ALAGAPPA UNIVERSITY, KARAIKUDI
NEW SYLLABUS FOR AFFILIATED COLLEGES
UNDER CBCS PATTERN WITH EFFECT FROM 2022-23 ONWARDS

B.Sc., INFORMATION TECHNOLOGY

Programme Structure

Sem	Part	Course Code	Courses	Title of the Course	T/P	Credits	Hours/ Week	Marks		
								Int.	Ext.	Total
I	I	2211T	T/ OL	Tamil/other languages – I	T	3	6	25	75	100
	II	712CE	E	English – I	T	3	6	25	75	100
	III	22BIT1C1	CC	Principles of Information Technology	T	5	5	25	75	100
		22BIT1P1	CC	Practical- Office Automation	P	4	4	40	60	100
		-	AL – IA	Maths/Physics/BCA/ Computer Science	T	3	3	25	75	100
		-	AL - IA	Practical-Respective Allied Theory Course	P	2	2	40	60	100
	IV	22BVE1	SEC-I	Value Education	T	2	2	25	75	100
		-	-	Library	-	-	2	-	-	-
				Total		**22**	**30**	**205**	**495**	**700**
II	I	2221T	T/OL	Tamil/other languages – II	T	3	6	25	75	100
	II	722CE	E	Communicative English – II	T	3	6	25	75	100
	III	22BIT2C1	CC	Programming in Java	T	5	5	25	75	100
		22BIT2P1	CC	Practical- Programming in Java	P	4	4	40	60	100
		-	AL – IB	Maths/Physics/BCA/ Computer Science	T	3	3	25	75	100
		-	AL - IB	Practical-Respective Allied Theory Course	P	2	2	40	60	100
	IV	22BES2	SEC-II	Environmental Studies	T	2	2	25	75	100
		Naan Mudhalvan Course		Language Proficiency for Employability(Effective English)	-	2	2	25	75	100
				Total		**24**	**30**	**230**	**570**	**800**
III	I	2231T	T/OL	Tamil/other languages – III	T	3	6	25	75	100
	II	2232E	E	English for Enrichment - I	T	3	6	25	75	100
	III	22BIT3C1	CC	PHP Programming	T	3	3	25	75	100
		22BIT3C2	CC	Database Management Systems	T	3	3	25	75	100
		22BIT3P1	CC	Practical-PHP Programming with Mysql	P	3	3	40	60	100
		-	AL – IIA	Maths/Physics/BCA/ Computer Science	T	3	3	25	75	100
		-	AL - IIA	Practical-Respective Allied Theory Course	P	2	2	40	60	100
	IV	22BE3	SEC-III	Entrepreneurship	T	2	2	25	75	100
		-	NME-I	1.Adipadai Tamil (or) 2.Advance Tamil (or) 3.IT Skills for Employment (or) MOOC's	T	2	2	25	75	100
				Total		**24**	**30**	**255**	**645**	**900**
	I	2241T	T/ OL	Tamil/other languages – IV	T	3	6	25	75	100
	II	2242E	E	English for Enrichment - II	T	3	3	25	75	100
	III	22BIT4C1	CC	Python Programming	T	4	4	25	75	100
		22BIT4C2	CC	Computer Networks	T	4	4	25	75	100

IV		22BIT4P1	CC	Practical –Python Programming Lab	P	3	3	40	60	100
		-	AL – IIB	Maths/Physics/BCA/ Computer Science	T	3	3	25	75	100
		-	AL - IIB	Practical-Respective Allied Theory Course	P	2	2	40	60	100
	IV	-	NME-II	1.Adipadai Tamil (or) 2.Advance Tamil (or) 3.Small Business Management (or) MOOCs	T	2	2	25	75	100
		Naan Mudhalvan Course		Digital Skills for Employability – (Microsoft-Office Fundamentals)	-	2	3	25	75	100
				Total		**26**	**30**	**255**	**645**	**900**
V	III	22BIT5C1	CC	Visual Studio .Net	T	4	4	25	75	100
		22BIT5C2	CC	Multimedia and its Applications	T	4	4	25	75	100
		22BIT5C3	CC	Internet of Things	T	4	4	25	75	100
		22BIT5C4	CC	Fundamentals of Digital Image Processing	T	4	4	25	75	100
		22BIT5P1	CC	Practical-Dot Net Programming	P	4	6	40	60	100
		22BIT5P2	CC	Practical- Multimedia	T	4	6	40	60	100
		-	-	Carrier Development/ Employability Skills	-	-	2	-	-	-
				Total		**24**	**30**	**180**	**420**	**600**
VI	III	22BIT6I	DSE	Internship		**24**	**26**	**150**	**250**	**400**
	IV	Naan Mudhalvan Course		Emerging Technology for Employability(Course Name: Machine Learning*/Android app**/ Cyber Security***)	-	2	4	25	75	100
				Total		**26**	**30**	**175**	**325**	**500**
	III	**(or)**								
		22BIT6E1	**DSE**	Software Project Management	T	6	6	25	75	100
		22BIT6E2		Cyber Security	T	6	6	25	75	100
		22BIT6E3		Big Data Analytics	T	6	6	25	75	100
		22BIT6E4		Principles of Artificial Intelligence	T	6	6	25	75	100
	IV	-	Others	Library/ Yoga etc	-		2	-	-	-
		Naan Mudhalvan Course		Emerging Technology for Employability(Course Name: Machine Learning*/Android app**/ Cyber Security***)	-	2	4	25	75	100
				Total		**26**	**30**	**125**	**375**	**500**
		(or)								
	III	22BIT6PR		Project		6	8	25	75	100
		22BIT6E5	DSE	Software Engineering	T	6	6	25	75	100
		22BIT6E6		Cloud Computing	T	6	6	25	75	100
		22BIT6E7		Data Mining	T	6	6	25	75	100
	IV	Naan Mudhalvan Course		Emerging Technology for Employability(Course Name: Machine Learning*/Android app**/ Cyber Security***)	-	2	4	25	75	100
				Total		**26**	**30**	**125**	**375**	**500**
				Grand Total		**146**	**--**	**--**	**--**	**4400**

*Machine Learning - All Computer Science programmes for Government Colleges
** Android App - All Computer Science programmes for Government Aided College
***Cyber Security - All Computer Science programmes for Self financing College

Sem.	Part	Course Code	Title of the Paper	Credits	Hours/ Week	Marks		
						Int.	Ext.	Total
I	III	71BEPP - I	Professional English for Physical Science -I	4	5	25	75	100
II		72BEPP - II	Professional English for Physical Science -II	4	5	25	75	100
III		*	Professional English for Physical Science -III	4	5	25	75	100
IV			Professional English for Physical Science -IV	4	5	25	75	100

*The Syllabus of Professional English for III & IV Semester will be provided after Receiving the syllabus from TANSCHE.

As per TANSCHE, the Professional English book will be taught to all four streams apart from the existing hours of teaching/additional hours of teaching (1hour/day) as a 4 credit paper as an add on course on par with Major paper and completion of the paper is a must to continue his/her studies further.

