

Vinayaka Missions Research Foundation, Salem
Bachelor of Computer Applications
Curriculum - 2017 (Choice Based Credit System)

Sl. No.	Semester	Courses	Credits	Total Credits
1	I	Foundation Course I: Tamil I / Hindi-I	3	28
2		Foundation Course II: English - I	3	
3		Core Course-I: Fundamentals of Computer Applications	4	
4		Core Course-I: Practical - Computer Fundamentals Lab	2	
5		Core Course II : Programming in C	4	
6		Core Course II : Programming in C Lab	2	
7		Ability Enhancement Compulsory course - I: Environmental Science	4	
8		Generic Elective I	5+1	
9	II	Foundation Course I: Tamil II / Hindi - II	3	22
10		Foundation Course II: English - II	3	
11		Core Course-III: Object Oriented Programming using C++	4	
12		Core Course-III: Object Oriented Programming using C++ Lab	2	
13		Core Course IV : Data Structures and its Applications	4	
14		Core Course IV : Data Structures lab	2	
		Skill Enhancement Course - 1: Yoga and Meditation	4	
15	III	Core Course-V: Programming in Java	4	22
16		Ability Enhancement Compulsory course - II: English Communication	4	
17		Core Course-V: Practical-Programming in Java Lab	2	
18		Core Course VI : Database Management System and its Applications	4	
19		Core Course VI :Practical-RDBMS Lab	2	
20		Core Course-VII: Web Technologies	4	
21		Core Course-VII: -Web Technologies Lab	2	
23	IV	Core Course VIII : Visual Basic .Net Programming	4	22
24		Core Course VIII : Visual Basic .Net Programming Lab	2	

25		Core Course IX : Operating System	4	
26		Core Course IX : Operating System lab	2	
27		Core Course X : Software Engineering & Testing	4	
28		Core Course X: Software Engineering & Testing lab	2	
29		Skill Enhancement Course - 2	4	
30	V	Discipline Specific Elective - I	4+2	26
31		Discipline Specific Elective - II	4+2	
32		Generic Elective II	5+1	
33		Skill Enhancement Course - 3	4	
34		Skill Enhancement Course - 4	4	
35	VI	Discipline Specific Elective - III	4+2	16
36		Inter Disciplinary Theory*	4	
37		Discipline Specific Elective - IV: Project Work/Dissertation	6	
			Total	136

Total Credits: 132 + 4 = 136

Inter Disciplinary Theory* (Optional & credit will not be included for CGPA calculation)

S. No.	Nature of Course	No. of Courses	No of Credits
1	Foundation Courses	4	12
2	Core Courses	10	60
3	Discipline Specific Elective	3	18
4	Generic Electives	2	12
5	Ability Enhancement courses	2	8
6	Skill Enhancement courses: 2 Credits	4	16
7	Interdisciplinary course	1	4
8	Project Work/Dissertation	1	6
	Total	27	136

Electives : (each 6 Credits)	
	Discipline Specific Elective
	Discipline Specific Elective I : (Any one)
1	Information security
2	Data Warehousing and Data Mining
3	Bioinformatics
	Discipline Specific Elective II : (Any one)
1	Scripting Languages
2	Building Internet of Things
3	Object Oriented Analysis and Design
	Discipline Specific Elective III : (Any one)
1	E-Commerce and it Applications
2	Mobile Communication
3	Cloud Computing
	Discipline Specific Elective IV : Compulsory
1	Project Work/Dissertation (Compulsory)
	Generic Electives (Interdisciplinary) (Any Two Choices)
1	Numerical and Statistical Methods
2	Fundamentals of Financial Accounting
3	Research Methodology
4	Operation Research

Ability Enhancement Courses (each 4 Credits)	
1	Ability Enhancement Compulsory Courses (AECC)
1	Environmental Science
2	English Communication
2	Skill Enhancement Courses (Any four choices)
1	Software Lab using Python
2	HTML Programming
3	PHP Programming
4	System Administration and Maintenance
5	Tally
6	Android Programming
7	XML Programming
8	R Programming
9	Yoga and Meditation

VINAYAKA MISSIONS UNIVERSITY
FIRST YEAR B.C.A.
SEMESTER I

CORE COURSE-I : FUNDAMENTALS OF COMPUTER APPLICATIONS

L T P C
4 0 0 4

Objective: To enable the students to have the basic knowledge of computers.

UNIT I

12 Hours

Introduction To Computers, Characteristics of computers, Evolution of computers, Generation of Computers, Classification of Computers, Number Systems-Conversion between Number Bases, Arithmetic System, Signed and Unsigned Numbers, Binary Coding, Logic Gates, Boolean Algebra, Combination of Logic Gates.

UNIT II

12 Hours

Central Processing Unit (CPU) Memory, Communication between Various Units of a Computer System, Primary Memory-Memory Hierarchy, Random Access Memory (RAM), Types of RAM, Read Only Memory (ROM), Types of ROM, Secondary Storage- Classification of Secondary Storage Devices, Magnetic Tape, Magnetic Disk, Optical Disk, Magneto Optical disk.

UNIT III

12 Hours

Input Devices-KeyBoard, Pointing Devices, Speech Recognition, Digital Camera, Scanners, Optical Scanners, Output Devices - Classification of Output, Hard Copy Output Devices, Printers, Plotters, Computer Output Microfilm (COM), Soft Copy Output Devices, Monitors, Audio Output, Projectors, Terminals.

UNIT IV

12 Hours

Developing a Program, Algorithm, Flowchart, Pseudo code (P-Code), Computer Languages-Evolution of Programming Languages, Classification of Programming Languages, Computer Software -Definition, Software Categories- System Software, Application Software, Software Terminology, Operating System - Evolution of Operating System, Types of Operating System, Functions of an Operating System, Modern Operating Systems.

UNIT V

12 Hours

Computer Network, Network Topologies, Communication Protocols, Network devices, Internet - Introduction, Evolution of Internet, Basic Internet Terms, Getting Connected to Internet, Internet Applications, Electronic Mail : An Introduction How E-Mail Works, Searching the Web (Search Engines), Languages of Internet, Internet and Viruses.

Total Hours: 60

Text Book:

1. Introduction to computer Science, ITL Education solution Limited, R&D Wing, PEARSON Education, Edition 2004

Reference Book:

1.Rajaraman V. – Fundamental of Computers, Prentice Hall of India Pvt. Ltd., New Delhi – 2nd edition, 1996.

VINAYAKA MISSIONS UNIVERSITY

FIRST YEAR B.C.A.

SEMESTER I

CORE COURSE-I: COMPUTER FUNDAMENTALS LAB

L	T	P	C
0	0	4	2

MSWORD

1. Text Manipulations- Formatting & Alignment
2. Usage of Numbering, Bullets, Footer and Headers.
3. Usage of Spell check, and Find & Replace.
4. Creation and usage of Templates
5. Mail Merge Concepts.
6. Copying Text & Pictures from Excel.

MS - EXCEL

7. Cell Editing.
8. Usage of Formulae and Built-in Functions.
9. Data Sorting (both number and alphabets).
10. Drawing Graphs and charts
11. Usage of Auto Formatting.

POWER POINT

12. Inserting Clip arts and Pictures.
13. Frame movements of the above.
14. Creating master Slides
15. Preparation of Organizational Charts.
16. Presentation using Wizards.
17. Usage of design templates.

ACCESS

18. Create a new database and name it “School Database”
19. Create a Table named “Student’s Table” in the *School Database* with the following and Make the “ID Number” Field as the Primary Key.

Field Name	Data Type	Field Size or Format
ID Number	Text	10
Name	Text	15
Surname	Text	15
Telephone Number	Number	Long Integer

Date of Birth	Date/Time	Medium Date
Stipend	Currency	Currency
Foreigner	Yes/No	Yes/No

20. Open the “Students Table” and enter 5 complete records.
21. Sort the table in ascending order by surname
22. Delete the last Record you have entered
23. Create a Form with all fields on the Student’s Table and name the form as”Students Entries”
24. Create a report based on the Student’s Table showing the Fields *Name*, *Surname*, and *Telephone Number* and name the report as “Telephone List”
25. Create another query showing all fields of those students born after 1987
26. Create a query showing only the Student’s Name, Student’s Surname and Student’s Date of birth.

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FIRST YEAR B.C.A.

SEMESTER I

CORE COURSE-II: PROGRAMMING IN C

L T P C

4 0 0 4

OBJECTIVES:

At the end of this course the learner is expected:

1. To acquire basic knowledge about Programming in C
2. To gather extensive knowledge in C programming and developing programming skills
3. To strengthen the knowledge on structures, arrays etc., of C programming

UNIT I - OVERVIEW OF C

(12 Hours)

Introduction- Importance of C- Basic Structure of C program- Tokens-Variables- Data types- Operators and Expression- Managing Input and Output Operators.

UNIT II - CONDITIONAL STATEMENTS

(12 Hours)

If statement- switch statement- goto statement- while statement- do statement-for statement- continue statement- break statement.

UNIT III - ARRAYS AND FUNCTIONS

(12 Hours)

One dimensional array- Two dimensional array- Multidimensional array-Built in functions (Library functions): String Handling functions-User defined functions.

UNIT IV - STRUCTURES, UNIONS AND POINTERS

(12 Hours)

Structure definition-Arrays of structures-Structures and functions-Unions-Understanding pointers- Declaring and initializing pointers- Pointers and arrays-Pointers and functions- Pointers and structures.

UNIT V - FILE MANAGEMENT

(12 Hours)

Defining and Opening a file- Closing a file- Input output operations on files-Error Handling during I/O operations- Command line arguments

Total Hours: 60

TEXT BOOK

Balagurusamy.E (2008), "Programming in ANSI C", Second Edition, Tata McGraw Hill.

REFERENCES

1. Kamthane Ashok.N (2013), "Programming in C", 2nd Edition, Pearson Education.
2. Yashvant P. Kanetkar (2008), "Let us C", 8th Edition, Infinity science press.

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FIRST YEAR B.C.A.

SEMESTER I

CORE COURSE-II: PROGRAMMING IN C LAB

L T P C

0 0 4 2

1. Program to check whether a number is positive or negative or zero using if statement.
2. Program to check vowel or consonant using switch case statement.
3. Program to check whether a number is prime or not using while statement.
4. Program to generate multiplication table using do...while statement.
5. Program to check the given string is palindrome or not using for statement.
6. Program to display Fibonacci series.
7. Program to search an element in an array using linear search method.
8. Program to find the smallest and largest number among 'n' numbers.
9. Program to sort elements in an array.
10. Program to add two matrices.
11. Program for manipulating the strings using string handling functions.
12. Program to find the sum of 'n' numbers by making function.
13. Program to calculate factorial of a number using recursion.
14. Program to generate the mark sheet of the student using structure.
15. Program to copy the content of one file to other file.

