# M.O.P. VAISHNAV COLLEGE FOR WOMEN

**(AUTONOMOUS)**

## Choice Based Credit System

Course of Study for the batch of Candidates admitted in

2017 – 2018

2016 – 2017

2015 – 2016

## ACADEMIC YEAR 2017 – 2018

# B. C.A

**Activities / Content with direct bearing on Employability/ Entrepreneurship/ Skill Development**

**M.O.P. VAISHNAV COLLEGE FOR WOMEN (AUTONOMOUS), CHENNAI-34**

*(Effective for the batch of Candidates admitted in 2017- 2018)*

**B.C.A**

# Choice Based Credit System

# Course of Study for the batch of Candidates admitted in 2017 – 2018

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# B.C.A

## CORE I - PROGRAM DESIGN WITH C
## COMMON TO B.Sc. COMPUTER SCIENCE & B.C.A

| | | | |
|---|---|---|---|
| **COURSE CODE: 15UCSC302 & 15UCSC302P** | **YEAR/SEMESTER : I/ I** | **MAXIMUM MARKS: 100** | **THEORY: 60** |
| | | | **PRACTICAL: 40** |
| **COURSE TYPE: THEORY & PRACTICAL** | **CREDITS: 4** | **TOTAL TEACHING HOURS: 60** | **THEORY: 36Hrs** |
| | | | **PRACTICAL: 24 Hrs** |

## COURSE OBJECTIVES:

- To Understand the basic programming principles
- To Understand problem solving using flowcharts, algorithms
- To Recognize the basic concepts of C Program
- To Understand the principles of code design, documentation and coding standards

## UNIT I

**Introduction to programming**

Introduction, Kinds of Flowcharts, Symbols used in flowcharts, Constants and variables, Advantages of flowchart (8Hrs)

## UNIT II

**PseudoCode and Flowchart**

Pseudo Code, Flowchart – Selection, Multiple Selection, Iteration using for, while and do while, Problems on array, one dimensional. (6 Hrs)

## UNIT III

**Subscripted Variables**

Introduction, Basic concepts of subscripted variables, one dimensional array, Tracing Logic.

Files **-** Introduction to file structure, Concept of a Data File, Types of Data files, File Organizations, File Processing. (6 Hrs)

## UNIT IV

**Introduction to C**

Constants, Variables and Data Types – Introduction, Character set, Tokens, Keywords and Identifiers, Constants, Variables, Data Types. Operators and Expressions - Types of operators, Operator precedence, Evaluation of expressions. Input and Output functions – scanf, printf. (8 Hrs)

## UNIT V

**Control Structures in C**

Control structures – if, if-else, nested if-else, else-if ladder, switch, Conditional operator, While, do-while, for, break, continue statements, Goto statement, Simple programs. (8 Hrs)

## TEXT BOOKS


- Raj K Jain (2002), Insight into Flowcharting. Sultan Chand Publishers, New Delhi.
- Anil Bikas Chaudhuri, The art of programming through flowcharts and algorithms. Firewall Media, New Delhi
- E .Balaguruswamy(2010) , Programming in ANSI C, fifth edition,Tata McGraw Hill, New Delhi.

## REFERENCE BOOK

- Yashwant P Kanitkar( 2008), Let Us C, Infinity Science Press - Eighth Edition, New Delhi

## ACTIVITY PLANNER

**List of activities for Employability / Skill Development / Entrepreneurship Skill Development**

*(These activities are only indicative, the Faculty member can innovate)*

- Logic Building: Students write logic for the programs based on control structures and draw flowchart and submit as assignment
- Assignment: Students submit programs based on the concepts learnt. This activity helps students to arrive at solution for a problem through programming
- Project: Students have to develop simple projects using the concepts learned.
- Roleplay : Sorting techniques
- Shoot the error to test debugging skills.

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# PROGRAM DESIGN WITH C – PRACTICAL

## LIST OF PROGRAMS (24 Hours)

Develop Flowchart and write programs in C for the following:

### I. Sequence Structures:

1. Programs to implement Formatted I/O.
2. Programs to implement Arithmetic Operators.
3. Programs to implement Assignment Statements.
4. Programs to implement Auto-increment and auto-increment operators.

### II. Branching Control Structures:

5. Programs to implement simple if.
6. Programs to implement nested if.
7. Programs to implement else-if ladder.
8. Programs to implement switch-case.
9. Programs to implement logical operators.
10. Programs to implement go to statement.

### III. Looping Control Structures:

11. Programs to implement unconditional looping.
12. Programs to implement for loop.
13. Programs to implement while loop.
14. Programs to implement do-while loop.

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**B.C.A**

# CORE II - BASICS OF DIGITAL LOGIC AND COMPUTER ARCHITECTURE

| | | | |
|---|---|---|---|
| **COURSE CODE: 15UCSC301/ 15UCSC301P** | **YEAR/SEMESTER: I/I** | **MAXIMUM MARKS: 100** | **THEORY: 60**<br>**PRACTICAL: 40** |
| **COURSE TYPE:THEORY & PRACTICAL** | **CREDITS: 4** | **TOTAL TEACHING HOURS:60** | **THEORY: 36Hrs**<br>**PRACTICAL: 24 Hrs** |

## COURSE OBJECTIVES:

- Analyze and design digital logic systems by understanding formal foundations and selected design techniques
- To provide students with the knowledge of basic computer system hardware building blocks, computer organization and architecture and maintenance
- Introduce the fundamental techniques on which high performance computing is based
- To develop the foundations for analyzing the benefits of design options in computer architecture.
- To have the basic knowledge of microprocessor system programming, interfacing and architecture.

## UNIT I

**Number system and Logic Gates**

Number Systems & Codes-Base Conversion, Binary Codes, Code Conversion-1's and 2's complements. Digital Logic- Logic Gates , Truth Tables, Universal Gates. (7Hrs)

## UNIT II

**Techniques for Simplification of Boolean Functions**

Boolean Algebra- Theorems, SOP, POS Methods – Simplification Of Boolean Functions, Using Theorems, K-Map, Prime-implicant method. Implementation Using Universal Gates. - Binary Arithmetic-Binary Addition, Subtraction, Adders, Subtractors, code conversion.

(7Hrs)

## UNIT III

**Combinational logic, Sequential Logic, Registers & Counters**

Decoders – Multiplexers - Introduction to Flip-Flops - Registers, Shift registers, Ripple Counters. (8Hrs)

## UNIT IV

**Microcomputer System Design**

Introduction-Microcomputer Organization-Memory Organization, Input, Interface, Direct Memory Access. (7Hrs)

## UNIT V

**Introduction to 8085**

8085 Architecture – Pin definitions of 8085-bus organization-Signals-Instruction Set-Addressing modes. (7Hrs)

## TEXT BOOKS


- M. MorisMano(2001). Digital Logic and computer Design. PHI.
- A.P.Godse , D.A. Godse(2009), Microporecessor and its Applications ,Technical Publications,Pune


## REFERENCE BOOKS


- T.C. Bartee(1985). Digital Computer Fundamentals, 6th Edition, Tata McGraw Hill, New Delhi.
- V.Vijayendran(2009), Fundamentals of Microprocessor 8085 – Architecture,programming& interfacing. S.Viswanathan publishers, Chennai
- V.Vijayendran(2009 ), Digital Fundamentals. S.Viswanathan publishers, Chennai
- R. Gaonkar (2002) - Microprocessor and its Application, Prentice Hall,New Delhi.


## ACTIVITY PLANNER

**List of activities for Employability / Skill Development / Entrepreneurship Skill Development**

*(These activities are only indicative, the Faculty member can innovate)*

- Number systems and Conversions:Workbook:Students to do exercises in decimal.binary,octal,hexadecimal conversions.
- Boolean Functions and K-Map:Exercises:Students solve problems using Boolean Theorems and K-map reduction
- Sequential and Combinational Circuits:Digital Project- Students should identify a simple logic and construct models or digital circuits
- Microcomputer Architecture:Assignments on Architecture of micro computer and DMA
- 8085:Write programs in Assembly Level Programming

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**B.C.A**

# DIGITAL AND MICROPROCESSORS - PRACTICAL

## LIST OF PROGRAMS( 24 Hours)

### I. STUDY OF LOGIC GATES

1. Logic Gates using discrete components
2. Verification of truth table for AND ,OR, NOT, NAND, NOR and XOR gates
3. Realisation of NOT, AND, OR, EX-OR gates with only NAND gates
4. Realisation of NOT, AND, OR, EX-OR gates with only NOR gates

### II. IMPLEMENTATION OF LOGIC CIRCUITS

5. Verification of Associative law for AND, OR gates.
6. Karnaugh's Map reduction and logic circuit implementation

### III ADDER AND SUBTRACTOR

7. Verification of Demorgan's Law
8. Implementation of Half-Adder and Half- Subtractor.
9. Implementation of Full-Adder and Full- Subtractor.

### IV. SIMPLE PROGRAMS USING MICRO PROCESSOR

10. Arithmetic Operations Using Different Number Systems.
11. Implementation of Control Structures.
12. Implementation of subroutines.

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**B.C.A**

# ALLIED I - STATISTICS

## COMMON TO B.Com (Accounting & Finance), B.Com (Marketing Management), B.Com (Corporate Secretaryship), B.Sc(Computer Science), B.C.A, B.B.A

| | | | |
|---|---|---|---|
| **COURSE CODE: 14UMAT307 & 14UMAT307P** | **YEAR/SEMESTER: I/I** | **MAXIMUM MARKS: 100** | **THEORY: 80** |
| | | | **PRACTICAL: 20** |
| **COURSE TYPE:THEORY & PRACTICAL** | **CREDITS: 5** | **TOTAL TEACHING HOURS:75** | **THEORY: 55 Hrs** |
| | | | **PRACTICAL: 20Hrs** |

## COURSE OBJECTIVES:

- To develop skills in analysis & interpretation of data
- Handle challenging problems using appropriate analysis tools

## UNIT I

**Statistics**

Introduction, Meaning, Definition, Scope and Limitations of Statistics, Collection, Classification and Tabulation of Statistical data, Diagrammatic and Graphical Presentation of Statistical data, Measures of Central Tendency – Mean, Median and Mode.

(8 Hrs)

## UNIT II

**Measures of Dispersion**

Introduction, Significance, Range, Quartile deviation, Mean deviation, Standard deviation, Co-efficient of variation.

**Correlation**

Introduction**,** Significance, Types of correlation, Karl Pearson's co-efficient of correlation and Rank co-efficient of correlation, Regression Analysis.

(8 Hrs)

## UNIT III

**Tests of Hypothesis**

Introduction, Procedure of Testing Hypothesis, Two types of Errors, One tailed and two tailed tests, Standard Error.

Large samples- Tests of significance for Single Mean, Difference of Means.

Small Samples- t test for Single Mean, Difference of Means, Paired t tests.

Non-Parametric test- Chi-Square for goodness of fit (excluding fitting of distributions) and test for association of attributes.

(10 Hrs)

## UNIT IV

**Analysis of Time series**

Introduction, Components of time series, Measurement of Trend- Graphic Method, Method of Semi-averages, Method of Moving Averages, Method of Least Squares, Measurement of seasonal variations - Method of Simple Averages (Weekly, Monthly or Quarterly) , Simple Problems. (9 Hrs)

**UNIT V**

**Probability**

Introduction, Definitions, Addition and Multiplication Theorem, Conditional probability, Baye's theorem, Simple Problems (Statement only for all the theorems).