- TOL-Tamil/Other Languages,
- E – English
- CC-Core course –Core competency, critical thinking, analytical reasoning, research skill & teamwork
- Allied -Exposure beyond the discipline
- AECC- -Ability Enhancement Compulsory Course (Professional English & Environmental Studies) - Additional academic knowledge, psychology and problem solving etc.,
- SEC-Skill Enhancement Course - Exposure beyond the discipline (Value Education , Entrepreneurship Course, Computer application for Science, etc.,
- NME -Non Major Elective – Exposure beyond the discipline
- DSE – Discipline specific elective – -Student choice – either or
    - Internship
    - If internship – Marks = Internal =150 (75+75) two midterm evaluation through Viva voce and External 250 marks (Report =150 +Viva Voce=100) =Total 400 marks
    - Theory papers or
    - Project + 3 theory papers.
- MOOCs – Massive Open Online Courses

*T-Theory, P- Practical

Semester –I				
Course Code: 22BIT1C1	**Core Course I**	**T/P**	**C**	**H/W**
	Principles of Information Technology	**T**	**5**	**5**
Objectives:	➢ To introduce IT in a simple language to all undergraduate students, regardless of their specialization. ➢ The focus of the subject is on introducing skills relating to IT basics, computer applications, programming, interactive medias, Internet basics etc.			
Unit - I	**Introduction to Computers:** Introduction, Definition, .Characteristics of computer, Evolution of Computer, Block Diagram Of a computer, Generations of Computer, Classification Of Computers, Applications of Computer, Capabilities and limitations of computer.			
Unit -II	**Basic Computer Organization:** Role of I/O devices in a computer system. Input Units: Keyboard, Terminals and its types. Pointing Devices, Scanners and its types, Voice Recognition Systems, Vision Input System, Touch Screen, Output Units: Monitors and its types. Printers: Impact Printers and its types. Non Impact Printers and its types, Plotters, types of plotters, Sound cards, Speakers. **Storage Fundamentals:** Primary Vs Secondary Storage, Data storage & retrieval methods. Primary Storage: RAM ROM, PROM, EPROM, EEPROM. Secondary Storage: Magnetic Tapes, Magnetic Disks. Cartridge tape, hard disks, Floppy disks Optical Disks, Compact Disks, Zip Drive, Flash Drive. Concept of Virtual Memory and Cache Memory			
Unit – III	**Computer Arithmetic:** Number systems Decimal, Binary, Octal, Hexadecimal and their conversion, Binary Addition, Subtraction and Multiplication, Floating point representation and arithmetic, Computer Language: Introduction to computer language, Definition of assembler, compiler and Interpreter Computer Operation- Instruction Cycle, Program flow of control with and without interrupts			
Unit – IV	**Data Communication:** Communication Process, Data Transmission speed, Communication Types (modes), Data Transmission Medias, Modem and its working, characteristics, Types of Networks, LAN Topologies, Computer Protocols, Concepts relating to networking			
Unit - V	Internet and World wide web-Introduction-Internet access-Internet basics-Internet Protocols-Internet Addressing-WWW-HTML- HTML Tags-Web browsers-Searching web-56 Introduction to E-mail –Mailing basics-E-mail ethics-Advantages and disadvantages-Useful email services-Mailing list.			
Outcomes	At the end of this course, student should be able to ➢ Understand basic concepts and terminology of information technology. ➢ Have a basic understanding of personal computers and their operations. ➢ Be able to identify issues related to information security			

TEXT BOOK

P.K.Sinha, 2007, *Computer Fundamentals*, BPB publications Sixth edition,.

Alexis leon& Mathews leon, 2009, *Fundamentals of Information Technology* ,Vikas publication second edition.

REFERENCE BOOK

Dr. Durgesh pant, Magesh kumar Sharma, 2008, *Fundamentals of Information Technology*, Lakshmi publications, second edition.

SEMESTER –I				
Course Code: 22BIT1P1	**Core Course - II**	**T/P**	**C**	**H/W**
	OFFICE AUTOMATION LAB	**P**	**4**	**4**

LIST OF PRACTICAL PROGRAMS

MS-WORD

1. Working with Files – Creating and opening documents, Saving documents, Renaming documents, working on multiple documents.
2. Working with Text – Formatting, Moving, copying and pasting text
3. Styles – Apply a style, Apply from the Style dialog box, Create a new style from a model, Modify or rename a style, Delete style.
4. Lists – Bulleted and numbered lists, Nested lists, Formatting lists
5. Table Manipulations.
6. Graphics – Adding clip Art, Add an image from a file, Editing a graphic
7. Spelling and Grammar, AutoCorrect
8. Page formatting – Page margins, page size and orientation, Header and footers, page numbers
9. Mail Merge.
10. Macros – Recording a macro, Running a macro
11. Web wizard – Using the Web Wizard, Creating & Saving web pages, Hyper links.

MS-EXCEL

1. Modifying a Worksheet – Moving through cells, Adding worksheets, rows and columns, Resizing rows and columns, Selecting cells, Moving and copying cells, Freezing panes
2. Macros – recording and running.
3. Formatting cells – Formatting toolbar, Dates and times, Auto formatting.
4. Formula and Functions.
5. Linking worksheets – Relative, absolute and mixed referencing
6. Sorting and Filling – Basic ascending and descending sorted, Complex sorts, Alternating text and numbers with Auto fill, Autofilling functions.
7. Graphics – Adding clip art, add an image from a file
8. Charts – Using chart Wizard, Copy a chart to Microsoft Word

MS-POWER POINT

1. Create a Presentation from a template.
2. Working with Slides-Insert a new slide, Applying a design template, Changing slide layouts, Reordering slides, Hide slides, Create a Custom slide show 7 edit.
3. Adding Content – Resizing a text box, Text box properties, Delete a text box.
4. Video and Audio effects.
5. Color Schemes & Backgrounds
6. Adding clip art, Adding an image from a file
7. Save as a web page.

MS-ACCESS

1. Using Access database wizard, pages and projects.
2. Open an existing database, converting to Access 2000
3. Screen Layouts – Database window, Design view, Datasheet view
4. Creating Tables – Create a Table in design view, Primary key, Indexes, Field validation rules.
5. Datasheet Records – Adding, Editing, Deleting records, Adding and deleting columns & Resizing rows and columns, Finding data in a table & replacing, Print a datasheet.
6. Declaring Table Relationships.
7. Sorting and Filtering – Sorting, Filter by selection, by form, saving & removing a filter.
8. Queries – Create a query in design view, Query Wizard, Find duplicates query ,Delete
9. Forms – Create a form using the wizard, Create a form in Design View.
10. Form Controls.
11. Sub forms – Create a form and sub form at once, Sub form wizard, Drag and drop method.

12. Reports – Using the wizard, Create in Design View, Printing reports.
13. Importing, Exporting, Linking.

Text Book

Alexis Leon & Mathews Leon, 2001, *"Introduction to Computers with MS-Office 2000"*, TATA McGraw Delhi.

R.K.Taxali , 2006 "*PC SOFTWARE for Windows 98 Made Simple*" , TATA McGraw Hill Publishing Company Limited, New Delhi.

Book for Reference:

Gordon Padwick, Sue Plumley, Debbie walkowski, "*Microsoft Office*", Prentice Hall of India Private Limited, New Delhi.