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FIRST YEAR B.C.A.

SEMESTER II

CORE COURSE-III: OBJECT ORIENTED PROGRAMMING USING C++

L T P C

4 0 0 4

OBJECTIVES:

At the end of this course the learner is expected:

1. To learn the concepts of class & objects.
2. To perform Inheritance, Overloading of operators, functions, constructors, File Handling and exception handling.

UNIT I - PRINCIPLES OF OBJECT ORIENTED PROGRAMMING (12 Hours)

Object Oriented Programming Paradigms- basic concept of OOPS- benefits of OOP-what is C++-simple C++ program-structure of C++ program- creating a source file – compiling and linking.

UNIT II - TOKENS, EXPRESSION AND CONTROL STRUCTURES (12 Hours)

Tokens-keywords-identifiers and constants-basic data types-user defined data types-derived data types-type compatibility-declaration of variables-dynamic initialization of variables-reference variables-operators in C++-manipulators-type cast operator-implicit conversion-operator overloading-control structures.

UNIT III - CLASS AND OBJECTS (12 Hours)

Functions in C++- function overloading-Specifying a class- defining member function-arrays within a class-arrays of objects- objects as function arguments- friendly functions-constructor and destructor

UNIT IV - INHERITANCE, POINTER, VIRTUAL FUNCTION AND POLYMORPHISM (12 Hours)

Single inheritance-multilevel-multiple inheritance-hierarchical-hybrid-virtual base class-abstract classes-pointers-this pointer-virtual functions-pure virtual functions.-operator over loading- rules for operator overloading

UNIT V - MANAGING CONSOLE I/O OPERATIONS (12 Hours)

C++ streams- streams classes-unformatted I/O operations-formatted console I/O operations-managing output with manipulators- exception handling- basics of exception handling.

Total Hours: 60

TEXT BOOK

1. Balagurusamy.E (2008), “Object Oriented Programming with C++”, Tata McGraw-Hill Publication.

REFERENCE

1. Herbert Schildt (2003), “C++: The Complete Reference”, Tata McGraw publication.

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SEMESTER II

CORE COURSE-III: OBJECT ORIENTED PROGRAMMING USING C++ LAB

L T P C

0 0 4 2

1. Write a C++ program to find the sum of individual digits of a positive integer.
2. Write a C++ program to find the factorial of a given integer
3. Write a C++ program that uses a recursive function for solving Towers of Hanoi problem
4. Write a C++ program to implement call by value and call by reference parameters passing

5. Classes and Objects

To create a class 'staff', to create different objects and to test the functioning of member functions, constructors and Destructors.

6. Arrays of Objects

To create Class 'student', To create an array of students, To find out the student who get the first rank

7. Static Polymorphism: operator overloading

To perform complex number arithmetic or Matrix arithmetic

8. Inheritance

To create a class 'College' To create another class 'department' by using 'college' as a base class To verify the functions in the derived and base classes. Also to verify by keeping the two functions with same name (one in the base class and another in derived class)

9. Dynamic Polymorphism: virtual function

To draw various shapes viz Square, Circle, Triangle and Rectangle.

10. Templates and Exception Handling.

Class template by creating a template T for a class named pair having two data members of type T which are inputted by a constructor and a member function get-max() return the greatest of two numbers to main. Note: the value of T depends upon the data type specified during object creation.

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FIRST YEAR B.C.A.

SEMESTER II

CORE COURSE-IV: DATA STRUCTURES AND ITS APPLICATIONS

L T P C

4 0 0 4

Objective: To enable the students to know about the techniques for arrangement of data in the computer memory.

UNIT I **12 Hours**

Definition of a Data structure - primitive and composite Data Types, Asymptotic notations, Arrays, Operations on Arrays, Order lists.

UNIT II **12 Hours**

Stacks - Applications of Stack - Infix to Postfix Conversion, Recursion, Maze Problems - Queues - Operations on Queues, Queue Applications, Circular Queue.

UNIT III **12 Hours**

Singly Linked List - Operations, Application - Representation of a Polynomial, Polynomial Addition; Doubly Linked List - Operations, Applications Ordering of Books in Library (Alphabetical Ordering).

UNIT IV **12 Hours**

Trees and Graphs: Binary Trees - Conversion of Forest to Binary Tree, Operations - Tree Traversals; Graph - Definition, Types of Graphs, Hashing Tables and Hashing Functions, Traversal - Shortest Path; Dijkstra's Algorithm.

UNIT V **12 Hours**

Algorithm - Definition - Examples - Complexity - Divide and Conquer - Binary Search - Maximum and Minimum - Merge Sort.

Total Hours: 60

Text Books:

1. E.Horowitz and S.Shani Fundamentals of Data Structures in C++, Galgotia Pub. 1999.
2. R. Kruse C.L. Tondo and B. Leung, Data Structures and Program design in C, PFU, 1997.

Reference Books:

1. Horowitz, S. Sahni, and S. Rajasekaran, Computer Algorithms, Galgotia Pub. Pvt. Ltd., 1998.
2. C++ plus Data structure by N.Dale, Publishers Narosa publishing, Edition 2000

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SEMESTER II

CORE COURSE-IV: DATA STRUCTURES LAB

L T P C

0 0 4 2

1. Implement PUSH, POP operations of stack using Arrays.
2. Implement add, delete operations of a queue using Arrays.
3. Conversion of infix to postfix using stack operations.
4. Evaluation of Arithmetic expression using stack operation.
5. Perform Addition of two polynomials using singly linked list
6. Solve the single source shortest path problem. (Note: Use Dijkstra's algorithm).
7. Traverse a binary tree in:
 - a) Pre-order
 - b) In-order
 - c) Post-order
8. Sorting a given list of elements in ascending order using the following sorting methods:
 - a) Quick sort
 - b) Merge sort
9. Perform the following operations in a given graph
 - a) Depth first search
 - b) Breadth first search
10. To search an item in the list using
 - a) Linear Search
 - b) Binary Search

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SECOND YEAR B.C.A.

SEMESTER III

CORE COURSE – V : PROGRAMMING IN JAVA

L T P C
4 0 0 4

Objective: To improve the programming knowledge in JAVA to create GUI applications and perform event handling functionalities in response to GUI applications.

UNIT I **12 Hrs**

Java Evolution and Overview of Java Language: How Java differs from C and C++, Java and Internet, Java and World Wide Web, Introduction, Simple Java Program, More of Java, An Application with Two Classes, Java Program Structure, Java Tokens, Java Statements, Implementing a Java Program, Java Virtual Machine, Command Line Arguments, Programming Style.

UNIT-II **12 Hrs**

Constants, Variables, Data Types , Operators and Expressions , Decision Making and Branching, operator, Decision Making and Looping, Jumps in Loops - Labeled Loops , Classes, Objects and Methods.

UNIT-III **12 Hrs**

Arrays, Strings and Vectors, Interfaces: Multiple Inheritance, Packages: Putting Classes together, Multithreaded Programming.

UNIT-IV **12 Hrs**

Managing errors and Exceptions, Applet Programming, Graphics Programming.

UNIT-V **12 Hrs**

Basics of event handling, event handlers, adapter classes, actions, mouse event , AWT event hierarchy.

Total Hours: 60 Hrs

TEXTBOOK:

1. Programming with java , A PRIMER - E. Balagurusamy, 3 rd Edition, TMH.

REFERENCE BOOKS:

1. The complete reference JAVA 2 - Patrick Naughton & Hebert Schildt, 3rd ed,TMH

2. Programming with java , John R. Hubbard, 2nd Edition, TMH.

3. JAVA and Object-Oriented Programming Paradigm , Debasish Jana
1. Web Design, A Beginners Guide, Wendy Willard, Tata McGraw Hill

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SECOND YEAR B.C.A.

SEMESTER III

CORE COURSE – V : PROGRAMMING IN JAVA - LAB

L T P C
0 0 4 2

Applications

1. Finding area and Perimeter of a circle. Use Buffered Reader class
2. Substring Removal from a String. Use String Buffer Class.
3. Determining the order of numbers generated randomly using Random class.
4. Usage of Calendar class and Manipulation.
5. String Manipulation using Char Array.
6. Application using file streams(sequential file)
7. Application using file streams(Random file)
8. Usage of Vector Classes.
9. Implementing Thread based applications & Exception Handling.
10. Application using synchronization such as Thread based, Class based and synchronized statements.

Applets

11. Working with Frames and various controls
12. Working with Dialogs and Menus.
13. Working with Panel and Layout.
14. Incorporating Graphics.
15. Working with colors and Fonts.

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SECOND YEAR B.C.A.

SEMESTER III

CORE COURSE – VI : DATABASE MANAGEMENT SYSTEMS

L T P C
4 0 0 4

Objective: Understand basic database concepts, including the structure and operation of the relational data model.

UNIT I **12 Hrs**

Introduction: Characteristics of Data in a Database –Core concepts of DBMS-Types of DBMS-Hierarchical Model-Network Model-Relational Model-Object Oriented Model-Object Relational Model.

UNIT II **12 Hrs**

Database Architecture and E-R Model: Conceptual Model, Physical Model, Logical Model, Database Design, Design Constraints, Functional Dependencies, Normal forms, E-R Model, Components of E-R Model, E-R Modeling symbols.

UNIT III **12 Hrs**

SQL: SQL Data Types and Literals- Types of SQL Commands-SQL Operators-Queries-SELECT operations-Sub queries-Aggregate Functions- INSERT-UPDATE-DELETE operations-JOINS and UNIONS.

UNIT IV **12 Hrs**

Indexing and Hashing: Ordered Indexes- Primary Index-Secondary Indexes-B⁺ Tree Indexes- B-Tree Indexes-Hashing-Internal Hashing-External Hashing-Dynamic Hashing. Data Integrity: Types-Restrictions.

UNIT V **12 Hrs**

Transaction Management and Concurrency Control: Transaction, Properties of Transactions, States of Transaction, Concurrency Control, Concurrency Control Schemes, SQL Commands for Transaction-BEGIN-COMMIT-ROLLBACK-SAVE-IN Commands.

Total Hours: 60 Hrs

Text Book:

1. Database Management Systems, Fifth edition, Alexis Leon, Mathews Leon, McGraw-Hill-2005.

Reference Books:

1. Database System Concepts, Abraham Silberschatz, Henry F.Korth, S.Sudharshan, McGraw-Hill-2006, 5th Edition.
2. “An introduction to database systems”, Bipin C. Desai, Galgotia Publications Pvt. Ltd., 1991.

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SECOND YEAR B.C.A.

