DHANALAKSHMI SRINIVASAN COLLEGE OF ARTS AND SCIENCE FOR WOMEN (Autonomous)

Affiliated to Bharathidasan University, Tiruchirappalli
(Nationally re-accredited with 'A' Grade by NAAC)
Perambalur-621212,Tamil Nadu.

BCA (Bachelor of Computer Applications)-Course Structure under CBCS
(For the Candidates Admitted From the Academic Year 2021-2022 Onwards)

Sem	Part	Course	Course Title	Course Code	Instru. Periods / Week	Credit	Exam Hours	Marks		
								Intl	Extrn	Total
I	I	Language Course – I	Cheyyul (IkkalaIlakkiyam) ,Sirukathai, IlakkiyaVaralaru/ Hindi / Arabic /French / Sanskrit	21U1LT1/ 21U1LH1/ 21U1LA1/ 21U1LF1/ 21U1LS1	6	3	3	25	75	100
	II	English Language Course – I	English for Communication - I	21U1EL1	6	3	3	25	75	100
	III	Core Course – I	C Programming	21UCA1C1	6	5	3	25	75	100
		Core Course –II	C Lab	21UCA1C2P	4	3	3	40	60	100
		Allied Course– I	Algebra and Calculus	21UCA1A1	4	3	3	25	75	100
		Allied Course –II	Numerical Analysis and Statistics	21UCA1A2	2	-	-	-	-	-
	IV	Environmental Studies	Environmental Studies	21U1EVS	2	2	3	25	75	100
	TOTAL				**30**	**19**		**165**	**435**	**600**
II	I	Language Course – II	Cheyyul (IdaikalaIlakkiyam), Puthinam/ Hindi /Arabic /French / Sanskrit	21U2LT2/ 21U2LH2/ 21U2LA2 / 21U2LF2/ 21U2LS2	6	3	3	25	75	100
	II	English Language Course – II	English for Communication - II	21U2EL2	6	3	3	25	75	100
	III	Core Course – III	Programming in C++	21UCA2C3	6	5	3	25	75	100
		Core Course – IV	Programming in C++ Lab	21UCA2C4P	4	3	3	40	60	100
		Allied Course –II	Numerical Analysis and Statistics	21UCA1A2	2	3	3	25	75	100
		Allied Course –III	Operations Research	21UCA2A3	4	3	3	25	75	100
	IV	Value Education	Value Education	21U2VED	2	2	3	25	75	100
	TOTAL				**30**	**22**		**190**	**510**	**700**
III	I	Language Course – III	Cheyyul (Kappiyangal), Urainadai , / Hindi / Arabic /French / Sanskrit	21U3LT3/ 21U3LH3/ 21U3LA3/ 21U3LF3/ 21U3LS3	6	3	3	25	75	100
	II	English Language Course – III	English through Literature	21U3EL3	6	3	3	25	75	100
	III	Core Course – V	Java programming	21UCA3C5	6	5	3	25	75	100
		Core Course – VI	Java programming Lab	21UCA3C6P	4	3	3	40	60	100
		Allied Course – IV	Financial Accounting	21UCA3A4	4	3	3	25	75	100
		Allied Course – V	Accounting Package Lab	21UCA3A5P	2	-	-	-	-	-
	IV	Non Major Elective – I	Working Principles of Internet	21UCA3N1A	2	2	3	25	75	100
			Fundamentals of Information Technology	21UCA3N1B						

			Basics of Computer Programming	21UCA3N1C						
	TOTAL				**30**	**19**		**165**	**435**	**600**
IV	I	Language Course – IV	Cheyyul (SangaIlakkiyam, NeedhiIlakkiyam, Nadagam,)/ Hindi Arabic /French / Sanskrit	21U4LT4/ 21U4LH4/ 21U4LA4/ 21U4LF4/ 21U4LS4	6	3	3	25	75	100
	II	English Language Course – IV	English for Competitive Examinations	21U4EL4	6	3	3	25	75	100
	III	Core Course – VII	PHP	21UCA4C7	6	5	3	25	75	100
		Core Course – VIII	PHP Lab	21UCA4C8P	4	3	3	40	60	100
		Allied Course – V	Accounting Package Lab	21UCA3A5P	2	3	3	40	60	100
		Allied Course – VI	Accounting Package	21UCA4A6	4	3	3	25	75	100
	IV	Non Major Elective – II	PC Hardware and Trouble Shooting	21UCA4N2A	2	2	3	25	75	100
			Scripting Languages	21UCA4N2B						
			Office Automation	21UCA4N2C						
	TOTAL				**30**	**22**		**205**	**495**	**700**
V	III	Core Course – IX	Cyber Security	21UCA5C9	6	6	3	25	75	100
		Core Course – X	Internet of Things	21UCA5C10	5	5	3	25	75	100
		Core Course –XI	Computer Architecture	21UCA5C11	5	5	3	25	75	100
		Core Course – XII	Cyber Security Lab	21UCA5C12P	4	3	3	40	60	100
		Major Based Elective-I	E-Commerce and M-Commerce	21UCA5M1A	4	4	3	25	75	100
			System Analysis and Design	21UCA5M1B						
			Data Base Management	21UCA5M1C						
	IV	Skill Based Elective – I	Page maker	21UCA5S1A	2	2	3	25	75	100
			Corel Draw	21UCA5S1B						
			Internet Programming	21UCA5S1C						
		Skill Based Elective – II	Dream Weaver	21UCA5S2A	2	2	3	25	75	100
			Computer Applications in Business	21UCA5S2B						
			Introduction to web design	21UCA5S2C						
		Soft skills Development	Soft Skills Development	21U5SS	2	2	3	25	75	100
	TOTAL				**30**	**29**		**215**	**585**	**800**
VI	III	Core Course – XIII	Python Application Programming	21UCA6C13	6	6	3	25	75	100
		Core Course – XIV	Software Engineering	21UCA6C14	6	6	3	25	75	100
		Core Course – XV	Python Lab	21UCA6C15P	5	4	3	40	60	100
		Major Based Elective -II	Web Programming	21UCA6M2A	6	5	3	25	75	100
			GIS and Remote Sensing	21UCA6M2B						
			Multimedia Applications	21UCA6M2C						
		Major Based Elective -III	Mini Project	21UCA6M3PW	6	6	3	40	60	100
			Web Programming Lab	21UCA6M3P1						
			Multimedia Lab	21UCA6M3P2						
	IV	Gender Studies	Gender Studies	21U6GS	1	1	3	25	75	100
	V	Extension Activities	Extension Activities	--	-	1	-	-	-	-
	TOTAL				**30**	**29**	**-**	**180**	**420**	**600**
	Grand Total				**180**	**140**		**1120**	**2880**	**4000**

1.University Representative : Dr.L.Arokiam

2.Subject Expert : Dr.V.Anita sofia

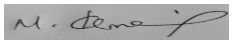
3.Industry Corporate Sector/Allied Area Representative : Mr.M.Manoharan

4.Principal's Nominee from Alumnae : Ms.K.Lavanya

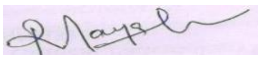
5.Chair Person : Dr.M.Chandrasekaran

Members :

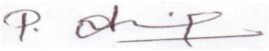
1.Mrs.S.Gowri : 

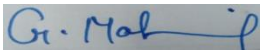
2.Mrs.M.Kamarunisha 

3.Mrs.A.Sivasankari 

4. Mrs.R.Kayalvizhi 

5. Mrs.R.Jothi 

6.Ms.P.Anitha 

7.Mrs.G.Mahalakshmi 

LIST OF PAPERS

Language Part-I	: 4
Language Part-II	: 4
Core Course	: 09
Core Practical	: 6
Allied Course	: 5
Allied Practical	: 1
Skill Based Elective	: 2
Major Based Elective	: 3
Non Major Elective	: 2
Environmental Studies	: 1
Value Education	: 1
Soft Skill Development	: 1
Gender Studies	: 1

Skill Based Elective

1.Page Maker
2.Corel Draw
3.Internet Programming
4.Dream Weaver
5. Computer Applications in Business
6.Introduction to Web Design

Major Based Elective

1. E-Commerce & M-Commerce
2. System Analysis and Design
3. Database Management
4.Web Programming
5.GIS and Remote Sensing
6.Multimedia Applications
7.Mini Project
8.Web Programming Lab
9.Multimedia Lab

Non-Major Elective

1. Working Principles Of Internet
2. Fundamentals of Information Technology
3. Basics of Computer Programming
4. Pc Hardware and Troubleshooting
5. Scripting Languages
6. Office Automation

Program Specification Outcome :

Pso1: focuses on preparing student for roles pertaining to computer applications and IT industry.

Pso2: develop programming skills, networking skills, learn applications, packages, programming languages and modern techniques of IT.

Pso3: Learn programming language such as Java, c++, HTML, SQL, etc…

Pso4: Information about various computer applications and latest development in IT and communication system is also provided.

Pso5: Gives overview of the topics in IT like networking, computer graphics, web development, trouble shooting, and hardware and software skills.

Pso6: Bachelor in computer applications (BCA) gives a number of opportunities to individuals to go ahead and shine in their lives.

Pso7: A few of them being like software programmer, system and network administrator, web designer faculty for computer science and computer applications.

CORE COURSE – I

C PROGRAMMING

Semester: I **Exam Hrs:3**
Course Code : 21UCA1C1 **Max.Marks:75**
Total Periods: 90 **Credit : 5**

Objective: To impart basic knowledge of Programming Skills in C language.

Unit- I **(15 Periods)**

Computer Basics: Algorithms, A Simple Model of a Computer, Characteristics of Computers, Problem Solving Using Computers. Data Representation: Representation of Characters in Computers, Representation of Integers, Representation of Fractions, Hexadecimal Representation of Numbers, Decimal to Binary Conversion, Error Detecting Codes. Input / Output Units: Description of Computer Input Units, Other Input Methods, Computer Output Units.

Unit- II **(15 Periods)**

Computer Memory: Memory Cell, Memory Organization, Read Only Memory, Serial Access Memory, Physical Devices Used to Construct memories, Magnetic Hard Disk, Floppy Disk Drives, Compact Disk Read Only Memory (CDROM), Algorithms-Characteristics of Algorithms- Examples of Algorithms- Advantages and Disadvantages of Algorithms- Flow Charts – Symbols used in Flow Charts.

Unit- III **(20 Periods)**

Introduction to C : -History of C- Structure of a C program- Simple C program- executing a C program- Character set in C- C Tokens- Keywords and Identifiers in C- Constants- Variables in C-, Basic Data Types- Type declaration- Operators and Expressions.

Unit IV **(20 Periods)**

Arrays and String Handling :- Managing Input and output operation- Control statements- Introduction to array- advantages of arrays- array declaration- array initialization- Types of arrays - Single and Multidimensional arrays, Character Arrays - Strings.

Unit -V **(20 Periods)**

Functions:- Introduction to functions - advantages of functions- declaring a function- calling a function- passing arguments for a function- Categories of functions - nesting of functions- Recursion - Structures and Union- Introduction to Pointers- Pointers and Arrays- Function returning pointers- Pointers to functions.

.**Text Book(s):**

1. E.Balagurusamy (2010), Fundamentals of Computers, Tata McGraw Hill Publishing Company Ltd, Second reprint.
2. E.Balagurusamy (2011), Programming in ANSI C, Tata McGraw Hill Publishing Company Ltd, Fifth Edition.

Reference Books:

1. YashwantP.Kanetkar (2010),Let us C, BPB Publications, Sixth Edition.
2. ReemaThareja(2014),Fundamentals of Computers, Oxford University Press.