**Index Numbers**

Introduction, Uses of Index Numbers, Methods of Constructing Index Numbers: Unweighted Index Numbers- Simple Aggregative Method, Weighted Index Numbers – Laspeyres, Paasche's, Bowley's and Fischer's Ideal Index numbers, Tests of Adequacy of Index number Formulae – Time and Factor Reversal Tests, Cost of living index- Aggregate Expenditure Method, Family Budget Method.

(10 Hrs)

## TEXT BOOK

- S.P. Gupta (2008) Statistical methods, Sultan Chand & Sons.

## REFERENCE BOOKS

- P.R.Vittal (2009), Mathematical Statistics, Margham Publications.
- Murray R Spiegel, Larry J Stephen (1999) Schaum"s Outline of Theory & Problems of Statistics, Mcgraw Hill.
- Sharma (2007) ,Business Statistics , Pearson Education.
- G C .Beri (2005) Business Statistics, Tata Mcgraw Hill.

## ACTIVITY PLANNER

**List of activities for Employability / Skill Development / Entrepreneurship Skill Development**

*(These activities are only indicative, the Faculty member can innovate)*

- Learn a tool: Students write the steps in implementing statistical methods using formulas in excel software and submit as observation notebook.
- Excel in diagrams: Implement simple bar,multiple bar, subdivided bar, pie, line charts for the tabulated data.
- Unitwise Assignment: Students solve problems in central measures, index numbers,
- Formula Test: Unitwise Class test in Formulas.

# ALLIED I - STATISTICS PRACTICAL

## LIST OF PROGRAMS ( 20 Hours)

- **DIAGRAMMATIC REPRESENTATION**
  Column, Bar Diagram, Line, Pie and Area

- **METHODS OF CENTRAL TENDENCY**
  Mean, Median, Mode.

- **MEASURES OF DISPERSION**
  Standard deviation, Quartile deviation, Range

- **CORRELATION**
  Correlation co-efficient

  Rank Correlation (without repeated ranks)

  Regression co-efficient and Regression lines

- **TESTS OF SIGNIFICANCE**
  Small samples- t test for single mean, difference of means and paired t test.

  Chi-square for independence of attributes.

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# CORE III -PROGRAMMING IN C
# COMMON TO B.Sc. COMPUTER SCIENCE & B.C.A

| | | | |
|---|---|---|---|
| **COURSE CODE: 15UCSC310 & 15UCSC310P** | **YEAR/SEMESTER: I/II** | **MAXIMUM MARKS: 100** | **THEORY: 60** |
| | | | **PRACTICAL: 40** |
| **COURSE TYPE: THEORY & PRACTICAL** | **CREDITS: 4** | **TOTAL TEACHING HOURS:60** | **THEORY: 36Hrs** |
| | | | **PRACTICAL: 24Hrs** |

## COURSE OBJECTIVES:

- Acquire a solid foundation in C, the multi-platform programming language
- Recognize the basic concepts of C Program
- Create and solve modular programs.

## UNIT I

**Arrays**

Review of Fundamentals concepts of 'C' - Arrays: Declaration and processing arrays – Handling of Character arrays – Multidimensional arrays – Practical implementation.

(6Hrs)

## UNIT II

**Functions and Structures**

Functions : Definition – Prototype – Categories of functions - Passing arguments - Passing arrays to functions-Recursion. Storage Classes-Automatic , External , Static and Register Variables.Structures : Definition- initialization – Array of structures – Array within structures – Nested structures – Structures and Functions – Self –referential Structures–Unions

(8 Hrs)

## UNIT III

**Pointers and Files**

Pointers : Declaration – initialization – Pointer operations – Pointers and arrays – Pointers and Structures. File Management : Creating , Opening , Processing and Closing a file –Command line arguments.

(9Hrs)

## UNIT IV

**Linked Lists**

Dynamic Memory Allocation – Linked lists – Basic list Operations. The Preprocessor – Macro Substitution – Compiler Control Directives – File inclusion.

(8Hrs)

## UNIT V

**Graphics**

Simple Programs using C Graphics – Basic commands in C graphics.

(5Hrs)

## TEXT BOOKS


- E .Balaguruswamy(2010). Programming in ANSI C. Fifth Edition,TATA MCGRAW HILL
- Yashwant Kanetkar(1998 ). Graphics under C. BPB Publications.


## REFERENCE BOOKS


- H. Schildt(2000) – C: The Complete Reference – Fourth Edition ,TATA MCGRAW HILL Edition.
- Gottfried. B.S (1996) – Programming with C – Second Edition – TATA MCGRAW HILLPub.Co.Ltd, New Delhi 1996
- Y.Kanetkar(1999) – Let Us C. Second Edition BPB Publications, New Delhi
- B.W.Kernighan and D.M. Ritchie(1998). The C Programming Language – Second Edition , PHI.


## ACTIVITY PLANNER

**List of activities for Employability / Skill Development / Entrepreneurship Skill Development**

*(These activities are only indicative, the Faculty member can innovate)*

- **Programming assignment to test the coding skills**
- **Code Builder: Develop simple project using C Programming**
- **Game Development: Develop simple games using C graphics and programming knowledge**

# PROGRAMMING IN C - PRACTICAL

## LIST OF PROGRAMS (24 Hours)

**Write programs in C for the following:**

1. Programs to implement One-dimensional array.
2. Programs to implement Two-dimensional array.
3. Programs to implement Strings.
4. Programs to implement Functions
5. Programs to implement Recursive Functions.
6. Programs to implement Structures.
7. Programs to implement Unions.
8. Programs using Pointers.
9. Programs using Files.
10. Programs using Dynamic memory allocation.
11. Programs using Command-line arguments.

## Graphics:

1. Write a C program to implement Boundary Fill & Flood fill algorithm.
2. Write a C program to implement Two-dimensional transformations.
3. Design a blue-print of your House in C.
4. Design a car & apply movements as per arrow keys pressed in C.
5. Design bouncing ball game in C.
6. Design an image in C & apply Zoom-in & Zoom-out effects for the image.

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# CORE IV- DATA STRUCTURES

| | | |
|---|---|---|
| **COURSE CODE: 14UCSC311** | **YEAR/SEMESTER: I/ II** | **MAXIMUM MARKS:100** |
| **COURSE TYPE:THEORY** | **CREDITS: 4** | **TOTAL TEACHING HOURS:60** |

## COURSE OBJECTIVES:

- Understand the meaning asymptotic time complexity analysis
- Understand the underlying organization of various important data structures
- Interpret and develop simple hashing functions.

## UNIT I

**Arrays and ordered Lists**

Abstract data types – asymptotic notations – complexity analysis – Arrays –- Representation of array-operations on arrays – ordered lists – polynomials.

(10 Hrs)

## UNIT II

**Stacks and Queues**

Linked lists: Singly linked list – doubly linked lists - Circular linked list, General lists- stacks – Queues – Circular Queues – Evaluation of expressions

(12 Hrs)

## UNIT III

**Trees**

Trees – Binary Trees – Binary Tree Traversal – Binary Tree Representations – Binary Search Trees - threaded Binary Trees **-** Application of trees (Sets)

(12 Hrs)

## UNIT IV

**Graphs**

Representation of Graphs – Graph implementation – graph Traversals - Minimum Cost Spanning Trees – Shortest Path Problems**-**Application of graphs.

(12 Hrs)

## UNIT V

**Sorting and Searching**

Sorting – Bubble Sort, Insertion Sort, Quick Sort , Merge Sort, Selection Sort, Heap Sort

Searching – Linear search, Binary search - Hashing Techniques – Hash and Search – Tree Hashing – Chaining – Hashing Functions – Division method – Digit Analysis – Folding – Mid Square Method.

(14 Hrs)

## TEXT BOOKS

- Seymour Lipshutz(2011). Schaum's Outlines - Data Structures with C – McGraw Hill.
- E.Horowitz, S.Sahani(2010). Fundamentals of Data Structures -Galgotia.

## REFERENCE BOOKS

- Gregory L. Heileman – Data Structures, Algorithms and Object Oriented Programming – McGraw Aill International Editions –.
- A.V.Aho, J.D. Ullman, J.E.Hopcraft : Data Structures and Algorithms – AddisionWelsley Pub.

## ACTIVITY PLANNER

**List of activities for Employability / Skill Development / Entrepreneurship Skill Development**

*(These activities are only indicative, the Faculty member can innovate)*

- Students created mini projects on Graph-based in data structures
- Students to analyse the performance of various algorithms using time complexity & space complexity and submit as an assiignment .
- Algorithm Design : Students to write logic for the given problem and submit it as an assignment.
- Students to present demo on tree, Linked List & Stack with Yarn and Paper Bags to increase their basic understanding of programming skills..
- problem solving on sorting algorithms.

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**B.C.A**

# ALLIED II - MATHEMATICS FOR COMPUTER APPLICATIONS

| | | |
|---|---|---|
| **COURSE CODE: 14UMAT305** | **YEAR/SEMESTER: I/ II** | **MAXIMUM MARKS:100** |
| **COURSE TYPE:THEORY** | **CREDITS:** | **TOTAL TEACHING HOURS: 75** |

## COURSE OBJECTIVES:

- To provide a solid foundation in functional concepts of mathematics
- To acquire logical & analytical skills for further studies & its applications to the required fields

## UNIT I

**Sets, Relations, Functions**

Sets, Relations & Functions: Cartesian product; Relation –Equivalence relation-Partition – Partial Order relation; Functions –Inverse functions- composition of functions-Properties of functions -Set Operations and Venn diagram

(15 Hrs)

## UNIT II

**Permutation and combination**

Permutation & combinations – Lattices – Boolean algebra -Laws of Boolean algebra

(15Hrs)

## UNIT III

**Matrices**

Matrices –Types of matrices –Matrices Operations – Inverse of matrix – Solution to Linear system of equations (matrix inversion & Cramer's rule)

(15 Hrs)

## UNIT IV

**Coding Theory**

Introduction, Hamming distance, Encoding a message, Group codes, Procedure for generating group codes, Decoding and error correction.

(15 Hrs)

## UNIT V

**Mathematical Logic and Tautology**

Mathematical Logic –Proposition – Logical operators, Truth table –Conditional & Bi-conditional Operators; Converse, Inverse & Contra-positive statements, Tautology & Contradiction, Laws of Algebra of Proposition, testing the validity of arguments.

(15Hrs)

## TEXTBOOKS


- Dr.A.Singaravelu, Dr.M.P.Jeyaraman (2011). Discrete Mathematics. Meenakshi Agency.
- P.R.Vittal(2003). Mathematical Foundations. Margham publications.

- T.Veerarajan Discrete Mathematics(2007), Tata McGraw-Hill Publishing Company, NewDelhi.

## REFERENCE BOOKS

- Dr. M.K.Venkataraman ,Dr.N.Sridharan, N.Chandrasekaran(2003). Discrete Mathematics. National publishing Company.
- J.P.Tremblay, R.Manohar(1997), Discrete Mathematics structures with applications to computer science. Tata Mc Graw Hill, Revised edition.

