

Branch Name:	B.Sc. (IT/DS/CS)
Program Code:	ET110/ET111/ET112
Course Title:	Database Management Systems
Course Code:	13-ITM205-2C
Pre-requisite Course:	--

Course Objectives:

1. The core objective of this course is to make the students aware and have some expertise with various facets of database design methodology in oracle database, Microsoft SQL Server, MySQL etc. used in industry now days.
2. This course aims to present various, Relational Database, Storage Architecture, Query Language & Processing, Normalization, Function Dependency used for database design during software development.
3. This course shall act as platforms for the students wishing to carry out further development in database management for large enterprise.

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory (Marks)		Practical (Marks)		Total (Marks)
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
3	0	2	4	50	25	-	25	100

Course Contents:

Unit No	Topic	Total Hours	Weightage (%)
1	Introduction: Purpose & Applications, Database Architecture, Type of DBMS, Data Model, Users Role & Responsibility, Transaction Management	2	05
2	Relational Model: Structure of Relational Database, Database Schema, Keys, Relational Algebra Operations, Relational Algebra Query Language	4	10
3	SQL: Overview of the SQL Query Language, SQL Data Definition, Basic Structure of SQL Queries, Integrity Constraint, Additional Basic Operations, Set Operations, Null Values, Aggregate Functions, Nested Sub queries, Modification of the Database, Join Expressions, Aggregation Features	4	10
4	E-R Model: Overview, Constraints, E-R Diagrams, E-R Design Issues, Advance E-R Model	3	10
5	Database Design: Features of Good Database Design, Redundancy, Functional Dependency, Decomposition, Normalizations, Normal Forms	5	15
6	Query Processing & Optimization: Overview, Estimating of Query Cost, Evaluation of Expressions, Evaluation Plan, Selection Operation, Sorting, Join Operations, Indexing, Ordered Indices, B+ Tree Index, Static and Dynamic Hashing	5	15
7	Transaction Management: Concept, Transaction Model, ACID Property, Serializability, Transaction Protocols, Deadlock Handling, Recovery	5	15
8	Advance SQL: Views, Index, Transactions, Authorization, Functions and Procedures, Triggers, Cursor	2	10
9	Case Study: Postgre SQL, MySQL	2	10

Text Books:

1. Database System Concepts, Abraham Silberschatz, Henry F. Korth & S. Sudarshan, McGraw Hill.
2. An introduction to Database Systems, C J Date, Addition-Wesley

Reference Books:

1. SQL- PL/SQL by Ivan bayross
2. Oracle – The complete reference – TMH /oracle press
4. Oracle – The complete reference – TMH /oracle press

Course Learning Outcomes (CLO):

On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	Understand the business data and relation between data	Understanding
CLO2	Use of Technology to store the large data	Applying, Understanding
CLO3	Efficiently usage of data in short response time.	Applying
CLO4	Access control over the data.	Analyzing
CLO5	Design of database for real life project	Analyzing Creating
CLO6	Interpret the architecture and components of a computer system	Creating

Mapping of CLO with PO and PSO

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes(PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CLO1	H	M	M	L	L	M			L		M	L	H	H	M	L
CLO2	M	H	M	L	L	M			L		M	L	H	H	H	M
CLO3	H	M	M	L	M	L			M		M	L	H	H	H	
CLO4	M	H	M		L	L			M		L		M	M	M	L
CLO5	H	M	M	L	L	M			L		L	M	M	H	H	
CLO6	M	H	M		M	L			M		M	L	M	H	M	L

H:High, M:Medium, L:Low

List of Experiments:

Note: The experiment list provided beneath is for reference only. The course teacher may change/formulate it as per his/her methodology and requirement.

- (1) To study DDL and DML commands.
- (2) Create table and insert sample data in tables.
- (3) Perform query involving retrieve, update, and delete record in a table.
- (4) Perform query using arithmetic and logical operators.
- (5) Perform queries involving pattern matching predicates.
- (6) Perform query using aggregate, numeric and string functions.
- (7) Using Union, Intersect and Minus Clause.
- (8) Perform query using order by, group by and having clause.
- (9) To study transaction control commands.

