

**POST GRADUATE AND RESEARCH DEPARTMENT OF  
COMPUTER APPLICATIONS**

**BCA SYLLABUS-2016-17**

**B.C.A. – CURRICULUM DESIGN TEMPLATE**

<b>Semester</b>	<b>Part</b>	<b>Subject Title</b>	<b>Hrs</b>	<b>Cr</b>
		<b>FIRST YEAR</b>		
<b>I</b>	I	Tamil-I / Hindi-I / French-I	5	3
	II	English – I	5	3
	III	Main- Programming in C	4	3
	III	Main- Digital Logic Fundamentals	5	4
	III	Main Practical –I– C Programming	3	2
	III	Allied -Mathematical Foundations	5	4
	IV	Skill Based Course- Value Education	3	2
			<b>Total</b>	<b>30</b>
<b>II</b>	I	Tamil-II / Hindi-II / French-II	5	3
	II	English – II	5	3
	III	Main –Object Oriented Programming using C++	5	4
	III	Main Practical – II Programming in C++	3	2
	III	Main – Fundamentals of Data Structures	4	3
	III	Allied – Statistics	5	4
	IV	Skill Based Course-Personality Development	3	2
			<b>Total</b>	<b>30</b>
		<b>SECOND YEAR</b>		
<b>III</b>	III	Main– Programming using Sun Micros Tech-Java	6	4
	III	Practical-III-Programming using Sun Micros (Java)	5	3
	III	Main-Computer Algorithms	6	5
	III	Allied-Financial Accounting	5	4
	III	Allied-Numerical Methods	5	4
	IV	Skill Based Course-Environmental Science	3	2
			<b>Total</b>	<b>30</b>
<b>IV</b>	III	Main – Internet Technologies	5	5
	III	Main- Advanced Java Programming	6	4
	III	Main Practical-IV-Advanced Java Programming-Lab	5	3
	III	Allied-Resource Management Techniques	5	5
	III	Allied-Organizational Behaviour	5	5
	IV	Skill Based Course-Soft Skills	4	4
			<b>Total</b>	<b>30</b>

<b>THIRD YEAR</b>				
<b>V</b>	III	Main- Relational Database Management Systems	5	4
	III	Main- Prog. using Microsoft Tech.(C# with Asp.net)	5	4
	III	Elective- I:Computer Graphics*/Multimedia and Virtual Reality*	5	5
	III	Elective-II: Data Communication Networks	5	5
	III	Practical: Any RDBMS Package-Oracle	5	3
	III	Practical: Prog. Using Ms Tech.(C# with Asp.net)	5	3
	<b>Total</b>			<b>30</b>
<b>VI</b>	III	Main- Open Source Technologies-PHP	5	4
	III	Main- Operating Systems	5	4
	III	Elective-I: Software Engineering	5	5
	III	Elective-II : Computer Architecture	5	5
	III	Practical –Open Source Technologies-PHP	5	3
	III	Mini –Project	5	3
	<b>Total</b>			<b>30</b>
<b>V</b>	III	Elective-I 1.Multimedia and Virtual Reality 2.Computer graphics 3.Cloud Computing Elective-II:1.Data Communication Networks 2.Network Security 3.Mobile Computing	5	5
<b>VI</b>	III	Elective-III 1.Software Engineering 2.Management Information system 3. Information System Design Elective-IV: 1.Computer Architecture 2.Distributed Computing 3.Microprocessor and its Applications	5	5

<b>I BCA</b>	<b>PROGRAMMING IN C</b>	<b>CA101S</b>
<b>SEMESTER-I</b>		<b>CREDIT - 3</b>
<b>MAIN</b>		<b>HRS/WK- 4</b>

**Objective:**

To make the students abreast with the programming concepts and to master them C Language.

**UNIT-I** **[15 Hrs]**

**C Fundamentals:** Character set – Identifiers - keywords - Data types-Constants – Variables –Declarations – Expressions - Statements-Operators - Library functions.

**UNIT-II** **[15 Hrs]**

**Control Statements:** Data Input/Output functions - Simple C programs - flow of control-control structures - switch, break and continue - Go to statement-comma operator.

**UNIT-III** **[15 Hrs]**

**Functions:** Defining, accessing functions - functions prototypes-passing arguments - call by value - call by reference - Recursions-storage classes.

**UNIT-IV** **[15 Hrs]**

**Arrays:** Defining and processing – passing arrays of functions- Arrays and string – Structures - passing structures to functions - self-referential structures - unions.

**UNIT-V** **[15 Hrs]**

**Pointers:** Declarations - passing pointers to functions - operation with pointers - pointer and arrays - arrays of pointers - structure and pointers – Files and its operations.

**TEXT BOOKS:**

1. E. Balagurusamy -Programming in Ansi C -Tata McGraw Hill Pub
2. Byron S.Gottfried - Schaum’s outline Theory and problems of programming with C. Tata McGraw Hill Pub
3. Yeshwanth Kanethkar -Let us C -.BPB Publications
4. K.R.Venugopal, S.R.Prasad -Mastering C – Tata McGraw Hill Pub

<b>I BCA</b>	<b>DIGITAL LOGIC FUNDAMENTALS</b>	<b>CA102T</b>
<b>SEMESTER-I</b>		<b>CREDIT - 4</b>
<b>MAIN</b>		<b>HRS/WK- 5</b>

**Objective:**

To get acquainted with the internals of the System logic circuits and to know the working principles of the computers.

**UNIT-I** **[12 Hrs]**

**Number System:** Binary number system - The Basic Gates - Boolean Algebra - Universal Gates - Boolean Laws and Theorem – Number system and its conversations.

**UNIT-II** **[12 Hrs]**

**Simplification:** Sum of products - Product of Sums - K-map simplifications - Don't care conditions-Quine Mcclausky tabulation method.

