ST. JOSEPH'S COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS), CUDDALORE-607 001.

POST GRADUATE AND RESEARCH DEPARTMENT OF COMPUTER APPLICATIONS

BACHELOR OF COMPUTER APPLICATIONS (B.C.A.)

SYLLABUS

2018 - 2019

BACHELOR OF COMPUTER APPLICATIONS (B.C.A.)

CURRICULUM DESIGN TEMPLATE
2018 - 2019

Semester	Part	Subject Title	Subject Code	Hrs	Cr
		FIRST YEAR			
I Semester	Language	Tamil-I	LTC101T	5	3
		Hindi-I	LH101S		
		French-I	LF101		
	Language	Foundation Course English – I	LEC101T	5	3
	Main-1	Programming in C	CA101S	4	3
	Main-2	Digital Logic Fundamentals	CA102T	5	4
	Practical- I	Programming in C	CAP101T	3	2
	Allied-1	Mathematical Foundations	AMTCA101	5	4
	Skill	Value Education	VE101T	3	2
			Total	**30**	**21**
II Semester	Language	Tamil-II	LTC202T	5	3
		Hindi-II	LH202S		
		French-II	LF202		
	Language	Foundation Course English – II	LEC202T	5	3
	Main-3	Object Oriented Programming using C++	CA203Q	5	4
	Main-4	Fundamentals of Data Structures	CA204S	4	3
	Practical – II	Programming in C++	CAP202T	3	2
	Allied-2	Statistical Methods	ASCA202T	5	4
	Skill	Dynamics of Personality	EPD201T	3	2
			Total	**30**	**21**

		SECOND YEAR			
III Semester	Main–5	Programming using Sun Micros Technology (Java)	CA305Q	6	4
	Main–6	Computer Algorithms	CA306T	6	5
	Practical – III	Programming using Sun Micros Technology (Java)	CAP303Q	5	3
	Allied-3	Organizational Behaviour	ACA301	5	5
	Allied-4	Numerical Methods	AMTCA302	5	4
	Skill	Environmental Science	EVS301S	3	2
			Total	**30**	**23**
IV Semester	Main–7	Internet Technologies	CA407T	5	5
	Main–8	Advanced Java Programming	CA408T	6	4
	Practical – IV	Advanced Java Programming	CAP404T	5	3
	Allied-5	Resource Management Techniques	AMCA403S	5	5
	Allied-6	Financial Accounting	ACCA401	5	4
	Skill	Soft Skill	AOSS401S	4	4
			Total	**30**	**25**
		THIRD YEAR			
V Semester	Main–9	Relational Database Management System	CA509S	5	4
	Main–10	Programming using ASP.NET and C-SHARP	19CA510	5	4
	Elective-I	1.Multimedia and Virtual Reality*	ECA512S*	5	5
		2. Computer Graphics*	ECA512A*		
		3. Cloud Computing	ECA512B		
	Elective-II	1. Data Communication and Networks	ECA511	5	5
		2. Network Security	New Code		
		3. Mobile Computing	New Code		
	Practical – V	RDBMS -Oracle	CAP505T	5	3
	Practical – VI	Programming in ASP.NET using C-SHARP	19CAP506	5	3
			Total	**30**	**24**

VI Semester	Main–11	Open Source Technology -PHP	CA614Q	5	4
	Main–12	Operating Systems	CA615S	5	4
	Elective-III	1. Software Engineering*	ECA616T*	5	5
		2. Management Information system	ECA616A		
		3. Information System Design	ECA616B		
	Elective-IV	1. Computer Architecture*	ECA613T	5	5
		2. Distributed Computing	New Code		
		3. Microprocessor and its Applications	New Code		
	Practical – VII	Programming in PHP	CAP607T	5	3
	Project	Mini Project	JCA601	5	3
			Total	**30**	**24**
		Extension Activities	EU601	**-**	**2**
				180	**140**

I BCA	PROGRAMMING IN C	CA101S
SEMESTER - I		HRS/WK- 4
MAIN-1		CREDIT - 3

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

Course Outcomes:

At the end of the Course the students should be able to exhibit

CO1: Knowledge pertaining to C-Language Fundamentals
CO2: Logic using Control Statements
CO3: Modular Programming using Functions
CO4: Knowledge pertaining to arrays and structures.
CO5: Advanced Programming techniques using pointers and files concepts.

SEMESTER I	COURSE CODE: CA101S					TITLE OF THE PAPER:PROGRAMMING IN "C"								HOURS: 4	CREDITS: 4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)								MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8		
CO1	3	4	4	3	4	4	4	4	4	2	4	4	5	3.75	
CO2	4	4	4	3	4	4	4	4	4	2	4	4	5	3.85	
CO3	4	4	4	3	4	4	4	4	4	2	5	4	4	3.90	
CO4	4	4	4	3	4	4	4	4	4	2	5	4	5	3.90	
CO5	5	5	5	3	4	4	4	5	4	2	5	4	5	4.20	
Mean Overall Score														3.92	

This Course is having **HIGH** association with Programme Outcomes and Programme Specific Outcomes.

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

I BCA	PROGRAMMING IN C	CA101S
SEMESTER - I		HRS/WK- 4
MAIN-1		CREDIT - 3

UNIT-I **[12 Hrs]**

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

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

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

UNIT-IV **[12 Hrs]**

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

UNIT-V **[12 Hrs]**

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

TEXT BOOK:

E. Balagurusamy -Programming in ANSI C -Tata McGraw Hill Pub.

REFERENCE BOOKS:

1. Byron S. Gottfied - Schaum's outline Theory and problems of programming with C. Tata McGraw Hill Pub.
2. YeshwanthKanethkar -Let us C, BPB Publications.
3. K. R. Venugopal, S. R. Prasad -Mastering C – Tata McGraw Hill Pub.

I BCA	DIGITAL LOGIC FUNDAMENTALS	CA102T
SEMESTER - I		HRS/WK- 5
MAIN- 2		CREDIT - 4

Objective:

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

Course Outcomes:

At the end of the Course the students should be able to exhibit

CO1: Knowledge pertaining to Number System
CO2: Simplification Logic using K-Map and Tabulation Method
CO3: Designing Skills using Adders and Subtractors.
CO4: Designing Skills using Combinational Logic.
CO5: Advanced Designing Skills using Sequential Logic Circuit.

SEMESTER I	COURSE CODE: CA102T					TITLE OF THE PAPER: DIGITAL LOGIC FUNDAMENTALS								HOURS: 5	CREDITS: 4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)								MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8		
CO1	3	3	3	4	4	5	4	4	4	2	3	2	4	3.15	
CO2	4	4	4	4	4	5	5	5	4	2	2	2	5	3.50	
CO3	4	4	4	4	4	5	5	4	5	3	3	2	5	3.70	
CO4	4	4	4	4	4	5	4	5	5	3	3	2	5	3.70	
CO5	4	4	4	4	4	5	4	4	4	3	3	2	5	3.50	
Mean Overall Score														3.51	

This Course is having **HIGH** association with Programme Outcomes and Programme Specific Outcomes.

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

I BCA	DIGITAL LOGIC FUNDAMENTALS	CA102T
SEMESTER - I		HRS/WK- 5
MAIN- 2		CREDIT - 4

UNIT-I **[15Hrs]**

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

UNIT-II **[15Hrs]**

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

UNIT-III **[15Hrs]**

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

UNIT-IV **[15Hrs]**

Combinational Logic Circuits: Multiplexers-Demultiplexers-Decoders: 1 of 16 Decoders-seven segment decoders-Encoders.

UNIT-V **[15Hrs]**

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

TEXT BOOK:

M. Morris Mano -Digital Logic and Computer Design- PHI.

REFERENCE BOOKS:

1. Thomas C. Bartee Digital ComputerFundamentals- McGraw Hill Pub.
2. Malvino& Leach- Digital Principles and Applications –McGraw Hill Pub.
3. S. Ramalatha - Digital Computer Fundamentals, Meenakshi Agency.

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

Objective:

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

Course Outcomes:

At the end of the Course the students should be able to exhibit

CO1: Programming Skills using Operators and Control Statements
CO2: Programming Skills using Functions and Recursive Functions
CO3: Programming Skills using Arrays and Structures
CO4: Programming Skills using Pointers.
CO5: Programming Skills using Files.

SEMESTER I	COURSE CODE: CA101T					TITLE OF THE PAPER: C- PROGRAMMING								HOURS: 3	CREDITS: 3
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)								MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8		
CO1	4	5	4	4	4	4	5	4	5	4	4	4	4	4.2	
CO2	5	4	4	5	5	4	4	4	4	4	4	4	5	4.3	
CO3	4	5	5	5	5	5	5	5	5	4	4	4	5	4.7	
CO4	5	4	4	5	5	5	5	5	5	4	4	4	5	4.6	
CO5	4	5	4	5	5	5	5	5	5	4	4	4	5	4.6	
Mean Overall Score														4.48	

This Course is having **VERY HIGH** association with Programme Outcomes and Programme Specific Outcomes.

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

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

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.

I BCA	OBJECT ORIENTED PROGRAMMING USING C++	CA203Q
SEMESTER - II		HRS/WK- 5
MAIN -3		CREDIT - 4

Objective:

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

Course Outcomes:

At the end of the Course the students should be able to exhibit

CO1: Knowledge pertaining to C++-Language Fundamentals
CO2 Knowledge pertaining to Principles of OOP
CO3: Knowledge pertaining to Fundamentals of OOP
CO4: Programming Skills using Functions, Polymorphism.
CO5: Advanced Programming techniques using files.

SEMESTER II	COURSE CODE: CA203Q					TITLE OF THE PAPER: OBJECT ORIENTED PROGRAMMING USING C++								HOURS: 5	CREDITS: 4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)								MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8		
CO1	3	4	4	3	4	4	4	4	4	2	4	4	5	4.0	
CO2	4	4	4	3	4	4	4	4	5	2	4	4	5	4.0	
CO3	4	4	4	3	4	4	4	4	5	2	5	4	4	4.0	
CO4	4	4	4	3	4	4	4	4	5	2	5	4	5	4.0	
CO5	5	5	5	3	4	4	4	5	5	2	5	4	5	4.0	
Mean Overall Score														4.0	

This Course is having **HIGH** association with Programme Outcomes and Programme Specific Outcomes.