SEMESTER - II				
Course code	**Core Course III**	**T/P**	**C**	**H/W**
22BIT2C1	**PROGRAMMING IN JAVA**	**T**	**5**	**5**

Unit – I	**Fundamentals of Object Oriented Programming** Introduction – Object Oriented Paradigm – Basic Concepts of OOP – Benefits of OOP – Applications of OOP. **Java Evolution** Java History – Java Features – Java and Internet – World Wide Web–Web Browsers – H/W and S/W requirements – Java Support Systems – Java Environment. **Overview of Java language** Introduction – Simple Java Program – Comments – Java Program Structure–Tokens – Java Statements – Implementing a Java Program – JVM – Command Line Arguments. Constants – Variables – Data Types – Type Casting.
Unit –II	**Operators and Expressions** Arithmetic Operators – Relational, Logical, Assignment, Increment and Decrement, Conditional, Bitwise, Special Operators – Arithmetic expressions, Evaluation of expression – Precedence of Arithmetic Operators – Type Conversions – Operator Precedence and associativity – Mathematical Functions. **Decision Making and Branching** If – if…..else – Nesting of if……. Else – else if – switch - ?: operator. **Decision Making and Looping** While – do – for – jump in loops – labeled loops.
Unit – III	**Classes, Objects and Methods** Defining a class – Adding variables, methods – Creating objects – Accessing Class Members– Constructors – Methods overloading – static members – Nesting of Methods – Inheritance – Overriding methods – final Variables and methods – Final classes – finalizer methods – Abstract methods and classes – visibility control. **Arrays, Strings** Arrays – One Dimensional Arrays – Creating an array – Two Dimensional Arrays – Strings– Wrapper Classes **Interfaces: Multiple Inheritance** Defining interfaces – Extending interfaces – implementing interfaces – Accessing interface variables.
Unit – IV	**Packages** Java API Packages – Using system packages – Naming conventions – Creating Packages – Accessing a Package – Using a Package – Adding a Class to a Package – hiding classes. **Multithreaded Programming** Creating Threads – Extending the Thread Class – Stopping and Blocking a Thread – Life Cycle of a Thread – Using Thread methods – Thread Exceptions – Thread Priority – Synchronization – Implementing the 'Runnable' Interface **Managing Errors and Exceptions** Types of errors – Exceptions – Syntax of Exception handling code – Multiple Catch Statements – Using finally statement – Throwing our own Exceptions – Using Exceptions for Debugging.
Unit – V	**Applet & Graphics Programming** How applets differ from Applications – preparing to write applets – Building Applet Code – Applet life cycle – creating an Executable Applet –Getting input from the user-The Graphics Class – Lines and Rectangles – Circles and Ellipses – Drawing Arcs – Drawing Polygons – Line Graphs – Using Control Loops in Applets – Drawing Bar Charts. **Managing input / output files:** The Standard Streams, Working with File Object, File

	I/O Basics, Reading and Writing to Files. **Collections** : Understanding ArrayList, LinkedList,Vectors, TreeSet, HashSet

Reference and Textbooks:

Programming with Java-Sixth Edition-E Balagurusamy-McGraw-Hill Education, 2019

Java The Complete Reference - Eleventh Edition - Herbert Schildt-Paperback – McGraw Hill, 2020

Introduction to Programming with Java: A Problem Solving Approach - Third Edition -John Dean, Ray Dean-McGraw-Hill Education, 2020

SEMESTER –II				
Course code	**Core Course - IV**	**T/P**	**C**	**H/W**
22BIT2P1	**PROGRAMMING IN JAVA LAB**	**P**	**4**	**4**

LIST OF PRACTICAL PROGRAMS

1. Write a program to find the bigger of two number using command line argument.
2. Write a program to find the sum and average of the N numbers using Command line argument
3. Write a mark list program to find the total, average, result and grade.
4. Write a program to prepare the EB Bill calculation.
5. Write a program to find the factorial value of the given number.
6. Write a program to print the Multiplication Table.
7. Write a program to print the Fibonacci Series.
8. Write a program to find the given number is prime number or not.
9. Write a program to find the given number is perfect number or not.
10. Write a program to find the given number is Armstrong or Not.
11. Write a program to Reverse the Given Number.
12. Write a program to find the Sum of Digit.
13. Write a program to arrange the numbers in Descending order.
14. Write a program to find the Sum of each Row in the given matrix.
15. Write a program for Matrix Addition.
16. Write a program for Matrix Subtraction.
17. Write a program for Matrix Multiplication.
18. Write a program to find the given string is Palindrome or Not.
19. Write a program to Count the no of Vowels in the given string.
20. Write a program to arrange the String an Ascending order.
21. Write a program to calculate Area of Square, Rectangle using Method Overloading.
22. Write a program using Single Inheritance.
23. Write a program to handle the Exception using try and multiple catch block.
24. Write a program to generate Prime and Perfect number using thread.
25. Write a program to implement a Mark List program using package.
26. Write a program to implement a Vector Operations program .
27. Write a program to draw a house using Applet.
28. Write a program to draw a human face using Applet.
29. Write a program to draw our national flag using Applet.
30. Write a program to draw a Bar-chart using Applet.
31. Write a program to create a file and write the text in it using Stream.
32. Write a java program to read a file and display the content on screen using Stream.

SEMESTER - III				
Course code	**Core Course V**	**T/P**	**C**	**H/W**
22BIT3C1	**PHP PROGRAMMING**	**T**	**3**	**3**
Unit - I	**HTML:** Introduction, Formatting text using tags, using lists and backgrounds, Creating hyperlinks and anchors. Formatting text using style sheets, formatting paragraphs using style sheets, planning site organization, creating text based navigation bar, creating graphics based navigation bar, creating graphical navigation bar -list- creating simple table, specifying the size of the table, specifying the width of the column, merging table cells, using tables for page layout, formatting tables. **Creating user forms:** Creating basic form-using text box, check box , option button, submit and reset buttons. Incorporating sound and video on web page.			
Unit -II	**Introduction to PHP:** Evaluation of PHP, Basic Syntax, Defining variable and constant, PHP Data type, Operator and Expression. Introduction to Control Structures – Using Conditional and Looping Statements. Handling Html Form with PHP- Capturing Form, GET- POST method and redirecting a form after submission.			
Unit – III	**Array:** Anatomy of an Array, Creating index based and Associative array, Accessing array, Looping with Index based array, Looping with associative array using foreach(). **String:** String Searching & Replacing String, Formatting String, String Related Library function and regular expression. **Function:** What is a function, Define a function, Call by value and Call by reference, Recursive function, Date and Time Function,			
Unit – IV	**Working with file and Directories:** Understanding file& directory, Opening and closing a file, Copying, renaming and deleting a file, working with directories, Creating and deleting folder, File Uploading & Downloading. **Exception Handling:** Understanding Exception and error, Try, catch, throw. Error tracking and debugging. Sending and receiving E-mails - Oops -Security tags.			
Unit - V	**Session and Cookie:** Introduction to Session Control, Session Functionality, What is a Cookie, Setting Cookies with PHP. Using Cookies with Sessions, Deleting Cookies, Registering Session variables, Destroying the variables and Session. **Database Connectivity with MySql:** Introduction, Connection with MySql Database, Performing basic database operation (Insert, Delete, Update, Select), Setting query parameter, Executing query Join.			