Course Outcomes

CO Number	CO Statement	Knowledge Level
CO1	Understands programming methodologies by learning algorithm and flowcharts	K1
CO2	Acquire programming logic, use of program instructions, syntax, program structure..	K2
CO3	Understand the concept of arrays and functions.	K3
CO4	Solve various problems using C features.	K3

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4
CO1	S	S	S	S
CO2	S	M	S	M
CO3	S	M	S	M
CO4	S	M	S	S

S –Strong; M–Medium; L – Low

CORE COURSE -II
C LAB

Semester: I **Exam Hrs: 3**
Course Code : 21UCA1C2P **Max.Marks:45**
Total Periods : 45 **Credit : 3**

Objective :

To Impart Practical Training in C Programming Language

1.Write a Program to convert temperature from degree Centigrade to Fahrenheit.(4 Periods)

2.Write a Program to find whether given number is Even or Odd.(4 Periods)

3.Write a Program to find greatest of Three numbers.(4 Periods)

4.Write a Program to using switch statement to display Monday to Sunday.(3 Periods)

5.Write a Program to display first Ten Natural Numbers and their sum.(3 Periods)

6.Write a Program to find Multiplication of Two Matrices. .(3 Periods)

7.Write a Program to find the maximum number in Array using pointer .(4 Periods)

8.Write a Program to reverse a number using pointer. (4 Periods)

9.Write a Program to solve Quadratic Equation using functions.(4 Periods)

10.Write a Program to find factorial of a number using Recursion.(4 Periods)

11.Write a Program to show Call by Value and Call by Reference.(4 Periods)

12.Write a Program to add two numbers using pointer.(4 Periods)

Course Outcomes

CO Number	CO Statement	Knowledge Level
CO1	Identify the basic terminologies of C programming by using different data types, decision structures, loops and functions.	K1
CO2	Demonstrate practical experience in developing solutions using C	K2
CO3	Apply, compile and debug programs in C language	K3
CO4	Design and develop the simple business application.	K3

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4
CO1	S	S	S	M
CO2	S	S	S	M
CO3	S	S	S	S
CO4	S	S	S	S

S –Strong; M–Medium; L – Low

CORE COURSE III

PROGRAMMING IN C++

Semester: II **Max.Marks:75**
Course Code : 21UCA2C3 **Credit:5**
Total Periods :90 **Exam Hrs :3**

Objective:

To impart basic knowledge of Programming Skills in C++ language.

UNIT I (20 **Periods)**

Principles of Object- Oriented Programming – Beginning with C++ - Tokens, Expressions and Control Structures – Functions in C++

UNIT II (20 **Periods)**

Classes and Objects – Constructors and Destructors – New Operator – Operator Overloading and Type Conversions

UNIT III (20 **Periods)**

Inheritance: Extending Classes – Pointers- Virtual Functions and Polymorphism

UNIT IV (15 **Periods**

Managing Console I/O Operations – Working with Files – Templates – Exception Handling

UNIT V (15 **Periods)**

Standard Template Library – Manipulating Strings – Object Oriented Systems Development

Text Book(s) :

1. Balagursamy E, Object Oriented Programming with C++, Tata McGraw Hill Publications, Sixth Edition, 2013 .

Reference Books:

1. Ashok Kamthane, Programming in C++, Pearson Education, 2013.

Course Outcomes

CO Number	CO Statement	Knowledge Level
CO1	Identify the role of inheritance, polymorphism, dynamic binding and generic structures in building reusable codes.	K1
CO2	Describe classes and objects written by other programmers when constructing their system.	K2
CO3	Classify C++ features to program design and implementation	K3
CO4	Illustrate the object oriented design for small/medium scale problems.	K3

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4
CO1	S	S	S	S
CO2	S	M	S	M
CO3	S	M	S	M
CO4	S	M	S	S

S –Strong; M–Medium; L – Low

CORE COURSE - IV

PROGRAMMING IN C++ LAB

Semester: II **Max.Marks:60**
Course Code : 21UCA2C4P **Credit:3**
Total Periods :45 **Exam Hrs :3**

Objective:

1. To Impart Practical Training in C++ Programming Language.

1. Classes **(5 Periods)**

Write a Program using a class to represent a Bank Account with Data Members – Name of depositor, Account Number, Type of Account and Balance and Member Functions – Deposit Amount – Withdrawal Amount. Show name and balance. Check the program with own data.

2. Constructor & Destructor **(5 Periods)**

Write a program to read an integer and find the sum of all the digits until it reduces to a single digit using constructor, destructor and default constructor.

3. Default & Reference Argument **(5 Periods)**

Write a program using function overloading to read two matrices of different data types such as integers and floating point numbers. Find out the sum of the above matrices separately and display the total sum of these arrays individually.

4. Operator Overloading **(5 Periods)**

a. Addition of Two Complex Numbers.
b. Matrix Multiplication

5. Inheritance **(5 Periods)**

Prepare Pay Roll of an employee using Inheritance.

6. Pointers **(5 Periods)**

a. Write a Program to find the number of vowels in a given text
b. Write a Program to check for Palindrome

7. Files **(5 Periods)**

Prepare Students Mark List in a file with Student Number, Mark in four subjects and Mark Total. Write a program to arrange these records in the ascending order of Mark Total and write them in the same file overwriting the earlier records.

8. Exception Handling **(5 Periods)**

Prepare Electricity Bill for customers generating and handling any two Exceptions.

Course Outcomes

CO Number	CO Statement	Knowledge Level
CO1	Identify object oriented programming paradigm and the importance of it in software development.	K1
CO2	Understand algorithmic thinking and apply it to programming.	K2
CO3	Implement Oops concept in developing simple applications using C++	K3
CO4	To use appropriate C programming statements to control flow of execution in a C++ programme.	K3

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4
CO1	S	S	S	M
CO2	S	S	S	M
CO3	S	S	S	S
CO4	S	S	S	S

S –Strong; M–Medium; L – Low

CORE COURSE –V

JAVA ROGRAMMING

Semester: III **Max.Marks:75**

Course Code : 21UCA3C5 **Credit:5**

Total Periods :90 **Exam Hrs :3**

Objective:

To understand the basic concepts of Object Oriented Programming with Java language.

Unit I **(20 Periods)**

Object Oriented Programming : Introduction to OOP – Objects and Classes – Characteristics of OOP – Difference between OOP and Procedure Oriented Language – Introduction to java Programming : Introduction – Features of Java – Comparing java and Other Languages – Applications and Applets – Java Development Kit – Complex Programs – Java Source File Structure – Prerequisites for Compiling and Running Java Programs

Unit II **(20 Periods)**

Java Language Fundamentals : The Building Blocks of Java – Data Types – Variable Declarations – Wrapper Classes – Operations and Assignment – Control Structures – Arrays – Strings – StringBuffer Class

Unit III **(20 Periods)**

Java as an OOP Language : Defining Classes – Modifiers – Packages – Interfaces.

Unit IV **(15 Periods)**

Exception Handling : Introduction – Basics of Exception Handling – Exception Hierarchy – Constructors and Methods in Throwable Class - Unchecked and Checked Exceptions – Handling Exceptions in Java – Exception and Inheritance – Throwing User-defined Exceptions – Redirecting and Rethrowing Exceptions – Advantages of Exception Handling Mechanism – Multithreading : Introduction – Creating Threads – Thread Life-cycle – Thread Priorities and Thread Scheduling – Thread Synchronization– Daemon Threads – Tread Groups – Communication of Threads

Unit V **(15 Periods)**

Files and I/O Streams : Overview – Java I/O – File Streams – FileInputStream and FileOutputStream – File Streams – RandomAccess File – Serialization - Applets : Introduction – Java Applications versus Java Applets – Applet Life-cycle – Working with Applets – The HTML APPLET Tag – The java.Applet package

Text Book :

1.Object Oriented Programming through Java,P.Radha Krishna,University Press,2011.

Reference Book:

1.Java Programming, K.Rajkumar, Pearson India, 2013.

Course Outcomes

CO Number	CO Statement	Knowledge Level
CO1	Recognize design of java class & solve basic design problems using object oriented concepts	K1
CO2	Execute inheritance codes.	K2
CO3	Write java application programs using packages & collection interfaces.	K3
CO4	Implement the robust & multitasking application using exception handling concepts	K3

Mapping with Programme Outcomes

Cos	PO 1	PO 2	PO 3	PO 4
CO1	S	S	S	S
CO2	S	M	S	M
CO3	S	M	S	M
CO4	S	M	S	S

S –Strong; M–Medium; L – Low

CORE COURSE-VI

JAVA PROGRAMMING LAB

Semester: III **Exam Hrs: 3**
Course Code : 21UCA3C6P **Max.Marks:60**
Total Periods : 45 **Credit : 3**

Objective : To Impart Practical Training in Java Programming Language.

1.Write a program to sort the given numbers using arrays.(5 Periods)
2.Write a program to implement the FIND and REPLACE operations in the given multiple text. .(5 Periods)
3.Write a program to implement a calculator to perform basic arithmetic Operations. (5 Periods)
4.Write a program to find the area of a rectangle using constructor. .(5 Periods)
5.Write a program to find the student's percentage and grade using command line arguments. (5 Periods)
6.Write a program to draw circle or triangle or square using polymorphism and inheritance. (4 Periods)
7.Implement multiple inheritance concepts in java using interface, you can choose your own example of a company or education institution or a general concept which requires the use of interface to solve a particular problems. .(4 Periods)
8.Write a program to create threads and assign priorities to them. .(4 Periods)
9.Write a program to develop an applet to play multiple audio clips using multithreading.(4 Periods)
10.Write a program to create a window with three check boxes called red, green and blue. The applet should change the colors according to the selection. .(4 Periods)

Course Outcomes

CO Number	CO Statement	Knowledge Level
CO1	Identify the logic for the given problem, recognize and understand the syntax and construction JAVA code	K1
CO2	Understand and design the classes using string functions & methods.	K2
CO3	Develop java application programs using packages & collection interfaces.	K3
CO4	To build software development skills using java programming for real world applications.	K3

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4
CO1	S	S	S	M
CO2	S	S	S	M
CO3	S	S	S	S
CO4	S	S	S	S

S –Strong; M–Medium; L – Low

NON MAJOR ELECTIVE-I

WORKING PRINCIPLES OF INTERNET

Semester: III **Max.Marks:75**
Course Code : 21UCA3N1A **Credit :2**
Total Periods :30 **Exam Hrs :3**

Objective : To understand the working Principles of Internet

Unit I **(6 Periods)**

What is Internet ? The Internet's underlying Architecture.

Unit II **(6 Periods)**

Connecting to the Internet – Communicating on the Internet.

Unit III **(6 Periods)**

How the World Wide Web works. Common Internet tools.

Unit IV **(6 Periods)**

Multimedia on the Internet – Intranet and shopping on the Internet.

Unit V **(6 Periods)**

Safeguarding the Internet.

Text Book :

1. How the Internet Works, Preston Gralla, Pearson Education, Eighth Edition, 2006

Reference Book :

1.Internet for Everyone, Alexis Leon, S. Chand (G/L) & Company Ltd; Second Edition 2012.

Course Outcomes

CO Number	CO Statement	Knowledge Level
CO1	Understand internet's underlying architecture	K2
CO2	Explain the different types of connection to internet	K3
CO3	Understand the concepts of how to create web pages and websites	K2
CO4	Explain about multimedia communication on internet	K3
CO5	Explain the process of web browser.	K3

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4
CO1	S	S	S	S
CO2	S	M	S	M
CO3	S	M	S	M
CO4	S	M	S	S
CO5	S	M	S	M

S –Strong; M–Medium; L – Low

NON MAJOR ELECTIVE-I

FUNDAMENTALS OF INFORMATION TECHNOLOGY

Semester: III **Max.Marks:75**
Course Code : 21UCA3N1B **Credit:2**
Total Periods :30 **Exam Hrs :3**

Objective : To Provide the Basic Concepts in Information Technology

Unit I **(6 Periods)**

Introduction to Computers - Generation of Computers - Classfication of Digital Computer - Anatomy of Digital Computer.

Unit II **(6 Periods)**

CPU and Memory - Secondary Story Devices - Input Devices - Output Devices.

Unit III **(6 Periods)**

Introduction to Computer Software - Programming Language - Operating Systems - Introduction to Database Management System.

Unit IV **(6 Periods)**

Computer Networks - WWW and Internet - Email - Web Design

Unit V **(6 Periods)**

Computers at Home, Education, Entertainment, Science, Medicine and Engineering - Introduction to Computer Security - Computer Viruses, Bombs, Worms.