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

I BCA	OBJECT ORIENTED PROGRAMMING USING C++	CA203Q
SEMESTER - II		HRS/WK- 5
MAIN -3		CREDIT - 4

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 BOOK:

E. Balagurusamy-Object Oriented Programming with C++.TMH-1995

REFERENCE BOOKS:

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

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

Objective:

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

Course Outcomes:

At the end of the Course the students should be able to exhibit

CO1: Knowledge pertaining to Fundamentals of Data Structure
CO2: Stacks and Queues Implementation Techniques.
CO3: Logical Skills using Linked List.
CO4: Traversing Programming Skills using Trees.
CO5: Advanced Programming techniques using Graph.

SEMESTER II	COURSE CODE: CA204S					TITLE OF THE PAPER: FUNDAMENTALS OF DATA STRUCTURES +								HOURS: 4	CREDITS: 4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)								MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8		
CO1	4	4	4	3	4	4	4	4	3	2	3	2	4	3.50	
CO2	4	4	4	3	4	4	4	4	3	2	3	2	4	3.50	
CO3	5	4	4	3	4	5	5	4	3	2	4	2	4	3.80	
CO4	5	4	4	3	4	5	5	4	3	2	4	2	4	3.80	
CO5	5	4	4	3	4	5	5	4	3	2	4	2	4	3.80	
Mean Overall Score														3.68	

This Course is having **HIGH** association with Programme Outcomes and Programme Specific Outcomes.

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

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

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: **[12Hrs]**

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

TEXT BOOK:

E. Horowitz and S. Shani, Fundamentals of Data Structures in C++, Galgotia Publications 1999.

REFERENCE BOOKS:

1. Alfred V. Aho, John E. Hopcroft, Jeffrey D. Ullman, Data structures and algorithms, Pearson Education India.
2. R. Kruse and N. Dale and S. C. Lily Pascal plus Data Structures Algorithms and Advanced Programming –Tata McGraw Hill-New Delhi (1990)

I BCA	PROGRAMMING IN C++	CAP202T
SEMESTER – II		HRS/WK- 3
PRACTICAL - II		CREDIT – 2

Objective:

To implement all object oriented programming Concepts and Data structure.

Course Outcomes:

At the end of the Course the students should be able to exhibit

CO1: Programming Skills using Basic OOP Concepts
CO2: Programming Skills using Advanced OOP Concepts
CO3: Application developing skills using Stack and Queue
CO4: Traversing Programming Skills using Trees.
CO5: Advanced Programming techniques like Recursive for Binary Tree Traversing.

SEMESTER II	COURSE CODE: CAP202T					TITLE OF THE PAPER: PROGRAMMING IN C++								HOURS: 3	CREDITS: 3
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)								MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8		
CO1	4	4	4	3	4	4	4	4	3	2	3	2	4	3.50	
CO2	4	4	4	3	4	4	4	4	3	2	3	2	4	3.50	
CO3	5	4	4	3	4	5	5	4	3	2	4	2	4	3.80	
CO4	5	4	4	3	4	5	5	4	3	2	4	2	4	3.80	
CO5	5	4	4	3	4	5	5	4	3	2	4	2	4	3.80	
Mean Overall Score														3.68	

This Course is having **HIGH** association with Programme Outcomes and Programme Specific Outcomes.

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

I BCA	PROGRAMMING IN C++	CAP202T
SEMESTER – II		HRS/WK- 3
PRACTICAL - II		CREDIT – 2

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 Operations of Stack using Arrays.
8. Implement insert, delete Operations of a queue using Arrays.
9. Conversion of infix to postfix using stacks Operations.
10. Binary tree traversals using recursion

II BCA	PROGRAMMING USING SUN MICROS TECHNOLOGY (JAVA)	CA305Q
SEMESTER - III		HRS/WK-6
MAIN – 5		CREDIT-4

Objective:

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

Course Outcomes:

At the end of the Course the students should be able to implement

CO1: Programs using Java Control Statements.
CO2: Programs using OOP Concepts in Java.
CO3: An Application using Packages and Interfaces
CO4: Programs using Threads and Streams.
CO5: Programs using String and Predefined Classes.

SEMESTER III	COURSE CODE: CA305Q					TITLE OF THE PAPER: PROGRAMMING IN JAVA								HOURS: 6	CREDITS: 4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)								MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8		
CO1	5	4	4	3	4	4	4	4	4	2	3	2	4	3.60	
CO2	5	4	4	3	4	4	4	4	5	2	3	2	4	3.70	
CO3	5	5	5	3	4	5	5	4	5	2	4	2	4	4.0	
CO4	5	5	5	3	4	5	5	4	5	2	4	2	4	4.0	
CO5	5	5	5	3	4	5	5	4	5	2	4	2	4	4.0	
Mean Overall Score														3.91	

This Course is having **HIGH** association with Programme Outcomes and Programme Specific Outcomes.

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

II BCA	PROGRAMMING USING SUN MICROS TECHNOLOGY (JAVA)	CA305Q
SEMESTER - III		HRS/WK-6
MAIN – 5		CREDIT-4

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 BOOK:

E. Balagurusamy, Programming with JAVA, TMH.

REFERENCE BOOKS:

1. Cray S. Horstman, Gray Cornell – Core Java 2 Vol. I and Vol. II – 7th Ed. PHI, 2000.
2. H. Schildt – Java 2 (The Complete Reference) – Fourth Edition, TMH 1999.
3. Wesley, K. Arnold and J. Gosling – The Java Programming Language – Third Edition Addison – Wesley, 2000.

II BCA	COMPUTER ALGORITHMS	CA306T
SEMESTER - III		HRS/WK-6
MAIN – 6		CREDIT-5

Objective:
To make the student to understand Time and Space Complexity of different algorithms.
Course Outcomes:

At the end of the Course the students should be able to implement

CO1: Algorithm based on time and space Complexity.
CO2: Algorithm based on Divide and Conquer method.
CO3: Algorithm based on Dynamic Programming
CO4: Algorithm based on Greedy Method
CO5: Algorithm based on Graph Techniques.

SEMESTER III	COURSE CODE: CA306T					TITLE OF THE PAPER: COMPUTER ALGORITHMS								HOURS: 6	CREDITS: 4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)								MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8		
CO1	4	4	5	3	4	4	4	4	3	2	3	2	4	3.50	
CO2	5	5	5	3	4	4	4	4	3	2	3	2	4	3.70	
CO3	5	5	5	3	4	5	5	4	3	2	4	2	4	3.90	
CO4	5	5	5	4	4	5	5	4	3	2	4	2	4	4.0	
CO5	5	5	5	4	4	5	5	4	3	2	4	2	4	4.0	
Mean Overall Score														3.83	

This Course is having **HIGH** association with Programme Outcomes and Programme Specific Outcomes.

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

II BCA	COMPUTER ALGORITHMS	CA306T
SEMESTER - III		HRS/WK-6
MAIN – 6		CREDIT - 5

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 BOOK:

E. Horowitz, S. Sahni and S. Rajasekaran, Computer Algorithms Galgotia-1999.

REFERENCE BOOKS:

1. G. Brassard and Brately- Fundamentals of Algorithmics, PHI 1996.
2. Goodman S.E. and Hedetniemi S.T. - Introduction to the Design and Analysis of Algorithms - Tata McGraw Hill publication.

II BCA	ORGANIZATIONAL BEHAVIOUR	ACA301
SEMESTER - III		HRS/WK-5
ALLIED-3		CREDIT-5

Course Outcomes:

At the end of the Course the students should be able to

CO1: Deliver proper behavior inside an organization.
CO2: Deliver proper Individual Behavior
CO3: Deliver proper Group Behavior
CO4: Communicate and Exhibit Leadership Qualities.
CO5: Adjust to Organizational Climate and Culture.

SEMESTER III	COURSE CODE: NEW CODE					TITLE OF THE PAPER: ORGANIZATIONAL BEHAVIOUR								HOURS: 5	CREDITS: 4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)								MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8		
CO1	4	4	4	3	4	4	4	4	2	3	4	5	4	3.75	
CO2	5	5	5	3	4	4	4	4	2	3	5	5	4	4	
CO3	5	5	5	3	4	5	5	5	2	3	5	5	4	4	
CO4	5	5	5	4	4	5	5	5	2	5	5	5	4	4.5	
CO5	5	5	5	4	4	5	5	5	2	5	5	5	4	4.5	
Mean Overall Score														4.2	

This Course is having **VERY HIGH** association with Programme Outcomes and Programme Specific Outcomes.

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

II BCA	ORGANIZATIONAL BEHAVIOUR	ACA301
SEMESTER - III		HRS/WK-5
ALLIED-3		CREDIT-5

UNIT I: **[15 Hrs]**

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: **[15 Hrs]**

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

UNIT III: **[15 Hrs]**

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

UNIT IV: **[15 Hrs]**

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

UNIT V: **[15 Hrs]**

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

TEXT BOOKS

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

REFERENCES

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

II BCA	PROGRAMMING USING SUN MICROS TECHNOLOGY (JAVA)	CAP303Q
SEMESTER - III		HRS/WK-5
PRACTICAL - III		CREDIT-3

Objective:

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

Course Outcomes:

At the end of the Course the students should be able to implement

CO1: Programs using Java Control Statements.
CO2: Programs using OOP Concepts in Java.
CO3: An Application using Packages and Interfaces
CO4: Programs using Threads and Streams.
CO5: Programs using String And Predefined Classes.

SEMESTER III	COURSE CODE: CAP303T					TITLE OF THE PAPER: JAVA PROGRAMMING								HOURS: 5	CREDITS: 3
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)								MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8		
CO1	5	4	4	3	4	4	4	4	4	2	3	2	4	3.60	
CO2	5	4	4	3	4	4	4	4	5	2	3	2	4	3.70	
CO3	5	5	5	3	4	5	5	4	5	2	4	2	4	4.0	
CO4	5	5	5	3	4	5	5	4	5	2	4	2	4	4.0	
CO5	5	5	5	3	4	5	5	4	5	2	4	2	4	4.0	
Mean Overall Score														3.91	

This Course is having **HIGH** association with Programme Outcomes and Programme Specific Outcomes.

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

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.
4. Implementing Interfaces-Arithmetic Manipulations
5. Exception Handling
6. Multithreading
7. String Manipulation using buffered Reader
8. Usage of Calendar Class and manipulation
9. Application using File streams (Sequential File)
10. Application using File streams (Random File)

II BCA	INTERNET TECHNOLOGIES	CA407T
SEMESTER – IV		HRS/WK-5
MAIN-7		CREDIT-5

Objective:

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

Course Outcomes:

At the end of the Course the students should be able to Exhibit

CO1: Knowledge in Internet Connection Technologies.
CO2: Knowledge in World Wide Web Concepts
CO3: Programming Skills using HTML Tags
CO4: Programming Skills using Style Sheets
CO5: Programming Skills using JavaScript.