Reference and Textbooks:

HTML 5 Black Book-2nd Edition - Dreamtech Press -2016

Head First HTML 5 Programming-Eric Freeman-O'Reilly

PHP: The Complete Reference -Steven Holzner -McGraw Hill Education-2017

PHP Programming -The Complete Guide - Code Academy-2022 Learning PHP, MySQL & JavaScript-5th Edition-Robin Nixon-O'Reilly Media, Inc.

SEMESTER - III				
Course code	**Core Course VI**	**T/P**	**C**	**H/W**
22BIT3C2	**DATABASE MANAGEMENT SYSTEMS**	**T**	**3**	**3**
Unit - I	Introduction: Database System Applications- Purpose of Database Systems-View of Data-database Languages-			
Unit -II	Relational Database: Introduction to the Relational model- Structure of Relational databases-Database Schema-Keys-Schema Diagrams-Relational Query languages Relational database design: Feaures of good relational design-Atomic Domains and First Normal Form-Decomposition using Functional Dependencies- Functional Dependency Theory- More Normal forms-Modeling Temporal data.			
Unit – III	Introduction to MYSQL: Creating a database and tables, DDL,DML,DCL,TCL commands, clauses-order by, where and group by functions in MYSQL, Aggregate functions(avg,count,max,sum),String functions (concat,instr,mid,length,srcmp,trim,ltrim,rtrim),Mathfunctions(abs,cell,floor,mod,po,sqrt), Date and Time functions (adddate,datediff,day,month,year,hour,min,sec) Subqueries and joins in MYSQL: Subqueries-concept of subqueries - subqueries with IN,EXIST,NOTEXISTS-Subqueries restrictions-nested subqueries-ANY/ALL clause-correlated subqueries-group by and having clause-concepts of join-types of join-inner join-outer join-left join-right join-cross join-creating, altering, dropping, renaming and manipulating views-MYSQL control statements and stored procedures :cursors- declare,open,fetch,close-Triggers-create,show and drop trigger-Types of trigger.			
Unit – IV	Database System Architecture: Centralized & Client-server Architectures-Server System Architectures-Parallel Systems- Distributed Systems-Network Types Parallel Databases: I/O Parallelism - Interquery Parallelism Intraquery Parallelism Distributed databases: Homogenous and Heterogeneous databases-Distributed transactions - Distributed Querying processing.			
Unit - V	Data Storage &Querying: Storage and file Structure-Overview of Physical storage Media-Magnetic disk and flash storage- RAID-File Organization Indexing and Hashing: Basic Concepts-Ordered Indices-B-tree Index Files-Multiple Key access-Static Hashing-Dynamic Hashing-Comparison of Ordered Indexing & Hashing			

Textbooks:

Database System Concepts-Abraham Silbershatz, Henry F.Korth, S.Sudharshan,Sixth Edition, Tata McGraw Hill Company-2011

Fundamentals of Database systems- Ramez Elmsari,Shamkant & B.Navathe,7 th Edition

ElizabethNaramore,Jasongerner-BeginningPHP5,Apache,MYSQL,with web development.

Reference Books:

Database Systems-A practical Approach to design, Implementation & Management by Thomas Connolly , Carolyn Begg-Sixth Edition,pearson publications

Database Management Systems-Punert Kumar,Sushil Bhardwaj.

SEMESTER –III				
Course code	**Core Course - VII**	**T/P**	**C**	**H/W**
22BIT3P1	**PHP PROGRAMMING WITH MYSQL LAB**	**P**	**3**	**3**

LIST OF PRACTICAL PROGRAMS

1. Write a Program to design a web page with links to different pages and allow navigation between web pages.
2. Write a Program to design a web page with a form that uses all types of controls.
3. Write a Program to create a page using functions for comparing three integers and print the largest number.
4. Write a function to calculate the factorial of a number (non-negative integer). The function accept the number as an argument.
5. Write a Program to convert Number into Word.
6. Write a Program to check whether the given number is prime or not.
7. Write a Program that checks whether a passed string is palindrome or not.
8. Write a Program to create a PHP page which accepts name from user. After submission that page will display good morning or good evening message along with user name based on time functions?
9. Write a Program to create a simple 'birthday countdown' script, the script will count the number of days between current day and birth day.
10. Write a Program to prepare the EB Bill using File Handling.
11. Write a program to check the email-id is valid or not using regular expression.
12. Write a Program to implement the Session Management.
13. Write a Program to implement the COOKIES concepts.
14. Write a Program to implement E-mail concept on PHP.
15. Write a Program to implement File Upload and File Download options.
16. Write a Program to design web page for student registration page and store the input into database.
17. Write a Program to create a login page having user name and password. On clicking submit, a welcome message should be displayed if the user is already registered (i.e.name is present in the database) otherwise error message should be displayed.
18. Write a Program to Maintain the Employee details using PHP & MySQL. The page contains the search option to find the employee name.
19. Write a Program to Manage the Book details using PHP & MySQL. The page contains the search option to find the book or author name.
20. Write a Program to prepare the Mark List Program using PHP & MySQL.
21. Create a table EMP in MYSQL

Emp	Name	Salary	Age	State	Email
Anantha	65000	42	Tamilnadu	ananth@gmail.com	Anantha
Jodhika	40000	36	Maharastra	jodhi@yahoo.com	Jodhika
Krishnan	30000	30	Kerala	krishnan@apsac.com	Krishnan
Rashmika	25000	25	Andhrapradesh	rash@gmail.com	Rashmika

22. Write a MySQL statement to insert your record into the above table against each columns.
23. Write a MySQL statement to insert 3 rows in above table by a single insert statement.
24. Write a MySQL statement to change the email and state name for krishnan.
25. Write the MySQL statement to insert a new column “address”.
26. Write a query to get the minimum age from employees table.
27. Write the MySQL statement to show those records who’s age >34.
28. Write the MySQL statement to delete column “Age” in above table
29. Write a query to get the average salary and number of employees.
30. Write a query to get the maximum salary and name employee.

SEMESTER - IV				
Course code	**Core Course XIII**	**T/P**	**C**	**H/W**
22BIT4C1	**PYTHON PROGRAMMING**	**T**	**4**	**4**
Unit - I	**Introduction to Python:** History of Python- Futures of Python-Application of Python Installation of Python-Keywords-Identifiers-Statements-Indentation-Data types-Literal Variable-Operators and Expression-Input/Output Statements. **Control Flow statements:** Conditional and Looping Statements.			
Unit -II	**Sequences**–Lists-Methods-Slicing-Cloning-Nested List-Mutability-Creating Tuple-Accessing/Updating/Deleting elements in Tuple-Nested Tuples–Making a Dictionary-Adding and Modifying an Item in a Dictionary-Sorting Items-Looping over a Dictionary-Sets-Iterators and Generators.			
Unit – III	**Functions-**Defining a Function-Calling Function – Type of Arguments –return statement -Recursive functions-Modules-Importing-Creating Modules-Name spacing-Reloading- Installing Packages. Strings and Regular Expressions-Files and Directory Access-Opening a file modes-Reading / Writing Operations on a File-File Position-Renaming and Deleting File-Directory methods. **Object Oriented Programming**-Class –Methods-Self variable-Data Hiding-Constructor-Method Overloading-Inheritance-Operator Overloading.			
Unit – IV	**Errors and Exceptions**- Handling Exceptions-Try-Finally- With and Except Statements-Assert Statement-Custom Exceptions- Thread-Threading Module-Synchronization.			
Unit - V	**GUI Programming with Tkinter:** Widget-Label-Button-Text-Checkbutton-Entry-Listbox -Combobox - Scrollbar –RadioButton- Container -Frame-Menu-Message-Scale-Canvas-Events-Keyboard and Mouse Events-Graphics using Turtle-Plotting Graphs- Web Programming using Flask-Templates-Web forms.			

