SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS) COIMBATORE – 641 020

For candidates admitted from academic year 2017 - 2018 onwards under New CBCS.

Programme: BCA
Course Title: Core: Programming in C   **Subject Code: 15UCA1C01**
Year: I   **Semester: I**
6 Hours / week   **Credits: 4**

Unit I

Overview of C – Introduction-Character set –C Tokens Keywords & identifiers - Constant –Variables - Data types- Declaration of Variables- Assigning values to variables- Defining Symbolic Constants. Operators and Expressions:-Arithmetic, Relational Logical, Assignment, Conditional Bitwise, Special, Increment and Decrement operators-Arithmetic Expressions-Evaluation of expression-Precedence of arithmetic operators-Type conversion in expression- operator precedence & associative – mathematical functions. Managing Input and Output Operations: -Reading & writing a character – formatted input and output. Page No :1-36, 52-76, 84-107.

Unit II

Decision making and Branching: – Decision making with IF Statement-simple IF Statement- The IF ELSE statement-Nesting of IF—ELSE statement-Else if Ladder-Switch Statement--Conditional operator. Decision Making and Looping:- The WHILE statement- Do Statement-FOR Statement.

Arrays: The One Dimensional Array-Declarations – Initialization-Two Dimensional Array-Initialization- Multidimensional arrays. Character Arrays and strings: Declaring and initializing string variables- Reading strings from terminals-writing strings to screen - Arithmetic operation on character-putting strings together-comparison of two strings- string handling functions- table of Strings.(Page No: 112-130, 153-168, 194-216, 238-261).

Unit III

User defined functions: –need for user Defined functions- A multifunction program – Elements of User defined functions-Definition of functions-–Return values and their types-Calling a function-Function declaration- Category of functions-No Arguments and no Return values- Arguments but no return values-Arguments with return values-No Arguments but Return the value- Functions that return multiple values- nesting of functions- Recursion-Passing arrays to functions- Passing strings to functions- The scope,visibilityand lifetime of variables (Page No: 270-312)

Unit IV

Structure and Union: Defining a structure-Declaring the structure variables– Accessing structure members-Structures initialization- Copying and comparing structure variables-

Arrays of Structures - Arrays with in Structures- Structures within structures – Structures and functions- unions- Size of structures- Bit fields. Pointers:- Understanding pointers-Accessing the Address of a Variable – Declaring and initializing pointers- Accessing a variable through its pointers- pointers expressions pointer increments and scale factor-pointers and arrays – pointers and character strings- pointers as functions arguments.(Page No: 324-344, 357-363,366-372,375).

Unit V

File management in C:- Defining and opening a file- closing file-I/O operations on files-Error handling during I/O operations-Random Access to files- Command line arguments – The Preprocessor:Macro substitution- File inclusion- Complier control directives (Page No: 395-416,453-461)

TEXT BOOKS:

1. Balagurusamy.E, Programming in ANSI C, 6th Edition, McGraw Hill, 2012.

REFERENCE BOOKS:

1. YashavantKanetkar, Let us C, 2nd Edition, Tata McGraw Hill.

2. Mullesh cooper, Sprit of C, 4th Edition, Tata McGraw Hill.

3. http://spoken-tutorial.org/

SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS) COIMBATORE – 641 020

For candidates admitted from academic year 2017 - 2018 onwards under New CBCS.

Programme:BCA
Course Title: Core Practical : Programming in C
Subject Code: 15UCA1CP1
Year: I   **Semester: I**
4 Hours / week   **Credits: 3**

LIST OF PRACTICALS

1. Write a program for quadratic equation to find different types of roots.
2. Write program to find prime numbers below 1000.
3. Write program to find maximum and minimum no with the set of numbers.
4. Write a program for two-dimensional matrix addition.
5. Write a program for two-dimensional matrix multiplication.
6. Write program to find a factorial value of given numbers.
7. Write program to find Fibonacci series for n numbers.
8. Write program to convert integer into words form range 1 to100.
9. Write program to find Armstrong no for 1 to 1000.
10. Conversion of decimal to binary.
11. Conversion of binary to decimal.
12. Sum of diagonals of the matrix.
13. Find ncr value using function.
14. To calculate biggest among n numbers using function.
15. To check given string is palindrome or not, without using string reverse function.
16. To sort a given set of numbers in ascending order.
17. To sort given set of strings using pointers.
18. To count no. of words, lines, characters in a given sentence.
19. To read one file & write it into another using command line arguments.
20. Write a program to count the occurrence of a character in a given string.

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For candidates admitted from academic year 2017 - 2018 onwards under New CBCS.

Programme: BCA
Course Title: Core : Object Oriented Programming with C++
SubjectCode: 15UCA2C02
Year: I   **Semester: II**
6 Hours / week   **Credits: 3**

Unit I

Principles of object oriented programming: Basic concepts–Benefits– Applications of C++ - Structure of C++ program – Basic data types – User Defined Data Types: derived data types - Declarations of variables – Operators in C++ - Manipulators-Type cast operator – conversions – Operator overloading – Control Structures. Pages:(7-69)

Unit II

Functions: Function prototyping - call by reference – return by reference – inline functions – default arguments – Function overloading. Classes and objects: Specifying a class – Defining member functions – Arrays within a class – memory allocation for objects – Arrays of object – objects as function arguments – Constructors – Parameterized constructor – Copy constructor – Dynamic constructor – Destructors. Pages:(79-164)

Unit III

Operator overloading & type conversion: Defining operator overloading– Overloading unary operators – Overloading Binary operators - Type conversions. Inheritance: Defining derived class – Single inheritance – Multilevel inheritance- Multiple inheritance – Hierarchical inheritance – Hybrid inheritance – Constructors in derived class. Pages:(177-241)

Unit IV

Pointers, Virtual functions and Polymorphism: Pointers to Objects – this Pointer – Virtual Functions – Pure virtual functions. Files: Opening and Closing a file – Detecting End-of-File – File pointers and their manipulations- Command-Line Arguments. Pages:(253-353)

Unit V

Templates: Class templates – Function templates – Overloading of template function – Member function templates.Exception Handling: Basics – Exception handling mechanism – Throwing mechanism – Catching mechanism – Specifying exceptions. Pages : (360-394)

TEXT BOOKS:
1. Balagurusamy.E, Object Oriented Programming with C++, Tata McGraw Hill, 2009.
REFERENCE BOOKS:
1. Robert Lafore, Object Oriented Programming in Turbo C++, Galgotia Publications, 2006.
2. http://spoken-tutorial.org/

For candidates admitted from academic year 2017 - 2018 onwards under New CBCS.

Programme: BCA

Course Title: Core Practical : Object Oriented Programming with C++

Subject Code:15UCA2CP2

Year: I   **Semester: II**

4 Hours / week   **Credits: 3**

LIST OF PRACTICALS

1. Write a C++ program to read an integer and reverse it. Having reversed it check whether it is prime or not.

2. Write a C++ program to find the Largest and smallest value in 'n' numbers.

3. Write a C++ program to count the number of characters, words and lines in a given sentence without using string functions.

4. Write a C++ program to sort the given set of strings.

5. Construct class for primitive data structure Stack operation.

6. Construct class for primitive data structure Queue operation.

7. Write a C++ program for binary search.

8. Write a C++ program to implement Constructors and Destructors in factorial of 'n' numbers.

9. Write a C++ program to implement Copy Constructor.

10. Write a C++ program to implement unary operator overloading.

11. Write a C++ program to implement Binary Operator (+) Overloading for the addition of Complex numbers.

12. Write a C++ program to implement Multiple Inheritance for Student details.

13. Write a C++ program to implement Friend function for Employee details.

14. Write a C++ program to implement pure virtual function for Student details.

15. Write a C++ program on accessing the Data Members using "this" pointer.

16. Write a C++ program to create a binary file "mark.dat" and store student name, rollno and marks in three subjects using structure.

17. Write a C++ program to find maximum of two data using template function.

18. Write a C++ program to create two different types of objects using class template

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For candidates admitted from academic year 2017 - 2018 onwards under New CBCS.