SEMESTER IV	COURSE CODE: CA407T					TITLE OF THE PAPER: INTERNET TECHNOLOGIES								HOURS: 6	CREDITS: 4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)								MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8		
CO1	5	4	4	3	4	4	4	4	4	2	3	2	4	3.60	
CO2	5	4	4	3	4	4	4	4	5	2	3	2	4	3.70	
CO3	5	5	5	3	4	5	5	4	5	2	4	2	4	4.0	
CO4	5	5	5	3	4	5	5	4	5	2	4	2	4	4.0	
CO5	5	5	5	3	4	5	5	4	5	2	4	2	4	4.0	
Mean Overall Score														3.91	

This Course is having **HIGH** association with Programme Outcomes and Programme Specific Outcomes.

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

II BCA	INTERNET TECHNOLOGIES	CA407T
SEMESTER – IV		HRS/WK-5
MAIN-7		CREDIT-5

UNIT – I **[15 Hrs]**

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 **[15 Hrs]**

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 **[15 Hrs]**

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

UNIT – IV **[15 Hrs]**

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 **[15 Hrs]**

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

TEXT BOOK:

Ivan Bayross, Web Enable Commercial Application Development using HTML, DHTML, Javascript, PERL CGI, BPB Publications, 2000.

REFERENCE BOOKS:

1. Thomas A. Powell – HTML and XHTML: The Complete Reference, Tata McGrawHill, 4th Edition 2003.
2. E. Stephen Mack and Janan Platt, HTML 4.0: No Experience Required, Sybex Inc.
3. H. M. Deitel, P.J. Deitel, A.B. GoldBerg, Internet & World Wide Web: How to Programme, Prentice Hall, Third Edition

II BCA	ADVANCED JAVA PROGRAMMING	CA408T
SEMESTER - IV		HRS/WK-6
MAIN – 8		CREDIT-4

Objective:

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

Course Outcomes:

At the end of the Course the students should be able to Exhibit

CO1 Programming Skills using AWT.
CO2: Network Programming Skills using Java.
CO3: An Application developing skills using JDBC
CO4: An Application developing skills using RMI
CO5: An Application developing skills using Servlet

SEMESTER IV	COURSE CODE: CA408T					TITLE OF THE PAPER: ADVANCED JAVA PROGRAMMING								HOURS: 6	CREDITS: 4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)								MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8		
CO1	5	4	4	3	4	4	4	4	4	2	3	2	4	3.60	
CO2	5	4	4	3	4	4	4	4	5	2	3	2	4	3.70	
CO3	5	5	5	3	4	5	5	4	5	2	4	2	4	4.0	
CO4	5	5	5	3	4	5	5	4	5	2	4	2	4	4.0	
CO5	5	5	5	3	4	5	5	4	5	2	4	2	4	4.0	
Mean Overall Score														3.91	

This Course is having **HIGH** association with Programme Outcomes and Programme Specific Outcomes.

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

II BCA	ADVANCED JAVA PROGRAMMING	CA408T
SEMESTER - IV		HRS/WK-6
MAIN – 8		CREDIT-4

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 (MS Access).

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 BOOK:

H. Schildt – Java 2 (The Complete Reference] – Fourth Edition, TMH 1999.

REFERENCE BOOKS:

1. Cray S. Horstman, Gray Cornell – Core Java 2 Vol. I and Vol. II – 7th Ed. PHI, 2000.
2. Wesley, K. Arnold and J. Gosling – The Java Programming Language – Third Edition Addison – Wesley, 2000.

II BCA	SOFT SKILLS	AOSS401S
SEMESTER - IV		HRS/WK-4
SKILL		CREDIT-4

Objective:

To make the students to develop their aptitude, logical, reasoning and other skills needed to attend interviews.

Course Outcomes:

At the end of the Course the students should be able to Exhibit

CO1: Talent in Group Discussion
CO2: Apt Body Language during Interviews
CO3: Impeccable Mind set in solving Quantitative Aptitude Problems.
CO4: Impeccable Mind set in solving Logical Reasoning Problems
CO5: Talent in clearing all Phases of a Selection Process.

SEMESTER IV	COURSE CODE: AOSS401S					TITLE OF THE PAPER: SOFT SKILL								HOURS: 3	CREDITS: 2
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)								MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8		
CO1	4	5	4	4	4	4	4	3	2	3	4	4	4	3.45	
CO2	5	5	4	4	4	4	4	3	2	3	4	4	4	3.50	
CO3	5	5	4	5	4	5	5	3	2	3	5	5	5	4	
CO4	5	5	4	5	4	5	5	3	2	3	5	5	5	4	
CO5	5	5	4	5	4	5	5	3	2	3	5	5	5	4	
Mean Overall Score														3.8	

This Course is having **HIGH** association with Programme Outcomes and Programme Specific Outcomes.

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

II BCA	SOFT SKILLS	AOSS401S
SEMESTER - IV		HRS/WK-4
SKILL		CREDIT-4

UNIT - I **[12 Hrs]**

Group Discussion: Why Group Discussion is important – Types of Group Discussion – KTechniques in Group Discussion – Tips for Group Discussion.

UNIT – II **[12 Hrs]**

Interview Preparation: Common Interview Questions – Questions to Ask Your Employer – What Emplopyers Want – Attitude & Effort – Body Language .**Types of interview:** The Mock interview – Phone interviews – Behavioural Interviews – Closing the interview – Thank You notes & Follow-Ups.

UNIT – III **[12 Hrs]**

Quantitative Aptitude: Time and work - Time and Distance – Heights and Distances - **Data Interpretation:** Tabulation – Bar Graphs – Pie Charts – Line Graphs.

UNIT – IV **[12 Hrs]**

Logical Reasoning (1): Analogies – Arrangement - Causes and Effects – Family Tree – Puzzles based questions.

UNIT – V **[12 Hrs]**

Logical Reasoning (2): Sequence and Series – Code based questions on letter of Alphabets – Syllogism - Statement and Conclusion.

References:

1. Group Discussion: A Practical Guide to Participation And Leadership by Kathryn Sue Young, Julia T. Wood, Gerald M. Phillips and Douglass J. Pedersen (Jun 25,2006).
2. How To Interview Like A Pro: Forty – Three Rules For Getting Your Next Job Paperback – July 25, 2012 –by JD Mary Greenwood(Author).
3. R.S. Aggaewal, Objective Arithmetic, S. Chand & company, New Delhi , 2005.
4. Govind Prasad Singh and Rakesh Kumar, Text Book of Quickest Mathematics (for all Competitive Examinations),Kiran Prakashan, 2012.
5. R.S. Aggarwal, Quantitative Aptitude, S. chand & Company, New Delhi, 2012.

II BCA	ADVANCED JAVA PROGAMMING	CAP404T
SEMESTER - IV		HRS/WK-5
PRACTICAL-IV		CREDIT-3

Objective:

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

Course Outcomes:

At the end of the Course the students should be able to Exhibit

CO1 Programming Skills using AWT.
CO2: Network Programming Skills using Java.
CO3: An Application developing skills using JDBC
CO4: An Application developing skills using RMI
CO5: An Application developing skills using Servlet

SEMESTER IV	COURSE CODE: CAP404T					TITLE OF THE PAPER: ADVANCED JAVA PROGRAMMING								HOURS: 5	CREDITS: 3
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)								MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8		
CO1	5	4	4	3	4	4	4	4	4	2	3	2	4	3.60	
CO2	5	4	4	3	4	4	4	4	5	2	3	2	4	3.70	
CO3	5	5	5	3	4	5	5	4	5	2	4	2	4	4.0	
CO4	5	5	5	3	4	5	5	4	5	2	4	2	4	4.0	
CO5	5	5	5	3	4	5	5	4	5	2	4	2	4	4.0	
Mean Overall Score														3.91	

This Course is having **HIGH** association with Programme Outcomes and Programme Specific Outcomes.

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

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(MS access).
6. To implement student mark list using AWT classes with data base (MS access).
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.

III BCA	RELATIONAL DATABASE MANAGEMENT SYSTEM	CA509S
SEMESTER - V		HRS/WK-5
MAIN – 9		CREDIT - 4

Objective:

To make the students aware of database management concepts and basic SQL Commands.

Course Outcomes:

At the end of the Course the students should possess

CO1: Knowledge in Basic Database Concepts.
CO2: Knowledge in Entity Relationship Model.
CO3: Knowledge in Normalization Techniques.
CO4: Programming Skill set in SQL
CO5: Programming Skill set in PL/SQL

SEMESTER V	COURSE CODE: NEWCODE					TITLE OF THE PAPER: RELATIONAL DATABASE MANAGEMENT SYSTEMS								HOURS: 5	CREDITS: 4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)								MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8		
CO1	5	4	4	5	4	4	4	4	4	2	3	2	4	3.75	
CO2	5	4	4	5	4	4	4	4	5	2	3	2	4	3.85	
CO3	5	5	5	5	4	5	5	4	5	2	4	2	4	4	
CO4	5	5	5	5	4	5	5	4	5	2	4	2	4	4	
CO5	5	5	5	5	4	5	5	4	5	2	4	2	4	4	
Mean Overall Score														4.1	

This Course is having **VERY HIGH** association with Programme Outcomes and Programme Specific Outcomes.

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

III BCA	RELATIONAL DATABASE MANAGEMENT SYSTEM	CA509S
SEMESTER - V		HRS/WK-5
MAIN – 9		CREDIT - 4

UNIT – I **[15 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 **[15 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 **[15 Hrs]**

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

UNIT – IV **[15 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 **[15 Hrs]**

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

TEXT BOOK:

Henry F. Korth& Abraham Silberschatz, Database System Concepts, TMH, 1998.

REFERENCE BOOKS:

1. A. J. Page, Relational database concepts selection and implementation,
2. ORACLE DATABASE 10g-The complete reference- KEVIN LONELY, Tata McGraw-Hill Publishing Company Ltd 2004
3. Introduction to Oracle, Oracle Corporation Press.
4. Introduction to PL/SQL, Oracle Corporation Press.

