1	0	4	40	60
2	2205ES02	Python Programming	3	0	0	3	40	60
3	2202ES01	Basic Electrical Engineering	3	1	0	4	40	60
4	2200BS06	Engineering Chemistry	3	0	0	3	40	60
5	2203ES61	Engineering Workshop	1	0	3	2.5	40	60
6	2202ES61	Basic Electrical Engineering Lab	0	0	2	1	40	60
7	2205ES62	Python Programming Lab	0	0	3	1.5	40	60
8	2200BS62	Engineering Chemistry Lab	0	0	2	1	40	60
9	2200MC01	Environmental Science*	1	0	0	0	100	0
		TOTAL	14	2	10	20	420	480

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

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

S. No	Subject Code	Subject	L	T	P	C	Max. Marks	
							INT	EXT
1	2267PC01	Introduction to Data Science	3	0	0	3	40	60
2	2204ES01	Analog and Digital Electronic Circuits	3	0	0	3	40	60
3	2205PC01	Data Structures & Algorithms	3	0	0	3	40	60
4	2205PC03	Discrete Mathematics	3	0	0	3	40	60
5	2205PC06	Object Oriented Programming through Java	3	0	0	3	40	60
6	2205PC61	Data Structures & Algorithms using Python Lab	0	0	3	1.5	40	60
7	2205PC63	Object Oriented Programming through Java Lab	0	0	3	1.5	40	60
8	2267PR01	Innovative Product Development	0	0	2	1	40	60
9	2200MC03	Human values and Professional Ethics*	2	0	0	0	100	0
		TOTAL	**17**	**1**	**8**	**20**	**420**	**480**

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

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

S. No	Subject Code	Subject	L	T	P	C	Max. Marks	
							INT	EXT
1	2200BS04	Probability & Statistics	3	1	0	4	40	60
2	2200HS03	Managerial Economics and Financial Analysis	3	0	0	3	40	60
3	2267PC02	Data Handling and Visualization	3	0	0	3	40	60
4	2205PC08	Database Management Systems	3	0	0	3	40	60
5	2205PC05	Design and Analysis of Algorithms	3	0	0	4	40	60
6	2267PC61	Data Handling and Visualization Lab	0	0	3	1.5	40	60
7	2205PC64	Database Management Systems Lab	0	0	3	1.5	40	60
8	2267PR02	Innovative Product Development-2	0	0	2	1	40	60
9	2000MC04	Indian Constitution *	2	0	0	0	100	0
		TOTAL	**17**	**1**	**8**	**20**	**420**	**480**

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

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN					
B.Tech.I Year I Sem		**L**	**T**	**P**	**C**
LINEAR ALGEBRA AND DIFFERENTIAL EQUATIONS	**2200BS01**	**3**	**1**	**0**	**4**

Course Objectives: To learn

- Types of Matrices and their properties, concept of a rank of the matrix and applying this concept to know the consistency and solving the system of linear equations.
- Concept of Eigen values and Eigenvectors and to reduce the quadratic form to canonical form.
- Methods of solving the linear differential equations of first order, equations solvable for p, y and x.
- Methods of solving the linear differential equations of higher order.
- Partial differentiation, concept of total derivative, finding maxima and minima of function of two and three variables.

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 analyze the solution of the system of equations
- Find the Eigen values and Eigen vectors and reduce the quadratic form to canonical form using orthogonal transformations.
- Identify whether the given differential equation of first order is exact or not and solve the first order differential equations.
- Solve higher differential equation and apply the concept of differential equation to real world problems.
- Find the extreme values of functions of two variables with/ without constraints.

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:

Eigen Values and Eigen Vectors: Eigen values and Eigenvectors and their properties; Diagonalization of a matrix; Cayley-Hamilton Theorem (without proof); Finding inverse and powers 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:

First Order ODE: Exact, Linear and Bernoulli's equations; Newton's law of cooling, Law of Natural Growth and Decay; Equations not of first degree: Equations solvable for p, y and x, Clairaut's type.

UNIT-IV:

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.

UNIT-V:

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's multipliers.

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, NarosaPubishers, 4th Edition, 2014.

REFERENCES:

1. Michael Greenberg, Advanced Engineering Mathematics, Pearson Education, 2nd Edition, 1998.

2. Erwin Kreyszig, Advanced Engineering Mathematics, John Wiley & Sons,

3. Ramana B.V., Higher Engineering Mathematics, Tata McGraw Hill New Delhi, 11thReprint, 2017

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN				
B.Tech.I Year I Sem		**L**	**T**	**P**	**C**
PROGRAMMINGFORPROBLEMSOLVING	**2205ES01**	**3**	**0**	**0**	**3**

Course Objectives:
- To learn the fundamentals of computers.
- To understand the variousstepsinprogramdevelopment.
- TolearnthesyntaxandsemanticsofCprogramminglanguage.
- Tolearntheusageofstructuredprogrammingapproachinsolvingproblems.

CourseOutcomes: Thestudentwilllearn
- Towritealgorithmsandtodrawflowchartsforsolving problems.
- ToconvertthealgorithmsflowchartstoCprograms.
- TocodeandtestagivenlogicinCprogramminglanguage.
- Todecomposeaproblemintofunctionsandtodevelopmodularreusablecode.
- To use arrays, pointers, stringsandstructurestowriteCprograms.
- Searching andsortingproblems.

UNITI:

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. RepresentationofAlgorithm,Flowchart/Pseudocodewithexamples,Programdesignands tructuredprogramming.IntroductiontoC 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, OperatorsArithmeticoperators,relationalandlogicaloperators,incrementanddecremento perators,Bitwiseoperators, conditional operator, assignment operator, expressions and precedence,Expressionevaluation,typeconversion,typedef,Themainmethodand commandlinearguments.

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

UNITII:

Conditional Branching and Loops: Writing and evaluation of conditionals and consequentbranching with if,if-else, switch-case, ternary operator, goto, Iteration with for, while, dowhileloops

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

Strings: Introduction to strings, handling strings as array of characters, basic string functionsavailableinC (strlen,strcat,strcpy,strstretc.),arraysofstrings

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UNIT–III

Functions: Designingstructuredprograms,declaringafunction,Signature of afunction,Parameters and return type of afunction,passing parameters tofunctions,callby value,Passing arrays to functions, passing pointers to functions, idea of call by reference, Some Cstandardfunctionsandlibraries,Passing1-D arrays,2-D arraysto functions

Recursion: Simple programs, such as Finding Factorial, Fibonacci series, Towers of Hanoietc.,Limitations ofRecursivefunctions.

StorageClasses- extern, auto,register,static, scoperules, blockstructure.

UNITIV:

Structures: Definingstructures,initializingstructures, unions, Arrayofstructures

Pointers: Idea of pointers, Defining pointers, Pointers to Arrays and Structures, pointers topointers ,Use of Pointers in self-referential structures, usage of self referential structures inlinkedlist(noimplementation)Enumerationdatatype andbit-fields.

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

UNIT–V

File Handling: Files: Text and Binary files, Creating and Reading and writing text and   binaryfiles,Appendingdata toexistingfiles,Writingandreadingstructuresusingbinaryfiles,Randomaccess usingfseek,ftellandrewindfunctions

Introduction to Algorithms: Algorithms for finding roots of quadratic equations, findingminimum 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 algorithmsto sort array of elements (Bubble, Insertion and Selection sort algorithms), Basic concept of orderofcomplexitythroughtheexampleprograms

TextBooks:

1. ComputerScience:AStructuredProgrammingApproachUsingC,B.A. ForouzanandR.F.Gilberg,ThirdEdition,CengageLearning.
2. ProgramminginC. P.DeyandMGhosh, SecondEdition,OxfordUniversityPress.

ReferenceBooks:

1. TheCProgrammingLanguage,B.W.KernighanandDennisM.Ritchie,SecondEditi on,Pearsoneducation.
2. ProgrammingwithC,B.Gottfried,3rdedition,Schaum'soutlines,McGrawHillEducat ion(India)PvtLtd.
3. CFromTheorytoPractice,GS.TselikisandND. Tselikas,CRCPress.
BasiccomputationandProgrammingwithC, SubrataSahaandS.Mukherjee, Cambridge

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN					
B.Tech. I Year I Sem		**L**	**T**	**P**	**C**
APPLIED PHYSICS	**2200BS06**	**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 Electro magnetic machinery.

Course Outcomes: Upon graduation:
- The student would be able to learn the fundamental concepts on Quantum behavior of matter in its micro state.
- The knowledge of fundamentals of Semiconductor physics, Optoelectronics, 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, Wave-particle duality, de-Broglie's hypothesis, Davisson and Germer experiment, Heisenberg's Uncertainty principle, physical significance of Wave function (ψ), Schrodinger's time independent wave equation, Particle in one dimensional box.

UNIT-II: Semiconductor Physics:

Intrinsic and Extrinsic semiconductors, Fermi level in intrinsic and extrinsic semiconductors, 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, Types of luminescence: Electro luminescence and Photo luminescence, LED: Device structure, Materials, Characteristics and figures of merit, Semiconductor photo detectors: Solar cell: working principle, structure, Materials, PIN and Avalanche photo detectors: working principle, structure, Materials, and Characteristics and applications.

UNIT-IV: Lasers and Optical fibers:

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 to 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:

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, Piezo electrics and Pyro electrics, Applications of dielectrics, Magnetization, field intensity, magnetic field induction, permeability and susceptibility, Bohr magneton, Classification of magnetic materials on the basis of magnetic moment, explanation of hysteresis curve based on domain theory, soft and hard magnetic materials, applications of magnetic materials.

TEXT BOOKS:

1. Engineering Physics, B.K. Pandey, S. Chaturvedi - Cengage Learing.

2. Halliday and Resnick, Physics - Wiley.

3. A textbook of Engineering Physics, Dr. M. N. Avadhanulu, Dr. P.G. Kshirsagar -
   S. Chand

REFERENCES:

1. Richard Robinett, Quantum Mechanics

2. J. Singh, Semiconductor Optoelectronics: Physics and Technology, Mc Graw-Hill inc.
   (1995).

3. Online Course: "Optoelectronic Materials and Devices" by Monica Katiyar and Deepak
   Guptha 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					
B.Tech.I Year I Sem		**L**	**T**	**P**	**C**
COMPUTER AIDED ENGINEERING GRAPHICS	**2203ES01**	**1**	**0**	**4**	**3**

Course Objectives:
1. To enable the students with various concepts like Dimensioning, Conventions and standards related to working drawing in order to become professionally efficient and to introduce fundamental concepts of curves used in engineering,
2. Students are capable to understand the Orthographic Projections of Points and Lines and are able to improve their visualization skills so that they can apply these skills in developing the new products.
3. Understands and becomes efficient in applying the concept of Orthographic Projections of Points, Lines and Planes in industrial applications
4. Can employ freehand 3D pictorial sketching to aid in the visualization process and to efficiently communicate ideas graphically.
5. Analyze a drawing and can efficiently communicate ideas graphically and Draw the 3D views using CAD.