Programme:BCA

Course Title: Core: Java Programming	**Subject Code: 15UCA3C03**
Year: II	**Semester: III**
5 Hours / week	**Credits: 4**

Unit I

Object Oriented Fundamentals and Java Revolution: Object Oriented Programming – Encapsulation – Inheritance – Polymorphism – Java Genesis – Characteristics – Java Programming Techniques – Lexical Issues – Variables – Types – Simple Types – Arrays - Operators.(Page Number: 17-87)

Unit II

Flow Control and Classes: Branching: If-else, Break, Switch, Return Statements – Looping: While, Do-while, for, comma statements, Continue – Classes: Object References – Instance Variables – New Operator – Dot Operator – Method Declaration – Method Calling – This Operator .

Constructors – Method Overloading – Inheritance – Super Class – Method overriding – Dynamic Method Dispatch – Final, Finalize, Static, Abstract Classes (Page Number: 89-127)

Unit III

Packages and Inheritance: Packages: The Package Statement – Compiling Classes in Packages – The Import Statement – Access Protection – Interfaces: The Interface Statement – The Implements Statement – Variables in Interfaces – String Handling – Constructors – String Creation – String Concatenation – Character Extraction.

Exception Handling Fundamentals – Exception Types – Uncaught Exceptions – Nested Try Statements – The Java Thread Model – Thread Priorities, Synchronization, Messaging – Thread – Runnable – Synchronization – Inter Thread Communication – Thread API summary. (Page Number: 165-197)

Unit IV

Utilities and Files: Simple Type Wrappers – Enumerations – Runtime – System – Date – Math – Random – Input and Output – File – Directory – Filename filter – Input Stream – Output Stream – File Streams.(Page Number: 201-230)

Unit V

Applets: HTML – Applet Tag – Order of Applet Initialization – Sizing Graphics – Simple Graphics Methods – Drawling – Draw Arc and Fill Arc – Font Manipulation – Imaging – Simple Image Loader – Image Observer.(Page Number: 253 - 313)**TEXT BOOKS:**

1. Patrick Naughton, The JAVA Hand Book, TATA McGraw Hill.

REFERENCE BOOKS:

1. Herbert Schildt, The Complete Reference- Java 2, 5th Edition, TATA McGraw Hill, 2002.
2. Harley Haim, The Internet Computer reference, 2nd Edition, TATA McGraw Hill, 1998.
3. http://spoken-tutorial.org/

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For candidates admitted from academic year 2017 - 2018 onwards under New CBCS.

Programme:BCA
Course Title: Core: Data Structures using C++   **Subject Code: 16UCA3C04**
Year: II   **Semester: III**
5 Hours / week   **Credits: 4**

Unit-I
Algorithm Specification**(25-32)**-Performance Analysis**(38-61)**. Arrays: Array as an ADT-Polynomial ADT- Polynomial Representation–Polynomial Addition –Sparse Matrices-Representation of Arrays**(84-112)**. Stacks and Queues: Stacks ADT- Queues ADT. **(134-147)**

Unit-II
Linked lists: Singly Linked Lists and Chains-Representing Chains in C++ **(170-183)**-Circular Lists-Available Space List-Linked Stacks and Queues-Polynomials-Equivalence Classes **(194-215)**-Doubly Linked List-Generalized Lists **(224-240)**.

Unit-III
Trees: Introduction-Binary Trees-Binary Tree Traversal and Tree Iterators **(243-269)** – Threaded Binary Trees **(274-277)**. Graphs: Graphs ADT-Elementary Graph Operation: Depth First Search-Breath First Search-Connected components-Spanning Trees- Biconnected Components –Minimum Cost Spanning Tree-Shortest Path and Transitive Closure **(324-372)**.

Unit-IV
Internal Sorting: Insertion Sort –Quick Sort **(399-405)**-Merge Sort-Heap Sort **(407-416)**. External Sorting: Introduction- k way Merging Buffer Handling for Parallel Operation-Run Generation-Optimal Merging of Runs **(438-457)**.
Unit-V
Hashing: Introduction-Static Hashing: Hash Table-Hash Function **(458-463)**-Dynamic Hashing   **(477-482)**-Efficient Binary Search Trees: Optimal Binary Search Tree- AVL Trees **(553-577)**. Multiway Search Tree **(606-635)**.

TEXT BOOKS:
1. Ellis Horowitz and SartajSahni, Fundamentals of Data Structures, Computer Science Press, 2002 (All Units).

REFERENCE BOOKS:
1. Tanenbaum A. M. and Augestine M. J., Data Structures Using Pascal, Prentice hall, 2nd edition, 1996.
2. YashwantKanetkar, Data Structures through C, BPB publication, 2003.
3. SartajSahni, Data Structures, Algorithms & Applications in C++. McGraw-Hill, 1998.
4. Samuktha, Data and File Structures, Addison Wesley, 1999.
5. http://spoken-tutorial.org/

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For candidates admitted from academic year 2017 - 2018 onwards under New CBCS.

Programme:BCA

Course Title: Core: Operating System   **Subject Code: 15UCA3C05**

Year: II   Semester: III

4 Hours / week   Credits: 4

Unit I

Introduction-Defining Operating System-Computer-System Organization-Computer-System- Computer-System Organization- Computer-System Architecture- Operating-System Structure- Operating-System Operations- Process Management- Memory Management-Storage Management- Protection and Security- Kernel Data Structures- Computing Environments- Open-Source Operating Systems.(Pages:28-71).

Unit II

   Processes Management: Process Concept- Process Scheduling- Operations on Processes-Interprocess Communication- Examples of IPC Systems- Communication in Client–Server Systems-(Pages:130-171)

Deadlocks: System Model- Deadlock Characterization- Methods for Handling Deadlocks-DeadlockPrevention- Deadlock Avoidance- Deadlock Detection- Recovery from Deadlock(Pages:340-362)

Unit III

   Main Memory: Background- Swapping- Contiguous Memory Allocation-Segmentation-Paging- Structure of the Page Table(Pages:375-402)

   Virtual Memory: Background- Demand Paging- Page Replacement- Allocation of Frames-Thrashing- Memory Mapped Files- Allocating Kernel Memory(Pages:421-460)

Unit IV

   Mass Storage Structure: Overview of Mass-Storage Structure- Disk Structure- Disk Attachment- Disk Scheduling- Disk Management- Swap-Space Management- RAID Structure- Stable-Storage Implementation(Pages:491-518)

   File –System Interface: File Concept- Access Methods- Directory and Disk Structure- File- System Mounting- File Sharing- Protection(Pages:527-557)

Unit V

   The Linux System: Linux History- Design Principles- Kernel Modules- Process Management- Scheduling- Memory Management- File Systems- Input and Output-InterprocessCommunication- Network Structure- Security(Pages:405-445)

   Windows 7: History- Design Principles- System Components- Terminal Services and FastUser Switching- File System- Networking- Programmer Interface(Pages:853-898)

TEXT BOOKS:

1. Silberschatz, Galvin Gagne, Operating System Concepts, 9th Edition, Wiley India Edition,2013

REFERENCE BOOKS:

1. DeitelDeitelChoffnes, Operating Systems, 3rd Edition, Pearson Education, 2003.
2. Stuart E. Madnick, John J.Donovan. Operating Systems, 3rd Edition, Tata McGraw Hill,2003.

.   3. http://spoken-tutorial.org/

Programme:BCA
Course Title: Core Practical : Java Programming Lab   **Subject Code: 15UCA3CP3**
Year: II   **Semester: III**
4 Hours / week   **Credits: 3**

<div align="center">

LIST OF PRACTICALS
</div>

1. Write a java program for an Inheritance Concept?

2. Write a java program for using Interface?

3. Write a java program for using 2 Packages?

4. Write a java program for Constructor using method overloading?

5. Write a java program to handle all Exceptions?

    a) Catch   b) Try   c) Throws and d) Finally.