III BCA	PROGRAMMING USING ASP.NET AND C-SHARP	19CA510
SEMESTER - V		HRS/WK-5
MAIN – 10		CREDIT – 4

Objective:

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

Course Outcomes:

At the end of the Course the students should possess

CO1: Knowledge in Dot Net Framework.
CO2: Programming Skill set in C#.Net
CO3: Programming Skill set in Asp.Net
CO4: Programming Skill set in C# Controls
CO5: Programming Skill set in ADO.Net

SEMESTER V	COURSE CODE: CA510T					TITLE OF THE PAPER: PROGRAMMING USING ASP.NET AND C#								HOURS: 5	CREDITS: 4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)								MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8		
CO1	5	4	5	5	4	4	4	4	4	2	3	2	4	3.85	
CO2	5	4	5	5	4	4	4	4	5	2	3	2	4	3.90	
CO3	5	5	5	5	5	5	5	4	5	2	4	2	4	4.30	
CO4	5	5	5	5	5	5	5	4	5	2	4	2	4	4.30	
CO5	5	5	5	5	5	5	5	4	5	2	4	2	4	4.30	
Mean Overall Score														4.14	

This Course is having **VERY HIGH** association with Programme Outcomes and Programme Specific Outcomes.

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

III BCA	PROGRAMMING USING ASP.NET AND C-SHARP	19CA510
SEMESTER - V		HRS/WK-5
MAIN – 10		CREDIT – 4

UNIT - I **[15 hrs]**

Introduction 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. E. Balaguruswamy, Programming with C#, First Edition, Tata McGraw Hill Publication.
2. Matthew Macdonald, ASP.NET: The Complete Reference, McGraw Hill Publication.

REFERENCE BOOKS

1. Harvey M. Deitel& Paul J. Deitel- C# Programmers- Second Edition-Pearson Edition.
2. YashavantKanetkar, 2004 C# .Net, Motilal Books of India.
3. Peter Drayton , Ben Albahari, Ted Neward. C# in an nutshell, O'Reilley Publication.
4. Herbert Schlit. 2002 C# - A Beginner's Guide. Osborne, Tata McGraw Hill Publication.
5. Burton Harvey, Simon Robinson, Julian Templeman and KarliWaston, 'C# Programming with the Public Bata', Shroff Publishers & Distributors Pvt. Ltd (SPD) Mumbai, April 2001.
6. Ben Albahart, Peter Drayton and Brad Merrill, 'C# Essentials', SPD, Mumbai March 2001.
7. ThamariSelvei, AText Book on C#: A Systematic Approach to OOP, Pearson Ed.

III BCA	MULTIMEDIA AND VIRTUAL REALITY	ECA512S
SEMESTER - V		HRS/WK – 5
ELECTIVE–I (1)		CREDIT – 5

Objective:

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

Course Outcomes:

At the end of the Course the students should be able to

CO1: Inhibit basic Knowledge about Multimedia.
CO2: Explore Sound and Images Features
CO3: Explore Video and Animation features.
CO4: Co-ordinate a Multimedia Project
CO5: Incorporate Virtual Reality wherever needed.

SEMESTER V	COURSE CODE: ECA512S					TITLE OF THE PAPER: MULTIMEDIA AND VIRTUAL REALITY						HOURS: 5	CREDITS: 4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)							MEAN SCORE OF CO'S
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	
CO1	4	4	5	5	4	4	4	4	4	2	3	2	4	3.75
CO2	4	4	5	5	4	4	4	4	5	2	3	2	4	3.85
CO3	4	5	5	5	4	5	5	4	5	2	3	2	4	4
CO4	4	5	5	5	4	5	5	4	5	2	3	2	4	4
CO5	4	5	5	5	4	5	5	4	5	2	3	2	4	4
Mean Overall Score														3.9

This Course is having **HIGH** association with Programme Outcomes and Programme Specific Outcomes.

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

III BCA	MULTIMEDIA AND VIRTUAL REALITY	ECA512S
SEMESTER - V		HRS/WK – 5
ELECTIVE–I (1)		CREDIT – 5

UNIT-I **[15 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 **[15 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 **[15 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 **[15 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 **[15 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 BOOK:

Tay Vaughan, Multimedia Making it Work, India Professional, Fifth Edition.

REFERENCE BOOKS :

1. John Hayward – Adventures in Virtual Reality, One publications.
2. John F. Koegel Buford, Multimedia Systems, Pearson Education.

III BCA	COMPUTER GRAPHICS	ECA512A
SEMESTER - V		HRS/WK-5
ELECTIVE – I (2)		CREDIT - 5

Objective:

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

Course Outcomes:

At the end of the Course the students should be able to

CO1: Inhibit basic Knowledge about Computer Graphics
CO2: Explore Output Primitive Features
CO3: Explore 2D Concepts.
CO4: Explore 3D Concepts.
CO5: Perform Transformation based Animation.

SEMESTER V	COURSE CODE: ECA512A					TITLE OF THE PAPER: COMPUTER GRAPHICS								HOURS: 5	CREDITS: 4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)								MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8		
CO1	4	4	5	5	4	4	4	4	4	2	3	2	4	3.75	
CO2	4	4	5	5	4	4	4	4	5	2	3	2	4	3.85	
CO3	4	5	5	5	4	5	5	4	5	2	3	2	4	4	
CO4	4	5	5	5	4	5	5	4	5	2	3	2	4	4	
CO5	4	5	5	5	4	5	5	4	5	2	3	2	4	4	
Mean Overall Score														3.9	

This Course is having **HIGH** association with Programme Outcomes and Programme Specific Outcomes.

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

III BCA	COMPUTER GRAPHICS	ECA512A
SEMESTER - V		HRS/WK-5
ELECTIVE – I (2)		CREDIT - 5

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 filing 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:

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

REFERENCE BOOK:

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

III BCA	CLOUD COMPUTING	ECA512B
SEMESTER - V		HRS/WK-5
ELECTIVE – I (3)		CREDIT - 5

Objective:

To make the students to understand the concept of Cloud Computing.

Course Outcomes:

At the end of the Course the students should be able to

CO1: Proficiency in basics of Cloud Computing.
CO2: Proficiency in Developing Cloud Services.
CO3: Knowledge pertaining to Cloud Computing.
CO4: Application developing skills using Cloud Services.
CO5: Proficiency in Cloud Security and Challenges.

SEMESTER V	COURSE CODE: ECA512A					TITLE OF THE PAPER: COMPUTER GRAPHICS								HOURS: 5	CREDITS: 4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)								MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8		
CO1	4	4	5	5	4	4	4	4	4	2	3	2	4	3.75	
CO2	4	4	5	5	4	4	4	4	5	2	3	2	4	3.85	
CO3	4	5	5	5	4	5	5	4	5	2	3	2	4	4	
CO4	4	5	5	5	4	5	5	4	5	2	3	2	4	4	
CO5	4	5	5	5	4	5	5	4	5	2	3	2	4	4	
Mean Overall Score														3.9	

This Course is having **HIGH** association with Programme Outcomes and Programme Specific Outcomes.

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

III BCA	CLOUD COMPUTING	ECA512B
SEMESTER - V		HRS/WK-5
ELECTIVE – I (3)		CREDIT - 5

UNIT -I **[15 Hrs]**

Fundamentals of grid and cloud computing : Fundamentals – Cloud computing – History of Cloud Computing – Cloud Architecture – Cloud Storage – Why cloud computing Matters – Advantages of Cloud computing – Disadvantages of Cloud Computing – Companies in the Cloud Today – Cloud Services

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

Developing cloud services : Web-Based Application – Pros and Cons of Cloud Service Development – Types of Cloud Service Development – Software as a Service – Platform as a Service – Web Services – On-Demand computing – Discovering Cloud Services Development Services and Tools – Amazon Ec2- Google App Engine – IBM Clouds.

UNIT -III **[15 Hrs]**

Cloud computing for everyone : Centralizing Email communications – collaborating on Schedules – Collaborating on To-Do Lists – Collaborating Contact Lists – Cloud computing for the Community – Collaborating on Group Projects and Events – Cloud Computing for the Corporation.

UNIT -IV **[15 Hrs]**

Using cloud services : Collaborating on Calendars, Schedules and Task Management – Exploring Online Scheduling Applications – Exploring Online Planning and Task Management – Collaborating on Event Management – Collaborating on Contact Management – Collaborating on Project Management – Collaborating on Word Processing – Collaborating on Databases – Storing and Sharing Files – Evaluating Web Mail Services – Evaluating Web Conference Tools – Collaborating via Social Networks and Groupware – Collaborating via Blogs and Wikis.

UNIT -V **[15 Hrs]**

Grid computing : OGSA – Sample Use Cases – OGSA Platform Components – OGSI – OGSA Basic Services. Globus Toolkit – Architecture – Programming Model – High Level Services – OGSI.Net.Middleware Solutions.

TEXT BOOK:

Michael Miller, Cloud Computing,Que Publishing, August 2008.

REFERENCE BOOK:

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 Pvt. Ltd.

III BCA	DATA COMMUNICATION NETWORKS	ECA511
SEMESTER - V		HRS/WK-5
ELECTIVE-II (1)		CREDIT - 5

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.

Course Outcomes:

At the end of the Course the students should be able to

CO1: Inhibit basic Knowledge about Networks
CO2: Explore OSI Model
CO3: Explore Transmission Media
CO4: Explore Switching Techniques
CO5: Implement different Routing Algorithms.

SEMESTER V	COURSE CODE: ECA511					TITLE OF THE PAPER: DATA COMMUNICATION AND NETWORKS								HOURS: 5	CREDITS: 4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)								MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8		
CO1	4	4	5	5	4	4	4	4	4	2	3	2	4	3.75	
CO2	4	4	5	5	4	4	4	4	5	2	3	2	4	3.85	
CO3	4	5	5	5	4	5	5	4	5	2	3	2	4	4	
CO4	4	5	5	5	4	5	5	4	5	2	3	2	4	4	
CO5	4	5	5	5	4	5	5	4	5	2	3	2	4	4	
Mean Overall Score														3.9	

This Course is having **HIGH** association with Programme Outcomes and Programme Specific Outcomes.

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

III BCA	DATA COMMUNICATION NETWORKS	ECA511
SEMESTER - V		HRS/WK-5
ELECTIVE-II (1)		CREDIT - 5

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.

Course Outcomes:

At the end of the Course the students should be able to

CO1: Inhibit basic Knowledge about Networks
CO2: Explore OSI Model
CO3: Explore Transmission Media
CO4: Explore Switching Techniques
CO5: Implement different Routing Algorithms.