Reference and Textbooks:

Python Programming- Ch Satyanarayana, M Radhika Mani, B N Jagadesh -Universities Press.

Python Programming Using Problem Solving Approach - Reema Thareja-Oxford University Press.

Programming and Problem Solving with Python - Ashok Namdev Kamthane-Amit Ashok Kamthane - Second Edition-2020.

Flask Web Development-Miguel Grinberg- 2nd Edition- O'Reilly Media-2018

SEMESTER - IV				
Course code	**CORE COURSE – IX**	**T/P**	**C**	**H/W**
22BIT4C2	**COMPUTER NETWORKS**	**T**	**4**	**4**
Unit - I	Introduction: Uses of Computer Networks – Network Hardware and network software – Reference models – Example Networks – Network Standardization – Physical Layer: Transmission Media – Telephone System – ISDN – Broadband and Narrowband ISDN – ISDN and ATM – Communication Satellites.			
Unit -II	Data Link Layer: Design Issues – Error Detection and correction codes – Elementary data link Protocols – Sliding Window Protocols – Protocol Specification and Verification: Finite State models – Petri net models – Media access Sub layer: Multiple access protocols – ALOHA – Carrier Sense multiple Access protocols – Collision free Protocols.			
Unit – III	Network Layer: Design Issues – Routing Algorithms – Congestion Control Algorithms – Internetworking: Tunneling – Fragmentation – Firewalls – Network Layer in the internet – IP– Subnets – Network layer in ATM networks: Cell Format – Connection setup – Routing and switching – Services Categories – ATM LANs.			
Unit – IV	Transport Layer: Transport Service – Elements of Transport Protocols: Addressing – Floe Control and Buffering – Multiplexing – Crash Recovery – Performance issues – Measuring Network performance – Internet Transport Protocols – TCP – UDP – Protocols for Gigabit Networks.			
Unit - V	Application Layer: Network Security – Cryptography – Secret and Public Key Algorithms – DNS – SNMP – Electronic Mail – Electronic Mail Privacy – World Wide Web: Client Side – Server Side – Multimedia – Audio – Video – Data compression – JPEG- MPEG Standards.			

TEXT BOOKS:

Andrew S.Tenenbaum- Computer Networks- Third Edition- Prentice Hall of India.2011

BOOKS FOR REFERENCE:

Uless Black- Computer Networks- PHIE.

Data and computer communications- PHI- W.Stallings

Data Communication and networking by Behrouz A.Forouzen- Tata McGraw Hill Edition.

SEMESTER –IV				
Course code	**PRACTICAL –X**	**T/P**	**C**	**H/W**
22BIT4P1	**PYTHON PROGRAMMING LAB**	**P**	**3**	**3**

LIST OF PRACTICAL PROGRAMS

1. Write a Python Program for checking whether the given number is an odd or even number.
2. Write a Python Program to check leap year.
3. Write a Python Program to Check Prime Number.
4. Write a Python program to check whether the given no is Armstrong or not.
5. Write a Python program to generate list of Fibonacci number up to n Fibonacci numbers.
6. Write a python program to create, append and remove lists in python.
7. Write a program to demonstrate working with tuples in python.
8. Write a program to demonstrate working with dictionaries in python.
9. Write a python program to define a module to find Factorial Numbers and import the module to another program.
10. Write a Python program to find the given string is Palindrome or Not.
11. Write a python program by using exception handling mechanism.
12. Implement python script to accept line of text and find the number of characters, number of vowels and number of blank spaces in it.
13. Write a program to copy file contents from one file to another.
14. Write a program to compute the number of characters, words and lines in a file.
15. Write a Python GUI program using Tkinter List box and Combo box widgets.
16. Create a graphical application in Python Tkinter that asks the user to enter two integers and displays their sum using text and button widgets.
17. Write a Python GUI program for Loan Calculator using Tkinter.
18. Write a program to drawing figures using turtle.
19. Write a program to plot a graph of people with pulse rate p vs. height h. The values of p and h are to be entered by the user.
20. Write a web program to create the Home Page using Python Flask.

SEMESTER - V				
Course code	**Core Course XI**	**T/P**	**C**	**H/W**
22BIT5C1	**VISUAL STUDIO .NET**	**T**	**4**	**4**
Unit - I	Introduction to .NET – The .NET Framework – Benefits of .NET – Common Language Runtime – Features of CLR - Compilation and MSIL – The .NET Framework libraries – The Visual Studio Integrated Development Environment.			
Unit -II	Introduction to VB.NET – VB.NET fundamentals – Branching and Looping Statements - Classes and Objects – Constructors – Overloading- Inheritance and Polymorphism – Interfaces – Arrays – Strings – Exceptions – Delegates and Events.			
Unit – III	Building Windows Applications – Creating a Windows Applications using window controls - Windows Forms - Text Boxes - Rich Text boxes – Labels and link labels – Buttons - Check boxes - Radio buttons - Panels and Group Boxes - List Boxes - Checked List boxes - Combo boxes and Picture boxes - Scroll bars – Calendar control - Timer control – Handling Menus – Dialog boxes –Report Viewer- Deploying an Application – Graphics.			
Unit – IV	ASP.NET Basics: Features of ASP.NET – ASP.NET Page directives - Building Forms with Web server Controls – Validation Server Controls – Rich Web Controls - Custom Controls – Collections and Lists- ASP.NET MVC			
Unit - V	Data Management with ADO.NET - Introducing ADO.NET - ADO.NET features - Using SQL Server with VB.NET – Using SQL Server with ASP.NET.			

REFERENCE AND TEST BOOKS:

Visual Studio 2019 In Depth-by Ockert J. du Preez (Author)-BPB Publications

Visual Basic 2019-Dr.Liew Voon Kiong

Programming with Microsoft Visual Basic-Diane Zak - Cengage Learning

Programming ASP.NET Core By Dino Esposito-Pearson Education

ASP.NET Core in Action-Second Edition-Andrew Lock-Manning

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SEMESTER - V				
Course code 22BIT5C2	**CORE COURSE XII**	**T/P**	**C**	**H/W**
	MULTIMEDIA AND ITS APPLICATIONS	**T**	**4**	**4**
Unit - I	Multimedia Definitions – Delivering - Uses of multimedia. **Text :** The Power of Meaning – About Fonts and Faces –Using Text in Multimedia – Computers and Text – Font Editing and Design Tools – Hypermedia and Hypertext.			
Unit -II	**Images:** Making Still Images –Understating natural light and color- Image File formats. **Sound:** The Power of Sound – Multimedia System Sounds- Digital Audio - MIDI Versus Digital Audio – Making MIDI Audio – Audio file formats – Adding Sound– Copyright Issues.			
Unit – III	**Animation:** The Power of motion – Principles of Animation – Making Animation. **Video:** Using video – How it works – Broadcast Video Standards – Integrating Computers and Television – shooting and Editing Video – Video Tips – Recording Formats – Digital video.			
Unit – IV	Making Multimedia - Hardware Peripherals: Connection - Memory and storage Devices – Input / Output Devices - Communication Devices - Software-Editing tools for Text, Image, Sound, Animation and Video- Multimedia Skills-Designing for the World Wide Web.			
Unit - V	**Adobe Animate**: Animate Interface-Managing workspaces and Panels- Customizing the tools and Timeline panels- Animating with Diverse Techniques-Working with Shapes-Tweens-Symbols-Interactive Motion Graphics for the Web-Character design through Layer.			