SEMESTER III

CORE COURSE – VI : RDBMS LAB

L T P C
0 0 4 2

1. Create DDL statements for,
 - a. Create,
 - b. Drop,
 - c. Alter Keywords.

2. Create DML statements for,
 - a. Insert,
 - b. Update,
 - c. Delete,
 - d. Commit, Rollback, Savepoints.

3. Develop DML statements for executing,
 - a. Sub Queries,
 - b. Group By, Group By with Having.

4. Develop an EB bill using SQL statements for retrieving and manipulating data from multiple related tables.

5. Develop a student mark list using SQL statements for retrieving and manipulating data from multiple related tables (Apply Primary key, Foreign key constraints).

6. Implement the Bank Database and execute the given queries/updates,
 - a) Bank Database Schema:
 1. account(account_number, branch_name, balance),
 2. branch (branch_name, branch_city, assets),
 3. customer (customer_name customer_street, customer_city),
 4. loan (loan_number, branch_name, amount),
 5. depositor((customer_name, account_number),
 6. borrower(customer_name, loan_number).

 - b) Retrieving records from a table:

1. List all branch names and their assests,
2. List all accounts of Adayar branch
3. List all loans with amount > 1000.
4. List all accounts of Guindy branch with balance < 1000.
5. List Numbers of accounts with balances between 700 and 900

c) Updating records from a table:

1. Change the assests of Adayar branch to 340000000.
2. Transfer the accounts and loans of Guindy branch to Besant Nagar branch.
3. Transfer Rs. 100 from account A-101 to A-215.

d) Deleting records from a table:

1. Delete the branch Adayar.
2. Waive off all the loans with amount < 1000.
3. Delete the accounts and loans of Besant Nagar branch.

e) Modifying the structure of tables:

1. Add a column, phoneNo to customer table.
2. Increase the field width allocated for customer.

VINAYAKA MISSIONS UNIVERSITY

SECOND YEAR B.C.A.

SEMESTER III

CORE COURSE – VII : WEB TECHNOLOGIES

L T P C
4 0 0 4

Objective: To Understand the importance of the web as a medium of communication and the principles of creating an effective web page, including an in-depth consideration of information architecture.
12 Hrs

UNIT – I : Internet Basic - Introduction to HTML - List - Creating Table - Linking document Frames - Graphics to HTML Doc - Style sheet - Style sheet basic - Add style to document - Creating Style sheet rules - Style sheet properties - Font - Text - List - Color and background color - Box - Display properties.
12 Hrs

UNIT – II : Introduction to Javascript - Advantage of Javascript Javascript Syntax - Datatype - Variable - Array - Operator and Expression - Looping Constructor - Function - Dialog box.
12 Hrs

UNIT – III : Javascript document object model - Introduction - Object in HTML - Event Handling - Window Object - Document object - Browser Object - Form Object - Navigator object Screen object - Build in Object - User defined object - Cookies.
12 Hrs

UNIT – IV : ASP. NET Language Structure - Page Structure - Page event, Properties & Compiler Directives. HTML server controls - Anchor, Tables, Forms, Files. Basic Web server Controls- L.able, Textbox, Button, Image, Links, Check & Radio button, Hyperlink. Data List Web Server Controls - Check box list, Radio button list, Drop down list, List box, Data grid, Repeater.
12 Hrs

UNIT – V : Request and Response Objects, Cookies, Working with Data - OLEDB connection class, command class, transaction class, data adaptor class, data set class. Advanced Issues - Email, Application Issues, Working with IIS and page Directives , Error handling. Security - Authentication, IP Address, Secure by SSL & Client Certificates.

Total Hours: 60 Hrs

TEXT BOOKS

1. I. Bayross, Web Enable Commercial Application Development Using HTML, DHTML, Javascript, Pen CGI, BPB Publications, 2000
2. J. Jaworski, Mastering Javascript, BPB Publications, 1999

REFERENCE BOOKS

1. T. A. Powell, Complete Reference HTML (Third Edition),TMH, 2002
2. G.Buczek, ASP.NET Developers Guide, TMH, 2002

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SECOND YEAR B.C.A.

SEMESTER III

CORE COURSE – VII : WEB TECHNOLOGIES LAB

L T P C
0 0 4 2

1. Create a simple page introducing yourself how old you are, what you do, what you like and dislike. Modify the introduction to include a bullet list of what you do and put list the 5 things you like most and dislike as numbered lists. Create another page about your favourite hobby, and link it to (and from) your main page. Center something, and put a quote on one of your pages
2. Put an existing image on a web page. Create a table, use a heading and at least one use of row span/col span. Colour a page and some text within the page. Link to another site
3. Create a new file called index. html.
 - * Put the normal HTML document structure tags in the file.
 - * Give it a title.
 - * At the bottom of the page (i.e. the last thing between the body tags) put the following:
 - * A horizontal rule.
 - * A link to your email address (with your name between the tag); remember to put the link to your email address within address tags.
 - * A line break.
 - * The date. (I have this same structure at the bottom of this page).
 - * Above this block (which is called the footer), put a title in heading tags.
 - * Add some text describing yourself (you can split this into multiple headings and paragraphs if you wish)
4. Write a script to create an array of 10 elements and display its contents.
5. Write a function in Javascript that takes a string and looks at it character by character.
6. Create a simple calculator using form fields. Have two fields for number entry & one field for the result. Allow the user to be able to use plus, minus, multiply & divide.
7. Create a document and add a link to it. When the user moves the mouse over the link, it should load the linked document on it's own. (User is not required to click on the link).
8. Create a document, which opens a new window without a toolbar, address bar, or a status bar that unloads itself after one minute.

9. Create a document that accepts the user's name in a text field form and displays the same the next time when the user visits the site informing him that he has accessed the site for the second time, and so on.
10. Create a Web form for an online library. This form must be able to accept the Membership Id of the person borrowing a book, the name and ID of the book, and the name of the book's author. On submitting the form, the user (the person borrowing the book) must be thanked and informed of the date when the book is to be returned. You can enhance the look of the page by using various ASP.NET controls.
11. Display an advertisement at the bottom of the Web form that you created in question 10.
12. Create an array containing the titles of five new movies. Use this array as a data source for a drop down list control. The page must be capable of displaying the selected movie title to the user when the user clicks on the submit button.
13. Create a virtual directory in uS. Create a global.asax file and include the 'Session_Start' and 'Session_End' and, 'Application_BeginRequest' and 'Application_EndRequest' events. Write a simple ASP.NET page and execute it in the browser.

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SECOND YEAR B.C.A

SEMESTER IV

CORE COURSE – VIII

VISUAL BASIC .NET PROGRAMMING

L T P C

4 0 0 4

OBJECTIVES:

At the end of this course the learner is expected:

1. To gain in-depth knowledge on .NET frame work
2. To develop business applications using VB .net
3. To understand ADO .Net for database programming.

UNIT - I

(12 Hours)

.NET FRAMEWORK AND VB.NET: Evolution of the .NET Framework – Overview of the .Net Framework – VB.NET – Simple VB.Net Program. VARIABLES, CONSTANTS AND EXPRESSIONS: Value Types and Reference Types – Variable Declarations and Initializations – Value Data Types – Reference Data Types – Boxing and Unboxing – Arithmetic Operators – Textbox Control – Label Control – Button Control.

UNIT – II

(12 Hours)

CONTROL STATEMENTS: If Statements – Radio Button Control – Check Box Control – Group Box Control – Listbox Control – Checked List Box Control – Combo box Control – Select Case Statement – While Statement – Do Statement – For Statement. METHODS AND ARRAYS: Types of Methods – One Dimensional Array – Multi Dimensional Arrays – Jagged Arrays. CLASSES: Definition And Usage of a Class – Constructor Overloading – Copy Constructor – Instance and Shared Class Members – Shared Constructors.

UNIT – III

(12 Hours)

INHERITANCE AND POLYMORPHISM: Virtual Methods – Abstract Class and Abstract Methods – Sealed Classes. INTERFACES, NAMESPACES AND COMPONENTS: Definition of Interfaces – Multiple Implementations of Interfaces – Interface Inheritance – Namespaces – Components – Access Modifiers. DELEGATES, EVENTS AND ATTRIBUTES: Delegates – Events – Attributes – Reflection.

UNIT - IV

(12 Hours)

EXCEPTION HANDLING: Default Exception Handling Mechanism – User Defined Exception Handling Mechanism – Throw Statement – Custom Exception. MULTITHREADING: Usage Of Threads – Thread Class – Start(), Abort(), Join(), and Sleep() Methods – Suspend() And Resume() Methods – Thread Priority – Synchronization. I/O STREAMS: Binary Data Files – Text Files - Data Files – FileInfo and DirectoryInfo Classes.

UNIT - V

(12 Hours)

ADDITIONAL CONTROLS: Timer – ProgressBar – LinkLabel – Panel – TreeView – Splitter – Menu – SDI & MDI – Dialog Boxes – Toolbar – StatusBar. DATABASE CONNECTIVITY: Advantages Of ADO.NET – Managed Data Providers – Developing a Simple ADO.NET Based Application – Creation of Data Table – Retrieving Data From Tables – Table Updating – Disconnected Data Access Through Dataset Objects.

Total Hours: 60

TEXT BOOK

1. Muthu C. (2008), ”*Visual Basic.NET*”, 2nd Ed., Vijay Nicole Imprints Pvt.Ltd.,

REFERENCES

1. Jeffrey R.Shaprio (2002), “*Visual Basic .NET The Complete Reference*”, Mac Graw Hill
2. Michael Halvorson (2010), “*Visual Basic 2010 Step by Step*”, Microsoft Press.
3. Harold Davis (2002), “*Visual Basic.NET Programming*”, Sybex.

VINAYAKA MISSIONS UNIVERSITY

SECOND YEAR B.C.A

SEMESTER IV

CORE COURSE – VIII

VISUAL BASIC .NET PROGRAMMING LAB

L T P C

0 0 4 2

1. Create and Validate Login Form.
2. Program to design an 'ACCOUNT' Class.
3. Program to demonstrate Inheritance, Polymorphism and Interfaces.
4. Advance Controls.
5. Common Dialog Controls.
6. ADO.NET Code to show records in DataGridView Control.
7. ADO.NET Code to perform Insert, Delete, Update and Select operations.
8. Crystal Reports
9. Web Application using ASP.NET that uses validation controls.
10. Web Application with ADO.NET to perform Insert, Delete, Update and Select Operations.

VINAYAKA MISSIONS UNIVERSITY

SECOND YEAR B.C.A.

SEMESTER IV

CORE COURSE – IX : OPERATING SYSTEM

L T P C
4 0 0 4

Objective: To provide an introduction to the internal operation of modern operating systems.

