Sem	Course Code	Core I: Professional English -I	Total Marks:100		Hours Per Week	Credits
I	21UAJCT101		CIA : 50	ESE:50	4	4

Course Objectives:

1. To develop the language skills of students.
2. To enhance the lexical, grammatical, socio-linguistic and communicative competence.
3. To focus on developing students' knowledge in domain specific registers and the required language skills.

Course Outcomes (CO): On completion of the course, students should be able to

CO 1	Identify the correct usage of vocabulary and grammar in speaking and writing	**K1 - K4**
CO 2	Apply the language for speaking efficiently and confidently	
CO 3	Build the reading skill by using unfamiliar texts with comprehension	
CO 4	Demonstrate the language skills through academic writing	
CO 5	Develop the leadership quality and team building through linguistic competence	

K1 :Remember; K2 :Understand; K3 :Apply; K4 :Analyze

Unit –I	**COMMUNICATION**

Listening: Listening to audio text and answering questions - Listening to Instructions.

Speaking: Pair work and small group work.

Reading: Comprehension passages - Differentiate between facts and opinion.

Writing: Developing a story with pictures.

Vocabulary: Register specific - Incorporated into the LSRW tasks.

Unit – II	**DESCRIPTION**

Listening: Listening to process description - Drawing a flow chart.

Speaking: Role play (formal context).0.

Reading: Skimming/Scanning - Reading passages on products, equipment and gadgets.

Writing: Process Description - Compare and Contrast Paragraph - Sentence Definition and Extended definition - Free Writing.

Vocabulary: Register specific - Incorporated into the LSRW tasks.

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Unit – III	NEGOTIATION STRATEGIES

Listening: Listening to interviews of specialists / Inventors in fields (Subject Specific).

Speaking: Brainstorming (Mind Mapping) - Small group discussions (Subject Specific).

Reading: Longer Reading text.

Writing: Essay Writing (250 words).

Vocabulary: Register specific - Incorporated into the LSRW tasks.

Unit – IV	PRESENTATION SKILLS

Listening: Listening to lectures.

Speaking: Short talks.

Reading: Reading Comprehension passages.

Writing: Writing Recommendations - Interpreting Visuals inputs.

Vocabulary: Register specific - Incorporated into the LSRW tasks.

Unit – V	CRITICAL THINKING SKILLS

Listening: Listening comprehension - Listening for information.

Speaking: Making presentations (with PPT-practice).

Reading: Comprehension passages - Note making. (Comprehension: Motivational article on Professional Competence, Professional Ethics and Life Skills).

Writing: Problem and Solution essay - Creative writing - Summary writing.

Vocabulary: Register specific - Incorporated into the LSRW tasks.

Skill Development Activities

1. Listening and Answering.
2. Speaking Activities through Role Play.
3. Reading and Answering.
4. Resume Preparation.
5. Vocabulary Enhancement Activities – Definitions, Synonyms, Antonyms, Keywords etc…

TEXT BOOK

1	Professional English for Physical Sciences-I - TANSCHE.

REFERENCE BOOKS

1	Simon Sweeney, English for Business Communication, Student's Book, Second Edition, Cambridge University Press, 2003.

2	Michael McCarthy, Felicity O'Dell, English Vocabulary in Use: Advanced, First South Asian Edition, Cambridge University Press, 2003.

Web Resources

i	https://nptel.ac.in/courses/109/104/109104030/
2	https://www.edubull.com/courses/online-english-speaking-courses-video-english/tofel-ilets/basic-courses/professional-english-part-2

Course Designed By	Verified By	Approved By HOD
Mr.S.Muruganantham	Ms.S.Yasmin	Dr.T.A.Sangeetha

QUESTION PAPER PATTERN

SECTION - A (10 X 1 = 10 Marks)	SECTION - B (4 X 10 = 40 Marks)
(Vocabulary) (MCQ, Info-gap questions - domain specific vocabulary)	(Reading: Two long domain-specific comprehension passages with questions pertaining to understanding and analysis - 20 Marks) (Writing: Descriptive/narrative/persuasive writing questions pertaining to domain-specific vocabulary - 20 Marks)

Mapping of COs with POs and PSOs

PO/PSO / CO	PO							PSO				
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO 1	S	S	S	S	S	M	M	M	M	S	S	M
CO 2	S	S	S	S	S	M	M	M	S	S	S	M
CO 3	S	S	M	M	M	M	S	M	M	S	S	M
CO 4	S	S	M	M	M	M	M	M	M	S	S	M
CO 5	S	S	S	S	M	S	S	M	S	S	S	M

S-Strong, M-Medium, L-Low

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Sem	Course Code	Core II: Programming in C	Total Marks:100		Hours Per Week	Credits
I	21UAJCT102		CIA : 50	ESE :50	4	4

Course Objectives:

1. To provide exposure to problem-solving skill through C Programming.
2. To train the student to the basic concepts of the C Programming language.
3. To equip and indulge Learners in problem solving using C.

Course Outcomes (CO): On completion of the course, students should be able to

CO 1	Define data types and use them in simple data processing applications	K1 - K4
CO 2	Build simple C Programs using Looping and Control Structures	
CO 3	Apply the right data representation formats based on the requirements of the problem	
CO 4	Demonstrate the concept of User defined functions , Recursions , Scope and Lifetime of Variables, Structures and Unions	
CO 5	Develop C programs using pointers and files	

K1 :Remember; K2 :Understand; K3 :Apply; K4 :Analyze

Unit –I	**Overview of C**

Importance of C - sample C program - C program structure - executing C program - Character set - C tokens - keywords and identifiers - constants - variables - data types - declaration of variables - Assigning values to variables - Assignment statement - declaring a variable as constant as volatile.

Arithmetic, Relational, logical, assignment, increment, decrement, conditional, bitwise and special operators - arithmetic expressions - operator precedence - type conversions - mathematical functions - Reading and writing a character - formatted input/output.

Chapters 1 to 4

Unit – II	**Decision Making and Looping and Arrays**

Decision making with If - simple IF, IF ELSE, nested IF ELSE, ELSE IF ladder - switch - The:? Operator - GOTO statement - Looping: While, Do-While, For - Jumps in loops.

Declaration and accessing of one & two-dimensional arrays - initializing two-dimensional arrays - multidimensional arrays.

Chapters 5 to 7

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Unit – III	Functions

Declaring and initializing String Variables - Reading and Writing Strings - Arithmetic Operations and comparison of strings - String Handling Functions - The form of C functions - calling a function - categories of functions - Nested functions - Recursion - call by value - call by reference.

Chapters 8 and 9

Unit – IV	Structures and Unions

Defining - giving values to members - initialization and comparison of structure variables - arrays of structure - arrays within structures - unions.

Chapters 10

Unit – V	Pointers and Files

Definition - declaring and initializing pointers - access a variable through address and through pointer - pointer expressions - Opening, closing and I/O operations on files - Random access to files - command line arguments.

Chapters 11 and 12

Skill Development Activities

1. Develop a program to inscribe the given string on the screen using C concept.
2. Compare the scope of looping and branching tools to be used in the languages.
3. List out the real time applications can be done using C Programming languages

TEXT BOOK

1	E. Balagurusamy, "Programming in ANSI C", Fourth Edition, Tata McGraw-Hill.

REFERENCE BOOKS

1	Schaum's Outline Programming with C, Byron Gottfried, Second Edition, Tata McGraw-Hill
2	Let Us C, Yashavant Kanetkar, Eighth Edition, BPB Publications.
3	The C Programming Language, Kernighan and Ritchie, Second Edition, Prentice Hall, 1998.

Web Resources

1	www.cprogramming.com
2	www.programmiz.com/c-programming
3	www.nptel.ac.in/courses/106/104/106104128/#

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4	www.udemy.com

Course Designed By	Verified By	Approved By HOD
Mr.N.Rajasekaran	Ms.S. Hemalatha	Dr.T.A.Sangeetha

QUESTION PAPER PATTERN

SECTION – A	SECTION – B	SECTION – C
10 x 1 = 10 Marks (Multiple choice, Four options) Two questions from each unit	5 x 3 = 15 Marks (Either or choice) Two questions from each unit	5 x 5 = 25 Marks (Either or choice) Two questions from each unit

Mapping of COs with POs and PSOs

PO/PSO / CO	PO							PSO				
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO 1	S	M	S	S	M	M	S	S	S	S	S	M
CO 2	S	L	S	S	L	M	S	S	S	S	S	S
CO 3	S	M	S	S	M	M	S	S	S	S	S	S
CO 4	S	M	S	S	M	M	S	S	S	S	S	M
CO 5	S	M	S	S	M	M	S	S	S	S	S	S

S-Strong, M-Medium, L-Low

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Sem	Course Code	Core Practical I: C Programming	Total Marks:100		Hours Per Week	Credits
I	21UAJCP103		CIA : 50	ESE : 50	3	3

Course Objectives:

1. To provide exposure to problem-solving skill through C Programming.
2. To practice the Basic concepts, branching and Looping Statements and Strings in C Programming.
3. To implement and gain knowledge in Arrays, functions, Structures, Pointers and File handling.

Course Outcomes (CO): On completion of the course, students should be able to

CO 1	Develop the program, write it on a computer, edit, compile, debug, correct, recompile and run it.	**K1-K4**
CO 2	Identify tasks in which the techniques learned are applicable and apply them to write programs, and hence use computers effectively to solve the task.	
CO 3	Choose the right data representation formats based on the requirements of the problem; define and manage them based on problem domain.	
CO 4	Compare the various control and looping structures and other programming constructs and choose, the right one for the task in hand.	
CO 5	Implement the pointer and file handling Operations.	

K1:Remember; K2 :Understand; K3 :Apply; K4 :Analyze

1. Write a simple C program using conditional operators.
2. Write a C program using branching structures (If, switch, goto).
3. Write a simple C program using looping structures (for, while, do-while).
4. Write a C program for matrix multiplication.
5. Write a C program for String Manipulation.
6. Write a C program for Recursion.
7. Write a C program to sort an array of integers using function.
8. Design a Structure as Employee which contains Name, Age, Designation and Salary. Write a C program to access and print the N Employee Details.
9. Write a program to implement pointers.
10. Write a C program to copy the contents of one file in to another.

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	TEXT BOOK
1	E. Balagurusamy, "Programming in ANSI C", Fourth Edition, Tata McGraw-Hill.
	REFERENCE BOOKS
1	Schaum's Outline Programming with C, Byron Gottfried, Second Edition, Tata McGraw-Hill
2	Let Us C, Yashavant Kanetkar, Eighth Edition, BPB Publications.
3	The C Programming Language, Kernighan and Ritchie, Second Edition, Prentice Hall, 1998.
4	Computing Fundamentals & C Programming, E.Balagurusamy – First Edition – Tata Mc-Graw Hill - 2008.
	Web Resources
1	www.tutorialspoint.com/cprogramming/
2	www.programiz.com/c-programming

Course Designed By	Verified By	Approved By HOD
Mr.T.Thilagaraj	Ms.S. Hemalatha	Dr.T.A.Sangeetha

Mapping of COs with POs and PSOs

PO/PSO / CO	PO							PSO				
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO 1	S	M	S	S	M	M	S	S	S	S	S	M
CO 2	S	L	S	S	L	M	S	S	S	S	S	S
CO 3	S	M	S	S	M	M	S	S	S	S	S	S
CO 4	S	M	S	S	M	M	S	S	S	S	S	M
CO 5	S	M	S	S	M	M	S	S	S	S	S	S

S-Strong, M-Medium, L-Low

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Sem	Course code	ALLIED COURSE –I	Total Marks:100		Hours Per Week	Credits
I	21UAJAT104	NUMERICAL AND STATISTICAL METHODS	CIA: 50	ESE:50	5	4

Course Objectives:

1. To understand the concepts of numerical methods for Computer Science
2. Make the Students to be ready for solving Statistical Problems
3. To impart knowledge among the students for solving problems through Numerical methods

Course Outcomes (CO); On completion of the course, students should be able to

CO 1	Solve Linear algebraic equations.	K1-K4
CO 2	Apply Newton's Interpolation Formulae.	K1-K4
CO 3	Calculate Measures of Central Tendency and Dispersion.	K1-K4
CO 4	To gain Knowledge in Correlation	K1-K4
CO 5	Analyse the Problems using Regression.	K1-K4

K1 :Recall; K2 :Understand; K3 :Apply; K4 :Analyze; K5: Evaluate; K6: Create.

Unit –I : Numerical Solution of Equations

The Solution of Numerical Algebraic and Transcendental Equations: The Bisection method – Regula Falsi Method – Newton - Raphson method.

Solution of Simultaneous Linear Algebraic Equations :Gauss-Elimination Method and Gauss-Seidel Method of Iteration

Chapters 3 (Pg.No.:69-75, 81-98)

Chapters 4 (Pg.No.: 112-121, 147-159)

Unit – II : Interpolation

Interpolation: Newton's Forward and Backward interpolation formulae.