**UNIT-III** **[12 Hrs]**

**Combinational Arithmetic Circuits:** Adders-Subtractors-full adder-subtractor-BCD Adder- ROM-PLA-Designing circuits using ROM/PLA

**UNIT-IV** **[12 Hrs]**

**Combinational Logic Circuits:** Multiplexers-Demultiplexers-Decoders: 1 of 16 Decoders-Encoders.

**UNIT-V** **[12 Hrs]**

**Sequential Logic Circuit:** Flip-Flops - Its types - RS Flip flop, JK Flip flop, D Flip flop, T and Master Slave. Counters and its types - Shift Registers and its types.

**TEXT BOOKS:**

1. Thomas C.Bartee Digital Computer Fundamentals- McGraw Hill Pub.
2. Malvino & Leach- Digital principles and applications –McGraw Hill Pub.
3. S.Ramalatha - Digital Computer Fundamentals
- 4 . M.Morris Mano -Digital Logic and Computer Design- -PHI

<b>I BCA</b>	<b>PRACTICAL - PROGRAMMING IN C</b>	<b>CAP101T</b>
<b>SEMESTER-I</b>		<b>CREDIT - 2</b>
<b>PRACTICAL</b>		<b>HRS/WK- 3</b>

**Objective:**

To Make the students skilled in programming and to make them Logically efficient and marketable in the Programming Industry.

1. Write a C program to find the odd or even numbers for the range of given number.
2. Write a C program to find the sum of series
3. Write a C program to generate the Fibonacci series
4. Write a C program to check whether the given year is leap year or not.
5. Write a C program to reverse a given number.
6. Write a C program to find the given number is Armstrong or not.
7. Write a C program to display the following output
  - (a) \*  
\* \*  
\*\*\*
  - (b) 1  
1 2  
1 2 3
  - (c) 1  
2 2  
3 3 3
  - (d) 3 3 3  
2 2  
1
8. Write a C program to find the largest number among the three numbers.
9. Write a C program to find whether the person is eligible to vote or not
10. Write a C program to display the grade of the student by using conditional statement
11. Write a C program to display the arithmetic manipulation using Switch statement
12. Write a C program to find out the Factorial with and without using recursive function.
13. Write a C program to add a 2 numbers by using all functions.
14. Write a C program to swap 2 numbers without using the temporary variables.

15. Write a C program to find the length of the string with and without using string function
16. Write a C program to check whether the given string is Palindrome or not
17. Write a c program for the following matrices
  - (a) Addition Matrix (3X3)
  - (b) Subtraction Matrix (2X2)
  - (c) Multiplication Matrix (2X2)
  - (d) Transpose Matrix (3X3)
18. Write a C program to generate the numbers in ascending order.
19. Write a C program to display the name ,age ,mark, average and total for the 5 students  
By structure using array.
20. Write a C program to swap 2 numbers using pointer.

<b>I BCA</b>	<b>Object Oriented Programming using C++</b>	<b>CA203Q</b>
<b>SEM - II</b>		<b>CREDIT - 4</b>
<b>MAIN</b>		<b>HRS/WK- 5</b>

**Objective:**

To make the students get abreast with rich object oriented features with respect to C++.

**UNIT-I****[15 Hrs]**

**C++ fundamentals:** Introduction to C++: Tokens, Keywords, Identifiers, Variables, Operators, Expressions and Control Structures-Arrays in C++ - CIN-COUT.

**Unit-II****[15 Hrs]**

**Principles of Object Oriented Programming(OOP):** Evolution of C++ - Programming Paradigms – Key Concepts of OOP – Advantages of OOP – Usage of OOP and C++.

**UNIT-III****[15 Hrs]**

**OOPS Fundamentals:** Classes and Objects: Constructors and Destructors; and Type of Constructors – Inheritance: Single Inheritance – Multilevel inheritance – Multiple inheritance – Hierarchical Inheritance – Hybrid Inheritance.

**UNIT-IV****[15 Hrs]**

**Functions:** Inline Functions – Friend Function-Virtual Function-**Polymorphism:** Function Overloading - Operator Overloading.

**Input and Output in C++** - Streams-Stream classes- Formatted and Unformatted console I/O operations-Member functions of istream class-manipulators-manipulators with parameters

**UNIT-V****[15 Hrs]**

**Working with Files:** Classes for File Stream Operations – Opening and Closing a File – End-of-File Detection – File Pointers – Updating a File – Error Handling during File Operations – Command-line Arguments.

**TEXT BOOKS**

1. E.Balagurusamy-Object Oriented Programming with C++.TMH-1995
2. H.Schildt,C++: The Complete Reference,TMH-1998
3. Robert Lafore, Object Oriented Programming in Microsoft C++, Galgotia Publication.
4. Ashok N.Kamthane, Object Oriented Programming with ANSI & Turbo C++, Pearson Education, 2006.

<b>I BCA</b>	<b>FUNDAMENTALS OF DATA STRUCTURES</b>	<b>CA204S</b>
<b>SEMESTER-II</b>		<b>CREDIT - 3</b>
<b>MAIN</b>		<b>HRS/WK- 4</b>

**Objective:**

This subject will make the student get acquainted with different storage techniques inside the system.

**UNIT-I** **[12 Hrs]**

**Introduction:** Definition of a Data structure – primitive and composite Data Types, Arrays, Operations on Array, Ordered lists.

**UNIT-II** **[12 Hrs]**

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

**UNIT-III** **[ 12 Hrs]**

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

**UNIT-IV:** **[12 Hrs]**

**Trees:** Binary Trees –Representation- Conversion of Forest to Binary Tree– Tree Traversals

**UNIT-V:** **[ 12 Hrs]**

**Graph:** Definition, Types of Graphs, Representation -Graph Traversal - Shortest Path (Dijkstra's Algorithm.)

**TEXT BOOKS**

1. E.Horowitz and S.Shani Fundamentals of Data Structures in C++, Galgotia Pub.1999.
2. R.Kruse and N.Dale and S.C.Lily Pascal plus Data Structures Algorithms and Advanced Programming –Tata McGraw Hill-New Delhi(1990)

<b>I BCA</b>	<b>OBJECT ORIENTED PROGRAMMING IN C++ PRACTICAL</b>	<b>CAP202T</b>
<b>SEMESTER-II</b>		<b>CREDIT - 2</b>
<b>PRACTICAL</b>		<b>HRS/WK- 3</b>

**Objective :**

To implement all object oriented programming Concepts.