Text Book:

1. Fundamentals of Information Technology, Alexis Leon And Mathews Leon, Vikas Publishing House Pvt. Ltd, 2009

Reference Book:

1. Fundamentals of Computers and Information Technology, M.N Doja, 2005

Course Outcomes

CO Number	CO Statement	Knowledge Level
CO1	Understand basic concepts and terminology of information technology, digital computers	K2
CO2	Have a basic understanding of personal computers and their operations	K3
CO3	Understand the concepts of how to create web pages and websites	K2
CO4	Explain about on internet email WWW concepts	K3
CO5	Explain the information security virus and worms	K3

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4
CO1	S	S	S	S
CO2	S	M	S	M
CO3	S	M	S	M
CO4	S	M	S	S
CO5	S	M	S	M

S –Strong; M–Medium; L – Low

NON MAJOR ELECTIVE-I

BASICS OF COMPUTER PROGRAMMING

Semester: III **Max.Marks:75**
Course Code : 21UCA3N1C **Credit:2**
Total Periods :30 **Exam Hrs :3**

Objective: On completion of the course, the students will
1.know the basics of computers and programming techniques.
2.know the basic concepts of C Programming

UNIT 1: **(6 Periods)**
Introduction to computer: Introduction – Characteristics of computer – Generation of computers – Classification of computers – The computer system – Application of Computer. **Computer Architecture**: Introduction – Central Processing Unit – Memory
UNIT 2: **(6 Periods)**
Computer Program: Introduction – Developing a program – Algorithm – Flow chart. **Computer Languages**: Introduction – evolution of programming languages Classification of programming languages.
UNIT 3: **(6 Periods)**
Computer Software: Introduction – Software definition – Relationship between software and hardware – software categories – System Software – Application Software.
UNIT 4: **(6 Periods)**
Introduction to C – overview of computers and interpreters – structure of a C program – C Character set – C keyword – Constants – Variables – Data types – Types Conversion – Operators and Expressions.
UNIT 5: **(6 Periods)**
Input and Output in C – Decision statements: IF, ELSE – IF, BREAK, CONTINUE, GOTO and SWITCH. Loop Control statements: FOR, WHILE, DO-WHILE.

Text Book:

1. Jennifer Sargunar, "Introduction to Computer Science", ITL Education Solution Limited, Pearson Education, 2nd edition, 2011
2.Ashok, N.Kamthane, **"**Programming with ANSI and TURBO C", Pearson Education, 3rd Indian print, 2003

Reference Book:

1.Balagurusamy.E**, "**Programming in C", Tata McGraw Hill, 4th Edition, 2008.

Course Outcomes

CO Number	CO Statement	Knowledge Level
CO1	To Familiarize operating systems, programming languages, peripheral devices, networking, multimedia and internet.	K2
CO2	Develops the use of the C programming language to implement various algorithms, and develops the basic concepts and terminology of programming in general.	K3
CO3	Write, compile and debug programs in C language and use different data types for writing the programs.	K2
CO4	Understanding the concept of input and output devices of Computers and how it works and recognize the basic terminology used in computer programming.	K3
CO5	Design programs connecting decision structures, loops and functions.	K3

Mapping with Programme Outcomes

Cos	PO1	PO2	PO 3	PO 4
CO1	S	S	S	S
CO2	S	M	S	M
CO3	S	M	S	M
CO4	S	M	S	S
CO5	S	M	S	M

S –Strong; M–Medium; L – Low

CORE COURSE-VII

PHP

Semester: IV **Max.Marks:75**
Course Code : 21UCA4C7 **Credit :5**
Total Periods : 90 **Exam Hrs :3**

Objective : To understand the Concepts of PHP and Ajax.

Unit I **(20 Periods)**

Essentials of PHP - Operators and Flow Control - Strings and Arrays.

Unit II **(20 Periods)**

Creating Functions - Reading Data in Web Pages - PHP Browser - Handling Power.

Unit III **(20 Periods)**

Object-Oriented Programming –Advanced Object-Oriented Programming .

Unit IV **(15 Periods)**

File Handling –Working with Databases – Sessions, Cookies, and FTP

Unit V **(15 Periods)**

Ajax – Advanced Ajax – Drawing Images on the Server.

Text Book:

1.The PHP Complete Reference – Steven Holzner – Tata McGraw-Hill Edition.

Reference Books:

1. Spring into PHP5 – Steven Holzer, Tata McCraw Hill Edition.

2. Ajax Bible- Steven Holzer , Tata McCraw Hill Editionv

Course Outcomes

CO Number	CO Statement	Knowledge Level
CO1	Understand basic concepts terminology of php code and produce array string	K2
CO2	Have a basic understanding creating and reading webpages	K3
CO3	Understand the object oriented and advanced object oriented programming	K2
CO4	Explain about data bases cookies	K3
CO5	Explain about php advanced concepts ajax	K3

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4
CO1	S	S	S	S
CO2	S	M	S	M
CO3	S	M	S	M
CO4	S	M	S	S
CO5	S	M	S	M

S –Strong; M–Medium; L – Low

CORE COURSE-VIII

PHP LAB

Semester: IV **Exam Hrs:3**
Course Code : 21UCA4C8P **Max.Marks:60**
Total Periods : 45 **Credit :3**

Objective : To Impart Practical Training in PHP Programming Language

1.Write a program using controls and functions (6 Periods)

2.Develop a program and check message passing mechanism between pages. (6 Periods)

3.Design a program using String function and Arrays. (6 Periods)

4.Develop a program using parsing functions (use Tokenizing) . (6 Periods)

5.Write a program and check Regular Expression, HTML functions, Hashing functions. (6 Periods)

6.Develop a program and check File System functions, Network functions, Date and time functions.(5 Periods)

7.Design a program using session (5 Periods)

8.Develop a program using cookie and session (5 Periods)

Course Outcomes

CO Number	CO Statement	Knowledge Level
CO1	Understand basic concepts math functions string tuples dictionaries in python	K2
CO2	To express decision making statements and functions	K3
CO3	Understand the object oriented programming	K2
CO4	Explain about string parsing functions	K3
CO5	Explain about Regular expressions HTML functions Hashing functions	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4
CO1	S	M	S	M
CO2	S	M	S	M
CO3	S	M	S	S
CO4	S	M	S	M
CO5	S	M	S	M

S–Strong; M–Medium; L -Low

NON MAJOR ELECTIVE-II

PC HARDWARE AND TROUBLE SHOOTING

Semester: IV **Max.Marks:75**
Course Code : 21UCA4N2A **Credit :2**
Total Periods :30 **Exam Hrs :3**

Objective :

To identify the names, distinguishing features, and units for measuring different kinds of memory and storage devices**.**

Unit –I **(6 PERIODS)**

Introduction - Computer Organization – Number Systems and Codes – Memory – ALU– CU – Instruction prefetch – Interrupts – I/O Techniques – Device Controllers – Error Detection Techniques – Microprocessor – Personal Computer Concepts – Advanced System Concepts – Microcomputer Concepts – OS – Multitasking and Multiprogramming – Virtual Memory – Cache Memory .

Unit – II **(6 PERIODS)**

Peripheral Devices-Introduction – Keyboard – CRT Display Monitor – Printer – Magnetic Storage Devices –FDD – HDD – Special Types of Disk Drives – Mouse and Track ball – Modem .

Unit – III **(6 PERIODS)**

PC Hardware Overview:Introduction – Hardware BIOS DOS Interaction – The PC family – PC hardware – Inside the System Box – Motherboard Logic – Memory Space – Peripheral Interfaces and Controllers – Keyboard Interface – CRT Display interface – FDC – HDC.

Unit – IV **(6 PERIODS)**

Installation and Preventive Maintenance -Introduction – system configuration – pre installation planning – Installation practice –routine checks – PC Assembling and integration – BIOS setup – Engineering versions and compatibility – preventive maintenance – DOS – Virus – Data Recovery.

Unit – V **(6 PERIODS)**

Troubleshooting-Introduction – computer faults – Nature of faults – Types of faults – Diagnostic programs and tools – Microprocessor and Firmware .

Text Book:

1. B. Govindarajalu, “IBM PC Clones Hardware, Troubleshooting and Maintenance”, 2/E, TMH, 2002.

References:

1. Peter Abel, Niyaz Nizamuddin, “IMB PC Assembly Language and Programming”,Pearson Education, 2007
2.Scott Mueller, “Repairing PC's”, PHI,1992

Course Outcomes

CO Number	CO Statement	Knowledge Level
CO1	To understand the concept Computer organization or DMA Controller number systems	K2
CO2	To explain peripherals devices, CRT monitors	K3
CO3	To introduce about bios and dos interaction pc family	K2
CO4	To explain about installation and pervasive maintenance	K3
CO5	Trouble shootingtools trouble shooting steps to solve computer faults in a process systems	K3

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4
CO1	S	S	S	S
CO2	S	M	S	M
CO3	S	M	S	M
CO4	S	M	S	S
CO5	S	M	S	M

S –Strong; M–Medium; L – Low

NON MAJOR ELECTIVE-II

SCRIPTING LANGUAGES

Semester: IV **Max.Marks:75**
Course Code : 21UCA4N2B **Credit :2**
Total Periods :30 **Exam Hrs :3**

Objective: To introduce the script programming paradigm.

Unit-I **(6 Periods)**

Internet basics, introduction to HTML, list, creating tables, linking documents, frames, graphics to HTML documents, style sheet basics, adding styles to documents.

Unit-II **(6 Periods)**

Creating style sheet tools, style sheet properties, font, text, list, color and background color, box,display properties.

Unit-III **(6 Periods)**

Introduction to JavaScript, Advantages of JavaScript, JavaScript Syntax, data types, variables, arrays. Operators and Expressions, Looping constructors, functions, dialog box, JavaScript, document object model.

Unit-IV **(6 Periods)**

Introduction – objects in HTML, event handling, window object, document object, browser object, object methods, built-in objects, user defined objects, cookies.

Unit-V **(6 Periods)**

DHTML, cascading style sheets, class, external style sheets, working with JavaScript style sheet.

Text Book:

1. Thomas Powell- HTML & CSS: The complete Reference, Fifth Edition,2017
2."Mastering HTML, CSS & JavaScript" Web Publishing – Laura Lemay, Jennifer Kymin-2016

Reference Books:

1. Web Developers Reference Guide by Joshua Johaman, Richard Zea, Talha Khan, Packet Publishing 2016.

Course Outcomes

CO Number	CO Statement	Knowledge Level
CO1	To master the theory behind scripting and its relationship to classic programming.Understanding basic in html formatting links frames all in htmls	K2
CO2	Understand basic concepts style sheet style sheet properties formatting attributes To gain some fluency programming in Ruby, JavaScript, Perl, Python, and related languages	K3
CO3	To express java scripts javascript syntax ,advantages document object functions	K2
CO4	Explain about objects in html event handling functions	K3
CO5	Explain about DHTML CSS, javascript functions	K3

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4
CO1	S	S	S	S
CO2	S	M	S	M
CO3	S	M	S	M
CO4	S	M	S	S
CO5	S	M	S	M

S –Strong; M–Medium; L – Low

NON MAJOR ELECTIVE-II

OFFICE AUTOMATION

Semester: IV **Max.Marks:75**
Course Code : 21UCA4N2C **Credit :2**
Total Periods :30 **Exam Hrs :3**

Objective : To provide an in-depth training in use of office automation, internet and internet tools.

Unit-I **(6 Periods)**

Introduction to Computer: Definition - History & Generation of Computer) - Applications of Computer – Advantages of Computer –- Characteristics of Computer – Hardware & Software.

Unit-II **(6 Periods)**

Definition of Operating System - Functions of OS - Types of OS- Windows Desk top - GUI: Desktop icons and their functions- Dialog Boxes- Task Bar- Parts of Windows. Linux Programming & Administration- Linux Commands and Utilities.

Unit-III **(6 Periods)**

MS Word - Working with Documents- Formatting Documents- Setting Page style- Creating Tables- Drawing- Tools- Printing Documents

Unit-IV **(6 Periods)**

MS Excel- Entering & Deleting Data- Setting Formula- Formatting Spreadsheets- Working with sheets- Chart- . Printing. Using Tools.

