SAKTHI COLLEGE OF ARTS AND SCIENCE FOR WOMEN, ODDANCHATRAM

(Recognized Under Section 2(f) and 12(B) of UGC Act 1956)

(Affiliated to Mother Teresa Women's University, Kodaikanal)

PG AND RESEARCH DEPARTMENT OF COMPUETR APPLICATIONS

CURRICULUM FRAMEWORK AND SYLLABUS FOR

OUTCOME BASED EDUCATION IN

SYLLABUS FOR

BCA.,

FRAMED BY

MOTHER TERESA WOMEN'S UNIVERSITY, KODAIKANAL

UNDER

CHOICE BASED CREDIT SYSTEM

2018 - 2021

PREAMBLE:

Bachelor of Computer Applications (BCA) is a 3 Year Under-graduate Programme, incepted in the academic year 2009 – 2010. The Programme is designed to bridge the gap between IT industries and Academic institutes by incorporating the latest development into the Curriculum, designed by Mother Teresa Women's University, Kodaikanal. The Department of Computer Applications of Sakthi College of Arts and Science strives to shape outstanding computer professionals with ethical and human values to reshape nation's destiny. The training imparted aims to prepare young minds for the challenging opportunities in the IT industry with a global awareness rooted in the Indian soil, nourished and supported by experts in the field.

VISION:

To be a leading, contemporary, innovative Computer Applications department in inculcating professional competencies in the field of Computing and related interdisciplinary technologies to achieve academic excellence and to facilitate research activities as a timely response to dynamic needs and challenges of industry and society.

MISSION:

- Imparting quality education in the field of Computing Sciences and Applications and generate successful computing professional
- Encouraging students to collaborate with industry environment and analyze the real world problems culminating in efficient solutions.
- Transforming students into computing professionals and entrepreneurs by imparting quality training and hands on experience with latest tools and technologies.
- Promoting activities in creating applications in emerging areas of computing technologies and applications in order to serve the needs of research, industry, society and scientific community.
- Inculcating value based and ethical commitment for bringing out successful professionals.

OBJECTIVES:

- To produce employable IT workforce, that will have sound knowledge of IT and business fundamentals that can be applied to develop and customize solutions for Small and Medium Enterprises (SME).
- To develop academically competent and professionally motivated personnel, equipped with objective, critical thinking, right moral and ethical values that compassionately foster the scientific temper with a sense of social responsibility.
- To develop skilled manpower in the various areas of information technology like:
- Data base management, Software Development, Computer-Languages, Software engineering, Web based applications etc.

FIXING THE LEARNING OBJECTIVES:

Since the Academic year 2009 – 2010, the learning objectives and outcomes of the Programme of BCA., have been set, following the Bloom's Taxonomy Cognitive Domain. Accordingly, it is broken into six levels of learning objectives of each course. They are -

- K1 / Knowledge = Remember
- K2 / Comprehension = Understand
- K3 / Application = Apply
- K4 / Analysis = Analyze
- K5 / Evaluation = Evaluate
- K6 / Synthesis = Create

MAPPING COS WITH POS:

For the Programme, the Educational Objectives and the Specific Objectives are specified. The Programme Outcomes are designed according to the curriculum, teaching, learning and evaluation process. For each course, the definite Outcomes are set, giving challenge to the cognitive domain. The Course Outcomes are mapped with the Programme Outcomes. The performance of the stakeholders is assessed and the attainment rate is fixed, by using the measurements 'high', 'medium' and 'low'. The restructuring of the curriculum is done based on the rate of attainment.

INSTITUTIONAL OBJECTIVES:

The institution has certain definite Institutional Objectives to be attained.

- Skill Development & Capacity Building
- Women Empowerment
- Self-reliance
- Gender Equity & Integrity

PROGRAMME EDUCATIONAL OBJECTIVES:

PSO1: Imparting the necessary technical, scientific as well as basic managerial and financial procedures to analyze and solve real world problems within their work domain

PSO2: Bringing in clarity on both conceptual and application oriented skills in commerce, Finance & Accounting and IT Applications in Business context.

PSO3: Improving communication and business management skills, especially in providing technical support.

PSO4: Creating awareness on ethics, values, sustainability and creativity aspects.

PSO5: Inculcating the ability and the mindset to continuously update and innovate.

MAPPING PEOs WITH IOs:

Programme Educational Objectives	Institutional Objectives			
BCA.,	**1**	**2**	**3**	**4**
PSO1: Imparting the necessary technical, scientific as well as basic managerial and financial procedures to analyze and solve real world problems within their work domain	*			
PSO2: Bringing in clarity on both conceptual and application oriented skills in commerce, Finance & Accounting and IT Applications in Business context.			*	
PSO3: Improving communication and business management skills, especially in providing technical support.		*		
PSO4: Creating awareness on ethics, values, sustainability and creativity aspects.				*
PSO5: Inculcating the ability and the mindset to continuously update and innovate.				*

Measuring: H – High; M – Medium; L – Low

BCA.,

PROGRAMME OUTCOMES:

After completion of BCA., Programme, certain outcomes are expected from the learners.

PO1: To apply fundamental knowledge of mathematics and Principles of Computing techniques to solve the problems in computer science and application areas.

PO2: To analyse a computing requirement and apply programming principles for providing effective solutions.

PO3: To design an innovative interface method to bring the complete requirement and visualize the result for decision making.

PO4: To investigate and apply modern tools and technologies in the construction of software system.

PO5: To practice team communication, effective management and Interpersonal skill for the successful computing professional and entrepreneur.

PO6: To apply contextual knowledge of professional, ethical, legal, and security to assess societal, health, legal and cultural issues.

PO7: To extend enthusiasm for self-improvement through continuous professional development and life-long learning.

COMMON STRUCTURE / BCA., / 2018 - 2021

I SEMESTER

S.No	Sub. Code	Title of the Course	HRS	CREDITS	CIA	CE	Total
1.	ULTA11	Part – I / Tamil	6	3	25	75	100
2.	ULEN11	Part – II / English	6	3	25	75	100
3.	UCAT11	Part – III / Core – I / Programming in C	5	4	25	75	100
4.	UCAT12	Part – III / Core – II / Computer Fundamentals & Problem Solving	5	4	25	75	100
5.	UCAA11	Part – III / Allied – I / Digital Principles	5	4	25	75	100
6.	UVAE11	ONME – I / Value Education	3	3	25	75	100
		Total	**30**	**21**			**600**

II SEMESTER

S.No	Sub. Code	Title of the Course	HRS	CREDITS	CIA	CE	Total
1.	ULTA22	Part – I / Tamil	6	3	25	75	100
2.	ULEN22	Part – II / English	6	3	25	75	100
3.	UCAT21	Part – III / Core – III / Programming using C++	6	4	25	75	100
4.	UCAP21	Part–III/Core – IV / Programming in C & C++ Lab	5	4	25	75	100
5.	UCAA21	Part – III / Allied – II / Visual Basic - Lab	5	4	25	75	100
6.	UEVS21	ONME – II / EVS	2	2	25	75	100
		Total	**30**	**20**			**600**

III SEMESTER

S.No	Sub. Code	Title of the Course	HRS	CREDITS	CIA	CE	Total
1.	ULTA33	Part – I / Tamil	6	3	25	75	100
2.	ULEN33	Part – II / English	6	3	25	75	100
3.	UCAT31	Part–III/Core – V / RDBMS	5	4	25	75	100
4.	UCAA32	Part – III / Allied – III / RDBMS Lab	5	4	25	75	100
5.	UCAE31	Part – III / Elective – I / Statistical Methods	4	3	25	75	100
6.	UCAN31	ONME – III / Business Automation Lab	2	2	25	75	100
7.	UCAS31	SBE – I / Business Automation Lab	2	2	25	75	100
		Total	**30**	**21**			**700**

IV SEMESTER

S.No	Sub. Code	Title of the Course	HRS	CREDITS	CIA	CE	Total
1.	ULTA44	Part – I / Tamil	6	3	25	75	100
2.	ULEN44	Part – II / English	6	3	25	75	100

3.	UCAT41	Part–III /Core – VI / Programming in JAVA	4	4	25	75	100
4.	UCAP42	Part–III/Core Practical–I/Programming in JAVA Lab	4	4	25	75	100
5.	UCAA42	Part – III / Allied – IV / Tally Lab	3	4	25	75	100
6.	UCAE42	Part–III/Elective–II/Account. & Fin. Management	3	3	25	75	100
7.	UCAN42	ONME – IV / DTP Lab	2	2	25	75	100
8.	UCAS42	SBE – II / Python Lab	2	2	25	75	100
		Total	**30**	**25**			**800**