TEXT BOOK:

Multimedia: Making It Work-Ninth Edition-Tay Vaughan-McGraw Hill

Mastering Adobe Animate 2021-Joseph Labrecque - Packt Publishing Limited

Multimedia Application and Web Designing - Dinesh Maidasani- Laxmi Publications

Ultimedia Programming: A Practical Approach- Dr. Siddhartha Bhattacharyya & Dr. Paramartha Dutta - Vikas Publishing

SEMESTER - V				
Course code	**Core Course XIII**	**T/P**	**C**	**H/W**
22BIT5C3	**INTERNET OF THINGS**	**T**	**4**	**4**

Unit - I	Introduction - Definition & characteristics of IoT - physical design of IoT - logical design of IoT - IoT enabling Technologies - IoT levels & Deployment templates. Domain specific Iots : Home Automation - cities - Environment - Energy - retail - logistics - Agriculture - Industry i Health and life style.
Unit -II	IoT and M2M - Deference between Iot and M2M - SDN and NFV for lot - IoT systems management - SNMP - YANG – NETOPEER.
Unit –III	IoT platforms design Methodology - purpose and specification - process specification - Domain model specification - Information model specification - Service specification - IoT level specification - functional view specification - operational view specification - Device and component Integrators - Application Development.
Unit –IV	Logical design using python - Installing python - type conversions - control flow - functions - modules - File handling - classes. IoT physical devices and End points, building blocks of IoT device - Raspberry Pi - Linux on Raspberry Pi - Raspberry Pi interfaces.
Unit - V	IoT physical servers & cloud computing - WAMP - Xively cloud for IoT - python Web application frame work - Amazon web services for IoT.

TEXT BOOK:

Internet of Things - A hands on Approach Authors: Arshdeep Bahga, Vijay Madisetti Publisher: Universities press.

REFERENCE BOOK:

Internet of Things - Srinivasa K.G., Siddesh G.M. Hanumantha Raju R. Publisher: Cengage Learning India pvt. Ltd (2018)

SEMESTER - V				
Course code	**Core Course XIV**	**T/P**	**C**	**H/W**
22BIT5C4	**FUNDAMENTALS OF DIGITAL IMAGE PROCESSING**	**T**	**4**	**4**

Unit - I	**Introduction:** Digital Image Processing-Origin of Digital Image Processing-Example fields that use digital image processing-fundamental Steps in digital Image Processing- Components of an Image Processing System. **Digital Image Fundamentals:** Elements of Visual Perception- Image Sensing & Acquisition- Image Sampling and Quantization.
Unit -II	**Image transformation:** Introduction to the Fourier Series &transform-The Fourier transform of Sampled functions-The discrete Fourier transform- The discrete Fourier transform of one variable-The 2d discrete Fourier transform and its inverse-Aliasing in images **Spatial Filtering:** Fundamentals of Spatial Filtering-Smoothing Spatial Filters-Sharpening Spatial filters
Unit – III	**Image Enhancement:** Background-Some basic intensity transformation functions--Histogram processing- **Image Restoration & Reconstruction:** A model of the image restoration process-Noise Models- inverse filtering- Image reconstruction from Projections.
Unit – IV	**Image Processing:** Color Fundamentals-Color Models-Basics of Full color image processing-Color Transformation-Color Image smoothing & Sharpening. **Image Compression:** Fundamentals –Inage Compression models-Image Formats, containers & Compression Standards.
Unit - V	**Image Segmentation:** Fundamentals –Point,line&edgeDetection-Thresholding-Segmentation by region growing and by region Splitting and merging. **Image Pattern Classification:** Background-Patterns& Pattern Classes-Pattern Classification by prototype matching-Bayes Statistical Classifiers.

TEXT BOOK:

Digital Image Processing- -Rafael C.Gonzalez,Richard E.woods ,Fourth Edition -Pearson Publications.

REFERENCE BOOKS:

Digital Image Processing by Dr.Ninad N.More, Technical Publications.

Fundamentals of Digital Image Processing By Anil k.Jain

SEMESTER –V				
Course code	**CORE COURSE XV**	**T/P**	**C**	**H/W**
22BIT5P1	**DOT NET PROGRAMMING LAB**	**P**	**4**	**6**

LIST OF PRACTICAL PROGRAMS

1. Write a program to create the Student Mark List using VB.NET.
2. Write a program to create the EB-Bill using VB.NET.
3. Design and develop a Puzzle Game using VB.NET
4. Design and develop a Calculator using VB.NET
5. Write an Image Scrolling program using VB.NET.
6. Write a program to Resize the Image height and Width using Scrollbar in VB.NET
7. Write a program to Draw a Picture using mouse events in VB.NET
8. Write a program to Draw a Home using graphics function in VB.NET
9. Design and develop a Text Editor using VB.NET.
10. Write a program to Maintain the Book Details Using VB.NET & ADO.NET
11. Write a ASP.NET program using Ad Rotator
12. Write a ASP.NET program using Cookies
13. Write a ASP.NET program to find the Page Count details using Application Object.
14. Write a ASP.NET program to prepare the Salary Bill.
15. Write a ASP.NET program to find the Airway Tariff Details.
16. Write a ASP.NET program to display the price List of the Item.
17. Write a ASP.NET program to design the Bio data form with validation control.
18. Write a program to create the webpage using Master Page with navigation control.
19. Write a program to Display the Sales Item Records using grid view control with data binding controls.
20. Write a program to maintain the Address Book using ASP.NET & ADO.Net.

SEMESTER –V				
Course code:	**Core Course VI**	**T/P**	**C**	**H/W**
22BIT5P2	**MULTIMEDIA LAB**	**4**	**4**	**6**

LIST OF PRACTICAL PROGRAMS

1. Draw an animation to show a bouncing ball.
2. Draw an animation to show a moving stick man.
3. Draw an animation with banana.
4. Draw an animation to show sunrise and sunset.
5. Draw an animation to show a disappearing house.
6. Draw an animation to show two boats sailing in river
7. Draw an animation to show a scene of cricket match.
8. Draw an animation to help teach a poem or a song
9. Draw an animation to show cartoon with a message
10. Draw an animation to move Butterfly from one flower to other.
11. Draw an animation for health tips.
12. Draw an animation for Kids Mathematics.
13. Make a movie showing Shape Tweening.
14. Make a movie showing Motion Tweening.
15. Add sound and button to the movie.