Numerical Differentiation: Newton's Forward Difference – Newton's Backward Difference.

Numerical Integration: The Trapezoidal Rule – Simpson's one-third Rule.

Chapter 6 (Section 6.2,6.3) (Pg.No.:211-227)

Chapter 9 (Sections 9.2, 9.3, 9.9, 9.11, 9.13, 9.16)(Pg.No.: 281-288, 300-304, 306-313)

Unit – III : Measures of Central Tendency and Dispersion

Measures of Central Tendency: Mean, Median and Mode.

Measures of Dispersion: Range- Quartile Deviation - Standard Deviation – Coefficient of Variation.

Chapter 7 (Pg.No.: 159-183, 196-209, 212-227)

Chapter 8 (Pg.No.: 305-311, 325-340, 360-362)

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Unit – IV :	Correlation

Simple Linear Correlation – Scatter Diagram – Karl Pearson's Coefficients of Correlation –Spearman's Rank Correlation Coefficient.

Chapter 12 (Pg.No.: 503-528)

Unit – V :	Regression

Simple Linear Regression– Difference between Correlation and Regression–Two Regression Lines–Methods of forming the Regression Equations- Properties of Regression lines and Coefficients.

Chapter 13 (Pg.No.: 540-554,563-569)

Skill Development Activities

1. List out and explain the real life applications of Numerical Methods.
2. Correlate your first and second internal marks.
3. List out and explain the applications of Statistics in the field of Computer Science.

TEXT BOOKS

1	Dr. P.Kandasamy, Dr.K.Thilagavathy and Dr.K.Gunavathi,"Numerical Methods", S.Chand and company ltd, 2016.
2	P.A. Navnitham, "Business Mathematics & Statistics", Jai Publishers, 2011.

REFERENCE BOOKS

1	E. Balagurusamy," Numerical methods", Tata MC Graw Hill Publishing Company Ltd,2008.
2	S.C Gupta, V.K.Kapoor,"Fundamental of Mathematical statistics", Sultan Chand and Sons, 2008.
3	Richard W.Hamming, "Numerical Methods for Scientists and Engineers", Dover Publications Inc., 1987.
4	R.S.N.Pillai & Bagavathi, "Statistics", Sultan Chand &Co, 2010.
5	S.P. Gupta, "Statistical Methods", Sultan Chand &Sons, 2012.

Web Resources

1	https://lecturenotes.in/m/17447-note-of-numerical-analysis-and-statistics-method-by-chirag-damania
2	https://go-pdf.online/out/53109AD/notes-numerical-and-statistical-methods-for-bca.pdf

Course Designed By	Verified By	Approved By HOD
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QUESTION PAPER PATTERN		
Time: 3 hours	**Max. Marks: 50**	
SECTION-A (10 X 1 = 10 Marks) Answer ALL questions Choose the correct answer Two questions from each unit	**SECTION-B (5 X 3 = 15 Marks)** Answer ALL questions Either or type Two questions from each unit	**SECTION-C (5 X 5 = 25 Marks)** Answer ALL questions Either or type Two questions from each unit

Mapping of COs with POs and PSOs:

PO/PSO / CO	PO							PSO				
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	L	L	L	L	M	S	S	S	M	M	S
CO2	S	L	L	L	L	M	S	S	M	S	M	S
CO3	S	L	L	L	L	M	M	S	S	M	M	S
CO4	S	L	L	L	L	M	M	S	M	M	M	S
CO5	S	L	L	L	L	M	M	S	M	M	M	S

S-Strong, M-Medium, L-Low

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Sem	Course Code	Core III: Professional English - II	Total Marks:100		Hours Per Week	Credits
II	21UAJCT201		CIA : 50	ESE:50	4	4

Course Objectives:

1. To develop their competence in the use of English with particular reference to the workplace situation.
2. To enhance the creativity of the students which will enable them to think of innovative ways to solve issues in the workplace.
3. To develop their competence and competitiveness and thereby improve their employability skills.

Outcomes (CO): On completion of the course, students should be able to

CO 1	Identify the importance of linguistic competence in workplace situations	K1 - K4
CO 2	Develop LSRW skills for academic and career purposes	
CO 3	Build the employability skills through various speaking and writing tasks	
CO 4	Relate the communication skills suitable for employability	
CO 5	Illustrate the digital competence with innovation and imagination	

K1 :Remember; K2 :Understand; K3 :Apply; K4 :Analyze

Unit - I	**Communicative Competence**

Listening: Listening to two talks/lectures by specialists on selected subject specific topics - (TED Talks) and answering comprehension exercises (inferential questions).

Speaking: Small group discussions (the discussions could be based on the listening and reading passages - open ended questions).

Reading: Two subject-based reading texts followed by comprehension activities/exercises.

Writing: Summary writing based on the reading passages.

Unit - II	**Persuasive Communication**

Listening: Listening to a product launch- sensitizing learners to the nuances of persuasive communication.

Speaking: Debates - Just-A Minute Activities

Reading: Reading texts on advertisements (on products relevant to the subject areas) and answering inferential questions.

Writing: Dialogue writing- Writing an argumentative / persuasive essay.

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Unit - III	Digital Competence

Listening: Listening to interviews (subject related).

Speaking: Interviews with subject specialists (using video conferencing skills) - Creating Vlogs (How to become a vlogger and use vlogging to nurture interests – subject related).

Reading: Selected sample of Web Page (subject area).

Writing: Creating Web Pages.

Reading Comprehension: Essay on Digital Competence for Academic and Professional Life.

The essay will address all aspects of digital competence in relation to MS Office and how they can be utilized in relation to work in the subject area.

Unit - IV	Creativity and Imagination

Listening: Listening to short (2 to 5 minutes) academic videos (prepared by EMRC/ other MOOC videos on Indian academic sites - E.g. https://www.youtube.com/watch?v=tpvicScuDy0).

Speaking: Making oral presentations through short films - subject based.

Reading: Essay on Creativity and Imagination (subject based).

Writing - Basic Script Writing for short films (subject based) - Creating blogs, flyers and brochures (subject based) - Poster making - writing slogans/captions (subject based).

Unit - V	Workplace Communication and Basics of Academic Writing

Speaking: Short academic presentation using PowerPoint.

Reading & Writing: Product Profiles, Circulars, Minutes of Meeting.

Writing an introduction, Paraphrasing, Punctuation (period, question mark, exclamation point, comma, semicolon, colon, dash, hyphen, parentheses, brackets, braces, apostrophe, quotation marks, and ellipsis), Capitalization (use of upper case).

Skill Development Activities

1. Group Discussion
2. Persuasive Speaking – Conversation
3. Listening Activities – Watching Videos and answering questions and summarizing the content
4. Creative Writing – Flyers, Brochures, Slogans, Captions
5. PowerPoint Presentation

TEXT BOOK

1.	Professional English for Physical Sciences-II - TANSCHE.

REFERENCE BOOKS

1.	Alice Oshima & Ann Hogue, Writing Academic English, Second Edition, Addison Wesley Publishing Company, 1991.

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2.	Lyn R. Clark, Kenneth Zimmer, Joseph Tinervia, Business English and Communication, Seventh Edition, MacMillan / McGraw-Hill, Imprint 1991.

Web Resources

1.	https://www.coursera.org/learn/speak-english-professionally
2.	https://www.ted.com/talks/pranav_rajan_computer_science_education

Course Designed By	Verified By	Approved By HOD
Mr.S.Muruganantham	for Ms.S.Yasmin	Dr.T.A.Sangeetha

QUESTION PAPER PATTERN

SECTION - A (10 X 1 = 10 Marks)	SECTION - B (4 X 10 = 40 Marks)
(Vocabulary) (MCQ, Info-gap questions - domain specific vocabulary)	(Reading: Two long domain-specific comprehension passages with questions pertaining to understanding and analysis - 20 Marks) (Writing: Descriptive/narrative/persuasive writing questions pertaining to domain-specific vocabulary - 20 Marks)

Mapping of COs with POs and PSOs

PO/PSO / CO	PO							PSO				
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO 1	S	S	S	M	S	M	M	M	S	S	S	M
CO 2	S	S	M	S	M	M	S	M	M	S	S	M
CO 3	S	S	S	M	S	M	M	M	M	S	S	M
CO 4	S	S	M	S	S	M	S	M	S	S	S	M
CO 5	S	S	S	M	M	M	M	S	S	S	S	M

S-Strong, M-Medium, L-Low

KONGU ARTS AND SCIENCE CO. ERODE 638 107

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Sem	Course Code	Core IV: Programming in JAVA	Total Marks:100		Hours Per Week	Credits
II	21UAJCT202		CIA : 50	ESE :50	4	4

Course Objectives:

1. To expose the students skill with the concepts of OOPs and to make them represent the real world entities.
2. To introduce the concepts of converting the real time problems into objects and methods and their interaction with one another to attain a solution.
3. To make them design Applications using Applet and GUI.

Course Outcomes (CO): On completion of the course, students should be able to

CO 1	Build the java applications using OOP Concepts for stand-alone applications.	**K1 - K4**
CO 2	Develop the packages as reusable components.	
CO 3	Apply the concept of multi threading and Synchronization in java programs.	
CO 4	Detect the possible errors by applying the concepts of Exception Handling.	
CO 5	Design Applets and Graphical Programming.	

K1 :Remember; K2 :Understand; K3 :Apply; K4 :Analyze

Unit –I	**Fundamentals of Object-Oriented Programming**

Object Oriented Paradigm, Basic Concepts of OOP, Benefits of OOP, Application of OOP, Java Evolution: History – Features – How Java Differs from C and C++. Overview of Java Language: Simple Java Program – More on Java – An Application with Two Classes – Java Program Structure – Java Tokens – Java Statements – Java Virtual Machine - Constants, Variables and Data types.

Self Study: Operators and Expressions – Decision Making and Branching – Decision Making and Looping.

Chapters 1 to 7

Unit – II	**Classes, Objects, Methods, Arrays and Interfaces**

Classes, Objects and Methods: Defining a Class – Field Declaration – Creating Objects – Accessing Class Members – Constructors – Method Overloading – Static Members – Nesting of Methods – Inheritance – Overriding Methods – Final Variables and Methods – Final Classes – Finalizer Classes – Abstract Methods and Classes. Arrays, Strings and Vectors: One-Dimensional Arrays – Creating an Array – Two-Dimensional Arrays – Strings – Vectors – Wrapper Classes – Enumerated Types. Interfaces: Defining – Extending – Implementing – Accessing Interfaces.

Chapters 8 to 10

Unit – III	Packages and Thread Programming

Java API Packages: Using System Packages – Naming Conventions – Creating Packages – Accessing Package – Using a Package – Adding Classes to a Package – Hiding Classes – Static Import. Multithreaded Programming: Creating Thread – Extending Thread – Stopping and Blocking a Thread – Life Cycle of a Thread – Using Thread Method – Thread Exception: Thread Priority – Synchronization – Implementing the Runnable Interface – Inter-Thread Communication.

Chapters 11 and 12

Unit – IV	Managing Errors & Exceptions and Handling Files

Managing Errors and Exceptions: Types of Errors – Exceptions – Syntax of Exception Handling Code – Multiple Catch Statements – Using Finally Statement – Throwing our own Exceptions – Using Exceptions for Debugging. Managing Input / Output Files in Java: Concept of Streams – Stream Classes – Byte Stream Classes – Character Stream Classes – Using Streams – Other Useful I/O Classes – Using File Class – Input / Output Exceptions – Creation of Files – Reading/Writing Characters – Reading/Writing Bytes – Handling Primitive Data Types – Concatenating and Buffering Files – Random Access Files – Interactive Input and Output – Other Stream Classes.

Chapters 13 and 16

Unit – V	Applet Programming

Applet Programming: How Applets Differ From Applications – Preparing to Write Applets – Building Applet Code – Applet Life Cycle – Creating an Executable Applet – Designing a Webpage – Applet Tag – Adding Applet to HTML File – Running the Applet – Passing Parameter to Applet – Aligning the Display – More about HTML Tags – Displaying Numerical Values – Getting Input from the User – Event Handling. Graphics Programming – The Graphic Class – Lines and Rectangles – Circles and Ellipse – Drawing Arcs – Drawing Polygons – Line Graphs – Using Control Loops in Applets – Drawing Bar Charts – Introduction to AWT Package - Introduction to Swings.

Chapters 14 and 15

Skill Development Activities

1. To develop a program to inscribe the given string on the screen using JAVA concepts.
2. Compare the scope of looping and branching tools to be used in the languages.
3. List out the real time applications can be done using OOPS Concepts.