1. Program using Classes and Objects
2. Program using Constructor and destructor
3. Program using Function overloading and Inline functions
4. Program using Operator Overloading
5. Program using Inheritance
6. Program using friend functions

**Programs using Data Structure Concepts**

7. Implement PUSH, POP Operators of Stack using Arrays.
8. Implement add, delete Operators of a queue using Arrays.
9. Conversion of infix to postfix using stack Operations.
10. Binary tree traversals using recursion

<b>YEAR – II</b>	<b>Programming using Sun Micros Tech- Java</b>	<b>CA305Q</b>
<b>SEMESTER-III</b>		<b>HRS/WK-6</b>
<b>MAIN</b>		<b>CREDIT-4</b>

**Objective:**

To understand the power of Core JAVA and its Object Oriented Features.

**UNIT – I** [ 18 Hrs]

**Introduction to Java:** Features of Java – Data Types – Variables – Arrays – Operators - Control Statements.

**UNIT – II** [ 18 Hrs]

**Classes and Objects:** Constructors –Inheritance- Overloading method- Overriding methods – Using super – Abstract class.

**UNIT – III** [ 18 Hrs]

**Packages and Interfaces:** Packages-Creating Packages –Importing Packages- Interfaces. **Exception Handling:** Try, Catch, Throws, Throw and Finally.

**UNIT –IV** [ 18 Hrs]

**Thread:** Introduction to Thread-Multithread-implementation of multithread application using synchronization.

**Streams:** Simple Input Streams-Simple Output Streams – File Streams-

**UNIT – V** [ 18 Hrs]

**Strings:** String classes-String Buffer classes.

**Predefined Classes:** Vector class, Random class, Calendar class, Date Class.

**TEXT BOOKS:**

1. Cray S. Horstman, Gray Cornell – Core Java 2 Vol. I and Vol. II – 7<sup>th</sup> Ed. PHI, 2000.
2. H. Schildt – Java2 [The Complete Reference] – Fourth Edition, TMH 1999.

**REFERENCE BOOK:**

Wesley, K. Arnold and J. Gosling – The Java Programming Language – Third Edition Addison – Wesley, 2000.



<b>YEAR – II</b>	<b>COMPUTER ALGORITHMS</b>	<b>CA306T</b>
<b>SEMESTER- III</b>		<b>HRS/WK-6</b>
<b>MAIN</b>		<b>CREDIT-5</b>

**Objective:**

To make the student equipped with different Time and Space Complexity based Algorithms.

**UNIT-I****[ 18 Hrs]**

**Introduction:** Algorithm-PSEUDO – How to analyze algorithms-Time and Space complexity-Asymptotic Notations.

**UNIT-II****[ 18 Hrs]**

**Divide and Conquer:** General method- Complexity analysis-Strassen's Matrix Multiplication-Quick sort-Merge sort.

**UNIT-III****[ 18 Hrs]**

**Greedy method:** General method- Shortest path-Algorithm-problems-0/1 Knapsack problem

**UNIT-IV****[ 18 Hrs]**

**Dynamic Programming:** General method-multistage graph-Traveling salesman problem

**UNIT-V****[ 18 Hrs]**

**Traversal Techniques:** Back Tracking- General method-Depth first search- Breadth first search.

**TEXT BOOKS:**

1. E.Horowitz.S.Sahni and S.Rajasekaran, Computer Algorithms Galgotia-1999.
2. G.Brassard and Brately- Fundamentals of Algorithmics, PHI 1996.

**REFERENCE BOOK:**

1. Goodman, S.E. and Hedentnelemi- Introduction to the Design and Analysis of Algorithms- McGrawHill publication.

<b>YEAR - II</b>	<b>Programming using Sun Micros Tech-Java -PRACTICAL</b>	<b>CAP303Q</b>
<b>SEMESTER- III</b>		<b>HRS/WK-5</b>
<b>Practical</b>		<b>CREDIT-3</b>

**Objective :**

To enable the students to learn the basic function of JAVA programming and to make students to acquire the skill in JAVA programming.

1. Finding area and Perimeter of a circle. Use Buffered Reader class.
2. Determining the order of numbers generated randomly using Random class.
3. Implementing and importing packages for simple application.
4. Implementing Interfaces-Arithmetic Manipulations.
5. Exception Handling.
6. Multithreading.
7. String Manipulation using String/StringBuffer class.
8. Usage of Calendar Class and manipulation
9. Application using File streams(Sequential File)
10. Application using File Streams(Random File)

<b>YEAR - II</b>	<b>INTERNET TECHNOLOGIES</b>	<b>CA407T</b>
<b>SEMESTER - IV</b>		<b>HRS/WK-5</b>
<b>MAIN</b>		<b>CREDIT-5</b>

**Objective:**

To give an introduction to Internet, HTML and to learn Java Script and how to add Java Script code to HTML page.

**UNIT - I :**

Internet Connection Concepts : Internet Communication Protocols – Internet Hosts – Internet Protocol(IP) Addresses – Domain and Host Name - Servers and Clients – Ports and Port Numbers – Types of Internet Connections – Internet Service Providers(ISPs)

**UNIT - II :**

World Wide Web Concepts : URLs and Transfer Protocols – HTML – Java and JavaScript – VBScript – Plug-ins – XML – Cascading Style Sheets(CSS) – Websites – Portals – Web Directories and Search Engines – Home Pages.

**UNIT - III :**

HTML tags : History of HTML – Structure of HTML – Basic Tags of HTML - List – Linking Document – Frames – Graphics to HTML Documents.

**UNIT - IV**

Style Sheet Basics : Introduction to CSS – Add Style to document – Creating Style Sheet rules – Style sheet Properties – Font – text – Color and Background Color – Box Properties.