Unit-V **(6 Periods)**

MS Access: Introduction, Planning a Database, Starting Access, Access Screen, Creating a New Database, Creating Tables, Working with Forms, Creating queries, Finding Information in Databases, Creating Reports, Types of Reports, Printing & Print Preview – Importing data from other databases. MS Power point: Introduction to presentation – Opening new presentation, Different presentation templates, Setting backgrounds, Selecting presentation layouts. Creating a presentation - Setting Presentation style, Adding text to the Presentation.

Text Book(s):

1.Fundamentals of Computer-V.Rajaraman-Prentics-Hall of India.

Reference Book :

1.Microsoft Office 2007 Bible –John Walkenbach,Herb Tyson,Faithe Wempen,Cary N.Prague,Michael R.Groh,Peter G.Aitken ,and Lisa A.Bucki-Wiley India pvt ltd.

Course Outcomes

CO Number	CO Statement	Knowledge Level
CO1	Understand basic concepts word excel so students would be able to documents, spreadsheets, make small presentations .	K2
CO2	Students would be able to underatand about operating systems.	K3
CO3	Understand the formatting documents printing documents	K2
CO4	Explain about Excel sheet deleting inseting formatting	K3
CO5	Explain about Ms-Access planning database ,reports	K3

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4
CO1	S	S	S	S
CO2	S	M	S	M
CO3	S	M	S	M
CO4	S	M	S	S
CO5	S	M	S	M

S –Strong; M–Medium; L – Low

CORE COURSE –IX

CYBER SECURITY

Semester: V **Max.Marks:75**
Course Code : 21UCA5C9 **Credit :6**
Total Periods:90 **Exam Hrs :3**

Objective: To Introduce the students to the fundamental knowledge of computer security.

Unit I **(20 Periods)**

INTRODUCTION: Cyber Security–Cyber Security policy–Domain of Cyber Security Policy–Laws and Regulations–Enterprise Policy–Technology Operations–Technology Configuration-Strategy Versus Policy–Cyber Security Evolution–Productivity–Internet–E commerce–Counter Measures Challenges.

Unit II **(20 Periods)**

CYBER SECURITY OBJECTIVES AND GUIDANCE: Cyber Security Metrics–Security Management Goals–Counting Vulnerabilities–Security Frameworks–E Commerce Systems–Industrial Control Systems –Personal Mobile Devices–Security Policy Objectives–Guidance for Decision Makers–Tone at the Top–Policy as a Project Cyber Security Management–Arriving at Goals–Cyber Security Documentation–The Catalog Approach–Catalog Format–Cyber Security Policy Taxonomy.

Unit III **(20 Periods)**

CYBER SECURITY POLICY CATALOG: Cyber Governance Issues– Net Neutrality – Internet Names and Numbers–Copyright and Trademarks – Email and Messaging-Cyber User Issues Advertising-Impersonation–Appropriate, Use–Cyber Crime–Geo location–Privacy-Cyber Conflict Issues Intellectual property Theft–Cyber Espionage – Cyber Sabotage – Cyber Welfare.

Unit IV **(15 Periods)**

CYBER MANGEMENT ISSUES: Fiduciary Responsibility – Risk Management – Professional Certification–Supply Chain–Security Principles–Research and Development–Cyber Infrastructure Issue–Banking and finance–Health care–Industrial Control systems.

Unit V **(15 Periods)**

Government's Approach to Cyber Security Policy.

Text Book:

1.Jennifer L. Bayuk,J.Healey,P. Rohmeyer,MarcusSachs,Jeffrey Schmidt
2.JosephWeiss"Cyber Security Policy Guidebook" John Wiley & Sons 2012.

Reference Book:

1.RickHoward"Cyber Security Essentials"Auerbach Publications 2011.
2.DanShoemakerCyber security The Essential Body Of Knowledge, 1sted.Cengage Learning2011

Course Outcomes

CO Number	CO Statement	Knowledge Level
CO1	Understand basic concepts math functions string tuples dictionaries in python	K2
CO2	To express decision making statements and functions	K3
CO3	Understand the object oriented programming	K2
CO4	Explain about string parsing functions	K3
CO5	Explain about Regular expressions HTML functions Hashing functions	K3

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4
CO1	S	S	S	S
CO2	S	M	S	M
CO3	S	M	S	M
CO4	S	M	S	S
CO5	S	M	S	M

S –Strong; M–Medium; L – Low

CORE COURSE-X

INTERNET OF THINGS

Semester: V **Exam Hrs:3**
Course Code : 21UCA5C10 **Max.Marks:75**
Total Periods: 75 **Credit :5**

Objective:

1.Students will understand the concepts of Internet of Things and can able to build IOT Applications.
2.The main aim of IoT is to unify everything in world including things, people, place and process under a common infrastructure to provide information and control of state of objects around us.

Unit – I **(15 Periods)**

INTRODUCTION TO INTERNET OF THINGS : Introduction-Physical Design of IOT-Logical design of IOT-IOT Enabling Technologies-IOT Levels & Deployment Technologies.

DEMYSTIFYING THE IOT PARADIGM: The Emerging IoT Flavors-The Industrial Internet of Things (IIoT) Consumer Internet of Things **(**CIoT)-Social Internet of Things **(**SIoT**) -** Semantics for the Interoperable IoT -Cognitive Internet of Things (CIoT).

Unit – II: **(15 Periods)**

REALIZATION OF IOT ECOSYSTEM USING WIRELESS TECHNOLOGIES :

Introduction-Architecture for IoT Using Mobile Devices -Mobile Technologies for Supporting IoT Ecosystem-Mobile Use Cases for IoT -Low Power Wide Area Networking Technologies-Sigfox -Weightless -NWave-Ingenu-LoRa.

Unit-III: **(15 Periods)**

INFRASTRUCTURE AND SERVICE DISCOVERY PROTOCOLS FOR THE IOT ECOSYSTEM: Introduction-Layered Architecture for IoT-Protocol Architecture of IoT -Infrastructure Protocols-Device or Service Discovery for IoT-Protocols for IoT Service Discovery.

Unit-IV: **(15 Periods)**

IOT AND M2M: Introduction-M2M-Difference between IOT and M2M-SDN and NFV for IOT-DEVELOPING IOT: IOT Design Methodology.

Unit-V: **(15 Periods)**

SECURITY MANAGEMENT OF AN IOT ECOSYSTEM : Introduction-Security Requirements of an IoT Infrastructure-Authentication, Authorization, and Audit Trial (AAA) Framework-Defense-in-Depth-Security Concerns of Cloud Platforms-Security Threats of Big Data-Security Threats in Smart phones-Security Solutions for Mobile Devices -Security Concerns in IoT Components -Security Measures for IoT Platforms/Devices.

Text Book:

1. Pethuru Raj And Anupama C.Raman , "The Internet Of Things Enabling Technologies,Platforms, and Use Cases ",Taylor & Francis,CRC Press,1stEdition,2017.
2. Arshdeep Bahga,Vijay Madisetti, "Internet of Things, A Hands-On Approach ",Universities Press(INDIA)Private Limited ,1stEdition,2015.

Reference Book

1.Jan Holler , VlasiosTsiatsis,Catherine Mulligan,Stefan Avesand,Stamatis Karnouskos,David Boyle, "From Machine-to –Machine to the Internet of Things :Introduction to a New Age of Intelligence",1stEdition,Academic Press,2014

Course Outcomes

CO Number	CO Statement	Knowledge Level
CO1	Apply the concepts of IOT	K2
CO2	Identify the different technology	K3
CO3	Apply IOT to different applicatiOions	K2
CO4	Explain IOT and M2M	K3
CO5	To understand security management and iot eco system	K3

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4
CO1	S	S	S	S
CO2	S	M	S	M
CO3	S	M	S	M
CO4	S	M	S	S
CO5	S	M	S	M

S –Strong; M–Medium; L – Low

CORE COURSE –XI

COMPUTER ARCHITECTURE

Semester: V **Exam Hrs:3**
Course Code : 21UCA5C11 **Max.Marks:75**
Total Periods: 75 **Credit :5**

Objective:

1. To introduce the fundamentals of Computer Architecture, Abstract concepts and how these concepts are used in problem solving.
2. To create and use new, simple and complex data types within Computer Architecture.

Unit-I **(15 Periods)**

Introduction - Organization and Architecture, Structure and Function Computer Evolution and Performance - A Brief History of Computers, Designing for Performance, Pentium and Power PC Evolution. System Buses - Computer Components, Computer Function, Interconnection Structures, Bus Interconnection, PCI, Future bus.

Unit-II **(15 Periods)**

DIGITAL LOGIC CIRCUITS: Logic gates Boolean algebra, map simplification, combinational circuits, flip-flop, sequential circuits**. INTEGRATED CIRCUITS AND DIGITAL FUNCTIONS**: Digital integrated circuits, IC flipflops and registers, decoders and multiplexers, binary counters, shift registers, random – access memories (RAM) read-only memories (ROM).

Unit-III **(15 Periods)**

COMPUTER ARITHMETIC: Addition and subtraction of signed magnitude data and signed 2's complement data – Multiplication of signed magnitude and 2's complement data – Restoring and non restoring division algorithm .

Unit-IV **(15 Periods)**

CPU Structure and Function - Processor Organization, Register Organization, The Instruction Cycle, Instruction Pipelining, The Pentium Processor, The PowerPC Processor. RISC - Instruction Execution Characteristics, The use of a Large Register File, Compiler Based Register Optimization, Reduced Instruction Set Architecture, RISC Pipelining, Motorola 88510, MIPS R4650, The RISC versus CISC Controversy.

Unit-V **(15 Periods)**

ORGANIZATION INPUT-OUTPUT: Peripheral devices, asynchronous data transfer, direct memory access (DMA), priority interrupt, input-output processor (IOP). **MEMORY ORGANIZATION**: Auxiliary memory, microcomputer, memory hierarchy, associative memory, virtual memory, cache memory.

Text Book:

1. William Stallings , ”Computer Organization and Architecture”, PHI , Fourth Edition,1997.
2. M.Moris Mano, Computer System Architecture, 2nd Edition Prentice Hall of India (1991).

Reference Book:

1. John L. Hennessy and David A. Patterson, Computer Architecture – A Quantitative Approach, Morgan Kaufmann, Fourth Edition .
2. V.Carl Hamacher, ZvoKog G.Vranesic and Safwat G.Zaky, "COMPUTER ORGANIZATION", McGraw-Hill, ISE, 1984

Course Outcomes

CO Number	CO Statement	Knowledge Level
CO1	To introduce computer organization and architecture	K2
CO2	To demonstrate knowledge of computer artithmetic signed and unsigned	K3
CO3	To demonstrate knowledge of assembly programming optimization.	K2
CO4	To understand Cpu structure and functions processor and register organization	K3
CO5	To describe about Memory organization input and output	K3

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4
CO1	S	S	S	S
CO2	S	M	S	M
CO3	S	M	S	M
CO4	S	M	S	S
CO5	S	M	S	M

S –Strong; M–Medium; L – Low

CORE COURSE –XII

CYBER SECURITY LAB

Semester: V **Exam Hrs:3**
Course Code : 21UCA5C12P **Max.Marks:60**
Total Periods: 45 **Credit :3**

Objective :

To Design and implementation of a simple client/server model and running application using sockets and TCP/IP.

1. Implementation of Substitution and Transposition ciphers(5 Periods)
2. Implementation of Data Encryption Standard(5 Periods)
3. Implementation of International Data Encryption Algorithm(5 Periods)
4. Implementation of Advanced Encryption Standard(5 Periods)
5. Implementation of RSA Algorithm(5 Periods)
6. Implementation of Diffie-Hellman Key Exchange(4 Periods)
7. Implementation of Message Authentication Codes(4 Periods)
8. Implementation of Hash functions(4 Periods)
9. Implementation of Digital Signature Standard(4 Periods)
10. Hiding of confidential information within Image(4 Periods)

Course Outcomes

CO Number	CO Statement	Knowledge Level
CO1	Analyze and evaluate the cyber security needs of an organization	K2
CO2	Determine and analyze software vulnerabilities and security solutions to reduce the risk of exploitation.	K3
CO3	Measure the performance and troubleshoot cyber security systems.	K2
CO4	Determine and analyze the AES and RSA algorithm	K3
CO5	Unserstand Digital Signature standard	K3

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4
CO1	S	S	S	S
CO2	S	M	S	M
CO3	S	M	S	M
CO4	S	M	S	S
CO5	S	M	S	M

S –Strong; M–Medium; L – Low

MAJOR BASED ELECTIVE-I

E-COMMERCE & M-COMMERCE

Semester: V **Exam Hrs:3**
Course Code : 21UCA5M1A **Max.Marks:75**
Total Periods: 60 **Credit :4**

Objective:

To understand the E – commerce strategies and value chains and the M-commerce services.

