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

Sem	Part	Course Code	Category	Title	T/P	Hours	Credits	Int	Ext	Total
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		71BEPP - I	Professional English for Physical Science -I	4	5	25	75	100
II	III	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:	Core Course - II	**T/P**	**C**	**H/W**	
22BIT1P1	**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 22BIT3C1	Core Course V	T/P	C	H/W
	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	**CORE COURSE XII**	**T/P**	**C**	**H/W**
22BIT5C2	**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: **22BIT5P2**	**Core Course VI**	**T/P**	**C**	**H/W**	
	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 22BIT6E1	DSE	T/P	C	H/W
	(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., &amp; 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, &quot;Distributed and Cloud Computing, From Parallel Processing to the Internet of Things&quot;, 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.

Course code 22BITA1	Allied-I A	T/P	C	H/W
	FUNDAMENTALS OF COMPUTER	T	3	3
Objectives	➢ To acquire the basic concepts of computer ➢ To gain knowledge about storage devices, computer applications			
Unit -I	**Introduction to Computer**: Introduction - Digital and Analog Computers - Characteristics of Computer - History of Computer - Generations of Computer - Classification of Computer - The Computer System - Application of Computers - **The Computer System Hardware**: Introduction - Central Processing Unit - Memory Unit - Instruction Format - Instruction Set - Instruction Cycle – Microprocessor - Interconnecting the Units of a Computer - Performance of a Computer - Inside a Computer Cabinet.			
Unit-II	**Computer Memory**: Introduction - Memory Representation - Memory Hierarchy - CPU Registers - Cache Memory - Primary Memory - Secondary Memory - Access Types of Storage Devices - Magnetic Tape - Magnetic Disk - Optical Disk - Magneto-Optical Disk - Using the Computer Memory.			
Unit -III	Data Entry Devices - Source Data Entry Devices - Output Devices - I/O Port - Working of I/O System- **Interaction of User and Computer**: Introduction - Types of Software - System Software - Application Software - Software Acquisition.			
Unit -IV	**Operating System**: Introduction - Objectives of Operating System - Types of OS - Functions of OS - Process Management - Memory Management - File Management - Device Management - Protection and Security - User Interface - MS-DOS - Windows Family of OS - Brief History of Windows OS - Linux OS - **Computer Programming Fundamentals**: Introduction - Program Development Life Cycle – Algorithm - Control Structures - Flowchart - Pseudo Code - Programming Paradigms.			
Unit -V	The Internet and Internet Services : Introduction - History of Internet - Internetworking Protocol - The Internet Architecture - Managing the Internet - Connecting to Internet - Internet Connections - Internet Address - Internet Services - Uses of Internet.			
Text Book: *"Computer Fundamentals"*, Anita Goel, Pearson Education. **References:** *Computer Fundamentals* By Anita Goel, Pearon Education India ,2010.				
Outcomes	• Students will able to understand the basic concepts of computer • Students will able to learn about memory devices and computer applications.			

Course code	Allied-I A	T/P	C	H/W
22BITAP1	FUNDAMENTALS OF OPERATING SYSTEM LAB	P	2	2
Objectives	To make the students understand DOS, UNIX and WINDOWS operating system commands and effectively use the computer interacting with the OS shell.			
Cycle-I	**Disk Operating System (DOS)**			

Disk Operating System (DOS)

1. Perform the following operations using DOS commands: Change the system date, Change the System time, clear the screen and use the copy con file to create a text file.

2. Demonstrate the following using DOS commands: Change the drive to user working Drive, Display all the files from the drive, Display the Directory names, Display the file types .C, Display the files with attributes(hidden, read-only, system)

3. Create a batch file to do the following: Display the files in a directory with alphabetical order, print the current path of the directory, Display the "Welcome" message, Display the files starting with character 'd', Display the files having names with two characters and file type .C and execute the crated batch file.

4. Create batch file to do the following: Display the current working directory, Create a new directory called "Student", Change the directory to newly created directory, Create two text files namely "user1" and "user2", Rename the file "user1" to your name, Display the files with its attributes, Remove the newly created directory "Student".

5. Demonstrate the following DOS commands: Display all files with extension .txt, Create three text files, Display the content of the text files one by one, Concatenate the three text files into one called "result.txt", Rename the file "result.txt" to "NewName.txt", Display the directory files by its creation date.

6. Demonstrate the following DOS commands: Display the files from the current directory, create a new directory called "New", Copy all the .C files to the newly created directory, change to the new directory, Display all the files from the New directory, Remove the New Directory.

7. Demonstrate the following DOS commands: Display the files starting with 's' and ending with 't', Display files exactly three character in its name, Display the files with any name and extension .exe, Store all the current directory files to a file called "output.txt", Sort and display the contents of the file "output.txt".

Linux Operating System

1. Write a shell script to get the current date, time, username and current working directory.

2. Write a shell script that adds an extension ".new" to all the files in a directory.

3. Write a shell program to reverse the digits of five digit integer

4. Write shell program to find the number of characters, words and line in a given file.

5. Write a shell script to delete the lines containing a word <dd> if it appears between the 5th and 7th position?

6. Write a shell script to get the total count of the word "Linux" in all the ".txt" files

7. Write a shell script to do the following: displays present working directory, displays

	current date and time, lists files in the current directory, creates a directory called test, copies file1 to test directory, renames file1 to file2, displays contents of File2, lists files in the long format.
	Windows Operating System
	1. Change the appearance of the windows desktop with new wallpaper and Display settings.
	2. Use the control panel to change the system date and time
	3. Using the windows folder to do the following: search and display the selected files from the folder, Display the files with the extension .C, Delete all the files with the extension .BAK
	4. Do the following operations on folders and files: create a new folder, change to the new folder, create some text files on the folder, rename any one of the file to "reNamedFile", Delete the file just renamed, Remove the new folder created by you.
	5. Demonstrate the following: Create a new text file using any text editor, Display the text file on the folder, Change the file attributes to read-only and hidden, Remove the file created by you.

Reference and Textbooks:-

DOS: The Complete Reference Paperback, Kris Jamsa, 4th Edition, McGraw Hill 1993.

Linux: The Complete Reference, Sixth Edition – Illustrated, Richard Petersen,McGraw Hill, 2008.

Windows 10: The Missing Manual, 2nd Edition, David Pogue, O'Reilly Media, Inc., 2018.

Outcomes	➢ Understand the commands and services in operating systems. ➢ Develop solutions for a range of problems by writing scripts. ➢ Automation of oft-repeated operations with scripts and short cuts

Course code 22BITA2	Allied-I B	T/P	C	H/W
	DIGITAL ELECTRONICS	T	3	3
Objectives	➢ To acquire the basic knowledge of digital logic levels and application of knowledge to understand digital electronics circuits. ➢ To impart how to design Digital Circuits.			
Unit -I	**Digital Logic**: The Basic Gates-NOT, OR, AND – Universal Logic Gates - NOR, NAND – And - OR Invert Gates – Positive Negative Logic – **Data Processing Circuits**: Multiplexers – Demultiplexers – 1 to 16 Decoder – BCD To Decimal Decoders – Seven Segment Decoders.			
Unit-II	Encoders – Exclusive OR Gates – Parity Generator Checkers – Read Only Memory – Programmable Array Logic – **Number Systems and Codes**: Binary Number system – Radix Representation of Numbers - Binary to Decimal Conversion – Fixed Point Representation - Decimal to Binary Conversion – Octal Numbers – Hexadecimal Numbers – The ASCII Code – The Excess-3 Code – The Gray Code.			
Unit -III	**Arithmetic Circuits**: Binary Addition – Binary Subtraction – Unsigned Binary Numbers – Sign-Magnitude Numbers – 2's Complement Representation – 2's Complement Arithmetic – Arithmetic Building Blocks – The Adder - Subtractor – Fast Adder – Arithmetic Logic Unit – Binary Multiplication and Division.			
Unit -IV	**Clocks and Timers**: Clock Waveforms – TTL Clock – Schmitt Trigger - 555 Timer Astable – 555 Time Monostable – Monostables with Input Logic - **Flip-Flops** : RS Flip-Flops – Gated RS Flip-Flops – Edge-Triggered RS Flip-Flops - Edge-Triggered D Flip-Flops – Edge-Triggered JK Flip-Flops - Flip-Flop Timing – JK Master-Slave Flip-Flops.			
Unit -V	**Registers**: Types of Registers – Serial In-Serial Out – Serial In-Parallel Out – Parallel In-Serial Out – Parallel In-Parallel Out – Universal Shift Register – **Counters**: Asynchronous Counters - Decoding Gates – Synchronous Counters – Decade Counters – Presettable Counters - A Digital Clock.			

Text Book:

"*Digital Principles and Applications*", Donald P. Leach, Albert Paul Malvino, Goutam Saha , Eighth Edition, McGraw-Hill International Editions.

Books for Reference:

S.Salivahanan and S.Arivazahagan. "*Digital circuits and design*", Vikas publishing house Ltd., 2000.

Tocci T.I "D*igital systems: principle and applications*", sixth edition, PHI 1997.

Mano M.M, "*Digital logic and complete design*" PHI 1992.

Palmer, J.E and Periman, D.E, "*Introduction to Digital systems*"

Outcomes	• Students will able to understand the basic concepts of Digital Electronics • Students will able to design circuits and how to implement.

Course code 22BITAP2	Allied-I B	T/P	C	H/W
	DIGITAL ELECTRONICS LAB	**P**	**2**	**2**
Objectives	• To Understand the Digital Electronics Practically • To know how to solve gates and other functions.			

1. AND, OR and NOT Gate using Truth Table
2. Universality of NAND & NOR gates.
3. Verification of Boolean laws using NAND gates (Associative, Commutative & Distributive Laws)
4. Verification of Boolean laws using NOR gates (Associative, Commutative & Distributive Laws)
5. Sum of Products using NAND gates and Product of Sums using NOR Gates.
6. 4-bit binary parallel adder and Subtractor IC 7483
7. Counter using IC 7473
8. Study of RS, D, T and JK Flip-Flops with IC's.
9. Study of Encoder & Decoder.
10. Study of Multiplexer & De-Multiplexer.
11. Half and Full Adder using Simple & NAND Gates.
12. Half and Full Subtractor using Simple & NAND Gates.

Outcomes	• Students were able to solve simple gate functions. • Students were able to solve and Design circuits using IC.

Course code	Allied		T/P	C	H/W
22BITA3	**Multimedia and Its Applications**		T	3	3
Objectives	➢ This course gives an exposure to Multimedia and its applications. ➢ Students will understand the hardware and software needed to create application using creativity				
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.				

Reference and Text Books:
- ➢ 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
- ➢ Multimedia Programming: A Practical Approach- Dr. Siddhartha Bhattacharyya & Dr. Paramartha Dutta - Vikas Publishing

Outcomes	➢ Understand the concepts of Sound, Image, Animation and Video. ➢ Work with Animation tools.

Course code 22BITAP3	Allied-II A	T/P	C	H/W
	Multimedia LAB	P	2	2
	LIST OF PRACTICAL PROGRAM **Note : Use Adobe Animate Latest Software**			

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.

Course code		Allied-II B	T/P	C	H/W
22BITA4		**Open Source Technologies**	T	3	3
Objectives		➢ Learn more server side scripting. ➢ To understand Python programs with lists, tuples, sets and dictionaries.			
Unit -I		Introduction to Open sources-Need of Open Sources-Advantages of Open Sources – Application of Open Sources. 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-II		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.			
Unit -III		Function: What is a function, Define a function, Call by value and Call by reference, Recursive function, Date and Time Function. 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, Exception Handling: Understanding Exception and error, Try, catch, throw. Error tracking and debugging. Sending and receiving E-mails			
Unit -IV		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. Conditional and Looping Statements. Sequences–Lists-Methods--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 -V		Functions-Defining a Function-Calling Function – Type of Arguments –return statement - Recursive functions-Modules- 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-Object Oriented Programming-Errors and Exceptions- Handling Exceptions			
Text Book:					
PHP: The Complete Reference -Steven Holzner -McGraw Hill Education-2017					
PHP Programming -The Complete Guide - Code Academy-2022					
Python Programming- Ch Satyanarayana, M Radhika Mani, B N Jagadesh -Universities Press.					
Python Programming Using Problem Solving Approach - Reema Thareja-Oxford University Press.					
Outcomes		• Understand process of executing a PHP-based script on a webserver. • Explain the various operations for manipulating Tuples, Sets, Dictionaries and use List to perform simple and sorting operations.			

Course code 22BITAP4	Allied	T/P	C	H/W
	Open Source Lab	P	2	2

1. Write a PHP Program to create a page using functions for comparing three integers and print the largest number.
2. Write a PHP Program to calculate the factorial of a number (non-negative integer). The function accept the number as an argument.
3. Write a PHP Program to convert Number into Word.
4. Write a PHP Program to check whether the given number is prime or not.
5. Write a PHP Program that checks whether a passed string is palindrome or not.
6. Write a PHP Program to prepare the EB Bill using File Handling.
7. Write a PHP program to check the email-id is valid or not using regular expression
8. Write a Python Program for checking whether the given number is an odd or even number.
9. Write a Python Program to check leap year.
10. Write a Python Program to Check Prime Number.
11. Write a Python program to check whether the given no is Armstrong or not.
12. Write a Python program to generate list of Fibonacci number up to n Fibonacci numbers.
13. Write a python program to create, append and remove lists in python.
14. Write a program to demonstrate working with tuples in python.
15. Write a program to demonstrate working with dictionaries in python.
16. Write a python program to define a module to find Factorial Numbers and import the module to another program.
17. Write a Python program to find the given string is Palindrome or Not.
18. Write a python program by using exception handling mechanism.

