Coimbatore Institute of Technology, Coimbatore - 14.

(Government Aided Autonomous Institution Affiliated to Anna University)

Department of Computing

M. Sc. DATA SCIENCE

Five year Integrated Programme

Curriculum for the Academic Year 2021 – 2026

Semester 2

Subject code	Name of the Subject	L	T	P	C	CAT
	THEORY					
	Language Elective	2	0	1	2	HS
21MDS21	Calculus and Applications	3	1	0	4	BS
21MDS22	Probability Distributions and Applications	3	0	0	3	PC
21MDS23	Data Structures and Algorithms I	3	0	0	3	PC
21MDS24	Object Oriented Programming	3	0	0	3	PC
	PRACTICALS					
21MDS25	Computing Laboratory II	0	0	4	2	PC
21MDS26	Data Structures and Algorithms Laboratory I	0	0	4	2	PC
21MDS27	Object Oriented Programming Laboratory	0	0	4	2	PC
21MDS28	Employability Skills	0	0	2	1	EEC
	Total Credits				**22**	

21MDSLE01 - PROFESSIONAL ENGLISH

PRE-REQUISITES
Consent of the Instructor

L	T	P	C
2	0	1	2

ASSESSMENT: THEORY

COURSE OUTCOMES

- *Apply the rules of grammar namely Active and Passive voice, Direct and Indirect speech, Purpose and Function, Articles and Prepositions, Conjunction, Conditional sentences and use suitable patterns in a given sentence or passage.*
- *Construct appropriate responses to greet, transfer, place the caller on hold, enquires, callbacks, unintentional disconnects, interruptions, using suitable language and telephoning etiquettes. Given a business communication scenario construct a suitable strategy and action plan using specific negotiation tactics consistent with the objectives of the negotiator.*
- *Given a communication context, specify the type and barriers to listening, provide solutions and justify. For a given passage note the important points and summarize it.*
- *Given a business communication scenario, compose a Business Letters, Memo, Emails, Reports, Technical Proposals, Instructions and Recommendation and checklist using appropriate language and format. For a given job requirement, prepare a job application letter with resume.*
- *For a given HR topic, generate valid points for and against the topic and present them with appropriate group behavior. For any job requirement, plan and prepare for a 20min HR mock interview.*

FOCUS ON LANGUAGE: ENGLISH GRAMMAR & VOCABULARY

One Word Substitutes – Homophones – Homonyms – Eponyms – Direct Indirect Speech – Active Passive Voice – Conditional Sentences – Adverbs – Conjunctions – Prepositions – Articles – Relative Clause – Pronouns – Cause and Effect Expressions – Purpose and Function – Modals (6)

BUSINESS ENGLISH

Telephoning Skills: Understanding Telephone communication – Telephonic Conversations and Etiquettes - Handling Calls – Leaving a Message – Making Requests –Asking for and Giving Information – Giving Instructions - Negotiations: Types of Negotiation –Six Basic Steps of Negotiations – Informal and formal Negotiations (4)

READING

Summarizing – SQ3R Reading Technique – Note Making: Outline/Linear Method- Sentence Method – Schematic/Mapping Method – Understanding Discourse Coherence – Cloze Comprehension – Critical Reading: Creative and Critical Thinking- Reading proverbs, online advice forum (4)

WRITING

Letter Writing – Business Letters – Cover Letters – Resumes – Memos – Emails – Reports – Technical Proposals – Instructions & Recommendations – Technical Description – Checklist - Writing a paragraph – Writing a description of a person's past present and future, recent experiences, movie review, list of roles – Writing a job application letter, Advice column list -

Writing a guide book introduction – Writing about people response to a survey (6)

LISTENING

Stress and Intonation -Types of Listening – Barriers of Effective Listening – Listening for Generic Content and Specific Information - Listening & Note Taking – Intensive Listening - Listening to Descriptions - Listening to predicaments, call in radio show and excuses (4)