Course Outcomes:

1. Gets knowledge on usage of various drawing instruments and capable to draw various curves like conic curves, cycloidal curves and involutes.
2. Understand the Orthographic Projections of Points and Lines and are able to improve their visualization skills so that they can apply these skills in developing the new products.
3. Understand about orthographic projection and able to draw planes and solids according to orthographic projections.
4. Can employ freehand 3D pictorial sketching to aid in the visualization process and to draw the 3D views using CAD software.
5. To convert and draw the given orthographic view to isometric view using CAD software and vice versa.

UNIT-I:
Introduction to AutoCAD Software:
The Menu System, Toolbars (Standard, Object Properties, Draw, Modify and Dimension), Drawing Area (Background, Crosshairs, Coordinate System), Dialog boxes and windows, Shortcut menus (Button Bars), The Command Line, The Status Bar, Different methods of zoom as used in CAD, Select and erase objects.
Introduction to Engineering Drawing:
Principles of Engineering drawing and their significance, Conventions, Drawing Instruments

Engineering Curves: Construction of Ellipse, Parabola and Hyperbola – General and Special   methods; Cycloidal curves- Epicycloids and Hypocycloids.

UNIT-II:

Orthographic Projections, Projections of Points & Straight Lines: Principles of Orthographic Projections – Conventions; Projections of Points in all positions; Projections of lines Parallel to one Plane and Perpendicular to other Plane and Vice-versa - Inclined to one Plane and Parallel to other Plane and Vice-versa - Surfaceinclined to both the Planes.

UNIT-III:

Projections of Planes: Projections of Planes- Surface Parallel to one Plane and Perpendicular to other Plane and Vice-versa – Surface Inclined to one Plane and Parallel to other Plane and Vice-versa - Surface Inclined to both the Planes.

UNIT-IV:

Projections of Regular Solids: Projections of Regular Solids-Parallel to one Plane and Perpendicular to other Plane and vice-versa- inclined to one Plane and Parallel to other Plane and vice-versa- Inclined to both the Planes– Prisms, Pyramids, Cylinder and Cone.

UNIT-V:

Isometric Projections: Principles of Isometric projection – Isometric Scale, Isometric Views, Conventions; Isometric Views of lines, Planes, Simple and Compound Solids

Conversion of Isometric Views to Orthographic Views and Vice-versa, Conventions

Introduction to Solid Modeling: Creation of simple solid models relevant to the domain.

TEXT BOOKS
1. Engineering Drawing, N.D. Bhatt – N.D. Bhatt & V.M Panchal, 48th Edition, 2005 Charotar Publishing House, and Gujarat.
2. "Computer Aided Engineering Drawing"by Dr. M H Annaiah, Dr C N Chandrappa and Dr B Sudheer Premkumar Fifth edition, New Age International Publishers.
3. Engineering Drawing by K.Venu Gopal& V.Prabu Raja New Age Publications.

REFERENCES

1. Engineering drawing – P.J. Shah .S.Chand Publishers.
2. Engineering Drawing / Basant Agarwal and McAgarwal / McGraw Hill
3. Engineering Drawing- Johle/Tata Macgraw Hill Book Publisher.
4. Computer Aided Engineering Drawing – S. Trymbaka Murthy, - I.K. International Publishing House Pvt. Ltd., New Delhi, 3rd revised edition-2006.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN					
B.Tech.I Year I Sem		**L**	**T**	**P**	**C**
ENGLISH	**2200HS01**	**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:

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

Course Outcomes: Students should be able to:

  1. Use English Language effectively in spoken and written forms.
  2. Comprehend the given texts and respond appropriately.
  3. Communicate confidently in various contexts and different cultures.
  4. 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.

Prescribed Textbook:

1. **Sudarshana, N.P. and Savitha, C. (2018). English for Engineers. Cambridge UniversityPress.**

References:

1. Swan, M. (2016). Practical English Usage. Oxford UniversityPress.
2. Kumar, S and Lata, P.(2018). Communication Skills. Oxford UniversityPress.
3. Wood, F.T. (2007).Remedial English Grammar.Macmillan.
4. Zinsser, William. (2001). On Writing Well. Harper ResourceBook.
5. Hamp-Lyons, L. (2006).Study Writing. Cambridge UniversityPress.
6. Exercises in Spoken English. Parts I –III. CIEFL, Hyderabad. Oxford UniversityPress.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN					
B.Tech.I Year I Sem		**L**	**T**	**P**	**C**
APPLIED PHYSICS LAB	**2200BS61**	**0**	**0**	**3**	**1.5**

List of Experiments

Course Objectives:

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

Course Outcomes: Upon graduation

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

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**

   To study the 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-C Circuit
   To determine the time constant of the given RC circuit

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN					
B.Tech.I Year I Sem		**L**	**T**	**P**	**C**
ENGLISH LANGUAGE AND COMMUNICATION SKILLS LAB	**2200HS61**	**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:
- ☐ To facilitate computer-assisted multi-media instruction enabling individualized and independent language learning

- ☐ To sensitize students to the nuances of English speech sounds, word accent, intonation and rhythm

- ☐ To bring about a consistent accent and intelligibility in students' pronunciation of English by providing an opportunity for practice in speaking

- ☐ To improve the fluency of students in spoken English and neutralize their mother tongue influence

- ☐ To train students to use language appropriately for public speaking and interviews

- ☐ To foster better understanding of nuances of English language through audio- visual experience and group activities

- ☐ To inculcate neutralization of accent for intelligibility

- ☐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

Malla Reddy Engineering College for Women (Autonomous Institution, UGC, Govt . of India)

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
- Role play – Individual/Group activities
- Group Discussion – Group activities

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

ICS Lab:
Understand: Communication at Work Place- Spoken vs. Written language.
Practice: Ice-Breaking Activity and JAM Session- Situational Dialogues – Greetings – Taking Leave– Introducing Oneself and Others.

Exercises – 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, a LCD and a projector etc.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN					
B.Tech.I Year I Sem		**L**	**T**	**P**	**C**
PROGRAMMINGFORPROBLEMSOLVINGLAB	**2205ES61**	**0**	**0**	**3**	**1.5**

CourseObjectives: Thestudentswilllearnthefollowing:
- ToworkwithanIDEtocreate, edit,compile,runanddebugprograms
- Toanalyzethevariousstepsinprogramdevelopment.
- Todevelopprogramstosolvebasicproblems byunderstandingbasicconceptsinClikeoperators,controlstatements etc.
- Todevelopmodular, reusableandreadableCProgramsusingtheconceptslikefunctions,arrays etc.
- TowriteprogramsusingtheDynamicMemoryAllocationconcept.
- To create,read fromandwriteto textand binaryfiles

CourseOutcomes: Thecandidateisexpectedtobeableto:
- formulatethealgorithmsforsimpleproblems
- translategivenalgorithmstoaworkingandcorrectprogram
- correct syntaxerrorsasreported bythecompilers
- identifyandcorrectlogicalerrorsencounteredduringexecution
- representandmanipulatedatawitharrays,stringsandstructures
- usepointersofdifferenttypes
- create,readand writeto andfromsimpletextandbinaryfiles
- modularizethecodewithfunctionssothattheycanbereused

Practicesessions:
1. Write a simple program that prints the results of all the operators available in C (includingpre/ post increment, bitwise and/or/not, etc.). Read required operand values from standardinput.
2. Write a simple program that converts one given data type to another using auto conversionandcasting.Take thevaluesformstandardinput.

Simplenumericproblems:
a) Writeaprogramfor fiendthemaxandminfromthethreenumbers.
b) Writetheprogramforthesimple, compoundinterest.
c) WriteprogramthatdeclaresClassawardedforagivenpercentageofmarks,wheremark <40%= Failed,40%to<60%=Secondclass,60%to<70%=Firstclass,>=70%=Distinction.Readpercentagefromstandardinput.
d) Writeaprogramthatprintsamultiplicationtableforagivennumberandthenumberof rowsinthe table.

Forexample,foranumber5androws=3,theoutputshouldb

e:5x1=5

5x2=10

5x3=15

e) Writeaprogramthatshowsthebinaryequivalent ofagivenpositivenumberbetween0 to255.

ExpressionEvaluation:

i) A building has 10 floors with a floor height of 3 meters each. A ball is dropped from thetopofthe building.Findthetime taken bytheballtoreacheachfloor.(Usethe formulas

$= ut+(1/2)at^2$ where u and a are the initial velocity in m/sec $(= 0)$ and acceleration inm/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 +,-,*, /, % anduse SwitchStatement)

iii) Writeaprogramthatfindsifagivennumberisaprimenumber

iv) Write a C program to find the sum of individual digits of a positive integer and test givennumberispalindrome.

v) A Fibonacci sequence is defined as follows: the firstand second terms in the sequenceare 0 and 1. Subsequent terms are found by adding the preceding two terms in thesequence.Write aCprogramtogeneratethe firstnterms ofthesequence.

vi) Write a C program to generate all the prime numbers between 1 and n, where n is a valuesuppliedbytheuser.

vii) WriteaCprogramtofind the rootsofaQuadraticequation.

viii) Write aCprogramtocalculatethefollowing,wherexisafractionalvalue.1-x/2+x^2/4-x^3/6

ix) WriteaCprogramtoreadintwonumbers,xandn,andthencomputethesumoft hisgeometricprogression:1+x+x^2+x^3+

.... +x^n.Forexample:ifnis 3andxis5,

thentheprogramcomputes 1+5+25+125.

ArraysandPointersandFunctions:

a) WriteaCprogramto findtheminimum,maximumandaveragein anarrayofintegers.

b) Writea functionstocomputemean,variance,StandardDeviation,sortingofnelementsinsingl e dimensionarray.

c) WriteaCprogramthatusesfunctionstoperformthefollowing:

i. AdditionofTwoMatrices

ii. MultiplicationofTwoMatrices

     iii. Transposeofamatrixwith memorydynamicallyallocated forthe newmatrixasrowandcolumncountsmaynotbe same.

d) WriteCprogramsthatusebothrecursiveandnon-recursivefunctionsTofindthefactorialofagiveninteger.

    i)   TofindtheGCD(greatestcommondivisor)oftwogiveintegers.

    ii)   To find x^n

e) Writeaprogramforreadingelementsusingpointer intoarrayanddisplaythevaluesusingarray.

f) Writeaprogramfordisplay valuesreverseorder fromarrayusingpointer.

g) Writeaprogramthroughpointer variabletosumofnelementsfromarray.

Strings

a) WriteaCprogramto convertaRomannumeralrangingfromItoLto itsdecimalequivalent.

b) WriteaCprogramthatconvertsanumber ranging from1 to50toRomanequivalent

c) WriteaCprogramthatusesfunctionstoperformthefollowingoperations:

- Toinsertasub-stringintoagivenmainstringfromagivenposition.
- To delete nCharactersfroma givenpositionina givenstring.

d) WriteaCprogramtodetermineifthegivenstringisapalindromeor not(Spelledsameinbothdirectionswithorwithoutameaninglikemadam,civic,noon, abcba,etc.)

e) WriteaCprogramthatdisplaysthepositionofa characterch inthestringS or–1 ifSdoesn'tcontainch.

f) WriteaCprogramto count thelines,wordsand charactersinagiventext.