## ACTIVITY PLANNER

**List of activities for Employability / Skill Development / Entrepreneurship Skill Development**

*(These activities are only indicative, the Faculty member can innovate)*

- **Acquire and apply:** Solve matrix problems to learn solving techniques in two dimensional data.
- **Investigate transmission error:** Students solve the parity matrix to correct and detect transmission errors
- **Quiz:** Advance learns conduct quiz in Laws of Boolean algebra
- **FindMatApp**: This activity help students to find real applications of the mathematical concepts in software applications

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# Choice Based Credit System
# Course of Study for the batch of Candidates admitted in 2016 – 2017

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**B.C.A**

# CORE V - OBJECT ORIENTED PROGRAMMING USING C++

| | | | |
|---|---|---|---|
| **COURSE CODE: 14UCSC314 & 14UCSC314P** | **YEAR/SEMESTER : II/ III** | **MAXIMUM MARKS: 100** | **THEORY: 60** |
| | | | **PRACTICAL: 40** |
| **COURSE TYPE: THEORY & PRACTICAL** | **CREDITS: 4** | **TOTAL TEACHING HOURS: 60** | **THEORY: 36Hrs** |
| | | | **PRACTICAL: 24 Hrs** |

## COURSE OBJECTIVES:

- Acquire the knowledge in object oriented programming
- To recognize the components of C++ programming
- Create and solve modular programs

## UNIT I

**Introduction to OOPs**

Principles Of Object Oriented Programming (OOP) – Software Evaluation – OOP Paradigm – Basic Concepts of OOP – Benefits Of OOP – Applications Of OOP

(5 Hrs)

## UNIT II

**Introduction to C++**

Tokens – keywords – identifiers – variables – operators – manipulators – expressions and control structures. pointers – function prototyping, parameter passing in functions – values return by functions – inline functions – friend and virtual functions.

(10 Hrs)

## UNIT III

**Class & objects**

Classes And Objects – Constructors And Destructors – Operator Overloading – Type Conversions – Types Of Constructors – Function Overloading.

(7 Hrs)

## UNIT IV

**Inheritance**

Types Of Inheritance – Virtual Functions And Polymorphism – Constructors in Inheritance – Mapping Console I/O Operations.

(7 Hrs)

## UNIT V

**Files**

File Streams – File Operations –File Pointer- Error Handling During File Operations - Command Line Arguments.

(7 Hrs)

## TEXT BOOK

- E. Balagurusamy(2008), Object Oriented Programming with C++, Tata McGrawHill Publishing Company Ltd.

## REFERENCE BOOKS

- Schildt(2003), C++: The Complete reference, TMH 4th Edition.
- Robert Lafore(2009), Object Oriented Programming in Microsoft C++, Galgotia publication 4th Edition.

## ACTIVITY PLANNER

**List of activities for Employability / Skill Development / Entrepreneurship Skill Development**

*(These activities are only indicative, the Faculty member can innovate)*

- Language parser - This activity helps students to correct the syntax of small code samples which focuses on their memory skills.
- CodeEasy - This helps students to develop C++ programs to any real time application and develop simple projects
- Lecture Notes-Students prepare handbook on core concepts in C++
- Codebook - Students submit an example program to illustrate each concept in C++

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# OBJECT ORIENTED PROGRAMMING USING C++ - PRACTICAL

## LIST OF PROGRAMS (24 HOURS)

1. Write programs in C++ for the following
2. Implement stack using arrays
3. Program using friend functions
4. Program using function overloading
5. Implement Overloading of unary operator
6. Implement Overloading of binary operator
7. Implement Single Level Inheritance
8. Implement Multilevel Inheritance
9. Implement Multiple Inheritance
10. Marksheet processing using files
11. Implement stack using templates
12. Program to implement exception handling

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*(Effective for the batch of Candidates admitted in 2016- 2017)*

**B.C.A**

# CORE VI - OPERATING SYSTEMS

| | | |
|---|---|---|
| **COURSE CODE: 14UCSC316** | **YEAR/SEMESTER: II/ III** | **MAXIMUM MARKS:100** |
| **COURSE TYPE:THEORY** | **CREDITS: 4** | **TOTAL TEACHING HOURS: 60** |

## COURSE OBJECTIVES:

- TO HAVE AN OVERVIEW OF DIFFERENT TYPES OF OPERATING SYSTEMS
- To know the components of an operating system.
- To have a thorough knowledge of process management
- To have a thorough knowledge of storage management
- To know the concepts of I/O and file systems.

## UNIT I

**Introduction**

Views and Goals - Types of System- OS Structure - Components - Services - System Structure - Layered Approach - Virtual Machines - System Design and Implementation. Process Management: Process - Process Scheduling - Cooperating Process - Treads - Inter-process Communication. CPU Scheduling: CPU Schedulers - Scheduling Criteria - Scheduling Algorithms.

(12 Hrs)

## UNIT II

**Process synchronization**

Critical-Section Problem - Synchronization Hardware - Semaphores Classical Problems of Synchronization - Critical Region - Monitors. Deadlocks: Characterization- Methods for Handling Deadlocks - Deadlock Prevention - Avoidance - Detection - Recovery.

(12 Hrs)

## UNIT III

**Memory management**

Address Binding - Dynamic Loading and Linking - Overlays - Logical and Physical Address Space - Contiguous Allocation - Internal & External Fragmentation. Non-Contiguous Allocation: Paging and Segmentation Schemes - Implementation - Hardware-Protection - Sharing - Fragmentation.

(12 Hrs)

## UNIT IV

**Virtual memory**

Demand Paging - Page Replacement - Page Replacement Algorithms - Thrashing. File System: File Concepts - Access Methods - Directory Structures - Protection Consistency Semantics - File System Structures - Allocation Methods - Free Space Management.

(12 Hrs)

## UNIT V

**I/O system**

Overview - I/O Hardware - Application I/O Interface - Kernel I/O Subsystem - Transforming I/O Requests to Hardware Operations - Performance.Secondary Storage Structures: Protection - Goals - Domain - Access matrix - The Security Problem - Authentication - Threats - Threat Monitoring - Encryption.

(12 Hrs)

## TEXT BOOK

- SilberschatzP.B.Galvin, Gange(2011) sixth edition, Operating System Concepts, Addison-Wesley Publishing Co.

## REFERENCE BOOKS

- H.M.Deitel(2007), An Introduction to Operating Systems, Second edition, Addison Wesley, 1990
- A.S.Godbole(2011) third edition - Operating systems –TMH publishing Company Limited

## ACTIVITY PLANNER

**List of activities for Employability / Skill Development / Entrepreneurship Skill Development**

*(These activities are only indicative, the Faculty member can innovate)*

- Students submit an assignment on latest trends of OS in the market. This helps to build and design new OS.
- Scheduler - analyse the performance of algorithms.
- Tests in Glossary of Terms
- Hots- helps students to remember important concepts in OS
- Students to solve realtime deadlock problems and give solutions to its recovery

**M.O.P.VAISHNAVCOLLEGE FOR WOMEN (AUTONOMOUS), CHENNAI-34**

*(Effective for the batch of Candidates admitted in 2016- 2017)*

**B.C.A**

# CORE VII - SHELL PROGRAMMING

| | | | |
|---|---|---|---|
| **COURSE CODE: 14UCSC338 & 14UCSC338P** | **YEAR/SEMESTER : II/ III** | **MAXIMUM MARKS: 100** | **THEORY: 60** |
| | | | **PRACTICAL: 40** |
| **COURSE TYPE: THEORY & PRACTICAL** | **CREDITS: 4** | **TOTAL TEACHING HOURS: 60** | **THEORY: 36Hrs** |
| | | | **PRACTICAL: 24 Hrs** |

## COURSE OBJECTIVES:

- Understand Linux Operating System
- Understand what is Shell and how to create Shell programs
- Work with the vi editor
- Use Shell metacharacters : $*, $#
- Debug Shell programs
- Use command line arguments

UNIT I

**Linux introduction and File System**

Basic Features, Advantages, Basic Architecture of Linux System, Kernel, Shell. Linux File System-Boot block, Super block, Inode table, Data blocks, File accessing mechanism, System startup and shut-down process, init and run levels. Manual help, Getting system information using uname, host name. Commands for files and directories cd, ls, cp, md, rm, mkdir, rmdir,mv, pwd, wc, file, find, more, less, creating and viewing files using cat, file comparisons – diff, cmp& comm, disk related commands, Mathematical commands- bc, expr, factor. General purpose commands – date, cal.

(8 Hrs)

## UNIT II

**Process**

Understanding Processes in Linux-process fundamentals, connecting processes with pipes, tee, Redirecting input output, , Background processing, managing multiple processes, changing process priority with nice, scheduling of processes at command, cron, batch commands, kill, ps, who, sleep, touch. Editing files with vi and vim editor.

(7 Hrs)

## UNIT III

**System administration**

Common administrative tasks, identifying administrative files – configuration and log files, Role of system administrator, Managing user accounts-adding & deleting users, changing permissions and ownerships, Creating and managing groups, modifying group attributes, Temporary disable

user's accounts, creating and mounting file system, file security -& Permissions, becoming super user using su, Backup and restore files- cpio ,tar,gzip,gunzip,zip,unzip (7Hrs )

## UNIT IV

**SHELL BASICS**

Various types of shell available in Linux, comparisons between various shells, shell programming in bash, Shell variables, system shell variables, shell keywords, Input and output command, conditional and looping statements, case statements, command line arguments, Creating Shell Scripts. Connecting to MySQL using shell, running SQL queries from a shell script

(7 Hrs)

## UNIT V

**Simple Filter Commands And Regular Expressions**

Simple Filters - Pr, Head, Tail, Cut, Paste, Sort, Uniq, Tr. Filter Using Regular Expressions – Grep, Egrep, Fgrep Sed And Awk Programming-Formatting Output, Variables And Expressions, Comparison Operator, Arrays And Control Flow

(7 Hrs)

## TEXT BOOKS

- Sumitabha Das - UNIX – Concepts & Applications –TataMcGraw Hill Publications - Third Edition..
- Cristopher Negus **-** Red Hat Linux 9 Bible– IDG Books India Ltd.

## REFERENCE BOOK

- Graham Glass & King Ables **-** Unix for programmers and users – Pearson Education India - Third Edition.