V SEMESTER

S.No	Sub. Code	Title of the Course	HRS	CREDITS	CIA	CE	Total
1.	UCAT51	Part–III /Core – VII / Computer Architecture	5	4	25	75	100
2.	UCAT52	Part–III /Core – VIII / Operation Research	5	4	25	75	100
3.	UCAT53	Part–III /Core – IX / System Software	5	4	25	75	100
4.	UCAT54	Part–III /Core – X / Software Engineering	5	4	25	75	100
5.	UCAT55	Part–III /Core – XI / Computer Networks	5	4	25	75	100
6.	UCAE53	Part – III / Elective – III / PHP with MySQL Lab	3	3	25	75	100
7.	UCAS53	SBE – III / Mobile Applications Lab	2	2	25	75	100
		Total	**30**	**25**			**700**

VI SEMESTER

S.No	Sub. Code	Title of the Course	HRS	CREDITS	CIA	CE	Total
1.	UCAT61	Part–III /Core – XII / Computer Graphics	5	4	25	75	100
2.	UCAT62	Part–III /Core – XIII /Web Technology	5	4	25	75	100
3.	UCAT63	Part–III/Core–XIV/Multimedia & its Applications	5	4	25	75	100
4.	UCAP63	Part–III /Core Practical – II / Multimedia Lab	5	4	25	75	100
5.	UCAP64	Part–III / Core Practical – III / Web Tech. Lab	5	4	25	75	100
6.	UCAE64	Part – III / Elective – IV / Mini Project	3	3	25	75	100
7.	UCAS64	SBE – IV / Software Testing - Lab	2	2	25	75	100
8.	UEAS61	Extension Activities	-	3	25	75	100
		Total	**30**	**28**			**800**
		Grand Total		**140**			**4200**

SEMESTER – I

Subject Code: UCAT11 **PROGRAMMING IN C** **5 HRS/ 4 CREDITS**

Course Outcomes:

After completion of the course, certain outcomes are expected from the learners.

COs	Bloom's Taxonomy Level
CO1: Gaining complete knowledge of C Language.	Knowledge (Level – 1)
CO2: Understanding and developing well-structured programs using C language.	Comprehension (Level – 2)
CO3: Acquiring problem solving skills through computer programming.	Application (Level – 3)
CO4: Developing logics which will help them to create programs, applications in C.	Analysis (Level – 4)
CO5: Dealing with different memory allocation & input/output methods.	Synthesis (Level – 6)

COURSE CONTENT

UNIT I: BASICS OF C PROGRAMMING

Introduction to programming paradigms - Structure of C program - C programming: Data Types – Storage classes - Constants – Enumeration Constants - Keywords – Operators: Precedence and Associativity - Expressions - Input/output statements, Assignment statements – Decision making statements - Switch statement - Looping statements – Pre-processor directives - Compilation process.

UNIT II: ARRAYS AND STRINGS

Introduction to Arrays: Declaration, Initialization – One dimensional array – Example Program: Computing Mean, Median and Mode - Two dimensional arrays – Example Program: Matrix

Operations (Addition, Scaling, Determinant and Transpose) - String operations: length, compare, concatenate, copy – Selection sort, linear and binary search

UNIT III: FUNCTIONS AND POINTERS

Introduction to functions: Function prototype, function definition, function call, Built-in functions (string functions, math functions) – Recursion – Example Program: Computation of Sine series, Scientific calculator using built-in functions, Binary Search using recursive functions – Pointers – Pointer operators – Pointer arithmetic – Arrays and pointers – Array of pointers – Example Program: Sorting of names – Parameter passing: Pass by value, Pass by reference – Example Program: Swapping of two numbers and changing the value of a variable using pass by reference

UNIT IV: STRUCTURES

Structure - Nested structures – Pointer and Structures – Array of structures – Example Program using structures and pointers – Self-referential structures – Dynamic memory allocation - typedef

UNIT V: FILE PROCESSING

Files – Types of file processing: Sequential access, Random access – Sequential access file - Example Program: Finding average of numbers stored in sequential access file - Random access file - Example Program: Transaction processing using random access files – Command line arguments.

TEXT BOOKS:

1. ReemaThareja, ―Programming in C, Oxford University Press, Second Edition, 2016.

2. Kernighan, B.W and Ritchie,D.M, ―The C Programming language, Second Edition, Pearson Education, 2006

REFERENCES:

1. Paul Deitel and Harvey Deitel, ”C How to Program”, Seventh edition, Pearson Publication

2. Juneja, B. L and Anita Seth, “Programming in C”, CENGAGE Learning India pvt. Ltd., 2011

3. PradipDey, ManasGhosh, “Fundamentals of Computing and Programming in C”, First Edition, Oxford University Press, 2009.

4. Anita Goel and Ajay Mittal, “Computer Fundamentals and Programming in C”, Dorling Kindersley (India) Pvt. Ltd., Pearson Education in South Asia, 2011.

5. Byron S. Gottfried, "Schaum's Outline of Theory and Problems of Programming with C",McGraw-ill Education, 1996.

CODE: UCAT12 COMPUTER FUNDAMENTALS & PROBLEM SOLVING 5 HRS/ 4 CREDITS

Course Outcomes:

After completion of the course, certain outcomes are expected from the learners.

COs	Bloom's Taxonomy Level
CO1: Acquiring knowledge of the concept of flow of control and program structures	Knowledge (Level – 1)
CO2: Understanding the basic concepts involved in computing	Comprehension (Level – 2)
CO3: Applying the knowledge in computer techniques to solve real world problems.	Application (Level – 3)
CO4: Analysing and solving Programming problems using procedural approach.	Analysis (Level – 4)
CO5: Activating the hardware and software skills required for a computation task	Synthesis (Level – 6)

COURSE CONTENT

UNIT – I:

Fundamentals: Introduction to Computers –Generations of Computers –Types of Computers - Advantages of Computer –Characteristics of Computer –Limitations of Computer - Types of Languages

Unit II:

Block diagram of a Computer –Input Devices –Output devices-Storage device: Ram, Rom – Comparison b/w Ram and Rom –Secondary Storage devices - Types of Software

UNIT III:

Data Representation and basic Computer Arithmetic: Number systems, complements, fixed and floating point representation, character representation, addition, subtraction, magnitude comparison.

UNIT – IV: Problem Solving

Algorithm: Introduction – Types of Algorithm (Sequence, Branch and Loop) – Properties – Examples of Algorithm.

Pseudo code: Introduction – Keywords – Assignment – Conditional Statements – Loop Structures – Command & Statements with examples – Rules – Merits & Demerits.

Flowchart: Introduction – Symbols - Assignment – Conditional Statements – Loop Structures – Command & Statements with examples – Rules – Merits & Demerits.

Unit V: Networks

Definition – Features of network –network topologies –LAN –WAN –MAN-Comparison between LAN &WAN –Introduction to Internet –History of Internet –Uses of Internet

Reference Books:

1. P. K. Sinha & Priti Sinha , "Computer Fundamentals", BPB Publications, 2007.

2. Dr. Anita Goel, Computer Fundamentals, Pearson Education, 2010.

3. Alexis Leon, Fundamentals of Information Technology, Vikas Publication.

CODE: UCAA11 DIGITAL PRINCIPLES 5 HOURS/ 4 CREDITS

Course Outcomes:

After completion of the course, certain outcomes are expected from the learners.

COs	Bloom's Taxonomy Level
CO1:. Gaining knowledge of multiprocessor organization and parallel processing	Knowledge (Level – 1)
CO2: Understand the theory and architecture of central processing unit.	Comprehension (Level – 2)
CO3: Exemplify in a better way the I/O and memory organization.	Application (Level – 3)
CO4: Analyzing some of the design issues in terms of speed, technology, cost, performance	Analysis (Level – 4)
CO5: Defining different number systems, binary addition and subtraction, 2's complement representation and operations with this representation	Synthesis (Level – 6)

COURSE CONTENT

UNIT I:

Number Representation-Number System: Binary, Hexadecimal-Octal Codes-BCD-Excess-3-Gray Code-ASCII-EBCDIC-Binary Arithmetic-1's Complement-2's Complement Representation-Error Detecting Codes-Hamming Codes.

UNIT II:

Introduction-Boolean Algebra- Demorgan's Theorem-Sum Of Product method-Product of Sum method-Karnaugh Map.

UNIT III:

Introduction - Logic Gates – OR – AND – NOT – NAND – NOR - Universal Gates – EX - OR & EX-NOR Gates.

UNIT IV:

Decoder – Encoder – Multiplexer - Demultiplexer - Half Adder - Full Adder - Half Subtractor - Full Subtractor.

UNIT V:

Flip-Flops - S-R Flip-flop - J-K Flip Flops - T Flip Flop - D Flip Flop - Counter: Ring Counter – Register - Shift Register.