Structures& Unions:

a) WriteaCprogramthatusesfunctionstoperformthefollowingoperationsusingStructure

- Readingacomplexnumber
- WritingComplexNumber
- Additionof2Complex Numbers
- Multiplicationoftwocomplexnumbers

b) WriteaCprogramtostoreinformationof5studentsusing structures.

c) WriteaCprogramtoAccessallstructuresmembersusingpointer structure variable.

d) WriteaCprogramtoaccessmembersof union?

Files

a) WriteaCprogramto displaythecontentsofafiletostandardoutput device.

b) WriteaCprogramwhichcopiesonefiletoanother,replacingalllowercasecharacte rswiththeirupper case equivalents.

c) WriteaCprogramtocountthenumber oftimesacharacter occursinatextfile.Thefilename andthe characterare suppliedascommandline

arguments.

d) WriteaCprogramthatdoesthe following:

e) Itshouldfirstcreateabinaryfileandstore10integers,
wherethefilenameand10valuesaregiveninthecommandline.(hint:convertthestrin
gsusingatoifunction)Nowthe

program asks for an index and a value from the user and the value at that index
should bechanged to the new value in the file. (hint: use fseek function).The
program should thenreadall10values andprintthemback.

f) Write a C program to merge two files into a third file (i.e., the contents of the
firs t filefollowedbythose ofthe secondare putinthethird file).

Miscellaneous:

a. Write a menu driven C program that allows a user to enter n numbers and then
choosebetween finding the smallest, largest, sum, or average. The menu and all
the choices are tobe functions. Use a switch statement to determine what action to
take. Display an errormessageifaninvalidchoiceis entered.

b. WriteaCProgramtoconstructapyramidofnumbersasfollows:1

*	1	1	*
**	23	22	**
***	456	333	***
		4444	****

c. WriteaCProgramimplementStudentDataBaseSystemUsingFiles &Structures.

Sorting andSearching:

a. WriteaCprogramthatusesnonrecursivefunctiontosearch for
aKeyvalueinagivenlistofintegersusinglinearsearch method.

b. WriteaCprogramthatusesnonrecursivefunctiontosearch for
aKeyvalueinagivensortedlistofintegersusingbinarysearch method.

c. WriteaCprogramthatimplementstheBubblesortmethodtosortagivenlistofintegers
inascending order.

d. WriteaCprogramthatsortsthegivenarrayofintegersusing selectionsort
indescendingorder

e. WriteaCprogramthatsortsthegivenarrayofintegersusinginsertionsortinascendin
gorder

f. Write a Cprogramthatsortsa givenarrayofnames

Suggested Reference Books for solving the problems:

i.   Byron Gottfried, Schaum's Outline of Programming with C,McGraw-Hill

ii. B.A.ForouzanandR.F.GilbergCProgrammingandDataStructures,CengageLearning,(3rdEdition)

iii. BrianW.KernighanandDennisM.Ritchie,TheCProgrammingLanguage,PrenticeHall of India

iv. R.G.Dromey, How to solve it by Computer,Pearson(16thImpression)

v.   Programming in C, Stephen G.Kochan,Fourth Edition, Pearson Education.

vi. Herbert Schildt, C:The Complete Reference,McGrawHill,4thEdition

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN					
B.Tech.I Year I Sem		**L**	**T**	**P**	**C**
FRENCH LANGUAGE	**2200MC02**	**2**	**0**	**0**	**0**

Introduction:

In view of the growing importance of foreign languages as a communication tool in somecountries of the world, French has been identified as one of the most popular languages afterEnglish. As a result, French program is introduced to develop the linguistic and communicativeskills of engineering students and to familiarize them to the French communication skills. Thiscourse focuses onbasicoralskills.

CourseObjectives:

- ToinculcatethebasicknowledgeoftheFrenchlanguage.
- Tohonethebasicsentenceconstructions indaytodayexpressions for communicationintheirvocation.

CourseOutcomes

- ThestudentswillbeabletocommunicateinFrenchatA1level.
- Thestudentwillhaveanadvantageinthecompetitivejobmarket.
- Thiscoursebenefitsthegraduateswhenpursuing study*opportunities*inthecountrieswhere Frenchis the officiallanguage.

UNIT - I:

Speaking: Introduction to the French language and culture – Salutations - French alphabet -Introducingpeople
Writing:Understand andfilloutaform
Grammar:Theverbs"tobe'and "tohave"inthepresenttenseoftheindicativeVocabulary:The numbersfrom1to20-Professions -Nationalities

UNIT - II:

Speaking:Talkaboutone'sfamily–descriptionofaperson-expresshistastesandpreferences -expresspossession-
expressnegationWriting:Writeandunder
standashortmessage
Grammar:Nouns(genderandnumber)-Articles- The–erverbs inthepresent–
Possessiveadjectives -Qualifyingadjectives
Vocabulary:Thefamily–Clothes-Colors-Thenumbersfrom1 to100-Theclassroom

UNIT - III

Speaking: Talk about your daily activities - be in time - ask and indicate the date and time –talkaboutsportsandrecreation-expressthe frequencyWriting:Alettertoafriend
Grammar-Theexpressionoftime– Their verbsinthepresent-Theverbsdo,go,take,come,

-Adverbs- Reflexiveverbs

Vocabulary-Thedaysandmonthsoftheyear-Thesports-Hobbies

UNIT - IV

Speaking:Expressthequantity-askandgivetheprice-

expresstheneed,thewillandthecapacity-compare (adjective)-speakatthe restaurant/inthe shops

Writing:Adialoguebetweenavendor andacustomer atthemarket

Grammar: Verbs "to want", "to can" - Express capacity / possibility - Express will / desire –thefuturetense

Vocabulary: Thefood–Meals-Fruitsand vegetables– The partsofthe body

UNIT-V

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

Writing:Descriptions

Grammar: Demonstrative adjectives -Prepositions - The verb 'must' to indicate obligation andnecessityinthepresent

Vocabulary: Seasons – Holidays-Thecity– Furniture

NOTE:Thestudentsareexposedtosimplelisteningandreadingactivities.

REFERENCEBOOKS

1. ApprenonsleFrançais1&2,NewSaraswatiHouse,2015
2. Apropos,A1,LangersInternational,2010
3. EasyFrenchStep-by-stepbyMyrnaBellRochester
4. UltimateFrenchBeginner-Intermediate(Coursebook)ByLivid Language
5. ÃL'Aventure:
   AnIntroductiontoFrenchLanguageandFrancophoneCulturesbyEvelyne Charvier-Berman,AnneC.Cummings.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN				
B.Tech.I Year II Sem	**L**	**T**	**P**	**C**
ADVANCED CALCULUS & TRANSFORM TECHNIQUES	**2200BS03**			
	3	**1**	**0**	**4**

Course Objectives: To learn

- Geometrical approach to the mean value theorems, their application to the mathematical problems and Evaluation of improper integrals using Beta and Gamma functions

- Evaluation of multiple integrals and their applications.

- The physical quantities involved in engineering field related to vector valued functions and their applications to line, surface and volume integrals.

- A periodic function by Fourier series and a non-periodic function by Fourier transform and properties.

- Properties of Laplace transforms, solving ordinary differential equations using Laplace transforms techniques. Also, Z- transform of a sequence and properties.

Course Outcomes: After learning the contents of this paper the student must be able to
- Solve the applications on mean value theorems and evaluate the improper integrals using Beta and Gamma functions

- Evaluate the multiple integrals and apply the concept to find areas, volumes.

- Find the directional derivatives, Irrotational and Solenoidal functions and angle between the surfaces. Evaluate the line, surface and volume integrals and converting them from one to another.

- Express any periodic function in terms of Sines and Cosines and express a non-periodic function as integral transform.

- Use the Laplace transform techniques for solving ODE's and sequence as Z – transforms.

UNIT-I:

Differential Calculus: Rolle's theorem (without proof), Lagrange's Mean value theorem (without proof) with their Geometrical Interpretation, Cauchy's Mean value Theorem (without proof). Definition of Improper Integral; Definition of Beta and Gamma functions, properties, relation between them.

UNIT-II:

Multiple Integrals: Evaluation of Double Integrals (Cartesian); Change of order of integration (only Cartesian form); Evaluation of Triple Integrals.Areas (by double integrals) and Volumes (by double integrals and triple integrals).

UNIT-III:
Vector Differentiation: Vector point functions and Scalar point functions. Gradient, Divergence and Curl. Directional derivatives, Scalar potential functions.
Vector Integration: Line and Surface integrals
UNIT – IV
Fourier series: Introduction, Fourier series definition, Dirichlet's conditions, Even and

odd functions.

Fourier Transforms: Fourier integral theorem (without proof), Fourier sine and cosine integrals, sine and cosine transforms, properties, inverse Fourier transforms.
UNIT – V
Laplace Transforms:
Definition of Laplace transform, Laplace transform of standard functions, and properties Definition of Inverse Laplace transform ,Inverse Laplace transforms of standard functions Convolution theorem, Solution of ordinary differential equations by Laplace transforms.
Z- transforms: Z- transforms inverse z-transforms, properties .convolution theorem,

solution of difference equation by z-transforms.

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 Pubishers, 4th Edition, 2014.

REFERENCES:

1. ErwinKreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006.

2.Staff, E. B. and A. D. Snider , Fundamentals of Complex Analysis , Pearson.
3. S. L. Ross, Differential Equations, 3rd Ed., Wiley India, 1984.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN					
B.Tech.I Year II Sem		**L**	**T**	**P**	**C**
PYTHON PROGRAMMING	**2205ES02**	**3**	**0**	**0**	**3**

CourseObjectives:

Thiscoursewillenablestudentsto

- LearnSyntaxandSemanticsandcreateFunctions in Python.
- HandleStringsand Filesin Python.
- UnderstandLists,DictionariesandRegularexpressionsin Python.
- ImplementObjectOrientedProgrammingconceptsin Python.
- BuildGUIProgrammingin Python.
-

CourseOutcomes:

Thestudentsshould beableto

- ExaminePythonsyntaxandsemanticsandbefluentintheuseofPythonflowcontr oland functions.
- DemonstrateproficiencyinhandlingStringsandFile Systems.
- Create,runandmanipulatePythonProgramsusingcoredatastructures likeLists,Dictionariesanduse Regular Expressions.
- InterprettheconceptsofObject-OrientedProgrammingasusedin Python.
- ImplementexemplaryapplicationsrelatedtoGraphicalUserInterface(G UI)inPython.