SEMESTER V	COURSE CODE: ECA511					TITLE OF THE PAPER: DATA COMMUNICATION AND NETWORKS								HOURS: 5	CREDITS: 4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)								MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8		
CO1	4	4	5	5	4	4	4	4	4	2	3	2	4	3.75	
CO2	4	4	5	5	4	4	4	4	5	2	3	2	4	3.85	
CO3	4	5	5	5	4	5	5	4	5	2	3	2	4	4	
CO4	4	5	5	5	4	5	5	4	5	2	3	2	4	4	
CO5	4	5	5	5	4	5	5	4	5	2	3	2	4	4	
Mean Overall Score														3.9	

This Course is having **HIGH** association with Programme Outcomes and Programme Specific Outcomes.

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

III BCA	DATA COMMUNICATION NETWORKS	ECA511
SEMESTER - V		HRS/WK-5
ELECTIVE-II (1)		CREDIT - 5

UNIT -I **[15 hrs]**

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

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

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

UNIT -V **[15 hrs]**

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

TEXT BOOK:

Behrouz A Forouzan, Data Communications and Networks, Second Edition, McGraw Hill, 2002.

REFERENCE BOOKS:

1. William Stallings, Data & Computer Communications, Sixth Edition, Pearson Education, 2001.
2. Andrew S. Tanenbaum, Computer Networks, Pearson Education, 3rd Edition.
3. Fred Halsall, Data Communications, Computer Networks and Open Systems, Addison Wessley, 1995.

III BCA	NETWORK SECURITY	NEW CODE
SEMESTER - V		HRS/WK-5
ELECTIVE-II (2)		CREDIT - 5

Objective:
To impart knowledge on Network Security and to make the students expertise in it.

Course Outcomes:

At the end of the Course the students should be able to

CO1: Describe network security services and mechanisms
CO2: Describe about main security
CO3: Explore data integrity, authentication, digital signatures
CO4: Explore various network security applications, Firewall ,IDS, web security
CO5: Implement firewall configurations.

SEMESTER V	COURSE CODE: ECA511					TITLE OF THE PAPER: DATA COMMUNICATION AND NETWORKS								HOURS: 5	CREDITS: 4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)								MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8		
CO1	4	4	5	5	4	4	4	4	4	2	3	2	4	3.75	
CO2	4	4	5	5	4	4	4	4	5	2	3	2	4	3.85	
CO3	4	5	5	5	4	5	5	4	5	2	3	2	4	4	
CO4	4	5	5	5	4	5	5	4	5	2	3	2	4	4	
CO5	4	5	5	5	4	5	5	4	5	2	3	2	4	4	
Mean Overall Score														3.9	

This Course is having **HIGH** association with Programme Outcomes and Programme Specific Outcomes.

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

III BCA	NETWORK SECURITY	NEW CODE
SEMESTER - V		HRS/WK-5
ELECTIVE-II (2)		CREDIT - 5

UNIT – I **[15 Hrs]**

Authentication Applications: Kerberos - X.509 - Authentication Service

UNIT – II **[15 Hrs]**

Electronic Mail Security: Pretty Good Privacy (PGP) - S/MIME

UNIT – III **[15 Hrs]**

IP Security: IP Security Overview - IP Security Architecture - Authentication Header - Encapsulating Security Payload - Combining Security Associations - Key Management.

UNIT – IV **[15 Hrs]**

Web Security: Web security Considerations - Secure Socket layer (SSL) and Transport Layer security (TLS) - Secure Electronic Transaction (SET)

UNIT – V **[15 Hrs]**

System Security: Intruders - Intrusion Detection - Firewall Design Principles- Characteristics - Types of Firewall and Firewall Configuration.

TEXT BOOK:

William Stallings, Cryptography And Network Security–Principles and Practices, Pearson Education, Fourth Edition, 2006.

REFERENCE BOOKS:

1. Behrouz A. Foruzan, Cryptography and Network Security, Tata McGraw-Hill, 2007.
2. Bruce Schneier, Applied Cryptography, John Wiley & Sons Inc, 2001.
3. Charles B. Pfleeger, Shari Lawrence Pfleeger, Security in Computing, Third Edition, Pearson Education, 2003.
4. Wade Trappe and Lawrence C. Washington, Introduction to Cryptography withcoding theory, Pearson Education, 2007.
5. Wenbo Mao, Modern Cryptography Theory and Practice, Pearson Education, 2007.
6. Thomas Calabrese, Information Security Intelligence: Cryptographic Principles andApplications, Thomson Delmar Learning, 2006.
7. AtulKahate, Cryptography and Network Security, Tata McGraw-Hill, 2003.

III BCA	MOBILE COMPUTING	NEW CODE
SEMESTER - V		HRS/WK-5
ELECTIVE-II (3)		CREDIT - 5

Objective:
To make the students to get exposed to latest mobile computing concepts.

Course Outcomes:

At the end of the Course the students should be able to

CO1: Explain the basics of Mobile Computing
CO2: Describe the functionality of Mobile IP and transport Layer
CO3: Classify different types of mobile telecommunication systems.
CO4: Demonstrate the Adhoc networks concepts and its routing protocols.
CO5: Make use of mobile operating systems in developing mobile applications.

SEMESTER V	COURSE CODE: ECA511					TITLE OF THE PAPER: DATA COMMUNICATION AND NETWORKS						HOURS: 5	CREDITS: 4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)							MEAN SCORE OF CO'S
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	
CO1	4	4	5	5	4	4	4	4	4	2	3	2	4	3.75
CO2	4	4	5	5	4	4	4	4	5	2	3	2	4	3.85
CO3	4	5	5	5	4	5	5	4	5	2	3	2	4	4
CO4	4	5	5	5	4	5	5	4	5	2	3	2	4	4
CO5	4	5	5	5	4	5	5	4	5	2	3	2	4	4
Mean Overall Score														3.9

This Course is having **HIGH** association with Programme Outcomes and Programme Specific Outcomes.

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

III BCA	MOBILE COMPUTING	NEW CODE
SEMESTER - V		HRS/WK-5
ELECTIVE-II (3)		CREDIT - 5

UNIT –I **[15 hrs]**

Introduction: Mobile computing-mobile computing vs wireless computing –mobile computing applications-characteristic of mobile computing- technical issues of mobility-cellular mobile communications-GSM-architecture-GPRS-architecture.

UNIT -II **[15 hrs]**

Wireless and Cellular Communication: Electromagnetic spectrum-communication satellites-multiple access schemes-cellular communication-IEEE802.1- Bluetooth -infrared systems.

UNIT-III **[15 hrs]**

MAC protocol: properties-MAC protocols for ad-hoc networks and cognitive radio ad-hoc networks.

Mobile IP: overview of mobile IP-Dynamic host configuration protocol-architecture of TCP/IP-overview of operation of TCP-TCP works in mobile computing.

UNIT -IV **[15 hrs]**

Mobile ad hoc networks: characteristics of MANETs-applications of MANETs. **Routing protocols:** destination-sequenced distance-vector routing protocol-DSR protocol –AODV protocol-Zone routing protocol-multicast routing for MANNETs-VANETs-WSN: applications of WSN-WSN vs MANETs-architecture of WSN.

UNIT -V **[15 hrs]**

Mobile Databases: transaction processing environment- transaction processing in mobile environment-Query processing. Operating systems for mobile computing: basic concepts-constraints and requirements of mobile OS. Mobile commerce: applications of M-Commerce-structure of M-Commerce.

TEXT BOOK:

Prasant Kumar Pattnaik and Rajib Mall, Fundamentals of Mobile Computing, Prentice Hall India Publishers, Eastern Economy Edition, 2016.

REFERENCE BOOKS:

1. KumkumGarg, Mobile Computing : Theory and Practice, Pearson Education India, First Edition, 2010.
2. Devi Kamal, Mobile Computing, Oxford University Press, Second Edition 2012.

III BCA	RDBMS – ORACLE	CAP505T
SEMESTER - V		HRS/WK-5
PRACTICAL-V		CREDIT - 3

Objective:

To make the student abreast with the Database Management concepts.

Course Outcomes:

At the end of the Course the students should possess

CO1: Knowledge in Basic Database Concepts.

CO2: Knowledge in Entity Relationship Model.

CO3: Knowledge in Normalization Techniques.

CO4: Programming Skill set in SQL

CO5: Programming Skill set in PL/SQL

SEMESTER V	COURSE CODE: CAP505T					TITLE OF THE PAPER: RDBMS PACKAGE – ORACLE								HOURS: 5	CREDITS: 3
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)								MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8		
CO1	5	4	4	5	4	4	4	4	4	2	3	2	4	3.75	
CO2	5	4	4	5	4	4	4	4	5	2	3	2	4	3.85	
CO3	5	5	5	5	4	5	5	4	5	2	4	2	4	4	
CO4	5	5	5	5	4	5	5	4	5	2	4	2	4	4	
CO5	5	5	5	5	4	5	5	4	5	2	4	2	4	4	
Mean Overall Score														4.1	

This Course is having **VERY HIGH** association with Programme Outcomes and Programme Specific Outcomes.

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

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

III BCA	PROGRAMMING IN ASP.NET USING C-SHARP	19CAP506
SEMESTER - V		HRS/WK-5
PRACTICAL-VI		CREDIT - 3

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.

Course Outcomes:

At the end of the Course the students should possess

CO1: Knowledge in Dot Net Framework.
CO2: Programming Skill set in C#.Net
CO3: Programming Skill set in Asp.Net
CO4: Programming Skill set in C# Controls
CO5: Programming Skill set in ADO.Net

SEMESTER V	COURSE CODE: CAP506T					TITLE OF THE PAPER: PROGRAMMING IN ASP.NET USING C#								HOURS: 5	CREDITS: 3
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)								MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8		
CO1	5	4	5	5	4	4	4	4	4	2	3	2	4	3.85	
CO2	5	4	5	5	4	4	4	4	5	2	3	2	4	3.90	
CO3	5	5	5	5	5	5	5	4	5	2	4	2	4	4.30	
CO4	5	5	5	5	5	5	5	4	5	2	4	2	4	4.30	
CO5	5	5	5	5	5	5	5	4	5	2	4	2	4	4.30	
Mean Overall Score														4.14	

This Course is having **VERY HIGH** association with Programme Outcomes and Programme Specific Outcomes.

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

III BCA	PROGRAMMING IN ASP.NET USING C-SHARP	19CAP506
SEMESTER - V		HRS/WK-5
PRACTICAL-VI		CREDIT - 3

WINDOWS APPLICATION:

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

WEB APPLICATION:

1. Create an application to sending a request from one page to another using session.
2. Create a simple website for an organization using Master Page.
3. To develop database application for student mark list processing using validation control (Oracle)
4. 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)

III BCA	OPEN SOURCE TECHNOLOGY(PHP)	CA614Q
SEMESTER - VI		HRS/WK- 5
MAIN-11		CREDIT - 4

Objective:

To impart basic knowledge of PHP and MySQL.