6. Write a java program for all String handling methods?

7. Write a java program for a) Single Multithreading b) Multiple multithreading?

8. Write a java program to pass message between 2 clients using TCP/IP Protocol?

9. Write a java program for finding the IP Addresses?

10. Write a java Applet program for displaying the Human face?

11. Write a java program using AWT events?

12. Write a java program using Swing to create a MDI form?

13. Write a java program to create Student Mark list using data base using Swing?

14. Write a java program to create personal information?

15. Write a java program to create calculator using Swing?

16. Write a java program to connect 2 clients system using RMI concept?

17. Write a java program using datagram with socket concept?

18. Write a java program to retrieve IP address of the system using RMI concept (client side)?

19. Write a java program to create the Basic Bean concept (text)?

20. Write a java program to create a Bean tool?

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For candidates admitted from academic year 2017 - 2018 onwards under New CBCS.

Programme: BCA
Course Title: Core Practical: Data Structure using C++ Lab
Subject Code: 16UCA3CP4
Year: II   **Semester: III**
4 Hours / week   **Credits: 3**

<div align="center">LIST OF PRACTICALS</div>

1. Write a C++ program to create a stack.

2. Write a C++ program to convert an Infix to Postfix Notation.

3. Write a C++ program to Evaluate of expression.

4. Write a C++ program to create a stack using Linked List

5. Write a C++ program to create a Queue.

6. Write a C++ program to create a circular queue.

7. Write a C++ program to create a Queue using Linked List

8. Write a C++ program to construct a Binary Tree Traversal.

9. Write a C++ program for Depth First Search

10. Write a C++ program to Breath First Search.

11. Write a C++ program for Warshall's Algorithm.

12. Write a C++ program for Dijkstra's Algorithm.

13. Write a C++ program to Huffman's Algorithm.

14. Write a C++ program to make an Insertion Sort.

15. Write a C++ program to make a Merge Sort.

For candidates admitted from academic year 2017 - 2018 onwards under New CBCS.

Programme:BCA
Course Title: Core : Visual Programming (C#.Net and ASP.Net)
Subject Code:16UCA4C06
Year: II   **Semester: IV**
6 Hours / week   **Credits: 5**

Unit I
Console Application
Introduction to C# **(1-5)** – Understanding .Net: The C# Environment **(11-16)** – Overview of C# **(18-21)** – Adding Comments – Command Line Arguments **(21-25)** – Literals, Variables and Data Types**(34-49)** – Operators and Expressions**(55-73)** - Decision Making and Branching **(80-96)** – Decision Making and Looping**(102-118)** – Methods in C# **(125-137)** – Handling Arrays **(145-160)** – Manipulating Strings **(168-181)** – Classes and Objects **(212-233)**.

Unit II
Graphical User Interfaces with Windows Forms: Part I
Introduction – Windows Forms – Event Handling **(399-409)** – Control Properties and Layout – Labels, TextBoxes and Buttons – GroupBoxes and Panels – CheckBoxes and RadioButtons – PictureBoxes – Tooltips – NumericUpDown Control – Mouse-Event Handling – Keyboard-Event Handling **(410-440)**

Unit III
Graphical User Interfaces with Windows Forms: Part 2
Introduction – Menus – MonthCalendar Control – DateTimePicker Control – LinkLabel Control – ListBox Control – CheckedListBox Control **(441-465)** – ComboBox Control – TreeView Control – ListView Control – TabControl – Multiple Document Interface (MDI) Windows – Visual Inheritance **(466-501)**

Unit IV
Data Access with .NET
ADO.NET Overview**(685-687)** – Using Database Connections**(688-692)** – Fast Data Access: The Data Reader – Managing Data and Relationships: The DataSet Class **(701-714)** – Populating a DataSet – Persisting DataSet Changes – Working with ADO.NET **(721-733)** – The DataGrid Control **(735-749)** – Data Binding – Visual Studio.Net and Data Access **(750-769)**

Unit V
ASP.Net

Web forms – Buttons, Text boxes, Labels, Literals, Place holders, Check boxes, Radio buttons, Tables, Panels, Images, Image buttons, List boxes, Drop down lists, Hyperlinks and link buttons, HTML controls.**(643-646, 677-706, 711-738, 781-820)**

TEXT BOOKS:

1. E.Balagurusamy, Programming in C#, 3rd Edition, Tata McGraw-Hill, 2011. **(UNIT I)**
2. Paul Deitel and Harvey Deitel, C# 2010 for Programmers, 4th Edition, Pearson, 2011. **(UNIT II - III)**
3. Simon Robinson, Christian Nagel, Karli Watson, Jay Glynn, Professional C#, 3rd Edition, Wrox Publisher, 2007. **(UNIT IV)**
4. Steven Holzner, Visual Basic.NET Black Book, Platinum Edition, Dream Tech, 2011.**(UNIT V)**

REFERENCES BOOKS:

1. Geetanjali Arora ,Balasubramaniam Aiswamy ,and Nitin Pandey, Microsoft C# Professional Projects,Prentice Hall of India Private Limited, 2002.
2. Herbert Schildt, C# 4.0 Complete References, 1st Edition, Tata McGraw-Hill, 2010.
3. http://spoken-tutorial.org/

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For candidates admitted from academic year 2017 - 2018 onwards under New CBCS.

Programme: BCA
Course Title: Core : Relational Database Management Systems
Subject Code: 15UCA4C07

Year: II	**Semester: IV**
6 Hours / week	**Credits: 5**

Unit I

Introduction to Database Systems: – Database System Applications, Purpose of Database Systems – View of Data – Data Models – Database Languages – RelationalDatabases, Database Design (Chapter 1, Page No.:1 - 19)

Entity-Relationship Model :- Basic Concepts – Constraints – Keys – E-R Design Issues - WeakEntity Sets– Extended E-R Features (Chapter 6, Page No.:204 - 226)

Unit II

Relational Model: – Structure of Relational Databases – The Fundamental Relational Algebra Operations – Additional Relational-Algebra Operations – Extended Relational-Algebra Operations – Null Values – Modification of the Database (Chapter 2, Page No.: 37 – 70)

Unit III

SQL :– Background – Data Definition – Basic Structure of SQL Queries - Set Operations – Aggregate functions – Null Values – Nested Subqueries – Complex Queries - Views – Modificationof the database - Transactions (Chapter 3, Page No.: 75-114)

Unit IV

Relational Database Design :- Features of Good Relational Designs – Atomic Domains and First Normal Form –Decomposition Using Functional Dependencies – Functional-Dependency Theory – Decomposition Using Functional Dependencies – Decomposition Using Multivalued Dependencies – Database-Design Process (Chapter 7, Page No.: 263 - 302)

Unit V

Object Oriented Databases :– Overview – Complex Data Types - Structured Types and Inheritance in SQL – Table Inheritance – Array and Multiset Types in SQL – Object-Identity and Reference Types in SQL – Implementing O-R Features – Persistent Programming Languages – Object-Oriented versus Object-Relation (Chapter 9, Page No.: 361 -388)

Storage and File Structure:- Overview of Physical Storage Media – Magnetic Disks – RAID – Tertiary Storage – Storage Access – File Organization – Organization of Records in Files – Data- Dictionary Storage (Chapter 9, Page No.: 441 -474)

TEXT BOOKS:
1. A.Silberschatz, H.Korth and S.Sudarsan, Database System Concepts, 5th Edition, TATAMcGraw Hill Inc., 2009.

REFERENCE BOOKS:
1. Bipin.C.Desai, An Introduction to Database System,West Publishing Company, 2004.
2. C.J.Date, An Introduction to Database Systems, 8th Edition, Addition – Wesley, 2007.
3. http://spoken-tutorial.org/

SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS) COIMBATORE – 641 020

For candidates admitted from academic year 2017 - 2018 onwards under New CBCS.