**UNIT - V :**

JavaScript : Introduction – Advantage of JavaScript – JavaScript Syntax – data type – Variable – Array – Operator & Expressions – Looping Constructors – Function – Dialog Box .

**Text Books :**

1. Thomas Pwell - "HTML and XHTML: The Complete Reference" - Tata McGrawHill, 4<sup>th</sup> Edition 2003.
2. E. Stephen Mack and Janan Platt - "HTML 4.0" - BPB Publications
3. "Web Enable Commercial Application Development using HTML,DHTML,Javascript,PERL CGI" - BAYROSS, BPB Publications 2000.
4. "Internet & World Wide Web" How to Programme , Third Edition - H.M.Deitel, P.J. Deitel, A.B. Goldberg.

<b>YEAR – II</b>	<b>Advanced Java Programming</b>	<b>CA408T</b>
<b>SEMESTER – IV</b>		<b>HRS/WK-6</b>
<b>MAIN</b>		<b>CREDIT-4</b>

**Objective:**

To learn advanced concept of Java and make them to develop distributed application.

**UNIT I****[ 18 Hrs]**

**AWT Overview:** Components, Container-AWT classes: Button, TextField, Checkbox-Layouts-Simple example using AWT. **Applet:** Introduction to Applet-Life Cycle of Applet.-Simple example using applet.

**UNIT II****[ 18 Hrs]**

**Networks:** Network Basics-socket overview-Internet Addressing-DNS-TCP/IP-URL-Example using network concepts.

**UNIT III****[ 18 Hrs]**

**DataBase:** JDBC-ODBC Driver-Connection class-Statement class-ResultSet class-Example using database (msaccess).

**UNIT IV****[ 18 Hrs]**

**RMI:** Introduction to RMI-Architecture of RMI-A complete example using RMI.

**UNIT V****[ 18 Hrs]**

**Servlet:** Servlet overview – your first servlet – servlet chaining – session management in servlet: Session Tracking-simple database program using Servlet.

**TEXT BOOKS:**

1. Cray S. Horstman, Gray Cornell – Core Java 2 Vol. I and Vol. II – 7<sup>th</sup> Ed. PHI, 2000.
2. H. Schildt – Java2 [The Complete Reference] – Fourth Edition, TMH 1999.

**REFERENCE BOOK:**

Wesley, K. Arnold and J. Gosling – The Java Programming Language – Third Edition Addison – Wesley, 2000.

<b>YEAR - II</b>	<b>ORGANIZATIONAL BEHAVIOUR</b>	<b>ACA401</b>
<b>SEMESTER - IV</b>		<b>HRS/WK-5</b>
<b>ALLIED</b>		<b>CREDIT-5</b>

**UNIT I**

**FOCUS AND PURPOSE:** Introduction to organizational behaviour: – Challenges facing the Management-Paradigm shift-New perspective of Management-Define Organizational Behaviour – Frame work – Organizational behaviour model.

**UNIT II**

**INDIVIDUAL BEHAVIOUR:** Personality – types – Factors influencing personality – Theories -Perception Process-Social Perception- Attitudes-Motivation – MotivationProcess –Hierarchy of work Motivation.

**UNIT III**

**GROUP BEHAVIOUR:** Natureof Groups– Dynamics of Informal Groups-dysfunction of group – Work Team building - Communication.

**UNIT IV**

**LEADERSHIP AND POWER:** Meaning – Importance – Leadership styles – Traditional Theories of Leadership-Modern Theoretical process of Leadership-Power and Politics.

**UNIT V**

**DYNAMICS OF ORGANIZATIONAL BEHAVIOUR:**Organizational culture and climate – Factors affecting organizational climate – Importance ofJob satisfaction-Organizational change – Stress and Conflict.

**TEXT BOOKS**

1. Stephen P. Robins, Organisational Behavior, PHI Learning / Pearson Education, 11<sup>th</sup> edition, 2008.
2. Fred Luthans, Organisational Behavior, McGraw Hill, 11<sup>th</sup> Edition, 2001.

**REFERENCES**

1. Schermerhorn, Hunt and Osborn, Organisational behavior, John Wiley, 9<sup>th</sup> Edition, 2008.
2. UdaiPareek, Understanding OrganisationalBehaviour, 2<sup>nd</sup> Edition, Oxford Higher Education, 2004.
3. Mc Shane & Von Glinov, OrganisationalBehaviour, 4<sup>th</sup> Edition, Tata McGraw Hill, 2007.
4. Hellrigal, Slocum and Woodman, Organisational Behavior, Cengage Learning, 11<sup>th</sup> Edition 2007.
5. Ivancevich, Konopaske&Maheson, OranisationlBehaviour& Management, 7<sup>th</sup> edition, Tata McGraw Hill, 2008.

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<b>YEAR - II</b>	<b>ADVANCED JAVA PROGRAMMING- PRACTICAL</b>	<b>CAP404T</b>
<b>SEMESTER- IV</b>		<b>HRS/WK-5</b>
<b>PRACTICAL</b>		<b>CREDIT-3</b>

**Objective :**

To enable the students to learn advanced level of JAVA programming and to make students to develop web oriented and distributed concepts.

1. To implement Bio-Data Information using Frame class with various controls.
2. Display different graphical symbols using Applet class.
3. To implement for sending a string from one system to another using TCP/IP.
4. Chatting Application using TCP/IP.
5. To develop an application for telephone directory using data base(msaccess).
6. To implement student mark list using AWT classes with data base (msaccess).
7. To develop a program for prime number using RMI.
8. To develop a program for Arithmetic Operation using Servlets.
9. To develop an application for simple EB Bill using Servlets with database.

<b>III B.C.A.</b>	<b>RELATIONAL DATABASE MANAGEMENT SYSTEMS</b>	<b>CA509S</b>
<b>SEMESTER - V</b>		<b>HRS/WK-5</b>
<b>MAIN</b>		<b>CREDIT - 4</b>

**Objective :**

To make the students aware of Normalization concepts related to Database and Some Basic SQL Commands.