Branch Name:	B.Sc. (IT/DS/CS)
Program Code:	ET110/ET111/ET112
Course Title:	Object Oriented Programming Using Java
Course Code:	13-ITM206-2C
Pre-requisite Course:	Basic computer skills and should be familiar with general coding concepts like variables and data types.

Course Objectives:

1. Provide students with a solid understanding of Object-Oriented Programming principles in Java.
2. Develop proficiency in Java programming language syntax and constructs.
3. Introduce and implement common design patterns in Java programming.
4. Emphasize best practices in software development, including code organization, documentation, and version control.

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory (Marks)		Practical (Marks)		Total (Marks)
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
3	0	2	4	50	25	-	25	100

Course Contents:

Unit No	Topic	Total Hours	Weightage (%)
1	Introduction to Java : Basics of Java programming, Data types, Variables, Operators, Control structures including selection, Looping, Java methods, Overloading, Math class, Arrays in java.	2	05
2	Objects and Classes : Basics of objects and classes in java, Constructors, Finalizer, Visibility modifiers, Methods and objects, Inbuilt classes like String, Character, StringBuffer, File, this reference.	4	10
3	Inheritance and Polymorphism : Inheritance in java, Super and sub class, Overriding, Object class, Polymorphism, Dynamic binding, Generic programming, Casting objects, Instance of operator, Abstract class, Interface in java, Package in java, UTIL package.	4	10
4	Event and GUI programming : Event handling in java, Event types, Mouse and key events, GUI Basics, Panels, Frames, Layout Managers: Flow Layout, Border Layout, Grid Layout, GUI components like Buttons, Check Boxes, Radio Buttons, Labels, Text Fields, Text Areas, Combo Boxes, Lists, Scroll Bars, Sliders, Windows, Menus, Dialog Box, Applet and its life cycle, Introduction to swing.	8	20
5	I/O programming: Text and Binary I/O, Binary I/O classes, Object I/O, Random Access Files.	7	15
6	Multithreading in java : Thread life cycle and methods, Runnable interface, Thread synchronization, Exception handling with try-catch-finally, Collections in java, Introduction to JavaBeans and Network Programming.	7	15

Text Books:

1. The Complete Reference, Java 2 (Fourth Edition), Herbert Schild, TMH.
2. Introduction to Java Programming (Comprehensive Version), Daniel Liang, Seventh Edition

Reference Books:

1. Programming in Java, Sachin Malhotra & Saurabh Chaudhary, Oxford University Press
2. Big Java, 3rd Edition, Horstmann, Wiley-India

Course Learning Outcomes (CLO):

On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	Understand the concept and underlying principles of Object-Oriented Programming.	2. Understanding
CLO2	Understand how object-oriented concepts are incorporated into the Java programming language.	1. Remembering
CLO3	Develop problem-solving and programming skills using the OOP concept.	2. Understanding
CLO4	Develop the ability to solve real-world problems through multithreaded programming using Java.	3. Applying, 2. Understanding
CLO5	Become familiar with creating packages and working with files in Java.	2. Understanding 3. Evaluating

Mapping of CLO with PO and PSO

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes(PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CLO1	H	M	M	L	L	M			L		M	L	H	M	M	L
CLO2	H	M	H	L	L	L			M		M	L	M	H	H	M
CLO3	M	H	M	M	M	M			M		L	L	H	M	M	
CLO4	M	H	M		L	L			M		L		M	M	H	M
CLO5	H	M	M	L	L	M			L		L	M	M	H	H	

H:High, M:Medium, L:Low

List of Experiments:

Note: The experiment list provided beneath is for reference only. The course teacher may change/formulate it as per his/her methodology and requirement.