UNIT I

12 Hrs

Introduction: Operating System-An overview: Mainframe Systems, Desktop Systems, Multiprocessor Systems, Distributed Systems, Clustered Systems, and Real- Time Systems. **Computer-System Structures:** Operation, I/O Structure, And Storage Structure, Storage Hierarchy. **Operating-System Structures:** System Components, Operating-System Services, System Calls, System Programs, System Structure

UNIT II

12 Hrs

Mass-Storage Structures: Disk Structure; Disk Scheduling; Disk Management; Swap- **Space Management. Processes:** Process Concept; Process Scheduling, Operations On Processes. **CPU Scheduling:** Basic Concepts; Scheduling Criteria; Scheduling Algorithms.

UNIT III

12 Hrs

Storage Management: Memory Management- Backward, Swapping, Contiguous Memory Allocation, Paging, Segmentation, Segmentation with Paging.

UNIT IV

12 Hrs

File-System Interface: File Concept; Access Methods; Directory Structure; Protection. **File-System Implementation:** File-System Structure; File-System Implementation; Directory Implementation; Allocation Methods, Free-Space Management. **Protection:** Goals of Protection; Domain Of Protection; Access Matrix; Implementation Of Access Matrix; Revocation Of Access Rights.

UNIT V

12 Hrs

The Unix System: Evolution of UNIX – UNIX System Structure – Features of Unix - Operating System Services - Unix Kernel - Architecture of Unix - System Concepts – Unix file system- Process management – Unix Commands and utilities.

Total Hours: 60 Hrs

Text book:

1. A. Silberschatz et.al.-Operating System Concepts, 6th Edition, John Wiley Inc., 2003

Reference books:

1. H.M. Deitel -Operating Systems , 6th Edition, Pearson Education, 2006
2. D.M. Dhandhare - Operating Systems, 2nd Edition, Tata McGraw Hill, New Delhi, 2006

VINAYAKA MISSIONS UNIVERSITY

SECOND YEAR B.C.A.

SEMESTER IV

CORE COURSE – IX : OPERATING SYSTEM LAB

L	T	P	C
0	0	4	2

1. Write a shell program to find the largest of 3 numbers using command line arguments.
2. Write a shell program to compare two strings given by the user.
3. Write a shell program to concatenate the contents of two files.
4. Write a shell program to find sum of digits of a given number.
5. Write Shell Scripts to compute the factorial value
6. Write a shell program to remove the files of the same size in the current directory
7. Write a shell program to convert all lower case into upper case and vice versa in a file using command line arguments.
8. Write a Shell Script to prepare and display the Electricity bill with significant considerations.
9. File handling system.
 - a. create a file
 - b. copy the file c. move the file d. delete the file e. exit
10. Write a shell program to calculate the net salary of an employee in a particular month. Considering various allowances (TA, DA, and HRA) and deductions (income tax) as:
TA = 15 % of Basic salary DA = 2 % of Basic salary HRA = 10 % of Basic salary Income tax = 5% of salary PF = 10 % of salary
11. Write a shell program which will
 - a. ask the user to enter a filename
 - b. check if the file is ordinary file and is readable
 - c. display the file if the file is ordinary and readable
 - d. display an error message if the file is not ordinary and/or not readable

VINAYAKA MISSIONS UNIVERSITY

SECOND YEAR B.C.A.

SEMESTER IV

CORE COURSE-X: SOFTWARE ENGINEERING & TESTING

L T P C

4 0 0 4

UNIT I

12 Hours

Software Process: Introduction ,S/W Engineering Paradigm , life cycle models (water fall, incremental, spiral, evolutionary, prototyping, object oriented) , System engineering, computer based system, verification, validation, life cycle process, development process, system engineering hierarchy.

UNIT II

12 Hours

Software requirements: Functional and non-functional , user, system, requirement engineering process, feasibility studies, requirements, elicitation, validation and management, software prototyping, prototyping in the software process, rapid prototyping techniques, user interface prototyping, S/W document. Analysis and modeling, data, functional and behavioral models, Structured analysis and data design.

UNIT III

12 Hours

Design Concepts and Principles: Design process and concepts, modular design, design heuristic, design model and document, Architectural design, software architecture, data design, architectural design, transform and transaction mapping, user interface design, user interface design principles. Real time systems, Real time software design, system design, real time executives, data acquisition system, monitoring and control system.

UNIT IV

12 Hours

Software Configuration Management: The SCM process, Version control, Change control, Configuration audit, SCM standards. **Software Project Management:** Measures and measurements, S/W complexity and science measure, size measure, data and logic structure measure, information flow measure. Estimations, for Software Projects, Empirical Estimation Models, Project Scheduling

UNIT V

12 Hours

Testing: Taxonomy of software testing, levels, test activities, types of s/w test, black box testing testing boundary conditions, structural testing, test coverage criteria based on data flow, mechanisms, regression testing, testing in the large. S/W testing strategies, strategic approach and issues, unit testing, integration testing, validation testing, system testing and debugging. Trends in Software Engineering: Reverse Engineering and Re-engineering – wrappers – Case Study of CASE tools.

Total : 60 Hours

Text Books:

1. Roger S.Pressman, Software engineering- A practitioner's Approach, McGraw-Hill
2. Ian Sommerville, Software engineering, Pearson education Asia, 6th edition, 2000.

Reference Books:

1. Pankaj Jalote- An Integrated Approach to Software Engineering, Springer Verlag, 1997.
2. James F Peters and Witold Pedrycz, "Software Engineering – An Engineering Approach", John Wiley and Sons, New Delhi, 2000.
3. Ali Behforooz and Frederick J Hudson, "Software Engineering Fundamentals", Oxford University Press, New Delhi, 1996.

VINAYAKA MISSIONS UNIVERSITY

SECOND YEAR B.C.A.

SEMESTER IV

CORE COURSE-X SOFTWARE ENGINEERING & TESTING LAB

L T P C

0 0 4 2

1. Practical Title

- Problem Statement,
- Process Model

2. Requirement Analysis

- Creating a Data Flow
- Data Dictionary,
- Use Cases

3. Project Management

- Computing FP
- Effort
- Schedule, Risk Table, Timeline chart

4. Design Engineering

- Architectural Design
- Data Design, Component Level Design

5. Testing

- Basis Path Testing

Sample Projects

- DTC Route Information: Online information about the bus routes and their frequency and fares
- Car Pooling: To maintain a web based intranet application that enables the corporate employees within an organization to avail the facility of carpooling effectively.
- Patient Appointment and Prescription Management System
- Organized Retail Shopping Management Software
- Parking Allocation System
- Wholesale Management System

VINAYAKA MISSIONS UNIVERSITY**Bachelor of Computer Applications****SKILL ENHANCEMENT COURSES****1. Software Lab using Python**

L	T	P	C
1	0	2	4

Section: A (Simple programs)

- Write a menu driven program to convert the given temperature from Fahrenheit to Celsius and vice Versa depending upon user's choice.
- WAP to calculate total marks, percentage and grade of a student. Marks obtained in each of the three subjects are to be input by the user. Assign grades according to the following criteria :
 - Grade A: Percentage ≥ 80
 - Grade B: Percentage ≥ 70 and < 80
 - Grade C: Percentage ≥ 60 and < 70
 - Grade D: Percentage ≥ 40 and < 60
 - Grade E: Percentage < 40
- Write a menu-driven program, using user-defined functions to find the area of rectangle, square, circle and triangle by accepting suitable input parameters from user.
- WAP to display the first n terms of Fibonacci series.
- WAP to find factorial of the given number.
- WAP to find sum of the following series for n terms: $1 - 2/2! + 3/3! - \dots - n/n!$
- WAP to calculate the sum and product of two compatible matrices.

Section: B (Visual Python):

All the programs should be written using user defined functions, wherever possible.

- Write a menu-driven program to create mathematical 3D objects
 - Curve
 - Sphere
 - Cone
 - Arrow
 - Ring
 - Cylinder
- WAP to read n integers and display them as a histogram.
- WAP to display sine, cosine, polynomial and exponential curves.
- WAP to plot a graph of people with pulse rate p vs. height h. The values of p and h are to be entered By the user.

5. WAP to calculate the mass m in a chemical reaction. The mass m (in gms) disintegrates according to the formula $m=60/(t+2)$, where t is the time in hours. Sketch a graph for t vs. m , where $t \geq 0$.
6. A population of 1000 bacteria is introduced into a nutrient medium. The population p grows as follows:

$$P(t) = (15000(1+t))/(15 + e^t)$$
 where the time t is measured in hours. WAP to determine the size of the population at given time t and plot a graph for P vs t for the specified time interval.
7. Input initial velocity and acceleration, and plot the following graphs depicting equations of motion:
- I. velocity wrt time ($v=u+at$)
 - II. distance wrt time ($s=u*t+0.5*a*t*t$)
 - III. distance wrt velocity ($s=(v*v-u*u)/2*a$)

VINAYAKA MISSIONS UNIVERSITY

Bachelor of Computer Applications

SKILL ENHANCEMENT COURSES

2. HTML Programming

L T P C
1 0 2 4

OBJECTIVE:

To build the fundamental knowledge of application development for the internet using HTML

Unit-I: Introduction (1L)

Unit-II: The Basics (2L)

The Head, the Body Colors, Attributes Lists, ordered and unordered

Unit-III: Links (3L)

Introduction

Relative Links, Absolute Links, Link Attributes. Using the ID Attribute to Link Within a Document

Unit-IV: Images (2L)

Putting an Image on a Page, Using Images as Links, Putting an Image in the Background

Unit V: – Tables (4L)

Creating a Table, Table Headers Captions, Spanning Multiple Columns, Styling Table

Unit VI – Forms (3L)

Basic Input and Attributes, Other Kinds of Inputs, Styling forms with CSS, Where To Go From Here

Book Recommended:

1. Introduction to **HTML** and CSS -- O'Reilly , 2010
2. Jon Duckett, **HTML** and CSS, John Wiley, 2012

Software Lab Based on HTML:

Q.1 Create an HTML document with the following formatting options:

Bold

Italics

Underline

Headings (Using H1 to H6 heading styles) V. Font (Type, Size and Color)

Background (Colored background/Image in background)

Paragraph

Line Break

Horizontal Rule

Pre tag

Q.2 Create an HTML document which consists of:

I. Ordered List

Unordered List

Nested List

Image

- A. Safety Considerations
 - 1. Body substance isolation
 - 2. Sense safety
 - 3. Initial size-up
 - B. Initial Patient Assessment
 - 1. General Impression
 - 2. Unresponsiveness
 - i. Alert to person, place and time
 - ii. Verbal response to audible stimuli
 - iii. Pain evokes verbal or physical response
 - iv. Unresponsive to all stimuli
 - C. Patient Critical Needs
 - 1. Airway
 - 2. Breathing
 - i. Use oxygen if indicated
 - ii. Consider use of assisting with bag value mask
 - 3. Circulation
 - 4. Bleeding

Create an HTML document which implements Internal linking as well as External linking.

Create a table using HTML which consists of columns for Roll No., Student's name and grade.