Text Books:

1. Digital Principles and Applications-Albert Paul Malvino & Donald P.Leach-IV Edition-Tata McGraw Hill Company Limited.

2. Digital Circuits & Design-S.Salivahanan, S.Arivazhagan-II Edition-Vikas Publication

Reference Book

1. Digital Principles & System Design – P.S.Manoharan-Revised Edition-Charulatha Publication.

SEMESTER – II

CODE: UCAT21 PROGRAMMING USING C++ 6 HOURS/ 4 CREDITS

Course Outcomes:

After completion of the course, certain outcomes are expected from the learners.

COs	Bloom's Taxonomy Level
CO1: Gaining complete knowledge of C Language.	Knowledge (Level – 1)
CO2: Understanding and developing well-structured programs using C language.	Comprehension (Level – 2)
CO3: Acquiring problem solving skills through computer programming.	Application (Level – 3)
CO4: Developing logics which will help them to create programs, applications in C.	Analysis (Level – 4)
CO5: Dealing with different memory allocation & input/output methods.	Synthesis (Level – 6)

COURSE CONTENT

UNIT -I: Object Oriented Methodology, **Functions and Classes and Objects.**

Object Oriented Methodology: Basic Concepts of OOP. Advantages and Application of OOPs, Procedural Programming Vs. OOP.

Functions: Inline Function, Default and Const Arguments, Function Overloading, Manipulators and Enumeration.

Classes and Objects**:** Specifying a Class, Creating Objects, Private & Public Data Members and Member Functions, Defining Inline Member Functions, Static Data Members and Member Functions. Arrays within Class, Arrays of Objects, Objects as Function Arguments, Returning Objects.

UNIT -II: Constructors, Destructors and Operators Overloading.

Constructors and Destructors: Introduction, Parameterized Constructors, Multiple Constructors in a Class, Constructors with Default Arguments, Dynamic Initialization of Objects, Copy Constructors, Dynamic Constructors, Const Objects, Destructors

Operator Overloading: Definition, Unary and Binary Overloading, Rules for Operator Overloading,

UNIT -III: Inheritance, Pointers Virtual & Friend functions.

Inheritance: Defining Derived Classes, Types of Inheritance, Constructors and Destructors in Derived Classes.

Pointers: Pointer to Objects, this Pointer, New and Delete Operators, Virtual Function,

Friend Functions. Managing Console I/O operations.

UNIT – IV: Sequential Representations of lists.

Stacks, Queues and their applications. Lists: Linked Representation - Linear linked lists. Circular

linked lists. Doubly linked lists. Operations on all types of lists and Applications.

UNIT -V: Trees.

Binary Trees, Traversals of binary trees, Structural properties of binary trees.

Binary Search Trees: Search, Insertion and Deletion algorithms, Structural properties. Threaded Binary trees.

Balanced Binary Search Trees: AVL tree, B-trees, B+- trees.

Text Books:

1) E Balagurusamy, "Object Oriented Programming with C++ ", Tata McGraw Hill Publishing Company Limited, New Delhi, ISBN:- 13- 978-07-066907-9
2) Parimala N.," Object Orientation through C++", Macmillan India Ltd. Publication, ISBN:-0333 93202-1
3) Narasimha Karumanchi, "Data Structures and Algorithms made Easy", Careermonk Publications, 2016 Edition, ISBN-9788 193245 279
4) Fundamentals of Data Structure by Ellis Horrowitz Sartaj Sahnia Galgotia Publications, 1998.

References Books:

1) K.R.Venugopal, Rajkumar, T. Ravishankar, "Mastering C++", ISBN:0-07-463454-2.
2) D. Ravichandran, "Programming with C++", Tata McGraw Hill , ISBN: 978-0-07-049488-6.
3) Data structure, Algorithms and Applications in C++, Sartaj Sahni, TMH 1988.

CODE: UCAP21 PROGRAMMING IN C & C++ LAB 5 HOURS/ 4 CREDITS

Course Outcomes:

After completion of the course, certain outcomes are expected from the learners.

COs	Bloom's Taxonomy Level
CO1:. Understanding and applying Object oriented features and C++ concepts.	Comprehension (Level – 2)
CO2: Applying the concept of polymorphism and inheritance, exception handling and templates.	Application (Level – 3)
CO3: Implementing different functions for input and output, various data types, basic operators, files and functions	Application (Level – 3)
CO4: Analysing the concepts and principles of the programming language to the real-world problems and solve the problems through project-based learning.	Analysis (Level – 4)
CO5: Demonstrating basic object oriented and structured programming concepts.	Synthesis (Level – 6)

EXERCISES:

PROGRAMMING IN C LAB

1. Simple Programs
2. Arrays
3. Functions
4. Pointers
5. Files

PROGRAMMING IN C++ LAB

1. Simple Programs
2. Call by Value and Call by Reference Method
3. Program using Inheritance
4. Operator Overloading
5. Program using Polymorphism
6. Stack Operations
7. Queue Operations
8. Linked List Operations.

CODE: UCAA21 VISUAL BASIC Lab 5 HRS/ 4 CREDITS

Course Outcomes:

After completion of the course, certain outcomes are expected from the learners.

COs	Bloom's Taxonomy Level
CO1:.Exploring Visual Basic's Integrated Development Environment (IDE)	Knowledge (Level – 1)
CO2: Understanding the concept of Visual Basic	Comprehension (Level – 2)
CO3: Applying fundamental skills in utilizing the tools of a visual environment such as command, menus, and toolbars.	Application (Level – 3)
CO4:. Creating one and two dimensional arrays for sorting, calculating, and displaying of data.	Synthesis (Level – 6)
CO5: Demonstrating knowledge of programming terminology and how applied using Visual Basic (e.g., variables, selection statements, repetition statements, etc.)	Synthesis (Level – 6)

COURSE CONTENT

Program List:

1. Simple Arithmetic Operations.
2. Picture slide show
3. Building a Color Panel for Red, Green and Blue using Scroll bars
4. Math functions.
5. String Functions
6. Program to perform an animation of a picture using Timer Control.
7. Create a "Text Styler" with font, Size and Style utilities using Rich Text Box.
8. Simulating Calculator using control arrays.
9. Database creation using Data Manager.
10. Program to prepare a payroll.
11. Program to prepare an electricity bill.
12. Program for quiz.

SEMESTER – III

CODE: UCAT31 **RDBMS** **5 HRS/ 4 CREDITS**

Course Outcomes:

After completion of the course, certain outcomes are expected from the learners.

COs	Bloom's Taxonomy Level
CO1:. Gaining knowledge of the database concepts and structures and query language	Comprehension (Level – 2)
CO2: Comprehending the overview of Data Base systems & Data Models	Comprehension (Level – 2)
CO3: Analyzing the principles of storage structure and recovery management	Analysis (Level – 4)
CO4: Executing various advance SQL queries and Understand query processing and techniques.	Analysis (Level – 4)
CO5: Performing PL/SQL programming using concept of Cursor Management, Error Handling, Package and Triggers	Synthesis (Level – 6)

COURSE CONTENT

Unit I

Introduction to database management System – Database Terminology – Distributed and Centralized Database – Traditional approach to data files – Data Models: Network, Hierarchical, and Relational data models.

Unit II

Relational Model : Characteristics of Relational Model – Normalization: First Normal Form, Second Normal Form, Third Normal Form, Boyce – Codd Normal Form – Keys – Integrity Rules – Relational Operations : Union, difference, Intersection, Product, Division, Projection, Selection, Join.

Unit III

Introduction to SQL, DDL, DML, and DCL statements, Creating Tables, Adding Constraints, Altering Tables, Update, Insert, Delete & various Form of SELECT- Simple, Using Special Operators for Data Access. Aggregate functions, Joining Multiple Tables (Equi Joins),Joining a Table to itself (self Joins) Functions.

Unit IV

Data Constraints – Introduction, advantages and disadvantages - Type of data constraints – NOT NULL, UNIQUE, PRIMARY KEY, FOREIGN KEY and CHECK - Modifying constraints, working with data dictionary and use of USER_CONSTRAINTS

Functions – Introduction, merits and demerits - Types of functions: Scalar: Numeric functions (ABS, FLOOR, MOD, POWER, ROUND, SIGN, SQRT and TRUNC), Character functions (CHR, ASCII, CONCAT, INITCAP, LOWER, SUBSTR, TRIM, UPPER), Date functions (ADD_MONTHS, LAST_DAY, NEXT_DAY, MONTHS_BETWEEN), Conversion functions (TO_NUMBER,

TO_CHAR and TO_DATE) - Aggregate: AVG, COUNT, MAX, MIN, SUM Miscellaneous – NVL, DECODE, COALESCE.

Unit V

Introduction to PL/SQL (blocks of PL/SQL, Variables, Constants) - Control Structures –Functions - Cursor and Triggers.