SPEAKING

Group Communication: Forms of Group Communication – Using Body Language in Group – Discussions – Group Discussions - Organizational GD – GD as a Part of Selection Process – Meetings – Conferences – Symposia & Seminars **–** Interviews: Objectives of Interviews – Types of Interviews – Job Interviews – Media Interviews – Press Conference - Describing abilities and Skills, acceptable and prohibited behaviour in different situations, Personality Traits, Countries, a predicament, Recent past events and experiences, movies and books – Giving Advice and suggestions- Making polite requests – Making invitations and excuses- Speculating about past and future events. (6)

TOTAL : 30

TEXT BOOKS

1. *Jack C Richerds, "Interchange - 2", CUP, Fourth Edition, Chennai, 2015.*
2. *Meenakshi Raman, Sangeeta Sharma, "Technical Communication – Principles and Practice", Oxford University Press, New Delhi, 2015, 2015.*

REFERENCE BOOKS

1. *Sudharshana N. P & Savitha C, "English for Technical Communication", CUP, 2016.*
2. *Sudharshana N. P & Savitha C, "English for Engineers", CUP, 2018.*
3. *Ronald Carter, Michael Mc Carthy. "Cambridge Grammar of English" Cambridge University Press, 2011.*
4. *Michael Mc Carthy and Felicity O'Dell, "English Vocabulary in Use", Cambridge University Press, 2012.*
5. *Mark Ibbotson. "Cambridge English for Engineering" Cambridge University Press, 2012.*

19FYG21 - BASIC GERMAN

L	T	P	C
2	0	1	2

PRE-REQUISITES
Consent of the Instructor

ASSESMENT: THEORY

COURSE OUTCOME

- *At the end of the semester the students will:*
- *Understand the fundamental concepts of the Language*
- *Write simple narration and description and speak to communicate idea.*
- *Demonstrate confidence in Social Interactions.*

EINFUHRUNG

BegrUung - Name - Vorname - Familienname - Anrede (5)

THEMA

Hallo !Wiegeht's?
Begegnungen
Guten Tag, ichsuche…,
ImSupermarkt
Arbeit und Freizeit
Familie und Haushalt (7)

GRAMMATIK-I

Position des Verbs : Aussage, W - Frage und
Ja/Nein - Frage; Artikel die der das.
W - Frage; Konjugation in Prasens;
Nominativ : bestimmter, unbestimmter und negative Artikel
Akkusativ : unbestimmterundnegativerArtikel
Adjektive : Akkusativ-Erganzung (10)

GRAMMATIK-II

ArtikelalsPronomen Dative - Erganzung : Personalpronomen und Ortsangaben; ImperativModalverben; Ortsangaben; Richtungsangaben; Zeitangaben; OrdinalzahlenPossessiv - Artikel; trennbare und nicht trennbareVerben; Wechselprapositionen (8)

TOTAL : 30

TEXT BOOK

1. *Studio d A1: Kurs - und Ubungsbuch (Deutsch alsFremdsprache) CornelsenVerlag.*

REFERENCE BOOK

1. *Tangarmaktuell1 :Kursbuch + Arbeitsbuch (Deutsch alsFremdsprache) Max HueberVerlag.*

19FYF21 - BASIC FRENCH

L	T	P	C
2	0	1	2

PRE-REQUISITES
Consent of the Instructor

ASSESSMENT: THEORY

COURSE OUTCOMES

- *At the end of the semester the students will:*
- *Understand the basics of the Language*
- *Write simple narration and description and speak to communicate idea.*
- *Demonstrate confidence in Social Interactions.*

INTRODUCTION (2)

UNITÉ-1
Faire connaissance - inviter etrépondre à une invitation - décrire les personnes- articles définis et indéfinis - genre etnombre des noms et des adjectifs- interrogation et négation - conjugaison du présent. Paris monuments et lieux publics - la vie de quatreparisiens de professions différentes. (7)

UNITÉ-2

Exprimer l' ordreetl'obligation demander et commander - evaluer et apprécier- féliciter et remercier - articles partitifs -adjectifsdémonstratifs et possessifsprépositions et adverbes de quantité et de l'imperatifverbespronominaux - unerégiondeFrance la Bourgogne - vie quotidienne à la compagne. (6)