Unit I **(12 Periods)**

ELECTRONIC COMMERCE : Introduction -The e-commerce environment - The e-commerce marketplace -Focus on portals, Location of trading in the marketplace - Commercial arrangement for transactions - Focus on auctions- Business models for e-commerce - Revenue models - Focus on internet start-up companies – the dot-com - E-commerce versus E-business.

Unit II **(12 Periods)**

MOBILE COMMERCE : Introduction – Infrastructure Of M– Commerce – Types Of Mobile Commerce Services – Technologies Of Wireless Business – Benefits And Limitations, Support, Mobile Marketing & Advertisement, Non–Internet Applications In M– Commerce Wireless/Wired Commerce Comparisons.

Unit III **(12 Periods)**

MOBILE COMMERCE: TECHNOLOGY :A Framework For The Study Of Mobile Commerce – NTT Docomo's I– Mode – Wireless Devices For Mobile Commerce – Towards A Classification Framework For Mobile Location Based Services –Wireless Personal And Local Area Networks –The Impact Of Technology Advances On Strategy Formulation In Mobile Communications Networks

Unit IV **(12 Periods)**

MOBILE COMMERCE: THEORY AND APPLICATIONS : The Ecology Of Mobile Commerce – The Wireless Application Protocol – Mobile Business Services –Mobile Portal – Factors Influencing The Adoption Of Mobile Gaming Services – Mobile Data Technologies And Small Business Adoption And Diffusion – M–Commerce In The Automotive Industry– Location– Based Services: Criteria For Adoption And Solution Deployment – The Role Of MobileAdvertising In Building A Brand – M–Commerce Business Models.

Unit V **(12 Periods)**

BUSINESS– TO– BUSINESS MOBILE E-COMMERCE : Enterprise Enablement – Email And Messaging – Field Force Automation (Insurance,Real Estate,Maintenance, Healthcare) – Field Sales Support (Content Access, Inventory) – Asset Tracking AndMaintenance/Management – Remote IT Support –Customer Retention (B2C Services,Financial,Special Deals) – Warehouse Automation – Security.

Text Book:

1. Dave Chaffey, "E-Business and E-Commerce Management", Third Edition, 2009, Pearson Education.

Reference Book:

1. Brian E. Mennecke, Troy J. Strader, "Mobile Commerce: Technology, Theory and Applications", Idea Group Inc., IRM press, 2003.
2. P. J. Louis, " M-Commerce Crash Course", McGraw- Hill Companies February 2001.

Course Outcomes

CO Number	CO Statement	Knowledge Level
CO1	To Explain the concept of ecommerce and its revolution.	K2
CO2	Explain the infrastructure of the Internet and how the various elements contribute to the marketing distribution solutions.	K3
CO3	Explain and develop solutions for implementing an ecommerce site.	K2
CO4	M–Commerce In The Automotive Industry	K3
CO5	To explain business to business mobile ecommerce	K3

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4
CO1	S	S	S	S
CO2	S	M	S	M
CO3	S	M	S	M
CO4	S	M	S	S
CO5	S	M	S	M

S –Strong; M–Medium; L – Low

MAJOR BASED ELECTIVE-I

SYSTEMS ANALYSIS AND DESIGN

Semester: V **Exam Hrs:3**
Course Code : 21UCA5M1B **Max.Marks:75**
Total Periods: 60 **Credit :4**

Objective : It is a problem solving technique that improves the system and ensures that all the components of the system work efficiently to accomplish their purpose.

Unit-I **(12 Periods)**

System concept and the information system environment: Introduction - The System Concept - Characteristics of a system - Elements of a system - Types of systems. The System Development Life Cycle - Consideration for Candidate Systems. Role of the Systems Analyst: The Multifaceted Role of the Analyst – The Place of the Analyst in the MIS Organization - Rising Positions in System Development.

Unit-II **(12 Periods)**

System Planning and the Initial Investigation: Introduction- Bases for Planning in Systems Analysis: Dimensions of Planning - Initial Investigation: Need identification – Determining the user's information requirements- Background Analysis -Information Gathering: Introduction - Information Gathering Tools.

Unit-III **(12 Periods)**

Feasibility Study: Introduction -System Performance Definition - Feasibility Study considerations-Steps in feasibility study- Feasibility Report - Cost/ Benefit Analysis: Introduction - Cost / Benefit Analysis- Cost/Benefit categories- Procedure for Cost/Benefit Determination.

Unit-IV **(12 Periods)**

Process and Stages of Systems Design: Process of Design – Design Methodologies - Major Development Activities - Audit Considerations. Input / Output and Forms Design: Input Design - Forms Design.

Unit-V **(12 Periods)**

File Organization and Database Design: Introduction - File Organization - Data Base Design. System .Testing and Quality Assurance: The Test Plan - Quality Assurance- Role of the Data Processing Auditor. Implementation and Software Maintenance: Conversion – Software maintenance.

Text Book:

1. Elias M. Awad, "Systems Analysis and Design", Galgotia Publications, New Delhi, Second Edition, 2010.

Reference Book:

1. Hawryczkiewycz I.T, "Introduction to System Analysis and Design", PHI, New Delhi, 1994.
2. S.A. Kelkar, "Structures Systems Analysis and Design: A Concise Study", PHI Learning Private Limited, New Delhi, 2009.
3. B. Lee, "Introduction to System Analysis and Design", John Wiley & Sons, 1983.

Course Outcomes

CO Number	CO Statement	Knowledge Level
CO1	Describe different life cycle models and explain the contribution of thesystem.	K2
CO2	Discuss various approaches to systems analysis and design and explaintheir strengths and weakness.	K3
CO3	Discuss about feasibility study feasibility performance	K2
CO4	Describe the process and stages of system design input output form design	K3
CO5	Explain about File organisation and Database design	K3

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4
CO1	S	S	S	S
CO2	S	M	S	M
CO3	S	M	S	M
CO4	S	M	S	S
CO5	S	M	S	M

S –Strong; M–Medium; L – Low

MAJOR BASED ELECTIVE-I
DATABASE MANAGEMENT

Semester: V **Exam Hrs:3**
Course Code : 21UCA5M1C **Max.Marks:75**
Total Periods: 60 **Credit :4**

Objective : To provide the basic concepts of the Database Systems including Data Models, Storage Structure, Normalization and SQL

Unit I **(12 Periods)**

Introduction: Database-System Applications- Purpose of Database Systems - View of Data --Database Languages - Relational Databases - Database Design -Object- Based and Semi structured Databases - Data Storage and Querying Transaction Management -Data Mining and Analysis - Database Architecture - Database Users and Administrators - History of Database Systems.

Unit II **(12 Periods)**

Relational Model: Structure of Relational Databases - Fundamental Relational- Algebra Operations Additional Relational-Algebra Operations- Extended Relational- Algebra Operations - Null Values - Modification of the Database.

Unit III **(12 Periods)**

SQL: Data Definition - Basic Structure of SQL Queries - set operations –Aggregate Functions –Null Values- Nested Sub queries - Complex Queries - Views -Modification of the Database - Joined Relations - SQL Data Types and Schemas - Integrity Constraints - Authorization - Embedded SQL

Unit IV **(12 Periods)**

Relational Languages: The Tuple Relational Calculus - The Domain Relational Calculus - Query-by- Example. Database Design and the E-R Model: Overview of the Design Process - The Entity-Relationship Model - 3 Constraints - Entity- Relationship Diagrams - Entity-Relationship Design Issues - Weak Entity Sets - Database Design for Banking Enterprise

Unit V **(12 Periods)**

Relational Database Design: Features of Good Relational Designs - Atomic Domains and First Normal Form - Decomposition Using Functional Dependencies - Functional-Dependency Theory - Decomposition Using Functional Dependencies - Decomposition Using Multivalued Dependencies-More Normal Forms - Database- Design Process

Text Book:

1. Database System Concepts, Sixth edition, Abraham Silberschatz , Henry F. Korth,

S. Sudarshan, McGraw-Hill-2010.

Reference Book:

1 Database Systems: Models, Languages, Design and Application, Ramez Elmasri, Pearson Education, 2014.

Course Outcomes

CO Number	CO Statement	Knowledge Level
CO1	Understand database concepts and structures and query language.	K2
CO2	Understand the E R model and relational model.	K3
CO3	Discuss about SQL Queries and SQL Databases	K2
CO4	Describe the Relational languages tuple relational calculus Entity Relationship model and algebra	K3
CO5	Explain about Relation database design normal forms	K3

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4
CO1	S	S	S	S
CO2	S	M	S	M
CO3	S	M	S	M
CO4	S	M	S	S
CO5	S	M	S	M

S –Strong; M–Medium; L – Low

SKILL BASED ELECTIVE -I

PAGE MAKER

Semester: V **Exam Hrs:3**
Course Code : 21UCA5S1A **Max.Marks:75**
Total Periods: 30 **Credit :2**

Objective:

It allows you to create, modify and print offline publications, such as brochures, flyers and newsletters.

Unit I **(6 Periods)**

Getting Started with Adobe Page Maker 7.0, Creating a Publication, Working with Text

Unit II **(6 Periods)**

Modifying Text, Working with Multiple Pages

Unit III **(6 Periods)**

Working with Graphics, Formatting Text

Unit IV **(6 Periods)**

Using Advanced Graphics, Adding Color and Using Mail Merge

Unit V **(6 Periods)**

Working with Long Publications, Publishing Electronically

Text Book:

Adobe PageMaker 7.0, Kevin Proot, Cengage Learning

Course Outcomes

CO Number	CO Statement	Knowledge Level
CO1	To Design eye-catching flyers and ads	K2
CO2	To Demonstrate marketable desktop publishing skills using multiple pages	K3
CO3	Use white space to create readable and attractive newsletters	K2
CO4	Import, resize, and manipulate both clip-art and photo graphics, mail merge	K3
CO5	Describe aboutWorking with publications	K3

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4
CO1	S	S	S	S
CO2	S	M	S	M
CO3	S	M	S	M
CO4	S	M	S	S
CO5	S	M	S	M

S –Strong; M–Medium; L – Low

SKILL BASED ELECTIVE I

COREL DRAW

Semester: V **Exam Hrs:3**
Course Code : 21UCA5S1B **Max.Marks:75**
Total Periods: 30 **Credit :2**

Objective :

It allows you to create, modify and print offline publications, such as brochures, flyers and newsletters.

Unit-I **(6 Periods)**

CorelDRAW Basics.

Unit-II **(6 Periods)**

Drawing and Selecting

Unit III **(6 Periods)**

Working with Text

Unit IV **(6 Periods)**

Working with Images

Unit V **(6 Periods)**

Page Layout and Background

Text Book

DTP Course Kit, Vikas Gupta, Dreamtech Press, 2009.

Course Outcomes

CO Number	CO Statement	Knowledge Level
CO1	To create vector art and illustrations for logos, web graphics, brochures, and more	K2
CO2	To Explain about drawing and selecting	K3
CO3	To explain working with text with all formatting	K2
CO4	Describe about working with images	K3
CO5	Describe about page layout	K3

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4
CO1	S	S	S	S
CO2	S	M	S	M
CO3	S	M	S	M
CO4	S	M	S	S
CO5	S	M	S	M

S –Strong; M–Medium; L – Low

SKILL BASED ELECTIVE-I

INTERNET PROGRAMMING

Semester: V **Exam Hrs:3**
Course Code : 21UCA5S1C **Max.Marks:75**
Total Periods: 30 **Credit :2**

Objective:

To learn the basic of HTML and CSS.
To understand dynamic websites creation using web designing tags.

Unit –I **(6 Periods)**

Getting Started with HTML – Formatting Text by using Tags – using Lists and Backgrounds – Creating Hyperlinks and Anchors – Introduction to Style Sheets – Formatting Text by using Style Sheets – Formatting Paragraphs by using Style Sheets.