## ACTIVITY PLANNER

**List of activities for Employability / Skill Development / Entrepreneurship Skill Development**

*(These activities are only indicative, the Faculty member can innovate)*

- ScriptforSchedule - This activity helps students to write shell scripts for various process scheduling algorithms. This in turn help students to design new process scheduling algorithms.
- Workbook on Unix Commands
- Tests in Glossary of Terms
- ShellScript - This activity helps students to write simple shell programming code

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***(Effective for the batch of Candidates admitted in 2016- 2017)***

# B.C.A

# SHELL PROGRAMMING – PRACTICAL

# LIST OF PROGRAMS (24 HOURS)

**Implementation of Commands**

- File and directory commands
- Disk commands
- Process commands

**Study of Editors**

- vi editor
- stream editor

**Implementation of Filters**

- cut
- paste
- sort
- grep
- egrep
- fgrep

**awk programming**

**Shell Scripts**

- Bourne again shell

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**B.C.A**

# ALLIED III - FUNDAMENTALS OF FINANCIAL ACCOUNTING

| | | | |
|---|---|---|---|
| **COURSE CODE: 14UCOM327 & 14UCOM327P** | **YEAR/SEMESTER : II/ III** | **MAXIMUM MARKS: 100** | **THEORY: 80** |
| | | | **PRACTICAL: 20** |
| **COURSE TYPE: THEORY & PRACTICAL** | **CREDITS:5** | **TOTAL TEACHING HOURS: 75** | **THEORY: 55Hrs** |
| | | | **PRACTICAL: 20Hrs** |

## COURSE OBJECTIVES:

- To facilitate the understanding of Accounting in general
- To give a comprehensive understanding of the system of Financial Accounting
- To understand the intermediate concepts for assets liabilities and stockholder's equity
- To develop skill, related to problem solving and critical thinking

## UNIT I

Meaning and scope of Accounting, Basic Accounting concepts and conventions – Objectives of Accounting Transactions – Double Entry Book Keeping - Journal, Ledger, Preparation of Trial Balance.

(11Hrs)

## UNIT II

Preparation of Final Accounts of a sole trading Concern – Adjustments – Closing Stock, Outstanding and Prepaid items, Depreciation, Provision of Bad debts, Provision for discount on debtors, Interest on capital and drawings. (Simple Problems)

(11Hrs)

## UNIT III

Classification of errors- Rectification of Errors– Preparation of suspense Account. Bank Reconciliation Statement (Only simple Problems)

(11 Hrs)

## UNIT IV

Depreciation- Meaning, Causes, Types-Straight Line Method- Written Down Value Method (Change in method excluded)

(11 Hrs)

## UNIT V

Company Accounts- Issue of shares and debentures for cash and consideration other than cash at par, premium and discount–forfeiture and re-issue. Preparation of company final accounts and balance sheet

(11Hrs)

## TEXT BOOKS

- Advanced Accounting – R.L.Gupta&V.K.Gupta
- Financial Accounting – T.S.Reddy&A.Murthy

## REFERENCE BOOKS

- Advanced Accounting – Shukla & Grewal
- Financial Accounting – Jain & Narang
- Financial Accounting – P.C. Tulsian
- Corporate Accounting – R.L.Gupta&V.K.Gupta
- Corporate Accounting – T.S.Reddy&A.Murthy

**ACTIVITY PLANNER:**

**List of activities for Employability / Skill Development / Entrepreneurship Skill Development**

*(These activities are only indicative, the Faculty member can innovate)*

1. Mystery Box: Pick a chit to find out the transaction given and pass the Journal Entry for the same.
2. Presentation on the types of Subsidiary books
3. Preparation of Financial Statements of a sole proprietorship
4. Group Discussion - Reason out the need for Reconciliation statement
5. Rapid fire quiz on the topic Depreciation
6. Discuss the reason for depreciation on a given product
7. Prepare a prospectus for an Imaginary Company
8. Mock-stock activity.
9. Worksheet on problems under the topic Preparation of Final Accounts of a sole trading Concern.

# ACCOUNTING SOFTWARE I

**UNIT I**
**Computerized Accounting**
Installing Tally-Features & Procedure for Installing Tally-Changing default settings
Introduction to Tally-Opening screen of tally-Creating company-Selecting company-shutting a company-altering company- configuration company

**UNIT II**
**Inventory Information**
Creation of stock group (Displaying, altering and deleting groups)-Stock items (Displaying, altering and deleting item)-Units of measure

**UNIT III**
**Accounting Information**
Ledger-single and multiple ledgers (Displaying, altering and deleting ledger)

**UNIT IV**
**Vouchers**
Vouchers in tally-Contra Vouchers-Purchases Vouchers-Sales vouchers-Payments-Receipt Voucher-Journal Voucher

**UNIT V**
**Display Menu**
Display Menu- Trial Balance, Profit & Loss account and Balance Sheet

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# B.C.A

# ELECTIVE I – HYPERTEXT PREPROCESSOR AND MYSQL

# (COMMON TO B.C.A & B.Sc. COMPUTER SCIENCE)

| | | |
|---|---|---|
| **COURSE CODE: 15UCSC303** | **YEAR/SEMESTER: II/ III** | **MAXIMUM MARKS:100** |
| **COURSE TYPE: PRACTICAL** | **CREDITS: 5** | **TOTAL TEACHING HOURS: 75** |

## COURSE OBJECTIVES:

- Understand the basics of using PHP.
- Use it to build dynamic web pages.
- Determine how simple database queries can be constructed using MySQL and PHP.
- Implement the basics of MySQL database tables by adding, changing and deleting data using PHP and HTML forms.

## Hypertext processor (PHP)

- Introduction to HTML
- Control structures.
- operators
- Built in functions-String, Math, Array functions
- Functions
- Create forms using Get and Post Method
- Graphics
- Php and Mysql Connectivity

## MySQL

- Creating a database
- Creating a table
- Inserting records in a table
- Altering the table structure.
- Deleting data from table
- Updating data from table.
- Select command
- Where clause
- Aggregate functions
- Numeric functions ( Absolute, ceiling, floor, modulo, round off, square, Square Root, power)
- Constraints
- Group By, Having
- Operators (and, or, not between, In , not in, is null, is not null, like, Order By)

- String Functions (Lower, Upper, Replace, left-trim, right-trim, substring, Length, rename)
- Drop (table, database)
- Truncate
- Sub Queries , Alias

## REFERENCE BOOKS


- Christopher Johnes& Allison Holloway – Underground PHP – Oracle Press – 2007
- Gaborhojtsy – PHP Manual – PHP Documentation Group
- Learning MySQL –Seyed M.M. Tahaghoghi, Hugh Williams – O'Reilly Media Inc., 2007.


## ACTIVITY PLANNER

**List of activities for Employability / Skill Development / Entrepreneurship Skill Development**

*(These activities are only indicative, the Faculty member can innovate)*

- Quiz: Online quiz on PHP functions

- Form Builder: Create Interactive forms using PHP and HTML
- Web page analysis: Students choose web page on their own and do web page analysis.
- Query builder : Students will be judged based on their programming skills by giving on the spot test
- Project - Web site development: Dynamic web site development with PHP and MySQL

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**B.C.A**

# CORE VIII - SOFTWARE ENGINEERING WITH UML

| | | | |
|---|---|---|---|
| **COURSE CODE: 14UCSC323 & 14UCSC323P** | **YEAR/SEMESTER : II/ IV** | **MAXIMUM MARKS: 100** | **THEORY: 60** |
| | | | **PRACTICAL: 40** |
| **COURSE TYPE: THEORY & PRACTICAL** | **CREDITS: 4** | **TOTAL TEACHING HOURS: 60** | **THEORY: 36Hrs** |
| | | | **PRACTICAL: 24 Hrs** |

## COURSE OBJECTIVES:

After studying this course, the students should be able to

- Acquire knowledge about software engineering, its tools and techniques and how these are used to engage the unique challenges of this still emerging discipline and profession.
- Grasp the principles of Software Engineering and its application to software development.
- Analyze Software Engineering problems in terms of basic Software Engineering principles and practices and effect solutions based on these approaches.

## UNIT – I

**Introduction to Software Engineering concepts**

Introduction – Software Crisis – What is Software Engineering? – Terminologies – Role of management in Software Development. Software Life Cycle Models – Build and Fix Model – Water fall Model – The increment Process Model – Evolutionary Process Model – Selection of a Life Cycle Model.

(7 Hrs)

## UNIT – II

**Software Requirements**

Analysis and Specifications – Requirements Engineering – Types of Requirements – Feasibility Studies – Requirements Elicitation – Requirements Analysis – Requirements Documentation – Requirements Validation – Requirements Management.

(7 Hrs)

## UNIT – III

**Planning**

Software Project Planning: Size Estimation – Cost Estimation models – COCOMO I – COCOMO II – Software Risk Management. Software Design – What is Design – Modularity – Strategy of Design – Function Oriented Design – Object Oriented Design.

(7 Hrs)

## UNIT – IV

**Software Metrics**

Software Metrics – What and Why? – Token Count – Data Structure Metric – Information Flow Metrics – Object Oriented Metrics – Use-Case oriented Metrics – Web Engineering Project Metrics – Metrics Analysis - Software Reliability – Basic Concepts – Software Quality – McCall Software Quality Model – Boehm Software Quality Model – Capability Maturity Model – ISO 9000.

(7 Hrs)

## UNIT – V

**Software Testing Techniques**

Software Testing – Strategic Approach To Software Testing – Terminologies – Functional Testing – Structural Testing - Levels Of Testing – Validation Testing – Testing Tools - Software Maintenance - What Is Software Maintenance – The Maintenance Process – Maintenance Models – Estimation Of Maintenance Costs – Regression Testing – Reverse Engineering – Software Re-Engineering – Configuration Management – Documentation.

(8 Hrs)

## TEXT BOOK

- K.K. Aggarwal & Yogesh Singh – Software Engineering – Programs - Documentation – Operating procedures – New Age International Publishers - Revised 3rd Edition – 2008.

## REFERENCES:

- Roger S Pressman – Software Engineering – A practitioner Approach – McGraw Hill 6th Edition.
- Ian Sommerville – Software Engineering – Addison Wesley

## ACTIVITY PLANNER

**List of activities for Employability / Skill Development / Entrepreneurship Skill Development**

*(These activities are only indicative, the Faculty member can innovate)*

- Group Discussion : Elicitation techniques
- Software Metrics : Students analyze the size and complexity of the project using software metrics.
- Research paper publication on topics related to software engineering
- Project : Students identify a project on their and they apply software engineering principles to plan for their project

- SD : Building blocks of UML - Report on writing normal and abnormal flow for a given software requirement and arrive at sequence diagram.

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# B.C.A

## UNIFIED MODELLING LANGUAGE – PRACTICAL

## LIST OF PROGRAMS ( 24 Hours)

1. Application using Use cases
2. Application using Sequence diagram
3. Application using Collaboration diagram
4. Application using Class Diagram
5. Application using Components
6. Application using State Transition Diagram
7. Application using Deployment view

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**B.C.A**

# CORE IX - RESOURCE MANAGEMENT TECHNIQUES (COMMON TO B.C.A & B.Sc. COMPUTER SCIENCE)

| | | |
|---|---|---|
| **COURSE CODE: 14UMAT329** | **YEAR/SEMESTER: II/ IV** | **MAXIMUM MARKS:100** |
| **COURSE TYPE:THEORY** | **CREDITS: 4** | **TOTAL TEACHING HOURS: 60** |

## COURSE OBJECTIVES:

- Understand the major capabilities and limitations of deterministic operations research modeling as applied to problems in industry or government
- Be able to recognize, formulate and, using prepared computer packages, solve allocation models of static or dynamic type.