Programme: BCA
Course Title: Core Practical : Visual Programming Lab (C#.Net and ASP.Net)
Subject Code: 16UCA4CP5
Year: II   **Semester: IV**
5 Hours / week   **Credits: 3**

LIST OF PRACTICALS

1. Write a C# Console Program to perform palindrome.

2. Write a C# Console Program to perform command line argument.

3. Write a C# Console Program to perform simple calculator.

4. Write a C# Console Program to perform string functions.

5. Write a C# Console Program to find second largest number.

6. Write a C# Console Program to jagged array.

7. Simple Math Calculator with Memory

8. Simple Dictionary and Spell Check

9. Create a MS Windows Notepad Application with Menus and ToolBar

10. Create a MS Windows Word Pad Application

11. Creating a Windows Explorer

12. Creating an Image List View based Album

13. Working with File Saving and Opening Features in Notepad

14. A Sample Inventory Application for a Hostel Store with Transactions

15. A Sample Application for Student Progress Card

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For candidates admitted from academic year 2017 - 2018 onwards under New CBCS.

Programme: BCA

Course Title: Core Practical: Relational Database Management Systems Lab

Subject Code: 16UCA4CP6	**Year: II**	**Semester: IV**
5 Hours / week		**Credits: 3**

LIST OF PRACTICALS

1. Exploring the Simple queries with DDL Commands using SQL.

2. Exploring the Simple queries with DML Commands using SQL.

3. Exploring the Comparison (relational) operator and Logical operator using SQL.

4. Exploring the Set operations and sorting and grouping operator using SQL.

5. Exploring the built-in functions i) Count Function ii) Character Function using SQL.

6. Exploring the built-in functions i) Number Function ii) Date function using SQL.

7. Create a student table contains reg-no, stud-name, class, subjects to perform an Aggregate operations using SQL.

8. Create a table PASSENGER with the fields Ticket no (Primary Key), name, age, sex and fare.

i) Write a PL/SQL procedure to print the details of all the passenger, name, age, sex and fare.

ii) Write a PL/SQL procedure to print the details of the entire passenger.

9. Write a PL/SQL recursive functions for finding Factorial Series for the given no of terms.

10. Write a PL/SQL recursive functions forGenerating Fibonacci Series for the given no.

11. Write PL/SQL statements to addition of two numbers.

12. Write a PL/SQL statements to print "n" numbers using while loop.

13. Write a PL/SQL code to calculate the area of a circle.

14. Create a function to return a fare from tickets booking table whichcontainsbus_code,origin, fare,destinations,time of departure, data of travelling.

15. Create a function to return a current stock value for a given product.

SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS) COIMBATORE – 641 020

For candidates admitted from academic year 2017 - 2018 onwards under New CBCS.

Programme:BCA

Course Title: Core : Web Technology (HTML, Bootstrap.PHP and MySQL)

Subject Code:16UCA5C08

Year: III   **Semester: V**

6Hours / week   **Credits: 5**

Unit I

Overview of HTML5 – HTML5 and its Essentials – Exploring New Features of HTML5 – Fundamentals of HTML (1-59) – Working with Text (77-94) – Organizing Text in HTML (113-117) – Working with Links and URLs (129-135) – Creating Tables (145-151) – Working with Forms (189-205) – Working with Multimedia (245-252).

Unit II

Overview of CSS – Exploring CSS Selectors – Inserting CSS in an HTML Document (465-476) – Background and Color Gradients in CSS (487-504) – Fonts and Text Styles (521-530) – Creating Boxes and Columns Using CSS (545-566) – Displaying, Positioning and Floating an Element (597-603)

Bootstrap Overview – Bootstrap Environment Setup – Bootstrap Grid System – Bootstrap CSS Overview – Bootstrap Typography – Bootstrap Tables – Bootstrap Forms – Bootstrap Images – Bootstrap Dropdowns – Bootstrap Navigation Elements – Bootstrap Jumpotron – Bootstrap Alerts

Unit III

Introducing PHP (1-18) – Using Variables and Operators (21-45) – Controlling program flow (49-82) – Working with cookies, sessions and headers (293 – 308).Working with arrays (85-118) – Using functions and classes (121-148) – Working with files and directories (159-180) – Working with databases and SQL (185-246)

Unit IV

Getting started with Ajax (433-435) – Writing Ajax (435) – Creating and Opening XML Http Request object (436-440) – Handling & Starting the Downloaded data (441-447) – Ajax with Some PHP (448) – Passing Data to the Server with GET & POST (449-455).

Unit V

Understanding Joomla (3-7) – Installing Joomla (25-39) – A tour of the joomla administrator interface (41-49) – Defining Section and Creating Structure (53-57) – Creating, editing and deleting sections, categories and articles (59-83) – Joomla menus (125-166) – Joomla Templates and modules (169-228).

TEXT BOOKS:
1. VikramVaswani, A Beginner's Guide PHP,1st Edition, Tata McGraw Hill, 2008.

2. Steven Holzner, PHP Complete Reference, Tata McGraw Hill Edition, 2008.
3. Jen Kramer, Joomla! Start to Finish, John Wiley & Sons, 2010.

REFERENCE BOOKS:
1. Kogent Learning Solutions Inc., HTML5 Black Book Covers CSS3, JavaScript, XML, XHTML, AJAX, PHP and JQuery, 2012
2. http://spoken-tutorial.org/
3. http://tutorialspoint.com – Bootstrap Tutorial

SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS) COIMBATORE – 641 020

For candidates admitted from academic year 2017 - 2018 onwards under New CBCS.

Programme:BCA
Course Title: Core: Software Engineering   **Subject Code: 15UCA5C09**
Year: III   **Semester: V**   **Credits: 5**
5 Hours / Week

Unit I

Defining Software-Software Application Domain-Legacy Software (3-9) Process Model-Waterfall Model-Incremental Process Models-Spiral Model-Specialized Process Models-The Unified Process(39-56)

Unit II

Requirements Engineering: Establishing TheGroundwork-Eliciting Requirements-Developing Use Cases- Building The Requirements Model-Negotiating Requirements-Validating Requirements(120-145)

Unit III

Design Concepts: The Design Process-Design concepts-Design Model(215-238)Architectural Design: Software Architecture- Architectural Genres-Architectural Styles-Architectural Design-Assessing Alternative Architectural Designs-Architectural Mapping Using Data Flow (243- 273)

Unit IV

SoftwareTesting: Software Testing Fundamentals-White Box Testing-Basis Path Testing-Control Structure Testing-Black Box Testing-Graph based testing method-Equivalence Partitioning-Boundary value analysis-Orthogonal Array Testing.(482 - 502)

Web Application Testing: Testing Concepts for Web Apps-Content Testing-User Interface Testing-Configuration Testing-Component Level Testing-Navigation Testing-Performance Testing.(529 - 553)

Unit V

Risk Management: Software Risks-Risk Identification-Risk Projection-Risk Refinement-RMMM (745-759).

Software Quality Assurance-Background Issues-Elements of SQA-SQA Tasks-Formal Approaches to SQA-Statistical Software Quality Assurance-Software Reliability-The SQA Plan(432 - 446).