Unit –II **(6 Periods)**

Creating Tables – Formatting Tables – Creating User Forms - **The Basics of Java Script:** Overview of Java Script – Object Oriented and Java Script – General Syntactic Characteristics – Primitives, Operations, and Expressions.

Unit –III **(6 Periods)**

Screen Output and Keyboard Input – Control Statements – Object Creation and Modification .**Java Script and XHTML Documents:** The Java Script Execution Environment – The Document Object Model –Element Access in Java Script.

Unit –IV **(6 Periods)**

Events and Event Handling: Handling Events from Body Elements – Handling Events from Button Elements - Handling Events from Text Box and Password Elements – The DOM 2 Event Model – The Navigator Object – DOM Tree Traversal and Modification.

Unit –V **(6 Periods)**

Introduction To XML: Introduction – The Syntax of XML – XML Document Structure – Document Type Definitions – Namespaces – XML Schemas – Displaying Raw XML Documents – Displaying XML Documents With CSS – XSLT Style Sheets – XML Processors.

Text Book:

1.Faithe Wempen, HTML5 Step by Step, Microsoft Press, 2011.
2.Robert W. Sebesta, Programming the World Wide Web, Pearson Education, Fourth Edition, 2009.

Reference Book:

1.Joel Sklar, *Principles of Web Design: The Web Technologies Series*, Fifth Edition, 2011.
2.www.w3schools.com

Course Outcomes

CO Number	CO Statement	Knowledge Level
CO1	To understand html basics tags table formatting style sheet	K2
CO2	To understand table forms frames and java script basics	K3
CO3	To demonstrate java script and xhtml documents	K2
CO4	Explain Handling Events from body elements dom tree	K3
CO5	Explain about xml xml document structure xslt stylesheet	K3

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4
CO1	S	S	S	S
CO2	S	M	S	M
CO3	S	M	S	M
CO4	S	M	S	S
CO5	S	M	S	M

S –Strong; M–Medium; L – Low

SKILL BASED ELECTIVE –II

DREAM WEAVER

Semester: V **Exam Hrs:3**
Course Code : 21UCA5S2A **Max.Marks:75**
Total Periods: 30 **Credit :2**

Objective:

To create personal and/or business websites following current professional and/or industry standards.

Unit-I **(6 Periods)**

Introduction to Dreamweaver CS4, Working with Dreamweaver Websites.

Unit-II **(6 Periods)**

Working with Web Pages, Working with HTML Tables, Framesets and Frames.

Unit III **(6 Periods)**

Introduction to Cascading Style Sheets.

Unit IV **(6 Periods)**

Working with Templates, Working with Flash Contents and HTML Forms.

Unit V **(6 Periods)**

Working with JavaScript, Finalizing the Site.

Text Book:

Dreamweaver CS4 in Simple Steps, Kogent Learning Solutions Inc, Dreamtech Press, 2010

Course Outcomes

CO Number	CO Statement	Knowledge Level
CO1	To get knowledge about Design a complete website html table	K2
CO2	To demo about html table frame frameset	K3
CO3	To give introduction cascading stylesheet	K2
CO4	To demonstrate Working with flash contents html forms templates Able to include to audio, video, flash, java applets and images	K3
CO5	To explain java script and giving demo to finalize website	K3

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4
CO1	S	S	S	S
CO2	S	M	S	M
CO3	S	M	S	M
CO4	S	M	S	S
CO5	S	M	S	M

S –Strong; M–Medium; L – Low

SKILL BASED ELECTIVE –II

COMPUTER APPLICATIONS IN BUSINESS

Semester: V **Exam Hrs:3**
Course Code : 21UCA5S2B **Max.Marks:75**
Total Periods: 30 **Credit :2**

OBJECTIVES:

- To enable students to understand the basic concepts in computer applications .
- To give in-depth knowledge of documentation through MS Office packages.
- To help them apply various accounting procedures through TALLY software.

UNIT – I **(6 Periods)**

Meaning of computer – Characteristics – Area of application cycle – components – Memory unit – Input and Output devices – Hardware and Software operation system – Introduction to Windows 2007 logging on Desk top and task Icons on desk top – Start menu options - Creations of files and folders. Windows explorer. Find options shortcuts – briefcase running applications and customization.

UNIT – II **(6 Periods)**

Introduction to MS word - Short cut for MS word – Creating word documents – Business letters using wizards – Editing, inserting objects and formatting documents – Spelling and grammar check – Word count – Thesaurus - Auto correct - Working with tables – Saving, opening and closing documents – Mail merge.

UNIT – III **(6 Periods)**

Introduction to MS Excel and its features – Programmes and applications - spread sheets – Building worksheets – Entering data, editing and formatting worksheets – Creating and formatting different types of charts – Application of financial and statistical function – Organising data using Automatic rule saving, opening and closing of work books.

UNIT – IV **(6 Periods)**

Fundamentals of computerized accounting – computerized accounting Vs manual accounts. Architecture and customization of TALLY – Features of Tally- Configuration of Tally screens and menus – Creation of company and groups – Editing and deleting ledgers – Introduction to vouchers – Entry, payment, receipt, sales, purchase, contract and Journal vouchers- Editing and deleting vouchers.

UNIT – V **(6 Periods)**

Introduction to Inventories – Creation of stock categories – Creation of Stock groups – Creation of Stock items – Configuration and features of stock item – Editing and deleting stocks – Usage of stocks in Vouchers entry.

TEXTBOOK:

1. Microsoft office for windows 2007
2. TIAL smart account book SMW deva publication, AVC Deva publication.

REFERENCE:

1. Computerized accounting under Tally publication, Deva publication
2. Implementing Tally 5-4 Author K.K.Nadhani Publication BPB Publication

Course Outcomes

CO Number	CO Statement	Knowledge Level
CO1	To introduce about basics of computer login in windows To Achieve hands-on experience with productivity/application software to enhance business activities.	K2
CO2	To explain about ms word formatting dcumennts	K3
CO3	To explain about excel spreadsheet and prepare chart	K2
CO4	To introduce basics of accounting tally ,journal vouchers	K3
CO5	To introduce inventors stock register creation	K3

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4
CO1	S	S	S	S
CO2	S	M	S	M
CO3	S	M	S	M
CO4	S	M	S	S
CO5	S	M	S	M

S –Strong; M–Medium; L – Low

SKILL BASED ELECTIVE –II

INTRODUCTION TO WEB DESIGN

Semester: V **Exam Hrs:3**
Course Code : 21UCA5S2C **Max.Marks:75**
Total Periods: 30 **Credit :2**

Objective:

To present the fundamental concepts of Internet, Internet Technologies and to give the knowledge on HTML.

UNIT I **(6 Periods)**

Introduction to the Internet - Computers in Business, Networking, Internet, E-mail, Resource Sharing, Gopher, World Wide Web, Usenet, Telnet, Bulletin Board Service, Wide Area Information Service.

UNIT II **(6 Periods)**

Internet Technologies - Modem, Internet Addressing, Physical Connections, Telephone Lines - Internet Browsers - #Internet Explorer, Netscape Navigator #.

UNIT III **(6 Periods)**

Introduction to HTML - History of HTML, HTML Documents, Anchor Tag, Hyper Links - Head and Body Sections - Header Section - Title, Prologue, Links, Colorful Web Page, Comment Lines.

UNIT IV **(6 Periods)**

Designing the Body Section - Heading Printing, Aligning the Headings, Horizontal Rule, Paragraph, Tab Settings, Lists, Unordered Lists, Ordered Lists.

UNIT V **(6 Periods)**

Table Handling – Tables, Tables Creation in HTML - #Frames# – Frameset Definition, Frame Definition, Nested Framesets.

Text Book:

1. C. Xavier, *World Wide Web Design with HTML*, TMH, 19th Reprint, 2008.

UNIT I: Chapter 1 Sections 1.1 - 1.11,**UNIT II :** Chapters 2 Sections 2.1 – 2.4, 3.1, 3.2 **UNIT III :** Chapters 4 Sections 4.1 – 4.6, 5.1 – 5.6 ,**UNIT IV :** Chapters 6 Sections 6.1 – 6.5, 7.1 – 7.4,**UNIT V :** Chapters 8 Sections 8.1 – 8.3, 10.1 – 10.3

Reference Book:

1.Thomas A. Powell, *HTML& XHTML,* TMH, Fourth Edition, Thirteenth Reprint, 2007.
2.N.P. Gopalan and J. Akilandeswari, *Web Technology A Developer's Perspective*, PHI, Second Printing, July 2008.

Course Outcomes

CO Number	CO Statement	Knowledge Level
CO1	To explain internet and company in business www To Recognize and understand HTML web page elements.	K2
CO2	To explain internet addressing physical connection.	K3
CO3	To explain html basics link Know how to write HTML code.	K2
CO4	Know how to write HTML code using html tags body formatting	K3
CO5	Understand and apply effective web design principles	K3

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4
CO1	S	S	S	S
CO2	S	M	S	M
CO3	S	M	S	M
CO4	S	M	S	S
CO5	S	M	S	M

S –Strong; M–Medium; L – Low

SOFT SKILL DEVELOPMENT

Semester: V **Exam Hrs:3**
Course Code : 21U5SS **Max.Marks:75**
Total Periods: 30 **Credit :2**

Objective:

To encourage the all round development of students by focusing on soft skills.

Unit I **(6 Periods)**

Know Thyself/ Understanding Self Introduction to Soft skills-Self discovery-Developing positive attitude-Improving perceptions-Forming values.

Unit II **(6 Periods)**

Interpersonal Skills/ Understanding Others Developing interpersonal relationship-Team building-group dynamics-Networking Improved work relationship.

Unit III **(6 Periods)**

Communication Skills / Communication with others Art of listening-Art of reading-Art of speaking-Art of writing-Art of writing e-mails-e mail etiquette.

Unit IV **(6 Periods)**

Corporate Skills / Working with Others Developing body language-Practising etiquette and mannerism-Time management Stress management.

Unit V **(6 Periods)**

Selling Self / Job Hunting Writing resume/cv-interview skills-Group discussion- Mock interview-Mock GD – Goal setting - Career planning

TEXT BOOKS:

1.Meena.K and V.Ayothi (2013) A Book on Development of Soft Skills (Soft Skills : A Road Map to Success), P.R. Publishers & Distributors, No, B-20 & 21, V.M.M. Complex, Chatiram Bus Stand, Tiruchirappalli- 620 002.

2.Alex K. (2012) Soft Skills – Know Yourself & Know the World, S.Chand & Company LTD, Ram Nagar, New Delhi- 110 055.Mobile No : 94425 14814 (Dr.K.Alex)

REFERENCE BOOKS:

(i)Developing the leader within you John (ii) c Maxwell (ii) Good to Great by Jim Collins

(iii) The seven habits of highly effective people Stephen Covey (iv) Emotional Intelligence Daniel Goleman (v) You can win Shive Khera (vi) Principle centred leadership Stephen Covey

Course Outcomes

CO Number	CO Statement	Knowledge Level
CO1	.Effectively communicate through verbal/oral communication and improve the listening skills	K2
CO2	Write precise briefs or reports and technical documents	K3
CO3	Actively participate in group discussion / meetings / interviews and prepare & deliver presentations .	K2
CO4	Introduction with coporate skills time management	K3
CO5	Selling self job writeingresume and group discussion	K3

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4
CO1	S	S	S	S
CO2	S	M	S	M
CO3	S	M	S	M
CO4	S	M	S	S
CO5	S	M	S	M

S –Strong; M–Medium; L – Low

CORE COURSE –XIII

PHYTHON APPLICATION PROGRAMMING

Semester: VI **Exam Hrs:3**
Course Code : 21UCA6C13 **Max.Marks:75**
Total Periods: 90 **Credit :6**

Objective :

- Learn Syntax and semantics and create Functions in Python.
- To handle Files, Lists and Dictionaries in Python.
- Understand Regular expressions and Object Oriented Programming in Python.
- Construct Data Structures using Python.
- Build Web Services and Introduction to Network Programming in Python.