Text Books:

1. Elmasri & Navathe, Fundamentals of Database systems, Addison &Weisely, New Delhi.

An introduction to Database Systems :Bipin C. Desai, GalgotiaPoblications Pvt. Ltd.

2. Ivan Bayross: SQL,PL/SQL The programming language of Oracle, 3rd revised edition, BPB Publications.

3. Kevin Loney, George Koch, Orale9i The Complete Reference , Oracle Press.

References:

1. H. F. Korth & A. Silverschatz, Database Concepts, Tata McGraw Hill, New Delhi.

2. C. J. Date, Database Systems, Prentice Hall of India, New Delhi.

3. Oracle Developer 2000 by Ivan Bayross, BPB Publications.

4. Understanding Database Management System : S. Parthsarthy and B.W.Khalkar, First edition – 2007, Master Academy.

5. P. S. Deshpande : SQL/PLSQL for Oracle9i, dreamtech press, reprint edition 2009.

CODE: UCAA32 RDBMS LAB 5 HOURS/ 4 CREDITS

Course Outcomes:

After completion of the course, certain outcomes are expected from the learners.

COs	Bloom's Taxonomy Level
CO1:. Knowing the connectivity of databases with controls (DAO,ADO & RDO)	Knowledge (Level – 1)
CO2: Becoming familiar with SQL fundamental Concepts.	Comprehension (Level – 2)
CO3: Applying Normalization techniques to normalize a database	Application (Level – 3)
CO4:. Evaluating the underlying concepts of database technologies	Evaluation (Level – 5)
CO5: Designing and implementing a database scheme for a given problem-domain	Synthesis (Level – 6)

COURSE CONTENT

Lab Program:

1. Program using Conditional Controls, Iterative Controls & Sequential Controls.
2. Programs using Exception Handling.
3. Programs using Explicit Cursors & Implicit Cursors.
4. Programs using PL/SQL Tables & Records.
5. Programs using Database Triggers.
6. Programs to design Procedures using In, Out, Inout Parameter.
7. Program to design Procedure using Functions.
8. Programs to design Procedures using Packages.
9. Program using ADO, DAO & RDO Connectivity.
10. Program using Conditional Controls, Iterative Controls & Sequential Controls.
11. Programs using Exception Handling.
12. Programs using Explicit Cursors & Implicit Cursors.
13. Programs using PL/SQL Tables & Records.
14. Programs using Database Triggers.
15. Programs to design Procedures using In, Out, Inout Parameter.
16. Program to design Procedure using Functions.
17. Programs to design Procedures using Packages.
18. Program using ADO, DAO & RDO Connectivity.

CODE: UCAE31 STATISTICAL METHODS 4 HOURS/ 3 CREDITS

Course Outcomes:

After completion of the course, certain outcomes are expected from the learners.

COs	Bloom's Taxonomy Level
CO1: Gaining knowledge about the broad background in Statistics fundamentals and techniques.	Knowledge (Level – 1)
CO2: Becoming familiar with a variety of examples where mathematics or statistics helps accurately explain abstract or physical phenomena.	Comprehension (Level – 2)
CO3: Demonstrate proficiency in probability and statistical theory and methods.	Application (Level – 3)
CO4:. Creating confidence to have the versatility to work effectively in a broad range of analytic, scientific, government, financial, health, technical and other positions.	Synthesis (Level – 6)
CO5: Identifying the importance and value of mathematical and statistical thinking, training, and approach to problem solving, on a diverse variety of disciplines.	Synthesis (Level – 6)

COURSE CONTENT

Unit – I:

Frequency distribution: Measure of Central Tendency – Arithmetic Mean – Median – Mode – Geometric Mean – Harmonic Mean.

Unit – II:

Curve Fitting – Principles of Least Square – Correlation – Rank Correlation.

Unit – III:

Random Variables – Mathematical Expectations – Moment Generating Functions – Properties of MGF – Cumulant generating function – Properties of cumulant generating function.

Unit – IV:

Binomial Distribution – Poisson Distribution – Normal Distribution (Problems only) – Some more continuous distribution.

Unit – V:

χ^2 – Distribution - χ^2 Test - χ^2 test to test the goodness of fit – Test for independence of attributes.

Text Book:

1. "Statistics" – S. ArumugamIssac, New Gamma Publishing House, Palayamkottai.

Reference:

1. "Element of Mathematical Statistics" – S.C.Gupta, V.K.Kapoor, Sultan Chand Sons.

CODE: UCAN31 NME - BUSINESS AUTOMATION LAB 2 HRS/ 2 CREDITS

Course Outcomes:

After completion of the course, certain outcomes are expected from the learners.

COs	Bloom's Taxonomy Level
CO1:. Gaining knowledge of documentation	Comprehension (Level – 2)
CO2: Comprehending the performance of accounting operations	Comprehension (Level – 2)
CO3: Applying the gained knowledge and preparing Documents Using Formatting options	Application (Level – 3)
CO4: Analyzing the various innovative techniques of Slide show animation	Analysis (Level – 4)
CO5: Being capable of handling Basic Data Processing Work in Working Environment	Synthesis (Level – 6)

COURSE CONTENT

MS-WORD

1. Create an Official Letter
2. Create an Order letter in the company Letter Head
3. Create a Simple Newsletter for your department
4. Create the Mark sheet for 15 students and find the total using table formula.
5. Create your resume
6. Create a Greeting Card for any Function
7. Create a Mail Merge Letter
8. Create a Macro for inserting a picture and formatting the text

MS-EXCEL

1. Create a Worksheet with 10 Students Record and find the sum and average.
2. Create a Worksheet with 15 Employee Records and find their Gross Pay with the following Calculation.

   DA (40% of Basic Pay)

   HRA (45% of Basic Pay)

   PF (25% of Basic Pay)

   Gross Pay= Basic Pay + DA + HRA – PF
3. Create a Worksheet with 10 Students Record to create a Result Sheet.
4. Create a Worksheet with a Bar Chart to highlight the Result analysis of the department for 5 years.
5. Create a Worksheet with a Pie Chart to show the usage of various Social Media in your area and give legends.

MS-POWERPOINT

1. Create a slideshow with transitions.
2. Create a slideshow by using pictures, audio & video files

CODE: UCAS31 SBE - BUSINESS AUTOMATION LAB 2 HRS/ 2 CREDITS

Course Outcomes:

After completion of the course, certain outcomes are expected from the learners.

COs	Bloom's Taxonomy Level
CO1:. Gaining knowledge of documentation	Comprehension (Level – 2)
CO2: Comprehending the performance of accounting operations	Comprehension (Level – 2)
CO3: Applying the gained knowledge and preparing Documents Using Formatting options	Application (Level – 3)
CO4: Analyzing the various innovative techniques of Slide show animation	Analysis (Level – 4)
CO5: Being capable of handling Basic Data Processing Work in Working Environment	Synthesis (Level – 6)

COURSE CONTENT

MS-WORD

1. Create an Official Letter
2. Create an Order letter in the company Letter Head
3. Create a Simple Newsletter for your department
4. Create the Mark sheet for 15 students and find the total using table formula.
5. Create a Memo
6. Create your resume
7. Create a Greeting Card for any Function
8. Create a Cover page of your project record
9. Create a Mail Merge Letter
10. Create a Macro for inserting a picture and formatting the text

MS-EXCEL

1. Create a Worksheet with 10 Students Record and find the sum and average.
2. Create a Worksheet with 15 Employee Records and find their Gross Pay with the following Calculation.

   DA (40% of Basic Pay)

   HRA (45% of Basic Pay)

   PF (25% of Basic Pay)

   Gross Pay= Basic Pay + DA + HRA – PF
3. Create a Worksheet with 10 Students Record to create a Result Sheet.
4. Create a Worksheet with a Bar Chart to highlight the Result analysis of the department for 5 years.

5. Create a Worksheet with a Pie Chart to show the usage of various Social Media in your area and give legends.
6. Create a Worksheet to import data from Database and do any two calculations on them.
7. Create a Macro which creates a line chart using the data in the worksheet.

MS-POWERPOINT

1. Create a slideshow with transitions.
2. Create a slideshow by using pictures, audio & video files

SEMESTER - IV

CODE: UCAT41 PROGRAMMING IN JAVA 4 HRS/ 4 CREDITS

Course Outcomes:

After completion of the course, certain outcomes are expected from the learners.

COs	Bloom's Taxonomy Level
CO1:. Gaining knowledge of the Package and Interfaces	Knowledge (Level – 1)
CO2: Understanding the object-oriented paradigm in the Java programming language	Comprehension (Level – 2)
CO3: Applying Java in a variety of technologies and on different platforms	Application (Level – 3)
CO4:. Managing Input Output in Files in Java	Synthesis (Level – 6)
CO5: Mastering Java script, Data types, Variables, Operators, and controlling windows.	Synthesis (Level – 6)

COURSE CONTENT

Unit I:

Introduction to Java: Features of Java, JDK Environment.