UNITÉ-3

Raconteretrapporter - donner son avis - se plaindre et réprimander - expliquer et justifier - pronomscompléments -futurproche - passé composé et imparfait. Plusieursrégions de France – différentsuniverssociaux. (7)

UNITÉ-4

Demander l'autorisation - interdire - formuler des projects - discuteretdébattre. Pronoms< en >et< y > - pronomsrelatifs et superlatifs - conjugaison du futur - présentcontinu et passé récent.La vie administrativeetrégionale - problems economiques et écologiques - traditions et modernité. (8)

TOTAL : 30

TEXT BOOK

1. *Le Nouveau Sans Frontières - Philippe Dominique, Jacky GirardetMichèleVerdelhan, Michel Verdelhan*

REFERENCE BOOKS

1. *Dondo Modern French Course ---MathurinDondo*
2. *Modern French Grammar---Margaret Lang and Isabelle Perez.*

21MDS21 – CALCULUS AND APPLICATIONS

L	T	P	C
3	1	0	4

PRE-REQUISITES
Consent of the Instructor

ASSESSMENT : THEORY

COURSE OUTCOME

- *To incorporate the essentials of differential calculus and its applications.*
- *To provide various applications of integral calculus in business and economics.*
- *To describe the concepts of ordinary and partial differential equations, Fourier Series and methods of solving them.*
- *To provide good knowledge in experimental data analysis.*

DIFFERENTIAL CALCULUS

Definition of limit and derivative of a function. Applications to marginal analysis in Business and Economics-Approximations by increments- Relative Rate of Change and Elasticity of Demand- Maxima and Minima of function of single variables –Applications to Optimization of area and perimeter, Relation between Average Cost and Marginal Cost, Maximizing Revenue and Profit and Inventory Control. Functions of Several Variables-Partial Derivatives-Homogeneous functions and Euler's Theorem-Optimization of functions of two variables-Constrained Optimization using Lagrange Multipliers- Significance of Lagrange Multiplier--Optimisation of functions of several variables using Hessian matrix. (12)

INTEGRAL CALCULUS

Integration as a process of Summation and geometrical meaning-Applications-Beta and Gamma Functions- Application of single integrals- Area between two curves and finding the Net Excess Profit-Application to study Lorenz Curves in Economics –Computing Gini Index-Average Value of a function using integration and its interpretations-Useful life of a machine-Future and Present Value of an Income Flow- -Consumer Willingness to Spend-Consumers' and Producer's Surplus –- Double and triple integrals- Changing the order of integration - Applications of Double and triple integrals –Area and Volume. (10)

ORDINARY DIFFERENTIAL EQUATIONS

Formation of differential equations-geometrical interpretation of ODE- Higher order differential equations with constant coefficients- Euler Cauchy type-Applications in micro economics**.** (5)

PARTIAL DIFFERENTIAL EQUATIONS:

Basic Concepts and Solutions of first order Equations-Linear Partial Differential Equations of Second Order with constant coefficients- Classifications-Hyperbolic, Parabolic and Elliptic – Solutions-**Fourier Series:** Dirichlet's conditions-Full range series-Half range series-Complex form of series-Parseval's identity -Harmonic analysis. (9)

EXPERIMENTAL DATA ANALYSIS

Curve fitting: Least Square Method. **Interpolation:** Newton's method - Lagrange's method. **Numerical Differentiation:** Application to Maxima and Minima of functions. **Numerical Integration:** Trapezoidal rule- Simpson's $1/3^{rd}$ rule. Applications to area, volume and linear motion. **Numerical Solutions of Ordinary Differential Equations**: Taylor's Series – RungeKutta Fourth order methods – Milne's Predictor – Corrector Method. (9)

THEORY : 45

TUTORIAL : 15

TOTAL : 60

TEXT BOOKS

1. *L.D.Hoffman and G.L.Bradley, Calculus for Business, Economics and the Social and Life Sciences, 10th Edition, McGraw Hill, Higher Education, 2010.*
2. *Mehta B.C, and G.M.K. Madani, Mathematics for Economists, Sultan Chand & Sons, New Delhi, 2006.*
3. *Shepley L.Ross. Differential Equations. John Wiley and Sons, Third Edition, 2004.*
4. *Sankara Rao.K. Numerical Methods for Scientists and Engineers, Prentice Hal of India, New Delhi, 2001.*