TEXT BOOKS:

1. ROGER S.PRESSMAN,SOFTWARE ENGINEERING A practitioner's Approach, 7th Edition,McGRAW-HILL,2014.

REFERENCE BOOKS:
1. Richard fairly, Software Engineering concepts,TATA McGRAW HILL, 1965.
2. http://spoken-tutorial.org/

 For candidates admitted from academic year 2017 - 2018 onwards under New CBCS.
Programme:BCA
Course Title: Core: Computer Networks   **Subject Code: 16UCA5C10**
Year: III   **Semester: V**   **Credits: 5**
5 Hours / Week

Unit - I

Introduction: The use of computer networks - Network structures -Network architectures -Components of the Network **-** Types of Networks - Client-Server- Peer To Peer Networks -**Transmission Media:** Classification of transmission media - wired - Coaxial - Twisted pair - Fiber-optics Wireless - cabling Standards- **Overview of TCP / IP & OSI:** benefits of a Layered Model – TCP/IP Model – OSI Model – Comparing the TCP/IP & OSI Model

Unit - II

Application layer functionality and Protocols: Application layer Services and Protocols Function- DNS Service and Protocols – WWW Service and HTTP – E-Mail services and SMTP/POP Protocols – FTP – DHCP- **OSI Transport Layer:** Purpose - Transport Layer Protocols: TCP and UDP – Port Addressing -– TCP Three-way

Unit - III

OSI Network Layer: process and Protocols –IPv4 Protocols and Packet Header fields –address management - Hierarchical addressing - Default Gateway- **Addressing the Network-** Types of Address in IPv4 - Network Prefixes – Types of Communication – NAT - Public and Private Address –ISP -Overview of IPv6 – Subnet Mask – Subnetting -**OSI Data link layer:** service - Data Link Sublayers - Full Duplex and Half Duplex - Data Link Header Fields- Ethernet Frame Size and Fields - MAC Address Structure- **OSI Physical Layer:**purpose- operation – standard - functions-Bandwidth –Throughput

Unit - IV

Introduction to routing and packet forwarding: Router – Path selection - Router Components and Functions – Bootup Process - Router Interfaces - Basic Router Configuration - Routing Table - Routing Types- Routing Table PrinciplesPacket Fields and Frame Fields –**Static Routing:** Router Connections - Configuring an Ethernet and serial interface - Configuring Static routes - Modifying Static Routes - Summarizing Routes - Configuring a Summary Route and Troubleshooting.

Unit - V

Dynamic Routing Protocols: role – purpose – operation - Dynamic,Static Routing Advantages and Disadvantages -Dynamic Routing Protocols Classification –RIP –EIGRP –

OSPF - Operation and configuration - Purpose of Algorithm - Routing Protocols Characteristics - **VLSM and CIDR:** Classful and Classless IP addressing -CIDR and Route Summarization - Load Balancing- Administrative Distance- Classless routing protocols – VLSM. <mark>**Wireless Concepts and Configuration:**</mark> Wireless LANs - Comparing a WLAN to a LAN - Wireless LAN Standards -Wireless NICs - Wireless AP - Wireless Routers - Client and Access Point Association - Configuring Basic Wireless Settings - Configuring Security - WLAN Troubleshooting.

Text Books:

1. Andrew S Thenanbaum, Computer Network,Prentice Hall of India, 3rdEdition, 2003. *(Unit-1)*
2. Cisco Networking Academy, CCNA 1 and 2 Companion Guide, Pearson Education, Third Edition, 2003. *(Unit-2,3,4)*
3. Cisco Networking Academy, CCNA 3 and 4 Companion Guide, Pearson Education, Third Edition, 2003. *(Unit-5)*

Reference Books:

1. DouglasE.Comer, David L.Stevens, Internetworking with TCP/IP, Prentice Hall of India, 2003.
2. Wendell Odom, CCNA Introduction,Pearson Education, First Edition 2006.
3. http://www.cisco.com.

For candidates admitted from academic year 2017 - 2018 onwards under New CBCS.
Programme:BCA

Course Title: Core Practical: Web Technology (HTML, Bootstrap.PHP and MySQL)

Subject Code: 16UCA5CP7

Year: III   **Semester: V**

5 Hours / Week   **Credits: 3**

LIST OF PRACTICALS

1. Write a HTML5 Program to create student information form with following details

    (Reg No, Student Name,Date of Birth,Age,Course)

2. Write a HTML with Bootstrap program to create employee information form with following details

    (EmpNo , Employee Name , Employee Age, Designation , Department)

3. Write a HTML with Bootstrap program to create your college website as responsive website by using Bootstrap nav, Bootstrap Jumpotron, …. etc.

4. Using PHP program read and print a file character by character, until the end of file reached.

5. Using PHP string function to convert lower case, upper case, string length, string compare string reverse, and string shuffle.

6. Using PHP connect MySql and save the following data into the respective MySql table.
     (Student Name , Student Reg No , Age , Department)

7. Using PHP connect MySql and view contents of the previous program saved details.

8. Using PHP connect MySql and view contents and made delete operation in it.

9. Using PHP connect MySql and view contents and made edit operation in it.

10. Using PHP with MySql develop one small application in online job portal.

11. Using PHP with MySql develop online exam.

12. Using PHP with MySql develop an alumni registration form with image uploading.

13. Using PHP, AJAX and MySql create your class profile using add, view, edit and delete modes with image and music file uploading.

SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS) COIMBATORE – 641 020

For candidates admitted from academic year 2017 - 2018 onwards under New CBCS.
Programme: BCA
Course Title: Core Practical: Computer Networking Lab
Subject Code: 16UCA5CP8

Year: III	**Semester: V**
4 Hours / week	**Credits: 3**

1. Configure DNS Protocol and Troubleshoot
2. Configure FTP Protocol and Troubleshoot
3. Configure DHCP Protocol and Troubleshoot
4. Configure Email Service and Troubleshoot
5. Configure Router using CLI
6. Create a network using subnetting concept.
7. Create a network using VLSM concept.
8. Create Static Routing using IPv4 Address and Troubleshooting
9. Create Default Route Configuration and Troubleshooting
10. Create Summary Route Configuration and Troubleshooting
11. Create RIPv1 Protocol Configuration and Troubleshooting
12. Create Ripv2 Configuration using IPv4 Address and Troubleshooting
13. Create Ripv2 Configuration using IPv6 Address and Troubleshooting
14. Create EIGRP Protocol Configuration and Troubleshooting
15. Create OSPF Protocol Configuration and Troubleshooting
16. Create Wireless Configuration and Troubleshooting
17. Configure Load balancing concept using RIP Protocol.
18. Configure Administrative Distance concept in wired network.

SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS) COIMBATORE – 641 020

For candidates admitted from academic year 2017 - 2018 onwards under New CBCS.
Programme: BCA

Course Title: Elective: Cyber Security	**Subject Code: 16UCA5EL1**
Programme: BCA	**5 Hours / week**

Credits: 4	**Year: III**	**Semester: V**

Unit I
Introduction and Data Encryption Standards:
    Introduction(1-10) – Data Encryption Techniques(10-15) – Substitution Ciphers(15-26) – Transposition Ciphers(26-28) – Steganography(28-30) –Data Encryption Standards: Block ciphers, Block Cipher Modes of Operation(32-40) – Feistel Ciphers(40-41) – Data Encryption Stand(42-67) - Triple DES(67-69) – DES Design Criteria(69-71).

Unit II
Advanced Encryption Standard and Symmetric Ciphers
    Introduction, Advanced Encryption Standard(74-75) – Overview of Rijndael(75-83) – Advantages and Limitations of Rijndael, Comparison of AES with other ciphers(84-85) – Blowfish Encryption Algorithm(87-92) - RC5(92-95) – RC4(95-98) – RC6(98-100) – Comparison Between RC6 and RC5(100-101) – IDEA(101-104).

Unit III
Public Key Cryptosystems, Key Management and Authentication
        Introduction, Public key Cryptosystems(118-125) – The RSA algorithm(125-130) – Timing Attacks(130-134) – Key Distribution, Diffie-Hellman Key Exchange(138-145) – Elliptic Curve Arithmetic(145-154) – Elliptic Curve Cryptography(154-155) – Elliptic Curve Security and Efficiency, Zero Knowledge Proof(155-157) – Authentication: Introduction, authentication methods(162-172) – Message Digest(172-184) – Kerberos(184-199) – X.509 Authenticaiton Service(199-200).