Object Oriented Programming Concept Overview of Programming, Paradigm, Classes, Abstraction, Encapsulation, Inheritance, Polymorphism, Difference between C++ and JAVA.

Java Programming Fundamental **:**Structure of java program, Data types, Variables, Operators, Keywords, Naming Convention, Decision Making (if, switch),Looping(for, while) ,Type Casting.

Unit II:

Classes and Objects: Creating Classes and objects, Memory allocation for objects, Constructor,

Implementation of Inheritance, Implementation of Polymorphism, Method Overloading, Method Overriding, Nested and Inner classes.

Arrays and Strings: Arrays, Creating an array, Types of Arrays, String class Methods, String Buffer methods.

Unit III:

Abstract Class, Interface and Packages: Modifiers and Access Control, Abstract classes and methods, Interfaces, Packages Concept, Creating user defined packages

Unit IV:

Exception Handling: Exception types, Using try catch and multiple catch, Nested try, throw, throws and finally, Creating User defined Exceptions.

File Handling: Byte Stream, Character Stream, File IO Basics, File Operations, Creating file, Reading file, Writing File.

Unit V:

Applet Programming: Introduction, Types Applet, Applet Life cycle, Creating Applet, Applet tag.

Text Book:

1. Dr.K.Somasundram, Programming in Java 2, Jaico Publishing House -2008.
2. Herbert schildt, The Complete Reference –Java 2, 4th edition, Tata McGraw Hill 2001. (Unit 3,4,&5)
3. Er.V.K.Jain, Programming Java server Pages & servlets – dream Tech Press 2000.

Reference Book:

1. Steven Holzner, JAVA 2 Swing, Servlets JDBC, Java Beans Programming, Dream Tech Press Revised Edition.
2. Jamie Jaworski, Java 2 Platform unleashed, Techmedia.

CODE: UCAP42 PROGRAMMING IN JAVA LAB 4 HRS/ 4 CREDITS

Course Outcomes:

After completion of the course, certain outcomes are expected from the learners.

COs	Bloom's Taxonomy Level
CO1:. Gaining knowledge about basic Java language syntax and semantics	Knowledge (Level – 1)
CO2: Understanding the fundamentals of object-oriented programming in Java, including defining classes, objects, invoking methods etc and exception handling mechanisms.	Comprehension (Level – 2)
CO3: Analysing the principles of inheritance, packages and interfaces	Analysis(Level – 4)
CO4:. Becoming capable of writing Java programs and using concepts such as variables, conditional and iterative execution methods etc.	Synthesis (Level – 6)
CO5: Developing software in the Java programming language	Synthesis (Level – 6)

COURSE CONTENT

Lab Program:

1. WAP to find the largest of n natural numbers.
2. WAP to find whether a given number is prime or not.
3. Write a menu driven program for following:
    a. Display a Fibonacci series
    b. Compute Factorial of a number
    c. WAP to check whether a given number is odd or even.
    d. WAP to check whether a given string is palindrome or not.
4. WAP to print the sum and product of digits of an Integer and reverse the Integer.
5. Write a program to create an array of 10 integers. Accept values from the user in that array. Input another number from the user and find out how many numbers are equal to the number passed, how many are greater and how many are less than the number passed.
6. Write a program that will prompt the user for a list of 5 prices. Compute the average of the prices and find out all the prices that are higher than the calculated average.
7. Write a program in java to input N numbers in an array and print out the Armstrong numbers from the set.
8. Write java program for the following matrix operations:
    a. Addition of two matrices
    b. Summation of two matrices
    c. Transpose of a matrix

d. Input the elements of matrices from user.

9. Write a java program that computes the area of a circle, rectangle and a Cylinder using function overloading.

10. Write a Java for the implementation of Multiple inheritance using interfaces to calculate the area of a rectangle and triangle.

11. Write a java program to create a frame window in an Applet. Display your name, address and qualification in the frame window.

12. Write a java program to draw a line between two coordinates in a window.

13. Write a java program to display the following graphics in an applet window.

a. Rectangles

b. Circles

c. Ellipses

d. Arcs

e. Polygons

14. Write a program that reads two integer numbers for the variables a and b. If any other character except number (0-9) is entered then the error is caught by NumberFormatException object. After that ex.getMessage() prints the information about the error occurring causes.

15. Write a program for the following string operations:

a. Compare two strings

b. Concatenate two strings

c. Compute length of a string

16. Create a class called Fraction that can be used to represent the ratio of two integers. Include appropriate constructors and methods. If the denominator becomes zero, throw and handle an exception.

CODE: UCAA42 **TALLY LAB** **3 HRS/ 4 CREDITS**

Course Outcomes:

After completion of the course, certain outcomes are expected from the learners.

COs	Bloom's Taxonomy Level
CO1:. Gaining knowledge of the usefulness/importance of Tally ERP-9 software for simplifying the accounting methods & procedures.	Knowledge (Level – 1)
CO2: Acquiring the computer skills of recording financial transactions, preparation of annual accounts and reports using Tally.	Comprehension (Level – 2)
CO3: Applying the accounting knowledge to increase the job skill as Tally data entry operator.	Application (Level – 3)
CO4:. Becoming proficient in creating the accounting records and extract the financial statements and other statements related to inventory management, depreciation accounting and VAT procedure and records.	Synthesis (Level – 6)
CO5: Creating/Loading the company, group, security control, back-up etc.	Synthesis (Level – 6)

COURSE CONTENT

Lab Program:

1. Creating a company in Tally.ERP9
2. Single & Multi Ledger Creation
3. Single & Multi group Creation
4. Contra Voucher
5. Payment Voucher
6. Receipt Voucher
7. Purchase Voucher
8. Sales Voucher
9. Debit Not
10. Balance Sheet
11. Profit and Loss Account
12. Trial Balance

CODE: UCAE42 ACCOUNTING AND FINANCIAL MANAGEMENT 3 HRS/ 3 CREDITS

Course Outcomes:

After completion of the course, certain outcomes are expected from the learners.

COs	Bloom's Taxonomy Level
CO1:. Gaining knowledge of accounting procedures & preparation of final Accounts	Knowledge (Level – 1)
CO2: Understanding the need of Accounts of an organization for decision making.	Comprehension (Level – 2)
CO3: Analyzing the concept of fundamental financial concepts, especially time value of money.	Analysis (Level – 4)
CO4:. Analyzing the main ways of raising capital and their respective advantages and disadvantages in different circumstances.	Analysis (Level – 4)
CO5: Integrating concepts and applying the financial concepts to calculate ratios and do the capital budgeting.	Synthesis (Level – 6)

COURSE CONTENT

Unit – I

Origin and Growth of accounting: Meaning – objectives & Classifications, uses of accounting information – Limitations.

Double Entry System: Definitions - Rules, Merits & Demerits.

Unit – II

Journal – Ledger – Posting Journal to Ledger.

Unit – III

Final accounts of Sole Trading Concerns: Trail Balance – Profit and Loss account – Balance Sheet.

Unit – IV

Introduction to Financial Management – Origin – Scope – Types.

Unit – V

Financial statement analysis & interpretation: Accounting ratio their significance, Utility & Limitations, Analysis for Inequality, Profitability & Solvency.

Text Books:

1. Double entry book keeping - T.S.Grewal
2. Advanced Accountancy - R.L.Gupta&M.Radhasamy
3. Advanced Accountancy - M.A.Arulanantham&S.Raman
4. Advanced Accountancy - S.N.Maheswari
5. Advanced Accountancy - M.C.Shukhala&T.S.Grewal

Reference Books:

1. Accounting – R.L.Gupta & Radha Swamy.
2. Financial Management – Khan & Jain

CODE: UCAN42 NME – Desk Top Publishing (DTP LAB) 2 HOURS/ 2 CREDITS

Course Outcomes:

After completion of the course, certain outcomes are expected from the learners.

COs	Bloom's Taxonomy Level
CO1:. Acquiring knowledge of typography e.g. font size, style, kerning, alignment, hyphenation and line spacing	Knowledge (Level – 1)
CO2: Comprehending the difference between DTP and how it differs from word processing procedures	Comprehension (Level – 2)
CO3: Identifying desktop publishing terminology and concepts	Application (Level – 3)
CO4:. Developing the Visiting card,advertisement through various application	Synthesis (Level – 6)
CO5: Creating and printing a multi-page document which incorporates a variety of visual elements	Synthesis (Level – 6)

COURSE CONTENT

Lab Exercises:

Page Maker:

1. Letter Pad
2. Calendar
3. Flow chart

Corel Draw:

1. Rangoli
2. Logo Design
3. Power Clip

Photoshop:

1. Passport size photo
2. Conversion of Color image to Black & White
3. Change of Background
4. Light effect
5. Rain Effect
6. Text effect
7. Visiting Card
8. Certificate

CODE: UCAS42 SBE - PYTHON LAB 2 HOURS/ 2 CREDITS

Course Outcomes:

After completion of the course, certain outcomes are expected from the learners.