Course Code	Allied	T/P	C	H/W
22BCEA1	**MS Office**	T	3	3
Objectives	To understand the basic concepts of Windows operating system. To enable the students in crafting professional word documents, excel spread sheets, power point presentations using the Microsoft suite of office tools.			
Unit –I	**MS Windows** – Concepts – Features – Windows Structure – Desktop – Taskbar – Start Menu– My Computer My Pictures – My music – Working with Recycle Bin – Managing files and folders: exploring hard disk – creating new folder, searching files and folders – disk –navigating between folders – coping and moving files and folder from one drive to another –Windows Accessories – calculator – Notepad – Paint – Word pad – Character Map: Windows Explorer: exploring hard disk, coping and moving files and folder from one drive to another Entertainment, Installation of Hardware and Software, Using scanner, system tools, communication, sharing information between computers.			
Unit – II	**MS Word:** Introduction to MS Office – Features & area of use – Starting Word – Parts of Word Window – Mouse operations – Keyboard operations – Menus & Commands – Toolbars and their icons – Shortcut Menus – Wizards and Templates – Creating a New Document – Different Page Views and layouts – Applying various Text Enhancements; Working with – Styles, Text Attributes; Paragraph and Page Formatting; Text Editing using various features; Bullets, Numbering, Autoformatting, Printing & various print options **Advanced Features:** Spell Check, Thesaurus, Find & Replace; Headers & Footers; Inserting– Page Numbers, Pictures, Files, Autotexts, Symbols etc.; Working with Columns, Tabs & Indents; Creation & Working with Tables including conversion to and from text; Margins & Space management in Document; Mail Merge, Envelops & Mailing Labels.			
Unit – III	**MS Excel:** Introduction – area of use – Concepts of Workbook & Worksheets: Using Wizards; Various Data Types – Using different features with Data, Cell and Texts: Selecting cells – Selecting cells with mouse – Entering and Editing text – Entering numbers, formulas and dates – Text alignment – Inserting, Removing & Resizing of Columns & Rows; Working with Data & Ranges; Different Views of Worksheets; Column Freezing, Labels, Hiding, Splitting etc.; Use of Formulas, Calculations & Functions; Cell Formatting including Borders & Shading; Working with Different Chart Types; Printing of Workbook & Worksheets with various options.			
Unit – IV	**MS PowerPoint:** Introduction & area of use – Creating a New Presentation; Opening – Saving – Closing – Working with Presentation Using Wizards; Slides & its different views: Creating, Inserting, Deleting and Copying of Slides; Menus: File – Edit – View – Insert – Format – Tools – Slide Show – Window – Help – Working with Notes, Handouts, Columns & Lists; Adding Graphics, Sounds and Movies to a Slide; Printing Presentations, Notes, Handouts with print options.			
Unit – V	**MS Access:** Introduction – Parts of an Access Window – Starting MS Access – Database Creation – Table Creation using Table Wizard – Table Creation using Design view – Saving Database – Query – Form – Reports			
Books for Reference:				
Windows XP Complete Reference. BPB Publications				
MS Office XP complete BPB publication				
MS Office 2000 by Sanjay Saxena, Vikas publishing house pvt Ltd.				
MS Windows XP Home edition complete, BPB Publications				
I.T. Tools and Applications, A. Mansoor, Pragya Publications				
Outcomes	➢ Students will able to understand the concept of Windows operating system ➢ Students will able to work with office automation tools.			

Course Code	Allied	T/P	C	H/W
22BCEAP1	MS-Office -Lab	P	2	2

Objectives	To understand the concepts of office automation tools To know about formatting the text using tools and how to access the database.
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

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

"Introduction to Computers with MS-Office 2000" 2001, Alexis Leon & Mathews Leon, TATA McGraw Hill Publishing Company Limited, New Delhi.

Book for Reference:

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

| **Outcomes:** | ➢ Students will able to understand the Word, Power Point concepts |
| | ➢ Students will able to work with database using Access, Excel. |

Course Code	Allied	T/P	C	H/W
22BCEA2	**DIGITAL PRINCIPLES & COMPUTER ORGANIZATION**	T	3	3

Objectives	➢ To understand the basic concepts of Digital electronics ➢ To enable the students in knowing the basic concepts of gates, electronic circuits and their working principles.
Unit –I	Number Systems and Codes: Binary Number system – Binary to decimal –decimal to binary – hexa decimal – ASCII code – Excess-3 Code – Gray code. Digital Logic: The Basic Gates – NOT, OR, AND - Universal Logic Gates – NOR, NAND.
Unit – II	Combinatorial Logic Circuits: Boolean Laws and Theorems. - Sum of Products method - Truth table to Karnaugh Map – Pairs, Quads, Octets – Don't Care Conditions - Product-of sums method -Product-of sums Simplifications. Data Processing Circuits: Multiplexers – Demultiplexers-1-of-16 Decoder – BDC- todecimal Decoders – Seven-segment Decoders – Encoders – Exclusive-OR Gates- Parity Generators and Checkers.
Unit – III	Arithmetic Circuits: Binary Addition- Binary Subtraction – 2'S Complement Representation - 2'S Complement Arithmetic – Arithmetic Building Blocks.
Unit – IV	Basic Computer organization and Design: Instruction codes - stored program organization - Computer registers and common bus system - Computer instructions - Timing and control - Instruction cycle: Fetch and Decode - Register reference instructions. Micro programmed Control: Control memory organization - Address sequencing, micro instruction format and symbolic microinstructions - symbolic micro-program - binary microprogram.
Unit – V	Central Processing Unit : General register organization - stack organization – instruction formats - addressing modes - Data transfer and manipulation - Program control. CISC and RISC - Parallel processing - Pipeline- general consideration. Input-output organization: Peripheral devices - I/O interface - Memory organization: Memory hierarchy - Main memory - Auxiliary memory.

Text Book:

  Digital Principles and Applications – Donald P Leach, Albert Paul Malvino, GoutamSaha, 8th edition , McGraw-Hill Education, 3rd reprint 2015. 2.

  Computer System Architecture, M. Morris Mano, Pearson Education, 3rd edition.,2007

UNIT I	Chapters 5: (5.1 to 5.9) and 2: (2.1 to 2.3)	Text Book 1
UNIT II	Chapters 3: (3.1 to 3.8) and 4: (4.1 to 4.7)	Text Book 1
UNIT III	Chapters 6: (6.1 to 6.8)	Text Book 1
UNIT IV	Chapters 5 (5.1 to 5.5) and 7 (7.1 to 7.3)	Text Book 2
UNIT V	Chapters 8 (8.1 to 8.8), 9 (9.1 to 9.2),	Text Book 2
	11 (11.1 to 11.5) and 12(12.1 to 12.3)	

Outcomes:	➢ Students will able to understand the basic concepts of Digital Electronics ➢ Students will able to design circuits and how to implement.

Course code	Allied	T/P	C	H/W
22BCEAP2		**P**	**2**	**2**
	DIGITAL PRINCIPLES & COMPUTER ORGANIZATION LAB			
Objectives	➢ To Understand the Digital Electronics Practically ➢ To know how to solve gates and other functions.			

1. AND, OR and NOT Gate using Truth Table
2. Universality of NAND & NOR gates.
3. Verification of Boolean laws using NAND gates (Associative, Commutative & Distributive Laws)
4. Verify De-Morgans theorem
5. Verification of Boolean laws using NOR gates (Associative, Commutative & Distributive Laws)
6. Sum of Products using NAND gates and Product of Sums using NOR Gates.
7. 4-bit binary parallel adder and Subtractor IC 7483
8. Counter using IC 7473
9. Study of RS, D, T and JK Flip-Flops with IC's.
10. Study of Encoder & Decoder.
11. Study of Multiplexer & De-Multiplexer.
12. Half and Full Adder using Simple & NAND Gates.
13. Half and Full Subtractor using Simple & NAND Gates.

Outcomes	➢ Students were able to solve simple gate functions. ➢ Students were able to solve and Design circuits using IC.

Course Code	Allied		T/P	C	H/W
22BCEA3			T	3	3
	Operating System				
Objectives	➢ Understand the basic components of Operating Systems and their interactions. ➢ Understand the basics of Process Management, Memory Management , Deadlock Management and File Systems.				
Unit –I	Introduction: What is an operating system? History of operating system, computer hardware, different operating systems, operating system concepts, system calls, operating system structure. Processes and Threads: Processes, threads, interprocess communication, scheduling, IPC problems.				
Unit – II	Memory Management: No memory abstraction, memory abstraction: address spaces, virtual memory, page replacement algorithms, design issues for paging systems, implementation issues, segmentation. File Systems: Files, directories, file system implementation, file-system management and optimization, MS-DOS file system, UNIX / Linux file system, CD ROM file system.				
Unit – III	Deadlocks: Resources, introduction to deadlocks, the ostrich algorithm, deadlock detection and recovery, deadlock avoidance, deadlock prevention, issues. Case Study: Overview of Linux, Linux Goals , Interfaces to Linux ,The Shell , Linux Utility Programs , Kernel Structure. Android and Google - History of Android - Design Goals -Android Architecture - Linux Extensions -Android Applications.History of Windows-MS-DOS-based Windows,NT-based Windows , Modern Windows.				
Unit – IV	Linux :Basic features, advantages, installing requirement, basic architecture of Linux system. Commands for files and directories cd, cp, mv, rm, mkdir,more, less, creating and viewing files, using cat, file comparisons, View files, disk related commands, checking disk free spaces, Essential linux commands.				
Unit – V	Understanding shells, Processes in linux – scheduling of processes at command, batch commands, kill, ps, who,sleep, Printing commands, grep, fgrep, find, sort,cal, banner, touch, file related commands – ws, sat, cut, grep, dd, etc. Mathematical commands – bc, expr, factor,units. Vi, joe, vim editor. Shell programming: Shell programming basic, various types of shell, shell programming in bash, conditional and looping statements, case statements, parameter passing and arguments, shell variables, shell keywords, use of grep in shell, awk programming.				
Books for Reference:					
Modern Operating Systems-Andrew S. Tanenbaum,Herbert Bos- 4th Edition-Pearson Prentice Hall					
Operating Systems Concepts-Abraham Silberschatz-Peter Baer Galvin- Greg Gagne-8th Edition					
Operating Systems Internals And Design Principles- William Stallings-Eighth Edition					
Linux Command Line and Shell Scripting Bible-Christine Bresnahan and Richard BLUM					
Outcomes	➢ Explain the structure and functions of operating systems along with their components, types and working. ➢ Elaborate the system calls for process management and file management. ➢ Make use of appropriate Linux commands.				

Course Code	Allied	T/P	C	H/W
22BCEAP3	**Operating System Lab**	**P**	**2**	**2**

1.Linux commands: Working with Directories:

a pwd, cd, absolute and relative paths, ls, mkdir, rmdir

b file, touch, rm, cp. mv, rename, head, tail, cat, tac, more, less, strings, chmod

2.Linux commands: Working with files:

a ps, top, kill, pkill, bg, fg

b grep, locate, find, locate

c date, cal, uptime, w, whoami, finger, uname, man, df, du, free, whereis, which

d Compression: tar, gzip

3.Windows (DOS) Commands

a Date, time, prompt, md, cd, rd, path.

b Chkdsk, copy, xcopy, format, fidsk, cls, defrag, del, move.

c Diskcomp, diskcopy, diskpart, doskey, echo

d Edit, fc, find, rename, set, type, ver

4.Write a Shell script that displays list of all the files in the current directory to which the user has read, write and execute permissions.?

5.Write a shell script that takes argument and reports on whether it is directory, a file, or something else.

6.Write a Shell script to list all of the directory files in a directory.

7.Write a awk script to find the number of characters, words and lines in a file?

8.Write a shell script to perform the following string operations:

(a) To extract a sub-string from a given string

(b) To find the length of a given string

9.Write a shell script that accepts a file name, starting and ending line numbers as arguments and displays all the lines between the given line numbers.

10.Write a shell script that accepts one or more file name as arguments and converts all of them to uppercase, provided they exist in the current directory.

11.Write a Shell script to find factorial of a given integer.

12.Write a Shell script to find biggest no from two nos.

13. Write a Shell script to find the give no is odd or even.

14.Installation of Linux operating system on virtual machine.

15.Installation of Windows operating system.

Course code	Allied	T/P	C	H/W
22BCEA4	**Internet and Web Design**	T	2	2
Objectives	➢ To learn more about markup languages ➢ To understand various web services			
Unit -I	Internet and the World Wide Web: What is Internet? Introduction to internet and its applications, E-mail, telnet, FTP, e-commerce, video conferencing, e-business. Internet service providers, domain name server, internet address, World Wide Web and its evolution, uniform resource locator (URL), browsers, search engine, web server, HTTP protocol, Routers, Gateways, Bridge, Switches, Subnet and Intranet.			
Unit-II	HTML: Introduction, Why HTML5? Formatting text by using tags, using lists and backgrounds, Creating hyperlinks and anchors. Style sheets, CSS formatting text using style sheets, formatting paragraphs using style sheets. Creating navigational aids: planning site organization, creating text based navigation bar, creating graphics based navigation bar, creating graphical navigation bar, creating image map, redirecting to another URL, creating division based layouts: HTML5 semantic tags, creating divisions, creating HTML5 semantic layout, positioning and formatting divisions.			
Unit -III	Creating tables: 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: applying table borders, applying background and foreground fills, changing cell padding, spacing and alignment, creating user forms: creating basic form, using check boxes and option buttons, creating lists, additional input types in HTML5, Incorporating sound and video: audio and video in HTML5, HTML multimedia basics, embedding video clips, incorporating audio on web page.			
Unit -IV	Java Script: Introduction, Client-Side JavaScript, Server-Side JavaScript, JavaScript Objects, JavaScript Security, Operators , Conditional and Looping Statements-Break, continue, User Defined Function. Array, Date, Math, Number, Object, String, regExp.			
Unit =V	Document and its associated objects: document, Link, Area, Anchor, Image, Applet, Layer . Events and Event Handlers : General Information about Events,Defining Event Handlers, event, onAbort, onBlur, onChange, onClick,onDblClick, onDragDrop, onError, onFocus, onKeyDown,onKeyPress, onKeyUp, onLoad, onMouseDown, onMouseMove,onMouseOut, onMouseOver, onMouseUp, onMove, onReset,onResize, onSelect, onSubmit, onUnload.			
Reference and Textbooks:				
	Web Design The Complete Reference-Thomas Powell -Tata McGraw Hill			
	HTML5 Step by Step -Faithe Wempen-Microsoft Press			
	HTML 5 Black Book-2nd Edition - Dreamtech Press -2016			
	Head First HTML 5 Programming-Eric Freeman-O'Reilly			
	Web Technologies--A Computer Science Perspective-Jeffrey C. Jackson- Pearson Education.			
Outcomes	➢ Understand web essential concepts and to design simple web pages usingmarkup language. ➢ Understand style properties and able to build dynamic web pages using scripting language.			