REFERENCE BOOKS

1. *Thomas & Finney, " Calculus", Pearson education, 9th Edition, 2006.*
2. *Erwin Kreyszig, "Advanced Engineering Mathematics", 8th Edition, John Wiley & Sons Asia Private Limited., 2008.*
3. *Grewal, B.S., "Higher Engineering Mathematics", 4th Edition, Khanna Publishers, 2007.*
4. *Wylie C. R, Barret L. C, "Advanced Engineering Mathematics", 6th Edition, McGraw Hill, New York, 1995.*

21MDS22 - PROBABILITY DISTRIBUTIONS AND APPLICATIONS

Contact Hours

L	T	P	C
3	0	0	3

PRE-REQUISITES
Consent of the Instructor

ASSESSMENT : THEORY

COURSE OUTCOMES

- *Apply various discrete and continuous probability distributions to data and also situations where they can be applied*
- *Apply moment generating functions in understanding various properties of random variables*
- *Become familiar with various methods in statistical inference and he can independently apply many statistical tests to make inferences on the properties of both discrete and continuous types of data.*
- *Describe the concepts of Bayesian inference.*

PROBABILITY DISTRIBUTIONS-DISCRETE

Geometric distribution-its memory less property, negative binomial distribution, Hyper-geometric distributions-The Binomial Approximation to the Hyper-geometric distribution, multinomial distribution. **Continuous**: exponential distribution and its memory-less property, gamma, Beta, Chi-square log normal distributions and Weibull distributions –applications and their properties. (9)

FUNCTIONS OF RANDOM VARIABLES

Moments and Moment Generating functions –properties-MGF of important distributions-Transformations of Variables (using Jacobians) and finding their distributions -method of direct transformation and method of moment generating functions- Joint and Marginal Probability mass functions(for discrete) and density functions(for continuous) for two and more than two random variables. Conditional probability distributions-conditional mean and variance-Covariance of random variables-Statistically independent random variables-mean and variance of linear combination of random variables. (9)

ESTIMATION
Estimation of parameters using method of moments-Maximum Likelihood Point Estimation(MLE) **–**Properties of estimators-Unbiasedness, minimum variance, efficiency and sufficiency -Mean Square Error-Asymptotic properties-consistency-Fisher Information and Cramer-Rao's Inequality – Interval Estimation –Interpretation-Confidence interval for mean when variance is i) known and ii) unknown and determination of sample size-Concept of a Large-Sample Confidence Interval-Prediction Intervals. (9)

SAMPLING AND TESTS OF HYPOTHESIS

Population and sample –Sampling distribution of a statistic-Derivation of sampling distribution of mean and S^2- t-distribution and F-distribution-Central limit theorems- Test of significance – Basic concepts – null hypothesis – alternative hypothesis – level of significance – Standard error and its importance – steps in testing-One and two tailed tests-The use of p-values for

Decision making – Large sample tests and Small sample tests for : Single sample: Testing on a single mean with variance known and variance unknown-Two samples-tests on means –One sample test on a single proportion-two sample tests of two proportions-Goodness of Fit tests, One and two sample tests concerning variances-Tests of independence for categorical data, tests for homogeneity-testing of correlation coefficient and regression coefficients. (9)

BAYESIAN ESTIMATION

Bayesian Inferences-Prior and posterior distributions-Point Estimation Using the Posterior Distribution- Bayesian Interval Estimation-Bayes Estimates using Decision Theory framework: Bayes estimate under squared error loss function and absolute error loss function. (9)

TOTAL : 45

TEXT BOOKS

1. *Ronald E.Walpole, Raymond H. Myers, Sharon L. Myers and Keying Ye, Probability & Statistics for Engineers & Scientists, Ninth Edition, Prentice Hall, Delhi, 2002.*
2. *Michael Baron, "Probability and Statistics for Computer Scientists", 2nd edition, CRC Press, 2014.*