TEXT BOOK

1. E.Balagurusamy, "Programming with JAVA", Fifth Edition, McGraw-Hill Publishing Company Ltd., 2014.

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REFERENCE BOOKS	
1	"The Complete Reference JAVA 2", Herbert Schildt, Fifth Edition, Tata McGraw-Hill Publishing Company Ltd., 2005.
2	"Java: The Complete Reference", Herbert Schildt, McGraw Hill Education, Oracle Press 10th Edition, 2018
3	Programming with Java – John R. Hubbard, 2nd Edition, TMH.

Web Resources	
1	https://nptel.ac.in/courses/106/105/106105191/
2	https://www.w3schools.in/java-tutorial/
3	https://www.programiz.com/java-programming/online-compiler/
4	https://www.tutorialspoint.com/compile_java_online.php

Course Designed By	Verified By	Approved By HOD
Ms.S.Dhivya	Ms.S.Hemalatha	Dr.T.A.Sangeetha

QUESTION PAPER PATTERN

SECTION – A	SECTION – B	SECTION – C
10 x 1= 10 Marks (Multiple choice, Four options) Two questions from each unit	5 x 3 = 15 Marks (Either or choice) Two questions from each unit	5 x 5 = 25 Marks (Either or choice) Two questions from each unit

Mapping of COs with POs and PSOs:

PO/PSO / CO	PO							PSO				
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO 1	S	M	S	S	M	M	S	S	S	S	S	M
CO 2	S	L	S	S	L	M	S	S	S	S	S	S
CO 3	S	M	S	S	M	M	S	S	S	S	S	S
CO 4	S	M	S	S	M	M	S	S	S	S	S	M
CO 5	S	M	S	S	M	M	S	S	S	S	S	S

S-Strong, M-Medium, L-Low

Sem	Course Code	Core Practical II: JAVA Programming	Total Marks:100		Hours Per Week	Credits
II	21UAJCP203		CIA : 50	ESE : 50	3	3

Course Objectives:

1. To provide the students a strong foundation on OOP concepts and its applications through hands-on training.
2. To implement and gain knowledge in packages, interfaces, multithreading, applet and AWT.
3. To develop real time applications using their skill in Java Concepts.

Course Outcomes (CO): On completion of the course, students should be able to

CO 1	Build the java applications using OOP Concepts for stand-alone applications.	**K1 - K4**
CO 2	Develop the packages as reusable components.	
CO 3	Apply the concept of multi threading to synchronize multiple processes.	
CO 4	Detect the possible errors by applying the concepts of Exception Handling.	
CO 5	Design Applets for creating Graphical User Interface.	

K1 :Remember; K2 :Understand; K3 :Apply; K4 :Analyze

1. Write a JAVA Program to find the week and month of a year for the given date.
2. Write a JAVA Program to implement the various string methods using stringBuffer class.
3. Write a JAVA Program to implement the concept of multiple inheritance using interfaces.
4. Write a JAVA Program to implement the concept of Package.
5. Write a JAVA Program to get the name of a running thread.
6. Write a JAVA Program for exception handling by creating user defined exceptions.
7. Write an Applet Program to create different shapes and fill colours.
8. Write an Applet Program to demonstrate the multiple selection list box.
9. Write an Applet Program to create menu bars and pull-down menus.
10. Write a JAVA Program to append a string in an existing file.

TEXT BOOK

1. E.Balagurusamy, "Programming with JAVA", Third Edition, Tata McGraw-Hill Publishing Company Ltd., 2007.

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REFERENCE BOOKS

1	"The Complete Reference JAVA 2", Herbert Schildt, Fifth Edition, Tata McGraw-Hill Publishing Company Ltd., 2005.
2	"Java: The Complete Reference", Herbert Schildt, McGraw Hill Education, Oracle Press 10th Edition, 2018
3	"Programming with Java" – John R. Hubbard, 2nd Edition, TMH.

Web Resources

1	https://nptel.ac.in/courses/106/105/106105191/
2	https://www.w3schools.in/java-tutorial/
3	https://www.programiz.com/java-programming/online-compiler/
4	https://www.tutorialspoint.com/compile_java_online.php

Course Designed By	Verified By	Approved By HOD
Mr. G.Eswaramoorthi	Ms.S.Hemalatha	Dr.T.A.Sangeetha

Mapping of COs with POs and PSOs

PO/PSO / CO	PO							PSO				
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO 1	S	M	S	S	M	M	S	S	S	S	S	M
CO 2	S	L	S	S	L	M	S	S	S	S	S	S
CO 3	S	M	S	S	M	M	S	S	S	S	S	S
CO 4	S	M	S	S	M	M	S	S	S	S	S	M
CO 5	S	M	S	S	M	M	S	S	S	S	S	S

S-Strong, M-Medium, L-Low

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Semester	Course code	ALLIED PAPER: II DISCRETE MATHEMATICS	Total Marks:100		Hours Per Week	Credits
II	21UAJAT204		CIA : 50	ESE :50	5	4

Course Objectives:

1. To enable the students to understand the concepts of Discrete Structures.
2. To teach about the concept of relations and functions.
3. To impart the knowledge of lattices and Boolean algebra.

Course Outcomes (CO): On completion of the course, students should be able to

CO 1	Know about Connectives & Well-formed Formulas.	K1-K4
CO 2	Attain knowledge about Normal Forms and Predicate Calculus.	K1-K4
CO 3	Solve the real time problems on Relations.	K1-K4
CO 4	Acquire knowledge on Functions and Grammars.	K1-K4
CO 5	Compare the characteristics of Lattices and discuss about Boolean algebra .	K1-K4

K1: Recall; K2: Understand; K3: Apply; K4: Analyze; K5: Evaluate; K6: Create.

Unit –I : Connectives

Negation - Conjunction - Disjunction - Statement Formulas and Truth Tables - Conditional and Bi conditional - Well-formed Formulas–Tautologies - Equivalence of formulas– Duality law– Tautological implications.

Chapter 1 : Sections 1.2.1-1.2.4, 1.2.6-1.2.11 Page no : 7-14,18-35

Unit – II : Connectives and Predicate Calculus

Normal Forms: Disjunctive Normal Form – Conjunctive Normal Form – Principle Disjunctive Normal Form – Principle Conjunctive Normal Form.

Predicate Calculus: Predicates - The Statement Function, Variables and Quantifiers - Predicate Formulas- Free and Bound Variables. Theory of Inference for the Predicate Calculus.

Chapter 1 : Sections 1.3.1-1.3.4, 1.5.1-1.5.4, 1.6.4 Page no : 50-58,80-87,96-99

Unit – III : Set Theory

Relations and Ordering: Relations–Properties of Binary Relations in a Set–Relations Matrix and Graph of a Relation–Equivalence Relations–Composition of Binary Relations – Partial Ordering – Partially Ordered Set: Representation and Associated Terminology.

Chapter 2 : Sections 2.3.1-2.3.3, 2.3.5, 2.3.7-2.3.9 Page no : 148-162,164-166,176-192

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Unit – IV :	Set Theory and Algebraic Structures

Functions: Definition and Introduction–Composition of functions–Inverse functions.

Grammar and Languages: Discussion of Grammars - Formal Definition of a Language.

Chapter 2 : Sections 2.4.1-2.4.3 Page no : 192-205

Chapter 3 : Sections 3.3.1-3.3.2 Page no : 294-304

Unit – V :	Lattices and Boolean Algebra

Lattices: Introduction-Lattices as Partially Ordered Sets-Definition and Examples – Some Properties of Lattices – Some Special Lattices.

Boolean Algebra: Definition and Examples–Boolean Functions-Boolean functions and Free Boolean Algebra- Values of Boolean expressions and Boolean functions.

Chapter 4 : Sections 4.1.1,4.1.2, 4.1.5, 4.2.1, 4.3.1,4.3.2 Page no : 378-385,392-401,406-418

Skill Development Activities

1. List out and explain the real life applications of Discrete Mathematics.
2. Explain briefly about the use of Mathematical connectives in real life.
3. List out and explain the applications of Discrete Mathematics in the field of Computer Science.

TEXT BOOK

1	J. P Tremblay and R Manohar, "Discrete Mathematical Structures with Applications to Computer Science", 31st Reprint, Mc Graw Hill International, 2008.

REFERENCE BOOKS

1	J.K.Sharma, "Discrete Mathematics", Second Edition, Macmillan India Ltd, 2005.
2	K. Balakrishnan, "Introductory Discrete Mathematics", Dover Publications Incs, October 2010.

WEB RESOURCES

1	http://www.math.wise.edu>free221
2	www.ma.huji.ac.il>iWeb>Teaching_files

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Course Designed By	Verified By	Approved By HOD
Ms.S.VIDHYA	Ms.C.RADHAMANI	Dr.S.NAGARAJAN

QUESTION PAPER PATTERN		
Time: 3 hours		**Max. Marks: 50**
SECTION-A (10 X 1 = 10 Marks) Answer ALL questions Choose the correct answer Two questions from each unit	**SECTION-B (5 X 3 = 15 Marks)** Answer ALL questions Either or type Two questions from each unit	**SECTION-C (5 X 5 = 25 Marks)** Answer ALL questions Either or type Two questions from each unit

Mapping of COs with POs and PSOs:

PO/PSO / CO	PO							PSO				
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	S	M	L	L	L	S	S	S	M	S	S
CO2	S	M	M	L	L	L	S	S	S	S	S	S
CO3	S	M	M	L	L	L	S	S	S	M	S	S
CO4	S	M	M	L	L	L	S	S	S	M	S	S
CO5	S	M	M	L	L	L	S	S	S	M	S	S

S-Strong, M-Medium, L-Low

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SEM	Course Code	Core 4: Data Structures	Total Marks: 100		Hours per Week	Credits
III	17UAJCT301		CIA: 25	ESE: 75	6	5

Objectives: To enable the students to understand the concepts of Data structure and to know various algorithms in data structures.

Course Outcome: On Completion of this course the students will be able to

CO1 Understand the needs of the data structure, Problem solving strategies and Algorithms.

CO2 Understand the types of list and its representations.

CO3 Understand the applications of tree data structure.

CO4 Apply the graph representations, searching and sorting methods.

CO5 Know the need of algorithm and its designing strategy.

UNIT – I: Introduction to Data structures: Need for Data Structures – Algorithm Analysis: Problem Solving - Categories of Problem Solving - Problem Solving Strategies - Algorithm Analysis – Time Complexity Cases - Arrays – Stack: ADT Stack - Implementation of Stack - Infix, Prefix and Postfix Expressions. Queue – Implementation of Queues - Circular queue.

UNIT – II: Linked Lists : Introduction – Types of Linked List – Singly Linked Lists – Doubly Linked Lists – Circular Linked Lists – Multiply Linked List – Sparse Matrix Representation – Linked List Applications – Polynomial Representation - Polynomial Addition – Representation of Polynomials with Multivariables.

UNIT – III: Trees: Introduction - Representation of Binary Trees – Binary Tree Traversals – Applications of Trees. Binary Search Trees – Creating a BST – Inserting an Element into BST – Deleting an Element in a BST.

UNIT – IV: Graphs: Introduction - Representation of Graphs – Operations on Graph: Breadth First Search (BFS) – Depth First Search (DFS). Search: Binary Search – Linear Search. Sorting: Introduction – Types of Sorting: Insertion Sort – Shell Sort – Merge Sort – Quick Sort – Heap Sort – Bubble Sort.

UNIT V: Introduction to Algorithm: Definition – Expression and Implementation of Algorithms – Analysis of Algorithms – Algorithm Complexity: Space Complexity – Time Complexity – Determination of Complexities – Cases of Complexity – Importance of Constants during the Analysis of Algorithms – Designing of Algorithms: Approaches for Designing Algorithm - Difference Between Incremental and Divide and Conquer Approach.

TEXT BOOKS:

1. Dr.A.Chitra, P.T.Rajan, "Data Structures", Tata McGraw-Hill, Second Reprint 2007.
2. Prabhakar Gupta, Vineet Agarwal, Manish Varshney, "Design and Analysis of Algorithms", 2008, PHI Publications.

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REFERENCE BOOKS:

1. "Fundamentals of Data Structures", Ellis Horowitz, Sartaj Shani, Galgotia Publication.
2. "Analysis of Algorithms", Jeffrey J. McConnell, Narosa Publishing House.

QUESTION PAPER PATTERN		
SECTION - A	SECTION - B	SECTION - C
10 x 1 = 10 Marks (Multiple Choice, Four options) Two questions from each unit	5 x 7 = 35 Marks (Either or choice) Two questions from each unit	3 x 10 = 30 Marks (Answer any three Questions) One Question from each unit

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SEM	Course Code	Core 5: Programming in C++	Total Marks: 100		Hours per Week	Credits
III	17UAJCT302		CIA: 25	ESE: 75	5	4

Objectives: To inculcate knowledge on Object-Oriented Programming concepts using C++.

Course Outcome: On Completion of this course the students will be able to

CO1 Know the concepts and application of OOPs and the data types in C++ and Statements.

CO2 Understand the classes and objects and the types of functions.