Course Code	Allied	T/P	C	H/W
22BCEAP4	**Web Designing Lab**	**P**	**2**	**2**

1. Design a web page using different text formatting tags.

2. Design a web page with links to different pages and allow navigation between web pages.

3. Design a web page demonstrating all Style sheet types .

4. Design a web page with Image maps.

5. Design a web page demonstrating different semantics.

6. Design a web page with different tables.

7. Design a web page with a form that uses all types of input controls.

8. Design a web page embedding with multimedia features.

9. Write a JavaScript program to find the factorial value.

10. Write a JavaScript program to print the Fibonacci series.

11. Design a form and validate all the controls placed on the form using Java Script.

12. Write a JavaScript program to display all the prime numbers between 1 and 100.

13. Write a JavaScript program to accept a number from the user and display the sum of its digits.

14. Write a program in JavaScript to accept a sentence from the user and display the number of words in it. (Do not use split () function).

15. Write a java script program to design simple calculator.

Course code	Allied Theory - IA	T/P	C	H/W
22BCAA1	DATA STRUCTURES AND C	T	3	3

Objectives	➢ To understand basic concepts of C ➢ To develop C programs using arrays, functions. ➢ To develop modular applications using pointers and structures ➢ To do file handling in C
Unit -I	**C PROGRAMMING BASICS:** Structure of a C program – compilation and linking processes – Constants, Variables – Data Types – Expressions using operators in C – Managing Input and Output operations – Decision Making and Branching – Looping statements. Arrays – Initialization – Declaration – One dimensional and Two-dimensional arrays. Strings- String operations – String Arrays. Simple programs- sorting- searching – matrix operations.
Unit-II	**FUNCTIONS, POINTERS, STRUCTURES AND UNIONS** Functions – Pass by value – Pass by reference – Recursion – Pointers – Definition – Initialization – Pointers arithmetic. Structures–Definition- Structure within a structure – Union — Storage classes, Pre-processor directives.
Unit-III	**LINEAR DATA STRUCTURES** Arrays and its representations – Stacks and Queues – Linked lists – Linked list-based implementation of Stacks and Queues – Evaluation of Expressions – Linked list based polynomial addition.
Unit-IV	**NON-LINEAR DATA STRUCTURES** Trees – Binary Trees – Binary tree representation and traversals –Binary Search Trees – Applications of trees. Graph and its representations – Graph Traversals.
Unit-V	**SEARCHING AND SORTING ALGORITHMS** Linear Search – Binary Search. Bubble Sort– Merge sort – Quick sort – Hash tables – Overflow handling.

Reema Thareja, *Introduction to C programming* from Oxford University press

Balagurusamy E, *Computing Fundamentals & C Programming*, Tata McGraw-Hill, Second Reprint 2008, ISBN 978-0-07-066909-3.

Ashok N Kamthane: *Programming with ANSI and Turbo C,* Pearson Edition Publ, 2002.

Horowitz, E., Sahni, S., & Anderson Freed, S. (2007). *Fundamentals of Data Structures in C* (2nd ed.). Universities Press.

Tanenbaum, A.S., Langsam, Y., & Augenstein, M.J. (2019). *Data Structures using C*.PHI/Pearson Education.

Reference Books:

Paul Deitel and Harvey Deitel, "*C How to Program with an Introduction to C++",* Eighth edition, Pearson Education, 2018.

Yashwant Kanetkar, *Let us C*, 17th Edition, BPB Publications, 2020.

Pradip Dey, Manas Ghosh, "*Computer Fundamentals and Programming in C*", Second Edition, Oxford University Press, 2013.

Anita Goel and Ajay Mittal, "*Computer Fundamentals and Programming in C*", 1st Edition,

	Pearson Education, 2013.
	Gilberg, R. F., & Forouzan, B.A. (2005). *Data Structures: A Pseudocode Approach with C* (2nd ed.). Cengage Learning.
Outcomes	➢ Understand programming paradigms in C ➢ Understand and apply C programming concepts ➢ Implement linear and non-linear data structure operations using C ➢ Suggest appropriate linear / non-linear data structure for any given data set. ➢ Apply hashing concepts for a given problem ➢ Modify or suggest new data structure for an application

Course code	Allied Practical - IA		T/P	C	H/W
22BCAAP1	**Data Structures using C Lab**		**P**	**2**	**2**
Objectives	➢ To cover various concepts of C programming language, searching and sorting algorithms ➢ It provides an understanding of data structures such as stacks and queues.				
Lab Programs	1. Find out the given number is perfect number or not using C program. 2. Write a C program to check whether the given number is Armstrong or not. 3. Write a C program to find the sum of individual digits of a positive integer. 4. Write a C program to print the Fibonacci series. 5. Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user. 6. Write a C Program to find the grade of a student using else if ladder 7. Write a program to do arithmetic operations using Switch case 8. Write a program to sum the first hundred natural numbers using while, do while and For loop. 9. Write a C program to find both the largest and smallest number in a list of integers using function. 10. Write a C Program to add, subtract and multiply two matrices 11. Write a C Program to sort the numbers using function. 12. Write a program to perform various string operations. 13. Write a C Program to generate student mark list using array of structures 14. Write a program that uses functions to perform the following operations on singly linked list.: i) Creation ii) Insertion iii) Deletion iv) Traversal 15. Write a program that implement stack (its operations) using i) Arrays ii) Pointers 16. Write a program that implement Queue (its operations) using i) Arrays ii) Pointers 17. Write a program that implements the following sorting methods to sort a given list of integers in ascending order: i) Bubble sort ii) Insertion sort 18. Write a program that use both recursive and non-recursive functions to perform the following searching operations for a Key value in a given list of integers: i) Linear search ii) Binary search 19. Write a program to implement the tree traversal methods. Write a program to implement the graph traversal methods.				

Course code	Allied Theory - IB	T/P	Credits	H/W
22BCAA2	**Desktop Publishing**	T	3	3

Objectives	➢ Students will learn of basics of Corel Draw drawing and coloring. ➢ Students will learn to working with Bitmap commands. ➢ Students will understand how to work with Photoshop, layers, Type and filters.
Unit -I	**Getting started with Corel Draw:-** Introduction to Corel Draw, Features of Corel Draw, Corel Draw Interface Tool Box, Moving from Adobe Illustrator to Corel Draw. **Common Tasks Drawing and Coloring:-** Introduction, Selecting Objects, Creating Basic Shapes, Reshaping Objects, Organizing objects, Applying Color Fills and Outlines
Unit-II	**Mastering with Text:-** Introduction Text Tool, Artistic and Paragraph Text, Formatting Text, Embedding Objects into text, Wrapping Text around Object Linking, Text to Objects. **Applying Effects**:- Introduction, Power of Blends, Distortion Contour Effects, Envelopes, Lens effects, Transparency, Creating Depth Effects, Power Clips.
Unit-III	**Working with Bitmap Commands**:- Introduction, Working with Bitmaps, Editing Bitmaps, Applying effects on Bitmaps Printing, Converting Objects to Bitmap, 3D Effect, Art Effect, Blur Effect, Color Transformation Effect, Contour Effect, Creative Effect, Distort Effect.
Unit-IV	**Getting Started with Photoshop:-** Exploring the Toolbox, The New CS4 Applications, Bar & the Options Bar, Exploring Panels & Menus, Creating & Viewing a New, Document, Customizing the Interface, Setting Preferences. **Introduction**:- Working with images, Making Selections, Resizing & Cropping Images.
Unit-V	**Getting Started with Layers**:– Layers Palette, Working with Layers, Hiding/Showing Layers, Flattening Images, Working with Adjustment Layers, Layer Effects, Painting in Photoshop, Photo Retouching. **Type:-** Creating Type, Type Tool, Moving the Text, Creating Paragraph Type, Resizing a bounding box, Changing the Type Settings, Converting Point Type to Paragraph Type, Converting Type Layers to Standard Layers, Type Masking. **Filters:-** The Filter Menu, Filter Gallery, Extract Filter, Liquefy Filter, Vanishing Point Filter, Artistic Filters, Blur Filters, Brush Stroke Filters, Distort Filters, Noise Filters, Pixelate.

Reference and Textbooks:

Text Books:

Soumya Ranjan Behera (2014). *Smart DTP Course*. BPB Publications

Xenakis, D., & Levisay, B. (2001). *Photoshop 6 In Depth*. New Delhi: DreamTech Press.

Book for Reference:

Bittu Kumar (2015). *Desktop Publishing.* V & S Publishers.

Outcomes	On Completion of this Course, the students can able to ➢ Draw, edit, format and develop graphics using CorelDRWA application software. ➢ Working with text and applying the effects using Corel Draw. ➢ Working with Bitmap Commands and 3D effects. ➢ Getting Started with Photoshop and working with images. ➢ Create, format, edit and develop images using Adobe Photoshop software.

Course code	Allied Practical - IB	T/P	Credits	H/W
22BCAAP2	**Desktop Publishing Lab**	P	2	2
Objectives	➤ The course has been designed for the participants intending to build their career in desktop publishing.			
Lab Programs	**Corel DRAW** 1. Designing a Visiting Card in Corel Draw. 2. Designing a Notice in Corel Draw. 3. Designing a Certificate in Corel Draw. 4. Designing an Advertisement in Corel Draw. 5. Designing a house in Corel Draw using various Tools with a Scenery Back ground. 6. Create a design using freehand tool and its flyouts. 7. Apply some effects to the design created, using interactive blend tool. **Photo Shop** 1. Converting an Image in Gray scale into Color in Photo Shop. 2. Designing a visiting Card in Photo Shop. 3. Changing the background of an image in Photoshop. 4. Creating Wall poster using Photoshop. 5. Creating a Greeting Card in Photo shop. 6. Create multiple copies of Passport Size Photo.			
Outcomes	On Completion of this Course, the students can able to ➤ Effectively & efficiently produce formatted text and graphics.			

Course code	Allied Theory - IIA	T/P	C	H/W
22BCAA3	**Discrete Mathematics**	**T**	**3**	**3**
Objectives	➢ To understand the basic concepts of Discrete Mathematical Structure ➢ To gain knowledge about mathematical model, expression to solve real time problems			
Unit -I	**Fundamental Structures:-** Set Theory, Sets, Venn Diagrams, Complements, Cartesian Products, Power Sets, Finite and Infinite Sets. **Functions:-** Surjections, Injections, Inverses, Composition. **Relations:-** Reflexivity, Symmetry, Transitivity, Equivalence Relations.			
Unit-II	**Logic:-** TF Statements, Connective, Disjunction, Negation, Conditional Statements, Bi Conditional Statements, Atomic and Compound Statements, Well-formed Formulae, The Truth Table, Tautology, Tautological Implication Formulae with Distinct Truth Tables.			
Unit-III	**Normal Forms:-** Principles of Normal Forms, Theory of Inference, Open Statements, Quantifiers, Valid Formulae and Equivalence, Theory of Inference for Predicate Calculus.			
Unit-IV	**Graph Theory:-** Definition, Degrees, Sub Graph, Isomorphism, Complete Graph, Bipartite Graph, Paths, Cycles, Connectedness.			
Unit-V	**Trees:** Spanning Tree – Kruskal's Algorithm, Prim's Algorithm, Dijkstra's Algorithm, Cut Set and Cut Vertices, Eulerian-Hamiltonian Graph. **Boolean Algebra:-** Boolean Algebra, Boolean Functions.			

Reference and Textbooks:

Jean-Paul Trembly & Manohar, R. (2017). *Discrete Mathematics Structures with Applications to Computer Science.* Tata Mc Graw-Hill.

Venkataraman, M.K., Sridharan, N., & Chandrasekaran, N. (2009). *Discrete Mathematics.* National Publishing co.

Outcomes	➢ Students will able to understand the logical statements. ➢ Students will able to work with mathematical problems.

Course code	Allied Practical - IIA	T/P	C	H/W
22BCAAP3	**Excel & C++ Lab for Discrete Mathematics**	**P**	**2**	**2**

Objectives	➢ To impart the knowledge about solving Logical problems ➢ To make Students to learn about implementing mathematical structures.

1. Create a truth table using spreadsheet for AND, OR and NOT functions.
2. Create a truth table using spreadsheet for XOR of two variables, using your spreadsheet's AND, OR, and NOT functions to calculate the truth value.
3. Create a truth table, using your spreadsheet's logical functions, for the expression:
   $$((P \wedge 7Q) \vee (7P \wedge Q).$$
4. Create a truth table using your spreadsheet for demorgan's theorem.
5. Create a truth table using spreadsheet to check whether the given expression is tautology or not
   $$(P \wedge Q) \vee (7P \wedge Q) \vee (P \wedge 7Q) \vee (7P \wedge 7Q)$$
6. Write a C++ Program to implement various set operations (union, intersection, difference, symmetric difference).
7. Write a C++ Program to find power set of a set with size n.
8. Write a C++ program to perform following operation: a) is the given relation is reflexive? b) is the given relation is symmetric? c) is the given relation is Transitive?
9. Write C++ Program to implement Prim's Algorithm.
10. Write a C++ Program to check whether a given graph is bipartite or not.