UNIT-I **(20 Periods)**

Computer hardware architecture, Understanding programming, Words and sentences, Conversing with Python, Terminology: interpreter and compiler, Writing a program, What is a program? The building blocks of programs, What could possibly go wrong? The learning journey. Variables, expressions and statements, Values and types, Variables, Variable names and keywords, Statements, Operators and operands, Expressions, Order of operations, Modulus operator, String operations, Asking the user for input, Comments, Choosing mnemonic variable names, Conditional execution, Boolean expressions, Logical operators, Conditional execution, Alternative execution, Chained conditionals, Nested conditionals, Catching exceptions using try and except, Short circuit evaluation of logical expressions, Functions, Function calls, Built-in functions, Type conversion functions, Random numbers, Math functions, Adding new functions, Definitions and uses, Flow of execution, Parameters and arguments, Fruitful functions and void functions, Why functions?

UNIT-II **(20 Periods)**

Iteration, Updating variables, The while statement, Infinite loops, “Infinite loops” and break, Finishing iterations with continue, Definite loops using for, Loop patterns, Strings, A string is a sequence, Getting the length of a string using len, Traversal through a string with a loop, String slices, Strings are immutable, Looping and counting, The in operator, String comparison, string methods, Parsing strings, Format operator, Files, Persistence, Opening files, Text files and lines, Reading files, Searching through a file, Letting the user choose the file name, Using try, except, and open, Writing files, Lists, A list is a sequence, Lists are mutable, Traversing a list, List operations, List slices, List methods, Deleting elements, Lists and functions, Lists and strings, Parsing lines, Objects and values, Aliasing, List arguments, Dictionaries, Dictionary as a set of counters, Dictionaries and files, Looping and dictionaries, Advanced text parsing .

UNIT-III **(20 Periods)**

Tuples, Tuples are immutable, Comparing tuples, Tuple assignment, Dictionaries and tuples, Multiple assignment with dictionaries, The most common words, Using tuples as keys in dictionaries, Sequences: strings, lists, and tuples, Regular expressions, Character matching in regular expressions, Extracting data using regular expressions, Combining searching and extracting,

Escape character. Classes and objects, User-defined compound types, Attributes, The initialization method and self, Instances as parameters, Classes and functions, Time, Pure functions, Modifiers, Prototype development versus planning, Generalization, Classes and methods, Object-oriented features, print_time, Another example, A more complicated example, Optional arguments, The initialization method, Points revisited, Operator overloading, Polymorphism 4

UNIT-IV **(15 Periods)**

Linked lists, Embedded references, The Node class, Lists as collections, Lists and recursion, Infinite lists, The fundamental ambiguity theorem, Modifying lists, Wrappers and helpers, The Linked List class, Invariants, Stacks, Abstract data types, The Stack ADT, Implementing stacks with Python lists, Pushing and popping, Using a stack to evaluate postfix, Parsing, Evaluating postfix, Clients and providers, Queues, The Queue ADT, Linked Queue, Performance characteristics, Improved Linked Queue, Priority queue, The Golfer class

UNIT-V **(15 Periods)**

Networked programs, Hypertext Transport Protocol – HTTP, The World's Simplest Web Browser, Retrieving an image over HTTP, Retrieving web pages with url lib, Parsing HTML and scraping the web, Parsing HTML using Regular Expressions, Parsing HTML using BeautifulSoup, Reading binary files using url lib, Using Web Services, eXtensible Markup Language – XML, Parsing XML, Looping through nodes, JavaScript Object Notation – JSON, Parsing JSON, Application Programming Interfaces (API), Automating common tasks on your computer, File names and paths, Example: Cleaning up a photo directory, Command line arguments, Pipes

TEXT BOOK:

1.Charles Severance, "Python for Informatics", 1st Edition, CreateSpace Independent Publishing Platform, 2013.
2.Peter Wentworth, Jeffrey Elkner, Allen B. Downey, and Chris Meyers, "How to Think Like a Computer Scientist: Learning with Python", 2nd Edition, Open Book Project, 2012

REFERENCE BOOK:

1. Mark Lutz, "Learning Python", 5th Edition, O'Reilly Media, 2013.
2. Wesley Chun, "Core Python Applications Programming", Prentice Hall, 3rd Edition, 2012
3. Alex Martelli, "Python in a Nutshell", 2nd Edition, O'Reilly Media, 2006

Course Outcomes

CO Number	CO Statement	Knowledge Level
CO1	Understand basic concepts math functions string tuples dictionaries in python	K2
CO2	To express decision making statements and functions	K3
CO3	Understand the object oriented programming	K2
CO4	Explain about string parsing functions	K3
CO5	Explain about Regular expressions HTML functions Hashing functions	K3

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4
CO1	S	S	S	S
CO2	S	M	S	M
CO3	S	M	S	M
CO4	S	M	S	S
CO5	S	M	S	M

S –Strong; M–Medium; L – Low

CORE COURSE –XIV
SOFTWARE ENGINEERING

Semester: VI **Exam Hrs:3**
Course Code : 21UCA6C14 **Max.Marks:75**
Total Periods: 90 **Credit :6**

Objective

To introduce the fundamentals of Software Engineering, Abstract concepts and how these concepts are used in problem solving.

UNIT-I **(18 Periods)**

Introduction to Software Engineering : Definitions - Size Factors - Quality and Productivity Factors - Managerial Issues - Planning a Software Project : Defining the Problem - Goals and Requirements - Solution Strategy - Planning the Development Process : Various Models - Planning an Organizational Structure - Planning Activities.

UNIT-II **(18 Periods)**

Measuring Software Size: Size measures – A size measurement framework – Establishing a counting standard – Using LOC counts – Reuse considerations – LOC accounting – Calculating productivity – LOC counters. **Estimating Software Size:** Popular estimating methods – Proxy-based estimating – The PROBE size estimating method .

UNIT-III **(18 Periods)**

Software design - Design concepts - Modules And Modularization Criteria - Design Notations - Design Techniques - Design Considerations - Real Time and Distributed System Design - Test Plans - Milestones, Walkthroughs and Inspections - Design Guidelines Implementation Issues : Structure Loading Techniques - Coding Style - Standards And Guidelines - Documentation Guidelines.

UNIT-IV **(18 Periods)**

Software Quality Management: Meaning of software quality – The economics of software quality – Developing a quality strategy – Process benchmarking – Yield management – Defect removal strategies – Defect prevention strategies .

UNIT-V **(18 Periods)**

Unit - Testing And Debugging - System Testing - Formal Verification Software Maintenance - Maintainability - Managerial Aspect Of Software Maintenance - Configuration Management - Source Code Metrics - Other Maintenance Tools And Techniques.

TEXT BOOK :

1 .Watts S. Humphrey, A Discipline for Software Engineering, Pearson Education Inc., 2012.
2. Software Engineering Concepts 1997 Edition By RICHARD FAIRLEY Publishers : TATA Mc GRAW-Hill Edition.

REFERENCE BOOK:

1.R. S. Pressman, *Software Engineering*, Sixth Edition, McGraw Hill International Edition, 2005.
2. Software Engineering VI Edition, Author : ROGER S . PRESSMAN Publishers TATA McGRAW - HILL International Edition

Course Outcomes

CO Number	CO Statement	Knowledge Level
CO1	How to apply the software engineering lifecycle by demonstrating competence in communication, planning, analysis, design, construction, and deployment	K2
CO2	An ability to work in one or more significant application domains.	K3
CO3	To explain designtechniques and design concepts to prepare efficient software design	K2
CO4	To understand the software quality, yield manangement	K3
CO5	To understand about testing and debugging system testing	K3

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4
CO1	S	S	S	S
CO2	S	M	S	M
CO3	S	M	S	M
CO4	S	M	S	S
CO5	S	M	S	M

S –Strong; M–Medium; L – Low

CORE COURSE – XV
PYTHON LAB

Semester: VI **Exam Hrs:3**
Course Code : 21UCA6C15P **Max.Marks:60**
Total Periods: 45 **Credit :4**

Objectives:

1.To be able to introduce core programming basics and program design with functions using Python programming language.
2.To understand a range of Object-Oriented Programming, as well as in-depth data and information processing techniques.

List of Programs:

1. Write a program to demonstrate different number data types in Python .(4 Periods)
2. Write a program to perform different Arithmetic Operations on numbers in Python .(4 Periods)
3. Write a program to create, concatenate and print a string and accessing sub-string from a given string.(4 Periods)
4. Write a python script to print the current date in the following format "Sun May 29 02:26:23 IST 2017" (4 Periods)
5. Write a program to create, append, and remove lists in python .(4 Periods)
6. Write a program to demonstrate working with tuples in python.(4 Periods)
7. Write a program to demonstrate working with dictionaries in python .(4 Periods)
8. Write a python program to find largest of three numbers.(4 Periods)
9. Write a Python program to convert temperatures to and from Celsius, Fahrenheit.(4 Periods) [Formula: c/5 = f-32/9]
10. Write a Python program to construct the following pattern, using a nested for loop(3 Periods)

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

11. Write a Python script that prints prime numbers less than 20.(3 Periods)
12. Write a python program to find factorial of a number using Recursion**. (3 Periods)**

Course Outcomes

CO Number	CO Statement	Knowledge Level
CO1	Understand basic concepts math functions string tuples dictionaries in python .Student should be able to understand the basic concepts scripting and the contributions of scripting language 2	K2
CO2	To express decision making statements and functions	K3
CO3	Understand the object oriented programming Ability to explore python especially the object oriented concepts, and the built in objects of Python.	K2
CO4	Explain about string parsing functions	K3
CO5	Explain about Regular expressions HTML functions Hashing functions	K3

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4
CO1	S	S	S	S
CO2	S	M	S	M
CO3	S	M	S	M
CO4	S	M	S	S
CO5	S	M	S	M

S –Strong; M–Medium; L – Low

MAJOR BASED ELECTIVE-II

WEB PROGRAMMING

Semester: VI **Exam Hrs:3**
Course Code : 21UCA6M2A **Max.Marks:75**
Total Periods: 90 **Credit :5**

Unit-I **(18 Periods)**

INTRODUCTION: Internet Principles – Basic Web Concepts – Client/Server model retrieving datafrom Internet – HTM and Scripting Languages – Standard Generalized Mark –uplanguages – Next Generation – Internet –Protocols and Applications.

Unit II: **(18 Periods)**

COMMON GATEWAY INTERFACE PROGRAMMING: HTML forms – CGI Concepts – HTML tags Emulation – Server – BrowserCommunication – E-mail generation CGI client Side applets – CGI server applets– authorization and security.

Unit-III **(18 Periods)**

SCRIPTING LANGUAGES: Dynamic HTML-Cascading style sheets-Object model and Event model- Filtersand Transitions-Active X Controls-Multimedia-Client side script - VB Script programming – Forms – Scripting Object.

Unit IV **(18 Periods)**

SERVER SIDE PROGRAMMING: XML – Server side includes – communication – DTD – Vocabularies – DOMmethods – Firewalls– Proxy Servers.

Unit V **(18 Periods)**

SERVELETS AND JSP: JSP Technology Introduction-JSP and Servelets- Running JSP Applications BasicJSP- JavaBeans Classes and JSP-Tag Libraries and Files- Support for the ModelView-Controller Paradigm- Case Study- Related Technologies.

Text Books:

1. Deitel H.M. and Deitel P.J., “Internet and World Wide Web How to program”,Pearson International, 2012, 4th Edition. (Ch-1, 4, 5, 6, 12, 14, 26, 27)
2. Gopalan N.P. and Akilandeswari. J, “Web Technology”, PHI,2011. (Ch-1 to 11)
3. Paul Dietel and Harvey Deitel,”Java How to Program”, PHI,8th Edition. (Ch-29)

Course outcomes

CO Number	CO Statement	Knowledge Level
CO1	Understanding the html scripting language internet principles	K2
CO2	To understand cgi and browser communications	K3
CO3	To give demo about dhmtl and cascading style sheet	K2
CO4	To acquire knowledge from Server side programming xml dom methods	K3
CO5	Design and deploy web application using JSPs Explain jsp servlets java beans and jsp applications	K3

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4
CO1	S	S	S	S
CO2	S	M	S	M
CO3	S	M	S	M
CO4	S	M	S	S
CO5	S	M	S	M

S –Strong; M–Medium; L – Low

MAJOR BASED ELECTIVE-II

GIS AND REMOTE SENSING

Semester: VI **Exam Hrs:3**
Course Code : 21UCA6M2B **Max.Marks:75**
Total Periods: 90 **Credit :5**

Objectives:

To understand the principles, applications, trends, and pertinent issues of geographical information systems and sciences, including remote sensing (RS), Photogrammetric, cartography, and global positioning systems (GPS).