SEMESTER - VI				
Course code	**DSE**	**T/P**	**C**	**H/W**
22BIT6E1	**(A)SOFTWARE PROJECT MANAGEMENT**	**T**	**6**	**6**
Unit - I	Evaluation and project planning-Importance of software project management-Activities-Methodologies-Categorization of software projects-setting objectives-Management principles-Management control-Project portfolio management-Cost benefit evaluation technology-Risk Evaluation-Strategic program management-Stepwise project planning			
Unit -II	Project life cycle and effort estimation-Software process and process models-Choice of process models-Rapid application development-Agile methods-Dynamic system development methods-Extreme Programming-Managing interactive processes-Basics of software estimation-Effort and cost estimation techniques-cosmic full function points			
Unit – III	Objectives of activity planning-Project schedule Activities-Sequencing and Scheduling-Network planning models-Formulating network model-Forward pass and backward pass techniques-Critical path method-Risk identification-Risk Planning-Risk management-PERT technique-Monto Carlo Simulation-Resource Allocation-Creation of critical paths-Cost Schedules			
Unit – IV	Framework for management and control-Collection of data-Visualizing progress-Cost monitoring-Earned value analysis-Prioritizing monitoring-Project tracking-change control-Software configuration management-Managing contracts-Contract management			
Unit - V	Staffing in software projects-Managing people-organizational behavior-best methods of staff selection-motivation-The Oldham-Hack man job characteristics model-stress-health and safety-ethical professional concerns-working in teams-Decision making-organizational structures-communication genres-communication plans-Leadership			

TEXTBOOK:

Software project management-Bob Hughes, Mike Cottrell and Rajibmall ,Sixth edition,TataMcgraw hill, New Delhi.

REFERENCE BOOKS:

Effective software project management -Robert K.Wysocki,wiley publications

Software project management -Walker Royce-Addison wesley

SEMESTER - VI				
Course code	**DSE**	**T/P**	**C**	**H/W**
22BIT6E2	**(B)CYBER SECURITY**	**T**	**6**	**6**
Unit - I	Introduction -Computer Security - Threats -Harm - Vulnerabilities -Controls - Authentication -Access Control and Cryptography - Web—UserSide - Browser Attacks - Web Attacks Targeting-Users - Obtaining User or Website Data - Email Attacks.			
Unit -II	Security in Operating Systems - Security in the Design of Operating Systems -Rootkit – Network-security attack- Threats to Network Communications -Wireless Network Security - Denial of Service - Distributed Denial of Service – SQL Injection.			
Unit – III	Data Theft – Detecting Insider Attacks – The Naïve Bayes Approach - Security Planning – Business Continuity Planning - Handling Incidents - Risk Analysis - Dealing with Disaster – Cyber Crime - Cyber Warfare- Cyberspace and the Law - International Laws.			
Unit – IV	Introduction to Ethical Hacking - Footprinting and Reconnaissance - Scanning Networks -Enumeration - System Hacking - Malware Threats –Sniffing.			
Unit - V	Social Engineering - Denial of Service - Session Hijacking - Hacking Web servers – Hacking Web Applications – SQL Injection - Hacking Wireless Networks - Hacking Mobile Platforms.			

TEXTBOOK:

The Cyber security Self-Help Guide-Arun Soni-CRC Press-2021

Cyber Security: Analytics, Technology and Automation- Martti Lehto, Pekka

Neittaanmaki- Springer International Publishing Switzerland-2015.

Nilakshi Jain, Ramesh Menon, “Cyber Security and Cyber Laws”, Willey, 2020.Cyber Security Essentials-James Graham, Richard Howard, and Ryan Olson (Eds)- CRC Press

Ethical Hacking and Penetration Testing Guide-Rafay Baloch-CRC Press-2017

Beginners Guide To Ethical Hacking and Cyber Security-Abhinav Ojha- Independently Published-2020

SEMESTER - VI				
Course code	**DSE**	**T/P**	**C**	**H/W**
22BIT6E3	**(C)BIG DATA ANALYTICS**	**T**	**6**	**6**
Unit - I	Introduction to Big Data Analytics – Data Analytics – Analytics Terminology –Types of Analytics – Analytics Life Cycle - Data Store – Getting Started with R – Data Exploration – Data Preparation			
Unit -II	Introduction to machine learning –Dimensionality reduction –Hardware Acceleration for Machine Learning and Big Data Analytics–Social Network Analytics. Descriptive analytics.			
Unit – III	Market Basket Analysis– Kernel Density Estimation– Regression– Relational Logistics Regression –Relational Neighbor Classifiers –Bigraphs – Collective Inferencing.			
Unit – IV	Common predictive Modeling Techniques: RFM – Regression – Generalised Linear Models – Neural Network – Decision and Regression trees – Support vector Machines – Bayesian Methods Network Classification – Ensemble Methods.			
Unit - V	Segmentation and Hadoop– Cluster Analysis – Distance Measures – Evaluating Clustering – Number of Clusters – K-means Algorithm – Hierarchical Clustering – Introduction to Neural Networks – Support Vector Machines - K Nearest Neighbor classification - Ensemble learning.Hadoop concepts - Hadoop distributed file system (HDFS) basics.			

TEXTBOOK:

Bart Baesens, 2014, Analytics in a Big Data World, 1e, Wiley.

Douglas Eadline, Addision Wesley, 2016, Hadoop 2 Quick-Start Guide.

Jared Dean,Wiley, 2014, Big Data, Data Mining, Machine Learning, 1e

Lakshmi Prasad.Y, 2016, Big Data Analytics, 1st Edition, Notion Press.

SEMESTER - VI				
Course code	**DSE**	**T/P**	**C**	**H/W**
22BIT6E4	**PRINCIPLES OF ARTIFICIAL INTELLIGENCE**	**T**	**6**	**6**

Unit - I	Overview: foundations, scope, problems, and approaches of AI. Intelligent agents: reactive, deliberative, goal-driven, utility-driven, and learning agents, Artificial Intelligence programming techniques
Unit -II	Problem Spaces Problem solving methods: problem solving through Search: State space search- Strategies for search space- Data driven, goal driven, breadth first, depth first. Heuristic Searches: "Best" first searches. Heuristic in Games: The MinMax procedure-Alpha – Beta procedure
Unit – III	Knowledge Representation: Principles of KR using predicate logic - Overview of KR using other logics Structured representations of knowledge
Unit – IV	PLANNING AND CONSTRUCTION: planning as search, partial order planning, construction and use of planning graphs, Representing and Reasoning with Uncertain Knowledge: probability, connection to logic, independence, Bayes rule, Bayesian networks, probabilistic inference, sample applications.
Unit - V	DECISION MAKING Decision-Making: basics of utility theory, decision theory, sequential decision problems, elementary game theory, sample applications. Machine Learning and Knowledge Acquisition: learning from memorization, examples, explanation, and exploration.

TEXTBOOK:

Artificial Intelligence: A Modern Approach 2nd Ed. -- Russell & Norvig Prentice Hall, 2009.

Luger, G. F., & Stubblefield, W. A., Artificial Intelligence – Structures and Strategies for Complex Problem Solving. New York, NY: Addison Wesley, 5th edition(2005).