Reference and Textbooks:

Venkataraman, M.K., Sridharan, N., & Chandrasekaran, N. *Discrete Mathematics.* National Publishing co.

Jean-Paul Trembly, & Manohar, R. (2017). *Discrete Mathematics Structures with Applications to Computer Science*. Tata Mc Graw-Hill.

Outcomes	➢ Students will able to understand the logical statements ➢ Students will able to work with mathematical problems..

Course code	Allied Theory - IIB	T/P	C	H/W
22BCAA4	**Computer-Oriented Statistical Methods**	T	3	3
Objectives	➢ Provide knowledge of various significant and fundamental concepts to inculcate in the students an adequate understanding of the application of Statistical Methods. ➢ Obtain an intuitive and working understanding of Statistical analysis.			
Unit -I	**Measures of Central Tendency:-** Arithmetic mean, The Arithmetic Mean Computed from Grouped Data-Median, Mode, Empirical Relation between the Mean, Median, and Mode, Geometric Mean, Harmonic Mean, The Relation between the Arithmetic, Geometric and Harmonic Means, Quartiles, Deciles, and Percentiles, Software, and Measures of Central Tendency. **Measures of Dispersion:-** Dispersion or Variation, Range, Mean Deviation, Semi-Interquartile Range, The 10-90 Percentile Range, Standard Deviation-properties and short methods, The Variance, Charlie's Check, Sheppard's Correction for Variance, Empirical Relations between Measures of Dispersion, Absolute, and Relative Dispersion; Coefficient of Variation, Standardized Variable; Standard Scores, Software, and Measures of Dispersion.			
Unit-II	**Probability:-** Definitions of Probability, Conditional Probability; Independent and Dependent Events, Mutually Exclusive and Events, Probability Distributions, Mathematical Expectation. Sample Space, Events, Counting sample points, probability of events, additive rules, conditional probability, Bayes Theorem. **Sampling Theory:-** Sampling Theory, Random Samples and Random Numbers Sampling with and Without Replacement, Sampling Distributions, Sampling Distribution of Means, Sampling Distribution of Proportions, Sampling Distributions of Differences and Sums, Standard Errors, Software Demonstration of Elementary Sampling Theory.			
Unit-III	**Estimation Theory:-** Estimation of Parameters, Unbiased Estimates, Efficient Estimates, Point Estimates, and Interval Estimates; Their Reliability, Confidence-Interval Estimates of Population Parameters, Probable Error. **Mathematical Expectation:-** Mean of a Random Variable, Variance and covariance of a random variable, Chebyshev's theorem. **Decision Theory:-** Statistical Hypotheses, Tests of Hypotheses and Significance, Type I and Type II Errors, Level of Significance, Normal Distributions, Two-Tailed and One-Tailed Tests, Special Tests, Operating-Characteristic Curves; the Power of a Test, p-Values for Hypotheses Tests.			
Unit-IV	**Discrete probability distribution function:-** Introduction and motivation, binomial and multinomial distribution, Poisson distribution. **Continuous probability distribution function:-** Small Samples, Student's t Distribution, Confidence Intervals, Tests of Hypotheses and Significance, The Chi-Square Distribution, Confidence Intervals for Sigma, Degrees of Freedom, The F			

	Distribution. Observed and Theoretical Frequencies, Definition of chi-square, Significance Tests, The Chi-Square Test for Goodness of Fit, Contingency Tables.
Unit-V	**Simple Linear Regression and correlation:-** Introduction to Linear Regression, the Simple Linear Regression Model, Least Squares and the Fitted Model, Properties of the Least-Squares Estimators, Inference Concerning the Regression Coefficients, Predictions, Choice of a Regression Model. **Multiple linear regression and certain nonlinear regression models:** Introduction, Estimating the Coefficients, Linear Regression Models using Matrices, Properties of the Least Square Estimators, Inferences in Multiple Linear Regression.

Reference and Textbooks:

Goyal, M. (2008). *Computer-based Numerical & Statistical Techniques*. Laxmi Publications, Ltd.

Gupta, S. C., & Kapoor, V. K. (2020). *Fundamentals of Mathematical*. Sultan Chand Statistics & Sons.

Walpole, R. E., Myers, R. H., Myers, S. L., & Ye, K. (1993). *Probability and Statistics for Engineers and Scientists* (Vol. 5). New York: Macmillan.

Outcomes	➢ Understanding and learning statistical methods for computer analysis.
	➢ Learning of application of Statistical methods.

Course code	Allied Practical - IIB	T/P	C	H/W
22BCAAP4	**Computer-Oriented Statistical Methods Lab**	P	2	2
Objectives	➢ To introduce the student to basic statistical methods for the analysis of significance differences in data using C++ programming Language through Excel. ➢ To introduce various statistical method such as regression, Skewness, etc.			

1. Using C++ execute the basic commands, array, list, and frames.
2. Create a Matrix using C++ and Perform the operations addition, inverse, transpose, and multiplication operations.
3. Using C++ Execute the statistical functions: mean, median, mode, quartiles, range, interquartile range histogram.
4. Using C++ Execute the statistical functions: Standard Deviation,
5. Using C++ import the data from Excel / .CSV file and calculate the standard deviation, variance, and covariance.
6. Using C++ import the data from Excel / .CSV file and draw the skewness.
7. Using C++Import the data from Excel / .CSV and perform the hypothetical testing.
8. Using C++ Import the data from Excel / .CSV and perform the Chi-squared Test.
9. Using C++ perform the binomial and normal distribution on the data.
10. Perform the Linear Regression using C++.
11. Compute the Least squares means using C++.
12. Compute the Multi Regression using C++.

Reference and Textbooks:

Goyal, M. (2008). *Computer-based Numerical & Statistical Techniques*. Laxmi Publications, Ltd.

Gupta, S. C., & Kapoor, V. K. (2020). *Fundamentals of Mathematical*. Sultan Chand statistics & Sons.

Walpole, R. E., Myers, R. H., Myers, S. L., & Ye, K. (1993). *Probability and Statistics for Engineers and Scientists* (Vol. 5). New York: Mac-millan.

Outcomes	➢ Students will able to understand statistical methods for computer analysis. ➢ Students will able to programming with application of Statistical methods.

Course code: 22BSOA1	Allied- IA	T/P	C	H/W
	Office Automation	T	3	3

Objectives	➢ To learn the office software suite and do basic operations on documents ➢ To learn formatting features of Word package and design page layout, tables and news columns ➢ To learn the Excel package and create worksheets, workbooks, formulas to fill the data automatically, draw charts from data and perform what-if analysis. ➢ To learn Access package and design database elements Table, Query, Form, Reports and manipulate them. ➢ To learn powerpoint package and make presentation slides with various layouts, formats and animations.
Unit -I	MS Word Exploring Word 2007: Working in the Word Environment – Opening, Moving Around in, and closing Document – Creating and Saving A Document – Previewing and Printing Document – Editing and Proofreading Documents: Making Changes to document – Inserting Saved Text – Finding the Most Appropriate Word – Reorganizing a Document Outline – Finding and Replacing Text – Correcting spelling and Grammatical errors – Finalizing Document.
Unit-II	MS Word Changing the Look of Text: Quickly Formatting Text and Paragraphs – Manually changing the look of characters – Manually changing the look of paragraphs – Creating and modifying Lists-Presenting Information in Columns and Tables : Presenting Information in Columns – Creating Tabular List – Presenting Information in a Table – Formatting Table Information – Performing Calculations in a Table- Using a Table to control Page Layout.
Unit -III	MS Excel Setting Up a Workbook : Creating Workbooks – Modifying Workbooks - Modifying Worksheets – Working with Data and Data Tables : Entering and Revising Data – Moving Data within a Workbook- Finding and Replacing Data – Correcting and Expanding Upon Worksheet Data – Defining a Table – Performing Calculations on Data : Naming Groups of Data – Creating Formulas to Calculate Values – Summarizing Data that meets Specific Conditions – Finding and Correcting Errors in Calculations- Changing Document Appearance.
Unit- IV	MS-Access: Introduction – Parts of an Window: - Creating a New Data Base – Table Wizard – Renaming – Saving the Database – Relationships – Query – Form – Reports – Exiting MS-Access.
Unit- V	MS PowerPoint Starting a New Presentation – Working with Slide Text : Entering Text – Editing Text – Adding and Manipulating Text Boxes –Correcting and Sizing text – Checking Spelling – Finding and replacing text and fonts – Changing the size, Alignment, Spacing – Adjusting the Slide Layout, Order and Look : Changing the Layout of a slide – Rearranging Slides in a Presentation – Applying a theme -Switching to a Different Color Scheme – Adding Shading and texture to the background of a slide – Delivering a Presentation Electronically.

Text Book:
> Joyce Cox and Team, 2009 *Step by Step 2007 Microsoft Office System*,PHI learning Private ltd, New Delhi.

Reference Book:
> Sanjay Saxena, 2006 *MS-Office 2000 for everyone*‖, Vikas Publishing House Pvt. Ltd, Reprint.

Outcomes	➢ To be able to create documents in office packages, store and retrieve them. ➢ To be able to design letters, reports, books, wrapper pages and perform spelling and grammar check. ➢ To be able to create workbooks for business applications and perform powerful what-if analysis on data by grouping and classifying them. ➢ To be able to create and maintain database for any applications and design colorful forms and reports based on user-defined queries. ➢ To be able to make colorful presentations for education/business/meetings with powerpoint slides.

Course code: 22BSOAP1	Allied Practical-IA	T/P	C	H/W
	Office Automation Lab	T	2	2

Objectives	➢ To create letter, report, book chapters, news columns and wrappers using word package. ➢ To create production letters by merging data from data source with main document for mass communication ➢ To create excel worksheet with data for the given problem and autofill formulae, perform what-if analysis and draw charts. ➢ To create database for the given application, add query, form and report and make it as a full-fledged database system. ➢ To create powerpoint presentation with colourful slides for the given application

MS - WORD

1. Preparing an Official Letter / Business Letter / Circular Letter Covering formatting commands - font size and styles - bold, underline, upper case, lower case, superscript, subscript, indenting paragraphs, spacing between lines and characters, tab settings etc.,
2. Preparing a newsletter: To prepare a newsletter with borders, two columns text, header and footer and inserting a graphic image and page layout.
3. Creating and editing the table to create a table using table menu, to create a monthly calendar using cell editing operations like inserting, joining, deleting, splitting and merging cells, to create a simple statement for math calculations viz. Totalling the column.
4. Creating numbered lists and bulleted lists to create numbered list with different formats (with numbers, alphabets, roman letters), to create a bulleted list with different bullet characters.
5. Printing envelopes and mail merge, to print envelopes with from addresses and to addresses, to use mail merge facility for sending a circular letter to many persons, to use mail merge facility for printing mailing labels.
6. Using the special features of word to find and replace the text, to spell check and correct, to generate table of contents for a document.

MS - EXCEL

7. Using formulas and functions: To prepare a Worksheet showing the monthly sales of a company in different branch offices (Showing Total Sales, Average Sales).
8. Creating a Chart: To create a chart for comparing the monthly sales of a company in different branch offices.
9. Sorting Data, Filtering Data and creation of Pivot tables.
10. Create a sales table using the following data :

Item	Year1	Year2	Year3	Year4
Rice	1000	1050	1100	1200
Sugar	950	1050	1150	1200
Dal	1100	1200	1200	1300

   a. Draw the bar graph to compare the sales of the three items for four years.
   b. Draw a line graph to compare the sales of three items for four years using insert option.
   c. Use condition, to highlight all the cells having value >=1000 with red color (Use conditional formatting).

MS - POWERPOINT

11. Creating a new presentation based on a template – Using Auto content wizard, design template and plain blank presentation.
12. Creating a presentation with slide transition – Automatic and Manual with different effects.
13. Creating a presentation applying custom animation effects – applying multiple effects to the same object and changing to a different effect and removing effects.
14. Creating and printing handouts.

MS - ACCESS

15. Create a database "Student" with
    a. At least one table named "Mark Sheet" with field name "Student Name, Roll Number, Mark1, Mark2, Mark3, Mark4, Total"
    b. The data types are, Student Name : text, Roll Number : number, Mark1 to Mark4 : number, Total : number. Make Roll Number the primary key.
    c. Enter data in the table. The total must be calculated using update query.
    d. Use query for sorting the table according to the descending/ascending order of the total marks.
16. In addition to the table above,
    a. Add an additional field "Result" to the "Mark Sheet" table.
    b. Enter data for at least 10 students.
    c. Calculate the result for all the students using update query. (If total > = 200, then pass, else fail).
    d. Search the students, whose name starts with "An".
    e. Show the names and total marks of the students who have passed the examination.

Reference and Textbooks:-

Joyce Cox and Team, 2009 *Step by Step 2007 Microsoft Office System*, PHI learning Private ltd, New Delhi.

Sanjay Saxena, 2006 *MS-Office 2000 for everyone*‖, Vikas Publishing House Pvt. Ltd, Reprint.

Outcomes	➢ To be able to open, Save and close and integrate the documents from other packages. ➢ To be able to format text in word documents, design layouts and preview or print them. ➢ To be able to create worksheets with data for the given application and generate statistical reports and summary of data for what-if analysis. ➢ To be able to design data tables and manipulate them according to user requirements. ➢ To be able to create colourful presentations in different layouts, slide designs and with animations.