COs	Bloom's Taxonomy Level
CO1:. Gaining knowledge of the data from & files in python and develop Application using Pygame	Knowledge (Level – 1)
CO2: Developing a basic understanding of Python programming language.	Comprehension (Level – 2)
CO3: Solving problems requiring the writing of well-documented programs in the Python language, including use of the logical constructs of that language.	Application (Level – 3)
CO4:. Becoming fluent in the use of procedural statements — assignments, conditional statements, loops, method calls — and arrays.	Synthesis (Level – 6)
CO5: Being able to design, code, and test small Python programs that meet requirements expressed in English. This includes a basic understanding of top-down design.	Synthesis (Level – 6)

COURSE CONTENT

Unit I:

Overview of Programming: Structure of a Python Program, Elements of Python.

Introduction to Python: Python Interpreter, Using Python as calculator, Python shell, Indentation. Atoms, Identifiers and keywords, Literals, Strings, Operators (Arithmetic operator, Relational operator, Logical or Boolean operator, Assignment, Operator, Ternary operator, Bit wise operator, Increment or Decrement operator).

Unit II:

Creating Python Programs: Input and Output Statements, Control statements (Looping- while Loop, for Loop, Loop Control, Conditional Statement- if...else, Difference between break, continue and pass).

Unit III:

Structures: Numbers, Strings, Lists, Tuples, Dictionary, Date & Time, Modules, Defining Functions, Exit function, default arguments.

LAB Exercises

1. Write a menu driven program to convert the given temperature from Fahrenheit to Celsius and vice versa depending upon user's choice.

2. WAP to calculate total marks, percentage and grade of a student. Marks obtained in each of the three subjects are to be input by the user. Assign grades according to the following criteria:

Grade A: Percentage >=80

Grade B: Percentage>=70 and <80

Grade C: Percentage>=60 and <70

Grade D: Percentage>=40 and <60

Grade E: Percentage<40

3. Write a menu-driven program, using user-defined functions to find the area of rectangle, square, circle and triangle by accepting suitable input parameters from user.

4. WAP to find the given number is odd or even.

5. WAP to display the first n terms of Fibonacci series.

6. WAP to find factorial of the given number.

7. WAP to find sum of the following series for n terms: 1 – 2/2! + 3/3! - - - - - n/n!

8. WAP to calculate the sum and product of two compatible matrices.

9. WAP to compute the sum 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10 recursively:

10. WAP to generate password.

Reference Books

1. P. K. Sinha&PritiSinha , “Computer Fundamentals”, BPB Publications, 2007.

2. Dr. Anita Goel, Computer Fundamentals, Pearson Education, 2010.

3. T. Budd, Exploring Python, TMH, 1st Ed, 2011

4. Python Tutorial/Documentation www.python.or 2010

5. Allen Downey, Jeffrey Elkner, Chris Meyers, How to think like a computer scientist: learning with Python, Freely available online.2012

6. http://docs.python.org/3/tutorial/index.html

7. http://interactivepython.org/courselib/static/pythonds

8. http://www.ibiblio.org/g2swap/byteofpython/read/

SEMESTER – V

CODE: UCAT51 COMPUTER ARCHITECTURE 5 HOURS/ 4 CREDITS

Course Outcomes:

After completion of the course, certain outcomes are expected from the learners.

COs	Bloom's Taxonomy Level
CO1:.Identifying design levels for computer system development	Knowledge (Level – 1)
CO2: Understanding the internal processing system and procedure of the Computer.	Comprehension (Level – 2)
CO3: Analyzing some of the design issues in terms of speed, technology, cost, performance.	Analysis (Level – 4)
CO4:. Evaluating the historical development of computer systems	Evaluation (Level – 5)
CO5: Recognizing and dealing with high performance architecture design	Synthesis (Level – 6)

COURSE CONTENT

UNIT I:

Introduction: Logic gates, Boolean algebra, combinational circuits, circuit simplification, flip-flops and sequential circuits, decoders, multiplexers, registers, counters and memory units.

UNIT II:

Basic Computer Organization and Design: Computer registers, bus system, instruction set, timing and control, instruction cycle, memory reference, input-output and interrupt.

UNIT III:

Central Processing Unit: Register organization, arithmetic and logical micro-operations, stack organization, micro programmed control.

UNIT IV:

Programming the Basic Computer: Instruction formats, addressing modes, instruction codes, machine language, assembly language, input output programming.

UNIT V:

Input-output Organization: Peripheral devices, I/O interface, Modes of data transfer, direct memory access.

Text Book:

1. M. Mano, Computer System Architecture, Pearson Education 1992.

2. A. J. Dos Reis, Assembly Language and Computer Architecture using C++ and JAVA, Course Technology, 2004

3. W. Stallings, Computer Organization and Architecture Designing for Performance, 8th Edition, Prentice Hall of India ,2009

4. Digital Design, M.M. Mano, Pearson Education Asia, 1979

CODE: UCAT52 OPERATION RESEARCH 5 HRS/ 4 CREDITS

Course Outcomes:

After completion of the course, certain outcomes are expected from the learners.

COs	Bloom's Taxonomy Level
CO1:. Understanding the Mathematical Formation of L.P.P	Comprehension (Level – 2)
CO2: Understanding the usage of game theory and Simulation for Solving Business Problems	Comprehension (Level – 2)
CO3: Formulating and solving problems as networks and graphs using special solution algorithms.	Application (Level – 3)
CO4: Analyzing the transportation Problem and Assignment Problem	Analysis (Level – 4)
CO5: Solving Linear Programming Problems	Synthesis (Level – 6)

COURSE CONTENT

Unit: I

Definition of OR – General methods for solving OR models – Main characteristics of OR – Applications of OR.

Unit: II

Linear programming problems – Mathematical formation of LPP – Slack and surplus variables – Graphical solutions for LPP.

Unit: III

Simplex method – Computational procedure – Artificial variable techniques – two phase method – Duality in Linear programming.

Unit: IV

Mathematical formula of Assignment problem – Method for solving the assignment problem.

Unit: V

Mathematical formula of Transportation problem method for obtaining an Initial feasible solution – Optimum solution T.P – Degeneracy in T.P – Unbalanced T.P

Text book:

Operations Research- S.D Sharma, KedarNath Ram Nath& Co Publications, Sixteenth Revised Edition 2009.

Reference books:

1. Operations Research- KantiSwarup, P.K Gupta &Manmohan, Sultan Chand &Sons publications, Sixteenth Revised Edition 2009.
2. Resource Management Techniques – Prof.V.Sundaresan, K.S.Ganapathy Subramanian, K.Ganesan, AR Publications Revised Edition 2010.

CODE: UCAT53 SYSTEM SOFTWARE 5 HRS/ 4 CREDITS

Course Outcomes:

After completion of the course, certain outcomes are expected from the learners.

COs	Bloom's Taxonomy Level
CO1:.Gaining knowledge of the historical development of system software	Knowledge (Level – 1)
CO2: Understanding the difference between Operating Systems software and Application Systems software	Comprehension (Level – 2)
CO3: Knowing and applying the "boot" process	Application (Level – 3)
CO4:. Working out the system programs like editors, compiler, assembler, linker, loader, interpreter and debugger.	Synthesis (Level – 6)
CO5: Describing Microcomputer Structure & Memory management requirements	Synthesis (Level – 6)

COURSE CONTENT

UNIT –I

Basic Concepts of System software – System software and Machine Architecture-SIC machine-CISC machine –RISC machine

UNIT –II ASSEMBLERS

Basic Assembler Function-Dependent Assembler feature- Independent Assembler feature – Design Option.

UNIT –III LOADER & LINKER

Basic Loader Function-Dependent loader feature- Independent loader feature – Design Option.

UNIT –IV COMPILER

Basic Compiler Function-Dependent compiler feature- Independent compiler feature – Design Option.

UNIT –V OS

Basic OS Function-OS Types -OS feature – Design Option-Interactive Debugging System.

Text Book:

1. System software, An Introduction to System Program – Leland L.Beck, D.Manjula-3rd Edition 2007.
2. System software, An Introduction to System Program – Leland L.Beck-3rd Edition 2007.

CODE: UCAT54 SOFTWARE ENGINEERING CREDITS 5 HRS / 4 CREDITS

Course Outcomes:

After completion of the course, certain outcomes are expected from the learners.