Course Outcomes:

At the end of the Course the students should possess

CO1: Knowledge in Basics of PHP.
CO2: Programming Skill set in OOP using PHP
CO3: Programming Skill set in Files Concept using PHP
CO4: Programming Skill set in developing Web Pages
CO5: Programming Skill set in developing Database Application using PHP.

SEMESTER VI	COURSE CODE: CA614Q					TITLE OF THE PAPER: OPEN SOURCE TECHNOLOGIES-PHP								HOURS: 5	CREDITS: 4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)								MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8		
CO1	5	4	5	5	4	4	4	4	4	3	4	2	4	4	
CO2	5	4	5	5	4	4	4	4	5	3	4	2	4	4.10	
CO3	5	5	5	5	5	5	5	4	5	3	4	2	4	4.40	
CO4	5	5	5	5	5	5	5	4	5	3	4	2	4	4.40	
CO5	5	5	5	5	5	5	5	4	5	3	4	2	4	4.40	
Mean Overall Score														4.2	

This Course is having **VERY HIGH** association with Programme Outcomes and Programme Specific Outcomes.

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

III BCA	OPEN SOURCE TECHNOLOGY(PHP)	CA614Q
SEMESTER - VI		HRS/WK- 5
MAIN-11		CREDIT - 4

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

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

BOOK FOR REFERENCE

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

III BCA	OPERATING SYSTEMS	CA615S
SEMESTER - VI		HRS/WK-5
MAIN-12		CREDIT - 4

Objective:
To make the student aware of all concepts related to operating system functions and features.
Course Outcomes:

At the end of the Course the students should possess

CO1: Knowledge in Basics of Operating System.
CO2: Knowledge pertaining to process and deadlock.
CO3: Knowledge pertaining to memory management.
CO4: Knowledge pertaining to GUI and Security.
CO5: Knowledge pertaining to Unix OS.

SEMESTER VI	COURSE CODE: CA615S					TITLE OF THE PAPER: OPERATING SYSTEMS						HOURS: 5	CREDITS: 4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)							MEAN SCORE OF CO'S
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	
CO1	5	4	5	5	4	4	4	4	3	3	3	2	4	3.80
CO2	5	4	5	5	4	4	4	4	3	3	3	2	4	3.80
CO3	5	5	5	5	5	5	5	4	3	3	3	2	4	4.10
CO4	5	5	5	5	5	5	5	4	3	3	3	2	4	4.10
CO5	5	5	5	5	5	5	5	4	3	3	3	2	4	4.10
Mean Overall Score														4.0

This Course is having **HIGH** association with Programme Outcomes and Programme Specific Outcomes.

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

III BCA	OPERATING SYSTEMS	CA615S
SEMESTER - VI		HRS/WK-5
MAIN-12		CREDIT - 4

UNIT-I **[15 hrs]**

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

UNIT-II **[15 hrs]**

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

UNIT-III **[15 hrs]**

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

UNIT-IV **[15 hrs]**

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

UNIT-V **[15 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: UFDT-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 BOOK:

A. S. Godbole, Operating Systems, Tata McGraw Hill, 1999.

REFERENCE BOOK:

1. A. Silberschatz and P. B. Galvin- Operating system concepts, Addision-Wesley Publishing company, Fifth Edition, 1998.
2. William Stallings, Operating Systems: Internals and Design Principles, Pearson Education India.

III BCA	SOFTWARE ENGINEERING	ECA616T
SEMESTER - VI		HRS/WK-5
ELECTIVE-III (1)		CREDIT - 5

Objective:

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

Course Outcomes:

At the end of the Course the students should possess

CO1: Knowledge on different process models
CO2: Knowledge on how requirements can be collected.
CO3: Knowledge pertaining to building an Analysis Model.
CO4: Knowledge to test Software.
CO5: Managerial Capabilities to Deploy a Project.

SEMESTER VI	COURSE CODE: ECA616T					TITLE OF THE PAPER: SOFTWARE ENGINEERING								HOURS: 5	CREDITS: 4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)								MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8		
CO1	4	4	4	3	4	4	4	4	2	3	4	5	4	3.75	
CO2	5	5	5	3	4	4	4	4	2	3	5	5	4	4	
CO3	5	5	5	3	4	5	5	5	2	3	5	5	4	4	
CO4	5	5	5	4	4	5	5	5	2	5	5	5	4	4.5	
CO5	5	5	5	4	4	5	5	5	2	5	5	5	4	4.5	
Mean Overall Score														4.2	

This Course is having **VERY HIGH** association with Programme Outcomes and Programme Specific Outcomes.

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

III BCA	SOFTWARE ENGINEERING	ECA616T
SEMESTER - VI		HRS/WK-5
ELECTIVE-III (1)		CREDIT - 5

UNIT - I **[15 hrs]**

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

UNIT –II **[15 hrs]**

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

UNIT III **[15 hrs]**

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

UNIT –IV **[15 hrs]**

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

UNIT –V **[15 hrs]**

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

TEXT BOOK:

R. S. Pressman, Software Engineering, Sixth Edition, Tata McGraw Hill International Edition – 1997.

REFERENCE BOOKS:

1. Richard Fairley, Software Engineering (Design, Reliability and Management), Tata McGraw Hill edition, 1983.
2. Carlo Ghezzi, Mehdi Jazayasi, Dino Mandrioloi, Fundamentals of Software Engineering, PHI Pvt. Ltd., 1991.

III BCA	MANAGEMENT INFORMATION SYSTEM	ECA616A
SEMESTER - VI		HRS/WK-5
ELECTIVE-III (2)		CREDIT - 5

Objective:

To enlighten the students with knowledge related to Management Information Systems.

Course Outcomes:

At the end of the Course the students should possess

CO1: Knowledge on information systems.
CO2: Knowledge on information systems for business operations.
CO3: Capability to manage information Technology.
CO4: Knowledge in ERP
CO5: Capability to implement ERP.

SEMESTER VI	COURSE CODE: ECA616A					TITLE OF THE PAPER: MANAGEMENT INFORMATION SYSTEM								HOURS: 5	CREDITS: 4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)								MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8		
CO1	4	4	5	5	4	4	4	3	2	2	3	3	4	3.60	
CO2	4	4	5	5	4	4	4	3	2	2	3	3	4	3.60	
CO3	4	5	5	5	4	5	5	3	2	2	3	4	4	3.90	
CO4	4	5	5	5	4	5	5	3	2	2	3	4	4	3.90	
CO5	4	5	5	5	4	5	5	3	2	2	3	4	4	3.90	
Mean Overall Score														3.8	

This Course is having **HIGH** association with Programme Outcomes and Programme Specific Outcomes.

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

III BCA	MANAGEMENT INFORMATION SYSTEM	ECA616A
SEMESTER - VI		HRS/WK-5
ELECTIVE-III (2)		CREDIT - 5

UNIT - I **[15 Hrs]**

Introduction to information systems (IS): why study IS- why business need information technology (IT) – fundamentals of IS concepts – overview of IS – solving business problems with IS – developing IS solutions.

UNIT - II **[15 Hrs]**

Information systems for business operations: Business IS – marketing, manufacturing, human resource, accounting and financial information systems – transaction processing system – management information and decision support systems.

UNIT- III **[15 Hrs]**

Managing information technology: Managing information resource and technologies – global IT management – planning and implementing business change with IT.

UNIT -IV **[15 Hrs]**

Enterprise Resource Planning (ERP): an overview – benefits of ERP – ERP and related technologies – business process reengineering – data warehousing – data mining – online analytical processing – supply chain management.

UNIT -V **[15 Hrs]**

ERP implementation: ERP implementation life cycle – implementation methodology – hidden cost – organizing the implementation – vendors, consultants and users contracts with vendors, consultants and employees project management and monitoring – ERP present and future – turbo change the ERP systems – enterprise integration applications – ERP and E-commerce – ERP and Internet.

TEXT BOOK:

James A O'Brien – Management Information Systems for managing IT in the internetworked Enterprise – 4th Edition, Tata McGraw Hill, New Delhi, 1999.

REFERENCE BOOKS:

1. Alexis Leon, ERP Demystified, Tata McGraw Hill, New Delhi, 2000.
2. W.S. Jaswadekar, Management Information Systems, Tata McGraw Hill, New Delhi, 1998.

III BCA	INFORMATION SYSTEM DESIGN	ECA616B
SEMESTER - VI		HRS/WK-5
ELECTIVE-III (3)		CREDIT - 5

Objective:

To make the students understand technological impact on organizations and the interplay between technology and the organization.

Course Outcomes:

At the end of the Course the students should possess

CO1: Knowledge on information systems.
CO2: Knowledge on computers and information systems processing.
CO3: Capability to manage information system.
CO4: Knowledge in MIS
CO5: Capability to implement Decision support system.

SEMESTER VI	COURSE CODE: ECA616A					TITLE OF THE PAPER: MANAGEMENT INFORMATION SYSTEM								HOURS: 5	CREDITS: 4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)								MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8		
CO1	4	4	5	5	4	4	4	3	2	2	3	3	4	3.60	
CO2	4	4	5	5	4	4	4	3	2	2	3	3	4	3.60	
CO3	4	5	5	5	4	5	5	3	2	2	3	4	4	3.90	
CO4	4	5	5	5	4	5	5	3	2	2	3	4	4	3.90	
CO5	4	5	5	5	4	5	5	3	2	2	3	4	4	3.90	
Mean Overall Score														3.8	

This Course is having **HIGH** association with Programme Outcomes and Programme Specific Outcomes.

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

III BCA	INFORMATION SYSTEM DESIGN	ECA616B
SEMESTER - VI		HRS/WK-5
ELECTIVE-III (3)		CREDIT - 5

UNIT – I **[15 Hrs]**

Definition of Management Information System - Structure of MIS - Information system for decision making - The role of system analyst - Data base management system.

UNIT - II **[15 Hrs]**

Computes and Information Processing - Classification of computers - Main frames – Mini Computers - workstations - micro computers - super computers - Personal Computers -Input Devices - Computer mouse - touch screen - MICA - OCR - pen based input – digital scanners - voice input devices - sensors - Output devices - video display terminals - printers- plotters - voice output devices - Secondary storage - magnetic disk storage – magnetic tape storage - optical disk storage.