Course code: 22BSOA2	Allied- IB	T/P	C	H/W
	PROGRAMMING IN C	T	3	3
Objectives	➢ To learn the fundamentals of computer programming ➢ To learn the use of operators and statements in C language ➢ To learn the ways to write user defined functions, arrays and string data. ➢ To get know-how knowledge on pointers, structures and union features in C ➢ To learn the importance of file storage and create simple data files.			
Unit -I	**Overview of C:** Introduction to algorithm, flowchart, structured programming concept, programs – Compiler, Interpreter. Introduction to C Language: The C character set, identifiers and keywords, data types, constants, variables and arrays, declarations, expressions, statements, type conversion, symbolic constants.			
Unit-II	**Operators, I/O functions and Control Structures in C** **Operators and expressions**: Arithmetic operators, unary operator, relational and logical operator, assignment operators, the conditional operator, type conversion, Library function. **Data input and output**: Single character input, single character output, scanf, printf, puts gets functions, interactive programming. **Control statement**: Branching: if else statement, Looping, nested control structure, switch statement, jumping statements.			
Unit- III	**Functions**: Overview, function prototypes, passing arguments to a function, recursion. **Arrays**: Defining an array, passing array to functions, multidimensional arrays, **strings**: one dimensional character array, array of strings.			
Unit- IV	**Pointers**: Fundamentals, passing pointers to a function, pointers and one dimensional arrays, dynamic memory allocation, operation on pointers, pointer to an array, pointer to string, pointer to structure, pointers to function, array of pointers. **Structures and unions**: Defining a structure, processing a structure, user defined data types, structure and pointers, passing structure to function, self-referential structures, and union.			
Unit -V	**Data files:** opening and closing a data file, File Management Functions, reading and writing a data file, processing a data file, and unformatted data file, concept of binary file, Random access.			
Reference and Textbooks:-(APA Format)				
Brian W Kernighan & Dennis Ritchie, 2001 *The c programming language,* IInd edition Eastern Economy Edition, Prentice Hall Byron S Gottfried, 2010 *Programming with C*, Schaum's outlines 2nd Edition. Forouzan, 2007 *Computer Science: A Structured Programming Approach Using C*, 3rd Cengage Learning PradipDey, ManasGhosh,2007 *Programming in C*, Oxford Higher Education YashavantKanetkar,2008 *Working with C*, BPB publication				
Outcomes	➢ To be able to understand the structured programming concepts, Tokens and Use of different Data types in a computer program. ➢ To be able to use Operators, Input and Output functions and Control Structures in C Programs ➢ To be able to write programs to solve simple programs involving few input data using single, Multi dimensional Arrays and Functions, ➢ To become familiar with Structures and Unions in grouping data in user-defined ways. ➢ To be able to write programs to get data from user and store in files.			

Course code:		**Allied Practical-I B**	T/P	C	H/W
22BSOAP2		**Programming in C Lab**	T	2	2
Objectives	➢ To learn the basics of C programming language and write solution to a problem by writing a C program. ➢ To learn the use of various operators and control statements in C to solve problems. ➢ To learn the use of array data structure to group homogeneous data together and process them. ➢ To learn how to create user defined functions, pointers and use them in solving problems ➢ To learn how to create and manipulate data files using C program.				

1. Implementation of the various Data Types in C.
2. Demonstration of for loop.
3. Demonstration of do...while loop.
4. Demonstration of while loop.
5. Demonstration of nested if (Hint: Use logical operators).
6. Demonstration of switch... case structure.
7. Implementation of arrays.
8. Implementation of multidimensional arrays (Hint: implement matrix operation).
9. Implementation of functions (Hint: Demonstrate call by value, call by reference).
10. Demonstration of various string operations (Hint: Usage of user defined functions only allowed).
11. Demonstration of pointer operations.
12. Demonstration of recursion (Hint: GCD, factorial, Fibonacci series).
13. Implementation of structures (Hint: simple structure operations, array of structures).
14. Implementation of pointers to structures.
15. Demonstration of dynamic allocation of memory (Hint: malloc, calloc, realloc, free).
16. Demonstration of various file operations on different types of files.

Reference and Textbooks:-(APA Format)

Brian W Kernighan & Dennis Ritchie, 2001 *The c programming language*, IInd edition Eastern Economy Edition, Prentice Hall.

Byron S Gottfried, 2010 *Programming with C*, Schaum's outlines 2nd Edition.

Forouzan, 2007 *Computer Science: A Structured Programming Approach Using C*, 3rd Cengage Learning

PradipDey, ManasGhosh, ,2007 *Programming in C*, Oxford Higher Education.

Outcomes	➢ Understand basic structure of C program and concepts in problem solving. ➢ Design solution procedures to solve simple problems ➢ Design solution procedures to solve complex problems using control statements and loops. ➢ Use pointers in programs instead of arrays in order to use computer's memory economically. ➢ Create and manipulate files for permanent storage and retrieval of data.

Course code:	Allied-II A			T/P	C	H/W
22BSOA3	**Electronic Publishing**			**T**	**3**	**3**

Objectives	➢ To understand the building blocks of desktop publishing using Page Maker and Photoshop packages. ➢ To understand the layers and tools in photoshop for photo editing ➢ To understand the basic features of PageMaker ➢ To understand various formatting features of PageMaker ➢ To understand graphics handling features of PageMaker
Unit -I	**Getting Started with Photoshop:** Exploring the Toolbox - The New CS4 Applications -Bar & the Options Bar - Exploring Panels & Menus - Creating & Viewing a New – Document - Customizing the Interface - Setting Preferences. Working with images: Introduction - Making Selections – Resizing & Cropping Images.
Unit-II	**Getting Started with Layers**: Layers Palette – Working with Layers – Hiding/Showing Layers – Flattening Images – Working with Adjustment Layers – Layer Effects. Painting in Photoshop – Photo Retouching. **Type**: Creating Type – Type Tool – Moving the Text – Creating Paragraph Type. **Filters:** The Filter Menu – Filter Gallery – Filter Effects – Lighting Effects.
Unit III	**Getting started with Page maker:** PageMaker Basics - Starting PageMaker - About the work area - Using the toolbox - working with palettes - Viewing pages - Working with text and graphics - Moving between pages, adding and deleting pages - Working with multiple open publications.
Unit IV	**Drawing tools and text tools:** Different drawing tools - Text tools - Character formatting, paragraph formatting - Controlling windows and orphans - Controlling page breaks, tabs and hyphenation - Grid manager - Printing a document.
Unit V	**Importing Graphics**: Placing graphics - Sizing and cropping graphics – OLE - Embedding an OLE object. **Master Pages:** Creating a master page - Numbering pages - Setting up ruler guides - Applying master page design.

Reference and Text Books:

Adele Droblas Greenberg, Seth Greenberg, 2001 *The Complete Reference Photoshop 6*, McGraw-Hill Education

Carolyn M. Connally, 2002*PageMaker 7 The Complete Reference*, Osborne/McGraw- Hill.

David Xenakis Benjamin Levisay, 2001 *Photoshop 6 in Depth*, 1st Edition, Paraglyph Press.

Ramesh Bangia, 2015 *Learning Page maker 7*. First edition, Khanna Book Publishing Company.

Satish Jain, *PageMaker 7, Training Guide*, BPB Publications

Outcomes	➢ To be able to edit and enhance pictures in photoshop for better display and printing ➢ To be able to use layers effectively to place multiple content with transparency ➢ To be able to edit and create pages in book chapter or advertisement using PageMaker ➢ To be able to use text and drawing tools on pages ➢ To be able to crop and enhance the features of graphics on pages.

Course code: 22BSOAP3	Allied Practical –II A	T/P	C	H/W
	Electronic Publishing Lab	P	2	2

Objectives	➢ To learn and use the tools available in Photoshop in enhancing given images
	➢ To learn cropping of images using tools in photoshop
	➢ To learn page design in PageMaker
	➢ To learn designing a book content and its wrapper
	➢ To learn designing columns for paper news

Photoshop
1. Create a Postcard in Photoshop
2. Create a Photo Collage in Photoshop
3. Enhance Images in Photoshop
4. Remove the background of an image in Photoshop
5. Design a Logo for your institution in Photoshop
6. Create a Mirror Image Effect in Photoshop

PageMaker
7. Create a Label using PageMaker
8. Create a Visiting card in PageMaker
9. Create a notice board in PageMaker
10. Design a Wrapper for a Book in PageMaker
11. Design an advertisement for a newspaper in PageMaker

Reference and Textbooks:-(APA Format)

    C.J.Date, 1990 "*An Introduction to Data Base Systems*," , Volume L Addison Wesley, Reading, MA

    R Elmasri, S B Navathe, 2010 *Fundamentals of Database Systems,* D V L N Somayajulu, S K Gupta, 6th Edition, Pearson Education. (Chapter I,II,III,IV,VIII,IX,X)

    H.F. Korth, A Silberschatz and S. Sudarasan, 2010 "*Database System Concepts*", Computer Science Series, McGraw-Hill.

Outcomes	➢ To be able to process given images and enhance their quality
	➢ To be able to design pages using tools in PageMaker
	➢ To be able to design logo, visiting card, advertisement etc.
	➢ To be able to do full fledged desktop publishing
	➢ To be able to design news paper columns with text and images

Course code:	Allied- II B		T/P	C	H/W
22BSOA4	**Web Design using HTML**		**T**	**3**	**3**
Objectives	➢ To learn the history and fundamentals of Hyper Text Markup Language (HTML) ➢ To learn the structure of an HTML document and design a web pages with hyperlinks ➢ To learn to create data in tables and format them suitably ➢ To learn to design data forms with form elements ➢ To learn to specify internal and external style sheets to control the appearance of a web page				
Unit -I	HTML-History of HTML- HTML Generation-HTML documents - Anchor tag-Hyperlinks-Sample HTML documents.				
Unit-II	Head and body section-Header section-Title-Prologue-Links- Colorful webpage-Comment line-Sample HTML documents-Lists- Ordered lists-Unordered lists-Nested lists.				
Unit- III	Creating tables – Aligning Table elements – Working with advanced tables – Creating Frames – Frame concepts.				
Unit -IV	Creating Forms – Formatting and Designing forms – Image Maps – Working with image Map region types.				
Unit- V	Layers – Positioning a layer – Attaching Scripts to layers – Nesting Layers – Style Sheets – Exploring the properties of a style.				

Reference and Textbooks:-(APA Format)
   World Wide Web design with HTML : C.Xavier
 	
   HTML (With Dynamic HTML) : Vishnu P.Singh					

Outcomes	➢ To be able to design simple web pages ➢ To be able to control the design of web pages from different sections of the document ➢ To be able to design table of data and formatting with colors and backgrounds ➢ To be able to create frames to divide the screen into multiple independent sections ➢ To be able to specify and use internal and external style sheets and format web pages with different styles without rewriting code.				

Course code: 22BSOAP4	Allied Practical- II B	T/P	C	H/W
	Web Design using HTML Lab	P	2	2
Objectives	➢ To learn and use HTML tags and design web pages			
	➢ To learn text formatting features			
	➢ To learn image formatting features			
	➢ To learn Table creation and formatting			
	➢ To learn Style sheets and Frames for managing screen space.			

1. Write a HTML Program to illustrate body and pre tags.
2. Write a HTML Program to illustrate Font tag.
3. Write a HTML Program to illustrate comment,h1....h6, and div tag.
4. Write a HTML Program to illustrate text formatting tags.
5. Write a HTML Program to illustrate Order List tag.
6. Write a HTML Program to illustrate Unordered List tag.
7. Write a HTML Program to illustrate Nested and Definition tag.
8. Write a HTML Program to illustrate Image tag
9. Write a HTML Program to illustrate Hyper Link tag (Anchor tag)
10. Write a HTML Program to illustrate Table tag.
11. Write a HTML Program to illustrate Frame tag.
12. Write a HTML Program to illustrate Form tag.
13. Write a HTML Program to illustrate CSS (cascading style sheet).
14. Write a HTML Program to illustrate Layer.
15. Write a HTML Program to create a Colorful webpage.

Text and Reference Books:

World Wide Web design with HTML : C.Xavier

HTML (With Dynamic HTML) : Vishnu P.Singh

Outcomes	➢ To be able to design static content web pages
	➢ To be able to design a website containing pages that are linked with other pages and with other websites
	➢ To be able to format background with images
	➢ To be able to specify styles for formatting multiple websites with same formatting features
	➢ To be able to divide the screen into multiple independent frames and load different contents in each frame.

ALLIED COURSES FOR OTHER DEPARTMENT STUDENTS

Course code:	Allied - IA		T/P	C	H/W
22BMAA1	ANCILLARY MATHEMATICS - I		T	3	3
Objectives	➢ To learn the basic concepts and problem solving in differential equations ➢ To explore trigonometry as a tool in solving problems.				
Unit -I	Matrices – Characteristic Equation and Cayley - Hamilton Theorem (Proof not included) – Finding the inverse of a matrix using Cayley – Hamilton Theorem – Eigen values and Eigen vectors.				
Unit-II	Equations of the first order but of Higher Degree – Equations solvable for dy/dx – Equations solvable y, x – Clairaut's form – Linear equations with constant coefficients – Finding the complementary function and particular integral of the type e^{ax} cosax sinax.				
Unit- III	Differential Calculus – Successive Differentiation – n^{th} derivative of standard functions (Derivation not needed) problems – Leibnitz formula for the nth derivative of a product (proof not needed) simple problems only – Curvature and Radius of Curvature in Cartesian coordinates only – problems.				
Unit- IV	Integral Calculus – Integration by Parts – Bernoulli's formula – Definite integrals – Properties – problems.				
Unit- V	Trigonometry : Expression for sinnθ, cosnθ and tannθ, $sin^n θ$, $cos^n θ$ (n being a +ve integer) Expansion of sinθ, cosθ, tanθ in powers of θ (only problems in all the above)				
Reference and Textbooks					

Arumugam, S., & Thangapandi Isaac, A. (2002). *Ancillary Mathematics Paper I (Revised)*. Palayamkottai: New Gamma Publishing House

Arumugam, S., & ThangapandiIssac, A. (2003). *Modern Algebra*. Chennai: Scitech Publications.