1. Write a java program to find the Fibonacci series using recursive and non recursive functions
2. Write a java program to multiply two given matrices.
3. Write a java program for Method overloading and Constructor overloading
4. write a java program that prompts the user for an integer and then printouts all prime numbers up to that integer
5. Write a java program to display the employee details using Scanner class
6. Write a java program that checks whether a given string is palindrome or not
7. Write a java program to represent Abstract class with example.
8. Write a java program to implement Interface using extends
9. Write a Java program that implements a multi-thread application that has three threads
10. Write an applet program that displays a simple message
11. Write a java program that works as a simple calculator. Use a Grid Layout to arrange Buttons for digits and for the + - * % operations. Add a text field to display the result

Branch Name:	B.Sc. (DS)
Program Code:	ET111
Course Title:	Foundation of Data Science
Course Code:	13-DSM201-2C
Pre-requisite Course:	Statistics and Probability

Course Objectives:

This is an introductory course in data science. The objective of this course is to provide students with a practical understanding of the most widely used techniques employed in machine learning and data science tasks.

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory (Marks)		Practical (Marks)		Total (Marks)
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
3	0	2	4	50	25	-	25	100

Course Contents:

Unit No	Topic	Total Hours	Weightage (%)
1	Foundations of Data Science: Introduction to Data Science, Data mining and Data warehousing, Descriptive Analytics, Probability Theory, Probability distribution, Confidence Interval, Hypothesis Testing	8	15
2	Data Pre-processing: Types of Data, Sampling Theory, Correlation, Feature selection, Dimensionality reduction techniques: Projections, Eigen value decomposition, Principal component Analysis (PCA)	10	25
3	Linear Regression: Simple Linear Regression - Steps in Building a Regression Model, Model Diagnostics, Multiple Linear Regression - Developing Multiple Linear Regression Model	9	15
4	Classification: Logistic regression, Naive Bayes, K Nearest Neighbour, Decision Trees, Random Forest	11	25
5	Clustering, Optimization: K Means, Hierarchical clustering, DB SCAN, Jaccard coefficient, Gower's Index, Elbow technique, Optimization for Data Science	7	20

Text Books:

1. Dinesh Kumar, "Business Analytics :The Science of Data Driven decision making", First Edition, Wiley Publishers, 2017
2. Manaranjan Pradhan, U Dinesh Kumar, "Machine Learning using Python", First Edition, Wiley Publishers, 2019
3. Gilbert Strang, "Introduction to Linear Algebra, Fifth Edition", Wellesley-Cambridge Press and SIAM, 2016
4. Jiawei Han , Micheline Kamber, Jian Pei Professor, "Data Mining: Concepts and Techniques", Third Edition, Morgan Kaufmann Series, 2011

Reference Books:

1. Bruce M King, Edward W Minium, "Statistical Reasoning in the Behavioral Sciences", 5th Edition, Wiley Publishers, 2018
2. Douglas C. Montgomery, Douglas C. Montgomery, George C. Runger, "Applied Statistics and Probability for Engineers", 6th Edition, Wiley Publishers, 2016
3. McKinney W. "Python for data analysis: Data wrangling with Pandas, NumPy, and IPython." O'Reilly Media, Inc., 2012
4. EMC Education Services, "Data Science & Big Data Analytics: Discovering, Analyzing, Visualizing and Presenting Data", John Wiley & Sons, Inc

WEB RESOURCES:

1. <https://machinelearningmastery.com/>
2. <https://towardsdatascience.com/data-science/home>
3. <https://mastersindatascience.com/resources/top-100-data-science-resources/>
4. https://swayam.gov.in/nd1_noc19_cs60/preview
5. https://swayam.gov.in/nd1_noc20_cs46/preview

Course Learning Outcomes (CLO):

On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	Understand the probability, statistics and linear algebra concepts essential for data science	1. Remembering 2. Understanding
CLO2	Model the real-world dataset and apply algebraic and geometric view for the data	3. Applying 4. Analyzing
CLO3	Apply linear regression & multiple linear regression for model building and prediction	3. Applying 4. Analyzing 5. Evaluate
CLO4	Develop the classification models using classification algorithms	3. Applying 4. Analyzing 6. Creating
CLO5	Develop the clustering models using clustering algorithms	3. Applying 4. Analyzing 6. Creating
CLO6	Model the real-world dataset and apply optimization techniques	3. Applying 4. Analyzing 5. Evaluate 6. Creating