CO3 Know the applications of Constructors, Destructors and Function Overloading

CO4 Apply the inheritance and exception handling procedures.

CO5 Understand the file system in the C++ Programming.

UNIT – I: Principles of Object Oriented Programming (OOP): Introduction - OOP Paradigm – Basic Concepts of OOP – Benefits of OOP – OO Languages - Applications of OOP. C++: What is C++? – A Simple C++ Program – More C++ Statements – Example with Class – Structure of C++ Program – Creating the Source File – Compiling and Linking. Tokens: Introduction– Keywords – Identifiers and Constants – Symbolic Constants. Data Types: Basic Data Types – User-defined Data Types – Derived Data Types. Variables: Declaration – Dynamic Initialization – Reference Variables. Operators: Operators in C++ - Scope Resolution Operator - Member Dereferencing Operators – Memory Management Operators – Manipulators – Type Cast Operator. Special Assignment Expressions. Control Structures: Branching – IF Statement – SWITCH Statement. Looping: WHILE DO, FOR Statements.

UNIT – II: Classes and Objects: Introduction – Specifying a Class – Defining Member Functions – Nesting of Member Functions – Private Member Functions – Array within a Class – Memory Allocation for Objects – Static Data Members – Static Member Functions – Array of Objects – Objects as Function Arguments — Returning Objects - const Member Functions – Pointers to Members. Functions: Main Function – Function Prototyping – Call by Reference – Return by Reference – Inline Functions – Default Arguments – const Arguments – Function Overloading – Friend Functions.

UNIT – III: Constructors and Destructors: Introduction – Constructors – Parameterized constructor – Multiple Constructors in a Class – Constructors with Default Arguments – Dynamic Initialization of Objects – Copy Constructor – Dynamic constructors – Destructors. Operator Overloading: Introduction – Defining operator overloading – Overloading Unary and Binary Operators – Rules for Overloading Operators – Type Conversions.

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UNIT – IV: Inheritance: Defining Derived Class – Single, Multilevel, Multiple, Hybrid and Hierarchical Inheritance- Abstract Class. Pointers: Introduction – Pointers to Objects – this pointer – Pointers to Derived Classes – Virtual Functions: Pure Virtual Functions. Exception Handling : Introduction – Basics of Exception Handling – Exception Handling Mechanism - Throwing Mechanism – Catching Mechanism – Rethrowing an Exception – Specifying Exceptions.

UNIT V: Managing Console I/O Operations: Introduction – C++ Streams – C++ Stream Classes – Unformatted I/O Operations – Formatted Console I/O Operations – Managing Output with Manipulators. Working with Files: Introduction – Classes for File Stream Operations – Opening and Closing Files – Detecting an EOF – Sequential I/O Operations – Updating a File: Random Access – Error Handling During File Operations – Command Line Arguments.

TEXT BOOK:

1. E.Balagurusamy, "Object Oriented Programming with C++", Tata McGraw-Hill, Fourth Edition, 2008.

REFERENCE BOOK:

1. "Object-Oriented Programming with ANSI & Turbo C++", Ashok N Kamthane, Pearson Education India, 2006.

QUESTION PAPER PATTERN		
SECTION - A	SECTION - B	SECTION - C
10 x 1 = 10 Marks (Multiple Choice, Four options) Two questions from each unit	5 x 7 = 35 Marks (Either or choice) Two questions from each unit	3 x 10 = 30 Marks (Answer any three Questions) One Question from each unit

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SEM	Course Code	Core Lab 3: C++ Programming Lab	Total Marks: 100		Hours per Week	Credits
III	17UAJCP303		CIA: 40	ESE: 60	6	4

1. Write a simple program in C++ to create classes and objects.
2. Write a program in C++ to implement Inline function.
3. Write a program in C++ to implement Function Overloading.
4. Write a program in C++ to demonstrate Friend function.
5. Write a program in C++ by implementing call-by-value and call-by-reference.
6. Write a program in C++ using constructors and destructors.
7. Write a program in C++ using operator overloading (Unary / Binary).
8. Write a program in C++ using multilevel inheritance.
9. Write a simple program in C++ for exception handling.
10. Write a program in C++ for string manipulation.

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Sem	Course Code	ALLIED PAPER – III COMPUTER BASED OPTIMIZATION TECHNIQUES	Total Marks: 100		Hours Per Week	Credits
III	17UAJAT304/ 17UAKAT304		CIA:25	ESE:75	6	4

OBJECTIVE:

To enable the students to understand the concepts of the mathematical applications in industries and decision making using optimization techniques.

COURSE OUTCOME:

On successful completion of the course, the students will be able to

CO1 solve the Linear Programming Problem by graphical method (Apply)

CO2 formulate the Transportation problems (Create)

CO3 optimize the assignment problems and Replacement Problems (Analyze)

CO4 discuss the types of Queueing models and various Strategies of Game Theory (Understand)

CO5 construct a Network diagram and find the Critical path and PERT (Create)

UNIT I

Linear Programming Problem: Introduction – Linear Programming Problem - Mathematical Formulation of the Problem – Illustration on Mathematical Formulation of LPPs.

Graphical Solution and Extension: Introduction – Graphical Solution Method – General Linear Programming Problem.

Simplex Method: Introduction – The Computational Procedure.

UNIT II

Transportation Problem : Introduction – LP Formulation of the Transportation Problem –The Transportation Table – Loops in Transportation Tables – Solution of a Transportation Problem – Finding an Initial Basic Feasible Solution – Transportation Algorithm (MODI Method).

UNIT III

Assignment Problem: Introduction – Mathematical Formulation of the Problem – Solution Methods of Assignment Problem – Special Cases in Assignment Problems (Except Theorems).

Replacement Problem and System Reliability: Introduction – Replacement of Equipment/Asset that Deteriorates Gradually.

UNIT IV

Queueing Theory: Introduction – Queueing System – Classification of Queueing Models – Poisson Queueing Systems: Model I and Model III (Problems Only).

Games and Strategies: The Maximin - Minimax Principle – Games Without Saddle Points-Mixed Strategies – Graphical Solution of 2 x n and m x 2 Games.

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UNIT V

Network Scheduling by PERT/CPM: Introduction – Network: Basic Components – Logical Sequencing – Rules of Network Construction – Concurrent Activities – Critical Path Analysis – Probability Consideration in PERT – Distinction between PERT and CPM.

Text book:

Kanti Swarup, P.K.Gupta and Man Mohan. "Operations Research", Fourteenth Edition, Sultan Chand & Sons, 2008.

Unit I: Chapter 2: 2.1 – 2.4
Chapter 3: 3.1, 3.2, 3.4
Chapter 4: 4.1, 4.3

Unit II: Chapter 10: 10.1, 10.2, 10.5, 10.6, 10.8, 10.9 and 10.13

Unit III: Chapter 11: 11.1 – 11.4
Chapter 18: 18.1, 18.2

Unit IV: Chapter 21: 21.1, 21.2, 21.7, 21.9
Chapter 17: 17.4, 17.5, 17.6

Unit V: Chapter 25: 25.1 – 25.8

Books for Reference:

1. J.K.Sharma, " Operations Research Theory and Applications", Macmillan India Ltd, Third Edition, 2007.
2. Hamdy A.Taha, "Operations Research An Introduction", Prentice-Hall of India Private Limited, Eighth Edition, 2006.
3. Premkumar Gupta and D.S.Hira, " Problems in Operations Research Principles and Solutions", S.Chand & Company Ltd, First Edition, Reprint 2007.
4. A.M.Natarajan, P.Balasubramani and A.Tamilarasi, "Operations Research", Pearson Education Pvt Ltd, Second Edition, 2007.
5. R.Sivarethinamohan, "Operations Research", Tata McGraw-Hill Publishing Company Limited, First Edition, 2005.

QUESTION PAPER PATTERN		
SECTION – A	**SECTION – B**	**SECTION – C**
10x1=10 Marks (Multiple choice, Four options) Two questions from each unit	5 x 7 = 35 Marks (Either or choice) Two questions from each unit	3x10 = 30 Marks (Answer any three questions) One question from each unit

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SEM	Course Code	Skill Based Subject - I: Web Graphics	Total Marks: 75		Hours per Week	Credits
III	17UAJST305		CIA: 20	ESE: 55	5	3

Objectives: To enhance the profession skill set of the students in web oriented applications.

Course Outcome: On Completion of this course the students will be able to

CO1 Know the structure of HTML programming and body section characteristics.

CO2 Use the Lists and Table formats in HTML programming.

CO3 Understand the Concepts of DHTML, style sheets and Frames and Forms.

CO4 Classify the elements and menus of photoshop.

CO5 Know the file formats and animation procedures in photoshop.

UNIT – I: Introduction to HTML: Designing a Home Page - History of HTML - HTML Generations – HTML Documents - Anchor Tag - Hyper Links. Head and Body Sections: Header Section – Title - Prologue – Links - Colorful Web Page - Comment Lines. Designing the Body Section: Heading Printing - Aligning the Headings - Horizontal Rule – Paragraph – Tab Settings – Images and Pictures – Embedding PNG Format Images.

UNIT – II: Ordered and Unordered Lists: Lists – Unordered Lists – Headings in a list – Ordered Lists – Nested Lists. Table Handling: Tables – Table Creation in HTML - Width of the Table and Cells – Cells Spanning Multiple Rows/Columns – Coloring Cells – Column Specification.

UNIT – III: DHTML and Style Sheets. Frames: Frameset Definition – Frame Definition – Nested Framesets. Forms: Action Attribute - Method Attribute – Enctype Attribute – Drop Down List.

UNIT – IV: Launching Photoshop – Exploring the Interface – Using Screen Modes – Exploring Commonly used Tools in the Tools Panel – Creating, Saving and Closing Documents in Photoshop – Working with Panels in Photoshop – Understanding Image Resolution – Editing Images – Color Modes – Making Color Adjustments.

UNIT – V: File Formats in Photoshop – Creating a PDF File in Photoshop – Making a Selections Tools – Working with Layers – Exploring Drawing Tools – Exploring Painting Tools – Exploring Retouching Tools – Working with Animation in Photoshop.

TEXT BOOKS:

1. C. Xavier, "World Wide Web Design with HTML", Tata McGraw Hill Education Private Limited, 2012
2. "Photoshop CS5 in Simple Steps", Kogent Learning Solutions Inc. – Dreamtech Press, 2011.

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REFERENCE BOOKS:

1. "Photoshop CS in Easy Steps", Robert Shufflebotham, Dreamtech Press, 2004.
2. "Photoshop 6", Ramesh Bangia, First Edition 2001, ISBN 81-87522-70-4.

QUESTION PAPER PATTERN		
SECTION - A	SECTION - B	SECTION - C
10 x 1 = 10 Marks (Multiple Choice, Four options) Two questions from each unit	5 x 3 = 15 Marks (Either or choice) Two questions from each unit	3 x 10 = 30 Marks (Answer any three Questions) One Question from each unit

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Sem.	Course Code	Course Name	Total Marks: 75		Hours Per Week	Credits
III	17UADNT306	NON MAJOR ELECTIVE I BASICS OF COMMERCE	CIA: -	ESE: 75	2	2

OBJECTIVE:

To appreciate the various functions which deals the applications of commerce and Trade.

COURSE OUTCOMES:

At the end of the Course, Students will be able to

CO1 Remember the basic concepts of business organization.
CO2 Understand the management techniques and gain exposure on functions of management.
CO3 Apply the planning, organizing and controlling techniques of management.
CO4 Analyze the various marketing functions, process and its applications for decision making.
CO5 Evaluate and apply the mechanism of e - marketing technologies in business.

UNIT- I

Business: Meaning - Characteristics – Scope of business – Objectives of Modern Business – Business System – Business Ethics.

UNIT -II

Management: Definitions – Features – Importance of Management to Organization – Importance to Economy – Functions of Management.

UNIT- III

Planning: Meaning - Steps to make effective planning – Organization Chart – types -. Recruitment – selection procedure – induction and orientation- training and its importance.

UNIT- IV

Marketing: Meaning – Classifications of marketing – Marketing Functions – elements of Marketing Mix - Functions of physical supply.

UNIT- V

E-Business: Introduction - Telemarketing - Automatic vending – E-Commerce – Electronic Data Interchange – Email marketing - Viral Marketing – E-Trading.

TEXT BOOK:

1. R.K.Sharma Shashi K.Gupta, "Business Organisation and Office Management", Kalyani Publishers, 2014, New Delhi

BOOKS FOR REFERENCE:

1. Y.K. Bhushan "Business Organisation and Management", Sultan Chand & Sons, 2013, New Delhi.
2. Rajan Nair, "Marketing Management", Kalyani Publishers, 2012, Chennai.