Unit IV
Digital Signatures, Electronic Mail Security and Web Security
        Introduction, Digital Signature Algorithms(204-213) – Digital Signature Standards(DSS)(213-214) – Authentication Protocols(214) – Pretty Good Privacy(PGP)(216-223) – S/MIME(223-224) – MIME(224-232) – History of S/MIME(232-236) – Comparison PGP and S/MIME(237) – Secure Socket Layer(SSL)(267-269) – SSL session and connection(269-270) – SSL Record Protocol(270-275) – SSL in practice(275-277) – Secure electronic Transactions(277-279)

Unit V
Malicious Software and Firewall
    Malicious Code, viruses(306-313) – Worms(313-316) –Trojans(316-317) – Spyware(317) – Best Practices(317-318) – Digital Immune System(318-319) – Attacks(319 -327) – Introduction, Packet Filters(329-331) – Application level gateways(331-333) – Circuit level gateways(333-334) – Firewall Architectures(334-341) – Trusted System(341-342) – Access Control(342-344)

TEXT BOOKS:

    1. V. K. Pachghare, Cryptography and Information Security, PHI.

REFERENCE BOOKS:

    1. William Stalling, Cryptography and Network Security, 4th Edition, PHI.
Schneierand Bruce, Applied Cryptography: Protocols & Algorithms, 1st Edition,

SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS) COIMBATORE – 641 020

Programme: BCA

Course Title: Core: Multimedia (Gimp, 2D Pencil and Inkscape)

Subject Code: 17UCA6C11

Year: III   **Semester: VI**

6 Hours / Week   **Credits: 5**

GIMP

Unit I

What is Gimp (01-06) - The Tools(109-123) – Color Modes(187-190) – Transform Tools (155-162) – Text And Fonts (165-166) – Brush Size & Shape(175-176) –- Layers And Floating Selections (315-330)

Unit II

An Introduction To Filters (365-366) – Animation Filters (369-370) – Artistic Filters (375-396) – – Blur Filters (401-408).

INKSCAPE

Unit III

Inkscape Interface (03-09) –Working with file (10-14) - Selector Tool (15-20) – Using the Ruler (118-128) – Using group commands (276-277) – Creating Object Symbol (283-287– Text Effects (69-70)-Color Management(104-105)-Create a Basic Icon(114-121).

2D PENCIL

Unit IV

Properties Panel– Floating and Docking Panels– Tools Panel– Document Window– Drawing Tools– Document Library– Symbols – Basic Method of **2D Animation**

Unit V

Onion Skinning-Cartoon Animation Techniques– Vectors and Bitmaps - Importing sound from2D pencil– Exporting Video from2D pencil .

TEXT BOOKS:

1. Steve Sayre THE COMPLETE GUIDE TO GIMP The Official Handbook © 1999 The Coriolis Group.

2. Adam Hyde Ink space manual 3D BOX TOOL© Joshua Facemyer 2008

REFERENCE E-BOOKS:

1.   http://spoken-tutorial.org/

2.   https://inkscape.org/en/learn/books

3.   https://www.pencil2d.org/

SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS) COIMBATORE – 641 020

Programme: BCA
Course Title: Core: Mobile Computing and Android Programming
Subject Code: 16UCA6C12
Year: III   **Semester: VI**
5 Hours / Week   **Credits: 5**

Unit – I

Introduction – Enabling concepts for mobile and personal communication- <mark>Present, Past and Future Mobile Communication</mark>

Cellular concepts and implementation: Cellular concepts-multiple access technologies for cellular system- Cellular system operation and planning general principles. **Chapter 1 (1-11) ,Chapter 2 (15-20)**

Unit – II

Introducing Android: Before we get started – Advantages of android – Preparing SDK tools to download – Android development IDE – Java, XML and how android works – Android application framework – Screen layout design – User Interface Design – Graphics and animation Design – Interactivity – Content providers – Intent and intent filters. **(1-19)**

Unit – III

Setting up your android development environment – Installing Java, Eclipse and Android – Setting up AVDs and Smart Phone – Understanding Java SE and the Dalvik Virtual Machine – The directory structure of an android project – Leveraging android XML – Using your android application resources – The AndroidManifest.xml file – Creating your first android application. **(21-85)**

Android application components – **Android Intent Objects:** Messaging for Components – **Android Manifest XML:** Declaring Your Components – Android View Hierarchies – Defining Screen Layouts: Using XML. **(115-160)**

Unit – IV

<mark>**UI Design:**</mark> Buttons, Menus and Dialogs – Using Android UI Elements (Widgets) – Adding an Image Button to Your Layout – Adding a TextView Widget to Your Layout – Adding an Image – Using Menus in Android – Creating the Menu Structure with XML – Defining Menu Item Strings – Inflating the Menu Structure via Java – Running the Application in the Android Emulator – Making the Menu Work – Adding Dialogs – Using Custom Dialog Subclasses – Displaying an Alert Dialog. **(163-207)**

Unit - V

Adding Interactivity: Handling UI Events – An Overview of UI Events in Android – HandlineonClick Events – **Android Touchscreen Events:**onTouch – **Android Right-click Equivalent:**onLongClick – **Key Event Listeners:**onKeyUp and onKeyDown – **Context Menus in Android:**onCreateContextMenu. **(235-266)**

Understanding Content Providers: An Overview of Android Content Providers – Defining a Content Provider – Working with a Database.

TEXT BOOKS:
1. Raja Pandya, Mobile and Personal Communication Services and Systems, Prentice Hall of India, 2000.**(Chapter – 1)**
2. Wallace Jackson, Android Apps for Absolute Beginners, 2nd Edition, APress, 2013. **(Chapter – 2)**

REFERENCE BOOKS:
1. Shawn Van Every "Pro Android Media: Developing Graphics, Music, Video, and Rich Media Apps for Smartphones and Tablets "
2. http://spoken-tutorial.org/

SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS) COIMBATORE – 641 020

Programme: BCA
Course Title: Core Practical: Multimedia (Gimp, 2D Pencil and Inkscape)
Subject Code: 15UCA6CP9
Year: III   **Semester: VI**
4 Hours / week   **Credits: 3**

LIST OF PRACTICALS

GIMP

1) Create an invitation design using Gimp.
2) Create a layer animation using Gimp.
3) Apply the filter effect in image using Gimp.
4) Create a web index page using Gimp.
5) Create a logo design by Gimp.

2D PENCIL

1) Create a natural scenery using 2D pencil.
2) How to create a glossy button using 2D pencil?
3) Apply the filter effect in image or font using 2D pencil
4) Create a Text animation using 2D pencil.
5) Create a movie clip animation using 2D pencil.

INKSPACE

1) Create a logo design using Inkscape?
2) Create a banner design using Inkscape?
3) Create a corporate ID card design using Inkscape?
4) Create a wedding Card design using Inkscape?
5) Create a 3D Text effect using Inkscape?
6) Create a T-Shirt design using Inkscape
7) Create a CD wrapper design using Inkscape?
8) Create a Template design using Bitmap effects in Inkscape?

SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS) COIMBATORE – 641 020

Programme: BCA

Course Title: Core Practical: Android Programming Lab

Subject Code: 16UCA6CP10   **Year: III**   **Semester: VI**

4 Hours / week   **Credits: 3**

LIST OF PRACTICALS

2. Write the steps for installation and configuration of android in Windows OS.

3. Write a program to demonstrate usage of two textbox (Edit Text), Label (Text view) and Button widgets in android and perform addition of two numbers.