Narayanan, S., & ManickavachagomPillay, T. K. (2006). *Calculus.* (Volume I). S.Viswanathan (Printers & Publishers) Pvt. Ltd.

Narayanan, S., & ManickavachagomPillay, T. K. (2014). *Calculus.* (Volume II). S.Viswanathan (Printers & Publishers) Pvt. Ltd.

Narayanan, S., & ManickavachagomPillay, T. K. (2015). *Differential Equations and its Applications*. S.Viswanathan (Publishers & Printers) Pvt. Ltd.

Outcomes	Students will be able to ➢ Develop the ability of solving the integrals ➢ Understand the applications of differentiation

Course Code	Allied - IA	T/P	C	H/W
22BMAAP1	Practical	P	2	2

ANCILLARY MATHEMATICS - I

Q1. Find the rank of a 3 into 3 matrix.

Q2. Finding inverse of a given matrix using Cayley- Hamilton Theorem.

Q3. Finding complementary functions and particular integral of given differential equations with right hand side consisting of exponential, trigonometry and algebraic function and its combinations.

Q4. Finding nth derivative of a product of functions using Leibnitz formula.

Q5. Finding Integration by parts two or more times using Bernoulli's formula.

Q6. Express $\sin^m\theta\cos^n\theta$ in terms of either $\sin\theta$ or $\cos\theta$.

Course Designed by

Course code: 22BMAA2	Allied - IB	T/P	C	H/W
	ANCILLARY MATHEMATICS - II	T	3	3
Objectives	➢ To learn vector differentiation and vector integration ➢ To solve differential equations.			
Unit -I	Vector Calculus – Vector Differentiation – Gradient – Divergence – Curl – Properties – Results.			
Unit-II	Linear equations with constant coefficients with Right hand side of the from e^{ax} v where v is any function of x – x^m (a power of x) m being a positive integer – Linear equations with variable coefficients (Homogeneous Differential Equations only).			
Unit -III	Fourier Series – Definition – Fourier Series Expansion of Periodic Functions with Period 2π – Even and Odd functions – Half range Fourier Series – Problems.			
Unit- IV	Interpolation – Newton's Interpolation formula – Central Difference Interpolation formulae – Lagrange's interpolation formulae.			
Unit- V	Correlation – Rank Correlation – Regression lines and Regression coefficients.			

Reference and Textbooks

Arumugam. S., & Thangapandi Issac,A. (2006). *Analytical Geometry of Three Dimensions and Vector Calculus*. Palayamkottai: New Gamma Publishing House.

Arumugam, S., & Thangapandi Issac, A. (2007). *Statistics*. Palayamkottai: New Gamma Publishing House.

Arumugam, S., Thangapandi Issac, A., & Somasundaram, A. (2013). *Numerical Analysis with Programming in C*. Palayamkottai: New Gamma Publishing House.

Narayanan, S., & ManicavachagomPillay, T. K. (2014). *Calculus* (Vol. III). S.Viswanathan Printers & Publishers.

Narayanan, S., & ManicavachagomPillay, T. K. (2015). *Differential Equations and its Applications*. S.Viswanathan (Printers and Publishers) Pvt. Ltd.

Outcomes	Students will be able to ➢ Understand the need and importance of statistical analysis in their major subjects. ➢ Acquire the knowledge of fourier series.

Course Designed by

Course Code	Allied - IB	T/P	C	H/W
22BMAAP2	Practical	P	2	2

ANCILLARY MATHEMATICS - II

Q1. Finding Gradient of a given scalar Point function.
Q2. Finding Divergence of a given vector Point function.
Q3. Finding Curl of a given vector Point function.
Q4. Solving a given homogeneous differential equation.
Q5. Finding Fourier series expansions for a given periodic functions.
Q6. Finding Half range Fourier series expansions for a given periodic functions.
Q7. Finding interpolation using Newton's interpolation formula for a given data.
Q8. Finding interpolation using Central difference interpolation formula for a given data.
Q9. Finding Rank correlation for a given data.
Q10. Finding regression co- efficient and Regression lines for a given data.

Course Designed by

Course code:		Allied - IIA	T/P	C	H/W
22BMAA3		ANCILLARY MATHEMATICS - III	T	3	3
Objectives	➢ To learn the partial differential equations ➢ To enrich the knowledge in multiple integrals.				
Unit -I	Partial Differential Equations – Formation of Partial Differential Equations by eliminating arbitrary constants and arbitrary functions – Complete, Particular, Singular and General integral.				
Unit-II	Solving Lagrange's linear equation $Pp + Qq = R$ - Solution of equations of Standard types $f(p, q) = 0$, $z = px + qy + f(p, q)$, $f(z, p, q) = 0$, $f_1(x, p) = f_2(y,q)$.				
Unit III	Laplace Transform – Definition – Laplace transform of some Standard Functions –Problems – Inverse Laplace Transform – Standard formulae – problems.				
Unit IV	Numerical Differentiation – Derivatives using Newton's Forward Difference formula – Derivatives using Newton's Backward Difference formula – Derivatives using Newton's Central difference formula – Maxima and Minima of the interpolating polynomial.				
Unit V	Beta and Gamma functions – Relations between them – Evaluation of multiple integrals using Beta and Gamma functions.				

Reference and Textbooks

Arumugam, S., Thangapandi Issac, A., & Somasundara, A. (2013). *Numerical Analysis with Programming in C*. Palayamkottai: New Gamma Publishing House.

Arumugam, S., & Thangapandi Issac, A. (2014). *Differential Equations and Applications*. Palayamkottai: New Gamma Publishing House.

Narayanan, S., & ManicavachagomPillay, T. K. (2014). *Calculus*. (Vol. II). S.Viswanathan (Printers & Publishers) Pvt. Ltd.

Outcomes	Students will be able to ➢ Understand a way to solve problems quickly and easily ➢ Acquire knowledge to transform ordinary differential equations in to algebraic equations.

Course Designed by

Course Code	Allied - IIA	T/P	C	H/W
22BMAAP3	**Practical**	**P**	**2**	**2**
	ANCILLARY MATHEMATICS - III			

Q1. Solving differential equations of the form Pp +Qq = R, using Lagrange's method.
Q2. Solving differential equations using Charpit's method.
Q3. Solving differential equations using Laplace transform.
Q4. Finding integration using Beta and Gamma functions.
Q5. Finding multiple integrals of a given function.

Course Designed by

Course code:		Allied - IIB	T/P	C	H/W
22BMAA4		OPTIMIZATION TECHNIQUES	T	3	3
Objectives	➢ To introduce the fundamental concepts of LPP ➢ To Study the concept of Simplex method and Transportation problem.				
Unit -I	Origin and Development of O.R. – Definition of O.R. – Linear Programming – Mathematical formulation – Graphical method – Problems.				
Unit-II	Simplex method using Slack and Surplus variables.				
Unit- III	Transportation Problem – Definition – Finding initial basic feasible solution by North – West Corner rule – Least Cost method – Vogel's Approximation method.				
Unit -IV	Assignment problem – Definition – Finding optimal solution by using Hungarian method.				
Unit -V	Sequencing Problem – Processing n jobs through two machines – Processing n jobs through K machines – Problems.				

Textbook

Swarup, K., Gupta, P.K., & Mohan, M. (2008). *Operations Research* (14th Ed.). New Delhi: Sultan Chand & Sons Publishers.

Reference Book

Gupta, P. K., & Hira, D.S. (2004). Operations Research (2nd edition). New Delhi: S.Chand & Co.

Outcomes	Students will be able to ➢ Develop the skills in decision making ➢ Equip the students in solving real time problems.

Course Code	Allied - IIB	T/P	C	H/W
22BMAAP4	Practical	P	2	2
OPTIMIZATION TECHNIQUES				
Q1. Solving a given linear programming problem using graphical method.				
Q2. Solving a given linear programming problem using Simplex method.				
Q3. Finding OBFS for a given transportation problem.				
Q4. Finding OBFS for a given assignment problem.				
Q5. Finding the Sequence of jobs using the given data.				

Instructions for all four practical

Tutor's Guide

- All the Questions can be solved by applying the concepts through the pen and paper mode. (Solving through computer is not necessary for these papers, but if students are interested then they can do on their own).

- Practice at least three problems for all questions in the observation notebook.

- Write exactly one problem for all questions from the observation notebook with your own choice from the three.

Guide to write the record notebook

- For all Questions write the algorithm (if any) of the method used, graphs (if any) in the right hand side page of the record notebook; solution of particular problem in the left hand side page of the record notebook.

- Write the objective of the problem first, then write the basic concepts involved in that problem, then write the algorithm used, as said in the previous point, finally write the solution as result.

Course Designed by

ALLIED COURSES FOR MATHEMATICS DEPARTMENT STUDENTS

Course code:	Allied - IA		T/P	C	H/W
22BMAA5	STATISTICS – I		T	3	3
Objectives	➢ To extend and formalize knowledge of the theory of probability. ➢ To introduce the notation of regression and time series analysis.				
Unit -I	Central Tendencies – Introduction – Arithmetic Mean – Partition Values – Mode – Geometric Mean and Harmonic Mean – Measures of Dispersion.				
Unit-II	Moments – Skewness and Kurtosis – Curve fitting – Principle of least squares.				
Unit- III	Correlation – Rank correlation Regression – Correlation Coefficient for a Bivariate Frequency Distribution.				
Unit- IV	Interpolation – Finite Differences – Newton's Formula – Lagrange's Formula – Attributes – Consistency of Data – Independence and Association of Data.				
Unit- V	Index Numbers – Consumer Price Index Numbers – Analysis of Time series – Time series – Components of a Time series – Measurement of Trends.				
Textbook Arumugam, S., & ThangapandiIssac, A. (2015). *Statistics.* Palayamkottai: New Gamma Publishing House. **Reference Books** Gupta, S.C., & Kapoor, V. K. (2002). *Fundamentals of Mathematical Statistics*. New Delhi: Sultan Chand &Sons Pvt. Ltd. Pillai, R.S.N., & Bagavathi. (2007). *Statistics: Theory and Practice*. New Delhi: S.Chand and Company Pvt. Ltd.					
Outcomes	Students will be able to ➢ Understand Moments, Skewness and Kurtosis. ➢ Calculate the correlation coefficient for the given data. ➢ Compute Rank correlation for the given data.				

Course Designed by

Course Code:	Allied - IA		T/P	C	H/W
22BMAAP5	Practical		P	2	2

STATISTICS – I

1. From the following table showing the wage distribution in a certain factory determine:
   - i. The mean wages
   - ii. The median wages
   - iii. The modal wages
   - iv. The wage limits for 50% of the earners
   - v. The percentages of workers who earned between Rs. 75 and Rs. 125
   - vi. The percentages of workers who earned more than Rs. 150 per week, and
   - vii. The percentages of workers who earned less than Rs. 100 per week

Weekly Wages (Rs.)	20-40	40-60	60-80	80-100	100-120	120-140	140-160	160-180	180-200
No. of Employees	8	12	20	30	40	35	18	7	5

2. The following table gives the frequency distribution of marks in a class of 65 students

Marks	0-4	4-8	8-12	12-14	14-18	18-20	20-25	25 and over
No. of Students	10	12	18	7	5	3	4	6

   Calculate: (i) Upper and lower quartiles
   (ii) Number of students who secured marks more than 17
   (iii) Number of students who secured marks between 10 and 15

3. Find the second, third and fourth central moments of the frequency distribution given below. Hence find the measure of skewness (γ_1) and measure of kurtosis(γ_2).

Class limits	110.0-114.9	115.0-119.9	120.0-124.9	125.0-129.9	130.0-134.9	135.0-139.9	140.0-144.9
Frequency	5	15	20	35	10	10	5

4. In calculating the moments of a frequency distribution based on 100 observations, the following results are obtained:
   Mean = 9,   Variance = 19, $\beta_1 = 0.7$ $\beta_2 = 4$
   But later on it was found that one observation 12 was read as 21. Obtain the correct values of first central moments, β_1 and β_2.

5. If X_1 and X_2 are independent normal variates and U and V are defined by $U = X_1 \cos \alpha + X_2 \sin \alpha$ and $V = X_2 \cos \alpha - X_1 \sin \alpha$, show that the correlation

coefficient ρ between U and V is given by $\rho^2 = 1 - \dfrac{4\sigma_1^2 \sigma_2^2}{4\sigma_1^2 \sigma_2^2 + (\sigma_1^2 - \sigma_2^2)\sin^2 2\alpha}$, where σ_1^2 and σ_2^2 are variances of X_1 and X_2 respectively.

6. If $U = aX + bY$ and $V = bX - aY$, show that U and V are uncorrelated if $\dfrac{ab}{a^2 - b^2} = \dfrac{\rho \sigma_X \sigma_Y}{\sigma_X^2 - \sigma_Y^2}$, where ρ is the correlation co-efficient of X and Y. Show further that in this case

$$\sigma_U^2 + \sigma_V^2 = (a^2 + b^2)(\sigma_X^2 + \sigma_Y^2) \text{ and } \sigma_U \sigma_V = (a^2 + b^2)\sigma_X \sigma_Y \sqrt{1 - \rho^2}.$$

7. The coefficient of rank correlation between the marks obtained by 10 students in Mathematics and Statistics was found to be 0.5. It was discovered that the difference in ranks in two subjects obtained by one student was wrongly taken as 3 instead of 7. Find the correct coefficient of rank correlation.