Mapping of CLO with PO and PSO

Course	Program Outcomes (POs)												Program Specific Outcomes (PSOs)			
Learning Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CLO1	L	H	M							M			M	L		
CLO2	H	L	L	H			M	L		H	M	M	H	M	L	
CLO3	M	M	H	H	L		H	H		M	H	H	H	M	L	M
CLO4	L	M	H	M	M		L	H	H	L	L	M	H	M	M	H
CLO5	H	H	M	H	M		L	H	L	M	H	L	H	M	M	L
CLO6	M	H	H	L	M		M	H	M	M	L	L	H	M	H	M

H: High, M: Medium, L: Low

List of Experiments:

Note: The experiment list provided beneath is for reference only. The course teacher may change/formulate it as per his/her methodology and requirement.

Sr. No.	Practical Exercise
1.	Using pandas in python demonstrate the following operations for the sample dataset given, i) Indexing of Data frame ii) Grouping and aggregating iii) Adding and removing attributes iv) Joining data frames v) Filtering the data vi) Handling Missing values)
2.	Using pandas and Matplotlib demonstrate the following operations for the sample dataset given, i) Bar chart and Histogram ii) Comparing Distribution iii) Box plot and mention quartiles Correlation using pair plot and heatmapv
3.	Using Numpy, pandas and Matplotlib demonstrate the following operations for the sample dataset given, i. Central tendency ii. Dispersion and Distribution iii. ANOVA iv. Hypothesis testing
4.	Develop a program to implement Simple Linear Regression model and evaluate the model by verifying the performance
5.	Develop a program to implement Multiple Linear Regression model and evaluate the model by verifying the performance
6.	Develop a program to implement Logistic Regression and indicate the class label for the test dataset
7.	Develop a program to implement Naive Bayes classifier model and analyze the model using confusion matrix
8.	Develop a program to implement Decision Tree model and analyze the model using confusion matrix
9.	Develop a program to implement Random Forest classifier model and analyze the model using confusion matrix
10.	Develop a program to implement KNN classifier model and analyses the model using confusion matrix
11.	Develop a program to implement K Means clustering model for the given value of K, where K is number of clusters
12.	Develop a program to implement Hierarchical clustering model for the given value of N, where N is number of clusters

Branch Name:	B.Sc. (DS)
Program Code:	ET111
Course Name:	Mathematics for Data Science
Course Code:	13-MDC204-2C
Pre-requisite Course:	Basic Mathematics- I

Course Objectives:

To learn the advance concepts of statistics such as non-linear equation, linear equation, sampling, random variables, time series and forecasting.

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory (Marks)		Practical (Marks)		Total (Marks)
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
3	1	-	4	50	50	-	-	100

Subject Contents:

Sr. No	Topic	Total Hours	Weightage (%)
1.	Solutions of Non-Linear Equations: Absolute, Relative and Percentage Error, Roots of an equation, Linear and non-Linear equations (Definition and Difference), Methods for finding roots of non-Linear equations: Bisection Method, False Position Method, Self-Iterative Method(Method of Successive approximation), Newton-Raphson Method and secant Method - Example only- No algorithm	9	20
2.	Solution of Simultaneous Linear Equations: Definitions : System of linear equations, Existence of unique roots, multiple roots and no roots, Difference between direct and iterative methods, Gauss-Elimination Method, Gauss Jordan Method, Gauss-seidel Iterative Method, Jaccobi's Iterative Method	9	20
3.	Random Variables: Definition of random variable, discrete and continuous random variables, functions of random variables, probability mass function, probability density function, Distribution function, Properties of Distribution function, Definition of bivariate random variable, bivariate distribution	9	20
4.	Sampling: Meaning of population and sample, need for sampling, Definition of population size and sample size, Sampling methods (i) Non probabilistic sampling methods- convenience, quota, judgmental, purposive (ii) Probabilistic sampling methods- simple random sampling method, stratified random sampling method, systematic sampling method, two stage sampling method, cluster sampling method, sequential sampling method	9	20
5.	Analysis of Time Series and Forecasting: Meaning and Utility, Components of Time Series Analysis, Decomposition Models, Trend Projection Methods, Measurement of Seasonal Variation	9	20

Text Books:

1. Numerical Methods in Engineering & Sciences by B.S. Grewal , Khanna Publications
2. Introductory Methods of Numerical Analysis by S.S. Sastry, PHI Publications
3. Computer Oriented Numerical Methods by Rajaraman V., PHI Publications

Reference Books:

1. Numerical Methods for engineers. S C Chapra and R P Canale. McGraw Hill International Edition
2. Sheldon M.Ross (2006): Introductory Statistics , 2/e, Elsevier Publications..