QUESTION PAPER PATTERN
SECTION - A
5 x 15 = 75 Marks (Either or choice) Two questions from each unit

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Sem.	Course Code	Course Name	Total Marks: 75		Hours Per Week	Credits
III	17UADNT307	NON MAJOR ELECTIVE I BUSINESS ORGANISATION	CIA: -	ESE: 75	2	2

OBJECTIVE:

To acquaint the students with the concepts of business organization.

COURSE OUTCOMES:

At the end of the course, students will be able to

CO1 Remember the qualities of successful businessman and able to built good organizational structure.
CO2 Understand the various forms of business organization and its implications.
CO3 Apply the theories of form of organization in non corporate enterprises.
CO4 Analyze and determine the reasons for long survival of SSI.
CO5 Evaluate the size of firms and reason for survival of small scale undertakings.

UNIT- I

Business Organization : Meaning - Qualities of a Successful Businessman– Development or Growth of Various Forms of Business Organization.

UNIT- II

Forms of Organization : Non Corporate Enterprises – Sole Proprietorship Concern – Partnership Firms – Hindu Undivided Family.

UNIT -III

Forms of Organization : Corporate Enterprises – Joint Stock Companies – Co-operative societies.

UNIT- IV

Size of the business firm – Measures of size – Factors determining the size of the firm – Reason for the survival of Small Scale Undertakings.

UNIT -V

Trade association – special features of trade association – functions of trade association – chamber of commerce- organizational structure – Services of chamber – Trade association Vs Chamber of Commerce.

TEXT BOOK:

R.K.Sharma Shashi K.Gupta, "Business Organisation and Office Management", Kalyani Publishers, 2014, New Delhi.

BOOKS FOR REFERENCE:

1. Y.K. Bhushan "Business Organisation and Management", Sultan Chand & Sons, 2013, New Delhi.
2. Shukla, "Business Organisation and Management", S. Chand and Company Ltd., 2015, New Delhi.
3. Singh, B.P. & Chopra, Business Organisation and Management, Dhanpat Rai & Sons, 2003, New Delhi
4. Mishra, N., ''Modern Business Organisation'', Sahitya Bhawan, 2007, New Delhi.
5. Basu, ''Business Organisation and Management'', Tata McGraw Hill, 2003, New Delhi.

QUESTION PAPER PATTERN
SECTION - A
5 x 15 = 75 Marks (Either or choice) Two questions from each unit

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SEM	Course Code	Core 6: Operating Systems	Total Marks: 100		Hours per Week	Credits
IV	17UAJCT401		CIA: 25	ESE: 75	5	5

Objective: To learn about the fundamentals of Operating System concepts.

Course Outcome: On Completion of this course the students will able to

CO1 Understand the structure of Operating System and its working procedures.
CO2 Know the Concept of Process handling and multiprogramming.
CO3 Understand the inter process communication process handling in OS.
CO4 Know types of memory and its storing and retrieving procedures.
CO5 Understand the Virtual Memory management and UNIX.

UNIT I: Operating System - Different Services - Uses of System Calls - Issue of Portability – GUI – Operating System Structure – Virtual Machine – Booting. Device Driver: Basics – Submodules – I/O Procedure – I/O Scheduler – Device Handler.

UNIT II: Process - Evolution of Multiprogramming - Context Switching - Process States - Process State Transitions - Process Control Block – Process Hierarchy – Process Scheduling – Multi Threading.

UNIT III: Deadlocks - Graphical Representation – Deadlock Prerequisities - Deadlock strategies - Memory Management: Single Contiguous Memory Management - Fixed Partitioned Memory Management - Variable Partitions.

UNIT IV: - Non-contiguous Allocation: General Concepts - Paging – Segmentation - Virtual Memory Management Systems: Introduction – Relocation and Address Translation – Swapping – Protection and Sharing.

UNIT V: – Case Study: UNIX – History – Overview - File system: User's View – Types of File System – UNIX Directories / Files. LINUX – A Case Study.

TEXT BOOK:

1. Achyut S Godbole, "Operating Systems", 2nd Edition - TMH Publications, 2008.

REFERENCE BOOKS:

1. "Operating Systems", H. M Deitel, 2nd Edition, Pearson Education Publication, 2003.
2. "Operating Systems – A concept based approach", D.M. Dhamdhere, 2nd Edition, TMH Publications, 2008.

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QUESTION PAPER PATTERN		
SECTION – A	SECTION - B	SECTION - C
10 x 1 = 10 Marks (Multiple Choice, Four options) Two questions from each unit	5 x 7 = 35 Marks (Either or choice) Two questions from each unit	3 x 10 = 30 Marks (Answer any three Questions) One Question from each unit

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SEM	Course Code	Core 7: Software Engineering	Total Marks: 100		Hours per Week	Credits
IV	17UAJCT402		CIA: 25	ESE: 75	3	3

Objectives: To enable the students to understand the phases in a software project and fundamental concepts of Software development and maintenance.

Course Outcome: On Completion of this course the students will able to

CO1 Know the Needs of software and use of various Process Models.

CO2 Apply the Process Models for the software development.

CO3 Know the Practices in software engineering process and requirement engineering.

CO4 Understand design Engineering process in software development.

CO5 Know various types of Software testing and its procedures.

UNIT – I: Introduction to Software Engineering: Software – The Changing nature of Software – Legacy Software - Software myths. **Software Process:** The Process Framework – CMMI – Process Assessment – Personal and Team Process Models.

UNIT – II: Process Models: Prescriptive Models – The Waterfall Model – Incremental Process Model: the Incremental Model – The RAD Model – Evolutionary Process Models: Prototyping – The Spiral Model – The Concurrent Development Model – Specialized Process Models: Component based Models – Aspect Oriented software Development – The Unified Process.

UNIT – III: Software Engineering Practice: Essence of Practice – Core Principles – Communication Practices – Planning Practices – Modeling Practice – Construction Practice – Deployment. **Requirement Engineering:** Requirement Engineering Tasks – Eliciting Requirements – Developing Use Cases – Building the Analysis Model – Negotiating Requirements – Validating Requirements.

UNIT – IV: Design Engineering: Design within the context of Software Engineering – Design Concepts – The Design Model. **Performing User Interface Design:** The golden rules – User Interface Analysis and Design – Interface Analysis – Interface Design Steps – Design Evaluation.

UNIT V: Testing Strategies: A Strategic Approach to Software Testing – Strategic Issues – Test Strategies for Conventional Software – Test Strategy for Object – Oriented Software – Validation Testing – System Testing – Art of debugging. **Testing Tactics:** Fundamentals – White Box Testing – Basis Path Testing – Control Structure Testing – Black Box Testing – Object Oriented Testing Methods.

TEXT BOOK:

Roger S Pressman, "Software Engineering A Practitioner's Approach", McGraw – Hill International Edition, Sixth Edition 2005.

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REFERENCE BOOKS:

1. "Software Engineering", Sommerville, Pearson Education, Eighth Edition 2007.
2. "Software Engineering Principles and Practice", Waman S Javadekar, Tata McGraw-Hill, Seventh Reprint 2008.

QUESTION PAPER PATTERN		
SECTION - A	SECTION - B	SECTION - C
10 x 1 = 10 Marks (Multiple Choice, Four options) Two questions from each unit	5 x 7 = 35 Marks (Either or choice) Two questions from each unit	3 x 10 = 30 Marks (Answer any three Questions) One Question from each unit

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SEM	Course Code	Core 8: Programming in JAVA	Total Marks: 100		Hours per Week	Credits
IV	17UAJCT403		CIA: 25	ESE: 75	5	4

Objectives: To inculcate knowledge on programming using JAVA.

Course Outcome: On Completion of this course the students will able to

CO1 Understand the Structure of JAVA Programming and Virtual Machine in JAVA.

CO2 Know the Concepts of class, objects, array and interfaces.

CO3 Apply the Package and multi threading in programming

CO4 Utilize the Exception handling systems and file streams in programming

CO5 Write Applet and Graphics programming

UNIT I : Java Evolution: History – Features – How Java Differs from C and C++. Overview of Java Language: Simple Java Program – More on Java – An Application with Two Classes – Java Program Structure – Java Tokens – Java Statements – Java Virtual Machine. Constants, Variables and Data types.

Self Study: Operators and Expressions – Decision Making and Branching – Decision Making and Looping.

UNIT II : Classes, Objects and Methods: Defining a Class – Field Declaration – Creating Objects – Accessing Class Members – Constructors – Method Overloading – Static Members – Nesting of Methods – Inheritance – Overriding Methods – Final Variables and Methods – Final Classes – Finalizer Classes – Abstract Methods and Classes. Arrays, Strings and Vectors: One-Dimensional Arrays – Creating an Array – Two-Dimensional Arrays – Strings – Vectors – Wrapper Classes – Enumerated Types. Interfaces: Defining – Extending – Implementing – Accessing Interfaces.

UNIT III : Packages: Java API Packages: Using System Packages – Naming Conventions – Creating Packages – Accessing Package – Using a Package – Adding Classes to a Package – Hiding Classes – Static Import. Multithreaded Programming: Creating Thread – Extending Thread – Stopping and Blocking a Thread – Life Cycle of a Thread – Using Thread Method – Thread Exception: Thread Priority – Synchronization – Implementing the Runnable Interface – Inter-Thread Communication.

UNIT IV : Managing Errors and Exceptions: Types of Errors – Exceptions – Syntax of Exception Handling Code – Multiple Catch Statements – Using Finally Statement – Throwing our own Exceptions – Using Exceptions for Debugging. Managing Input / Output Files in Java: Concept of Streams – Stream Classes – Byte Stream Classes – Character Stream Classes – Using Streams – Other Useful I/O Classes – Using File Class – Input / Output Exceptions – Creation of Files – Reading/Writing Characters – Reading/Writing Bytes – Handling Primitive Data Types – Concatenating and Buffering Files – Random Access Files – Interactive Input and Output – Other Stream Classes.

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UNIT V : Applet Programming: How Applets Differ From Applications – Preparing to Write Applets – Building Applet Code – Applet Life Cycle – Creating an Executable Applet – Designing a Webpage – Applet Tag – Adding Applet to HTML File – Running the Applet – Passing Parameter to Applet – Aligning the Display – More about HTML Tags – Displaying Numerical Values – Getting Input from the User – Event Handling. Graphics Programming – The Graphic Class – Lines and Rectangles – Circles and Ellipse – Drawing Arcs – Drawing Polygons – Line Graphs – Using Control Loops in Applets – Drawing Bar Charts – Introduction to AWT Package - Introduction to Swings.

TEXT BOOK:

1. E.Balagurusamy, "Programming with JAVA", Third Edition, Tata McGraw-Hill Publishing Company Ltd., 2007.

REFERENCE BOOK:

1. "The Complete Reference JAVA 2", Herbert Schildt, Fifth Edition, Tata McGraw-Hill Publishing Company Ltd., 2005.

QUESTION PAPER PATTERN		
SECTION - A	SECTION - B	SECTION - C
10 x 1 = 10 Marks (Multiple Choice, Four options) Two questions from each unit	5 x 7 = 35 Marks (Either or choice) Two questions from each unit	3 x 10 = 30 Marks (Answer any three Questions) One Question from each unit

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SEM	Course Code	Core Lab 4: Java Programming Lab	Total Marks: 100		Hours per Week	Credits
IV	17UAJCP404		CIA: 40	ESE: 60	5	4

1. Write a JAVA Program using instanceOf Keyword.
2. Write a JAVA Program to find the week and month of a year for the given date.
3. Write a JAVA Program to remove an element from an array.
4. Write a JAVA Program to reverse a given string and replace a substring by another one.
5. Write a JAVA Program to implement the concept multiple inheritance using interfaces.
6. Write a JAVA Program to get the name of a running thread.
7. Write a JAVA Program for exception handling.
8. Write an Applet Program to create different shapes and fill colours.
9. Write an Applet Program to display the texts in different fonts.
10. Write an Applet Program to demonstrate the multiple selection list box.
11. Write an Applet Program to Create menu bars and pull-down menus.
12. Write a JAVA Program to append a string in an existing file.

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Sem.	Course Code	Course Name	Total Marks: 100		Hours Per Week	Credits
IV	17UAJAT405	BUSINESS ACCOUNTING	CIA: 25	ESE: 75	6	4

OBJECTIVE:

After the successful completion of the course the student should have a thorough knowledge on the accounting principles, basic accounting aspects and branches of accounting.

COURSE OUTCOMES:

At the end of the course, students will be able to

CO 1 Rememebr in mind the accounting principles in preparing accounting statements.
CO2 Understand the preparation of final accounts and its procedures.
CO3 Apply the elements of cost and prepare cost sheet.
CO4 Analyse the various methods of stores ledger.
CO5 Evaluate the various techniques in budgetary control.

UNIT- I

Introduction-Accounting principles – Branches of accounting- Accounting rule – Journalizing – ledger – subsidiary book including cash books – Trial balance.

UNIT- II

Preparation of final accounts: Trading, Profit and Loss Account and Balance sheet with simple adjustments..