4. Write a program and demonstrate the graphical layout orientation.

5. Write a program and fetch the IMEI number of your mobile phone.

6. Write a program to demonstrate usage of DateTimePicker with Toast(Message Box).

7. Write a program to demonstrate usage of List Box, Combo Box, Snippers with Toast(Message Box).

8. Write a program to demonstrate AutoCompleteTextView.

9. Write a program, create and send notification message in your mobile phone.

10. Write a program to demonstrate usage of Text Area, Checkbox, and Radio Button with Toast(Message Box).

11. Write a program and calculate the simple interest and compound interest using its API controls.

12. Write a program and create phone call activity using android.

13. Write a program for sending SMS using android.

14. Write a simple program to demonstrate the contact manager using Contacts ContractAPI (Insert, Delete, Edit, View).

15. Write a simple program to demonstrate connecting with SQLite Database.

16. Write a program and save employee details with SQLite Database.

17. Write a program and view employee details from SQLite Database.

SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS) COIMBATORE – 641 020

Programme: BCA
Course Title: Elective: Data Mining and Warehousing
Subject Code: 15UCA6EL2
5 Hours / week

Credits: 5   **Year: III**   **Semester: VI**

Unit I

Expanding universe of data – production factor – computer systems that can learn – data mining – data mining versus query tools – data mining in marketing – practical application. (Chapter:1, Page No.:1-10). Learning – Self Learning Computer Systems – machine learning and the methodology of science – concept learning. (Chapter:2, Page No.:11-22)

Unit II

Data warehouse – need- designing decision support systems – integration with data mining-Client/Server and data warehousing–multi-processing machines – cost justification. (Chapter:3, Page No.:25-36)

Unit III

Knowledge discovery process – data selection – cleaning – enrichment – coding – data mining – preliminary analysis of the data set using traditional query tools – visualization techniques – likelihood and distance – OLAP tools – K-nearest neighbor – Decision trees – Association rules – Neural networks – Genetic algorithms – Reporting. (Chapter:4, Page No.:37-78)

Unit IV

Different forms of knowledge – Getting started – Data Selection – Cleaning – Enrichment – Coding – Data mining - Reporting – KDD environment – Ten golden rules.(Chapter:5, Page No.:79-93)

Unit V

Customer Profiling – Predicting bid behaviour of pilots – Discovering foreign key relationships-Results. (Chapter:6, Page No.:95-110) Learning as compression of data sets – The information content of message – Noise and redundancy – significance of noise – Fuzzy databases – The traditional theory of the relational database – from relations to tables – from keys to statistical development Dependencies – Denormalization – Data Mining Primitives. (Chapter:7, Page No.:111-126)

TEXT BOOKS:

1. Peter Adrians and DOLF Zantinge, Data Mining, 4th Edition, Addition Wesley, 2002.

REFERENCE BOOKS:

1. K.P.Soman, ShyamDivakar, V.Ajay, Insight into Data Mining (Theory and Practice), 2nd Edition, Prentice Hall of India, 2006.

2. http://spoken-tutorial.org/

SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS AND SCIENCE(AUTONOMOUS)
COIMBATORE – 641 020

Programme:BCA

Elective: SOFTWARE PROJECT MANAGEMENT
Subject Code: 16UCA5EL1   **5 Hours / week**

Credits: 4   **Year: III**   **Semester: V**

UNIT I

Introduction to Software Project Management - Project Definition – Contract Management – Activities Covered By Software Project Management – Overview Of Project Planning – Stepwise Project Planning.

UNIT   II
Project Evaluation Strategic Assessment – Technical Assessment – Cost Benefit Analysis –Cash Flow Forecasting – Cost Benefit Evaluation Techniques – Risk Evaluation.

UNIT   III
Activity Planning Objectives – Project Schedule – Sequencing and Scheduling Activities –Network Planning Models – Forward Pass – Backward Pass – Activity Float – Shortening Project Duration – Activity on Arrow Networks – Risk Management – Nature Of Risk – Types Of Risk – Managing Risk – Hazard Identification – Hazard Analysis – Risk Planning And Control.

UNIT   IV
Monitoring and Control Creating Framework – Collecting The Data – Visualizing Progress – Cost Monitoring – Earned Value – Prioritizing Monitoring – Getting Project Back To Target – Change Control – Managing Contracts –

Introduction – Types Of Contract – Stages In Contract Placement – Typical Terms Of A Contract – Contract Management – Acceptance.

UNIT   V
Managing People and Organizing Teams Introduction – Understanding Behavior – Organizational Behavior: A Background – Selecting The Right Person For The Job – Instruction In The Best Methods – Motivation – The Old man – Hackman Job Characteristics

Model – Working In Groups – Becoming A Team –Decision Making – Leadership – Organizational Structures – Stress –Health And Safety – Case Studies.

TEXT BOOK
1. Bob Hughes, Mikecotterell, "Software Project Management", Third Edition, Tata McGraw Hill, 2004.
REFERENCES
1. Ramesh, Gopalaswamy, "Managing Global Projects", Tata McGraw Hill, 2001.
2. Royce, "Software Project Management", Pearson Education, 1999.
3. Jalote, "Software Project Management in Practice", Pearson Education, 2002.

SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS AND SCIENCE
(AUTONOMOUS) COIMBATORE – 641 020
For candidates admitted from academic year 2016 - 2017 onwards under New CBCS.

Programme: BCA
Elective: Compiler Design
Subject Code: 16UCA5EL1   **5 Hours / week**

Credits: 4   **Year: III**   **Semester: V**

Unit I

Introduction: Compliers: Analysis of source program – Phases of compiler- cousins of compiler – grouping of phases. Simple one – pass compiler : Overview – Syntax definition – syntasx – directed translation – parsing – translator for simple expressions.

Lexical Analysis: removal of white space and comments – constant – recognizing identifiers and keyboards – a lexical analyzer – role of lexical analyzer – input buffering – specification of tokens – recognition of tokens (section 1.1 to 1.5, 2.5, 2.6, 3.1 to 3.4)

Unit II

Symbol tables – incorporating a symbol table – symbol tables – entries – list data structures for symbol table – hash tables – scope information – Parsing – Principles topdown parsing – predictive parsing, left recursion – role of parser – context-free grammars – writing a grammar – top down parsing – simple bottom up parsing – shift reduce parsing. (section 2.7 to 7.6, 2.4 and 4.1 to 4.5)

Unit III

Syntax – directed translation – A translator for simple expressions – abstract and concrete syntax, adapting translations scheme, optimizing translator – syntax – directed definitions – construction of syntax trees - bottom up evaluation of S- attributed definitions – L-attributed definitions – top-down translation.

Type checking: type system, specifications of simple type checker.(section 2.5 , 5.1 to 5.5 and 6.1)

Unit IV

Runtime Organization: Source language issues – storage organization – storage allocation strategies.

Intermediate code generation: Intermediate languages – declarations – assignment statements. (section 7.1 to 7.3, 8.1 to 8.3)

Unit V

Code generation – issues in design of code generator – target machine – run-time storage management – basic blocks and flow graphs.

Code optimization introduction – Principle sources of optimization. (section 9.1 to 9.4, 10.1,10.2)

TEXT BOOKS:

1. A.V. Aho, R. Sethi, and J. D. Uliman, Compilers, Principles, Techniques and Tools, Addison Wesley Publishing Company

Programme: BCA

Course Title: Elective: Graphics and Multimedia   Subject Code: 16UCA5EL1

5 Hours / week   **Credits: 4**   **Year: III**   **Semester: V**

Unit I

Point-Plotting techniques-r Line drawing displays – Two dimensional Transformations: Transformation principles – Concatenation – Matrix representation – Clipping and Windowing: A Line clipping algorithm – Midpoint subdivision – Polygon clipping – Viewing transformation – Windowing transformations.

Unit II

Graphical Input Devices – Graphical Input Techniques Positioning techniques – Pointing and selection – Inking and painting – On Line character recognition – Raster graphics fundamentals : Representing a Raster Image – Scan converting line drawings – Displaying characters Three dimensional transformations and Perspective: Transformations – Three dimensional clipping – Homogeneous coordinate representations projective transformations.

Unit III

Definition – Multimedia Hardware – Multimedia Software – Multimedia Networking – Multimedia Applications – Multimedia Standards – Text Elements of text – tet technology – Fonts – Graphics Elements of graphics – Pictures and images – Raster images – Vector images – Images and Color – Bitmap, Vector, Compressed Formats – hypertext – Hyper picture – Various CD Formats.

Unit IV

Audio: Natural sound – Digital audio – Calculating the digital audio data size – Digital audio systems – Digital Representation of Sound – Time domain representation of sound – Transformation of digital sound – Video : Analog video – Digital video – Calculating the digital video data size – video file formats.

Unit V

Digital video and Image Compression: Video compression techniques –JPEG image compression standard – MPEG video compression standard. Photoshop: File types – Tool box – Importing and Exporting images – Image mode Rotate canvas – Extract – Layers – Feather – Extract –Layers – Feather – Filters – Zooming images – Navigator – Color – Styles – Channels.