8. If d_i be the difference in the ranks of the ith individual in two different characteristics then show that the maximum value of $\sum_{i=1}^{n} d_i^2$ is $\frac{1}{3}(n^3 - n)$. Hence or otherwise, show that rank correlation coefficient lies between -1 and 1.

9. Twenty five pairs of values of variants X and Y led to the following results:
$N = 25, \ \Sigma X = 127, \ \Sigma Y = 100, \ \Sigma X^2 = 760, \ \Sigma Y^2 = 449$ and $\Sigma XY = 500$.
A subsequent scrutiny showed that two pairs of values were copied down as (8, 14) and (8, 6) instead of (8, 12) and (6, 8),
    i. Obtain the correct value of the correlation coefficient.
    ii. Hence or otherwise, find the correct question of the two lines of regression.
    iii. Find the angle between the regression lines.

10. In a university examination, which was indeed very tough, 50% at least failed in Statistics, 75% at least in Topology, 82% at least in Functional Analysis and 96% at least in Measure theory. How many at least failed in all the four?

11. Given that $(A)=(B)=(C)= ½ \ N=50$ and $(AB)=30, \ (AC)=25$, find the limits within which (BC) will lie.

12. Prove that if n is an integer, then $(x\Delta)^{(n)} u_x = (x + n - 1)^{(n)} \Delta^n u_x$.

Course code:	Allied - IB	T/P	C	H/W
22BMAA6	**STATISTICS – II**	T	3	3
Objectives	➢ To study the concepts of random variable and some special distributions. ➢ To inculcate the concepts of the sampling distribution and hypothesis testing.			
Unit -I	Probability – Conditional Probability – Random variables – Discrete Random Variable – Continuous Random Variable – Mathematical Expectations – Moment Generating Function – Characteristic function.			
Unit-II	Some Special Distributions – Binomial Distribution – Poisson Distribution – Normal Distribution – Gamma Distribution – Chi-Square Distribution – Student's t-Distribution – Snedecor's F- Distribution.			
Unit- III	Tests of Significance of large samples – Sampling – Sampling Distribution – Testing of Hypothesis – Procedure for Testing of Hypothesis for large samples – Tests of Significance for large samples.			
Unit- IV	Tests of Significance based on 't' Distribution – Test of Significance based on F-Test – Test for Significance of an Observed sample correlation.			
Unit -V	Test based on Chi - Square Distribution – Chi - Square Test for Population variance – Chi - Square Test – To test the Goodness of fit – Test for Independence of Attributes – Analysis of Variance – One Criterion of Classification – Two Criteria of Classification.			

Textbook

Arumugam, S., & Thangapandi Isaac, A. (2015).*Statistics*. Palayamkottai: New Gamma Publishing House.

Reference Books

Gupta, S.C., & Kapoor, V.K. (2002). *Fundamentals of Mathematical Statistics*. New Delhi: Sultan Chand &Sons Pvt. Ltd.

Pillai, R.S.N., & Bagavathi. (2007). *Statistics: Theory and Practice*. New Delhi: S.Chand & Co. Pvt. Ltd.

Outcomes	Students will be able to ➢ Compute expectations, moments and correlation coefficients. ➢ Acquire knowledge of discrete and continuous distributions and their properties

Course Code	Allied - IIB	T/P	C	H/W
22BMAAP6	Practical	P	2	2

STATISTICS – II

1. (a) A perfect cube is thrown a larger number of times in the sets of 8. The occurrence of a 2 or 4 is called a success. In what proportion of the sets would you expect 3 successes.

   (b) In eight throws of a die, 5 or 6 is considered a success. Find the mean number of successes and the standard deviation.

   (c) A man tosses a fair coin 10 times. Find the probability that he will have
   - (i) heads on the first five tosses and tails on the next five tosses
   - (ii) heads on tosses 1,3,5,7,9 and tails on tosses 2,4,6,8,10
   - (iii) 5 heads and 5 tails
   - (iv) at least 5 heads
   - (v) not more than 5 heads.

2. If the probability of hitting a target is 1/5 and if 10 shots are fired, what is the conditional probability of the target being hit at least twice assuming that at least one hit is already scored?

3. (a) If the number of claims per policyholder is the sum of the number of claims under each of his two policies, state with reasons how the number of claims per policyholder, within that group and over that period is distributed, and

   (b) Calculate to the nearest whole number, the percentage of policyholders within that group and over that period who made more household claims than motor claims.

4. Suppose that a radio tube is inserted into a socket and tested. Assume that the probability that it tests positive equals P and the probability that it tests negative is (l-P). Assume furthermore that we are testing large supply of such tubes. The testing continues until the first positive tube appears. If X is the number of tests required to terminate the experiment, what is the probability distribution of X?

5. Suppose that the number of telephone calls that an operator receives from 9.00 to 9.05 hours in a day follows a Poison distribution with mean 3. Find the probability that
   - (i) The operator will receive no calls in that time interval tomorrow,
   - (ii) In the next three days the operator will receive a total of 1 call in that time interval.

6. In a box there are 4 granite stones, 5 sand stones and 6 bricks of identical size and shape. Out of them 3 are chosen at random. Find the chance that :
   - (i) They all belong to different varieties.
   - (ii) They all belong to the same variety.
   - (ii) They are all granite stones.

7. (a) A bag contains 10 balls, two of which are red, three blue and five black. Three balls are drawn at random from the bag, that is every ball has an equal chance of being included in the three. What is the probability that
   - (i) the three balls are of different colours,
   - (ii) two balls are of the same colour, and
   - (iii) the balls are all of the same colour?

   (b) A is one of six horses entered for a race and is to be ridden by one of the two jockeys B and C. It is 2 to 1 that B rides A, in which case all the horses are equally likely to win, with rider C, A's chance is trebled.
   - (i) Find the probability that A wins.
   - (ii) What are odds against A's winning?

8. (a) Three points are taken at random on the circumference of a circle. Find the chance that they lie on the same semi-circle.
   (b) A chord is drawn at random in a given circle. What is the probability that it is greater than the side of an equilateral triangle inscribed in that circle?
   (c) Show that the probability of choosing two points randomly from a line segment of length 2 inches and their being at a distance of at least 1 inch from each other is 1/4.
9. (a) A and B throw with one die for a stake of Rs. 44 which is to be won by the player who first throws a 6. If A has the first throw, what are their respective expectations?
   (b) A contractor has to choose between two jobs. The first promises a profit of Rs.1,20,000 with a probability of ¾ or a loss of Rs. 30,000 due to delays with a probability of ¼ ; the second promises a profit of Rs. 1,80,000 with a probability of ½ or a loss of Rs. 45,000 with a probability of ½. Which job should the contractor choose so as to maximise his expected profit?
   (c) A random variable X can assume any positive integral value n with a probability proportional to $1/3^n$. Find the expectation of X.
10. X is normally distributed with $\sigma = 5$ and it is desired to test $H_0: \mu = 105$ against H_1 : $\sigma = 110$. How large a sample should be taken if the probability of accepting H_0 when H_1 is true is 0.02 and if a critical region of size 0.05 is used?
11. Let p be the probability that a given die shows an even number. To test $H_0 : p = \frac{1}{2}$ against $H_1 : p = 1/3$; the following procedure is adopted. Toss the die twice and accept H_0 if both times it shows even number. Find the probabilities of type I and type II errors.
12. (a) Obtain the statistic for testing the hypothesis that the mean of a Poisson population is 2 against the alternative that it is 3, on the basis of n independent observations.
    (b) Suppose you are testing $H_0 : \lambda = 2$ against $H_1 : \lambda = 1$, where λ is the parameter of the Poisson distribution. Obtain the best critical region of the test.
13. (a) Discuss the concept of interval estimation and provide suitable Illustration.
    (b) Critically examine how interval estimation differs from point estimation. Give the 95% confidence interval for the mean of the normal distribution, when its variance is known.

Instructions for all four practical

Tutor's Guide

- All the Questions can be solved by applying the concepts through the pen and paper mode. (Solving through computer is not necessary for these papers, but if students are interested then they can do on their own).

Guide to write the record notebook

- For all Questions write the algorithm (if any) of the method used, graphs (if any) in the right hand side page of the record notebook; solution of particular problem in the left hand side page of the record notebook.

- Write the objective of the problem first, then write the basic concepts involved in that problem, then write the algorithm used, as said in the previous point, finally write the solution as result.

ARABIC

Semester-I				

Course code: 2211A	**Language -I**	**T/P**	**C**	**H/W**
	BASIC ARABIC GRAMMAR I	**T**	**3**	**6**

Objectives	➢ To develop the correct pronunciation of Arabic Alphabets and write them joint together ➢ To acquire adequate ability to form meaningful words in Arabic.
Unit–I	Lessons 1-3 The alphabet – Vowels – Changing shapes of alphabet
Unit-II	Lessons 4-6 Definite article – Parts of speech – Adjective and noun qualified
Unit-III	Lessons 7-9 Gender – Singular, Dual and Plural – The Nominal Sentence
Unit-IV	Lessons 10-12 The Possessive – Personal Pronouns – Demonstrative and Relative Pronouns
Unit-V	Lessons 13-15 Interrogatives – Prepositions – Verbal Sentence: Past Tense
Reference and Textbooks:- Syed Ali, Dr. (2008). *Arabic for beginners*	
Outcomes	➢ to clear understanding of basic grammar ➢ to develop the skill of reading and writing

Semester- II					
Course code: 2221A	**Language–II** **BASIC ARABIC GRAMMAR II**		**T/P** **T**	**C** **3**	**H/W** **6**
Objectives	➢ to learn the Arabic verbal sentences effectively ➢ to evaluate the different rules pertaining to the verbal sentences				
Unit–I	Lessons 16-17 The Imperfect tense – The Imperative tense				
Unit-II	Lessons 18-19 Transitive and Intransitive – Moods of the imperfect tense				
Unit-III	Lessons 20-21 Kana and its categories - Inna and its categories				
Unit-IV	Lessons 22-23 The Numerals, Days and Months – Types of Nouns – Derived from verbs				
Unit-V	Lesson 24-25 Derived forms of the verb – The Particles				
ReferenceandTextbooks:-(APAFormat) Syed Ali, Dr. (2008). *Arabic for beginners*					
Outcomes	➢ Students will be able to form nominal and verbal sentences effectively ➢ Students will be able to evaluate the various Arabic grammar rules				

Semester-III					
Course code: 2231A	**Language–III**		**T/P**	**C**	**H/W**
	CLASSICAL ARABIC PROSE		**T**	**3**	**6**
Objectives	➢ Todeeply understand the writing style of Classical Arabic lit ➢ Tostudythebasicprinciplesof Classical Arabic Prose				
Unit–I	Surah Al Hujurath Verses 1-18				
Unit-II	Surah An Nahl Verses 10-25				
Unit-III	Surah An Nahl Verses 26-34				
Unit-IV	Ahadith Sahla 1-10				
Unit-V	Ahadith Sahla 11-20				
ReferenceandTextbooks:-(APAFormat) Abdur Rahim, Dr. V. (2010). *Surah Al Hujurath with Lexical & grammatical notes* Abdur Rahim, Dr. V. (2010). *Ahadith Sahla* AbdulJaleel, Dr. K.F.*Prose* (Textbook prescribed by the Alagappa University, Karaikudi) **Books for reference:** Hilali, Taqiyuddin, & Khan, Dr. Muhammad Mushin,. *The Noble Qur'an* Nawawi, Imam. (2007). *Riyadhussaliheen*					
Outcomes	➢ The students gain noteworthy knowledge in the study of classical lit. ➢ The students will be able to understand the structure of the language used in classical lit.				

Semester-IV					
Course code: 2241A	**Language–IV** **HISTORY OF ARABIC LITERATURE**		**T/P** T	**C** 3	**H/W** 6
Objectives	➢ to enrich the knowledge the ability of Arabs to develop their language and literature ➢ to get to know the literary scholars and their contribution in the Arabic literature				
Unit–I	Preservation and collection of the Holy Quran • About Quran • Collection and compilation of the Quran • Contents of Meccan chapters • Contents of Madinah chapters • Style of the Quran • Recorders of revelations				
Unit-II	Collection and compilation of the Hadith • Classification of traditions • The six great traditionists • The four great Jurists				
Unit-III	Importance of Hadith				
Unit-IV	Life and works of Hassan bin Thabit (ra) Life history of Abdullah bin Rawaha (ra) Life history of Kab bin Zuhair (ra)				
Unit-V	Life History of Imam Al Bukhari (rah)				

ReferenceandTextbooks:-(APAFormat)
Textbooks
Shamsudeen, M. *Some gems in Arabic literature*

Books for reference:

Nicholson, Reynolds.*An introduction to literary history of Arabs*

Outcomes	➢ to evaluate the contributions of eminent scholars of Arabic literature. ➢ to gain the knowledge and talent in Arabic literature

பருவம் - 01				
பாடக்குறியீட்டுஎண்: 2211T	பொதுத் தமிழ்	T/P	C	H/W
	தற்காலக் கவிதையும் உரைநடையும்	T	3	6
நோக்கம் :	➢ கவிதை, உரைநடை வடிவங்களை வெளிப்படுத்தல். ➢ படைப்பாளர்கள்வெளிப்படுத்தும்சமூகவிழுமியப்பதிவுகளைஎடுத்தியம்புதல்.			
அலகு - 1	அ. மரபுக் கவிதை 1. பாரதியார் -பாரததேசமென்றுபெயர்சொல்லுவார்(பாரததேசம்) 2. பாரதிதாசன் - கனியிடைஏறியசுளையும்முற்றல்கழையிடைஏறியசாறும், 3. நாமக்கல் கவிஞர் - காந்தியக் கவிஞர் (காந்தியஞ்சலி) 4. கண்ணதாசன் - மனிதரைப் பாட மாட்டேன் (கவிதைகள்) 5. முடியரசன் -தொழிலாளி 6. ஜீவானந்தம் -"காலுக்குசெருப்புமில்லை...கால்வயிற்றுகூழுமில்லை..," ஆ. புதுக்கவிதை 1. அப்துல் ரகுமான் - வீட்டுக்கொரு மரம் (கூடு துறக்கும் பறவை) 2. மு.மேத்தா - கண்ணீர் பூக்கள் 3.சக்திஜோதி - தேடித்தீராததெரு			
அலகு - 2	உரைநடை 1. சவால் விடு - சாதனை செய் - இராமையா இ.ஆ.ப., தாமரைபதிப்பகம், சென்னை - 98.			
அலகு - 3	இலக்கணம் எழுத்திலக்கணம் : எண் - பெயர் - முறை - பிறப்பு - வடிவம் - மாத்திரை – மொழி முதல்எழுத்துக்கள் - மொழிஇறுதிஎழுத்துக்கள் - மெய்மயக்கம் – உருபு இலக்கணம்.			
அலகு - 4	இலக்கிய வரலாறு மரபுக்கவிதை, புதுக்கவிதை தொடர்பான இலக்கிய வரலாறு.			
அலகு - 5	படைப்பும் பயிற்சியும் கட்டுரைஎழுதுதல்			
பயன்கள் :	➢ கவிதை, உரைநடை படைப்பாக்கச் சிந்தனை. ➢ சமூகச் சிந்தனை வாயிலாக மாணவர் மேம்படுதல்.			