UNIT-I

PYTHON Programming Introduction, History of Python, Python is Derived from?, PythonFeatures,PythonApplications,Why PythonisBecomingPopularNowaDay?,ExistingProgramming Vs Python Programming, Writing Programs in Python, Top Companies UsingPython,PythonProgrammingModes,InteractiveModeProgramming,ScriptingMo deProgramming,FlavorsinPython,PythonVersions,Download&InstallthePythoninWin dows & Linux, How to set Python Environment in the System?, Anaconda - Data ScienceDistributor, Downloading and Installing Anaconda, Jupyter Notebook & Spyder, Python IDE -JupyterNotebookEnvironment,PythonIDE– SpyderEnvironment,PythonIdentifiers(Literals),ReservedKeywords,Variables,Comm ents,LinesandIndentations,Quotations,AssigningValues to Variables

UNIT-II

Data Types in Python, Mutable Vs Immutable, and Fundamental Data Types: int, float, complex,bool,str,NumberDataTypes:Decimal,Binary,Octal,HexaDecimal&NumberC onversions,

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InbuiltFunctionsin Python,Data Type Conversions,Priorities of Data Typesin Python,PythonOperators,ArithmeticOperators,Comparison(Relational)Operators,Assi gnmentOperators, Logical Operators, Bitwise Operators, Membership Operators, Identity   Operators,Slicing&Indexing, ForwardDirectionSlicingwith+veStep,BackwardDirectionSlicingwith -ve Step, Decision Making Statements, if Statement, if-else Statement, elif Statement, LoopingStatements,Whywe useLoops inpython?,AdvantagesofLoops for Loop, Nested for Loop, Using else Statement with for Loop, while Loop, Infinite whileLoop, Using else with Python while Loop, Conditional Statements, break Statement, continueStatement,Pass Statement

UNIT-III

Advanced Data Types: List, Tuple, Set, Frozenset, Dictionary, Range, Bytes & Bytearray,None,ListDataStructure,Listindexingandsplitting Updating List values, List Operations, Iterating a List, Adding Elements to the List, RemovingElements from the List, List Built-in Functions, List Built-in Methods, Tuple Data Structure,Tuple Indexing and Splitting, Tuple Operations, Tuple InbuiltFunctions, 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() andremove(),UnionofTwoSets,IntersectionofTwoSets,DifferenceofTwoSets,SetCom parisons, Frozenset Data Structure, Dictionary Data Structure, Creating the Dictionary,Accessing the Dictionary Values, Updating Dictionary Values, Deleting Elements Using delKeyword, Iterating Dictionary, Properties of Dictionary Keys, Built-in   Dictionary   Functions,Built- inDictionaryMethods,ListVsTupleVsSetVsFrozensetVs   Dictionary, Range,Bytes,Bytearray&None

UNIT-IV

Python Functions, Advantage of Functions in Python, Creating a Function, Function Calling,ParametersinFunction,CallbyReferenceinPython,TypesofArguments,Require dArguments, Keyword Arguments, Default Arguments, Variable-Length Arguments, Scope   ofVariables,PythonBuilt- inFunctions,PythonLambdaFunctions,StringwithFunctions,StringsIndexingand Splitting   StringOperators,PythonFormattingOperator,Built- inStringFunctions,PythonFileHandling, 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,ModifyingFilePointer Position RenamingtheFile&RemovingtheFile,WritingPythonOutputtotheFiles File Related Methods, Python Exceptions, Common Exceptions, Problem without HandlingExceptions,exceptStatementwithnoException,DeclaringMultipleExceptions, FinallyBlock,RaisingExceptions,CustomException,

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,RegularExpressions,CommandLineArguments,ObjectOrientedProgramming(OOPs),Object-orientedvsProcedure-orientedProgramminglanguages,Object,Class,Method, Inheritance,Polymorphism,DataAbstraction,Encapsulation,PythonClassandObjects,CreatingClassesinPython,CreatinganInstanceoftheClass,PythonConstructor,Creatingthe, Constructor in Python, Parameterized Constructor, Non-Parameterized Constructor, In-builtClassFunctions,In-builtClassAttributes,PythonInheritance,PythonMulti-LevelInheritance, Python Multiple Inheritance, Method Overriding, Data Abstraction in Python,GraphicalUserInterface(GUI)Programming,PythonTkinter,TkinterGeometry,pack()Method,grid()Method,place()Method,Tkinter Widgets

TEXTBOOK:

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

REFERENCEBOOK:
1. Programming Languages,A.B.Tucker,R.E.Noonan,TMH.
2. Programming Languages,K. C.LoudenandKALambert.,3ʳᵈ Edition,CengageLearning.
3. Programming Language Concepts,CGhezziandMJazayeri, WileyIndia.
4. Programming Languages, 2ₙ𝒹Edition, RaviSethiPearson.
5. Introductionto Programming Languages, Arvind Kumar BansalCRCPress.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN					
B.Tech.I Year II Sem		**L**	**T**	**P**	**C**
BASIC ELECTRICAL ENGINEERING	**2202ES01**	**3**	**1**	**0**	**4**

Course Objectives:
1. To introduce the concepts of electrical circuits and its components
2. To understand DC circuits and AC single phase & three phase circuits
3. To study and understand the different types of DC/AC machines and Transformers.
4. To import the knowledge of various electrical installations.
5. To introduce the concept of power, power factor and its improvement.

Course Outcomes:
    After learning the course the student will be able to
1. Analyze and solve electrical circuits using network laws and theorems.
2. Understand and analyze basic electric circuits
3. Study the working principles of various electrical machines
4. 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 RLC 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. 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:

Electrical Installations: Components of LT Switchgear: Switch Fuse Unit (SFU), MCB, ELCB, MCCB, Types of Wires and Cables, Earthing. Types of Batteries, Important Characteristics for Batteries. Elementary calculations for energy consumption, power factor improvement.

Text-Books:

1. Basic Electrical Engineering - D.P. Kothari and I.J. Nagrath, 3rd edition 2010, Tata McGrawHill.
2. D.C. Kulshreshtha, "Basic Electrical Engineering", McGraw Hill,2009.
3. L.S. Bobrow, Fundamentals of Electrical Engineering", Oxford University Press,2011

Reference-Books:

1. Electrical and Electronics Technology, E. Hughes, 10th Edition, Pearson,2010
2. Electrical Engineering Fundamentals, Vincent Deltoro, Second Edition, Prentice Hall India,1989.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN					
B.Tech.I Year II Sem		**L**	**T**	**P**	**C**
ENGINEERING CHEMISTRY	**2200BS07**	**3**	**0**	**0**	**3**

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

COURSE OUTCOMES:
The basic concepts included in this course will help the student to gain:
* The knowledge of atomic, molecular and electronic changes, band theory related to conductivity.
* To know the modern technology and interpret different problems involved in industrial utilization of water.
* The required principles and concepts of electrochemistry, corrosion to predict the behavior of a system under different variables.
* The knowledge of configurational and conformational analysis of molecules and reaction mechanisms.
* The required skills to get clear concepts on basic spectroscopy and application to medical and other fields.

UNIT - I:
Molecular structure and Theories of Bonding: Atomic and Molecular orbital's. Linear Combination of Atomic Orbital's (LCAO), molecular orbital's of diatomic molecules, molecular orbital energy level diagrams of N_2, O_2 and F_2 molecules. π molecular orbital's of butadiene and benzene.
Crystal Field Theory (CFT): Salient Features of CFT – Crystal Field Splitting of transition metal ion d- orbital's in Tetrahedral, Octahedral and square planar geometries. Band structure of solids and effect of doping on conductance.

UNIT - II:
Water and its treatment: Introduction – hardness of water – Causes of hardness - Types of hardness: temporary and permanent – expression and units of hardness – Estimation of hardness of water by complexo metric method. Potable water and its specifications. Boiler

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troubles: Scales and Sludge's, Priming and Foaming, Caustic Embrittlement. Steps involved in treatment of water – Disinfection of water by chlorination and ozonization. Boiler feed water and its treatment – Calgon conditioning, Phosphate conditioning and Colloidal conditioning. External treatment of water – Ion exchange process. Desalination of water – Reverse osmosis. Numerical problems.

UNIT - III:

Electrochemistry and corrosion: Electro chemical cells – electrode potential, standard electrode potential, types of electrodes – Calomel, Quinhydrone and Glass electrode. Nernst equation, Determination of pH of a solution by using quinhydrone and glass electrode. Electrochemical series and its applications. Numerical problems. Potentiometric titrations.
Electrochemical sensors: Potentiometric Sensors and voltametric sensors. Examples:analysis of Glucose and urea.
Batteries – Primary: Lithium cell, secondary batteries : Lead – acid storage battery and Lithium ion battery, Fuel cells: H_2-O_2 Fuel cell, CH_3OH-O_2 Fuel cell.
Causes and effects of corrosion – Theories of chemical and electrochemical corrosion – mechanism of electrochemical corrosion, Types of corrosion: Galvanic, water-line and pitting corrosion. Factors affecting rate of corrosion, Corrosion control methods- Cathodic protection – Sacrificial anode and impressed current cathodic methods. Surface coatings – metallic coatings – methods of application: Galavanising , Tinning , Metal Cladding, Electro-deposition, Electroless plating of Nickel.

UNIT - IV:

Stereochemistry, Reaction Mechanism and synthesis of drug molecules: Introduction to representation of 3-dimensional structures, Structural and stereoisomers, configurations, symmetry and chirality. Enantiomers, diastereomers, optical activity and Absolute configuration. Conformation analysis of n- butane.
Substitution reactions: Nucleophilic substitution reactions: Mechanism of SN^1, SN^2 reactions.
Electrophilic and nucleophilic addition reactions: Addition of HBr to propene. Markownikoff and anti Markownikoff's additions. Grignard additions on carbonyl compounds. Elimination reactions: Dehydro halogenation of alkylhalides, Saytzeff rule. Oxidation reactions: Oxidation of alcohols using $KMnO_4$ and chromic acid. Reduction reactions: Reduction of carbonyl compounds using $LiAlH_4$& $NaBH_4$.Hydroboration of olefins. Structure, synthesis and pharmaceutical applications of Paracetamol and Aspirin.

UNIT – V

Spectroscopic techniques and applications: Principles of electronic spectroscopy: Beer Lamberts law, Numerical problems, types of electronic excitations , applications of UV – Visible spectroscopy. IR Spectroscopy: Principle, Modes of vibrations, selection rules, Force Constant ,Some common organic functional groups Wave number regions (C-H, NH_2, OH, -COOH, C=O, C$\equiv$ N, C=C, C$\equiv$ C), Applications of IR Spectroscopy, ^{1}H-NMR(NMR Spectroscopy), Principles of NMR spectroscopy, chemical shift, Chemical shifts of some organic protons , Introduction to Magnetic resonance imaging.
Suggested Text Books:
1. Physical Chemistry, by P.W. Atkins
2. Engineering Chemistry by P.C.Jain & M.Jain; Dhanpat Rai Publishing Company (P)Ltd., New Delhi.

3. Fundamentals of Molecular Spectroscopy, by C.N. Banwell
4. Organic Chemistry: Structure and Function by K.P.C. Volhardt and N.E.Schore, 5thEdition.
5. University Chemistry, by B.M. Mahan, Pearson IV Edition.
6. Engineering Chemistry (NPTEL Web-book), by B.L. Tembe, Kamaluddin and M.S.Krishnan.ll

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN					
B.Tech.I Year II Sem		**L**	**T**	**P**	**C**
ENGINEERING WORKSHOP	**2203ES61**	**1**	**0**	**3**	**2.5**

COURSE OBJECTIVES:
1. To Study of different hand operated power tools, uses and theirdemonstration.
2. To gain a good basic working knowledge required for the production of various engineering products.
3. To provide hands on experience about use of different engineering materials, tools, equipment's and processes those are common in the engineeringfield.
4. To develop a right attitude, team working, precision and safety at workplace.
5. To study commonly used carpentryjoints and to have practical exposure to various welding and joiningprocesses.