Result		
Roll No.	Name	Grade

Create a Table with the following view:

			Place an image here	

Create a form using HTML which has the following types of controls:

Text Box

Option/radio buttons

III. Check boxes

IV. Reset and Submit buttons

Subscribe to XYZ News Magazine and Emails

Interested in receiving daily small updates of all latest News? Well, now you can. And best of all, it is free! Just fill out this form and submit it by clicking the "send it In" button. We will put you on our mailing list and you will receive your first email in 3-5 days.

Please fill the following boxes to help us send the emails and our news letter:

First Name:

Last Name:

Business:

We must have a correct e-mail address to send you the news letter:

Email:

How did you hear about XYZ News Magazine and Emails?

Here on the Web In a magazine Television Other

Would you like to be on our regular mailing list?

Yes, we love junk emails

Q.7 Create HTML documents (having multiple frames) in the following three formats:

Frame1
Frame2

Fra me1	
Frame2	Frame3

VINAYAKA MISSIONS UNIVERSITY

Bachelor of Computer Applications

SKILL ENHANCEMENT COURSES

3. PHP Programming

L T P C
1 0 2 4

OBJECTIVE:

1. Describe and use the features and syntax of programming language PHP
2. Create, translate, and process HTML information using the Common Gateway Information (CGI) protocol.
3. Retrieve, insert, update, and delete data from the relational database MySQL

Introduction to PHP:

(3L)

- PHP introduction, inventions and versions, important tools and software requirements (like Web Server, Database, Editors etc.)
- PHP with other technologies, scope of PHP
- Basic Syntax, PHP variables and constants
- Types of data in PHP , Expressions, scopes of a variable (local, global)
- PHP Operators : Arithmetic, Assignment, Relational , Logical operators, Bitwise , ternary and MOD operator.
- PHP operator Precedence and associativity

Handling HTML form with PHP:

(2L)

- Capturing Form Data
- GET and POST form methods
- Dealing with multi value fields
- Redirecting a form after submission

PHP conditional events and Loops: (3L)

- PHP IF Else conditional statements (Nested IF and Else)
- Switch case, while ,For and Do While Loop
Goto , Break ,Continue and exit

PHP Functions:

(3L)

- Function, Need of Function , declaration and calling of a function
- PHP Function with arguments, Default Arguments in Function
- Function argument with call by value, call by reference
 - Scope of Function Global and Local

String Manipulation and Regular Expression: (3L)

- Creating and accessing String , Searching & Replacing String
- Formatting, joining and splitting String , String Related Library functions
- Use and advantage of regular expression over inbuilt function
- Use of preg_match(), preg_replace(), preg_split() functions in regular expression

Array:

(3L)

- Anatomy of an Array ,Creating index based and Associative array ,Accessing array
- Looping with Index based array, with associative array using each() and foreach()
- Some useful Library function

Software Lab Based on PHP:

1. Create a PHP page using functions for comparing three integers and print the largest number.
2. Write a function to calculate the factorial of a number (non-negative integer). The function accept the number as an argument.
3. WAP to check whether the given number is prime or not.
4. Create a PHP page which accepts string from user. After submission that page displays the reverse of provided string.
5. Write a PHP function that checks if a string is all lower case.
6. Write a PHP script that checks whether a passed string is palindrome or not? (A palindrome is word, phrase, or sequence that reads the same backward as forward, e.g., madam or nurses run)
7. WAP to sort an array.
8. Write a PHP script that removes the whitespaces from a string.
Sample string : 'The quick " " brown fox'

Expected Output :Thequick""brownfox

9. Write a PHP script that finds out the sum of first n odd numbers.
10. Create a login page having user name and password. On clicking submit, a welcome message should be displayed if the user is already registered (i.e.name is present in the database) otherwise error message should be displayed.
11. Write a PHP script that checks if a string contains another string.
12. Create a simple 'birthday countdown' script, the script will count the number of days between current day and birth day.
13. Create a script to construct the following pattern, using nested for loop. *

```
* *
* * *
* * * *
```

* * * * *

14. Write a simple PHP program to check that emails are valid.
15. WAP to print first n even numbers.
16. \$color = array('white', 'green', 'red')

Write a PHP script which will display the colors in the following way :

Output : white, green, red,

- green
- red
- white

17. Using switch case and dropdown list display a “Hello” message depending on the language selected in drop down list.
18. Write a PHP program to print Fibonacci series using recursion.
19. Write a PHP script to replace the first 'the' of the following string with 'That'.

Sample : 'the quick brown fox jumps over the lazy dog.'

Expected Result : That quick brown fox jumps over the lazy dog.

VINAYAKA MISSIONS UNIVERSITY**Bachelor of Computer Applications****SKILL ENHANCEMENT COURSES****4. System Administration and Maintenance**

L	T	P	C
1	0	2	4

OBJECTIVE:

To learn deployment and maintenance of modern computer systems in an operational environment.

Part I (Linux/Unix)**(8L)**

- Basics of operating system, services,
- Installation and configuration, maintenance
- What is linux/unix Operating systems, Kernel, API, cli, gui,
- Difference between linux/unix and other operating systems
- Features and Architecture
- Linux features, advantages, disadvantages

Part II (Windows)**(8L)**

- Windows as operating system, history, versions.
- PC hardware, BIOS, Devices and drivers,
- Kernel Configuration and building
- Application installation, configuration and maintenance
- Server services and Client services
- Difference between WindowsXP/windows7 and windows server 2003/2008

Software Lab Based on System Administration and Maintenance**Linux:**

Linux Desktop tour. Configuring desktop environment and desktop settings.

Basic Commands :Terminal, shell,Cat, ls, cd, date, cal, man, echo, pwd, Mkdir, rm, rmdir Ps, kill
--

Package Installation

Synaptic package manager

Windows:

<p>Creating users – Admin and regular.</p> <p>Path of their personal files. Adding and changing passwords.</p> <p>Difference between workgroup and domain. Concept of roles.</p> <p>user profiles – creating and roaming Concept of Active Directory. Creating active directory in windows 2003/2008.</p>
<p>Process and Disk management</p> <p>Windows Task manager. File systems – NTFS, FAT.</p>
<p>Services</p> <p>Control Panel</p> <p>C:/program Files, C:/system C:/windows</p> <p>Add /remove new hardware (like printer), Add/remove new programmes.</p>
<p>Network Administration</p> <p>Ipconfig,Ping, tracert, route, hostname, net, netstat, whoami Set manual IP address, check connectivity – ipv4, ipv6</p>
<p>Administrator Tools</p> <p>Control Panel -> Administrative Tools</p> <p>Computer Management, Local security Policy, Performance Monitor, Task Scheduler, Antivirus and firewall.</p>
<p>Misc</p> <p>Start->Accessories->System tools -> All options (Remote desktop, backup/restore etc.)</p> <p>LAN – sharing printer, files and folder over the network.</p>

VINAYAKA MISSIONS UNIVERSITY

B.Sc. Computer Science

SKILL ENHANCEMENT COURSES

6. Android Programming

L T P C
1 0 2 4

OBJECTIVE:

1. Competence with the fundamental programming paradigms used to write Android applications
2. Competence with applications that permit users to interact with their environment such as location awareness, media or the Internet
3. Proficiency with the tools for creating Android applications

Introduction: History of Android, Introduction to Android Operating Systems, Android Development Tools, Android Architecture. (2L)

Overview of object oriented programming using Java: OOPs Concepts: Inheritance, Polymorphism, Interfaces, Abstract class, Threads, Overloading and Overriding, Java Virtual Machine. (4L)

Development Tools: Installing and using Eclipse with ADT plug-in, Installing Virtual machine for Android sandwich/Jelly bean (Emulator), configuring the installed tools, creating a android project – Hello Word, run on emulator, Deploy it on USB-connected Android device. (5L)

User Interface Architecture: Application context, intents, Activity life cycle, multiple screen sizes. (2L)

User Interface Design: Form widgets, Text Fields, Layouts, Button control, toggle buttons, Spinners (Combo boxes), Images, Menu, and Dialog. (2L)

Database: Understanding of SQLite database, connecting with the database. (2L)

Book Recommended:

1. Android application development for java programmers. By James C. Sheusi. Publisher: Cengage Learning, 2013.

ONLINE READING / SUPPORTING MATERIAL:

1. <http://www.developer.android.com>
2. <http://developer.android.com/about/versions/index.html>
3. <http://developer.android.com/training/basics/firstapp/index.html>
4. <http://docs.oracle.com/javase/tutorial/index.htm> (Available in the form of free downloadable ebooks also).
5. <http://developer.android.com/guide/components/activities.html>
6. <http://developer.android.com/guide/components/fundamentals.html>
7. <http://developer.android.com/guide/components/intents-filters.html>
8. <http://developer.android.com/training/multiscreen/screensizes.html>
9. <http://developer.android.com/guide/topics/ui/controls.html>
10. <http://developer.android.com/guide/topics/ui/declaring-layout.html>
11. <http://developer.android.com/training/basics/data-storage/databases.html>

Software Lab Based on Android Programming:

1. Create “Hello World” application. That will display “Hello World” in the middle of the screen in the emulator. Also display “Hello World” in the middle of the screen in the Android Phone.
2. Create an application with login module. (Check username and password).
3. Create spinner with strings taken from resource folder (res >> value folder) and on changing the spinner value, Image will change.
4. Create a menu with 5 options and selected option should appear in text box.
5. Create a list of all courses in your college and on selecting a particular course teacher-in-charge of that course should appear at the bottom of the screen.
6. Create an application with three option buttons, on selecting a button colour of the screen will change.
7. Create and Login application as above. On successful login, pop up the message.
8. Create an application to Create, Insert, update, Delete and retrieve operation on the database.

VINAYAKA MISSIONS UNIVERSITY

Bachelor of Computer Applications

SKILL ENHANCEMENT COURSES

7.XML Programming

L T P C
1 0 2 4

OBJECTIVE:

The student will acquire a knowledge of key features of the most common languages in the XML standard family. The student will fully understand the definition and structure of the Extensible Markup Language (XML), and tree structures in data organisation. Understanding functional programming based on XSLT.