List of Open Source Software/learning website:

LAB/Practical- NA

Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	Able to find solution of non-linear and linear equation	1 Remember 2 Understanding
CLO2	Find probability of random variable	2 Understanding
CLO3	Learn about sampling and its methods	2 Understanding 5 Evaluate
CLO4	Analysis of time series and forecasting	5 Analyze

Mapping of CLOs with POs & PSOs

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CLO1	H		L	M												
CLO2	L	L		M												
CLO3	L			M	L						L	L				
CLO4	M		L	H	L	L					L	L				

H: High, M: Medium, L: Low

Branch Name:	B.Sc. (IT/DS/CS)
Program Code:	ET110/ET111/ET112
Course Title:	Functional Grammar and Composition
Course Code:	13-AEC221-2C
Pre-requisite Course:	Basic and Functional Grammar

Course Objectives:

1. To identify the key concepts of English grammar.
2. To describe the use of appropriate language through the understanding of the sentence patterns in English.
3. To enable the learner to communicate effectively at the written and spoken level appropriately in real-life situations.
4. To learn how to use the structure of language systematically and to get a good command over the language to produce the learned grammatical structures accurately.

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory (Marks)		Practical (Marks)		Total (Marks)
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
1	1	-	2	25	25	-	-	50

Course Contents:

Unit No	Topic	Total Hours	Weightage (%)
1	Basic Concepts of Syntax- Word order and Sentence Patterns - Concord/ Subject-Verb Agreement - Types of Sentences based on Functions - Types of Sentences based on Clauses - Transformation of Sentences - Affirmative and Negative Sentences - Connectives- Collocations - Punctuations	10	30
2	Basic Functional Aspects of Grammar: Use of major tense forms (Emphasis on tense forms in use in everyday transactions) – Use of Active and Passive Voice – Making use of Reported Speech – Use of functional elements in sentences – Articles – Prepositions.	6	20
3	Composition: Writing a paragraph Information Transfer-converting information from charts, tables, diagrams etc verbally and vice-a-versa, Common errors.	6	20
4	Phonetics: Organs of speech,. Speech mechanism, Difference between phonetics and phonology, Syllable, word accent, sentence accent, weak forms, intonation	12	30

Text Books:

1. Bansal and Harrion : Spoken English for India. 4th Edition, Orient BlackSwan; 2011
2. Green, David : Contemporary English Grammar, Structure and Composition Macmillan India Ltd, Madras, 1971

Reference Books:

1. Augustine, A.E. Joseph, K.V.: Macmillan Grammar, A Handbook, Macmillan India Ltd, Delhi 1986
2. Narayan Swami, K.R.: Success with grammar and Composition Orient Longman, Hyderabad, 1995
3. Freeman, Serah: Written Communication in English Orient Longman Orient BlackSwan, 1977
4. Home Crofton: Essay, precise, composition and Comprehension Macmillan, Madras Macmillan Publishing Co. 1978

5. S R Inthira & V Saraswathi “Enrich your English – a) Communication skills b) Academic skills

“Publisher CIEFL & OUP

6. Maxwell Nurnberg and Rosenblum Morris, “All About Words”, General Book Depot, New Delhi 1995

Course Learning Outcomes (CLO):

On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	Ability to analyze the usage of English words in different contexts and acquire considerable flair in using broad range of vocabulary.	1 Remembering 2 Understanding
CLO2	Ability to upgrade comprehension of technical and academic articles and recognize writings as a process rather than a product.	2 Understanding 3 Applying
CLO3	Ability to identify common errors in various parts of English and give effective expression in oral and written communication.	2 Understanding 3 Applying 4 Analyze
CLO4	Ability to analyze various grammatical units of English and design a language component critically and coherently to meet desired needs within the realistic constraints.	3 Applying 4 Analyze 5 Evaluate