**UNIT - I****[18 hrs]**

**Database management system:** Definition – purpose of database systems – data abstraction – data models – instances and schemes – data independence – database manager – database administrator – database users – overall system structure.

**UNIT II****[18 hrs]**

**Entity – Relationship Model:** Entities and entity sets – relationships and relationship sets – attributes – mapping constraints – keys – E-R diagram – reducing E-R diagrams to tables – generalization – aggregation.

**UNIT - III****[18 hrs]**

**Normal Forms:** First Normal Form – Second Normal Form – Third Normal Form – Boyce – Codd normal form - Fourth Normal Form.

**UNIT - IV****[18 hrs]**

**Introduction to SQL:** DDL, DML, DCL operations – integrity constraints – string functions – number functions – date functions – aggregate functions – selecting distinct values – working with null values – pseudo columns – grouping and ordering data – sub queries – joins – union, intersect & minus – indexes – clusters – views – snapshots – sequences – synonym – users, roles and privileges – grant and revoke permission – locks.

**UNIT - V****[18 hrs]**

**Introduction to PL/SQL: PL/SQL overview** -Declarations section-Executable commands section-Exception handling section-Procedures-Functions-Packages-Triggers-Cursor Management.

**TEXT BOOKS:**

1. Henry F.Korth & Abraham Silberschatz "Database System concepts"- TMH-1998.
2. A.J.Page "Relational database concepts selection and implementation"
3. ORACLE DATABASE 10g-The complete reference- **KEVIN LONELY**, Tata McGraw-Hill Publishing Company Ltd 2004

**REFERENCE BOOKS:**

1. "Introduction to Oracle", Oracle Corporation Press.
2. "Introduction to PL/SQL", Oracle Corporation Press.

<b>III B.C.A.</b>	<b>PROGRAMMING USING MICROSOFT TECH. ( ASP.NET USING C#)</b>	<b>CA510T</b>
<b>SEMESTER - V</b>		<b>HRS/WK-5</b>
<b>MAIN</b>		<b>CREDIT - 4</b>

**Objective:**

To make the student get exposed with the latest programming concept Dot net and to equip them with skills related to c# programming.

**UNIT-I****[15 hrs]**

**Introductin to Dot Net:-** Dot Net Framework –CLR-MSIL-JIT-Managed Code-Benefits of Dot Net.

**UNIT -II:****[15 hrs]**

**C#.Net:** Data types-Variables-Arrays-Properties-Namespace-Methods-Interface-Delegation.

**UNIT-III:****[15 hrs]**

**Asp.net:** Difference between Asp and Asp.net-Architecture of Asp.net-Execution model-Difference between Code Behind and aspx file-Implementation of simple web application.

**UNIT-IV:****[15 hrs]**

**Controls in C#:** Button-Textbox-Timer-PictureBox-RadioButton-Menu. **Web Controls:** AdRotator-Validation-Calendar .

**UNIT -V:****[15 hrs]**

**ADO.NET:** ADO.Net Objects Model – Architecture of ADO.NET-Working with Grid control-Working with Crystal Report Viewer control.

**TEXT BOOKS:**

1. Harvey M.Deitel & Paul J.Deitel- c# Programmers- Second Edition-Pearson Edition.
2. Yashavant Kanetkar, 2004 C#.Net. Motilal Books of India.
3. Peter Drayton , Ben Albahari, Ted Neward. C# in an nutshell. O'Reilley Publication.
4. E.Balaguruswamy. Programming with C# - 1- Edition. Tata McGraw – Hill Publication.

**REFERENCE BOOKS**

1. Herbert Schlitz. 2002 C# - A Beginner's Guide. Osborne/ McGraw - Hill Publication.
2. Burton Harvey, Simon Robinson, Julian Templeman and Karli Waston, 'C# Programming with the Public Bata', Shroff Publishers & Distributors Pvt. Ltd (SPD) Mumbai, April 2001.
3. Ben Albahart, Peter Drayton and Brad Merrill, 'c# Essentials', SPD, Mumbai March 2001.
4. Thamari Selvei, A text Book on C#: A Systematic Approach to OOP, Pearson Ed.

<b>III B.C.A.</b>	<b>DATA COMMUNICATION NETWORKS</b>	<b>ECA511</b>
<b>SEMESTER - V</b>		<b>HRS/WK-5</b>
<b>ELECTIVE-I</b>		<b>CREDIT - 5</b>

**Objective:**

To enable the students to get acquainted with the basics of Networks and to make them concentrate on research side with respect to networks.

**UNIT I****[18 hrs]**

**Introduction:** Networks – protocols and standard – line configuration – topology – transmission mode – categories of networks – inter networks.

**UNIT II****[18 hrs]**

**OSI model:** functions of the layers – TCP/IP protocol suite – signals – analog and digital signal – periodic and a periodic signals – analog signals – digital signal – data transmission – data terminal equipment – data circuit terminals equipment – modems.

**UNIT III****[18 hrs]**

**Transmission media:** guided media – unguided media – transmission impairments – media comparison. Multiplexing – FDM – TDM – WDM. Error detection and correction – types of errors–detection – vertical redundancy check (VRC) – longitudinal redundancy check (LRC) – cyclic redundancy check (CRC) – check sum – error correction.

**UNIT IV****[18 hrs]**

**Switching Techniques:** circuit switching – packet switching – message switching – networking and internetworking devices – repeaters – bridges – routers – gateways.

**UNIT V****[18 hrs]**

**Routing algorithms:** distance vector routing – link state routing – data link control – line discipline – flow control – error control.

**TEXT BOOKS:**

1. Behrouz A Forouzan, "Data Communications and Networks" – Second Edition, Tata McGraw Hill, 2002.
2. Andrew S. Tanenbaum, " Computer Networks", 3<sup>rd</sup> Edition,

**REFERENCE BOOK:**

1. William Stallings, "Data & Computer Communications", Sixth Edition, Pearson Education, 2001.
2. Fred Halsall, "Data Communications, Computer Networks and Open Systems", Addison Wessley, 1995.