Introduction: Understanding Mark-up Languages, Introduction to XML and its Goals. (3L)

XML Basics: XML Structure and Syntax, Document classes and Rules. (5L)

Other XML Concepts: Scripting XML, XML as Data, Linking with XML. (4L)

XML with Style: XSL –Style Sheet Basics, XSL basics, XSL style sheets. (3L)

Books Recommended

1. William J. Pardi , XML in action web technology, Microsoft Press, 1999
2. Michael J. Young ,Step by Step XML , Microsoft Press, 2002

Software Lab Based on XML:

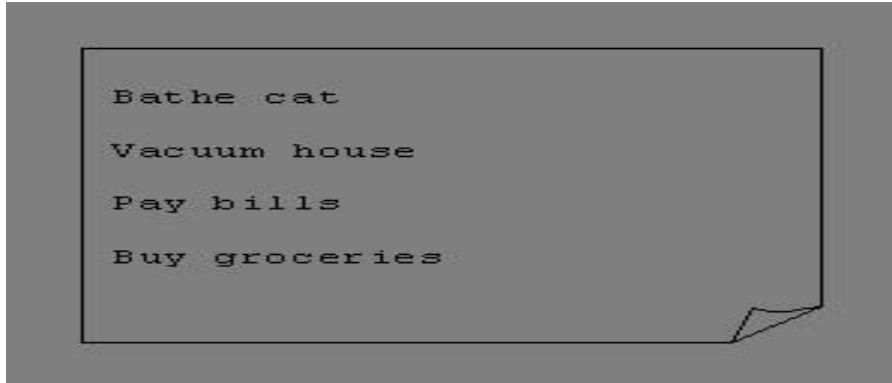
Exercise #1 – Information Structure

In this exercise, student will practice identifying the structure of an information object.

For the sample document provided below:

Label the information structures you see, including containing structures.

12. Draw a tree representation of the structure.



Exercise 2# Deconstructing an XML Document

In this exercise, student will practice identifying the explicit structure within an XML document. In a sense, this is the reverse of what you did in Exercise #1. For the sample XML markup below, create a document-like representation (or a simple drawing) for the content contained within the XML tags:

```
<book>
```

```
<coverInfo>
```

```
<title>The XML Handbook</title>
```

```
<author>Charles F. Goldfarb</author>
```

```
<author>Paul Prescod</author>
```

```
<edition>Second</edition>
```

```
<description>The definitive XML resource: applications, products, and technologies. Revised and expanded—over 600 new pages.
```

```
</description>
```

```
</coverInfo>
```

```
</book>
```

Exercise #3 – Creating XML Markup

In this exercise, create some XML markup based on the tree representation from Exercise #1 above, and the content from the original sample document.

Exercise #4 – Well-Formedness

This exercise checks your understanding of the constraints for well-formedness. Are the following document instances well-formed? Explain any NO answers.

```
<list><title>The first list</title><item>An item</list>
```

```
<item>An item</item><item>Another item</item>
```

<para>Bathing a cat is a <emph>relatively</emph> easy task as long as the cat is willing.</para>

<bibl><title>How to Bathe a Cat</title><author></author></bibl>Merlin Bauer</author></bibl>

Exercise #5-Well Formedness

This exercise is a bit more challenging than the previous example. Here is a fragment of an XML document instance. Identify all the places where it fails to match the constraints for wellformedness.

<PROCEDURE><TITLE>How to Bathe a Cat</TITLE>

<OVERVIEW>

This procedure tells you how to bathe a cat. <WARNING></OVERVIEW>Cats don't like to take baths. You could get hurt doing this. Be sure to obtain all the required protective gear before you start. </WARNING><EQUIPEMENT><ITEM>Hockey Mask <ITEM>Padded Full-body Kevlar Armor</ITEM><ITEM>Tub full of warm water</ITEM><ITEM>Towels </ITEM><ITEM>First Aid kit</ITEM><ITEM>Cat Shampoo</ITEM>

<EQUIPMENT><INSTRUCTIONS><STEP> Locate the cat, who by now is hiding under the bed.</STEP><STEP>Place the cat in the tub of water.</STEP><ITEM>Using the First Aid kit, repair the damage to your head and arms.</STEP><STEP>Place the cat back in the tub and hold it down.</STEP><STEP>Wash it really fast, then make an effort to dry it with the towels.</STEP><STEP>Decide not to do this again. </STEP></INSTRUCTIONS>

Note: Cover more exercises based on XML Programming theory concepts.

VINAYAKA MISSIONS UNIVERSITY

Bachelor of Computer Applications

SKILL ENHANCEMENT COURSES

8.R Programming

L T P C
1 0 2 4

OBJECTIVE:

- To give an introduction to the software *R* and how to write elementary programs

Introduction: Overview and History of R, Getting Help, Data types, Subsetting, Vectorized Operations, Reading and Writing Data. **(5L)**

Control Structures, Functions, *lapply*, *tapply*, *split*, *mapply*, *apply*, Coding Standards. **(5L)**

Scoping Rules, Debugging Tools, Simulation, R Profiler. **(5L)**

Reference Book

W. N. Venables, D. M. Smith, An Introduction to R, R-core team, 2015

Software Lab Based on R Programming:

1. Write a program that prints 'Hello World' to the screen.
2. Write a program that asks the user for a number *n* and prints the sum of the numbers 1 to *n*
3. Write a program that prints a multiplication table for numbers up to 12.
4. Write a function that returns the largest element in a list.
5. Write a function that computes the running total of a list.
6. Write a function that tests whether a string is a palindrome.
7. Implement the following sorting algorithms: Selection sort, Insertion sort, Bubble Sort
8. Implement linear search.
9. Implement binary search.
10. Implement matrices addition, subtraction and Multiplication

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DISCIPLINE SPECIFIC ELECTIVE I

1. INFORMATION SECURITY

L T P C
4 0 0 4

OBJECTIVES:

- Understand information security's importance in our increasingly computer-driven world.
- Master the key concepts of information security and how they "work."

UNIT I INTRODUCTION

(12 hours)

History, What is Information Security?, Critical Characteristics of Information, NSTITSSC Security Model, Components of an Information System, Securing the Components, Balancing Security and Access, The SDLC, The Security SDLC

UNIT II SECURITY INVESTIGATION

(12 hours)

Need for Security, Business Needs, Threats, Attacks, Legal, Ethical and Professional Issues

UNIT III SECURITY ANALYSIS

(12 hours)

Risk Management: Identifying and Assessing Risk, Assessing and Controlling Risk

UNIT IV LOGICAL DESIGN

(12 hours)

Blueprint for Security, Information Security Policy, Standards and Practices, ISO 17799/BS 7799, NIST Models, VISA International Security Model, Design of Security Architecture, Planning for Continuity

UNIT V PHYSICAL DESIGN

(12 hours)

Security Technology, IDS, Scanning and Analysis Tools, Cryptography, Access Control Devices, Physical Security, Security and Personnel

TOTAL HOURS: 60

TEXT BOOK:

1. Michael E Whitman and Herbert J Mattord, "Principles of Information Security", Vikas Publishing House, New Delhi, 2003

REFERENCE BOOKS

1. Micki Krause, Harold F. Tipton, "Handbook of Information Security Management", Vol 1-3 CRC Press LLC, 2004.
2. Stuart Mc Clure, Joel Scrambray, George Kurtz, "Hacking Exposed", Tata McGraw-Hill, 2003
3. Matt Bishop, "Computer Security Art and Science", Pearson/PHI, 2002.

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DISCIPLINE SPECIFIC ELECTIVE I

1. INFORMATION SECURITY LAB

L T P C
0 0 4 2

1. Implement the following SUBSTITUTION & TRANSPOSITION TECHNIQUES concepts:

- a) Caesar Cipher
- b) Playfair Cipher
- c) Hill Cipher
- d) Vigenere Cipher
- e) Rail fence – row & Column Transformation

2. Implement the following algorithms

- a) DES
- b) RSA Algorithm
- c) Diffie-Hellman
- d) MD5
- e) SHA-1

3. Implement the Signature Scheme - Digital Signature Standard

4. Demonstrate how to provide secure data storage, secure data transmission and for creating digital signatures (GnuPG)

5. Setup a honey pot and monitor the honeypot on network (KF Sensor)

6. Installation of rootkits and study about the variety of options

7. Perform wireless audit on an access point or a router and decrypt WEP and WPA. (Net Stumbler)

8. Demonstrate intrusion detection system (ids) using any tool (snort or any other s/w)

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DISCIPLINE SPECIFIC ELECTIVE II

2. DATA WAREHOUSING and DATA MINING

L T P C
4 0 0 4

OBJECTIVE:

To develop an understanding of the strengths and limitations of popular data mining techniques and to be able to identify promising business applications of data mining.

UNIT I (12 hours)

Data Warehousing: Introduction- Definition and description, need for data ware housing, need for strategic information, failures of past decision support systems, OLTP vs DWH-DWH requirements-trends in DWH-Application of DWH.

UNIT II (12 hours)

Data Warehousing Architecture: Reference architecture- Components of reference architecture - Data warehouse building blocks, implementation, physical design process and DWH deployment process. A Multidimensional Data, Model Data Warehouse Architecture.

UNIT III (14 hours)

Data Mining: Data mining tasks-Data mining vs KDD- Issues in data mining, Data Mining metrics, Data mining architecture - Data cleaning- Data transformation- Data reduction - Data mining primitives.

Association Rule Mining: Introduction - Mining single dimensional Boolean association rules from transactional databases - Mining multi-dimensional association rules.

UNIT IV (12 hours)

Classification and Prediction: Classification Techniques - Issues regarding classification and prediction - decision tree - Bayesian classification –Classifier accuracy – Clustering – Clustering Methods - Outlier analysis.

UNIT V (10 hours)

Applications and Other Data Mining Methods: Distributed and parallel Data Mining Algorithms, Text mining- Web mining.

TOTAL HOURS : 60

TEXT BOOK:

1. Jiawei Han and Micheline Kamber, ” Data Mining Concepts and Techniques”, Morgan Kaufmann Publishers, USA, 2006.
2. Berson,”DataWarehousing, Data Mining and OLAP”, Tata McGraw Hill Ltd, New Delhi, 2004.

REFERENCE BOOKS

1. Pang-Ning Tan, Michael Steinbach, Vipin Kumar, Introduction to Data Mining, ,Pearson Education.
2. Arun K Pujari,”Data mining techniques”, Oxford University Press, London, 2003.
3. Dunham M H,”Data mining: Introductory and Advanced Topics”. Pearson Education, New Delhi, 2003.
4. Mehmed Kantardzic,” Data Mining Concepts, Methods and Algorithms”, John Wiley and Sons, USA, 2003.
5. Soman K. P., DiwakarShyam, Ajay V., Insight into Data mining: Theory and Practice, PHI 2006

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DISCIPLINE SPECIFIC ELECTIVE I

2.DATA WAREHOUSING and DATA MINING LAB

L	T	P	C
0	0	4	2

Practical List: Practical are to be done using Weka, and a report prepared as per the format*.

The operations are to be performed on built-in dummy data sets of weka and/or the downloadable datasets mentioned in references below. Also wherever applicable, the parameter values are to be varied (upto 3 distinct values). The 'Visualize' tab is to be explored with each operation.