COURSE OUTCOMES: At the end of the course, the student will be able to:
1. Study and practice on machine tools and theiroperations
2. Practice on manufacturing of components using workshop trades including pluming, fitting, carpentry, foundry, house wiring andwelding.
3. Identify and apply suitable tools for different trades of Engineering processes including drilling, material removing, measuring,chiseling.
4. Apply basic electrical engineering knowledge for house wiringpractice.
5. Study commonly used carpentryjoints.

I. Carpentry
1. Cross lapjoint
2. Mortise & tenonjoint

II. Fitting
1. V- fitting
2. Semi - Circular Fitting

III. Tin Smithy
1. Making of Rectangular Tray
2. Making of Conical Funnel

IV. Housing wiring
1. Two points controlled by two-one way switches (parallel connection)
    2. One point controlled by two-two way switches (stair case connection)

V. Foundry
1. Single piece pattern
2. Multi-piece pattern

VI. Black Smithy
1. Round to Square

2. S - Hook

Trades for Demonstration:
  1. Plumbing
  2. Welding
  3. Machine Shop
  4. Metal Cutting (WaterPlasma)

TEXT BOOKS:

1. Workshop Manual, P. Kannaiah and K. L. Narayana, 3rd Edition, Scitech,2015

2. Elements of Workshop Technology Vol.1 & 2, S. K. Hajra Choudhury, A. K. Hajra Choudhury and Nirjhar Roy, 13th Edition, Media Promoters & Publishers Pvt. Ltd., 2010.

REFERENCE BOOKS:
        1. Workshop Manual / Venkat Reddy/ BSP
        2. Workshop Manual / K Venu Gopal / Anuradha

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN					
B.Tech.I Year II Sem		**L**	**T**	**P**	**C**
BASIC ELECTRICAL ENGINEERING LAB	**2202ES61**	**0**	**0**	**2**	**1**

Course Objectives:
1. To analyze a given network by applying various electrical laws and network theorems
2. To know the response of electrical circuits for different excitations
3. To calculate, measure and know the relation between basic electrical parameters.
4. To analyze the performance characteristics of DC and AC electrical machines

Course Outcomes:
After learning the lab course the student will be able to
1. Get an exposure to basic electrical laws.
2. Understand the response of different types of electrical circuits to different excitations.
3. Understand the measurement, calculation and relation between the basic electrical parameters
4. Understand the basic characteristics of transformers and electrical machines.

List of experiments/demonstrations

1. Verification of Ohms Law

2. Verification of KVL and KCL

3. 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					
B.Tech.I Year II Sem		**L**	**T**	**P**	**C**
PYTHONPROGRAMMINGLAB	**2205ES62**	**0**	**0**	**3**	**1.5**

CourseObjectives:

- IntroducecoreprogrammingbasicsandprogramdesignwithfunctionsusingPythonprogramminglanguage.
- Tounderstand arangeofObject-Oriented Programming,aswellasin-depthdataandinformationprocessingtechniques.
- Tounderstandthehigh-performanceprogramsdesignedtostrengthenthepracticalexpertise.

CourseOutcomes:

- Studentabletounderstandthebasicconceptsscriptingandthecontributionsofscriptinglanguage
- Abilitytoexplorepythonespeciallytheobjectorientedconcepts,andthebuiltinobjectsofPython.
- Ability to create practical and contemporary applications such as TCP/IP networkprogramming,Webapplications,discrete eventsimulations

Week1:

1. Pythonprogramtoprint"Hello Python"
2. Write a programthatcomputesandprintsthe resultof512−
 282/47·48+5.Itis roughly.1017
3. Asktheusertoenteranumber.Printoutthesquareofthenumberbutusetheseoptional argumenttoprintitoutinafullsentencethatendsinaperiod.Sampleoutputisshownbelow.Enteranumber:5

 Thesquareof5is25.
4. Asktheusertoenter
 anumberx.Usetheseoptionalargumenttoprintoutx,2x,3x,4x,and5x,eachseparatedbythreedashes,likebelow.

 Enteranumber: 7
 7---14---21---28---35

Week2:

1. Writeaprogram thataskstheusertoenterthreenumbers(usethreeseparateinputstatements). Create variables called total and average that hold the sum and average of thethree numbers andprintoutthe values oftotalandaverage.
2. A lot of cell phones have tip calculators. Write one. Ask the user for the price of the mealandthepercenttiptheywanttoleave.Thenprintboththetipamountandthetotalbill

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withthetipincluded.

3. Write a program which will find all such numbers which are divisible by 7 but are not amultiple of 5,between 2000 and 3200 (both included). The numbers obtained should beprintedina comma-separatedsequenceonasingleline.

Hints:Consideruserange(#begin,#end)method

4. Write a program that calculates and prints the value according to the given formula: Q =Square rootof[(2*C *D)/H]

Following are the fixed values of C and H:C is 50. H is 30.D is the variable whose valuesshouldbeinputtoyourprogram ina comma-separatedsequence,letus assumethefollowingcommaseparatedinputsequenceisgiven to the program:100,150,180Theoutputoftheprogram

Hint:

If

theoutputreceivedisindecimalform,itshouldberoundedofftoitsnearestvalue(forexample,iftheoutputreceivedis26.0, itshouldbeprintedas26)18,22,24shouldbe:

Week3:

1. Write a program that asks the user to enter a length in centimeters. If the user enters anegative length, the program should tell the user that the entry is invalid. Otherwise, theprogram should convert thelength toinches and printout the result.There are 2.54centimetersinaninch.

2. Ask the user for a temperature. Then ask them what units, Celsius or Fahrenheit, thetemperature is in. Your program should convert the temperature to the other unit. TheconversionsareF=95C +32andC =59(F−32)

3. Ask the user to enter a temperature in Celsius. The program should print a message basedon the temperature: • If the temperature is less than -273.15, print that the temperature isinvalidbecauseitisbelowabsolutezero.•Ifitisexactly-273.15,printthatthetemperature is absolute 0. • If the temperature is between -273.15 and 0, print that thetemperatureisbelowfreezing.•If itis0,printthatthetemperatureisatthefreezingpoint.

• If it is between 0 and 100, print that the temperature is in the normal range. • If it is 100,printthatthe temperature is atthe boilingpoint.• If itis above 100,printthat thetemperature is abovetheboilingpoint

4. Write aprogram thatasks the userhowmany credits they have taken. If they have taken23 or less, print that the student is a freshman. If they have taken between 24 and 53, printthat they are a sophomore. The range for juniors is 54 to 83, and for seniors it is 84 andover.

Week4:

1. A year is a leap year if it is divisible by 4, except that years divisible by 100 are not leapyears unless they are also divisible by 400. Write a program that asks the user for a yearandprintsoutwhetheritis aleapyearornot

2. Write a multiplication game program for kids. The program should give the player tenrandomly generated multiplication questions to do. After each, the

program should tellthemwhethertheygotitright orwrongand whatthecorrectansweris.

Question 1:

3 x 4 =

12Right!

Question 2:

8 x 6 =

44Wrong.

Theansweris48.

...

...

Question 10:

7 x 7 =

49Right.

3. A jar of Halloween candy contains an unknown amount of candy and if you can guessexactly how much candy is in the bowl, then you win all the candy. You ask the person incharge the following: If the candy is divided evenly among 5 people, how many pieceswould be left over? The answer is 2 pieces. You then ask about dividing the candy evenlyamong 6 people, and the amount left over is 3 pieces. Finally, you ask about dividing thecandy evenly among 7 people, and the amountleft overis 2 pieces. By looking at thebowl, you can tell that there are less than 200 pieces. Write a program to determine howmanypieces areinthebowl Writeaprogramthataskstheusertoentera valuen,and thencomputes$(1 + \frac{1}{2} + \frac{1}{3} + \cdots + \frac{1}{n}) - \ln(n)$. Thelnfunctionis loginthemathmodule

Week5:

1. A number is called a perfect number if it is equal to the sum of all of its divisors, notincluding the number itself. For instance, 6 is a perfect number because the divisors of 6are 1, 2, 3, 6 and 6 = 1 + 2 + 3. As another example, 28 is a perfect number because itsdivisors are 1, 2, 4, 7, 14, 28 and 28 = 1 + 2 + 4 + 7 + 14. However, 15 is not a perfectnumber because its divisors are 1, 3, 5, 15 and 15 6= 1 + 3 + 5. Write a program that findsallfouroftheperfectnumbersthatare less than10000.

2. .Asktheusertoenter10testscores. Writeaprogramtodothefollowing:
   (a) Print outthehighest and lowestscores.
   (b) Printouttheaverageofthescores.
   (c) Printoutthesecond largestscore.
   (d) Ifanyofthescoresisgreaterthan100,thenafterallthescoreshavebeenentered,printamessage warningtheuserthatavalueover100 hasbeenentered.
   (e) Dropthetwo lowestscoresand print out theaverageoftherestofthem

3. Write a program that computes the factorial of a number. The factorial,n!, of a numbernis the product of all the integers between 1 and n, including n. For instance, 5! = 1 · 2 · 3 ·4 ·5= 120.[Hint: Tryusingamultiplicative equivalentofthesummingtechnique.]

Week6:

1. Write a program that asks the user for a number and then prints out the sine, cosine, andtangentofthatnumber.

2. The Fibonacci numbers are the sequence below, where the first two numbers are 1, andeach number thereafteris the sum of the two precedingnumbers.Write a program thatasksthe userhow manyFibonaccinumberstoprint andthenprintsthat many.

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

3. Useafor looptoprintatriangleliketheonebelow.Allowtheusertospecifyhowhighthetriangle shouldbe.

   ```
   *
   **
   ***
   ****
   *****
   ```

Week7:

1. Useforloopstoprintadiamondliketheonebelow.Allowtheusertospecifyhowhighthe diamondshouldbe.

   ```
   *
   ***
   *****
   *******
   *****
   ***
   *
   ```

2. Write a program that asks the user to enter an angle between $-180°$ and $180°$. Using anexpression 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 aprogram that asks the user to enter a power. Then find the last digit of 2 raised to thatpower.

   (b) One way to find out the last two digits of a number is to mod the number by 100. Write aprogram that asks the user to enter a power. Then find the last two digits of 2 raised to thatpower.

   (c) Writeaprogramthatasktheusertoenterapowerandhowmanydigitstheywant. Findthelastthat manydigitsof2 raised tothepowertheuserentered

Week8:

1. The GCD (greatest common divisor) of two numbers is the largest number that both aredivisible by. For instance, gcd(18, 42) is 6 because the largest number that both 18 and 42are divisible by is 6. Write a program that asks the user for two numbers and computestheir gcd.Shownbelowisawayto computetheGCD,called Euclid'sAlgorithm.

• Firstcomputetheremainderofdividingthelargernumberbythesmallernumber
• Next, replace the larger number with the smaller number and the smaller number withthe remainder.
• Repeatthisprocessuntilthesmallernumberis0.TheGCDisthelastvalueofthelar gernumber.