<b>III BCA</b>	<b>MULTIMEDIA AND VIRTUAL REALITY</b>	<b>ECA512S</b>
<b>SEMESTER - V</b>		<b>HRS/WK - 5</b>
<b>ELECTIVE-II</b>		<b>CREDIT - 5</b>

**Objective:**

To enable the students to learn the basic functions, principles and concepts of Multimedia and Virtual Reality

**UNIT-I****[12 Hrs]**

**Introduction:** What is Multimedia: Definitions – Where to use multimedia – Introduction to Making Multimedia: What you need – Macintosh and Windows production platforms

**Text:** The power of meaning – About fonts and faces – Using text in multimedia – Computers and Text – Font editing and Design tools – Hypermedia and Hypertext

**UNIT-II****[12 Hrs]**

**Sound:** The power of sound – Multimedia system sounds – MIDI versus Digital Audio – Digital Audio – Making MIDI audio – Audio, File formats – Working with sound on the Macintosh – Notation Interchange File Format (NIFF) – Adding sound to your multimedia project – Toward Professional sound: The Red Book standard – Production tips.

**Images:** Making still Images – Color – Image file formats. **Animation:** The Power of Motion – Principles of Animation – Making animations that works.

**UNIT-III****[12 Hrs]**

**Video:** Using Video – How Video works – Broadcast video standards – Integrating computers and television – Shooting and Editing Video – Video tips – Recording formats – Digital Video. **Planning and Costing:** Project planning – Estimating – RFPs and Bid Proposals – Designing and producing: Designing – Producing

**UNIT-IV****[12 Hrs]**

**Introduction to virtual reality** –goals of virtual reality, the human side of things, and the basic concepts of virtual reality, Evaluation of virtual reality: Improvement of communication with computers. Early vision of virtual reality. State of virtual reality: sense of sound, touch, other senses, world creating tools. Virtual reality issues: display issues, tracking issues, manipulation issues, application issues, and navigation issues.

**UNIT-V****[12 Hrs]**

**Application to virtual reality:** 3D modeling, 3D architecture, 3D training, 3D science, 3D education, 3D shopping, 3D sports, Distributed interactive simulation, the responsive work bench, VR training programme for disable children, medicine and surgery. Introduction to Virtual Reality Modeling languages.

**Text Books :**

1. Multimedia Making it Work – Tay Vaughan
2. John Hayward – Adventures in Virtual Reality, One publications

**Reference Book :**

John F. Koegel Buford, Multimedia systems.

<b>III BCA</b>	<b>COMPUTER GRAPHICS</b>	<b>ECA512A</b>
<b>SEMESTER- III</b>		<b>HRS/WK-5</b>
<b>ELECTIVE II</b>		<b>CREDIT -5</b>

**Objective:**

- To enable the students to learn about the working of input/output devices.
- To make the student to learn the concepts of 2D and 3D Object transformation models and generation algorithms.

**UNIT - I****[ 15 Hrs]**

**Introduction to computer Graphics:** Video display devices – Raster scan system – Random Scan System – Interactive input Devices – Hard copy devices – Graphics software – Output primitives – line drawing algorithms – initializing lines – Line function – circle Generating algorithms.

**UNIT - II****[ 15 Hrs]**

**Output Primitives:** Attributes of output Primitives – line attributes – Color and Grayscale style – Area filling algorithms – Character attributes Inquiry functions – Two dimensional transformations – Basic transformation – composite transformation – Matrix representation –Other transformations.

**UNIT - III****[ 15 Hrs]**

**2D Concepts:** Two – dimensional viewing – window – to view port co-ordinate transformation – clipping algorithms – interactive input methods – Physical Input devices – logical classification of input devices – interactive picture construction methods.

**UNIT- IV****[ 15 Hrs]**

**3D Concepts:** Three – dimensional concepts – Three dimensional display methods – parallel Projection –Perspective projection – Depth Cueing – Visible line and surface identification.

**UNIT - V****[ 15 Hrs]**

**Transformations:** Three dimensional transformations -Three dimensional viewing – Projection – Viewing transformation – implementation of viewing operations.

**TEXT BOOK:**

D. Hearn and M.P. Basker – Computer Graphics [C Version] – Person Education.

**REFERENCE BOOK:**

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

<b>III B.C.A.</b>	<b>RDBMS -ORACLE-PRACTICAL</b>	<b>CAP505T</b>
<b>SEMESTER – V</b>		<b>HRS/WK-5</b>
<b>PRACTICAL</b>		<b>CREDIT – 3</b>

**Objective:**

To make the student aware of the Back-End tool.

**SQL**

1. Simple Queries using DDL,DML and DCL
2. SQL In-Built Functions
3. SET Operations
4. Views and Snapshots
5. Joins
6. Sub Queries

**PL/SQL**

7. PL/SQL Block
8. Procedures
9. Functions
10. Packages
11. Triggers
12. Cursors

<b>III B.C.A.</b>	<b>PROGRAMMING USING MS TECH. ( ASP.NET USING C#) PRACTICAL</b>	<b>CAP506T</b>
<b>SEMESTER - V</b>		<b>HRS/WK-5</b>
<b>PRACTICAL</b>		<b>CREDIT - 3</b>

**Objective:**

To improve the programming skills of the students with respect to C# and also to develop web application using asp.net and to make the students to know the latest programming concepts.

**WINDOWS APPLICATION:**

1. To develop simple student bio data
2. Create a color chooser using standard control.
4. To develop Notepad Application.
5. Login Form Creation using Ms Access.

**WEB APPLICATION:**

6. Create an application to sending a request from one page to another using session.
7. Create a simple website for an organization using Master Page.
8. To develop database application for student mark list processing using validation control ( Oracle)
9. To develop database Application for Telephone Directory to store phone number, Customer name and Customer address and display it with Grid View control.(SQL server)

<b>III YEAR</b>	<b>OPEN SOURCE TECHNOLOGIES-PHP</b>	<b>CA614Q</b>
<b>SEMESTER - VI</b>		<b>HRS/WK- 5</b>
<b>MAIN</b>		<b>CREDIT - 4</b>

**Objective:**

To impart basic knowledge of PHP and MySQL.