UNIT - III

Cost Accounting – Meaning, Elements of Cost – Preparation of cost sheet.

UNIT- IV

Material Cost : Stores Ledger – FIFO – LIFO– Weighted average, Simple Average method.

UNIT- V

Management Account – Meaning – Objectives – Management account with financial account. Budget and Budgetary control – Preparation of Various budgets – flexible budget – Production Budget – Cash Budget – Sales Budget.

TEXT BOOK:

T.S. Reddy, Y. Hari Prasad Reddy, "Financial and Management Accounting", Margham Publications, 2016, Chennai.

Note : Distribution of Marks between Problems and Theory shall be 60% and 40%

BOOKS FOR REFERENCE:

1. N.P. Srinivasan and M. Sakthivel Murugan, " Accounting for Mangement", S.Chand & Company Ltd., New Delhi .
2. K.L.Nagarajan, N. Vinayagam, P.L. Mani, " Principles of Accountancy", S. Chand & Company Pvt. Ltd., 2015, New Delhi.

QUESTION PAPER PATTERN		
SECTION - A	**SECTION - B**	**SECTION - C**
10 x 1 = 10 Marks (Multiple Choice, Four options) Two questions from each unit	**5 x 7 = 35 Marks** (Either or choice) Two questions from each unit	**3 x 10 = 30 Marks** (Answer any three Questions) One Question from each unit

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SEM	Course Code	Skill Based Subject II: Web Graphics Lab	Total Marks: 75		Hours per Week	Credits
IV	17UAJSP406		CIA: 30	ESE: 45	4	3

1. Design a HTML document describing your personal details. Assign a suitable background design and a text color.
2. Design a HTML document to list your friends and their family members using ordered and unordered list.
3. Write a HTML document to print your class Time Table.
4. Develop a Complete Web Page using Frames and Framesets which gives the information about your college using HTML.
5. Develop a HTML document to display a Registration Form for an inter-collegiate meet.
6. Create See-through text using Photoshop.
7. Design a Creative Business Card.
8. Change the background of an image using Photoshop.
9. Design a Simple Logo.
10. Animate Plane Flying in the Clouds using Photoshop.

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Sem.	Course Code	Course Name	Total Marks: 75		Hours Per Week	Credits
III	17UADNT406	NON MAJOR ELECTIVE I: BANKING	CIA: -	ESE: 75	2	2

OBJECTIVE:

To introduce the students to the practical aspects on banking.

COURSE OUTCOMES:

At the end of the course, students will be able to

CO1 keep in mind the relationship between banker and customer.
CO2 understand the deposit schemes provided to the customers.
CO3 apply the regulatory issues that arises in banking sector.
CO4 analyze the banking instrument and its features.
CO5 evaluate the various products and services offered by the bank.

UNIT I

Banker and Customer – Special type of Customers – Minor, Married Women – Relation between Banker and Customer.

UNIT II

Deposit – Current Deposit Account – Fixed Deposit Account – Savings Deposit Account – Recurring Deposit.

UNIT III

Loans and Advances – Principles of sound lending – Forms of Advances – Loans, Cash credit, Overdraft, Bills Purchased and Discounted.

UNIT IV

Cheque – Definition – Silent features of a Cheque – Specimen of a Cheque - Crossing- General and special crossing.

UNIT V

ATM – Debit Card – Credit Card – RTGS- NEFT – Filling of Form – Pay-in-slip- Withdrawal Slip - Demand Draft – Gift Card/Cheque.

TEXT BOOK:

Tannan.M.L., Banking Law and Practice, Thacker & Co. Ltd., New Delhi, 2014.

BOOKS FOR REFERENCE:

1. Varshney, Banking Theory Law and Practice, Sultan & Chand Ltd., New Delhi, 2014.

QUESTION PAPER PATTERN
SECTION - A
5X 15 = 75 Marks (Either or Choice) Two Questions from each unit

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Sem.	Course Code	Course Name	Total Marks: 75		Hours Per Week	Credits
IV	17UADNT407	NON MAJOR ELECTIVE II SERVICES MARKETING	CIA: -	ESE: 75	2	2

OBJECTIVE:

The basic objective of this course is to acquaint the students about the various types of services and products and how these are to be marketed.

COURSE OUTCOMES:

At the end of the course, students will be able to

CO1 Remember the growth and key services business in India.

CO2 Understand the consumer behavior considerations and its guidelines for developing service sectors.

CO3 Apply hospitality and tourism service mechanism and develop the sectors accordingly.

CO4 Analyze various service industries and their growth opportunities in Indian economy.

CO5 Evaluate the customer satisfaction by rating and assess the service quality of industries.

UNIT- I

Services – Salient Features of Marketing services-Services Marketing – significance of services marketing – Growth of service sector.

UNIT- II

Key services: Banking services- marketing the Banking services- users. Insurance services: Users- Insurance products.

UNIT-III

Transports services-users- Market segmentation for transportation. Tourism services-users- Market Information System for Tourism.

UNIT- IV

Bank marketing- users of banking services- MIS for banks- Significance- market segmentation- Bank marketing in the Indian perspective.

UNIT- V

Hotel marketing services- users- market segmentations. Courier services- rationale behind courier marketing.

TEXT BOOK:

S.M Jha "Services Marketing", Himalaya Publishing House., 2012, New Delhi

BOOKS FOR REFERENCE:

1. K. Rama Mohana Rao, "Services Marketing", Pearson Education, 2010, New Delhi.
2. Ravi Shankar, "Services Marketing", Excel Books, 2012, New Delhi.

QUESTION PAPER PATTERN
SECTION - A
5 x 15 = 75 Marks (Either or choice) Two questions from each unit

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SEM	Course Code	Core 9: Computer Networks	Total Marks: 100		Hours per Week	Credits
V	17UAJCT501		CIA: 25	ESE: 75	5	4

Objectives: To enable the students to understand the Computer Networks architecture and various algorithms in the Networking scenario.

Course Outcome: On Completion of this course the students will be able to

CO1 Know the various architectures and services of the Network.
CO2 Understand the data communication Medium and Protocols.
CO3 Describe the encoding and switching between the networks.
CO4 Explain the data routing and issues in data transfer.
CO5 Analyze the protocols of Internet and its applications.

UNIT – I: Computer Networks: – Introduction - Uses - Business Applications – Home Applications – Mobile Users. Network Hardware: LAN – MAN – WAN – Wireless Networks – Home Networks – Internetworks. Network Software: Protocol Hierarchies – Design Issues of the Layers – Connection Oriented & Connectionless Services – Service Primitives.
Reference Models: OSI Reference Models – TCP/IP Reference Models – Comparison of OSI and TCP/IP Reference Models.

UNIT – II: Physical Layer: Guided Transmission Media – Wireless Transmission – Communication satellites. **Data Link Layer:** Design Issues – Error Detection and Correction – Elementary Data Link Protocols: Unrestricted Simplex Protocol – Simplex Stop and Wait Protocol. Sliding Window Protocols.

UNIT – III: MAC Sub Layer: Multiple Access Protocols – Ethernet: Cabling – Manchester Encoding – MAC Sub Layer Protocol – Switched Ethernet – Fast Ethernet – Wireless LANs – Bluetooth.

UNIT – IV: Network Layer: Design Issues – Routing Algorithms: The Optimality Principle – Shortest Path – Flooding – Distance Vector – Link State – Hierarchical– Broadcasting – Multicast Routing – Routing for Mobile Hosts. Congestion Control Algorithm: General Principles – Prevention Polices – Load Shedding – Jitter Control.

UNIT – V: Transport Layer: Elements of Transport Protocols – Internet Transport Protocols: UDP – TCP. **Application Layer:** DNS – Email.

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TEXT BOOK:

Andrew S Tanenbaum, "Computer Networks", Pearson Education, Fourth Edition, 2003.

REFERENCE BOOK:

"Data Communication and Networks", Achyut Godbole, TMH, 2007.

QUESTION PAPER PATTERN		
SECTION - A	SECTION - B	SECTION - C
10 x 1 = 10 Marks (Multiple Choice, Four options) Two Questions from each Unit	5 x 7 = 35 Marks (Either or choice) Two Questions from each Unit	3 x 10 = 30 Marks (Answer any three Questions) One Question from each Unit

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SEM	Course Code	Core 10: RDBMS	Total Marks: 100		Hours per Week	Credits
V	17UAJCT502		CIA: 25	ESE: 75	5	4

Objectives: To enable the students to understand the fundamentals of database systems, Relational model, transaction processing and query processing, fundamentals of PL/SQL.

Course Outcome: On Completion of this course the students will be able to

CO1 Understand the basic concepts of DBMS and RDBMS.
CO2 Create the DDL statements for ORACLE.
CO3 Create the DML statements for ORACLE.
CO4 Apply the SQL statements for Database Management.
CO5 Create PL/SQL query for the database access.

UNIT – I: Database Concepts: An Introduction - Relationships - DBMS - RDBMS - Integrity Rules – Relational Algebra. Database Design: - Data Modeling – Dependency – Database Design – Normal Forms – Dependency Diagrams - Denormalization.

UNIT – II: Oracle Tables: DDL: Naming Rules and conventions – Data Types – Constraints – Creating Oracle Table – Altering an Existing Table – Dropping, Renaming, Truncating Table – Table Types – Spooling.

UNIT – III: Working with Table: DML – Adding a new Row/Record – Customized Prompts – Updating and Deleting an Existing Rows/Records – Retrieving Data from Table – Arithmetic Operations – Restricting Data with WHERE clause – Sorting – DEFINE command – CASE structure. Multiple Tables: Join – Set operations.

UNIT – IV: PL/SQL: A Programming Language: History – Fundamentals – Block Structure – Comments – Data Types – Other Data Types – Declaration – Assignment operation – Bind variables – Substitution Variables – Printing – Arithmetic Operators. Control Structures and Embedded SQL: Control Structures – Nested Blocks – SQL in PL/SQL – Data Manipulation – Transaction Control statements.

UNIT – V: PL/SQL Cursors and Exceptions: Cursors – Implicit & Explicit Cursors and Attributes – Cursor FOR loops – SELECT…FOR UPDATE – WHERE CURRENT OF clause – Exceptions – Types of Exceptions. Named Blocks: Procedures – Functions – Packages –Triggers.

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TEXT BOOK:

Nilesh Shah, "DATABASE SYSTEMS USING ORACLE", 2nd edition, PHI, 2011.

REFERENCE BOOKS:

1. "Database Management Systems", Arun Majumdar & Pritimoy Bhattacharya, 2007, TMH.
2. "Database Management Systems", Gerald V. Post, 3rd edition, 2009, TMH.
3. "SQL, PL/SQL The Programming language of Oracle", Ivan Bayross, III Revised Edition, BPB Publications, 2010.

QUESTION PAPER PATTERN		
SECTION - A	SECTION - B	SECTION - C
10 x 1 = 10 Marks (Multiple Choice, Four options) Two questions from each unit	5 x 7 = 35 Marks (Either or choice) Two questions from each unit	3 x 10 = 30 Marks (Answer any three Questions) One Question from each unit

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SEM	Course Code	Core Lab 5: XAMP Lab	Total Marks: 100		Hours per Week	Credits
V	17UAJCP503		CIA: 40	ESE: 60	6	4

1. Write a Program to read data from webpage using forms and various data controls to implement client side validation using JavaScript.
2. Write a program to implement String, Array, Math and Date Functions.
3. Write a Program by implementing PHP server side validation.
4. Write a Program to implement the concept of cookies.
5. Write a Program to implement the concept of sessions.
6. Write a Program to implement File uploads in PHP.
7. Write a Program to implement Database connectivity in PHP with MYSQL and create a table named as employee.
8. INSERT employee details to employee table and display the result in web page.
9. UPDATE all the records of employee in employee table and delete the data.
10. Search the employee table based on the given criteria.

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SEM	Course Code	Core Lab 6: ORACLE Lab	Total Marks: 100		Hours per Week	Credits
V	17UAJCP504		CIA: 40	ESE: 60	5	3

1. Create the following tables:

   Employee: Employee number number (6) as a Primary Key, employee name varchar2 (10), department ID number (3) as a Foreign key.

   Department: Department ID number (3) as a primary key, department name varchar2 (10).

2. Alter employee name as varchar2 (20) and add the salary column. Insert rows into the employee table.

3. Perform update and delete operations in employee table.

4. Display the employees belongs to a specific department. Sort the department table.

5. Select the minimum and maximum salary from employee table. Also find the average salary from the employee table.

6. Display the employee details with department name using join.

7. Write a PL/SQL block using selection statement.

8. Write a PL/SQL block using looping statement.

9. Write a Pl/SQL block to implement the concept of exception handling.

10. Write a before trigger for insert query of an employee table.

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SEM	Course Code	Skill Based Subject – III: PHP & MySQL	Total Marks: 75		Hours per Week	Credits
V	17UAJST508		CIA: 20	ESE: 55	4	3

Objectives: To enable the students to understand the fundamentals of PHP and to develop their skill set in the web applications.