Mapping of CLO with PO and PSO

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CLO1				L	M		L	L	M	H		L	L			M
CLO2	L			M		L	M		H	M	M	L	L	M		
CLO3	M	L	M		L		M	M		H	L			M		L
CLO4			M	M		L	L		M	H				L		

H: High, M: Medium, L:Low

Branch Name:	B.Sc. (IT/DS/CS)
Program Code:	ET110/ET111/ET112
Course Title:	Vedic Mathematics
Course Code:	13-IKS202 -2C
Pre-requisite Course:	Basic knowledge of Differentiation, Integration and Differential Equations.

Course Objectives:

- (1) To enable the learners to explore the power of Vedic Math.
- (2) To make learners strong in Numerical Math.
- (3) To enable learners to recognize and understand simple techniques of Arithmetic Calculations.
- (4) To train learners to use the ideas of Vedic Math in daily calculations and make those calculations with accuracy and speed.

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory (Marks)		Practical (Marks)		Total (Marks)
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
1	1	0	2	25	25	-	-	50

Course Contents:

Unit No	Topic	Total Hours	Weightage (%)
1.	High Speed Addition & Subtraction- History and Evolution of Vedic Mathematics, Introduction to Basic Vedic Mathematics formulas: Sutras & Upsutras, Addition in Vedic Math, Subtraction in Vedic Math Fractional Addition & Subtraction. (Should be performed without aid of writing material)	3	20
2.	Miracle Multiplication & Excellent Division - Multiplication: Base Method (Any two numbers upto three digits), UrdhvaTiryak Sutra, Miracle Multiplication: Any three digit number by series of 1's & 9's. Division: UrdhvaTiryak Sutra, Divisibility tests, Division of numbers near base, Applications of Vinculum. (Should be performed without aid of writing material)	3	20
3.	Rapid Squares & Cubes (Different Methods of squares – General Method, Duplex Method...) - Squaring of numbers – Base Method, Crisscross System, Formula Method, Square of numbers ending with 5 – Ekadhiken Purven Sutra Easy Square Roots – Dwandwa Yoga (Duplex) Sutra Cubing – Yavadunam Sutra, Cuberoots, General Division, Formula Method	4	27
4.	Algebra & Geometry - Use of various Vedic Techniques for answering Numerical Aptitude questions from Competitive Examinations: Factoring Quadratic Equations: Anurupyena, Adymadyenantyamantya Sutra, Simultaneous Equations, General Equations, Verifying answers by use of Digit Sum Method. Geometry: Concept of Baudhayana (Pythagorus) Theorem, Circling a Square: Baudhayana Shulabsutra, Presentation of Point, Angle & Line, Dates & Calenders	5	33

Text Books:

1. Bhatiya Dhaval, Vedic Mathematics Made Easy, Jaico Publishing House
2. Thakur Rajesh Kumar, Vedic Mathematics for students taking Competitive Examinations. Unicorn Books 2015 or Later Edition

Reference Books:

1. Gupta Atul, Power of Vedic Mathematics with Trigonometry, Jaico Books
2. V. G. Unkalkar, Magical World of Mathematics (Vedic Mathematics), Vandana Publishers, Bangalore

Course Learning Outcomes (CLO):

On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	Perform simple arithmetic calculations with speed and accuracy and Will be able to generate tables of any number	2 Understand 3 Apply 6 Create
CLO2	To perform products of large numbers quickly	2 Understanding 3 Applying
CLO3	Develop confidence in calculating square roots and cube roots of integers	2 Understand 3 Apply
CLO4	Perform difficult calculations speedily.	3 Apply 5 Evaluate
CLO5	Face Numerical Aptitude part of any Competitive Examination confidently.	2 Understand 3 Apply 5 Evaluate