2. Writeaprogramthataskstheusertoenterastring.Theprogramshouldthenprintthefollo wing:
(a) Thetotalnumberofcharactersinthestring
(b) Thestringrepeated10times
(c) Thefirstcharacterofthestring(rememberthatstringindicesstartat0)
(d) Thefirstthreecharactersofthestring
(e) Thelastthreecharactersofthestring
(f) Thestringbackwards
(g) Theseventhcharacterofthestringifthestringislongenoughandamessageother wise
(h) Thestringwithitsfirst and lastcharactersremoved
(i) Thestringinallcaps
(j) Thestringwitheverya replaced withane
(k) Thestring witheveryletterreplaced byaspace

Week9:

1. Write a program thatasks the user toenter a string. The program should create a newstring called new string from the user's string such that the second character is changed toan asterisk and three exclamation points are attached to the end of the string. Finally, printnewstring.Typicaloutputisshown below: Enteryourstring:QbertQ*ert!!!

2. Write a program that computes the net amount of a bank account based a transaction logfromconsoleinput.The transaction logformatisshownasfollowing: D100 W200DmeansdepositwhileWmeanswithdrawal. Supposethefollowinginputissuppliedtotheprogram:D300D300W200D100Th en,the outputshouldbe:500

Week10:

1. Awebsiterequirestheuserstoinputusernameandpasswordtoregister.Writeaprogramt ocheckthevalidityofpasswordinputbyusers.
Followingarethecriteriaforcheckingthepassword:
1. Atleast1letterbetween[a-z]
2. Atleast1numberbetween[0-9]
1. Atleast1letterbetween[A-Z]
3. Atleast1characterfrom[$#@]
4. Minimumlengthoftransactionpassword:6
5. Maximumlengthoftransactionpassword: 12
Your program should accept a sequence of comma separated passwords and will check themaccording to the above criteria. Passwords that match the criteria are to

be printed, eachseparatedbyacomma.
Example
Ifthefollowingpasswordsaregivenasinputtotheprogr
am:ABd1234@1,a F1#,2w3E*,2We3345

Then,theoutput oftheprogramshouldbe:
ABd1234@1

2. Writeaprogramthatacceptssequenceoflinesasinputand printsthelinesaftermakingallcharactersinthesentencecapitalized Supposethefollowinginputissuppliedtotheprogram:
Helloworld
Practicemakesper
fectThen,theoutp
utshouldbe:
HELLO WORLD
PRACTICEMAKESPERFECT

3. The goal of this exercise is to see if you can mimic the behavior of the in operator and thecountand indexmethodsusingonly variables,forloops,andifstatements.
   (a) Without using the in operator, write a program that asks the user for a string and aletterandprintsoutwhethertheletterappearsinthe string.
   (b) Without using the count method, write a program that asks the user for a string andaletterandcountshowmanyoccurrencesthere are oftheletterinthe string.
   (c) Without using the index method, write a program that asks the user for a string anda letter and prints out the index of the first occurrence of the letter in the string. Ifthe letterisnotinthe string,theprogramshouldsayso.

   TEXTBOOK:
   1.CorePythonProgramming, WesleyJ.Chun, SecondEdition, Pearson

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN					
B.Tech.I Year II Sem		**L**	**T**	**P**	**C**
ENGINEERING CHEMISTRY LAB	**2200BS62**	**0**	**0**	**2**	**1**

COURSE OBJECTIVES:
The course consists of experiments related to the principles of chemistry required for engineering student. The student will learn:
- Estimation of hardness and chloride content in water to check its suitability for drinking purpose.
- To determine the rate constant of reactions from concentrations as an function of time.
- The measurement of physical properties like adsorption and viscosity.
- To synthesize the drug molecules and check the purity of organic molecules by thin layer chromatographic (TLC) technique.

COURSE OUTCOMES:
1) Ability to perform experiments illustrating the principles of chemistry relevant to the study of science and engineering.
2) To record the amount of hardness and chloride content in water and interpret the significance of its presence in water.
3) Understand the kinetics of a reaction from a change in concentration of reactants or products as a function of time .
4) To report and predict the significance of properties like adsorption ,conductance ,viscosity, pH and surface tension.
5) To demonstrate the technique of thin Layer Chromotograhy (TLC) and synthesise drug molecules widely used in industry.

List of Experiments

1. Determination of total hardness of water by complexometric method using EDTA
2. Determination of chloride content of water by Argentometry
3. Estimation of an HCl by Conductometric titrations
4. Estimation of Acetic acid by Conductometric titrations
5. Estimation of HCl by Potentiometric titrations
6. Estimation of Fe^{2+} by Potentiometry using $KMnO_4$
7. Determination of rate constant of acid catalysed hydrolysis of methyl acetate
8. Synthesis of Aspirin and Paracetamol
9. Thin layer chromatography calculation of R_f values. eg ortho and para nitro phenols
10. Determination of acid value of coconut oil
11. Verification of freundlich adsorption isotherm-adsorption of acetic acid on charcoal
12. Determination of viscosity of castor oil and ground nut oil by using Ostwald's viscometer.
13. Determination of partition coefficient of acetic acid between n-butanol and water.

14. Determination of surface tension of a give liquid using stalagmometer.

References
1. Senior practical physical chemistry, B.D. Khosla, A.Gulati and V.Garg (R. Chand & Co., Delhi)
2. An introduction to practical chemistry, K.K. Sharma and D. S.Sharma (Vikas publishing, N. Delhi)
3. Vogel's text book of practical organic chemistry 5th edition
4. Text book on Experiments and calculations in Engineering chemistry – S.S. Dara.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN					
B.Tech.I Year II Sem		**L**	**T**	**P**	**C**
ENVIRONMENTAL SCIENCE	**2200MC01**	**1**	**0**	**0**	**0**

COURSEOBJECTIVES:

- Understandingtheimportanceofecologicalbalanceforsustainabledevelopment.
- Recognize ,the significance of natural resources, their classifications. Alternative energy for the sustainability of the environment by appropriate maintance of natural resources.
- Understand the biodiversity&type of biodiversity along with the value &conservation of biodiversity
- Categorize, the type of environmental pollution & various treatment technologies for diminution of environmental pollutants summarize the global environmental issues
- Understand the sustainable development concept & importance of green buildings ,EIA, EIS,EMP.

COURSEOUTCOMES:

- Understand the scarcity of natural resources and will be able to replace them with alternative energy resources for the sustainability of environmental society & economy
- Recognize the type of biodiversity along the values & conservation biodiversity and know about the biogeographical regions
- Categorize the types of environmental pollution & the various treatment technologies for the diminution of environmental pollutants and contaminants
- Summarize the global environmental issues to create awareness about the international conventions and protocols for extenuating global environmental issues
- Understand the importance of environmental legislation policies, sustainable development and concept of green building

UNIT-I

Ecosystems: Definition, Scope, and Importance of ecosystem. Classification, structure, andfunction of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy,Biogeochemical cycles, Bioaccumulation, Biomagnifications, ecosystem value, services andcarryingcapacity,Fieldvisits.

UNIT-II

Natural Resources: Classification of Resources: Living and Non-Living resources, **waterresources:** use and over utilization of surface and ground water, floods and droughts, Dams: Benefits and problems.**Mineral resources:**use and exploitation, environmental effects ofextracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:**growing energy needs, renewable and non renewable energy sources, use of alternate energysource,casestudies.

UNIT-III

Biodiversity And Biotic Resources: Introduction, Definition, genetic, species and ecosystemdiversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic andoptional values. India as a mega diversity nation, Hot spots of

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biodiversity. Field visit. Threatstobiodiversity:habitatloss,poachingof wildlife,man-wildlifeconflicts;conservationofbiodiversity:In-SituandEx-situconservation.NationalBiodiversityact.

UNIT-IV

EnvironmentalPollutionandControlTechnologies:**EnvironmentalPollution:**
Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile andIndustrialpollution,Ambientairqualitystandards.**Waterpollution**: Sourcesandtypesof pollution, drinking water quality standards.**Soil Pollution:** Sources and types, Impacts ofmodern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards,standards,**Solid waste:** Municipal Solid Waste management, composition and characteristics of e-Waste and itsmanagement. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary andTertiary.Overviewofairpollutioncontroltechnologies,Conceptsofbioremediation.**Glob alEnvironmental Issuesand Global Efforts:**Climate change and impactson human environment.OzonedepletionandOzonedepletingsubstances(ODS).Deforestationanddeser tification.International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol.

UNIT-V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects AirAct- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management

andhandlingrules,biomedicalwastemanagementandhandlingrules,hazardouswastemanage ment and handling rules. EIA: EIA structure, methods of baseline data acquisition.Overview on Impacts of air, water, biological and Socio-economical aspects. Strategies for riskassessment,ConceptsofEnvironmentalManagementPlan(EMP).**TowardsSustainable Future:**Conceptof SustainableDevelopmentGoals,Population andits explosion,CrazyConsumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics,Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbonlifestyle.

TEXTBOOKS:
1. TextbookofEnvironmentalStudiesforUndergraduateCoursesbyErachBharuchaforUniversityGrants Commission.
2. EnvironmentalStudiesbyR. Rajagopalan, OxfordUniversityPress.

REFERENCEBOOKS:
1. Environmental Science:towardsasustainablefuturebyRichardT.Wright.2008PHLLearningPrivateLtd.NewDelhi.
2. EnvironmentalEngineeringandsciencebyGilbertM.MastersandWendellP.Ela.2008 PHILearningPvt.Ltd.
3. EnvironmentalSciencebyDanielB.Botkin &EdwardA.Keller,WileyINDIAedition.
4. EnvironmentalStudiesbyAnubhaKaushik, 4thEdition, Newageinternationalpublishers.
5. TextbookofEnvironmentalScience and Technology-Dr.M.AnjiReddy2007,BSPublications.
6. IntroductiontoEnvironmentalSciencebyY.Anjaneyulu,BS. Publications.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN					
B.Tech.II Year I Sem		**L**	**T**	**P**	**C**
Introduction to Data Science	**2267PC01**	**3**	**0**	**0**	**3**

Course objectives:

To gain strong foundation of fundamental concepts of data science and types of data.

To provide a basic exposition to Sources of data, Data collection and APIs.

Investigate the basic concepts of data analysis.

Experience the basic concepts of data visualization techniques.

Explore the current scope, potential, limitations, and implications of Data Science.

Course outcomes:

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

Demonstrate the fundamental concepts, applications of data science.

Apply basic principles of data collection and APIs.

Ability to apply knowledge of different statistical methods in data science.

Demonstrate ability to analyses 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, Distributionproperties 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.

TEXT BOOKS:

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					
B.Tech.II Year I Sem		**L**	**T**	**P**	**C**
ANALOG AND DIGITAL CIRCUITS	**2204ES01**	**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 procedures 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 anditscharacteristics.
- Design and analyze the DC bias circuitry of BJTandFET.
- Perform arithmetic operations on dif ferent number systems and to apply the principles of Boolean algebra to minimize logicexpressions.
- 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 VI characteristics, Transition and Diffusion Capacitances, Breakdown Mechanisms in Semiconductor Diodes, Zener Diode Characteristics.
Rectifiers and Filters: The P-N junction as a Rectifier, Half wave 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.