## UNIT I

**Basics of operations research**

Characteristics of OR- OR and Decision Making- Application areas of Operations Research- Linear programming- formulations and Graphical solution canonical and standard terms of Linear programming problem- Algebraic solution – simplex method – Charne's method of penalties- Concept of duality- properties of duality. (14 Hrs)

## UNIT II

**Transportation model**

Definition- formulation and solution of transportation models- NWCR, LCM and Vogel's approximation method- Assignment model: Definition of Assignment model- formulation- Hungarian method - Difference between Transportation and Assignment model. (12 Hrs)

## UNIT III

**Sequencing problems**

Processing each of n jobs through m machines- processing n jobs through 2 machines- processing n jobs through 3 machines- processing n jobs through m machines- processing 2 jobs through m machines (Graphical method)- traveling salesman problem. (10 Hrs)

## UNIT IV

**Game theory and simulation**

Characteristics of games- Maximin, Minimax criteria of optimality- Dominance property- algebraic and graphical method of solution of solving 2x2 games. Simulation: Definition- Limitation- Various methods of obtaining random numbers (additive, multiplicative and mixed types of congruence random number generators) (12 Hrs)

## UNIT V

**Networks**

Fulkersons's rule- PERT computation and CPM computation. (12 Hrs)

## TEXT BOOKS

- Prem Kumar Gupta and D.S. Hira –Operations Research –S. Chand and Comp Ltd. – Third Edition
- Dr. P.R. Vittal - Introduction to Operations Research – Margham Publications

## REFERENCE BOOKS

- Sundaresan Ganapathy - Resource Management Techniques –AR Publications
- Hamdy A Taha – Operations Research – Prentice Hall of India- Sixth Edition

## ACTIVITY PLANNER

**List of activities for Employability / Skill Development / Entrepreneurship Skill Development**

*(These activities are only indicative, the Faculty member can innovate)*

- **Assignment:** Students solve take home assignments that improves problem solving skills.
- **Seminar:** Students present the different types of sequencing problem, transportation problem to the class.
- Class test: Test is conducted to generate random numbers used in monte carlo method.
- **Remembrance:** Class test on methodologies to solve the problem.

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# B.C.A

## CORE X –DATABASE MANAGEMENT SYSTEM

## (COMMON TO B.C.A & B.Sc. COMPUTER SCIENCE)

| | | | |
|---|---|---|---|
| **COURSE CODE: 14UCSC312 & 14UCSC312P** | **YEAR/SEMESTER : II/ IV** | **MAXIMUM MARKS: 100** | **THEORY: 60** |
| | | | **PRACTICAL: 40** |
| **COURSE TYPE: THEORY & PRACTICAL** | **CREDITS: 4** | **TOTAL TEACHING HOURS: 60** | **THEORY: 36Hrs** |
| | | | **PRACTICAL: 24 Hrs** |

## COURSE OBJECTIVES:

- Develop an understanding of the classic data models.
- Become familiar with the concepts of managing databases.

## UNIT I

## Introduction

Database Concepts - Database System Applications – Database systems versus File Systems – View of Data – Data Models – Database Languages – Database users and Administrators – Transaction Management – Database system Structure – Application Architecture. E-R Model – Basic Concepts-Constraints-keys – E-R Diagram- Reduction of E-R Schema- UML- Design of an E-R Database Schema (8 Hrs)

## UNIT II

## Relational models

Relational model - Relational Algebra- Extended Relational-Algebra Operations – Modification of the Database – Views - Tuple Relational Calculus-Domain Relational Calculus

(7 Hrs)

## UNIT III

## SQL & PL/SQL

Relational Database - SQL – Basic structure – DDL – DML – DCL - Set Operations – Aggregate functions - Sub Queries – Join Relation –Views – Cursors – Triggers - PL/SQL – Procedural Constructs – Functions - Procedures – Packages - Embedded SQL – Dynamic SQL.

(7 Hrs)

## UNIT IV

## Integrity and normalization

Integrity & Security – Domain Constraints – Referential Integrity – Assertion-Triggers-Authorization in SQL – Relational Database Design – $1^{st}$,$2^{nd}$,$3^{rd}$,$4^{th}$,BCNF Normal forms, Decomposition

(7 Hrs)

## UNIT V
## Distributed systems

Database System Architecture-Centralised and Client Server Architecture-Server System Architecture-Parallel Systems-Network types-Distributed Systems.

(7 Hrs)

## TEXT BOOK

- A.Silberschatz , H.F.Korth and Sudharsan , Database System Concepts – Fourth Edition-TMH International Edition

## REFERENCE BOOKS

- Gerry M. Litton, Introduction to Database Management – A Practical Approach – S.Chand& Company Ltd. New Delhi.
- Fred R. McFadden, Jeffery A. Hoffer, Mary B.Prescott, Modern Database Management – Fifth Edition – Pearson Education.

## ACTIVITY PLANNER

**List of activities for Employability / Skill Development / Entrepreneurship Skill Development**

*(These activities are only indicative, the Faculty member can innovate)*

- Draw ER - Students submit ER diagram as assignment on any real-time databases.
- SQL dictionary - Students prepare SQL commands, its syntax and examples. This helps them to write effective queries for any real time databases.
- Roleplays to implement the concept of database architectures.

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**B.C.A**

# RDBMS - PRACTICAL

## LIST OF PROGRAMS (24 Hours)

## SQL

a. Data Definition Language :Data Types,Constraints,Views
b. Data Manipulation Language :
   i. Operators : Arithmetic,Comparison,Logical,Set
   ii. Function :Numeric,Character,Date,Group
   iii. Joins
c. DCL : Grant,Revoke
d. Data Transaction : Commit,Rollback

## PL/SQL

a. Simple PL/SQL block with control structures
b. Cursors:Implicit/Explicit
c. Exception
d. Stored Procedure & Functions

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**B.C.A**

# ALLIED IV - FUNDAMENTALS OF COST AND MANAGEMENT ACCOUNTING

| | | | |
|---|---|---|---|
| **COURSE CODE: 14UCOM342 & 14UCOM342P** | **YEAR/SEMESTER : II/ IV** | **MAXIMUM MARKS: 100** | **THEORY: 80** |
| | | | **PRACTICAL: 20** |
| **COURSE TYPE: THEORY & PRACTICAL** | **CREDITS: 5** | **TOTAL TEACHING HOURS: 75** | **THEORY: 55Hrs** |
| | | | **PRACTICAL: 20Hrs** |

## COURSE OBJECTIVES:

- To facilitate the understanding of Accounting in general
- To give a comprehensive understanding of the system of cost and management Accounting
- To develop skill, related to problem solving and critical thinking

## UNIT I

Cost Accounting –Definition –Meaning and Objectives –Distinction between Cost and Financial Accounting –Elements of Cost and Preparing of Cost Sheet and Tender-Management Accounting –Definition and objectives –Distinction between Management and financial Accounting

(11Hrs)

## UNIT II

Fund flow and Cash Flow analysis-Schedule of changes in working capital-Preparation of Fund Flow and cash flow statements. Importance of Fund Flow and Cash Flow statements. Difference between Fund Flow and Cash Flow.

(11Hrs)

## UNIT III

Ratio Analysis-Utility and Limitations of Accounting Ratios-Calculation of Accounting Ratios. Ratio Analysis for liquidity, solvency, profitability and leverage.

(11Hrs)

## UNIT IV

Marginal costing: Break-even analysis- P/V Ratio-Margin of safety- Applicsation of Marginal costing. Decision Making Problems.

(11Hrs)

## UNIT V

Budget and Budgetary Control. Preparation of Different budgets. Cash andFlexible budget.

(11Hrs)

## TEXT BOOK

- S.N.Maheshwari - Cost and Management Accounting.

## REFERENCE BOOKS

- T.S.Reddy&HariPrasad Reddy - Cost and Management Accounting.
- Jain &Narang - Cost and Management Accounting.

## ACTIVITY PLANNER:

**List of activities for Employability / Skill Development / Entrepreneurship Skill Development**

1. Assume a product of your choice to calculate the cost per unit
2. Debate on costing of existing product using principles of costing
3. Think Pair Share - Analyse the inflow and outflow of cash of a company
4. Mystery Box: Pick a chit to find out the transaction given and analyse its impact on working capital
5. Divide as groups and make decisions for a company by analysing their financial ratios
6. Assignment on different ratios which improves problem solving skills
7. Case Study analysis - Find out maximum contribution at a particular level of activity which gives maximum profit
8. Prepare a budget for an occasion.
9. Analyse your personal expenses of previous month and prepare a cash budget for the current month
10. Memory game on the topic Cost Sheet, Tenders and Quotations

# ACCOUNTING SOFTWARE II (20 HOURS)

**UNIT I**
**STOCK GROUPS:** Creating Single stock groups-Multiple stock groups-creating, Displaying, Altering Multiple stock groups.

**UNIT II**
**STOCK CATEGORIES:** Single, creating, Displaying, altering and deleting Stock category-Multiple-Creating, Displaying and altering multiple stock categories.

**UNIT III**
**STOCK ITEMS:** Single- creating stock item Multiple- creating godowns- Displaying and altering multiple stock items.

**UNIT IV**
**GODOWNS:** Single- Creating and displaying godowns – altering multiple godowns

**UNIT V**
**REPORTS:** Balance sheet-Ratio Analysis-inventory books- Statement of inventory cash/funds flow- summarydetails.

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# B.C.A

## ELECTIVE II - INTERDISCIPLINARY ELECTIVE
## WEB DESIGN USING OPEN SOURCE TECHNOLOGY

| COURSE CODE: 11UELE302R | YEAR/SEMESTER: II/IV | MAXIMUM MARKS: 100 |
|---|---|---|
| COURSE TYPE: PRACTICAL | CREDITS: 5 | TOTAL TEACHING HOURS: 75 |

**COURSE OBJECTIVES:**

- To create and design websites using GUI based Open Source Software, an alternate open source tool for Macromedia Dreamweaver.

**UNIT – I**

Open Source Technology-Introduction –Difference between GUI based Open Source Software and HTML Editors -Creating Web Pages Using GUI based Open Source Software - Formatting Paragraphs, Headings, And Lists

**UNIT– II**

Adding images to your web page-Working with table of contents on your web page-working with templates-updating or removing table of contents-Working with templates-Setting page properties-meta tags-colors and background

**UNIT – III**

Adding tables to your web page-inserting table- changing a tables's properties-Adding deleting rows, columns and cells-Changing the default table editing behaviour-selecting table elements-Moving, copying and deleting tables-converting text into a table

**UNIT – IV**

Creating Links-Creating links within same page-Creating links to other pages-Adding XFN information within your links-using images as links-removing or discontinuing links-Publishing your web pages

**UNIT – V**

Casading Stylesheets-Using inline styles-internal stylesheet- external stylesheet-Creating Stylesheet with Firefox-Creating rules for stylesheet

**LIST OF PROGRAMS**

1. Create a webpage to show the usage of various formatting tags.
2. Create a webpage to display the usage of Nested Ordered / Unordered List. Use
3. Create a webpage to illustrate the usage of images and hyperlinks.
4. Create a webpage to show the navigation within a page.

5. Create a time table using row and column span.
6. Create a webpage to illustrate frame targeting.
7. Create a webpage to illustrate nested frames.
8. Create a webpage to show the usage of inline frames.
9. Create a webpage to demonstrate horizontal and vertical frame.
10. Create a webpage to show the image as hyperlink.
11. Create an Employee form to accept employee personal details (Use all form elements)
12. Create a table with the cells having
    - Image
    - Formatted text
    - List
    - Hyperlink
13. Create a webpage to demonstrate the usage of Internal/inline styles
14. Create a webpage to demonstrate the usage of External style sheet

## ACTIVITY PLANNER

### List of activities for Employability / Skill Development / Entrepreneurship Skill Development

*(These activities are only indicative, the Faculty member can innovate)*

- **Recreate:** Students bring a brochure and recreate the same during laboratory session.
- **Explore online:** Student create a website for their disciplinary like online newspaper, online advertising, marketing and others.
- **Beat the bug:** Code with bugs projected on screen and students to fix the bugs by making necessary changes to it.