REFERENCE BOOKS

1. *U.Dinesh Kumar. Business Analytics. Wiley India Pvt. Ltd., 4435-36/7, Ansari Road, Daryaganj, New Delhi-110002, 2017.*
2. *Sheldon Ross. Probability and Statistics for Engineers and Scientists, Elsevier Academic Press, 2009.*

21MDS23 - DATA STRUCTURES AND ALGORITHMS I

PRE-REQUISITES

21MDS14

L	T	P	C
3	0	0	3

ASSESSMENT : THEORY

COURSE OUTCOMES

- *Emphasize the importance of data structures in developing and implementing efficient algorithms.*
- *Describe how the basic data structures are represented in memory and used by algorithm.*
- *Understand the linear data structures such as stacks, queues and their applications.*
- *Assess how the choice of data structures and algorithm design methods impacts the performance of programs.*
- *Design and implement sorting and searching algorithms.*

BASIC CONCEPTS

Definition of an Algorithm -Basic Steps in Development of an Algorithm - Algorithm analysis – Functions used- Asymptotic Analysis - Analyzing Recursive Algorithms - Designing Recursive Algorithms. (9)

ARRAYS

Low-Level Arrays - Dynamic Arrays and Amortization - Efficiency of Python's Sequence Types - Using Array-Based Sequences - Multidimensional Data Sets. (9)

STACKS AND QUEUES

Stacks - The Stack Abstract Data Type - Simple Array-Based Stack Implementation - Reversing Data Using a Stack - Matching Parentheses and HTML Tags.
Queues - The Queue Abstract Data Type - Array-Based Queue Implementation - Using an Array Circularly - Double-Ended Queues. (9)

LINKEDLISTS

Singly Linked Lists - Circularly Linked Lists - Doubly Linked Lists - The Positional List ADT - Sorting a Positional List - Link-Based vs. Array-Based Sequences. (9)

SORTING

Introduction -Insertion Sort, Quick Sort, Merge Sort, Heap Sort, Radix Sort.

SEARCH STRATEGIES

Linear Search-Binary Search. (9)

TOTAL : 45

TEXT BOOK

1. Michael T. Goodrich, Roberto Tamassia, Michael H. Goldwasser , *"Data Structures and Algorithms in Python", Wiley publications, 2013.*

REFERENCE BOOKS

1. *Rance D. Necaise, "Data Structures and Algorithms using Python ",Wiley publications, 2013.*
2. *Ellis Horowitz & SartajSahani, "Fundamentals of Data Structures", Galgotia Publications, 1994.*
3. *Thomas H.Cormen, Charles E.Leiserson, Ronald L. Rivert, Clifford Stein "Introduction to Algorithms", Second Edition, Prentice Hall of India, Publications, New Delhi, 2007.*

21MDS24 – OBJECT ORIENTED PROGRAMMING

L	T	P	C
3	0	0	3

PRE-REQUISITES

Consent of the Instructor

ASSESSMENT :THEORY

COURSE OUTCOMES

- *To describe Object Oriented Programming concepts and basic characteristics of Java*
- *To depict the principles of packages, exception handling and String handling*
- *To design and develop applications using inheritance and interfaces*
- *To develop data structure concepts using collections*
- *To develop a java application with threads and build simple Graphical User Interfaces*

INTRODUCTION

Introduction to object oriented programming Paradigm- Introduction – Evolution of Higher Level Languages – Complexity of softwares and their Attributes - object oriented programming Paradigm - Introduction to Java Language – Evolution – Salient Features – Java, Internet and World Wide Web – The Java Environment The Java Language Preliminaries (7)

FUNDAMENTALS, OBJECTS AND CLASSES

Fundamental Programming Structures in Java – Objects and Classes – Object Construction – Packages - String Handling – String Constructors, String Length, Character Extractions, String Comparison, Searching, Modifying and Joining Strings, String Buffer (7)