UNIT –I **(18 Periods)**

Introduction to Computers & GIS: Introduction to computers, Basics of operating system: DOS and Windows; Hardware and software requirements of GIS; Graphical user interface of Arc-View and Geo-Media and Arc GIS.

UNIT- II **(18 Periods)**

Data Base Creation: Spatial data input and Geo-referencing; Spatial data base creation; Creation of non-spatial data sets into DBF format; Linking of Spatial data with non-Spatial data sets

UNIT-III **(18 Periods)**

Spatial Analysis :GIS analysis: Proximity, Thematic mapping and Over lay; 3D modeling: DEM, Slope and Aspect Overlay, buffer and proximity analysis; Output and report generation;

UNIT-IV **(18 Periods)**

Principles of Remote Sensing: Definition, types and scope of remote sensing; Stages in remote sensing data acquisition; Electromagnetic radiation and electromagnetic spectrum; Black body radiation and radiation laws; Interaction of EMR with atmosphere and Earth's surface features.

Platforms, Sensors and Data Products : Remote sensing platforms; Types & characteristics of sensors: IRS, LANDSAT, SPOT, IKONOS, Quick Bird; Remote sensing data products.

UNIT-V **(18 Periods)**

Thermal & Microwave Remote Sensing : Thermal Remote Sensing; Thermal properties of materials: emissivity of materials; thermal inertia of Earth surface features; Thermal data sets: LANDSAT and ASTER; Concept and Principles of microwave remote sensing; Microwave data sets SLAR. LIDAR and SAR; Application of Thermal and Microwave data.

TEXT BOOKS:

1. Bernhardsen (2003) Geographic Information Systems: An Introduction, 3ed, Wiley India Pvt. Ltd,New Delhi.
2. Demers (2004) *Fundamentals of Geographic Information Systems*, 3ed, Wiley India Pvt. Ltd., New Delhi.
3. Curran,Paul J; 1985, Principles of Remote Sensing,Longman,London.
4. Estes, J.E. and LW Senger, 1974, Remote Sensing techniques for environmental Analysis, Hamilton, Santa Barbara, California.

Course Outcomes

CO Number	CO Statement	Knowledge Level
CO1	.Analyse the principles and components of photogrammetry and remote sensing.	K2
CO2	Describe the process of data acquisition of satellite images and their characteristics	K3
CO3	Compute an image visually and digitally with digital image processing techniques	K2
CO4	To undertand principles of remote sensing	K3
CO5	To expolain thermal microwave remote sensing	K3

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4
CO1	S	S	S	S
CO2	S	M	S	M
CO3	S	M	S	M
CO4	S	M	S	S
CO5	S	M	S	M

S –Strong; M–Medium; L – Low

MAJOR BASED ELECTIVE-II

MULTIMEDIA AND APPLICATIONS

Semester: VI **Exam Hrs:3**
Course Code : 21UCA6M2C **Max.Marks:75**
Total Periods: 90 **Credit :5**

Objective: On completion of the course, the students will

1.learn different Multimedia architecture

2.know the Multimedia applications in various domains

Unit I **(18 Periods)**

Introduction: Objectives – History of Multimedia – Its market – Content copyright – Resources for multimedia developers – Types of products – Evaluation – Hardware Architecture – OS and Software – Multimedia Architecture – Software library – Drivers.

Unit II **(18 Periods)**

Text and Graphics : Elements of Text – Text Data files – Using text in Multimedia Application

– Hypertext – Elements of Graphics – Images and color – Graphics files and Application formats – Creating images for multimedia use –Using graphics in Application.

Unit III **(18 Periods)**

Digital Audio and Video : Characteristics of sound and Digital audio – Digital Audio systems

MIDI – Audio file formats – Using Audio in Multimedia Applications – Audio for content – Background as video – Characteristics of digital video – Digital video data sizing Video capture and playback systems –Computer animation.

Unit IV **(18 Periods)**

Product design and Authoring tools: Building blocks – Classes of products – Content organizational strategies – Story boarding – Multimedia tool selection – Tool feature – Categories of Authoring tools – Selecting the right authoring paradigm.

Unit V **(18 Periods)**

Multimedia and Internet: Internet – HTML and web authoring – Multimedia considerations for Internet – Design considerations for web pages.

Text book

1.David Hillman, "Multimedia Technology and Applications", Galgotia Publications Pvt. Ltd., 1st edition, 2008.

Reference book

1.Tay Vaughan, "Multimedia: Making it Work", Tata McGraw Hill Publication, 8th edition, 2011.

Course Outcomes

CO Number	CO Statement	Knowledge Level
CO1	To create interactive media using industry-standard authoring tools.	K2
CO2	To create programming scripts for interactive user interfaces and complex components.	K3
CO3	To understand multimedia applications audio and video	K2
CO4	To explain product authoring and tools	K3
CO5	To understand multimedia and internet html	K3

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4
CO1	S	S	S	S
CO2	S	M	S	M
CO3	S	M	S	M
CO4	S	M	S	S
CO5	S	M	S	M

S –Strong; M–Medium; L – Low

MAJOR BASED ELECTIVE-III

WEB PROGRAMMING LAB

Semester: VI **Exam Hrs:3**

Course Code : 21UCA6M3P1 **Max.Marks:60**

Total Periods: 45 **Credit :6**

Objective:

1. To learn programming in framework.
2. To develop web applications .

1.Write programs in Java to demonstrate the use of following components (5 Periods)
i. Text fields, buttons, Scrollbar, Choice, List and Check box.
2.Write Java programs to demonstrate the use of various Layouts like FlowLayout, (5 Periods)
ii.Border Layout, Grid Layout and card layout.
3.Write programs in Java to create applets incorporating the following features: (5 Periods)
i.Create a color palette with matrix of buttons
ii.Set background and foreground of the control text area by selectinga color from color palette.
iii. In order to select Foreground or background use check box controlas radio buttons
4.Write programs in Java to do the following. (5 Periods)
i.Set the URL of another server.ii.Download the homepage of the server.
iii.Display the contents of homepage with date, content type, and Expiration date. Last modified and length of the home page.
5.Write programs in Java using sockets to implement the following (5 Periods)
i.HTTP request ii.FTP iii.SMTP iv.POP3
6.Write a program in Java for creating simple chat application with datagramsockets and datagram packets. (4 Periods)
7.Write programs in Java using Servlets: (4 Periods)
i.To invoke servlets from HTML forms ii.To invoke servlets from Applets
8.Write programs in Java to create three-tier applications using servlets forconducting on-line examination for displaying student mark list. Assumethat student information is available in a database which has been stored ina database server.(4 Periods)
9.Create a web page with the following using HTML (4 Periods)
i.To embed a map in a web page ii.To fix the hot spots in that map
iii.Show all the related information when the hot spots are clicked.
10.Create a web page with the following. (4 Periods)
i.Cascading style sheets.ii.Embedded style sheets.
iii.Inline style sheets. Use our college information for the web pages.

Course Outcomes

CO Number	CO Statement	Knowledge Level
CO1	Design console application and windows application.	K2
CO2	Design web application statements and functions	K3
CO3	Understand the object oriented programming using layouts and applet programming	K2
CO4	Explain about database socket programming parsing functions	K3
CO5	Explain about HTML froms functions style scheets	K3

Mapping with Programme Outcomes

Cos	PO 1	PO2	PO 3	PO 4
CO1	S	S	S	S
CO2	S	M	S	M
CO3	S	M	S	M
CO4	S	M	S	S
CO5	S	M	S	M

S –Strong; M–Medium; L – Low

MAJOR BASED ELECTIVE-III

MULTIMEDIA LAB

Semester: VI **Exam Hrs:3**

Course Code : 21UCA6M3P2 **Max.Marks:60**

Total Periods: 45 **Credit :6**

Objective : To Impart Practical Training in Computer Graphics and Animation related problems

Photoshop :

1. (i) Handling different file formats and interchanging them, changing the resolution, color, grayscales and size of the images
(ii) Using brushes and creating multicolor real life images
2. Cropping, rotating, overlapping, superimposing, pasting photos on a page
3. Creation of a single image from selected portions of many
4. Developing a commercial brochure with background tints
5. Creating an image with multi-layers of images and texts.
6. Applying masks and filtering on images

Flash :

Develop an image(s) and do the following.

1. Basic Drawing and Painting
2. Working with Strokes and Fills
3. Creating Custom Colors, Gradients, and Line Styles Transforming and Grouping Objects
4. Creating and Managing Multiple Layers
5. Converting Text into Shapes
6. Animate using motion, shape, Tweening, and actions

Course Outcomes

CO Number	CO Statement	Knowledge Level
CO1	Understand basic concepts in photoshop to prepare photo effects and design .To create projects using creativity and organization to create them.	K2
CO2	To express knowledge about brush multilayers and selection portions from single photo	K3
CO3	Understand the basic drawing painting strokes fills in flash programming	K2
CO4	Explain about colores gradients to work with graphis	K3
CO5	To develop multimedia skills understanding the principal players of individual players in multimedia teams in developing projects	K3

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4
CO1	S	S	S	S
CO2	S	M	S	M
CO3	S	M	S	M
CO4	S	M	S	S
CO5	S	M	S	M

S –Strong; M–Medium; L – Low

GENDER STUDIES

Semester: VI **Exam Hrs:3**

Course Code : 21U6GS **Max.Marks:75**

Total Periods:20 **Credit :6**

Objectives:

To make boys and girls aware of each others strengths and Weakness.
To develop sensitivity towards both genders in order to lead an ethically enriched life.
To promote attitudinal change towards a gender balanced ambience and women empowerment .

Unit – I **(4 Periods)**

Concepts of Gender: Sex – Gender – Biological Determinism – Patriarchy – Feminism – Gender Discrimination – Gender Division of labour – Gender Stereotyping – Gender Sensitivity – Gender Equity – Equality – Gender Mainstreaming - Empowerment.

Unit – II **(4 Periods)**

Women's Studies vs Gender Studies : UGC's Guidelines – VII to XI Plans – Gender Studies : Beijing Conference and CEDAW – Exclusiveness and Inclusiveness.

Unit – III **(4 Periods)**

Areas of Gender Discrimination : Family – Sex Ratio – Literacy – Health – Governance – Religion Work Vs Employment – Market – Media – Politics – Law – Domestic Violence – Sexual Harassment – State Policies and Planning .

Unit – IV **(4 Periods)**

Women Development and Gender Empowerment : Initiatives – International Women's Decade – International Women's Year – National Policy for Empowerment of Women – Women Empowerment Year 2001 – Mainstreaming Global Policies .

Unit – V **(4 Periods)**

Women's Movements and Safeguarding Mechanism : In India National /State Commission for Women(NCW) – All Women Police Station – Family Court – Domestic Violence Act – Prevention of Sexual Harassment at Work Place Supreme Court Guidelines – Maternity Benefit Act – PNDT Act – Hindu Succession Act 2005 – Eve Teasing Prevention Act – Self Help Groups – 73rd and 74th Amendment for PRIS

References:

1. Bhasin Kamala, Understanding Gender : Gender Basics , New Delhi : Women Unlimited , 2004

2. Bhasin Kamala, Exploring Masculinity: Gender Basics , New Delhi: Women Unlimited ,2004

3. Bhasin Kamala , What is Patriarchy? : Gender Basics, New Delhi :Women Unlimited ,1993

Course Outcomes

CO Number	CO Statement	Knowledge Level
CO1	To acquire awareness of gender based balances gender division of labour	K2
CO2	To understand Women studies and gender studies	K3
CO3	To describe Areas of gender descriminisation gender sex ratio	K2
CO4	To explain women development and gender empowerment	K3
CO5	To explain Womens movements and safeguarding mechanism	K3

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4
CO1	S	S	S	S
CO2	S	M	S	M
CO3	S	M	S	M
CO4	S	M	S	S
CO5	S	M	S	M

S –Strong; M–Medium; L – Low