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**B.C.A**

# Choice Based Credit System
# Course of Study for the batch of Candidates admitted in 2015 – 2016

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**B.C.A**

# CORE XI - PROGRAMMING IN JAVA
# (COMMON TO B.C.A. & B.Sc. COMPUTER SCIENCE)

| | | | |
|---|---|---|---|
| **COURSE CODE: 15UCSC304 & 15UCSC304P** | **YEAR/SEMESTER : III/ V** | **MAXIMUM MARKS: 100** | **THEORY: 60** |
| | | | **PRACTICAL: 40** |
| **COURSE TYPE: THEORY & PRACTICAL** | **CREDITS: 4** | **TOTAL TEACHING HOURS: 60** | **THEORY: 36Hrs** |
| | | | **PRACTICAL: 24 Hrs** |

## COURSE OBJECTIVES:

- Understand the concepts of Object Oriented Programming
- Become proficient programmers through the java programming language
- Understand the various classes and methods in Java.

## UNIT I

**Introduction**

Introduction to Java-Features of Java-Object Oriented Concepts-Lexical Issues-Data Types – Variables – Arrays – Operators - Control Statements – Classes – Objects –Constructors - Overloading method - Access control - static and fixed methods - Inner classes -Inheritance-Overriding methods-Using super-Abstract class.

(8Hrs)

## UNIT II

**Packages & Threads**

Packages-Access Protection-Importing Packages-Interfaces-Exception Handling-Throw and Throws-Thread-Synchronization-Messaging-Runnable Interface-Inter thread communication-Deadlock-suspending, resuming and stopping threads-Multithreading.

(7 Hrs)

## UNIT III

**Input/output & Collection API**

I/O Streams-File Streams-String Objects-String Buffer-Char Array-Java Utilities-Collections interface-Collection classes-Enumeration –Vector -Stack –Hash tables - String class

(7 Hrs)

## UNIT IV

**Networking**

Networking –Networking basics – java and the Net – InetAddress- TCP/IP Client Sockets – URL- URLConnection – TCP/IP Server Sockets – Datagrams.

(7 Hrs)

## UNIT V

**Graphical User Interface in Java**

Working with windows using AWT Classes - Class Hierarchy of Window and Panel -AWT controls - Layout Managers – Menus- Menu bars - Dialog Boxes- File Dialog- Applets-Life cycle of Applet-Types of Applets-Event handling- -Applet tags.

(7 Hrs)

## TEXT BOOKS

- P.Naughton and H.Schildt –Java 2 (The Complete Reference) –Fifth Edition [Chapters 1-11, Ch 12(Pg.no. 313-331), Ch: 13, ch: 15 (Pg.no 439-457, 484-497) , Chapter 18(Pg.no 573 -587,608-611) , Chapter 19, 20, 21(Pg. no 687-712), Ch: 22(Pg. no. 735-790)]
- Jim Keogh – The Complete Reference J2EE – Tata McGraw Hill Edition 2002.

## REFERENCE BOOKS

- Cay S. Horstmann, Gary Cornell – Core Java 2 Volume I –Fundamentals-Addision Wesley
- K.Arnold and J.Gosling –The Java Programming Language-Second Edition

## ACTIVITY PLANNER

**List of activities for Employability / Skill Development / Entrepreneurship Skill Development**

*(These activities are only indicative, the Faculty member can innovate)*

- **Project :** Build Real time java applications using AWT.
- Students to teach to the class topic multithreading and package to get extra creative as students design their own lesson.
- Students to prepare unit wise lab Manual. This helps them to have good knowledge on programming concepts.
- Students solved exercise questions from basic to complex exercise for each unit.
- Roleplays to implement the concept of AWT and applet.
- **Assignments,Test :** on java program to create proficiency in programming skills.

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**B.C.A**

# PROGRAMMING IN JAVA - PRACTICAL
# LIST OF PROGRAMS

## APPLICATION

1. Program to illustrate i) constructors ii) inheritance iii) overloading and overriding
2. Implementation of Packages, interfaces, Exception handling
3. Implementation of concurrent and synchronized threads.
4. Implementation of string and string buffer classes and methods.
5. Implementation of stack and vector.
6. Implementation of file read and writes operation.

## APPLET PROGRAMS

7. Working with Frames and various controls
8. Working with Dialogs and Menus
9. Working Panel and Layout
10. Incorporating Graphics
11. Working with applets
12. Working with Images
13. Network Programming

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**B.C.A**

# CORE XII - COMPUTER NETWORKS
# (COMMON TO B.C.A. & B.Sc. COMPUTER SCIENCE)

| | | |
|---|---|---|
| **COURSE CODE: 14UCSC334** | **YEAR/SEMESTER: III/ V** | **MAXIMUM MARKS:100** |
| **COURSE TYPE: THEORY** | **CREDITS: 4** | **TOTAL TEACHING HOURS: 60** |

## COURSE OBJECTIVES:

- Introduce the fundamental network architecture concepts and their core principles issues in the emerging communication / data networks.
- Have a complete picture of the data and computer networks systematically
- Design and implement communication network
- Provide a strong foundation in networking concepts and technology.

## UNIT – I

**Introduction**

Network Hardware – Software – Reference Models – Internet – ATM – Physical layer – Transmission media – wireless transmission – switching (circuit switching, packet switching, Hybrid switching) methods.

(12 hrs)

## UNIT – II

**Data link layer**

Design issues – error detection and correction – elementary data link protocol sliding window protocols.

(12 hrs)

## UNIT – III

**Medium access layer**

Channel Allocation problem – Multiple Access Protocols –Wireless LANs- Ethernet– Bluetooth.

(12 hrs)

## UNIT – IV

**Network layer**

Design issues – Routing algorithms – Congestion control algorithms – quality of service-Internet working – IP protocol – IP Address – Internet Control Protocol.

(12 hrs)

## UNIT – V

**Transport layer**

Transport service-Elements of Transport protocols– Simple Transport Protocol – Internet Transport Protocol (TCP). Application layer -Domain Name systems - Electronic mail. Network security-cryptography.

(12 hrs)

## TEXT BOOKS

- Andrew S.Tanenbaum - Computer networks – Pearson Education, Inc, (Prentice Hall of India) – Fourth Edition

## REFERENCE BOOKS

- Behrouz Forouzan – Introduction to Data Communications in Networking, TMH – 1999.
- Fred Halsall, Data Communications, Computer Networks and Open Systems, Addison Wesley.

## ACTIVITY PLANNER

**List of activities for Employability / Skill Development / Entrepreneurship Skill Development**

*(These activities are only indicative, the Faculty member can innovate)*

- Demonstration of computer networks work in a similar way to transportation networks.
- Students to present demo on LAN, MAN, WAN.
- Explain, to another student, the methodology behind solving error detection and correcting techniques and submit as an assignment.
- Seminar on techniques needed to be installed for networking and components and protocol used in networking
- Roleplay how messages get from the classroom to the office .
- Quiz, MCQ on transmission media and to understand internet infrastructure.

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**B.C.A**

# CORE XIII – DATA MINING
# (COMMON TO B.C.A & B.SC. COMPUTER SCIENCE)

| | | |
|---|---|---|
| COURSE CODE: 14UCSC326 | YEAR/SEMESTER: III/ V | MAXIMUM MARKS:100 |
| COURSE TYPE: THEORY | CREDITS: 4 | TOTAL TEACHING HOURS: 60 |

## COURSE OBJECTIVES:

- To understand the concept of Data Mining
- To understand various Data mining tasks & techniques
- To discuss the applications of Data mining in various fields

## UNIT I

**Data Mining**

Introduction: What is Data Mining ? –Motivating Challenges – Origins of Data Mining – Data Warehousing - Data Mining tasks.( Jiawei Han, Micheline Kamber (2011),*Data Mining Concepts and Techniques* ,Morgan Kauffman Publishers).

DATA: TYPES OF DATA – DATA QUALITY – DATA PREPROCESSING .( PANG NING TAN,MICHAEL STEINBACH ,VIPIN KUMAR (2005), INTRODUCTION TO DATA MINING, ADDISON WESLEY)

(10 HRS)

## UNIT II

**Classification**

Introduction – Decision Tree construction algorithms – ID3 – CART– Pruning – Bayesian classification – Rule based classification – K-Nearest Neighbor classification. .( Jiawei Han, Micheline Kamber (2011),*Data Mining Concepts and Techniques* ,Morgan Kauffman Publishers)

(15 Hrs)

## UNIT III

**Association Rule Mining**

Introduction – Automatic discovery of Association Rules in Transaction databases – Apriori algorithm – Shortcomings – FP Growth algorithm (K.P.Soman, Shyam Diwakar, V.Ajay(2006) *Insight into Data Mining: Theory & Practice* Prentice Hall of India)

(10 Hrs)

## UNIT IV

**Cluster Analysis**

Introduction – Partitional Clusterings – K- Means - k-Medoids – Modern Clustering Methods – BIRCH– DBSCAN – CHAMELEON.( K.P.Soman, Shyam Diwakar, V.Ajay(2006) *Insight into Data Mining: Theory & Practice* Prentice Hall of India)

(15Hrs)

## UNIT V

**Applications of Mining**

Text Mining, Web Mining, Spatial Data Mining, Multimedia Mining. Applications of Data Mining in Banking industry & Healthcare *(Data Mining* (2004) , BPB publications ,BPB Editorial Board)

(10 Hrs)

## TEXT BOOKS

- Jiawei Han, Micheline Kamber (2011),*Data Mining Concepts and Techniques* ,Morgan Kauffman Publishers
- Pang Ning Tan,Michael Steinbach ,Vipin Kumar (2005), *Introduction to Data Mining,* Addison Wesley
- K.P.Soman, Shyam Diwakar, V.Ajay(2006) *Insight into Data Mining: Theory & Practice* Prentice Hall of India
- *Data Mining* (2004) , BPB publications ,BPB Editorial Board

## REFERENCE BOOKS

- Ian H.Witten & Eibe Frank(2011) *Data Mining , Practical Machine Learning Tools and Techniques,* Morgan Kaufmann series

## ACTIVITY PLANNER

**List of activities for Employability / Skill Development / Entrepreneurship Skill Development**

*(These activities are only indicative, the Faculty member can innovate)*

- Data preprocessing on survey project.
- Research Paper – Students should prepare a research paper and present in conference or publish in international journal
- Project – Analytics on any domain using data mining algorithms
- Online Quiz : To test data mining concepts

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**B.C.A**

# CORE XIV - WEB TECHNOLOGY

# (COMMON TO B.C.A. & B.Sc. COMPUTER SCIENCE)

| | | | |
|---|---|---|---|
| **COURSE CODE: 14UCSC332 & 14UCSC332P** | **YEAR/SEMESTER: III/ V** | **MAXIMUM MARKS: 100** | **THEORY: 60** |
| | | | **PRACTICAL: 40** |
| **COURSE TYPE: THEORY & PRACTICAL** | **CREDITS: 4** | **TOTAL TEACHING HOURS: 60** | **THEORY: 36Hrs** |
| | | | **PRACTICAL: 24 Hrs** |

## COURSE OBJECTIVES:

- Understand the use of stylesheets in HTML.
- Use Javascript in the HTML document.
- Understand the server based concepts and scripting with ASP.NET.
- Program for the web.