**UNIT-I****[15 Hrs]**

**BASICS OF PHP:-**History of php-Language basics:-Lexical structure-Data types-variables-Expressions and operators-flow control statements:if,if-else,while,do-while,switch,for,foreach-Functions:defining functions-variable scope(global and local variables)-function parameters: call by reference-call by value-return values: return single value, multiple value-handling missing parameters-default parameters.

**UNIT-II****[15 Hrs]**

**STRING:** String constants-printing string functions: print, print\_r, printf, echo, var\_dump-string manipulation functions: trim, ltrim, rtrim, strtolower, strtoupper, ucfirst, ucwords, strpos, substr,chartocode, strlen, strrev,str\_word\_count, strcmp, strcasecmp

**ARRAY:** Indexed – Associative-multidimensional arrays-Array Sorting: sort, asort, ksort, rsort, arsort, krsort, usort, uasort, uksort, ord functions.

**OOPS IN PHP:** Class, Object, Inheritance, Creating a class-creating object-accessing properties and methods-this variable -inheritance-use of extend keyword-constructor.

**UNIT-III****[15 Hrs]****BUILT IN FUNCTIONS IN PHP:**

**Mathematical functions:** floor, fmod, pow, round, rand, sqrt, max, min, log, hexdec.

**Date and Time Functions:** data, data\_default\_timezone\_set, strtotime, mktime.

**Handling Files:** create- fopen - fread - fwrite – include – fclose – unlink – fgets – fgetc – feof - require-require\_once.

**UNIT-IV****[15 Hrs]****Handling Web Pages:**

HTML – HTML tags-tables-frames-images-textfiled-textarea-listbox-checkbox-select-radiobutton-button-fileupload button-file download.

Javascript –Javascript basics –validating forms.

Handling Session and Cookies: Global variables:-\$\_Globals, \$\_Server, \$\_request, \$\_Post, \$\_files, \$\_Cookies, \$\_Session.

**UNIT-V****[15 Hrs]**

**Working with Databases:** Creating a MYSQL database-Creating a new Table-Inserting data into the database-Updating databases-Deleting records- Accessing the database records from PHP.

**TEXT BOOK**

1. Steven Holzner, "The Complete Reference PHP", Tata McGraw Hill Pvt.Ltd., 2008.

**BOOK FOR REFERENCE**

1. Leon Atkinson, "Core PHP programming", Pearson Education, 2004.

<b>III B.C.A.</b>	<b>COMPUTER ARCHITECTURE</b>	<b>ECA613T</b>
<b>SEMESTER - VI</b>		<b>HRS/WK-5</b>
<b>ELECTIVE-III</b>		<b>CREDIT - 5</b>

**Objective:**

To enable the students to learn the principles of Computer Working and its entire Internal Hardware..

**UNIT- I** **[ 15 Hrs]**

**Central processing unit** : General register and stack organization - Instruction formats - Addressing modes – Data Transfer and Manipulation.

**UNIT- II** **[ 15 Hrs]**

**Pipelining** : Arithmetic, instruction and RISC pipelining .

**UNIT- III** **[ 15 Hrs]**

**Computer Arithmetic:** Addition and subtraction - Multiplication and Division Algorithms - Floating point addition and subtraction.

**UNIT - IV** **[ 15 Hrs]**

**Input-Output organization:** Peripheral Devices - I/O Interface - Asynchronous data transfer - Priority interrupt - Direct memory access.

**UNIT- V** **[ 15 Hrs]**

**Memory Organization:** Memory hierarchy - Main memory - Auxiliary memory - Associative, Cache and Virtual memory.

**Text Book:**

M.Morris mano, “computer system architecture”,PHI.

**Reference Book:**

- 1.V.Carl Hamacher,uonko G.Vranesic, safwat G.Zaky, “Computer Organization”, McGraw Hill
- 2.John,P.Hayes, “Computer system Architecture”,McGraw Hill.

<b>III B.C.A.</b>	<b>OPERATING SYSTEMS</b>	<b>CA615S</b>
<b>SEMESTER - VI</b>		<b>HRS/WK-5</b>
<b>MAIN</b>		<b>CREDIT - 4</b>

**Objective:**

This paper is intended to make the student aware of all concepts related to operating system.

**UNIT-I****[18 hrs]**

**Introduction:** History of Operating system - Operating system functions – File system.

**UNIT-II****[18 hrs]**

**Process Management:** Inter-process communication - Dead Lock - Dead Lock prerequisites - Dead Lock Strategies

**UNIT-III****[18 hrs]**

**Memory Management:** - Single Contiguous – Fixed Partitioned – Variable Partitions – Non-Contiguous allocations - Paging – Segmentation - Virtual Memory Management Systems.

**UNIT-IV****[18 hrs]**

**GUI:** – Components of GUI – Requirements of Windows based GUI –Security Protection: Threats – Attacks – Worms – Virus - Design principles – Authentication – Protection mechanisms – Encryption.

**UNIT-V****[18 hrs]**

**Unix OS:** Overview of Unix-Unix File System: Users View of File System-Types of Files-Internals of File System: Logical Layout of the File-The Super Block-Structure of inode-Address Translation-run-Time Data Structure for File system: UFD-File Table-Inode Table-System Calls: Open-Read-Write-Random Seek-Close-Create a File-Unlink a File-Change Directory. Basic Commands in Unix.

**TEXT BOOKS:**

1. A.S.Godbole-Operating Systems-TMH-1999.
2. A.Silberschatz and P.B.Galvin- Operating system concepts-Addison-Wesley Publishing company, Fifth Edition, 1998.