COs	Bloom's Taxonomy Level
CO1:. Gaining knowledge of the processes of software development	Knowledge (Level – 1)
CO2: Comprehending and developing software design and modules for real time system	Comprehension (Level – 2)
CO3: Analyzing verification & validation techniques	Analysis (Level – 4)
CO4:. Developing software design and modules for real time system	Synthesis (Level – 6)
CO5: Identifying, formulating and solving engineering problems	Synthesis (Level – 6)

COURSE CONTENT

UNIT I

Introduction: Software Engineering - Software Process - Generic process model - Prescriptive process model specialized, unified process - Agile development - Agile Process - Extreme Programming - Other agile Process models -Software engineering Knowledge - core Principles - Principles that guide each framework Activity.

UNIT II

Requirements: Requirements Engineering - Establishing the Groundwork - Eliciting Requirements - Developing use cases - Building the requirements model - Negotiating, validating Requirements - Requirements Analysis -Requirements Modeling Strategies.

UNIT III

Design: Modeling with Uml: Modeling Concepts and Diagrams-Use Case Diagrams-Class Diagrams -Interaction Diagrams-State chart Diagrams-Activity Diagrams-Package Diagrams-Component Diagrams–Deployment Diagrams-Diagram Organization-Diagram Extensions. Design Process-Design concepts: Abstraction, Architecture, patterns, Separation of Concerns, Modularity, Information Hiding, Functional Independence, Refinement, Aspects, Refactoring, Object Oriented Design Concepts, Design Classes -Design Model: Data, Architectural, Interface, Component, Deployment Level Design Elements .

UNIT IV

Software Implementation**:** Structured coding Techniques -Coding Styles-Standards and Guidelines-Documentation Guidelines-Modern Programming Language Features: Type checking-User defined data types -Data Abstraction-Exception Handling-Concurrency Mechanism.

UNIT V

Testing And Maintenance:

Testing: Software Quality-Software Quality Dilemma-Achieving Software Quality-Testing: Strategic Approach to software Testing-Strategic Issues-Testing: Strategies for Conventional Software, Object oriented software, WebApps-Validating Testing-System Testing-Art of Debugging.

Maintenance: Software Maintenance-Software Supportability-Reengineering-Business Process Reengineering-Software Reengineering-Reverse Engineering-Restructuring-Forward Engineering-Economics of Reengineering

Text Books

1. Roger S,Pressman "Software Engineering–A Practitioner's Approach", Seventh edition, Pressman, 2010.
2. Pearson Edu, "Software Engineering by Ian Sommerville", 9th edition, 2010

CODE: UCAT55 COMPUTER NETWORKS 5 HOURS/ 4 CREDITS

Course Outcomes:

After completion of the course, certain outcomes are expected from the learners.

COs	Bloom's Taxonomy Level
CO1:. Gaining knowledge of the networking concepts and basic communication model	Knowledge (Level – 1)
CO2: Understanding the working principles of various application protocols	Comprehension (Level – 2)
CO3: Analyzing the basic terminology and Topology of the computer networking area	Analysis (Level – 4)
CO4:. Evaluating the working principles of various application protocols	Evaluation (Level – 5)
CO5: Mastering the working with routing algorithms	Synthesis (Level – 6)

COURSE CONTENT

UNIT I

Basic concepts : Components of data communication, standards and organizations, Network Classification, Network Topologies ; network protocol; layered network architecture; overview of OSI reference model; overview of TCP/IP protocol suite.

UNIT II

Physical Layer: Cabling, Network Interface Card, Transmission Media Devices- Repeater, Hub, Bridge, Switch, Router, Gateway.

UNIT III

Data Link Layer: Framing techniques; Error Control; Flow Control Protocols; shared media protocols - CSMA/CD and CSMA/CA.

UNIT IV

Network Layer: Virtual Circuits and Datagram approach, IP addressing methods – Subnetting; Routing Algorithms (adaptive and non-adaptive)

Transport Layer: Transport services, Transport Layer protocol of TCP and UDP

UNIT V

Application Layer: Application layer protocols and services – Domain name system, HTTP, WWW, telnet, FTP, SMTP

Network Security: Common Terms, Firewalls, Virtual Private Networks

Text Books:

1. B.A. Forouzan: Data Communication and Networking, 4th Edition, Tata McGraw Hill, 2007.

2. D.E. Comer, Internetworking with TCP/IP, Vol. I, Prentice Hall of India, 1998.

3. W. Stalling, Data & Computer Communication, 8th edition, Prentice Hall of India, 2006.

4. D. Bertsekas, R. Gallager, Data Networks, 2nd edition, Prentice Hall of India, 1992.

CODE: UCAE53 PHP WITH MYSQL – LAB 3 HOURS/ 3 CREDITS

Course Outcomes:

After completion of the course, certain outcomes are expected from the learners.

COs	Bloom's Taxonomy Level
CO1:. Gaining knowledge of the uses, features and syntax of PHP	Knowledge (Level – 1)
CO2: Comprehending the methods of designing and developing a Web site using form controls for presenting web based content.	Comprehension (Level – 2)
CO3: Analyzing the construction of a web page and relate how PHP and HTML combine to produce the web page.	Analysis (Level – 4)
CO4:. Creating, translating and processing HTML information using the CGI.	Synthesis (Level – 6)
CO5: Creating dynamic Website/ Web based Applications, using PHP, MySQL database	Synthesis (Level – 6)

COURSE CONTENT

Lab Programs:

1. Creating simple webpage using PHP
2. Use of conditional statements in PHP
3. Use of looping statements in PHP
4. Creating different types of arrays
5. Usage of array functions
6. Creating user defined functions
7. File manipulation using PHP
8. Creating simple applications using PHP
9. Creating simple table with constraints
10. Insertion, Updation and Deletion of rows in MYSQL tables
11. Searching of data by different criteria
12. Demonstration of joining tables
13. Usage of subqueries
14. Usage of aggregate functions
15. Working with string, numeric and date functions
16. Database connectivity in PHP with MySQL
17. Validating Input

CODE: UCAS53 MOBILE APPLICATIONS – LAB 2 HRS/ 2 CREDITS

. Course Outcomes:

After completion of the course, certain outcomes are expected from the learners.

COs	Bloom's Taxonomy Level
CO1:. Gaining knowledge about Android as new technology for developing mobile application	Knowledge (Level – 1)
CO2:. Identifying the different application programming interfaces that are available for the different mobile platforms and languages.	Comprehension (Level – 2)
CO3: Applying Java programming concepts to Android application development	Application (Level – 3)
CO4:. Designing and developing user Interfaces for the Android platform	Synthesis (Level – 6)
CO5: Becoming competent in designing and developing mobile applications using application development framework.	Synthesis (Level – 6)

COURSE CONTENT

Lab Program:

1. Develop an application that uses GUI components, Font and Colors
2. Develop an application that uses Layout Managers and event listeners.
3. Develop a native calculator application.
4. Write an application that draws basic graphical primitives on the screen.
5. Develop an application that makes use of database.
6. Develop an application that makes use of RSS Feed.
7. Implement an application that implements Multi-threading
8. Develop a native application that uses GPS location information.
9. Implement an application that writes data to the SD card.
10. Implement an application that creates an alert upon receiving a message.
11. Write a mobile application that creates alarm clock

SEMESTER VI

CODE: UCAT61 COMPUTER GRAPHICS 5 HRS/ 4 CREDITS

Course Outcomes:

After completion of the course, certain outcomes are expected from the learners.

COs	Bloom's Taxonomy Level
CO1:. Gaining in-depth knowledge about the current 3D graphics	Knowledge (Level – 1)
CO2: Understanding computational development of graphics	Comprehension (Level – 2)
CO3: Analyzing the Line attribute & curve attribute	Analysis(Level – 4)
CO4:. Designing animation with rotation, translation and scaling	Synthesis (Level – 6)
CO5: Working out 3D Display Techniques, 3D representation & 3D transformations.	Synthesis (Level – 6)

COURSE CONTENT

UNIT- I:

Introduction to computer Graphics - Video display devices- Raster scan Systems -Random Scan Systems -Output primitives : Points and Lines –Line drawing algorithm: DDA Algorithm, Bresenham's line algorithm –Circle Generating Algorithms: Properties of Circles, Mid point Circle Algorithm,

Unit - II

Attributes of output Primitives - line attributes –Curve Attributes - Color and Grayscale style - Area filling attributes - Character attributes – Bundled attributes - Two Dimensional Geometric Transformations: Basic Transformation –Composite Transformation – Other Transformations -

Unit - III

Two Dimensional Viewing: The Viewing pipeline – Viewing Coordinates Reference Frame - Window to View port coordinate Transformation – 2D Viewing Functions - Clipping Operations: Point Clipping –Line Clipping –Polygon Clipping – Curve Clipping – Text clipping.