UNIT - III **[15 Hrs]**

System Analysis - System Planning and the mutual investigation - Information gathering MIS Organization - Top management - Data processing group's responsibility

UNIT - IV **[15 Hrs]**

Management and MIS - MIS as competitive advantage – MIS support for planning, organizing, operating, controlling an knowledge work - specific function - finance - personnel - production - materials –marketing -Data representation in computers – Batch Processing Vs online processing.

UNIT – V **[15 Hrs]**

Decision Support System - definition - examples of DSS - components - building DSS –Group Decision Support System - GDSS tools - role of GDSS - Executive System– role developing DSS - benefits – examples.

TEXT BOOK:

Gordon Bitter Davis, Margrethe H. Olson, Management Information System: conceptual foundations, structure, and development, McGraw Hill, 2nd Reprint.

REFERENCE BOOKS:

1. S. Sadagopan, Management Information Systems, Prentice Hall of India, Eastern Economy Edition.
2. Robert G. Murdick, Joel E. Ross, Introduction to Management Information Systems, Prentice-Hall of India.
3. S. P. Rajagopalan, Management Information System, Margham Publications.
4. Gordon B. Davis , Computer Data Processing, McGraw Hill.
5. Kenneth C. Laudon, Jane P. Laudon, Management Information Systems: Managing the Digital Firm, Pearson Education.

III BCA	COMPUTER ARCHITECTURE	ECA613T
SEMESTER - VI		HRS/WK-5
ELECTIVE-IV (1)		CREDIT - 5

Objective:

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

Course Outcomes:

At the end of the Course the students should be able to exhibit

CO1: Knowledge pertaining to Central Processing Unit.
CO2: Knowledge pertaining to Arithmetic Pipeline.
CO3: Knowledge pertaining to Computer Arithmetic.
CO4: Knowledge pertaining to Input and Output Organization.
CO5: Knowledge pertaining to Advanced Memory Organization

SEMESTER VI	COURSE CODE: ECA613T					TITLE OF THE PAPER: COMPUTER ARCHITECTURE						HOURS: 5	CREDITS: 4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)							MEAN SCORE OF CO'S
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	
CO1	3	3	3	4	4	5	4	4	4	2	3	2	4	3.15
CO2	4	4	4	4	4	5	5	5	4	2	2	2	5	3.50
CO3	4	4	4	4	4	5	5	4	5	3	3	2	5	3.70
CO4	4	4	4	4	4	5	4	5	5	3	3	2	5	3.70
CO5	4	4	4	4	4	5	4	4	4	3	3	2	5	3.50
Mean Overall Score														3.51

This Course is having **HIGH** association with Programme Outcomes and Programme Specific Outcomes.

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

III BCA	COMPUTER ARCHITECTURE	ECA613T
SEMESTER - VI		HRS/WK-5
ELECTIVE-IV (1)		CREDIT - 5

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 - Modes of 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, Pearson Education.

REFERENCE BOOKS:

1. V. Carl Hamacher, Zvonko G. Vranesic, Safwat G. Zaky, Computer Organization, McGraw Hill Higher Education.
2. John P. Hayes, Computer System Architecture, McGraw Hill Higher Education.

III BCA	DISTRIBUTED COMPUTING	NEW CODE
SEMESTER - VI		HRS/WK-5
ELECTIVE-IV (2)		CREDIT - 5

Objective:

The components of a software system are shared among multiple computers to improve efficiency and performance.

Course Outcomes:

At the end of the Course the students should be able to exhibit

CO1: Knowledge pertaining to Distributed systems.
CO2: Knowledge pertaining to inter process communication.
CO3: Capability to manage deadlocks.
CO4: Implementation of real time systems.
CO5: Knowledge pertaining to Advanced Memory management.

SEMESTER VI	COURSE CODE: ECA613T					TITLE OF THE PAPER: COMPUTER ARCHITECTURE						HOURS: 5	CREDITS: 4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)							MEAN SCORE OF CO'S
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	
CO1	3	3	3	4	4	5	4	4	4	2	3	2	4	3.15
CO2	4	4	4	4	4	5	5	5	4	2	2	2	5	3.50
CO3	4	4	4	4	4	5	5	4	5	3	3	2	5	3.70
CO4	4	4	4	4	4	5	4	5	5	3	3	2	5	3.70
CO5	4	4	4	4	4	5	4	4	4	3	3	2	5	3.50
Mean Overall Score														3.51

This Course is having **HIGH** association with Programme Outcomes and Programme Specific Outcomes.

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

III BCA	DISTRIBUTED COMPUTING	NEW CODE
SEMESTER - VI		HRS/WK-5
ELECTIVE-IV (2)		CREDIT - 5

UNIT – I **[15 Hrs]**

Introduction: Introduction to Distributed Systems- Hard ware concepts, Software concepts, Design issues.

UNIT – II **[15 Hrs]**

Inter Process Communication: Communication in Distributed Systems, Lay red Protocols, ATM networks, The Client – server model, Remote Procedure call.

UNIT - III **[15 Hrs]**

Synchronization: Synchronization in Distributed System, Clock Synchronization, Mutual Exclusion, Election algorithms, Atomic transactions, Deadlocks in Distributed Systems.

UNIT – IV **[15 Hrs]**

Processor Allocation and Real Time Systems: Process and processors in Distributed System threads, System Models, Processors allocation, Scheduling in Distributed System, Fault tolerance, Real time Distributed System.

UNIT – V **[15 Hrs]**

File System and Shared Memory: Distributed File Systems, Distributed File System Design, Distributed File System implentation, Distributed Shared Memory.

TEXT BOOK:

Andrew S. Tanenbaum, Distributed Operating Systems, Pearson Education.

REFERENCE BOOKS:

1. MukeshSinghal, NiranjanShivaratri, Advanced Concepts in Operating Systems, McGraw Hill Education.
2. Ajay D. Kshemkalyani, MukeshSinghal, Distributed Computing: Principles, Algorithms, and Systems, Cambridge University Press-South Asian Edition.

III BCA	MICROPROCESSOR AND ITS APPLICATIONS	NEW CODE
SEMESTER - VI		HRS/WK-5
ELECTIVE-IV (3)		CREDIT - 5

Objective:

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

Course Outcomes:

At the end of the Course the students should be able to exhibit

CO1: Remember and understand the functions of PN junction in semiconductor electronics

CO2: Understand and analyze the working of operational amplifier.

CO3: Remember, understand and apply the basic principles of Boolean algebra and logic gates in combinational circuits.

CO4: Remember, understand and analyze the working of different types of flip flops and counters.

CO5: Understand microprocessor and create simple programs using microprocessor.

SEMESTER VI	COURSE CODE: ECA613T					TITLE OF THE PAPER: COMPUTER ARCHITECTURE						HOURS: 5	CREDITS: 4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)							MEAN SCORE OF CO'S
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	
CO1	3	3	3	4	4	5	4	4	4	2	3	2	4	3.15
CO2	4	4	4	4	4	5	5	5	4	2	2	2	5	3.50
CO3	4	4	4	4	4	5	5	4	5	3	3	2	5	3.70
CO4	4	4	4	4	4	5	4	5	5	3	3	2	5	3.70
CO5	4	4	4	4	4	5	4	4	4	3	3	2	5	3.50
Mean Overall Score														3.51

This Course is having **HIGH** association with Programme Outcomes and Programme Specific Outcomes.

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

III BCA	MICROPROCESSOR AND ITS APPLICATIONS	NEW CODE
SEMESTER - VI		HRS/WK-5
ELECTIVE-IV (3)		CREDIT - 5

Objective:
To expose the students to the architecture and instruction of microprocessor, Programmable chips, Input-output techniques and Assembly Language Programming using macro-assembler in detail

UNIT -I **[15 Hrs]**
Introduction: Introduction to Microprocessor, Microcomputer and Assembly Language - Microprocessor Architecture and its Operation-8085 Microprocessing unit(MPU)-Input and Output Devices.

UNIT -II **[15 Hrs]**
8085 Architecture and Instruction Set: The 8085 Programming Model, 8085 Instruction Set And Classification - How to Write, Assemble and Execute a simple program-Writing Assembly Language Programs-Programming Techniques Such As Looping, Counting and Indexing - Addressing Mode-Data Transfer Instructions- Arithmetic and Logic Operations- Dynamic Debugging

UNIT -III **[15 Hrs]**
Counters and Subroutines: Counters and Time Delays-Hexadecimal Counter-Zero-to-nine(Modulo Ten) Counter – Stack – Subroutine -Conditional Call and Return Instructions.

UNIT- IV **[15 Hrs]**
BCD Conversions: BCD To Binary Conversion and Binary to BCD Conversion - Binary to ASCII and ASCII to Binary Conversion- BCD Addition -BCD Subtraction–Tools for developing Assembly Language programs-Assemblers and Cross-Assemblers.

UNIT -V **[15 Hrs]**
8085 Interrupts and DMA: 8085 Interrupt- Implementation of 8085Interrupts-Multiple Interrupt – 8085 Vectored interrupts – DMA– Memory Interfaces – RAM and ROM – Memory Mapped I/O.

TEXT BOOK:
R.S. Gaonkar, Microprocessor Architecture, Programming and Application with 8085, Wiley Eastern Limited1990.

REFERENCE BOOK:

1. Mathur, Introduction to Microprocessor, Third Edition, Tata McGraw-Hill Publishing Co. Ltd., 1993.
2. Wadhwa, Ajay, Microprocessor 8085: Architecture, Programming and Interfacing, Prentice Hall India Learning Private Limited.

III BCA	PROGRAMMING IN PHP	CAP607Q
SEM - VI		CREDIT - 5
PRACTICAL-7		HRS/WK- 5

Objective:

To enable the student to build software applications in PHP.

Course Outcomes:

At the end of the Course the students should possess

CO1: Knowledge in Basics of PHP.
CO2: Programming Skill set in OOP using PHP
CO3: Programming Skill set in Files Concept using PHP
CO4: Programming Skill set in developing Web Pages
CO5: Programming Skill set in developing Database Application using PHP.

SEMESTER VI	COURSE CODE: CA607Q					TITLE OF THE PAPER: PROGRAMMING IN PHP								HOURS: 5	CREDITS: 3
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)								MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8		
CO1	5	4	5	5	4	4	4	4	4	3	4	2	4	4	
CO2	5	4	5	5	4	4	4	4	5	3	4	2	4	4.10	
CO3	5	5	5	5	5	5	5	4	5	3	4	2	4	4.40	
CO4	5	5	5	5	5	5	5	4	5	3	4	2	4	4.40	
CO5	5	5	5	5	5	5	5	4	5	3	4	2	4	4.40	
Mean Overall Score														4.2	

This Course is having **VERY HIGH** association with Programme Outcomes and Programme Specific Outcomes.