## UNIT – I

**Internet Basic**

Introduction to HTML – List – Creating Table – Linking document – Frames – Forms and Form Controls – Graphics to HTML Doc – Style sheet basic – Adding style to document – Creating Style sheet rules – Style sheet rules – Style sheet properties – Font – Text – List – Color and background color – Box and Display properties.

(7 Hrs)

## UNIT – II

**Introduction to JavaScript**

Advantage of JavaScript – JavaScript syntax – Data type – Variable – Array – Operator and Expression – Looping Constructor – Function.

(7 Hrs)

## UNIT – III

**Javascript Document Object Model**

Introduction – Object in HTML – Event Handling – Window object – Document Object – Browser Object – Form Object.

(7 Hrs)

## UNIT – IV

**ASP.Net**

Language Structure – Page Structure – Page event, properties and Compiler Directives. HTML Server Controls – Anchor, Tables, Forms. Basic Web Server Controls – Labels, Textbox, Button, Image, Links, Check & Radio button lists, Drop down list, Data Repeater.

(8 Hrs)

## UNIT – V

**Controls in ASP.Net**

Validator Controls - Datagrid control – Working with data – OLEDBConnection class, command class, transaction class, data adapter class, and data set class – Cookies –Application Issues – Error Handling.

(7 Hrs)

## TEXT BOOKS

- T.A.Powell, Complete Reference HTML, TMH
- J. Jaworski, Mastering Javascript, BPB Publications, 1999
- Greg Buczek–ASP.NET Developers Guide– Tata McGraw–Hill Edition

## REFERENCE BOOK

- Hersh Bhasin–Microsoft ASP.NET Professional Projects, Prentice Hall of India Pvt .Ltd.

## ACTIVITY PLANNER

**List of activities for Employability / Skill Development / Entrepreneurship Skill Development**

*(These activities are only indicative, the Faculty member can innovate)*

- Assignment on Web page analysis: Students to identify any website and write an assignment on various tags and coding used in the website
- UI / UX designing skills for having an appealing website that can fetch maximum hit ratio. Any one way of importing CSS in HTML should be employed in a project
- Spot Assessment : Students will be asked to create web form using HTML server controls, web server controls & Rich controls during lab hour
- Writing asp page with validations and exception handling
- Project: Create dynamic and interactive web page using rich controls in asp.net and OLEDB connection.

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**B.C.A**

# WEB TECHNOLOGY - PRACTICAL

## LIST OF PROGRAMS

1. Create a home page for your college. Make use of images and hyperlinks.
2. Create a web page to display your bio data. Make use of tables (with rowspan and colspan) wherever necessary.
3. Create a web page to categorize the subjects you learnt in your UG semester wise with the help of bullets and numbering.
4. Create a web page to display your personal diary which contains yours friends names, address and e-mail id. (with the link to the email address). Display the heading as PERSONAL DIARY. Make use of horizontal rulers.
5. Write a script to create an array of list of courses offered in your college and display them.
6. Write a function in Javascript that takes a string and display the number of vowels and consonants in that string.
7. Create a simple calculator using form fields.
8. Create a homepage that has links to two different files that has details about your personal information and academic information. The user should not click the link to move to the pages. The page should be loaded on mouse over itself.
9. Create a home page that displays an advertisement html file in a new window without address bar, toolbar and status bar. This window should unload after 30 seconds.
10. Display an mobile advertisement at the bottom of the web form which contains purchase details
11. Create an array containing the titles of five new movies. Use this array as a data source for a drop down list and display the selected movie title to the user when the user clicks submit button.
12. Create a Web form using ASP.NET Controls for student information system.
13. Create a web form that accepts input using the calendar control.
14. Create a web form that makes use of the validation controls.
15. Create an Online Library Transaction Web form using ASP.NET Controls.

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# B.C.A

# ELECTIVE III – SOFTWARE TESTING

# (COMMON TO B.C.A., B.Sc. COMPUTER SCIENCE)

| | | |
|---|---|---|
| **COURSE CODE: 15UCSC306** | **YEAR/SEMESTER: III/ V** | **MAXIMUM MARKS:100** |
| **COURSE TYPE: PRACTICAL** | **CREDITS: 5** | **TOTAL TEACHING HOURS: 75** |

## COURSE OBJECTIVES:

- Understand the basics of software testing
- Understand the usage of tools in software testing
- Become proficient in the usage of Quick Test Professional – Software testing tool.

## Quick Test Professional (QTP) topics:

- Testing in Software development Life cycle
- Design of test cases
- QTP overview and fundamentals
- Record and replay of tests
- Parameterization
- Synchronization
- Checkpoints
- Recovery scenario manager
- Web Application testing

## TEXT BOOKS


- Ashish Bhargava, "Designing and Implementing test automation Frameworks with QTP", Packt Publishing, 2013.
- Rajamanickam Antonimuthu , "Software Testing and QTP automation", Quality Point Technologies, 2013.


## ACTIVITY PLANNER

**List of activities for Employability / Skill Development / Entrepreneurship Skill Development**

*(These activities are only indicative, the Faculty member can innovate)*

**Seminar:** Students present various Manual Test Case documents to uncover bugs.

- Assignment: parameter test, synchronization, recovery scenario for flight application, databases and web applications respectively.
- Build Proficiency: Students do record work using implementation of testing modules in QTP

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# B.C.A

## CORE – XV XML AND ITS APPLICATIONS

| | | | |
|---|---|---|---|
| **COURSE CODE: 14UCSC340 & 14UCSC340P** | **YEAR/SEMESTER : III/ VI** | **MAXIMUM MARKS: 100** | **THEORY: 60** |
| | | | **PRACTICAL: 40** |
| **COURSE TYPE: THEORY & PRACTICAL** | **CREDITS: 4** | **TOTAL TEACHING HOURS: 60** | **THEORY: 36Hrs** |
| | | | **PRACTICAL: 24 Hrs** |

## COURSE OBJECTIVES:

- Understands Opportunities, Technical Platforms & Technical limitations of today's E-commerce
- Understand Secure e-payments
- Apply E-commerce in real-world
- Develop robust, XML applications
- Learn XML Web services technology

## UNIT – I

**Introduction to XML**

What is XML – XML versus HTML –XML Terminology - XML Standards – XML Schemas – XML Syntaxes : XML Syntax checking – The idea of Markup – XML Structure – Organising information in XML – Creating Well-formed documents – XML Namespace - Document Type Definitions: Introduction – Document Type Declaration – Element Type Declaration – Attribute declaration – Conditional Sections – Limitations of DTD.

(7 Hrs)

## UNIT – II

**XML schemas**

Introduction to schema – Complex Types – Grouping of data – Simple types – Deriving types – Attributes - Cascading Style sheets(CSS) – Need for CSS - Classification of Stylesheet – Features and Usage - Extensible Stylesheet Language(XSL): Introduction – XSL Transformation – XML Path Language – XSLT – XSL-FO.

(7 Hrs)

## UNIT – III

**XML and Java**

Basics of parsing – JAXP – XML and JAVA – CASESTUDY - XML and ASP.NET: Introduction XML Reader – XML Writer – Extracting data from a database as an XML Document. Webservices and AJAX: Webservices – AJAX.

(7 Hrs)

## UNIT – IV

**Modes of Electronic Commerce**

Overview – Electronic Data Interchange (EDI) **– Security threats to safe Electronic Commerce:** Security Overview –Intellectual property threats- Electronic Commerce threats – CERT.

**Approaches to safe Electronic Commerce:** Overview – Secure Transport Protocols – Secure Transactions – Secure Electronic Payment Protocol (SEPP) – Secure Electronic Transaction (SET) – certificates for Authentication – Security on Web Servers & Enterprise Networks.

( 8 Hrs)

## UNIT – V

**Electronic Payment Systems**: Basics – Electronic Cash – Electronic Wallets – Smart cards – Credit & Charge cards.

**Internet / Intranet security issues and solutions** – Need for computer security – Specific intruder approaches – Security Strategies – Security tools.

(7 Hrs)

## TEXT BOOKS


- Daniel Minoli & Emma Minoli (1999). *Web Commerce Technology Handbook*. Tata McGraw Hill Edition.
- Atul Kahate(2009). *XML and Related Technologies*. Pearson Education.


## REFERENCE BOOKS


- Ravi Kalakota & Andrew B. Whinston. *Frontiers of Electronic Commerce*.
- Gary P. Schneider & James T.Perry(2000). *Electronic Commerce.* Course Technology(Thomson Learning).
- Simon North, Paul Hermans(1999). *Teach Yourself XML in 21 Days*. SAMS TechMedia FIRST EDITION.
- Steven Holner (2009). *XML – A Beginner's Guide.* Tata McGraw-Hill Edition.


## ACTIVITY PLANNER

**List of activities for Employability / Skill Development / Entrepreneurship Skill Development**

*(These activities are only indicative, the Faculty member can innovate)*

- Work Book exercises:Students execute simple XML programs to gain knowledge in programming structure.
- Conduct quiz to recollect terminologies related to emerging trends in XML web services
- Quiz on various e-commerce threats
- Facilitate case study discussions to appraise real life scenarios on applications of e-commerce and electronic payment systems.

## XML PROGRAMMING LAB

## LIST OF PROGRAMS

1. Application using XML para, ENTITY and CDATA sections.
2. Design a simple email message using XML.
3. Application using Enumerated, String and Tokenized Attribute types.
4. Application using a DTD in the given XML document.
5. Application using a DTD to deal with numbered , bulletlist.
6. Design a DTD for a basic Web Home page.
7. Create a simple letter in XML using the letter DTD.
8. Application using XML Links.
9. Application using Event-Driven programming
10. Application using XSL linked to the XML document
11. Application using XML linked with JAVA
12. Application using XML linked with ASP.NET
13. Application using Web services and AJAX.

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**B.C.A**

# CORE XVI - CLOUD COMPUTING

## (COMMON TO B.C.A & B.Sc COMPUTER SCIENCE)

| | | |
|---|---|---|
| **COURSE CODE: 14UCSC325** | **YEAR/SEMESTER: III/ VI** | **MAXIMUM MARKS:100** |
| **COURSE TYPE: THEORY** | **CREDITS: 4** | **TOTAL TEACHING HOURS: 60** |

## COURSE OBJECTIVES:

- Learn basic concepts of Mobile Computing.
- An overview of Cloud computing.
- To learn about infrastructure security , data security and privay

## UNIT – I

**Introduction to Cloud Computing**

Cloud Computing – Definition – SPI Framework – Software Model – Cloud Services Delivery Model – Deployment Models – Key drivers – Impact on Users – Governance in the cloud – Barriers to Cloud Computing Adoption in the enterprise. Examples of Cloud Service Providers: Amazon Web services – Google – Microsoft Azure Services Platform – Sun Open Cloud Platform.