Unit - IV

Three - dimensional concepts - Three dimensional display methods - parallel Projection - Perspective Projection - Depth Cueing - Visible line and surface identification - Three dimensional transformation.

Unit V:

Three Dimensional Viewing: Viewing pipeline – Viewing Coordinated – Projections – Clipping – Visible Surface Detection Algorithms – Bacface detection – Depth buffer detection – A-Buffer method.

Text Book:

D.Hearn and M.P.Baker - Computer Graphics - Prentice Hall of India - 1997.

Reference Book:

W.M. Newman and RF.Sproull - Principles of Interactive Computer Graphics - McGraw Hill International Edition – 1979.

CODE: UCAT62 WEB TECHNOLOGY 5 HRS/ 4 CREDITS

Course Outcomes:

After completion of the course, certain outcomes are expected from the learners.

COs	Bloom's Taxonomy Level
CO1:. Gaining knowledge of solving web client/server problems	Knowledge (Level – 1)
CO2: Comprehending the concept of Tables, Forms, Files, Basic Web server Controls	Comprehension (Level – 2)
CO3: Understanding the concepts of Tables, Forms, Files. Basic Web server Controls	Comprehension (Level – 2)
CO4:. Describing the complete overview of HTML & Java Script	Synthesis (Level – 6)
CO5: Mastering Error handling. Security, Authentication, IP Address, Secure by SSL and Client Certificates	Synthesis (Level – 6)

COURSE CONTENT

UNIT I:

Introduction – History of the Internet – Services and Accessibility – Uses – Protocols – Internet Standards

UNIT II:

HTML – Introduction – HTML Document – Head Section – Body Section – HTML Forms – Java Script – Introduction – Language Elements – Objects of Java Script – Other Objects – Arrays.

UNIT III: Cascading Style Sheets – Advantages of CSS – Properties of Tags – Property Values – Embedded Style Sheets – External Style Sheets – Grouping – Inheritance – Class as Selector – Pseudo Classes and Pseudo Elements – Positioning – Backgrounds – Element Dimensions

UNIT IV: Servlets – Introduction – Advantages of Servlets - Servlet Life Cycle - The Servlet API - A Simple Servlet – Handling HTTP GET Requests – Handling HTTP POST Requests – Cookies – Session Tracking

UNIT V: Introduction – Advantages of JSP – Developing First JSP – Components of JSP – Reading request information – Retrieving the data posted from a HTML file to a JSP File – JSP Sessions – Cookies – Disabling Sessions

Text Book:

1. Web Technology – A Developers Perspective – N P Gopalan, J Akilandeswari, Prentice Hall of India Pvt. Ltd., New Delhi, 2008. 454

Reference Books:

1. Mastering Javascript, J Jaworkski, BPB Publications, 1999 2. Core SERVLETS AND JAVA SERVER PAGES VOLUME 1: CORE TECHNOLOGIES By Marty Hall and Larry Brown Pearson, Pearson Education India

CODE: UCAT63 MULTIMEDIA AND ITS APPLICATIONS 5 HRS / 4 CREDITS

Course Outcomes:

After completion of the course, certain outcomes are expected from the learners.

COs	Bloom's Taxonomy Level
CO1:. Gaining knowledge of the importance of Internet in multimedia	Knowledge (Level – 1)
CO2: Understanding Multimedia Architecture & Audio System	Comprehension (Level – 2)
CO3: Analyzing and designing Authoring Tools	Analysis (Level – 4)
CO4:. Working out Graphics file and Application Formats	Application (Level – 3)
CO5: Trying out Graphics in Multimedia Applications.	Synthesis (Level – 6)

COURSE CONTENT

UNIT – I:

Where to use Multimedia, Text: About font and faces using Text in Multimedia – Hypermedia and Hypertext

Unit – II:

Images: Making Still images: Bit map, Vector Drawing, Vector dr4awn objects vs Bitmap – 3D Drawing and Rendering. Color: Computerized Colors – Image file formats.

Unit – III:

Sound: Digital Audio – MIDI Audio –MIDI vs Digital Audio – Audio file formats – Adding Sound to multimedia projects.

Unit – IV:

Animation and Video: Principles of Animation – Animation by Computer – Making Animation that Works.

Video: How video works and is displayed – Digital Video Containers – Shooting and editing video

Unit – V:

Making Multimedia – Stages of a Multimedia Project – What you need: The Intangibles, Hardware, Software, authoring Systems.

Text Book:

1. Multimedia : Making it works, 8th Edition, Tay Vaughan, Tata McGraw Hill Publications

CODE: UCAP63 MULTIMEDIA LAB 5 HOURS/ 4 CREDITS

After completion of the course, certain outcomes are expected from the learners.

COs	Bloom's Taxonomy Level
CO1:. Gaining knowledge of the importance of Internet in multimedia	Knowledge (Level – 1)
CO2: Understanding Multimedia Architecture & Audio System	Comprehension (Level – 2)
CO3: Analyzing and designing Authoring Tools	Analysis (Level – 4)
CO4:. Working out Graphics file and Application Formats	Application (Level – 3)
CO5: Trying out Graphics in Multimedia Applications.	Synthesis (Level – 6)

COURSE CONTENT

Lab Program:

1. Procedure to create an animation to represent the growing moon.
2. Procedure to create an animation to indicate a ball bouncing on steps.
3. Procedure to simulate movement of a cloud.
4. Procedure to draw the fan blades and to give proper animation.
5. Procedure to display the background given (filename: Tulip.jpg) through your name.
6. Procedure to create an animation with the following features.
7. Procedure to simulate a ball hitting another ball.
8. Procedure to create an animated cursor using startdrag("ss",True); mouse.hide()
9. Procedure to design a visiting card containing atleast one Graphic and text information.
10. Procedure to take a photographic image. Give a title for the Image. Put the border. Write your names. Write the name of Institution and place.
11. Procedure to prepare a cover page for the book in your Subject area. Plan your own design.
12. Procedure to extract the flower only from given Photographic image and organize it on a background. Selecting your own background for organisation.
13. Procedure to display the background given (filename: Garden.jpg) through your name using mask.
14. Procedure to change a circle into a square using flash.

CODE: UCAP64 WEB TECHNOLOGY LAB 5 HRS/ 4 CREDITS

Course Outcomes:

After completion of the course, certain outcomes are expected from the learners.

COs	Bloom's Taxonomy Level
CO1:. Understanding the role of mark-up languages in the workings of the web and web applications.	Comprehension (Level – 2)
CO2: Applying the knowledge of the internet and related internet concepts that are vital in understanding web application development	Application (Level – 3)
CO3: Analyzing the insights of internet programming to implement complete application over the web	Analysis (Level – 4)
CO4:. Becoming capable of choosing the best technologies for solving web client/server problems.	Synthesis (Level – 6)
CO5: Automating the real time problems by developing & analyzing a web project and identifying its elements and attributes in comparison to traditional projects.	Synthesis (Level – 6)

COURSE CONTENT

Lab Program:

Creation of HTML pages with frames, links, tables and other tags

APPLYING STYLE TO AN HTML PAGE USING CSS

Java script for Displaying and Comparing Date & Form Validation

Online Applications using JSP

Servlet program using HTTP Servlet

Online application with data access

Creation of XML document

XML document and DTD

CODE: UCAS64 SOFTWARE TESTING LAB 2 HRS/ 2 CREDITS

Course Outcomes:

After completion of the course, certain outcomes are expected from the learners.

COs	Bloom's Taxonomy Level
CO1:. Learning the functionality of automated testing tools to apply in the specialized environment	Comprehension (Level – 2)
CO2: Applying various techniques to detect the errors in the software	Application (Level – 3)
CO3: Distinguishing characteristics of structural testing methods.	Analysis (Level – 4)
CO4:. Demonstrating the integration testing which aims to uncover interaction and compatibility problems as early as possible.	Synthesis (Level – 6)
CO5: Becoming capable of applying specific (automated) unit testing method to the projects.	Synthesis (Level – 6)

Lab Program:

1. Understand the automation testing approach.
2. Using Selenium IDE, Write a test suite containing minimum 4 test cases for arithmetic operations.
3. Conduct a test suite for any two web sites.
4. Install Selenium server and demonstrate it using a script in Java/PHP by developing a web page which calculates the GCD of 2 numbers.
5. Write and test a program to login a specific web page.
6. Write and test a program to update 10 student records into table into Excel file.
7. Write and test a program to select the number of students who have scored more than 60 in any one subject (or all subjects).
8. Write and test a program to provide total number of objects present available on the page.
9. Write and test a program to get the number of list items in a list combo box using HTML.
10. Write and test a program to count number of check boxes on the page checked and unchecked count using Visual Basic script.