Course Outcome: On Completion of this course the students will be able to

CO1 Understand the fundamentals of PHP.
CO2 Understand the concepts of functions and arrays in PHP.
CO3 Know the client and server side validation.
CO4 Know the cookies.
CO5 Understand the concepts of databases.

UNIT – I: PHP Basics: Introduction – Getting PHP – Development Environment – Creating and Running a PHP Page – Mixing HTML and PHP – Printing Some Text – Printing Some HTML – More Echo Power – Comments in PHP – Variables – Creating Variable Variables – Constants - Strings – PHP Data Types – String Operators - Execution Operators – Identical Operator - foreach loops.

Self Study: Operators: Assignment, Comparison, Logical, Bitwise, Increment and Decrement Operators, Math Operators. **Flow Control:** if, else, elseif, switch – for, while, do...while, break and continue.

UNIT – II: Strings and Arrays: Converting to and from Strings – Creating, Storing, Modifying and Deleting Arrays – Handling Arrays with Loop. **PHP Functions:** Creating Functions - Nesting Functions – Passing Arguments and Arrays to Functions – Returning Data and Arrays from Functions - Creating Include Files. **Object Oriented Programming:** Creating Classes – Creating Objects – Setting Access to Properties and Methods.

Self Study: PHP String Functions and Array Functions.

UNIT – III: Reading Data in Web Pages: Set Up web Page to Communicate with PHP – Handling Text Box, Text Areas, List Box, Check Box and Radio Button – Handling Password and Hidden Controls – Handling File Uploads – Handling Buttons. **Browser Handling:** Server Variables – HTTP Headers – Performing Server Side Data Validation – Performing Client Side Data Validation using Java Script.

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Self Study:

1. Java Script Variables, Functions, Forms and Event Handling.
2. Create a Simple User Registration web Page and Validate with Java Script and PHP.

UNIT – IV: Cookies – Sessions – FTP – Sending Email – Sending Advanced Email – Adding Attachments to Email.

Self Study:

1. The usages of Session in PHP web Page.
2. Sending Email Using PHP.

UNIT – V: Working with Database: What is a Database? – Creating a MySQL Database – Creating a New Tables – Inserting New Data Items into a Database – Accessing the Database in PHP – Updating Database – Deleting Records – Sorting data in Database.

Self Study: WAMP – XAMPP – LAMP

TEXT BOOKS:

1. Steven Holzner, "PHP: The Complete Reference", McGraw Hill Education Edition 2008.
2. Jim Keogh, "Java Script DeMYSTiFieD – A Self teaching Guide", Tata McGraw-Hill Edition 2005.

REFERENCE BOOK:

"PHP6 and MySQL Bible", Tim Converse, Joyce Park and Suehring Steve, Willy Publishing, Inc., 2010.

QUESTION PAPER PATTERN		
SECTION - A	SECTION - B	SECTION - C
10 x 1 = 10 Marks (Multiple Choice, Four options) Two questions from each unit	5 x 3 = 15 Marks (Either or choice) Two questions from each unit	3 x 10 = 30 Marks (Answer any three Questions) One Question from each unit

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SEM	Course Code	Core 11: Visual Programming –. Net	Total Marks: 100		Hours per Week	Credits
VI	17UAJCT601		CIA: 25	ESE: 75	6	4

Objective: To Gather the Knowledge about .NET Programming and Windows Application Development.

Course Outcome: On Completion of this course the students will be able to

CO1 Understand the basic concepts of .NET.
CO2 Understand the tools in .NET.
CO3 Know the concept of menus and exceptions.
CO4 Know the concept of ADO.NET.
CO5 Connecting the application with database.

UNIT – I: Event-driven Programming - What is .Net? - Visual Studio 2005 Integrated Development Environment –Keywords - Arithmetic Operators - Data types – Statements - Declaring variables - Constants - Data type Conversion - Control Statements and Loops – Arrays – Enumerations - Val and Str Functions.

UNIT – II: Creating Visual Basic Application - Member Access Modifiers - Defining class - creating Objects – constructors – Inheritance – Interfaces - Windows Forms - Label - TextBox - Button - ComboBox – ListBox – CheckBox – RadioButton - GroupBox Controls.

UNIT – III: Panel - PictureBox – ProgressBar – Timer - Menus - FolderBrowserDialog control - Open, Save, Font, Color, Print Dialog controls - TreeView control - Mouse Events - KeyBoard events. Handling Errors and Exceptions.

UNIT – IV: Accessing Data using ADO.NET: What are Databases?-Basic SQL statements-Working with ADO.NET - ADO.NET objects-DataGridView Control-Accessing Data using server Explorer-Creating new Data connection-Accessing Data using Data Adapters and DataSets - Previewing Data from data Adapters-Connecting to an MS Jet Database. Data Binding: Simple data Binding-Complex Data Binding-Implementing Data Binding.

UNIT – V: Handling database in Code: OLEDB, Oracle and Sql Connection Class- OLEDB, Oracle & Sql Command Class– OLEDB, Oracle & Sql Adapter Class - DataSet – DataReader – DataTable - DataRow – DataColumn – DataRelation - Individual DataItems - Writing DataSets to XML - Reading DataSets from XML.

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TEXT BOOKS:

1. Vikas Gupta & Kogent Solutions Inc, "Comdex .NET Course Kit", Dreamtech Press Publications-2008.(UNIT I,II,III,IV)
2. Steven Holzner, "Visual Basic .NET Programming Black Book", Dreamtech Press Publications-2013.(UNIT V-Chapter No. : 23)

REFERENCE BOOKS:

1. "Visual Basic.NET", Shirish Chavan , Pearson Education, ISBN 978-81-317-1391-4.
2. "Beginning Microsoft Visual Basic 2005", Thearon Willis and Bryan Newsome, Wrox Publication-2008.

QUESTION PAPER PATTERN		
SECTION - A	SECTION - B	SECTION - C
10 x 1 = 10 Marks (Multiple Choice, Four options)\ Two questions from each unit	5 x 7 = 35 Marks (Either or choice) Two questions from each unit	3 x 10 = 30 Marks (Answer any three Questions) One Question from each unit

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SEM	Course Code	Core Lab 7: Visual Programming Lab	Total Marks: 100		Hours per Week	Credits
VI	17UAJCP602		CIA: 40`	ESE: 60	5	4

1. Write a VB.NET program to perform the following number conversion.
   i) Decimal to Binary ii) Decimal to Octal iii) Decimal to Hexadecimal
2. Write a program to prepare a Questionnaire using VB.NET
3. Write a VB.NET program to add the items to list box with user input and move the selected item to combo box one by one.
4. To create Student Registration Form for an Inter Collegiate meet using VB.NET.
5. Write a VB.NET program to implement Timer control.
6. Write a VB.NET program to implement Dialog Box control.
7. Write a VB.NET program to implement Tree View control.
8. Write a VB.NET program to implement Menu Editor Control.
9. To develop a simple VB.NET project for Student Personal Details using OLEDB Connection.
10. To design two forms for an organization and calculate the Employee salary and store the data in SQL.

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SEM	Course Code	Skill Based Subject IV: Software Testing Lab	Total Marks: 75		Hours per Week	Credits
VI	17UAJSP610		CIA: 30	ESE: 45	4	3

White Box Testing

1. Demonstrate the Control Flow Testing with different test cases in a block of statements.
2. Demonstrate the Data Flow Testing one control structure with different test cases.
3. Demonstrate the Branch testing with different test cases.
4. Demonstrate the unit testing using a web application.
5. Demonstrate the Integration testing using different test cases.

Black Box Testing

6. Demonstrate the Boundary value analysis with different test cases.
7. Demonstrate the system testing through your project manually on par with SRS.
8. Test the System with possible test cases, which cannot be cope by the system using an application.
9. Demonstrate any one application from white box testing using the automated testing tool.
10. Demonstrate any one application from Black box testing using the automated testing tool.

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SEM	Course Code	Elective I: Software Testing	Total Marks: 100		Hours per Week	Credits
V	17UAJET505		CIA: 25	ESE: 75	5	4

Objectives: To enable the students to understand the fundamentals and need for software testing and various levels of Software testing.

Course Outcome: On Completion of this course the students will be able to

CO1 Understand the basic concepts Testing
CO2 Understand the types of Testing Concept.
CO3 Know the need of testing.
CO4 Validate the software by Testing.
CO5 Select the Manual or Automation Tools for software testing.

UNIT-I: Software Development Life Cycle models: Phases of Software project – Quality, Quality Assurance, Quality control – Testing, Verification and Validation **White-Box Testing**: Static Testing – Structural Testing – Challenges in White-Box Testing.

UNIT-II: Black-Box Testing: What is Black-Box Testing? - Why Black-Box Testing? – When to do Black-Box Testing? – How to do Black-Box Testing? **Integration Testing:** Integration Testing as Type of Testing – Integration Testing as a Phase f Testing – Scenario Testing – Defect Bash.

UNIT-III: System and Acceptance Testing: system Testing Overview – Why System testing is done? – Functional versus Non-functional Testing - Functional testing - Non-functional Testing – Acceptance Testing – Summary of Testing Phases.

UNIT-IV: Performance Testing: Factors governing Performance Testing – Methodology of Performance Testing – tools for Performance Testing – Process for Performance Testing – Challenges. **Regression Testing:** What is Regression Testing? – Types of Regression Testing – When to do Regression Testing – How to do Regression Testing – Best Practices in Regression Testing.

UNIT-V: Test Planning, Management, Execution and Reporting: Test Planning – Test Management – Test Process – Test Reporting. **Software Test Automation** – What is Test Automation? – Terms used in Automation – Skills Needed for Automation – What to Automate, Scope of Automation – Design and Architecture for Automation – Genetic Requirement for test

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Tool/Framework – Process model for Automation – Selecting a Test Tool – Automation for Extreme Programming Model – Challenges in Automation.

TEXTBOOK:

Srinivasan Desikan & Gopalswamy Ramesh, "Software Testing - Principles and Practices", Pearson Education, 2006.

(UNIT-I: 2.1-2.3, 3.1-3.4 UNIT-II: 4.1-4.4, 5.1-5.5 UNIT III: 6 .1-6.7

(UNIT IV: 7.1-7.6, 8.1-8.5 UNIT-V: 15.1-15.5, 16.1-16.10)

REFERENCE BOOKS:

1. "Effective Methods of Software Testing", William E.Perry, 3rd ed, Wiley India.
2. "Software Testing", Renu Rajani, Pradeep Oak, 2007, TMH.

QUESTION PAPER PATTERN		
SECTION - A	SECTION - B	SECTION - C
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SEM	Course Code	Elective II : E - Commerce	Total Marks: 100		Hours per Week	Credits
VI	17UAJET603		CIA: 25	ESE: 75	5	4

Objectives: To inculcate knowledge on E-Commerce concepts in the present IT world.

Course Outcome: On Completion of this course the students will be able to

CO1 Understand the basic concepts of E-Commerce and its architecture.

CO2 Understand the mobile commerce concepts and network security.

CO3 Know the firewall and encryption techniques.

CO4 Know the Electronic Payment systems of E-Commerce.

CO5 Apply EDI in E-commerce.

Unit – I: Introduction: Definition of E-Commerce – Evolution of E-Commerce – E-Commerce Technologies – E – Commerce From Different Perspective – E-Commerce Applications- Incentives for Engaging In E – Commerce – Needs of E – Commerce – Drivers of E-Commerce – Advantages and Disadvantages of E – Commerce – E – Commerce Frame Work.

E-Commerce: Architecture to Models: Architecture of E-Commerce - E-Commerce Models - Inter organizational E-Commerce Intra organizational E-Commerce - Impacts of E-Commerce on Business - Impacts of E-Commerce on organizations - Success Factors of E-Commerce.

Unit – II: Mobile Commerce: What is M-Commerce? – Feature of M-Commerce – Industries Affected by M-Commerce – History And Applications of M-Commerce – WAP – WAP Architecture – Advantages of WAP – Mobile Computing Devices.

E-Commerce: Web And Network Security: Overview of a Web – Security Issues on Web – Categories of Security Threads / Attacks – Security Concerns – Threads to Servers – Some More Security Threads – Network Security.

Unit – III: Firewalls: Introduction – Working of Firewall- Importance of Firewall for E-Commerce Systems - Types of Firewall- Components of Firewall - Factors to Consider in Firewall Design.

Encryption Techniques: Introduction to Cryptography – Encryption – Basic Vocabulary of Classical Encryption – Encryption Techniques – Benefits and Limitations of Encryption.