Richard E. Neapolitan -- Learning Bayesian Networks Prentice Hall, 2003

REFERENCE BOOKS:

Pattern Classification (2nd Edition) -- Duda Hart Stork Wiley-Interscience , 2000

Making Hard Decisions: An Introduction to Decision Analysis – Clemen Robert Duxbury Press, 1997

Probabilistic Reasoning in Intelligent Systems -- Judea Pearl Morgan Kaufmann, (revised second printing) 1988

SEMESTER - VI				
Course code	**DSE**	**T/P**	**C**	**H/W**
22BIT6E5	**SOFTWARE ENGINEERING**	**T**	**6**	**6**

Unit - I	**Introduction:** Introduction to Software Engineering-Definition- Some size factors-Quality &productivity Factors. **Planning a Software Project:** Defining the problem-Developing a solution Strategy-planning the Development process-planning an Organizational Structure-Other Planning Activities.
Unit -II	**Software Cost Estimation:** Software Cost Factors-Software Cost Estimation Techniques- Estimating Software maintenance costs. **Software Requirements Definition:** The Software requirements definitions-The Software requirements Specification-formal Specification Techniques.
Unit – III	**Software Design:** Fundamental Design Concepts-Modules Modularization Criteria-Design Notations-Design Techniques-Detailed Design Considerations-Test Plan-Milestones, Walkthrough & Inspections-Design Guidelines.
Unit – IV	**Software implementation:** Structured coding Techniques-Coding style-standards& guidelines-Software testing-A Srategic approach to software testing-Unit Testing-Integration Testing-Validation Testing-System Testing.
Unit - V	**Software Maintenance:** Configuration Management-Source Code Metrics- other maintenance tools & techniques Software Quality Assurance-Quality Concepts-Software Reviews-Formal Technical Reviews.

Textbook:

Software Engineering Concepts- Richard E.Fairely ,revised edition-Tata McGraw Hill Publishing Company Ltd.

Reference Books:

Software engineering-A practitioner's Approach –Roger S.Pressman,McGraw Hill publishing company,International Edition

An Integrated Approach to Software Engineering –Pankaj Jalote

SEMESTER - VI				
Course code	**DSE**	**T/P**	**C**	**H/W**
22BIT6E6	**CLOUD COMPUTING**	**T**	**6**	**6**

Unit - I	**UNDERSTANDING CLOUD COMPUTING:** Origins and Influences – Basic Concepts And Terminology – Goals And Benefits – Risks And Challenges. **FUNDAMENTAL CONCEPTS AND MODELS:** Roles And Boundaries– Cloud Characteristics – Cloud Delivery Models – Cloud Deployment Models.
Unit -II	**CLOUD – ENABLING TECHNOLOGY:** Broadband Networks And Internet Architecture – Data Center Technology – Virtualization Technology – Web Technology – Multitenant Technology – Service Technology. **CLOUD INFRASTRUCTURE MECHANISMS:** Logical Network Perimeter– Virtual Server – Cloud Storage Device – Cloud Usage Monitor – Resource Replication – Readymade Environment.
Unit – III	CLOUD ARCHITECTURE, SERVICES AND STORAGE Layered Cloud Architecture Design – NIST Cloud Computing Reference Architecture – Public, Private and Hybrid Clouds – laaS – PaaS – SaaS – Architectural Design Challenges – Cloud Storage – Storage-as-a-Service – Advantages of Cloud Storage – Cloud Storage Providers – S3.
Unit – IV	**Cloud Resource Management :** Inter Cloud Resource Management – Resource Provisioning and Resource Provisioning Methods – Global Exchange of Cloud Resources Cloud Security **Mechanism:** Encryption – Hashing – Digital signature– Public key Infrastructure – Identity and Access Management – single Sign – On(SSO) – Cloud – Based Security Groups – Hardened Virtual server Images.
Unit - V	**Working With Clouds :** Cloud Delivery Models :The Cloud Provider Perspective: Building Iaas Environments – Equipping Paas Environments – Optimizing Saas Environments. **Cloud Delivery Models :**The Cloud Consumer Perspective : Working With Iaas Environments – Working With Paas Environments – Working With Saas Services.

TEXT BOOK

Thomas Erl, ZaighamMahmood, and Ricardo Puttini, “Cloud Computing : Concepts, Technology and Architecture”, Prentice Hall, U.S.A., 2013.

REFERENCE BOOKS:

George Reese, “Cloud Application Architectures”, Shroff O’Reilly, ISBN:8184047142, 2009.

Michael Miller, “Cloud Computing Web Based Applications That Change The Way You Work And Collaborate Online”, Pearson Education, 2009.

Kris Jamsa, “Cloud Computing”, Jones and Bartlett Learning, 2013.

Kai Hwang, Geoffrey C. Fox, Jack G. Dongarra, "Distributed and Cloud Computing, From Parallel Processing to the Internet of Things", Morgan Kaufmann Publishers, 2012.

Rittinghouse, John W., and James F. Ransome, “Cloud Computing: Implementation, Management and Security”, CRC Press, 2017.

SEMESTER - VI				
Course code	**DSE**	**T/P**	**C**	**H/W**
22BIT6E7	**DATA MINING**	**6**	**6**	**6**

Unit - I	**Introduction:** Introduction - What is Data mining– Importance of Data mining - various kinds of data-Basic Data Mining Tasks – Components of Data Mining Algorithms – Data Mining supporting Techniques - Data Mining Versus Knowledge Discovery in Data Bases – Data Mining Issues
Unit -II	Data Pre-processing: Data summarization, data cleaning, data integration and transformation, data reduction, data discretization and concept hierarchy generation, feature extraction , feature transformation, feature selection, introduction to Dimensionality Reduction, CUR decomposition
Unit – III	Mining – Frequent Patterns, Associations Correlations. Market Basket Analysis: A Motivating Example Frequent Itemsets, Closed Itemsets, and Association Rules Frequent Pattern Mining: A Road Map, The Apriori Algorithm: Finding Frequent Itemsets Using Candidate Generation, Generating Association Rules from Frequent Itemsets,
Unit – IV	Classification Techniques What is Classification? – Issues regarding Classification - Classification by Decision Tree Induction – Bayesian Classification – Rule Based Classification - KNN Classifiers.
Unit - V	Clustering Techniques Clusters Analysis: Types of Data In Cluster Analysis- Categorization of Major Clustering Methods: Partitioning Methods: k-Means, k-Medoids – Hierarchical Methods: BIRCH, Chameleon – Density based Methods: DBSCAN, OPTICS. Applications.

TEXTBOOK:

Data Mining: The Data Mining Guide for Beginners, Including Applications for Business, Data Mining Techniques, Concepts, and More by Herbet Jones 2020.

REFERENCE BOOKS:

Jiawei Han and Micheline Kamber : "Data Mining Concepts and Techniques", 3rd Edition,Elsevier,2012.

Joshi, Siva kumar and Yesha, Data Mining Next Generation Challenges and Future Directions, Prentice Hall of India,2007

G.K. Gupta, PHI Private limited, Introduction to Data mining with case studies, New Delhi, 2008. 2nd Edition, PHI,2011.