EXCEPTIONS, ASSERTIONS AND LOGGING

Exceptions : Dealing with errors, Catching Exceptions , Using Assertions, try, catch, throw, throws and finally (7)

INHERITANCE

Classes, superclasses and subclasses – Object : The cosmic superclass – Generic Array List – Object Wrappers and Autoboxing – Method with a variable number of parameters – Enumeration Classes – Constructors – Method Overloading – Method overriding – Constructor overloading – Constructor overriding

Interfaces - Lambda Expressions and Inner Classes – Abstract class – final class, method and variable. (10)

COLLECTIONS

The Java Collections Framework, Interfaces in the Collections Framework, Concrete Collections, Maps, Views and Wrappers, Converting between collections and Arrays (7)

CONCURRENCY and EVENT DRIVEN PROGRAMMING

Concurrency: Threads – Thread States – Thread Properties – Synchronization Database Connectivity: JDBC, Introduction to Servlet and Java Server Page. (7)

TOTAL : 45

TEXT BOOKS

1. *Object Oriented Programming with Java, By M. T. Somashekara, D. S. Guru, K. S. Manjunatha , Prentice Hall India Pvt., Limited , June 2017 (Para – I).*
2. *Core Java Volume I—Fundamentals, Cay.S.Horstmann, 11th Edition, Pearson Education , 2018.*
3. *Herbert Schildt - Java: The Complete Reference, Eleventh Edition McGraw Hill Education, 2018. (Para IV).*

REFERENCE BOOKS

1. Effective Java, Joshua Bloch, Third Edition, Addison-Wesley Publications, 2018.
2. Herbert Schildt - Java: A Beginner's Guide, 8th Edition, McGraw Hill Education, 2018.
3. Core and Advanced Java, Black Book. Dreamtech Press, 2018.
4. Paul Deitel, Harvey Deitel, ―Java SE 8 for programmers‖, 3rd Edition, Pearson, 2015.

21MDS25 - COMPUTING LABORATORY II

Contact Hours

PRE-REQUISITES

21MDS21, 21MDS22

L	T	P	C
0	0	4	2

ASSESSMENT: PRACTICALS

COURSE OUTCOMES

- *Solve problems using R*
- *Understand properties of probability distributions and to perform statistical tests using MS-Excel, R*
- *Perform numerical methods using command in R*
- *Perform Hypothesis testing using MS-Excel and commands in R*

1. **Basic commands in R for matrix operations, plotting of functions data storage and retrieval**
2. **Developing script files in R**
3. **Probability Distributions using MS-Excel and R**
   Using functions in MS-Excel and R to calculate the probabilities and inverse probabilities and cumulative distribution functions for
   i) Binomial, Poisson, Normal,
   ii) Geometric, Negative Binomial and Hypergeometric distributions
   iii) exponential, gamma, beta and
   iv) normal and lognormal distributions
   v) t, F, Chi-square distributions
4. **Hypothesis testing Using MS-Excel's Data Analysis Pack and R**
   i) Testing Single mean, difference between two means large samples- Z test
   ii) Testing Single mean, difference between two means small samples- t- test
   iii) Single proportion, Difference between two proportions
   iv) Chi-square for i) goodness of fit and ii) independence of attributes
   v) Equality of Variances
5. **Numerical methods using R**
   i) Numerical differentiation:
   ii) Numerical Integration: Trapezoidal rule and Simpson's 1/3 rule
   iii) Curve fitting: Linear, quadratic, polynomial and exponential
   iv) Numerical solution of ordinary differential equations using Runge-Kutta 4^{th} order method

21MDS26 - DATA STRUCTURES AND ALGORITHMS LABORATORY I

Contact Hours

L	T	P	C
0	0	4	2

PRE-REQUISITES

21MDS17, 21MDS23

ASSESSMENT: PRACTICALS

COURSE OUTCOMES

- *Selection and application of suitable data structures in implementing practical problems.*
- *Demonstrate the abstract properties of various data structures such as stacks, queues and linked list.*
- *Trace and code recursive methods and compare with iterative methods*
- *Apply sorting algorithms that suit the given problem statement.*
- *Demonstrate understanding of linear and binary search algorithms*