TEXT BOOKS:
1. Millman's Electronic Devices and Circuits –J.Millman,C.C.Halkias,and SatyabrataJit, 2 Ed.,1998,TMH
2. Electronic Devices and Circuits – David A. Bell, 5Ed,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, 2ndEd.,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					
B.Tech.II Year I Sem		**L**	**T**	**P**	**C**
DATA STRUCTURES & ALGORITHMS	**2205PC01**	**3**	**1**	**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, lists 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 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 able to implement it. For a given problem of Stacks, Queues and linked list student will able to implement it and analyze the same to determine the time and computation complexity.
- Student will able to write an algorithm Selection Sort, Bubble Sort, Insertion Sort, Quick Sort, Merge Sort, Heap Sort and compare their performance in term of Space and Time complexity. Student will 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 implementation using C & Python and their complexity analysis.

UNIT-II

Stacks and Queues using C& Python: **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. Double ended Queue and Operations on each types of Queues and Algorithms.Applications of queues.

UNIT-III

Linked Lists using C&Python: Singly linked lists: Representation in memory, Algorithms of several operations: Traversing, Searching, Insertion into, Deletion from linked list; Linked representation of Stack and Queue. **Doubly Linked List:** operations on it and algorithmic analysis. **Circular Linked List:** all operations on it. Applications of Linked List.

UNIT-IV

Trees using C & Python: 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 algorithms. Applications of Binary Trees, B-Tree, B+ Tree: definitions and its construction algorithm.

UNIT-V

Sorting and Hashing using C & Python: 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-hash function, collision resolution methods. **Graphs:** Basic Terminologies & Representations, Applications of a Graph, Graph traversal algorithms .

 TEXTBOOKS:
 1. Data structures and algorithms in python by Michael T. Goodrich
 2. Data Structures and Algorithmic Thinking with Python by Narasimha Karumanchi
 REFERENCE BOOKS:
 1. Hands-On Data Structures and Algorithms with Python: Write complex and powerful code using the latest features of Python 3.7, 2nd Edition by Dr. Basant Agarwal, Benjamin Baka.
 2. Data Structures and Algorithms with Python by Kent D. Lee and Steve Hubbard.
 3. Problem Solving with Algorithms and Data Structures Using Python by Bradley N Miller and David L. Ranum.
 4. Core Python Programming -Second Edition,R. Nageswara Rao, Dreamtech **Press.**

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN					
B.Tech.II Year I Sem		**L**	**T**	**P**	**C**
DISCRETE MATHEMATICS	**2205PC03**	**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 counter examples.
- 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 ofBooleanFunction.

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.

TEXT BOOKS:
1. Kenneth H. Rosen, Discrete Mathematics and its Applications, Tata McGraw–Hill
2. Susanna S. Epp, Discrete Mathematics with Applications,4th edition,Wadsworth PublishingCo.Inc.
3. C L Liu and D P Mohapatra, Elements of Discrete Mathematics AComputer Oriented Approach, 3rd Edition by, Tata McGraw–Hill.

REFERENCE BOOKS:
1. J.P. Tremblay and R. Manohar, "Discrete Mathematical Structure and It's Application to Computer Science", TMGEdition,TataMcGraw-Hill
2. Norman L. Biggs, Discrete Mathematics, 2nd Edition, Oxford UniversityPress. Schaum's Outlines Series, Seymour Lipschutz,MarcLipson,
3. Discrete Mathematics, Tata McGraw–Hill

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN					
B.Tech.II Year I Sem		L	T	P	C
OBJECT ORIENTED PROGRAMMING THROUGH JAVA	2205PC06	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 counter examples.
- 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.

- 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, Method binding, 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, Control flow-block scope, conditional statements, loops, break and continue statements, simple java standalone programs, arrays, console input and output, classes, methods, constructors, static, this keyword, recursion, exploring string classes and garbage collection.

UNIT – II
Inheritance–Inheritance hierarchy, super keyword, preventing inheritance: final classes and methods, the Object class and its methods**.**
Polymorphism–dynamic binding, Constructor and method overloading, method overriding, abstract classes**.**
Interfaces-Interfaces Vs Abstract Classes, defining an interface, implementing interfaces, accessing implementations through interface references, extending interface, inner class.
Packages-Defining, creating and accessing a package, CLASSPATH, Access modifiers, importing packages.

UNIT-III
Exception Handling-Dealing with errors, benefits of exception handling, the classification of exceptions - exception hierarchy, checked exceptions and unchecked exceptions, usage of try, catch, throw, throws and finally, creating own exception subclasses.
Multithreading – Differences between multiple processes and multiple threads, thread lifecycle, creating threads, interrupting threads, thread priorities, synchronizing threads, inter-thread communication-producer consumer problem.

UNIT-IV
Collection Framework in Java – Introduction to java collections, Overview of java collection framework, Commonly used collection classes-Array List, Linked List, Hash Set, Tree Set, Map-Hash Map, Tree Map, Legacy Classes-Vector, Stack, Hash table.
Other Utilities-Scanner, String Tokenizer, Random, Date.
Files-Streams**-**Byte Streams, Character Streams, Text input/output, Binary input /output , File Management using File class.

UNIT-V
Applets – Inheritance hierarchy for applets, differences between applets and applications, Life cycle of an applet and Passing parameters to applets
GUI Programming - Swing -The AWT class hierarchy, Introduction to Swing, Swing Vs AWT, Hierarchy for Swing components, Overview of Swing components – JButton, JLabel, JTextField, JCheckBox, RadioButton, JTextArea, etc simple Swing applications, Layout

managers– FlowLayout, BorderLayout, GridLayout and GridbagLayout.
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, PearsonEducation

REFERENCE BOOKS:
1. Java for Programmers, P.J.Deite land H.M.Deitel, PEA(or) Java: Howto Program , P.J.Deitel andH.M.Deitel,PHI
2. ObjectOrientedProgrammingthroughJava,P.RadhaKrishna,UniversitiesPress.
3. Thinking in Java, BruceEckel,PE
4. Programming in Java, S.Malhotra and S.Choudhary, Oxford UniversitiesPress.
5. Design Patterns Erich Gamma, Richard Helm, Ralph Johnson and JohnVlissides

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN					
B.Tech.II Year I Sem		**L**	**T**	**P**	**C**
DATA STRUCTURES & ALGORITHMS PYTHON LAB	**2205PC61**	**0**	**0**	**3**	**1.5**

Course Objectives:
● To make the student to implement data structures using python and C programming languages.
● 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 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 able to implement it.
● For a given problem of Stacks, Queues and linked list student will able to implement it and analyze the same to determine the time and computation complexity.
● Student will able to write an algorithm Selection Sort, Bubble Sort, Insertion Sort, Quick Sort, Merge Sort, Heap Sort and compare their performance in term of Space and Time complexity.

Week1: Write a C program and Python program to implement the following searching techniques in both recursive and non recursive manner.
i)Linearsearch   ii) BinarySearch.

Week 2: Write a C & Python program to implement the following using List and Dictionary.
   a)   Stack   b) Queue

Week 3: Write a C & Python program to implement Linked list data structure and perform the following operations.
a) Insert an element in to a list.   b) Delete an element from list
c) Search for a key element in list   d) count number of nodes in list.

Week 4: Write a C & Python program to implement the following using a singly linked list.
a)Stack   b) Queue

Week 5: Write a C & Python program to implement the Deque (double ended queue)ADT using a List.

Week 6: Write a C& python 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 7: Write a C & Python program that uses recursive functions to traverse the given binary search tree in a)Preorder b) inorder and c) postorder.

Week 8: Write a C & Python program to perform the following operations
a) Insertion into aB-tree
b) Deletion from a B-tree

Week 9: Write a C&Python program to construct AVL tree and perform the following operation
a) Insertion into an AVL-tree

Week 10: Write a C & Python program to implement hash table and perform the following operations
a) Inserting a key-value pair b) Deleting a key-value pair

Week 11: Write a C & Python program for implementing the following sorting methods
a)Mergesort   b) Heapsort

Week 12: Write a C & Python program to implement the following sorting techniques
i)Bubblesort   ii) Selectionsort
iv) Quicksort   iv) Insertionsort
Week 13: Write a C & Python program to implement the Graph Traversal Techniques.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN					
B.Tech.II Year I Sem		**L**	**T**	**P**	**C**
OBJECT ORIENTED PROGRAMMING THROUGH JAVA LAB	**2205PC63**	**0**	**0**	**3**	**1.5**

Course Objectives:
- To prepare students to become familiar with the Standard Java technologies ofJ2SE
- To prepare students to excel in Object Oriented programming and to succeed as a Java Developer through global rigorouseducation.
- 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 lifeproblems.
- To inculcate in students professional and ethical attitude, multidisciplinary approach and an ability to relate java programming issues to broader applicationcontext.
- To provide student with an academic environment aware of excellence, written ethical codes and guidelines and lifelong learning needed for a successful professionalcareer.

Course Outcomes:
- Able to analyze the necessity for Object Oriented Programming paradigm and over structured programming and become familiar with the fundamental concepts inOOP.
- 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 andspecifications.
- Demonstrate an ability to visualize and work on laboratory and multidisciplinary tasks like console and windows applications both for standalone and Appletsprogram.

Week 1: 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.

Week 2: a) Write a java program for Method overloading and Constructor overloading.
   b)   Write a java program to display the employee details using Scannerclass.
   c)   Write a java program that checks whether a given string is palindrome ornot.

Week 3: a) Write a java program to represent Abstract class with example.
   b) Write a java program to implement Interface using extends keyword.

Week 4: a) Write a java program to create user defined package.

Week 5: 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.

Week 6: 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.

Week 7: 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.

Week 8: a) Write a java program to represent Array List class.
  b)   Write a Java program loads phone no, name from a text file using Hash table.

Week 9: a) Write an applet program that displays a simple message.
   b) Write a Java program compute factorial value using Applet.
   c) Write a program for passing parameters using Applet.

Week 10: Write a java program for handling Mouse events and Key events

Week 11: Write a java program that works as a simple calculator. Use a Grid Layout arrange
Buttons for digits and for the + - * % operations. Add a text field to display the result.

TEXT BOOK/ REFERENCE BOOKS:
1. Java Fundamentals – A Comprehensive Introduction, HerbertSchildt and Dale
Skrien,TMH.
2. Java for Programmers, P.J.Deitel and H.M.Deitel, PEA (or) Java:How to Program ,
P.J.Deitel andH.M.Deitel,PHI

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN					
B.Tech.II Year I Sem		**L**	**T**	**P**	**C**
HUMAN VALUES AND PROFESSIONAL ETHICS	**2200MC03**	**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 learn 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 (AkhandSamaj), Universal Order (SarvabhaumVyawastha) - from family to worldfamily!

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, G P Bagaria, 2009, A Foundation Course in Human Values and ProfessionalEthics.
2.   Professional Ethics: R. Subramanian, Oxford UniversityPress,2015.
3.   Ethics in Engineering Practice & Research, Caroline Whitbeck, 2e,Cambridge University Press2015.

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

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN				
B.Tech.II Year II Sem		**L**	**T**	**P**	**C**
Probability & Statistics	**2200BS04**	**3**	**1**	**0**	**4**

Course Objectives: To learn

- A random variable that describes randomness or an uncertainty in certain realistic situation. It can be of either discrete or continuous type. Study of the Binomial and the Poisson random variables and the Normal random variable and their probability distributions. Important statistical properties for these random variables provide very good insight and are essential for industrial applications.
- The types of sampling, Sampling distribution of means, Sampling distribution of variance, Estimations of statistical parameters.
- Testing of hypothesis for large samples of few unknown statistical parameters.
- Testing of hypothesis for large samples of few unknown statistical parameters.
- Estimate relation between the functionally related data using method of least squares.Estimate correlation coefficient and coefficient of regression of the given data.