(12 Hrs)

**UNIT – II**

**Virtual Machines Provisioning and Migration Services**

Introduction and Inspiration -Background and Related Work-Virtual Machines Provisioning and Manageability-Virtual Machine Migration Services-VM Provisioning and Migration in Action -Provisioning in the Cloud Context -Future Research Directions-

The Anatomy of Cloud Infrastructures -Distributed Management of Virtual Infrastructures-Scheduling Techniques for Advance Reservation of Capacity- Capacity Management to meet SLA Commitments .

(12 Hrs)

**UNIT – III**

**MapReduce Programming & Infrastructure Security**

Introduction - MapReduce Programming Model -Major MapReduce Implementations for the Cloud- MapReduce Impacts and Research Directions. Infrastructure Security: The Network Level -Infrastructure Security: The Host Level -Infrastructure Security: The Application Level.

(12 Hrs)

**UNIT –IV**

**Data Security, Identity and Access Management**

Data security and storage: Aspects of Data Security -Data Security Mitigation -Provider Data and Its Security.IDENTITY AND ACCESS MANAGEMENT:Trust Boundaries and IAM -Why IAM? -IAM Challenges-IAM Definitions-IAM Architecture and Practice-Getting Ready for the Cloud -Relevant IAM Standards and Protocols for Cloud Services -IAM Practices in the Cloud-Cloud Authorization Management-Cloud Service Provider IAM Practice.

(12 Hrs)

**UNIT – V**

**Security and privacy**

Security Management: Standards – Security Management in the Cloud – Availability Management – Access Control. Privacy: What is Privacy – Data Life Cycle – Key Privacy Concerns – Who is responsible for protecting Privacy – Privacy Risk Management – Legal and Regulatory Implications.

(12 Hrs)

## TEXT BOOKS

- Tim Mather – Subra Kumaraswamy – Shahed Latif (2010*). Cloud Security and Privacy* — OREILLY
- Rajkumar Buyya, James Broberg, Andrzej Goscinski(2011),*CLOUD COMPUTING Principles and Paradigms*, John Wiley & Sons, Inc., Hoboken, New Jersey

**REFERENCE BOOK**

- Ronald L. Krutz and Russell Dean Vines(2010 )- *Cloud Security* — Wiley – India

## ACTIVITY PLANNER

**List of activities for Employability / Skill Development / Entrepreneurship Skill Development**

*(These activities are only indicative, the Faculty member can innovate)*

- **Seminar :** Students present in groups about the national Privacy Laws.
- **Assignment:** in cloud resource scheduling and provisioning.
- **Debate:** about requirement of security in cloud computing.
- **Find and Tell:** List out the use cases of various public services offered by cloud service providers.

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**B.C.A**

# CORE XVII – ADVANCED JAVA PROGRAMMING

# (COMMON TO B.C.A & B.Sc COMPUTER SCIENCE)

| | | | |
|---|---|---|---|
| **COURSE CODE: 15UCSC307 & 15UCSC307P** | **YEAR/SEMESTER : III/VI** | **MAXIMUM MARKS: 100** | **THEORY: 60** |
| | | | **PRACTICAL: 40** |
| **COURSE TYPE: THEORY & PRACTICAL** | **CREDITS: 4** | **TOTAL TEACHING HOURS: 60** | **THEORY: 36Hrs** |
| | | | **PRACTICAL: 24 Hrs** |

## COURSE OBJECTIVES:

- Learn basic concepts of web applications.
- Gain knowledge in interactive internet programming.

## UNIT I

**Introduction & Database Programming**

J2EE Platform – Enterprise architecture styles – J2EE run times – J2EE API – J2EE architecture – Containers –Introduction to J2EE technologies.Database programming with JDBC – JDBC/ODBC bridge – Establishing a connection – Creating and executing SQL statements – Querying – Report statements – Scrollable and updatable result sets – Java.sql packages – JDBC data sources – Connection pooling.

(6 Hrs)

## UNIT II

**Servlet Programming**

Introduction to Servlet Programming - Servlet Implementations - Servlet configuration - Servlet exceptions - Servlet Life Cycle - Servlet Programming - Servlet Security- Servlet communication. Advanced Servlets : Approach to Session Tracking - Demonstrating Session - Lifecycle with Cookies - A simple shopping cart using Sessions - Servlet Context Interface - Servlet Collaboration.

(7 Hrs)

## UNIT III

**Java Server Pages**

JSP Syntax and Semantics: Jsp development model-contents of jsp page. Expressions and Scriptlets: Expressions-Scriptlets-Expressions and scriptlet handling by JSP container-implicit objects and jsp environment – initialization parameters. Request Dispatching: Anatomy of request processing – including other resources – The include directives – the <jsp:include> action- which method to use. The page directive: Language-extends- import – session –buffer and autoFlush – isThreadSafe – info – contentType - errorPage and isErrorPage.

(7 Hrs)

## UNIT IV

**Ajax**

Introduction to Ajax: AJAX defined – helloajaxworld – the rise of Ajax. Pre Ajax JavaScript Communication Techniques: one way communication-two way communications-communications pattern review -XMLHTTPRequest Object: Overview of XHRs – instantiation and cross browser concerns – XHR request basics- Synchronous and Asynchronous Request – sending data via GET,POST –Response Basics.

(8 Hrs)

## UNIT V

**Ajax (Continuation)**

Data Formats: Ajax and character sets- data format decisions – standard encoding – using other input formats Introduction to prototype- Introduction to JQuery.User Interface Design for Ajax: User interface implications of Ajax -communicating network activity – communicating problems and errors – communicating change.

(8Hrs)

## TEXT BOOKS


- Subrahmanyam Allamaraju and Cedric Buest ,"Professional Java Server Programming", A press,J2EE 1.3 Edition, 2007 (Ch : 1,4,6,7)
- Jim Keogh,"Complete Reference, J2EE",Tata McGraw Hill, 2004.
- JSP: The complete reference, Phil Hanna, Osborne/McGraw(Ch: 5,6,7)
- Ajax: the Complete Reference, Thomas A Powell. Mc GrawHill,2008. (Ch: 1,2,3,4,5,8)

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# B.C.A

# ADVANCED JAVA PROGRAMMING – PRACTICALS

## ACTIVITY PLANNER

**List of activities for Employability / Skill Development / Entrepreneurship Skill Development**

*(These activities are only indicative, the Faculty member can innovate)*

- **Projects** : to create Web Application.
- Seminar on Advanced Servlets.
- Workbook on J2EE API
- **Lab assignments** : on java Programs with Sql Server to create databases .
- Problem solving using servlet & jsp programs to develop Programming & debuggingSkills.
- Students to prepare unitwise Manual. This helps them to have good knowledge on core concepts.
- **Problem solving** on java and jdbc programs.
- Students to debug simple programs to understand java syntax.
- Students to submit an assignment on a basic program in JDBC . This helps to write new logic using the language.

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**B.C.A**

# ADVANCED JAVA PROGRAMMING – PRACTICALS

## LIST OF PROGRAMS

1. Write a Java Program to manipulate Student database.
2. Write a Servlet program to read inputs from the Browser and display the output on the browser.
3. Write a servlet program to manipulate employee database.
4. Write a program to display request header information.
5. Write a program to implement arithmetic functions in JSP.
6. Write a JSP program to include a method from Java Class.
7. Write a JSP program to illustrate the use of Page directives.
8. Write programs to search and display chemistry element's definition detail using JSP.
9. Write a Program to JSP file to set and then display the cookie.
10. Create a simple XMLHttpRequest, and retrieve data from a TXT file.
11. Write a program to retrieve header information of a resource (file).
12. Write a program to retrieve specific header information of a resource (file).

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**B.C.A**

# SHELL PROGRAMMING

| | | | |
|---|---|---|---|
| **COURSE CODE: 14UCSC338 & 14UCSC338P** | **YEAR/SEMESTER : III/ VI** | **MAXIMUM MARKS: 100** | **THEORY: 60** |
| | | | **PRACTICAL: 40** |
| **COURSE TYPE: THEORY & PRACTICAL** | **CREDITS: 4** | **TOTAL TEACHING HOURS: 60** | **THEORY: 36Hrs** |
| | | | **PRACTICAL: 24 Hrs** |

## COURSE OBJECTIVES:

- Understand Linux Operating System
- Understand what is Shell and how to create Shell programs
- Work with the vi editor
- Use Shell metacharacters : $*, $#
- Debug Shell programs
- Use command line arguments

## UNIT I

**Linux introduction and File System**

Basic Features, Advantages, Basic Architecture of Linux System, Kernel, Shell. Linux File System-Boot block, Super block, Inode table, Data blocks, File accessing mechanism, System startup and shut-down process, init and run levels. Manual help, Getting system information using uname, host name. Commands for files and directories cd, ls, cp, md, rm, mkdir, rmdir,mv, pwd, wc, file, find, more, less, creating and viewing files using cat, file comparisons – diff, cmp & comm, disk related commands, Mathematical commands- bc, expr, factor. General purpose commands – date, cal.

(8 Hrs)

## UNIT II

**Process**

Understanding Processes in Linux-process fundamentals, connecting processes with pipes, tee, Redirecting input output, , Background processing, managing multiple processes, changing process priority with nice, scheduling of processes at command, cron, batch commands, kill, ps, who, sleep, touch. Editing files with vi and vim editor.

(7 Hrs)

## UNIT III

**System administration**

Common administrative tasks, identifying administrative files – configuration and log files, Role of system administrator, Managing user accounts-adding & deleting users, changing permissions

and ownerships, Creating and managing groups, modifying group attributes, Temporary disable user's accounts, creating and mounting file system, file security -& Permissions, becoming super user using su, Backup and restore files- cpio ,tar,gzip,gunzip,zip,unzip

(7 Hrs)

## UNIT IV

**SHELL BASICS**

Various types of shell available in Linux, comparisons between various shells, shell programming in bash, Shell variables, system shell variables, shell keywords, Input and output command, conditional and looping statements, case statements, command line arguments, Creating Shell Scripts. Connecting to MySQL using shell, running SQL queries from a shell script

(7 Hrs)

## UNIT V

**Simple Filter Commands And Regular Expressions**

Simple Filters - Pr, Head, Tail, Cut, Paste, Sort, Uniq, Tr. Filter Using Regular Expressions – Grep, Egrep, Fgrep Sed And Awk Programming-Formatting Output, Variables And Expressions, Comparison Operator, Arrays And Control Flow

(7 Hrs)

## TEXT BOOKS

- Sumitabha Das - UNIX – Concepts & Applications –TataMcGraw Hill Publications - Third Edition..
- Cristopher Negus **-** Red Hat Linux 9 Bible – IDG Books India Ltd.

## REFERENCE BOOK

- Graham Glass & King Ables **-** Unix for programmers and users – Pearson Education India - Third Edition.

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# B.C.A

## SHELL PROGRAMMING – PRACTICAL

## LIST OF PROGRAMS (24 Hours)

**Implementation of Commands**

- File and directory commands
- Disk commands
- Process commands
- Study of Editors
- vi editor
- stream editor

**Implementation of Filters**

- cut
- paste
- sort
- grep
- egrep
- fgrep
- awk programming

**Shell Scripts**

- Bourne again shell