Unit – IV: Electronic Payment System : Introduction – Need for EPS – Conventional Vs Electronic Payment System – Process of EPS – Electronic Payment Protection Protocols – Payment Gateways – Certificates – Digital Tokens – Types of EPS – Critical Success Factors of E-Commerce Payment System - Risks And Security – Disadvantage of Electronic Currency Payment System - On-Line Banking.

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Unit – V: Electronic Data Interchange (EDI): Introduction – Definition – Benefits – EDI Example. EDI: the Nuts and Bolts: EDI Technology – EDI Standards – EDI Communications – EDI Implementation.

TEXT BOOKS:

1. S.K.Mourya, Shalu Gupta," E-Commerce", Narosa Publishing House, First Edition, 2015.
   (UNIT I: Chapter 1: 1.1 to 1.10, Chapter 2:2.1 to 2.6
   UNIT II: Chapter 4 and Chapter 5
   UNIT III: Chapter 6: 6.1 to 6.6 and Chapter 7: 7.1, 7.2, 7.3, 7.4, 7.9
   UNIT IV: Chapter 9)
2. David Whiteley, "e-commerce Strategy, Technologies and Applications", Tata Mc-Graw Hill, 2006. (UNIT V: Chapter 8: 8.1, 8.2, 8.3,8.4, Chapter 9: 9.1, 9.2, 9.3, 9.4)

REFERENCE BOOKS:

1. "E-Commerce", Dr.K.Abirami Devi, Dr. m.Alagammai, Margham Publications , 2012.
2. "Introduction to E-commerce", Nidhi Dhawan, International Book House P.Ltd, First Edition, 2010.
3. "Electronic Commerce Framework, Technologies & Applications", Bharat Bhasker, Tata Mc-Graw Hill, Second Edition.

QUESTION PAPER PATTERN		
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SEM	Course Code	Elective III: Client / Server Computing	Total Marks: 100		Hours per Week	Credits
VI	17UAJET607		CIA: 25	ESE: 75	5	4

Objective: To enable the students to inculcate knowledge on basic Client / Server concepts

Course Outcome: On Completion of this course the students will be able to

CO1 Know the basics of Client/Server, applications and its architecture.

CO2 Understand the various Operating Systems for Client / Server Computing.

CO3 Know the procedure calls and Rules.

CO4 Know the TP monitors and its uses.

CO5 Understand the distributed objects and services.

UNIT – I: Introduction: The Client/Server Computing Era - What is Client / Server? – Types of Servers: File Server – Database Server – Transaction Server – Groupware Server – Object Server – Web Server – What is Middleware? – Fat Server – Fat Client – 2-Tier Vs. 3-Tier. Client / Server Building Blocks.

UNIT – II: Clients, Servers and Operating Systems: Anatomy of a Server Program – What Does a Server Need From an OS? - Server Scalability – Client Anatomy - What Does a Client Need From an OS? - Client / Server Hybrids. Client OS Trends - Client OS – Server OS Trends – Server OS.

UNIT – III: RPC, Messaging, and Peer to Peer: Remote Procedure Call – Messaging and Queuing – MOM Vs. RPC.

Stored Procedures, Triggers and Rules: Stored Procedures - Stored Procedures Vs. Static and Dynamic SQL - Triggers and Rules.

UNIT – IV: The Magic Of Transactions: The ACID Properties – Transaction Models.

TP Monitors: What is a TP Monitor? TP Monitors and OS – Funneling Act Performance - TP Monitors and Transaction Management - TP Monitors Client/Server Interaction Types – Transactional RPCs, Queues and Conversations.

TP-Lite or TP-Heavy: Origins of TP-Lite – TP-Lite Vs. TP-Heavy.

UNIT – V: Distributed Objects And Components: What is Distributed Object? – From Distributed Objects to Components – 3 Tier Client / Server Objects Style.

CORBA: What is CORBA Distributed Object? – OMG's Object Management Architecture – ORB – ORB Vs. RPC – Anatomy of CORBA 2.0 ORB – CORBA Object Services.

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TEXT BOOK:

Robert Orfali, Dan Harkey, Jeri Edwards "The Essential Client/Server Survival Guide" , Second Edition, 2001.

REFERENCE BOOKS:

1. "Client / Server Computing" – Patrick Smith, Steve Guenferich , 2nd edition, PHI, 2003.
2. "Client/ Server Computing" — Dewire and Dawana Travis ,TMH, First Edition, 2008.
3. "Client/ Server" Unleashed- Techmedia, First Edition, 1998.

QUESTION PAPER PATTERN		
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10 x 1 = 10 Marks (Multiple Choice, Four options) Two questions from each unit	5 x 7 = 35 Marks (Either or choice) Two questions from each unit	3 x 10 = 30 Marks (Answer any three Questions) One Question from each unit

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ADVANCED LEARNERS COURSE

COURSE: Cloud Computing
COURSE CODE : 17UAJAL408 **Credits** : 2

Objective: To learn about the fundamentals of Cloud Computing Architecture and its applications.

UNIT I: Cloud Computing – History of Cloud Computing – Cloud Architecture – Cloud Storage – Why Cloud Computing – Advantages of Cloud Computing – Disadvantages of Cloud Computing – Companies in the Cloud Today – Cloud Services

UNIT II: Web-Based Application – Pros and Cons of Cloud Service Development – Types of Cloud Service Development – Software as a Service – Platform as a Service – Web Services – On-Demand Computing – Discovering Cloud Services Development Services and Tools – Amazon Ec2 – Google App Engine – IBM Clouds

UNIT III: Cloud computing for the Family: Centralizing Email Communications – Collaborating on Schedules – Collaborating on To-Do Lists – Collaborating Contact Lists – Cloud Computing for the Community: Collaborating on Group Projects and Events – Cloud Computing for the Corporation: Managing Schedules – Managing Projects – Managing Contact List – collaboration on budgets – collaborations on Financial Statements

UNIT IV: Collaborating on Calendars, Schedules and Task Management – Exploring Online Scheduling Applications – Exploring Online Planning and Task Management – Collaborating on Event Management – Collaborating on Contact Management – Collaborating on Project Management – Collaborating on Word Processing - Collaborating on Databases – Storing and Sharing Files

UNIT V: Collaborating via Web-Based Communication Tools – Evaluating Web Mail Services – Evaluating Web Conference Tools – Collaborating via Social Networks and Groupware – Collaborating via Blogs and Wikis

REFERENCE BOOKS:

1. Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online, Michael Miller, Que Publishing, August 2008.
2. Cloud Computing Bible,Barrie Sosinsky, Wiley Publishing, Inc.

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ADVANCED LEARNERS COURSE

COURSE: Big Data Analytics

COURSE CODE : 17UAJAL409 **Credits** : 2

Objective: To learn about the fundamentals of Big Data Analytics with its Architecture.

UNIT I: Introduction to Big Data – What is Big Data: The arrival of analytics – where is the value – more to Big Data meets the Eye- Dealing with the nuances of Big Data – an open source brings forth tool – obstacles ahead - Why Big Data Matters: Big Data reaches deep – obstacles remain – Data continue to evolve - Data and Data analysis are getting more complex

UNIT II: Big Data and the Business Case: Realizing the value – The cause for Big Data – the rise of Big Data options – beyond Hadoop – with choice come decisions - Building the Big Data team: The Data scientist – the team challenge – Different teams and different goals – Don't forget the Data – challenges remain – Teams versus culture

UNIT III: Big Data Sources: Hunting for Data – setting the goal – Big Data source growing – divining deeper into Big Data sources – a wealth of public information – getting started with Big Data acquisition – ongoing growth – no end in sight. The Nuts and Bolts of Big Data: The storage dilemma – building a platform – bringing structure to understand the Data – processing power – choosing among in-house – outsourced or hybrid approaches

UNIT IV: Security, Compliance, Auditing and Production : Pragmatic steps to securing Big Data – classifying Big Data – protecting Big Data analytics – Big Data and compliances – the intellectual property challenge- The Evaluation of Big Data : Big Data : The modern Era – Today tomorrow and the next day – changing Algorithms

UNIT V: Best Practices for Big Data Analytics: Start small with Big Data – thinking Big – avoiding worst practices- baby steps – the value of anomalies – expediency versus accuracy – In-money processing – Bringing all it together : The path of Big Data – the realities of thinking Big Data – hands on Big Data – the Big Data pipeline in depth – Big Data visualization – Big Data privacy

REFERENCE BOOKS:

1. "Big Data Analytics: Turning Big Data into Big Money", Frank J Ohlhorst, Wiley and SAS Business Series, 2012.
2. Understanding Big Data, Chris Eaton, Dirk Deroos, Tom Deutsch, George Lapis, Paul C. zikopoulos, McGraw Hill Publications.

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NANJANAPURAM, ERODE - 638 107.

HEAD OF THE DEPARTMENT
DEPARTMENT OF COMPUTER APPLICATIONS
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
ERODE - 638 107.

SEM	Course Code	Advanced Learners Course: Introduction to Bootstrap	Total Marks: 100	Hours per Week	Credits
V	17UAJAL509		ESE: 100	-	2

Objective: To learn about the fundamentals of Bootstrap and develop the web designing skill.

UNIT – I: The Evolution of CSS and Bootstrap: The mobile-first philosophy -Responsive design basics - Introducing Bootstrap: What Bootstrap includes - CSS - Components - JavaScript – Customization - Getting Started with Bootstrap: Get Bootstrap - The Bootstrap file structure - A precompiled bundle - A source code bundle.

UNIT – II: CSS preprocessors - Variables - Mixins - Operations - Nesting - How to use Bootstrap - The application folder structure. Creating Responsive Layouts Using Bootstrap CSS: Basic HTML structure for Bootstrap - Basic HTML elements.

UNIT – III: Responsive classes - Rendering images - The grid system - Constructing data entry forms - Other utility classes - Encapsulating everything - Packaged Components in Bootstrap: The page header – Glyphicons - The navigation bar - Badges - Alerts - Toolbars and button groups - Panels – Jumbotron – Breadcrumbs – Paginations.

UNIT – IV: The JavaScript Add-ons in Bootstrap: Basic concepts - Modal windows - Tabs - Collapse and accordions - Tooltips and popovers - This dropdown - Alerts – Carousels - The final preview - Design a simple registration page using bootsrap.

UNIT – V: Compiling and Building Bootstrap: Required tools - Installing Bootstrap - Compiling and building Bootstrap - Customizing Bootstrap - Extending Bootstrap: Theme extension – Bootswatch - A tree-view control - WYSIWYG editor and Font Awesome.

TEXT BOOK:

"Snig Bhaumik". Bootstrap Essential, PACKET Publishing.

WEB REFERENCE:

1. www.w3schools.com
2. www.getbootstrap.com

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SEM	Course Code	Advanced Learners Course:	Total Marks: 100	Hours per Week	Credits
V	17UAJAL510	Cryptography and Network Security	ESE: 100	-	2

Objective: To enable the students to understand the fundamentals of cryptography and network security.

UNIT – I: BLOCK CIPHERS & PUBLIC KEY CRYPTOGRAPHY: Cryptography: Introduction – Substitution ciphers – Transposition Ciphers – One Time Pad – Principles - Data Encryption Standard-Block cipher principles-block cipher modes of operation-Advanced Encryption Standard (AES)-Triple DES-Blowfish-RC5 algorithm.

UNIT – II: Public key cryptography: Principles of public key cryptosystems-The RSA algorithm-Key management – Diffie Hellman Key exchange-Elliptic curve arithmetic-Elliptic curve cryptography. Authentication applications – Kerberos – X.509 Authentication services

UNIT – III: SECURITY PRACTICE & SYSTEM SECURITY: Internet Firewalls for Trusted System: Roles of Firewalls – Firewall related terminology- Types of Firewalls – Firewall designs – SET for E-Commerce Transactions. Intruder – Intrusion detection system – Virus and related threats – Countermeasures – Firewalls design principles – Trusted systems – Practical implementation of cryptography and security.

UNIT – IV: E-MAIL, IP & WEB SECURITY: E-mail Security: Security Services for E-mail-attacks possible through E-mail – establishing keys privacy-authentication of the source-Message Integrity-Non-repudiation-Pretty Good Privacy-S/MIME.

UNIT – V: IPSecurity: Overview of IPSec – IP and IPv6-Authentication Header-Encapsulation Security Payload (ESP)-Internet Key Exchange (Phases of IKE, ISAKMP/IKE Encoding).Web Security: SSL/TLS Basic Protocol-computing the keys- client authentication-PKI as deployed by SSLAttacks fixed in v3- Exportability-Encoding-Secure Electronic Transaction (SET).

TEXT BOOKS:

1. William Stallings, "Cryptography and Network Security", 6th Edition, Pearson Education, March 2013. (UNIT I,II,III,IV).
2. Charlie Kaufman, Radia Perlman and Mike Speciner, "Network Security", Prentice Hall of India, 2002. (UNIT V).
3. Andrew S. Tanenbaum, "Computer Networks", Fourth Edition, Pearson Education, 2003.

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