1.Preprocessing : Apply the following filters –

a. weka>filter>supervised>attributed>

AddClassification ,AttributeSelection, Discretize , NominalToBinary

b. weka>filter>supervised>instance:

StratifiedRemoveFolds, Resample

c. weka>filter>unsupervised>attribute>

Add, AddExpression, AddNoise , Center , Discretize , MathExpression ,

MergeTwoValues ,NominalToBinary , NominalToString, Normalize

NumericToBinary ,NumericToNominal , NumericTransform ,

PrincipalComponent , RandomSubset , Remove , RemoveType ,

ReplaceMissingValues , Standardize

d. weka>filter>unsupervised>instance>

Normalize , Randomize , Standardize, RemoveFrequentValues,

RemoveWithValues , Resample , SubsetByExpression

2. Explore the 'select attribute' as follows

weka>attributeSelection> , FilteredSubsetEval ,

WrapperSubsetEval

3. Association mining weka>associations> , Apriori, FPGrowth

4. Classification**

weka>classifiers>bayes> , NaïveBayes , weka>classifiers>lazy> : IB1 ,

IBkweka>classifiers>trees , SimpleCart , RandomTree , ID3

5. Clustering**

weka>clusters> , SimpleKMeans , FarthestFirst algorithm, DBSCAN, hierarchicalClusterer

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DISCIPLINE SPECIFIC ELECTIVE I

3.BIOINFORMATICS

L T P C
4 0 0 4

Objective:

- The students will be able to describe the contents and properties of the most important bioinformatics databases, perform text- and sequence-based searches, and analyze and discuss the results in light of molecular biological knowledge
- The students will be able to explain the major steps in pairwise and multiple sequence alignment, explain the principle for, and execute pairwise sequence alignment by dynamic programming
- The students will be able to predict the secondary and tertiary structures of protein sequences.

UNIT I

12

Computer networking LAN, WAN, MODEM and Fiber Optics Networks – Introduction to Internet, WWW, NICNET, ERNET, VSNL, ISDN.

UNIT II

12

Database – Definitions – Biological database – Primary Database (EMBL, Genebank, DDBJ) – Protein Databases (SWISS – PROT, TREMBL, NRL – 3D PIR MIPS); - Secondary databases (PROSITE, PFAM, BLOCKS, PRINTS IDENTIFY) – Composite databases (NRDB, OWL MIPSX); - Protein structure databases (PDB, MMDB).

UNIT III

12

Pair wise alignment – Local and global alignment – BLAST, FASTA, Multiple Sequence Analysis (MSA).

UNIT IV

12

Evolution of Bio-informatics – Potentials of bio-informatics – Human Genome Project – bio-informatics in India – Future in Bio-informatics.

UNIT V

12

Scope of Bio-informatics – Useful Bio-informatics sites – Bio-informatics in Pharmaceutical industry – Bio-informatics orientation in IT industry.

Total hours : 60

Text Books:

1. T.K. Attwood and D.J. Parry – Smith, Introduction to bioinformatics, Pearson Education Ltd., New Delhi (2004).
2. Arthur M. Lesk, Introduction to bioinformatics, Oxford University Press, New Delhi (2003).

Reference Books:

1. S. Sundara Rajan and R. Balaji, introduction to Bioinformatics, Himalaya Publishing House, New Delhi (2002).
2. Irfan A. Khan and Atiya Khanum, Emerging trends in Bioinformatics, Ukaaz Publications, Andhara Pradesh (2002).

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DISCIPLINE SPECIFIC ELECTIVE I

3.BIOINFORMATICS LAB

L T P C
0 0 4 2

LIST OF EXPERIMENTS

1. Introduction to UNIX basic commands and UNIX Filters.

2. Perl programming and applications to Bioinformatics.

- Basic scripting.
- Regular expressions.
- File i/o & control statement.
- Subroutines & functions.
- Writing scripts for automation.

3. Types of Biological Databases and Using it.

- Genbank.
- Protein Data Bank .
- Uniprot.

4. Sequence Analysis Tools

- Use of BLAST, FASTA (Nucleic Acids & Proteins).
- Use of Clustal W.
- Use of EMBOSS.

5. Phylogenetic Analysis

- Use of Phyllip.

6. Molecular Modeling

- Homology Modeling – Swissmodeller.

Any Open Source Software.

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DISCIPLINE SPECIFIC ELECTIVE II

1.SCRIPTING LANGUAGES

L T P C
4 0 0 4

Objective:

1. To classify the various Scripting Languages
2. To understand DOM and XML
3. To create a webpage

UNIT I -INTRODUCTION TO HTML (12 Hours)

Introduction to HTML: Internet basics -formatting text in HTML-lists-Adding graphics to HTML-Internal and external linking in HTML-frames and framesets-creating tables.

UNIT II -HTML FORMSAND CSS (12 Hours)

HTML forms -Cascading Style Sheet: HTML CSS-Inline styles-creating style sheets with the style elements-Building a web page

UNIT III -DOM AND INTRODUCTION TO JAVA SCRIPT (12 Hours)

DOM model: Understanding DOM model. Objects in HTML, Browser, object, window, history, location, navigator, document object. Java Script: Introduction to scripting-operators: logical-Increment and decrement operators-control structures.

UNIT IV -FUNCTIONS, ARRAYS AND OBJECTS (12 Hours)

Functions: Definition-scope rules-recursion-Arrays: Declaring arrays-passing array to function-sorting arrays-object: math object-string object-data object-boolean object and number object, Handling event using java script.

UNIT V -INTRODUCTION TO XML (12 Hours)

XML-XML overview-features-HTML XML-processing instructions-application of XML-COMMENTS-XML names space –schema-Document Type Definition (DTD) –Extensible style language(XSL).

TOTAL HOURS : 60

TEXT BOOKS

1. Ivan Bayross,(2005),“web enables commercial application development using HTML, DHTML java script, perl CGI”, BPB Publications, New Delhi. UNIT (I –III).
- 2.Deitel.H.M, Nieto.T.R,(2012),“Internet and world wide web How to program”, Fifth Edition, Prentice Hall of Indian Pvt, Ltd, New Delhi. (UNIT IV-V)

REFERENCE BOOK

- 1.Williamson, (2001),“Xml: The Complete Reference”, Tata McGraw-Hill Education.

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DISCIPLINE SPECIFIC ELECTIVE II

1.SCRIPTING LANGUAGES LAB

L T P C
0 0 4 2

1. Create Application form using various text formats.
2. Create SRM UNIVERSITY website using HTML tags.
3. Create a table using HTML.
4. Display your information using form controls.
5. Create style sheets with the style elements.
6. Create calculator format using java script.
7. Create an array of 10 numbers and sort them using javascript.
8. String manipulation using string object.
9. Add a simple script using Click event.
10. Create Employee details using schemas.
11. Create our department details using CSS.
12. Create Payroll system using XSL.
13. Changing image using mouseover event.
14. Create a website for a newspaper.
15. Design and apply your application form for course enrolment using javascript.

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DISCIPLINE SPECIFIC ELECTIVE II

2. BUILDING INTERNET OF THINGS

L T P C

4 0 0 4

Objective: To Identify, classify and describe different kinds of Internet-connected product concepts.

UNIT I INTRODUCTION TO THE INTERNET OF THINGS 12

Origins – Early Concepts and Products – Current Products and Value Propositions– Architectures and Design Patterns – Analysis of a Full Connected –Object Experience – State of the Art, Challenges and Future Directions.

UNIT II COMPONENTS IN INTERNET OF THINGS 12

Control Units – Sensors – Communication modules – Power Sources – Communication Technologies – RFID – Bluetooth – Zigbee – Wifi – Rfinks – Mobile Internet – Wired Communication

UNIT III PROGRAMMING THE MICROCONTROLLER FOR IOT 12

Basics of Sensors and actuators – Examples and Working principles of Sensors and Actuators – Cloud computing and IOT – Arduino/Equivalent Microcontroller Platform – Setting up the board - Programming for IOT – Reading from Sensors

UNIT IV COMMUNICATION 12

Connecting microcontroller with Mobile Devices – Communication through Bluetooth and USB – Connection with the Internet using Wifi / Ethernet

UNIT V APPLICATIONS 12

Set up cloud environment – Send data from microcontroller to cloud – Case studies – Open Source e-Health sensor platform – BeClose Elderly monitoring – Other recent projects.

TOTAL HOURS:60

TEXT BOOK:

1. Charalampos Doukas , "Building Internet of Things with the Arduino", Create space, April 2002

REFERENCE BOOK:

1. Vijay Madiseti and Arshdeep Bahga, “**Internet of Things (A Hands-on-Approach)**”, 1st Edition, VPT, 2014
2. Francis daCosta, “**Rethinking the Internet of Things: A Scalable Approach to Connecting Everything**”, 1st Edition, Apress Publications, 2013
1. Cuno Pfister, Getting Started with the Internet of Things, O’Reilly Media, 2011, ISBN: 978-1-4493-9357-1
2. <http://postscapes.com/>
3. <http://www.theinternetofthings.eu/what-is-the-internet-of-things>

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DISCIPLINE SPECIFIC ELECTIVE II

2. BUILDING INTERNET OF THINGS LAB

L T P C

0 0 4 2

1. Creating a Bluemix Application
2. Create and add an Internet of Things Service
3. Wire the connected device's data flow with IBM Node-RED

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DISCIPLINE SPECIFIC ELECTIVE II

3. OBJECT ORIENTED ANALYSIS AND DESIGN

L T P C

4 0 0 4

Objective: To develop a working understanding of formal object-oriented analysis and design processes.

UNIT I **12**

Object system development

Objects, Classes, Object behavior and methods, Objects respond to messages Encapsulation and Information hiding, Class hierarchy, Polymorphism

UNIT II **12**

Object relationships

Association, Aggregation, Containment, Structured approach, Object Oriented approach Static and Dynamic Binding, Object Persistence, Meta-classes.

UNIT III **12**

Object oriented system development life cycle

Software development process, Use-case Driven approach, Prototyping, Component Based development, Incremental Testing.

UNIT IV **12**

Object oriented methodologies

Rumbaugh Object Modeling, Booch Methodology, Jacobson methodology, Patterns, Frameworks.

UNIT V **12**

UML

Introduction, Static and dynamic models, UML diagrams, UML Class diagram, Use case Diagrams, UML Dynamic Modeling

Total Hours: 60

TEXT BOOK:

1. Object Oriented Systems Development Ali Bahrami, Irwin/McGraw-Hill, 1999 - Computers.

REFERENCE BOOKS:

1. Object Oriented Analysis & Design with Application by Grady Booch

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DISCIPLINE SPECIFIC ELECTIVE II

3. OBJECT ORIENTED ANALYSIS AND DESIGN LAB

L T P C

0 0 4 2

DEVELOP A MINI-PROJECT FOLLOWING THE 12 EXERCISES LISTED BELOW.