TEXT BOOKS:

1. William M. Newman and Robert F Sproull, Principles of Computer Graphics, Tata McGraw Hill Company Ltd.
2. Multimedia Making it work, Toy Vaughon. 2002.
3. John F Koegel Buford, Multimedia Systems, Addison Wesley, 2002.
4. Mastering in Photoshop, 2002.

Programme: BCA
Course Title: Elective: Clients / Server Computing
Subject Code: 16UCA5EL1   **5 Hours / week**

Credits: 4   **Year: III**   **Semester: V**

UNIT I
    Introduction: - Clinet/Server computing era – File server – database server – transaction sever – GroupWare server – object server – web sever. (Page no. 7 – 15). Client/Server Building blocks: - Intergalactic client/server – 2-tier-Client/server building blocks. (Page no. 20 – 32)

UNIT II
    Operating Systems: - Anatomy of a sever program – base service – extended service – scalability. (Page no.57 – 65). Clients: - Clients anatomy – non-GUI client's – GUI clients – 00121 Clients – GUI versus OOUI – OOUI's on steroids.(Page no. 66 – 74)

UNIT III
    NOS: - NOS Middleware – extending the local OS's reach – Global directory services Ldistributed time services – Distributed security (page no. 99 – 112). RPC: peer-to-peer communications – sockets – Names – pipes-RPC-MOM middleware –MOM versus RPC (Page no. 115 – 130)

UNIT IV
    SQL databases servers: - Fundamentals of SQL & relational databases – ISO standards – stored procedure triggers and rules. (Page no. 150 – 170). Data Warehousing: - OLTP data warehouse – data mining – TP monitors (Page no. 200 – 234, 276 – 282)

UNIT V
    Client/Server Group Ware: - Group Ware – components of Group Ware (Page no. 319 – 352). Client server with distributed objects: - Distributed objects to components – CORBA OMG's object management architecture client/server and the Internet (Page no. 376 – 426)

TEXT BOOKS:
1. Robert Orali Dan Harkey and Jeri Edwards, The Essential Client/Server Survival Guide, 2nd Edition, Galgotia Publications Pvt. Ltd.,

SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS AND SCIENCE
(AUTONOMOUS) COIMBATORE – 641 020
For candidates admitted from academic year 2016 - 2017 onwards under New CBCS.

Programme: BCA
Course Title: Elective: Distributed Computing Systems
Subject Code: 15UCA6EL2   **5 Hours / week**

Credits: 4   **Year: III**   **Semester: VI**

Unit I

Introduction: Introduction to distributed computing system – Ensley's models of distributed system. Computer networks and operating system requirements for distributed computing systems. – Computing organization for distributed computing:

Pipeline and vector processors – multiprocessors and multicomputer – massively parallel processor.

Unit II

Computer networks and communications for distributed system – computer network architecture- network topology.

OS for distributed computing: Network operating system – distributed operating systems – inter-process communications resource sharing.

Unit III

Distributed System Modeling: Graphs – finite state automata – pettiness – formal methods – examples – system- Distributed database systems

Basic concepts, the client server model, the case for distribution, the distribution – problem and pattern.

Unit IV

Queries and Updates in DDBS: Queries, update and integrity issue – updates with replication and without replication – example systems.

Distributed and Multidatabase design: The general data allocation problem – fragmentation – data allocation strategies practical allocation.

Unit V

Programming language design and algorithm for distributed computing – distributed processes – examples.

Software and Hardware Environment for MPP's: EXPESS – PVM-LINDA – OCCAM – Case studies.

TEXT BOOKS:

1. Joel M.Chichiow, An Introduction to Distributed and Parallel Computing, Prentice Hall of India, 2000.

Programme: BCA

Course Title: Elective: Embedded Systems

Subject Code: 15UCA6EL2   **5 Hours / week**

Credits: 4   **Year: III**   **Semester: VI**

Unit I

Hardware Fundamentals: Terminology - Gates - Timing Diagrams - Memory Advance Hardware Fundamentals: Microprocessors- Microprocessor architecture - Direct Memory Access - Conventions used on Schematics.

Unit II

Interrupts: Interrupt Basics - Interrupt Service Routines. Survey of Software: Architectures: Round Robin with Interrupts- Function- Queue-Scheduling Architecture-Real Time Operating System Architecture.

Introduction to Real Time Operating Systems - Selecting an RTOS - Tasks and Task States - Tasks and Data - Semaphores and Shared Data

Unit III

More Operating System Services: Interrupt PROCESS Communication – Message Queues, Mailboxes and Pipes - Timer Functions - Events - Memory Management -Interrupt Routines in an RTOS Environment. Basic Design Using a Real Time Operating Systems: Principles - Encapsulating Semaphores and Queues-Hard Real Time Scheduling Considerations - Saving Memory Space and Power - Introduction to RTL & QNX

Unit IV

Embedded Software Development Tools: Hosts and Target Machines - Linker/Locators for Embedded Software - Getting Embedded Software into Target Systems.

Unit V

Debugging Techniques: Testing on your Host Machines - Instruction Set Simulators - The Asset Macro - Using Laboratory Tools - Case Studies

TEXT BOOKS:

1. David.E.Simson, An Embedded Software Primer, Addision Wesley, 2001.

SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS) COIMBATORE – 641 020
      For candidates admitted from academic year 2016 - 2017 onwards under New CBCS.

Programme: BCA

Subject: Elective: Geographical Information Systems

Subject Code: 15UCA6EL2   **5 Hours / week**

Credits: 4   **Year: III**   **Semester: VI**

Unit I
      Introduction – Defining GIS – Component of GIS – Spatial Data – Maps and their influence on the characteristic of spatial data – Thematic characteristic of spatial data – Other sources of spatial data.

Unit II
      Spatial data Modeling – Entity definition – Spatial data model – Spatial data structures – Modeling surfaces – Modeling networks – Building computer worlds – Modeling the third dimension – Modeling the fourth dimension.

Unit III
      Introduction – Database data models – Creating a database – GIS database applications – developments in databases – Methods of data input – Data editing – Towards an integrated database.

Unit IV
      Measurements in GIS – lengths perimeters and areas – Queries – Reclassification – Buffering and neighbourhood functions – Integrating data map overlay – spatial interpolation – Analysis of surfaces – Network analysis.

Unit V
      Analytical modeling in GIS – Process Models – Modeling physical and environmental process – Modeling human process – modeling the decision making process – Problems with using GIS to model spatial process – Maps as output – Non-cartographic output – GIS and spatial decision support.

TEXT BOOKS:
1. Ian Heywood, Sarah Cornelius, An introduction to GIS, 2^(nd) Edition, Pearson Education, 2003.

Programme: BCA
Elective: Design and Analysis of Algorithm
Subject Code: 15UCA6EL2   **5 Hours / week**

Credits: 4   **Year: III**   **Semester: VI**

Unit I

Introduction – overview – how to create programs and analyze them. Divide and Conquer: Algorithm - Complexity analysis - introduction to random algorithms - General Method - Finding maximum and minimum - Strassen's matrix multiplication - Quick sort -
Selection sort.

Unit II

Greedy Method: General Method - Tree vertex splitting - job sequencing with dead lines - shortest Path - Knapsack01. Dynamic Programming: General Method - multistage graphs - string Editing - Travelling Salesman Problem.

Unit III

Back Tracking: General Method - sum of subsets - Graph Coloring - Depth First Search - Breadth First Search.

Unit IV

Branch and Bound:General Method - I/O knapsack Problem - Travelling Salesperson - Algebraic manipulation - Fourier Transformation

Unit V

Lower Bound Theory: Comparison trees - Oracles and advisory arguments - Lower bounds through reduction - Basic Concepts of Np-Hard and Np-Complete.

TEXT BOOKS:

1. E.Horowitz, S.Sahni and S. Rajasekaran, Computer Algorithms, Galgotia Publications, 2003.

REFERENCE BOOKS:

1. G.Brassard and P.Bratley, Fundamentals of Algorithmic, PHI, 2003.

2. Kunth, Fundamentals of Algorithms.

3. http://spoken-tutorial.org/