Mapping of CLO with PO and PSO

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CLO1	H	M	M				L	L	L			L	L			M
CLO2		H	H		L	L	M				M	L	L	M		
CLO3	H	M	H				M	M			L			M		L
CLO4	M	L	H		L	L	L							L		
CLO5	M	H	H		L											

H: High, M: Medium, L:Low

Branch Name:	B.Sc. (IT/DS/CS)
Program Code:	ET110/ET111/ET112
Course Title:	Web Programming
Course Code:	13-SEC203-2C
Pre-requisite Course:	--

Course Objectives:

1. Today's world is driven by Internet based applications. The rationale behind this course is to impart the knowledge of web programming among students of computer engineering.
2. This course covers web programming for both client-side and server-side to develop complete web-based applications for various requirements.

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory (Marks)		Practical (Marks)		Total (Marks)
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
-	-	4	2	-	-	25	25	50

Course Contents:

Unit No	Topic	Total Hours	Weightage (%)
1	Basics of HTML and CSS Structure of HTML page, HTML tags for data formatting, tables, links, images, meta tags, frames, html form tags, media, APIs, HTML5 tags and validation. Need for CSS, Syntax and structure, CSS rules for Backgrounds, Colors and properties, Manipulating texts, Fonts, borders and boxes, Margins, Padding Lists, CSS Positioning. Animations, Tool-Tips, Style images, Variables, Media Queries, Wildcard Selectors (*, ^ and \$) in CSS, Working with Gradients, Pseudo Class, Pseudo elements, basic of frameworks like Bootstrap	10	30
2	Client Side Scripting using JavaScript Syntax of JavaScript, Execution of JavaScript, Internal, Embedded and External Javascript, JavaScript : variables, arrays, functions, conditions, loops, Pop up boxes, JavaScript objects and DOM, JavaScript inbuilt functions, JavaScript validations and Regular expressions, Event handling with JavaScript, Callbacks in Javascript, Function as arguments in JavaScript, Introduction to JSON	6	25
3	Server Side Programming with PHP Difference between Client side and Server side scripting, Structure of PHP page, PHP Syntax: variables, decision and looping with examples, PHP and HTML, Arrays and Functions, String, Form processing, File uploads, Dates and time zone, Working with Regular Expressions, Exception Handling , Basic concepts of Session and State, State management using query string, hidden form controls, Cookies, Session variables	6	30
4	Database programming with PHP and MySQL Basic MySQL commands, PHP functions for database connectivity, Implementation of CRUD operations using PHP, Prepared Statement and stored procedure execution in PHP	12	15

Text Books:

1. Web Technology, Moseley and Savaliya, Wiley India
2. Web Design, Joel Sklar, Cengage Learning

Reference Books:

1. HTML 5 Black Book 2Ed, Kogent Learning Solutions Inc, dreamtech
2. Learning PHP, MySQL, JavaScript, CSS & HTML5, 3rd Edition, Robin Nixon, O'Reilly
3. A Step-by-Step Guide to Creating Dynamic Websites By Robin Nixon Publisher: O'Reilly Media

Course Learning Outcomes (CLO):

On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	Use the various HTML tags with appropriate styles to display the various types of contents effectively.	1 Remembering 2 Understanding
CLO2	Develop the dynamic web pages using HTML, CSS and JavaScript applying web design principles to make pages effective.	2 Understanding 3 Applying
CLO3	Develop the server side PHP scripts using various features for creating customized web services.	2 Understanding 3 Applying 4 Analyze
CLO4	Write the server side scripts for designing web based services with database connectivity.	3 Applying 4 Analyze 5 Evaluate

Mapping of CLO with PO and PSO

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CLO1	H	M	M	L	L	M			L		M	L	H	H	M	L
CLO2	M	H	M	L	L	M			L		M	L	H	H	H	M
CLO3	H	M	M	L	M	L			M		M	L	H	H	H	M
CLO4	M	H	M		L	L			M		L		M	M	M	L

H: High, M:Medium, L:Low

List of Experiments:

Practical list should be prepared based on the content of the subject with following guidelines in mind.

1. Entire syllabus should be covered.
2. Practical list should be designed with real life examples.