1. To develop a problem statement.
2. Develop an IEEE standard SRS document. Also develop risk management and project plan (Gantt chart).
3. Identify Use Cases and develop the Use Case model.
4. Identify the business activities and develop an UML Activity diagram.
5. Identify the conceptual classes and develop a domain model with UML Class diagram.
6. Using the identified scenarios find the interaction between objects and represent them using UML Interaction diagrams.
7. Draw the State Chart diagram.
8. Identify the User Interface, Domain objects, and Technical services. Draw the partial layered, logical architecture diagram with UML package diagram notation.
9. Implement the Technical services layer.
10. Implement the Domain objects layer.
11. Implement the User Interface layer.
12. Draw Component and Deployment diagrams.

SUGGESTED DOMAINS FOR MINI-PROJECT.

1. Passport automation system.
2. Book bank
3. Exam Registration
4. Stock maintenance system.
5. Online course reservation system
6. E-ticketing
7. Software personnel management system
8. Credit card processing
9. e-book management system
10. Recruitment system
11. Foreign trading system
12. Conference Management System
13. BPO Management System **Suggested Software Tools** ArgoUML, Eclipse IDE, Visual Paradigm, Visual case, and Rational Suite.

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DISCIPLINE SPECIFIC ELECTIVE III

1. E-COMMERCE AND ITS APPLICATIONS

L T P C

4 0 0 4

UNIT I

12

An introduction to Electronic commerce: What is E-Commerce (Introduction And Definition), Main activities E-Commerce, Goals of E-Commerce, Technical Components of E-Commerce, Functions of E-Commerce, Advantages and disadvantages of E-Commerce, Scope of E-Commerce, Electronic Commerce Applications, 9 Electronic Commerce and ElectronicBusiness(C2C)(C2G,G2G, B2G, B2P, B2A, P2P, B2A, C2A, B2B, B2C)

UNIT II

12

The Internet and WWW: Evolution of Internet, Domain Names and Internet Organization (.edu, .com, .mil, .gov, .net etc.) , Types of Network, Internet Service Provider, World Wide Web, Internet & Extranet, Role of Internet in B2B Application, building own website, Cost, Time, Reach, Registering a Domain Name, Web promotion, Target email, Baner, Exchange, Shopping Bots

UNIT III

12

Internet Security: Secure Transaction, Computer Monitoring, Privacy on Internet, Corporate Email privacy, Computer Crime(Laws , Types of Crimes), Threats, Attack on Computer System, Software Packages for privacy, Hacking, Computer Virus(How it spreads, Virus problem, virus protection, Encryption and Decryption, Secret key Cryptography, DES, Public Key Encryption, RSA, Authorisation and Authentication, Firewall, Digital Signature(How it Works)

UNIT IV

12

Electronic Data Exchange: Introduction, Concepts of EDI and Limitation, Applications of EDI, Disadvantages of EDI, EDI model,Electronic Payment System: Introduction, Types of Electronic Payment System, Payment Types, Value Exchange System, Credit Card System, Electronic Fund Transfer, Paperless bill, Modern Payment Cash, Electronic Cash

UNIT V

12

Planning for Electronic Commerce: Planning Electronic Commerce initiates, Linking objectives to business strategies, Measuring cost objectives, Comparing benefits to Costs, Strategies for developing electronic commerce web sites

Text Books

2. G.S.V.Murthy, E-Commerce Concepts, Models, Strategies- :- Himalaya Publishing House, 2011.
3. Kamlesh K Bajaj and Debjani Nag , E- Commerce , 2005.

Reference Books

1. Gray P. Schneider , Electronic commerce, International Student Edition, 2011,

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DISCIPLINE SPECIFIC ELECTIVE III

1. E-COMMERCE AND ITS APPLICATIONS LAB

L T P C

0 0 4 2

E-commerce concepts are to be implemented in developing a website using a combination of following technologies:

1. HyperText Markup Language (HTML)
2. Cascading Style Sheets (CSS)
3. JavaScript
4. ASP
5. PHP
6. XML
7. Joomla

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DISCIPLINE SPECIFIC ELECTIVE III

2.MOBILE COMMUNICATION

L T P C
4 0 0 4

OBJECTIVES

- Describe those aspects of mobile programming that make it unique from programming for other platforms,
- Critique mobile applications on their design pros and cons,
- Utilize rapid prototyping techniques to design and develop sophisticated mobile interfaces

UNIT I

(12 hours)

Event Driven Programming: UI event loop, Threading for background tasks, Outlets / actions, delegation, notification, Model View Controller (MVC) design pattern.

Mobile application issues: limited resources (memory, display, network, file system), input / output (multi-touch and gestures), sensors (camera, compass, accelerometer, GPS)

UNIT II

(12 hours)

Development tools: Apple iOS toolchain: Objective-C, Xcode IDE, Interface Builder, Device simulator.

Frameworks: Objective-C and Foundation Frameworks, Cocoa Touch, UIKit, Others: Core Graphics, Core Animation, Core Location and Maps, Basic Interaction.

UNIT III

(14 hours)

Common UI's for mobile devices: Navigation Controllers, Tab Bars, Table Views, Modal views, UI Layout.

Data Persistence: Maintaining state between application invocations, File system, Property Lists, SQLite, Core Data

UNIT IV

(12 hours)

Remote Data-Storage and Communication: "Back End" / server side of application, RESTful programming, HTTP get, post, put, delete, database design, server side JavaScript / JSON (8L)

UNIT V

(10 hours)

Code signing: security, Keychain, Developers and App Store License Agreement

TOTAL HOURS : 60

TEXT BOOK

1. Rajiv Ramnath, Roger Crawfis, and Paolo Sivilotti, Android SDK 3 for Dummies, Wiley, 2011.
2. Brian Fling, Mobile Design and Development, O'Reilly Media, 2009. Maximiliano

REFERENCE BOOKS

1. Valentino Lee, Heather Schneider, and Robbie Schell, Mobile Applications: Architecture, Design, and Development, Prentice Hall, 2004.
2. Brian Fling, Mobile Design and Development, O'Reilly Media, 2009. Maximiliano
3. Firtman, Programming the Mobile Web, O'Reilly Media, 2010.
4. Christian Crumlish and Erin Malone, Designing Social Interfaces, O'Reilly Media, 2009.

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DISCIPLINE SPECIFIC ELECTIVE III

2.MOBILE COMMUNICATION LAB

L T P C
0 0 4 2

1. Installing Android Environment
2. Create Hello World Application
3. Sample Application about Android Resources
4. Sample Application about Layouts
5. Sample Application about Intents
6. Sample Application I about user interfaces
7. Sample Application about Animations
8. Make a Project based on above labs
9. Sample Application about Android Data
10. Sample Application about SQLite I
11. Sample Application about SQLite II
12. Project Presentation

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DISCIPLINE SPECIFIC ELECTIVE III

3. CLOUD COMPUTING

L T P C

4 0 0 4

Objective:

- To classify the various Cloud computing applications
- To build an architecture of Cloud computing IVES
- To understand Cloud computing standards

UNIT I:

12 Hours

Cloud Introduction: Cloud Computing Fundamentals: Cloud Computing definition, Types of cloud, Cloud services: Benefits and challenges of cloud computing, Evolution of Cloud Computing , usage scenarios and Applications , Business models around Cloud – Major Players in Cloud Computing - Issues in Cloud - Eucalyptus - Nimbus - Open Nebula, CloudSim.

UNIT II:

12 Hours

Cloud Services And File System: Types of Cloud services: Software as a Service - Platform as a Service – Infrastructure as a Service - Database as a Service - Monitoring as a Service – Communication as services. Service providers- Google App Engine, Amazon EC2, Microsoft Azure, Sales force. Introduction to MapReduce, GFS, HDFS, Hadoop Framework.

UNIT III:

12 Hours

Collaborating With Cloud:Collaborating on Calendars, Schedules and Task Management – Collaborating on Event Management, Contact Management, Project Management – Collaborating on Word Processing , Databases – Storing and Sharing Files- Collaborating via Web-Based Communication Tools – Evaluating Web Mail Services – Collaborating via Social Networks – Collaborating via Blogs and Wikis. 185 CS-Engg&Tech-SRM-2013

UNIT IV:

12 Hours

Virtualization For Cloud :Need for Virtualization – Pros and cons of Virtualization – Types of Virtualization – System Vm, Process VM, Virtual Machine monitor – Virtual machine properties - Interpretation and binary translation, HLL VM - Hypervisors – Xen, KVM , VMWare, Virtual Box, Hyper-V.

UNIT V:

12 Hours

Security, Standards, And Applications: Security in Clouds: Cloud security challenges – Software as a Service Security, Common Standards: The Open Cloud Consortium – The Distributed management Task Force – Standards for application Developers – Standards for Messaging – Standards for Security, End user access to cloud computing, Mobile Internet devices and the cloud.

TOTAL HOURS: 60

TEXT BOOK:

2. Bloor R., Kanfman M., Halper F. Judith Hurwitz “Cloud Computing ” Wiley India Edition,2010
3. John Rittinghouse& James Ransome, “Cloud Computing Implementation Management and Strategy”, CRC Press, 2010
4. Antohy T Velte ,Cloud Computing : “A Practical Approach”, McGraw Hill,2009
5. Michael Miller, Cloud Computing: “Web-Based Applications That Change the Way You Work and Collaborate Online”, Que Publishing, August 2008.
6. James E Smith, Ravi Nair, “Virtual Machines”, Morgan Kaufmann Publishers, 2006.

REFERENCE BOOKS

1. Haley Beard, “Cloud Computing Best Practices for Managing and Measuring Processes for On-demand Computing”, Applications and Data Centers in the Cloud with SLAs, Emereo Pty Limited, July 2008
2. webpages.iust.ac.ir/hsalimi/.../89.../Cloud%20Common%20standards.pptop ennebula.org,
3. www.cloudbus.org/cloudsim/, <http://www.eucalyptus.com/>
4. hadoop.apache.org

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DISCIPLINE SPECIFIC ELECTIVE III

3.CLOUD COMPUTING LAB

L T P C

0 0 4 2

1. Create virtual machines that access different programs on same platform.
2. Create virtual machines that access different programs on different platforms.
3. Exploring Google cloud for the following
 - a) **Storage**
 - b) **Sharing of data**
 - c) manage your calendar, to-do lists,
 - d) a document editing tool
4. Exploring Microsoft cloud
5. Exploring Amazon cloud

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DISCIPLINE SPECIFIC ELECTIVE IV

PROJECT WORK Project Work/Dissertation (Compulsory)

L T P C
1 0 8 6

- This option is to be offered only in 6th Semester.
- The students will be allowed to work on any project based on the concepts studied in core/elective or skill based elective courses.
- The group size should be maximum of three (03) students.
- Each group will be assigned a teacher as a supervisor who will handle both their theory as well lab classes.
- A maximum of Four (04) projects would be assigned to one teacher.
- Theory classes will cover project management techniques.