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

III BCA	PROGRAMMING IN PHP	CAP607Q
SEM - VI		CREDIT - 5
PRACTICAL-7		HRS/WK- 5

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.

III BCA	MINI-PROJECT	JCA601
SEMESTER - VI		HRS/WK-5
MINI PROJECT		CREDIT - 3

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

Course Outcomes:

At the end of the Course the students should possess

CO1: Project Analysis Technical Skill.
CO2: Project Designing Technical Skill.
CO3: Project Coding Technical Skill.
CO4: Project Testing Technical Skill.
CO5: Project Implementation Technical Skill.

SEMESTER VI	COURSE CODE: JCA601					TITLE OF THE PAPER: MINI-PROJECT								HOURS: 5	CREDITS: 5
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)								MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8		
CO1	5	4	5	5	4	4	4	4	4	3	4	4	4	4.10	
CO2	5	4	5	5	4	4	4	4	5	3	4	4	4	4.20	
CO3	5	5	5	5	5	5	5	4	5	3	4	4	4	4.50	
CO4	5	5	5	5	5	5	5	4	5	3	4	4	4	4.50	
CO5	5	5	5	5	5	5	5	4	5	3	4	4	4	4.50	
Mean Overall Score														4.4	

This Course is having **VERY HIGH** association with Programme Outcomes and Programme Specific Outcomes.

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

III BCA	MINI PROJECT	JCA601
SEMESTER - VI		HRS/WK-5
MINI PROJECT		CREDIT - 3

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 found 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
Top	:	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 literals. Papers 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 (B.C.A.)

by
STUDENT'S NAME
(Register Number)
Under the Guidance of

GUIDE'S NAME

College Logo

PG AND RESEARCH DEPARTMENT OF COMPUTER APPLICATIONS
ST. JOSEPH'S COLLEGE OF ARTS & SCIENCE (AUTONOMOUS)
CUDDALORE – 607001.

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 (Reg. No.)
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.

Internal Guide Head of the Department

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

Examiners:
1.

2.

Question Paper pattern:

THEORY EXAMINATION (B.C.A.)

Continuous Internal Assessment (CIA) - 25 Marks

Two Internal Examinations	15 marks
Assignment / Seminar	5 marks
Attendance	5 marks
Total	**25 marks**

External Examination (SE) - 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

II- B.SC CHEMISTRY	COMPUTERS IN CHEMISTRY	ACCH401S
SEMESTER IV		HRS/WK – 5
ALLIED		CREDIT - 4

Objective:

To enable the students to get acquainted with programming skills in solving problems related to chemistry and to expertise the student in Designing software related to Chemistry.

Course Outcomes:
At the end of the Course the students should be able to exhibit

CO1: Knowledge regarding programming language and C-Fundamentals.
CO2: Knowledge pertaining to Control Statements in "C".
CO3: Basic knowledge pertaining to Functions in "C" and solving problems through "C".
CO4: Skills in handling Arrays in "C" and solving problems through "C"
CO5: Knowledge pertaining to CHEMDRAW and ISIS DRAW

SEMESTER IV	COURSE CODE: ACCH401S					TITLE OF THE PAPER:COMPUTERS IN CHEMISTRY								HOURS: 5	CREDITS: 4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)								MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8		
CO1	3	4	4	3	4	4	4	4	4	2	4	4	5	3.75	
CO2	4	4	4	3	4	4	4	4	4	2	4	4	5	3.85	
CO3	4	4	4	3	4	4	4	4	4	2	5	4	4	3.90	
CO4	4	4	4	3	4	4	4	4	4	2	5	4	5	3.90	
CO5	5	5	5	3	4	4	4	5	4	2	5	4	5	4.20	
Mean Overall Score														3.92	

This Course is having **HIGH** association with Programme Outcomes and Programme Specific Outcomes.

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

II- B.SC CHEMISTRY	COMPUTERS IN CHEMISTRY	ACCH401S
SEMESTER IV		HRS/WK – 5
ALLIED		CREDIT - 4

UNIT-I **[15 Hrs]**

Programming Language: History of Computer-Introduction to Algorithm-Flowchart-Structure of Programming Languages

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

UNIT-II **[15 Hrs]**

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

UNIT-III **[15 Hrs]**

Functions: Defining, accessing functions - functions prototypes-storage classes.

Problems:

Determination of Electro negativity of an atom from bond energy data using pauling's relation – determination of Lattice Energy of a Crystal using born-Lande equation – shapes of molecules or ions using VSEPR theory - deriving empirical formula from elemental analysis – calculation of PH and POH – determination of solubility of sparingly soluble salts – calculation of inter planar spacing for different planes in an orthorhombic crystal.

UNIT-IV **[15 Hrs]**

Arrays: Defining and processing – Types of Arrays- string Functions-strlen()–strcpy()-strcat()- strcmp()-strlwr()-strupr()-strrev()- Structures.

Problems:

Determination of Half Life and Average Life of a Radio active nucleus-Determination of Normality, Molarity and Molality of Solutions –Calculation of Equivalent weight of acids, bases and salts.

UNIT-V **[15 Hrs]**

CHEM DRAW: Introduction to CHEM DRAW**-**Application of CHEM DRAW and ISIS Draw for ORGANIC and INORGANIC molecules

TEXT BOOKS:

1. E. Balagurusamy -Programming in Ansi C -Tata McGraw Hill Pub
2. Byron S.Gottfied - Schaum's outline Theory and problems of programming with C. Tata McGraw Hill Pub
3. Computers in Chemistry-K.V.Raman-TMH-VII Edition-2005

REFERENCE BOOKS

1. Yeshwanth Kanethkar -Let us C -.BPB Publications
2. K.R.Venugopal, S.R.Prasad -Mastering C – Tata McGraw Hill Pub

YEAR - I	EXCEL FOR BUSINESS	CODE – 17BB204
SEMESTER – II		HOURS / WEEK – 2
CORE THEORY - 4		CREDIT – 2

Course Outcomes: At the end of the Course the students should be able to exhibit
CO1: Basics of Excel.
CO2: Knowledge pertaining to spreadsheet.
CO3: Basics knowledge of data handling in Excel.
CO4: Knowledge pertaining to Pivot tables.
CO5: knowledge pertaining to formatting in Excel.

Semester	Course Code	Title of the paper	Hours	Credit
II	17BB204	Excel for Business	2	2

Course Outcomes (COS)	Programme Outcomes (POS)					Programme Specific Outcomes (PSOS)								Mean Score Of CO'S
	PO 1	PO 2	PO 3	PO 4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	
CO1	4	5	4	4	4	4	4	4	3	2	3	2	4	3.50
CO2	4	4	4	3	4	5	4	3	3	2	3	2	4	3.50
CO3	5	3	4	4	4	5	4	5	3	2	4	2	4	3.80
CO4	5	3	4	4	4	5	5	3	4	2	4	2	4	3.80
CO5	5	3	4	3	5	5	5	4	3	2	4	2	4	3.80
									Mean Overall Scores					3.68

This Course is having **HIGH** association with Programme Outcomes and Programme Specific Outcomes

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

YEAR - I	EXCEL FOR BUSINESS	CODE – 17BB204
SEMESTER – II		HOURS / WEEK – 2
CORE THEORY -4		CREDIT -2

Unit – I: Foundation **[6 Hrs]**

Foundation- Excel Introduction – The Excel Interface Basic Navigation and Editing – Getting Going

Unit-II: Orientation and Efficiency **[6 Hrs]**

Orientation and Efficiency- Editing – Viewing- Spreadsheet Structure- Cell References - Named Range - Basic Macros – Design- Administration- Customizing Excel – Housekeeping-Connecting Workbooks - Documentation - Protecting and Sharing-Google Sheets- Excel Troubleshooting

Unit-III: Data Handling **[6 Hrs]**

Data Handling- Sorting and Filtering - Controlling User Input - Working with Dates and Times- Working with Text - Lookup and Reference - Logical Functions

Unit-IV: Data Analysis **[6 Hrs]**

Data Analysis- Working with Numbers- Summarizing Data - PivotTables 1 – Simple Summaries - PivotTables 2 – Manipulating Data - PivotTables 3 – Interpreting Data. - Power Pivot: Handling Big Data- Formula Auditing - Advanced Macros and VBA – Modelling Presentation

Unit-V: Cell Formatting **[6 Hrs]**

Cell Formatting - Number Formatting - Conditional Formatting - Charts and Graphs-Page and Print Setup

Text book:

1. Paul Buggs, TeachYourself Excel 2016 Advanced,CreateSpace Independent Publishing Platform, 27-Feb-2016

Reference Book:

1. John Walkenbach, Excel 2016 Bible, John Wiley & sons Publications

YEAR - I	EXCEL - LAB	CODE – 17BP201
SEMESTER – II		HOURS / WEEK – 3
CORE PRACTICAL		CREDIT - 2

Course Outcomes:

At the end of the Course the students should be able to exhibit

CO1: Skills using editing, formatting in Excel.
CO2: Skills using filtering and sorting in Excel.
CO3: Skills using different functions in Excel.
CO4: Programming Skills in Macros.
CO5: Skills using Pivot Tables in Excel.

Semester	Course Code	Title of the paper	Hours	Credit
II	17BP201	Excel - Lab	3	2

Course Outcomes (COS)	Programme Outcomes (POS)					Programme Specific Outcomes (PSOS)								Mean Score Of CO'S
	PO 1	PO 2	PO 3	PO 4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	
CO1	4	5	4	4	4	4	5	4	5	4	4	4	4	4.2
CO2	5	4	4	5	5	4	4	4	4	4	4	4	5	4.3
CO3	4	5	5	5	5	5	5	5	5	4	4	4	5	4.7
CO4	5	4	4	5	5	5	5	5	5	4	4	4	5	4.6
CO5	4	5	4	5	5	5	5	5	5	4	4	4	5	4.6
									Mean Overall Scores					4.48

This Course is having **VERY HIGH** association with Programme Outcomes and Programme Specific Outcomes

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

YEAR - I	EXCEL - LAB	CODE – 17BP201
SEMESTER – II		HOURS / WEEK – 3
CORE PRACTICAL		CREDIT - 2

1. Editing and Cell References
2. Named Range
3. Protecting and Sharing
4. Sorting and Filtering
5. Working with Dates and Times
6. Lookup and Reference
7. Logical Functions
8. Pivot Tables
9. Formula Auditing
10. Macros
11. VBA – Modelling Presentation
12. Number Formatting
13. Conditional Formatting
14. Charts and Graphs