APPLICATIONS OF THE FOLLOWING DATA STRUCTURE CONSTRUCTS

1. Sparse and dense Matrix operations using arrays.
2. Stacks using array representation.
3. Evaluate a given postfix expression using stacks.
4. Conversion of infix expression to postfix expression and evaluation.
5. Queues, circular queue and double ended queue using array representation.
6. Linked Lists: Singly linked, doubly linked and Circular lists and applications.
7. Linked Stacks.
8. Linked Queues.
9. Expression Processing.
10. Sorting algorithms-Insertion sort, Merge sort, Quick sort, Heap sort, Radixsort.
11. Searching algorithms-Linear search, Binary search.

21MDS27 – OBJECT ORIENTED PROGRAMMING LABORATORY

Contact Hours

L	T	P	C
0	0	4	2

PRE-REQUISITES

21MDS24

ASSESSMENT : PRACTICALS

COURSE OUTCOMES

- *Given software requirements, design an object oriented software solution by discovering appropriate classes and objects and identifying attributes, behaviour and hierarchy among the classes.*
- *Write java programs by employing the object oriented constructs of inheritance and polymorphism for a given software requirement*
- *For a given software solution, organize the application programs into packages and prepare a deployable application*
- *Generate robust java applications for a given user requirements by employing applicable object oriented concepts and handling all possible exceptions*
- *Design and develop interactive three tier applications using Servlets, JSP and JDBC for the given user specifications*

CONCEPTS TO BE COVERED

1. Design use case models and class models using UML notations
2. Creating Classes and Objects using different types of functions
3. Programs using Constructor and Destructor
4. Count the number of objects created for a class using static member function
5. Write programs using Inheritance
6. Write programs to implement Polymorphism
7. Create programs to implement Runtime Polymorphism using Abstract Class and Interface
8. Develop programs for the given scenario using Packages and implement suitable Exception handling mechanisms.
9. Devise problems to implement Multithreading concepts
10. Write programs to choose and implement appropriate Collections for the given scenario
11. Develop a web application using JSP as front end, servlets as controllers and connect it with a database using JDBC connectivity.

21MDS28 – EMPLOYABILITY SKILLS

L	T	P	C
0	0	2	1

PRE-REQUISITES
Consent of the Instructor

COURSE OUTCOME

- *Solve timed objective question on logical reasoning and verbal ability.*
- *Generate ideas and speak confidently, for a given specific speaking task on topics like describing a picture, movie reviews, storytelling, and extempore.*
- *Use appropriate functional expressions, for a given social situation viz., greeting, thanking, congratulating, apologizing and giving directions.*
- *Produce language structures accurately and fluently, for a given 2 to5 minutes speaking activity like extempore and Debate. Prepare a power point presentation for 15 minutes, for a given technical topic.*
- *Specify appropriate responses and construct a summary for given short conversations and monologues for listening. Construct dialogues for a given social scenario, interpret the given graphic information and write creative paragraphs.*

UNIT – 1

Self Introduction - Barriers to Speaking and Listening - Introduction to Spoken English, Greetings, Thanking - Apologizing, Congratulating - Giving Directions, Shopping – Role Play. (6)

UNIT – II

Activity based on newspaper articles - Word Building - A picture and a few words activity - Current Events. (4)

UNIT – III

Alphabet test – Alphabet Order, Alphabet Series - Letter Word Problem, Word Formation and Scramble - Series Completion –Para Jumbles- Synonyms and Antonyms- Types and Exercises- Sentence Completion –Types and Exercises. (8)

UNIT – IV

Reading Comprehension- Skimming and Scanning - Reading Prose – Bacon's Essays (Speaking Activity based on the essays) - Story Building- Extempore - Movie Reviews. (4)

UNIT – V

Speech Sounds - Word Vocabulary - Reading Comprehension - Listening Practice- I - Dialogue Writing - Conversational Exercise – I - Focus on Language - Creative Writing - Conversational Exercise – II - Listening Practice – II. (8)

TOTAL : 30