**REFERENCE BOOKS :**

1. Andrew S.Tannenbaum, "Operating Systems: Design and Implementation", 3/e, PHI,2006.
2. Charles Crowley, "Operating Systems-A design Oriented Approach", Tata McGraw Hill , 1998.
3. William Stallings, "Operating Systems",5/e PHI/Pearson Education , 1997.

<b>III B.C.A.</b>	<b>SOFTWARE ENGINEERING</b>	<b>ECA616T</b>
<b>SEMESTER - VI</b>		<b>HRS/WK-5</b>
<b>ELECTIVE-IV</b>		<b>CREDIT - 5</b>

**Objective:**

To introduce the concepts of software Engineering and the various phases in Software development in order to equip the students in developing project.

**UNIT - I: [18 hrs]**

**Introduction:** Evolving Role of Software-Characteristics of Software-Software Myths-Process Models: Waterfall Model- Evolutionary Process Models.

**UNIT -II : [18 hrs]**

**Requirement Engineering:** Tasks - Initiating the Requirements Engineering Process- Eliciting Requirements.

**UNIT III: [18 hrs]**

**Building Analysis Model:** Requirement Analysis - Data Modeling – Flow Oriented Modeling – Class Based Modeling – Creating a Behavioral Model.

**UNIT -IV: [18 hrs]**

**Testing:** Software Testing Methods - Software Testing strategies –White Box Testing – Basic Path- Control Structure – Black Box Testing.

**UNIT -V: [18 hrs]**

**Project Management:** Management Spectrum - Formal Technical Reviews – Software Change Management Process – Clean Room S/W Engineering Specification-Design and Testing.

**TEXT BOOKS :**

- 1 R.S.Pressman – Software Engineering –Sixth Edition McGraw Hill International edition – 1997.
2. Richard Fairley – Software Engineering – (Design, Reliability and Management) – Tata McGraw Hill edition –1983.

**REFERENCE BOOKS**

1. Software Engineering Programs Documentation Operating procedures
2. Carlo Ghezzi, Mehdi Jazayasi, Dino Mandrioloi,” Fundamentals of Software Engineering “ Phi Pvt. Ltd., 1991.

<b>III BCA</b>	<b>PROGRAMMING IN PHP</b>	<b>CAP607Q</b>
<b>SEM - VI</b>		<b>CREDIT - 3</b>
<b>PRACTICAL</b>		<b>HRS/WK- 5</b>

**Objective:**

To enable the student to build software applications in PHP.

1. Simple Programs (Factorial , prime number, Fibonacci series)
2. String Functions:  
( trim,ltrim,rtrim,strtolower,strtoupper,ucfirst,ucwords,strops,substr,chartocode, strlen,strrev,str\_word\_count,strcmp,strcasecmp)
3. Arrays
4. Functions-Math function:- floor,pow,round,rand,sqrt,max,min,hexdec.  
Date and Time functions:-strtotime,mktime,data\_default\_timezone\_set.
5. Create a Home Page using PHP and validating the form using javascript.
6. Form creation using POST method
7. Database Operations
8. Login form
9. Student mark list creation
10. Electricity bill preparation.

<b>III B.C.A.</b>	<b>MINI PROJECT</b>	<b>JCA601</b>
<b>SEMESTER - VI</b>		<b>HRS/WK-5</b>
<b>MINI PROJECT</b>		<b>CREDIT - 3</b>

**Objective:**

The main objective of this Mini project is to expose the students to industry atmosphere and to get a broad idea to develop project.

**Mini-Project on Multimedia/ Web design/IPhone Applications.****FORMAT FOR PREPARING MINI PROJECT REPORT****Arrangement of contents**

1. Title Page
2. Bonafide Certificate
3. Acknowledgement
4. Table of contents
5. Abstract
6. Chapters of the Report
7. References
8. Appendices, if any

Appendices should be named as

- APPENDIX - A
- APPENDIX - B

**BINDING SPECIFICATION**

Report should be bound using flexible cover of thick white art paper.

The Spine for the bound volume should be 2cms width.

The Cover should be printed in block letters.

**MARGIN SPECIFICATION**

- Top : 4 cms
- Bottom : 3 cms
- Left : 4.5 cms
- Right : 2.5 cms

**PAGE NUMBERING**

All Page numbers should be typed without punctuation on the bottom-center portion of the page. The Preliminary pages (table of contents and abstract) should be numbered in lowercase roman numerals. Pages of main text, starting with chapter-1, should be consecutively numbered using Arabic numerals.

**TITLE PAGE**

**TITLE OF THE PROJECT**

**A project report**

Submitted for the partial fulfillment for  
the award of degree of

**BACHELOR OF COMPUTER APPLICATIONS**

By

**STUDENT'S NAME**

(Register Number)

Under the Guidance of

**GUIDE'S NAME**

**COLLEGE ADDRESS**

**Month and year**

**CERTIFICATE**

**CERTIFICATE**

This is to certify that the mini project report entitled

**TITLE OF THE PROJECT**

being submitted to the St.Joseph's College of Arts and Science  
(Autonomous),Affiliated to Thiruvalluvar University- Vellore.

By

Mr./Ms.STUDENT'S NAME

For the partial Fulfillment for the award of degree of

**BACHELOR OF COMPUTER APPLICATIONS**

Is a Bonafide record of work carried out by him/her, under  
my guidance and supervision.

Head of the Department

Internal Guide

Submitted for the viva-voce examination on-----

Examiners:

- 1.
- 2.

**Question Paper pattern:****THEORY EXAMINATION (BCA)****Continuous Internal Assessment (CIA) 25 marks**

Two Internal Examinations	10 marks
Assignment / Seminar	10 marks
Attendance	5 marks
<b>Total</b>	<b>25 marks</b>

**External Examination (75 marks)****Question Pattern****B.C.A.**

Time: 3 Hrs

Max. Marks: 75

**Section - A (5 x 5 = 25)****Answer ANY FIVE out of eight.**

One question from each unit and three questions from important topics with problems and programs

**Section - B (5 x 10 = 50)****Answer ANY FIVE out of EIGHT.**

One question from each unit and three questions from important topics with problems and programs