Course Outcomes:

After learning the contents of this paper the student must be able to
- Distinguish between random variables pertaining to discrete/ continuousdistributionsystems and apply the discrete distributions like Binomial and Poisson andcontinuous distribution like Normal and their properties.
- 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.
- Examine statistical hypothesis for large samples.
- Examine statistical hypothesis for small samples.
- Establish relationship between functionally related data and up to what extent they are correlated using correlation coefficient and coefficient of regression of the given data.

UNIT – I   L - 10
Single Random Variable and Probability Distributions:
Random Variables: Discrete and Continuous, Discrete Probability distributions: Binomial and Poisson distributions and their properties. (Without proof)
Continuous Probability Distributions: Continuous random variables and their properties (without proof), distribution functions, Normal distribution.

UNIT – II   L - 9
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 – III   L - 9

Testing of hypothesis: Null hypothesis, Alternate hypothesis, type I, & type II errors - critical region, confidence interval, Level of significance, one tailed test, 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 – IV   L - 10

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

UNIT – V   L - 10

Curve Fitting: Curve fitting by the method of least squares- fitting of straight line, parabola and exponential curves.

Correlation and Regression:

Correlation: Coefficient of correlation, Rank correlation (Karl Pearson's coefficient of correlation, Spearman's coefficient of correlation). Regression: Regression coefficient, lines of regression.

TEXT BOOKS:

   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.   Fundamentals of Mathematical Statistics by S C Gupta and V.K.Kapoor.
   3.   Veerajan T., Engineering Mathematics (for semester III) , Tata McGraw-Hill, New Delhi,2010.
   4.   P.G. Hoel, S.C.Port and C.J. Stone, Introduction to Probability theory, Universal Book Stall, 2003

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN					
B.Tech.II Year II Sem		L	T	P	C
MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS	2200HS03	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 in different 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).

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. 4

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, and Trial Balance - Final Accounts (Trading Account, Profit and Loss Account and Balance Sheet with simple adjustments). Financial Statement Analysis: Funds Flow and Cash Flow Statements (Simple Problems).

TEXT BOOKS:

1. Varshney & Maheswari: Managerial Economics, SultanChand,2009.

2. S.A. Siddiqui & A.S. Siddiqui, Managerial Economics and Financial Analysis, New Age international Publishers,Hyderabad2013.

3. M. Kasi Reddy & 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 UniversityPress,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, UniversityPress,2012.

10. Aryasri: Managerial Economics and Financial Analysis,TMH,2012.

11. Vijay Kumar &Appa Rao, Managerial Economics & Financial Analysis, Cengage2011.

12. J.V. Prabhakar Rao & P.V. Rao, Managerial Economics & Financial Analysis, Maruthi Publishers,2011.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN					
B.Tech. II Year II Sem		**L**	**T**	**P**	**C**
DATA HANDLING AND VISUALIZATION	**2267PC02**	**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 nay other storage solution.

2. To gain strong foundation of fundamental concepts in ETL Data 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 fundamentals of 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 to Stage, Designing the Staging Area, Data Structures in the ETL System, Planning and Design Standards.

UNIT-II

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

UNIT – III

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

Unit IV:

Introduction of visual perception, visual representation of data, Gestalt principles, information overloads. Creating visual representations, visualization reference model, visual mapping, visual analytics, 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,

TEXT BOOKS:
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: A K 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: A K Peters, Ltd.
4. E. Tufte, The Visual Display of Quantitative Information, Graphics Press.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN					
B.Tech.II Year II Sem		**L**	**T**	**P**	**C**
DATABASE MANAGEMENT SYSTEMS	**2205PC08**	**3**	**1**	**0**	**3**

Course Objectives:
- To understand the basic concepts and the applications of databasesystems.
- To master the basics of SQL and construct queries usingSQL.
- To understand the relational database designprinciples.
- To become familiar with the basic issues of transaction processing and concurrencycontrol.
- To become familiar with database storage structures and accesstechniques.

Course Outcomes:
- Demonstrate the basic elements of a relational database management system and Ability to identify the data models for relevantproblems.
- Ability to design entity relationship model and convert entity relationship diagrams into RDBMS and formulate SQL queries on thedata.
- Apply normalization for the development of applicationsoftware.

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 Data bases..

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.

TEXT BOOKS:
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.   Data base System Concepts, A. Silberschatz, Henry. F. Korth, S. Sudarshan, McGraw Hill Education(India) Private Limited l, 6th edition.(Part ofUNIT-I,UNIT-IV)

REFERENCE BOOKS:
1. Database Systems, 6th edition, R Elmasri, Shamkant B.Navathe, PearsonEducation.
2. Database System Concepts, Peter Rob & Carlos Coronel, CengageLearning.
3. Introduction to Database Management, M. L. Gillenson and others, Wiley StudentEdition.
4.Database Development and Management, Lee Chao, Auerbach publications, Taylor& Francis Group. Introduction to Database Systems, C. J. Date, PearsonEducation.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN					
B.Tech.II Year II Sem		**L**	**T**	**P**	**C**
Design and Analysis of Algorithms	**2205PC05**	**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
Backtracking-General method, applications-The 8-queen problem, sum of subsets problem, graph coloring, Hamiltonian cycles.

Branch and Bound- General Method, applications-0/1 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.

TEXT BOOKS:

1.   Fundamentals of Computer Algorithms, 2nd Edition, Ellis Horowitz, SartajSahniand S. Raja
sekharan, Universities Press.
2.   Design and Analysis of Algorithms, P. H. Dave, H. B. Dave, 2ndedition, Pearson Education.

REFERENCE BOOKS:

1.   Algorithm Design: Foundations, Analysis and Internet examples, M. T. Goodrich and R. Tomassia,
John Wiley andsons.
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, 4thedition, Jones and Bartlett
Student edition.
A.   Introduction to Algorithms, 3rdEdition, T. H. Cormen, C. E. Leiserson, R. L. Rivest, and Stein,
PHI

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN					
B.Tech.II Year II Sem		**L**	**T**	**P**	**C**
DATA HANDLING AND VISUALIZATION LAB	**2267PC61**	**0**	**0**	**3**	**1.5**

COURSE OBJECTIVES:
1.   Provide a broad 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 Can implement python Functions for Data analysis.
3. Develop and test different data analysis models using python.
4. Import external datasets 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 loops in Python. How to define functions in 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 dataset, clean the data for data analysis. Exercise involves reading and filtering data.

Expt. No. 4: Apply linear regression on the dataset for prediction. Instructor should provide a suitable dataset for linear regression analysis using Python to the students. Students should implement the program and 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 program and 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 dataset 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 dataset to students. Students should implement the functional program in Python for data analysis with write-up.

Expt. No. 11: Find and describe 3 datasets 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, OReilly Publication

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN					
B.Tech.II Year II Sem		**L**	**T**	**P**	**C**
DATABASE MANAGEMENT SYSTEMS LAB	**2205PC64**	**0**	**0**	**3**	**1.5**

Course Objectives:
Students will have the ability to:

- Keep abreast of current developments to continue their own professional development.
- To engage themselves in lifelong learning of Database management systems theories 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 database 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 into 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 knowledgeonRDBMS.

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 "Database System" to Roadway Travels. Examples are given at every experiment for guidance to students.

Experiment 1: E-R Model

Analyze the problem carefully and come up with the entities in it 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

PRIMARY KEY ATTRIBUTES:

1. Ticket ID (Ticket Entity)
2. Passport ID(Passenger Entity)
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*

Experiment 2: 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 INTEGER PRIMARY
   KEY,Name   VARCHAR(50) Not NULL,
Age Integer NotNULL,
Sex Char,
Address VARCHAR (50) Not NULL);

Similarly create all other tables.

Note: Detailed creation of tables is given at the end. Experiment 3: Practicing DML commands
DML commands are used to for managing data within schema objects. Some examples:

- SELECT - retrieve data from the a 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,'hyderabd'
'Banglore'); Insert into Bus values
(23,'hyderabd','Kolkata'); Insert into Bus values
(45,'Tirupathi,'Banglore'); Insert into Bus values
(34,'hyderabd','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 Passenger values (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;

Experiment 4: 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 HAVINGCLAUSES.

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 sailors who have reservedboat103
- Find the name and the age of the youngest sailor
- Find the names and ratings of sailor 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 (Use Employee Table)

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

Join:

Write a query to execute and verify the SQL commands using Join (Use Customer Table)

(a) Inner join, (b).Left join, (c).Right join (d).Full join

Experiment 7: 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 up d check BEFORE UPDATE ON passenger FOR EACH ROW BEGIN

IF NEW.Tickent N0 > 60 THEN SET

New.Tickent no = Ticket no; ELSE SET

New.Ticket no = 0; END IF;
END;

Experiment 8: 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_nameVARCHAR(30);
DECLARE cl CURSOR FOR SELECT ppno, name FROM Passenger
WHERE ppno=in_customer_id; OPENcl;
FETCH cl
into v_id, v_name; Close cl;
END Tables BUS
Bus No: Varchar:
PK (Primary key) Source: Varchar Destination:
Varchar DeptTime:Varchar **Passenger**
PPNO: Varchar(15)) :
PK Name:
Varchar(15) Age : int (4) Sex:Char(I 0) : Male/Female Address: VarChar(20)

Passenger_Tickets
PPNO: Varchar(15)) : FK Ticket No: 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):

FK 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

Ticket
Ticket_No: Numeric(9):
PK Journey_date :datetime(8) Age : int (4)

Sex:Char(10) :Male/Female
Source :Varchar Destination :Varchar Dep_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   PassportIDPassport_id   Ticket_id

You can do these cond and third normal forms if required. And how Normalize dtables are given at the end.

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_salaryEmp_no   Basic   HRA   DA   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.   Developaquerytograntallprivilegesofemployeestableintodepartmentstable
2.   Developaquerytograntsomeprivilegesofemployeestableintodepartmentstable
3.   Developaquerytorevokeallprivilegesofemployeestablefromdepartmentstable
4.   Develop a query to revoke some privileges of employees table from departments table
5.   Write a query to implement the savepoint
6.   Write a query to implement the commit
7.   Write a query to implement rollback

Reference Books:

1.   Introduction to SQL, RickF. Vander Lans, Pearson education..

2. Oracle PL/SQL, B.Rosenzweig and E.Silvestrova, Pearsoneducation.
3. Oracle PL/SQL Programming, Steven Feuerstein,SPD.
4. SQL & PL/SQL for Oracle 10g,B lack Book, Dr.P.S.Deshpande, DreamTech
5. Oracle Database 11g PL/ SQL Programming,M.McLaughlin,TMH
6. SQL Fundamentals, J.J.Patrick, Pearson Education

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN					
B.Tech.II Year II Sem		**L**	**T**	**P**	**C**
INDIAN CONSTITUTION	**2000MC04**	**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 Avasti and Avasti