பருவம் - 02			
		T/P	C	H/W
பாடக்குறியீட்டெண்: 2221T	பொதுத் தமிழ்	T/P	C	H/W
	இடைக்கால இலக்கியமும் சிறுகதையும்	T	3	6

நோக்கம் :	➢ இடைக்கால இலக்கியத்தின் வடிவங்களும் சிந்தனையும் வெளிப்படுத்தல். ➢ சிறுகதைப் படைப்பாளர்கள் வெளிப்படுத்தும் சமூக விழுமியப் பதிவுகளை எடுத்தியம்புதல்.

அலகு - 1	அ. திருஞானசம்பந்தர் - திருமறைக்காடு (முதல் இரண்டு பாடல்கள்)
	 ஆ. திருநாவுக்கரசர் - திருவதிகை வீரட்டானம் (முதல் இரண்டு பாடல்கள்)
	 இ. சுந்தரர் - திருவெண்ணைநல்லூர் பதிகம் (முதல் இரண்டு பாடல்கள்)
	 ஈ. மாணிக்கவாசகர் - திருவெம்பாவை (முதல் பாடல்)
	 உ. குலசேகர ஆழ்வார் - பெருமாள் திருமொழி (முதல் இரண்டு பாடல்கள்)
	 ஊ. ஆண்டாள் - திருப்பாவை (முதல் பாடல்)
	 எ. சிற்றிலக்கியம்
	      1. நந்திக்கலம்பகம் - முதல் ஐந்து பாடல்கள்
	      2. கலிங்கத்துப்பரணி - முதல் ஐந்து பாடல்கள்

அலகு - 2	**சிறுகதை** நவரத்தினக் கதைகள் - அறிவுப் பதிப்பகம், தொகுப்பு - முனைவர் சூ.நயினார் அறிவுப் பதிப்பகம், சென்னை - 14.
அலகு - 3	**இலக்கணம்.** சொல்வகை - பெயர்ச்சொல் - வினைச்சொல் - இடைச்சொல் - உரிச்சொல் வேற்றுமை மயக்கம் - ஆகுபெயர்.
அலகு - 4	**இலக்கிய வரலாறு** பக்தி இலக்கியம் மற்றும் சிற்றிலக்கியம் தொடர்பான இலக்கிய வரலாறு
அலகு - 5	**படைப்பாற்றல்** சிறுகதை படைத்தல்.
பயன்கள் :	➢ சமயச் சிந்தனையின் பங்கு மற்றும்சிறுகதைப் படைப்பாக்கச் சிந்தனை. ➢ சமூகச் சிந்தனை வாயிலாக மாணவர் மேம்படுதல்.

பருவம் - 03				
பாடக்குறியீட்டுஎண்: 2231T	பொதுத் தமிழ்	**T/P**	**C**	**H/W**
	காப்பியமும் புதினமும்	**T**	**3**	**6**
நோக்கம் :	➢ காப்பியம், புதின வடிவங்களை வெளிப்படுத்தல். ➢ படைப்பாளர்கள் வெளிப்படுத்தும் பதிவுகளை எடுத்தியம்புதல்.			
அலகு - 1	1. சிலப்பதிகாரம் - அடைக்கலக் காதை (மதுரைக் காண்டம்) 2. மணிமேகலை - ஆதிரை பிச்சையிட்ட காதை 3. கம்பராமாயணம் - அங்கதன் தூதுப் படலம் 4. பெரியபுராணம் - அப்பூதியடிகள் நாயனார் புராணம் 5. தேம்பாவணி - நாட்டுப் படலம் 6. சீறாப்புராணம் - விருந்தூட்டுப் படலம்			
அலகு - 2	**புதினம்** பனையடி - இரா.செல்வம் இ.ஆ.ப., நியூ செஞ்சுரி புக் ஹவுஸ் பிரைவேட் லிமிடெட்.சென்னை - 98.			
அலகு - 3	**இலக்கணம்** செய்யுள் உறுப்புகள் : எழுத்து - அசை - சீர் - தளை - அடி -தொடை - பாவகை - அணி வகைகள் - உவமை - உருவகம் - சிலேடை - பின்வருநிலை அணி - வேற்றுமை.			
அலகு - 4	**இலக்கிய வரலாறு** காப்பியம் மற்றும் புதின இலக்கியம் தொடர்பான இலக்கிய வரலாறு.			
அலகு - 5	**படைப்பாற்றல்.** கவிதை படைத்தல்.			
பயன்கள் :	➢ கவிதை, புதினம் படைப்பாக்கச் சிந்தனை. ➢ காப்பியம், புதினம் வெளிப்படுத்தும் சமூகச் சிந்தனை வாயிலாக மாணவர் மேம்படுதல்.			

பருவம் - 04				
பாடக்குறியீட்டுஎண்: 2241T	பொதுத் தமிழ்	T/P	C	H/W
	பண்டைய இலக்கியமும் நாடகமும்	T	3	6
நோக்கம் :	➤ பண்டைய இலக்கியம், நாடகம் வடிவங்களை வெளிப்படுத்தல். ➤ படைப்பாளர்கள் வெளிப்படுத்தும் சமூக விழுமியப் பதிவுகளை எடுத்தியம்புதல்.			
அலகு - 1	அ. பத்துப்பாட்டு - பொருநராற்றுப்படை ஆ. நற்றிணை - கபிலர் பாடல்கள் (13, 32, 59) இ. குறுந்தொகை - ஒளவையார் பாடல்கள் (23, 28) ஈ. கலித்தொகை - பாடல் எண் (9, 51) உ. அகநானூறு - வெள்ளிவீதியார் பாடல்கள் (45, 362) ஊ. புறநானூறு - பாடல் எண் (279, 288, 306) எ. திருக்குறள் - அன்புடைமை, அறிவுடைமை ஏ. நாலடியார் - மேன்மக்கள் (முதல் ஐந்து பாடல்கள்) ஐ. பழமொழி நானூறு - பாடல் எண் (12, 13, 53, 190, 202)			
அலகு - 2	நாடகம் வேலைக்காரி - அறிஞர் அண்ணா, பாவை பப்ளிகேஷன், சென்னை - 14.			
அலகு - 3	இலக்கணம் அகப்பொருள் - 7 திணைகள் புறப்பொருள் - 12 திணைகள் களவு - கற்பு - உள்ளுறை - இறைச்சி			
அலகு - 4	இலக்கிய வரலாறு சங்க இலக்கியம் மற்றும் நீதி இலக்கியம் தொடர்பான இலக்கிய வரலாறு			
அலகு - 5	படைப்பாற்றல் நாடகம் படைத்தல்			
பயன்கள் :	➤ நாடகம் படைப்பாக்கச் சிந்தனை. ➤ சமூகச் சிந்தனை வாயிலாக மாணவர் மேம்படுதல்.			

	Semester -I			
Course code: **712CE**	**General English**	**T/P**	**C**	**H/W**
	COMMUNICATIVE ENGLISH-I	**T**	**3**	**6**

Unit - 1	**1. Listening and Speaking**
	    a. Introducing self and others
	    b. Listening for specific information
	    c. Pronunciation (without phoneticsymbols)
	        i. Essentials of Pronunciation
	        ii. American and British Pronunciation
	2. Reading and Writing
	    a. Reading short articles – newspaperreports / fact based articles
	        i. Skimming and Scanning
	        ii. Diction and Tone
	        iii.Identifying Topic Sentences
	    b. Reading aloud: Reading an article/report
	    c. Journal (Diary) Writing
	3. Study Skills - 1
	    a. Using dictionaries, Encyclopaedias, Thesaurus
	4. Grammar in Context:
	      Naming and Describing
	      • Nouns & Pronouns, Adjectives

Unit - 2	**1. Listening and Speaking**
	    a. Listening with a Purpose
	    b. Effective Listening
	    c. Tonal Variation
	    d. Listening for Information
	    e. Asking for Information
	    f. Giving Information
	
	2. Reading and Writing
	    1. a. Strategies of Reading:
	        Skimming and Scanning
	        b. Types of Reading : Extensive and Intensive Reading
	        c. Reading a prose passage
	        d. Reading a poem
	        e. Reading a short story
	
	    2.Paragraphs: Structure and Types
	        a.What is a Paragraph?
	        b.Paragraph structure
	        c.Topic Sentence
	        d.Unity
	        e.Coherence
	        f. Connections between Ideas: UsingTransitional words and expressions
	        g.Types of Paragraphs
	
	3. Study Skills II:
	Using the Internet as a Resource

	a. Online search
	b. Know the keyword
	c. Refine your search
	d. Guidelines for using the Resources
	e. e-learning Resources of Government of India
	f. Terms to know
	4. Grammar in Context
	Involving Action-I
	    a.Verbs
	    b.Concord

Unit - 3	**1. Listening and Speaking**
	    a. Giving and following instructions
	    b. Asking for and giving directions
	    c. Continuing discussions with connectingideas
	2. Reading and writing
	    a. Reading feature articles (fromnewspapers and magazines)
	    b. Reading to identify point of view and perspective (opinion pieces, editorialsetc.)
	    c. Descriptive writing – writing a shortdescriptive essay of two to three paragraphs.
	3.Grammar in Context:
	    Involving Action – II
	    • Verbals - Gerund, Participle,Infinitive
	    • Modals

Unit - 4	1. **Listening and Speaking**
	    a. Giving and responding to opinions
	2. **Reading and writing**
	    a.Note taking
	    b. Narrative writing – Writing Narrative Essays of Two to Three Paragraphs
	3.**Grammar in Context**:
	    Tense
	    • Present
	    • Past
	    • Future

Unit - 5	**1. Listening and Speaking**
	    a. Participating in a Group Discussion
	2. Reading and writing
	    a. Reading diagrammatic information
	       – interpretations maps, graphs and pie charts
	    b. Writing short essays using the language of comparison and contrast
	3. Grammar in Context: Voice (showing ther elationship between Tense and Voice)

Semester -II				
Course code:	General English	T/P	C	H/W
722CE	COMMUNICATIVE ENGLISH-II	T	3	6

Unit - 1	**1. Listening and Speaking**
	   a. Listening and responding to complaints (formalsituation)
	   b. Listening to problems and offering solutions (informal)
	2. Reading and writing
	   a. Reading aloud (brief motivational anecdotes)
	   b. Writing a paragraph on a proverbial expression/motivational idea.
	3. Word Power/Vocabulary
	   a. Synonyms & Antonyms
	4. Grammar in Context
	   Adverbs, Prepositions			

Unit - 2	**1. Listening and Speaking**
	   a. Listening to Famous Speeches and Poems
	   b. Making Short Speeches- Formal: welcome speech and vote of thanks.
	    Informal Occasions- Farewell party, Graduation Speech
	2. Reading and Writing
	   a. Writing Opinion Pieces (could be on travel, food,film / book reviews or on any contemporary topic)
	   b. Reading poetry
	    i) Reading aloud: (Intonation and Voice Modulation)
	    ii) Identifying and using figures of speech - Simile, Metaphor, Personification etc.
	3. Word Power
	   a. Idioms & Phrases
	4. Grammar in Context
	   Conjunctions and Interjections			

Unit - 3	1. Listening and Speaking
	   a. Listening to Ted talks
	   b.Making Short Presentations – Formal Presentation with PPT, Analytical Presentation of Graphs and Reports of Multiple kinds
	   c. Interactions during and after the Presentations
	2. Reading and writing
	   a. Writing e-mails of Complaint
	   b. Reading aloud Famous Speeches
	3. Word Power
	   a. One Word Substitution
	4. Grammar in Context: Sentence Patterns			

Unit - 4	**1.** **Listening and Speaking**
	    a. Participating in a meeting: face to face and online
	    b. Listening with courtesy and adding ideas and giving opinions during the meeting and making concluding remarks.
	2. **Reading and Writing**
	    a. Reading visual texts – advertisements
	    b. Preparing first drafts of short assignments
	3. **Word Power**
	    a. Denotation and Connotation
	4. **Grammar in Context**: Sentence Types

Unit - 5	**1.** **Listening and Speaking** a. Informal interview for feature writing b. Listening and responding to questions at a formal interview **2.** **Reading and Writing** a. Writing letters of application b. Readers' Theatre (Script Reading) c. Dramatizing everyday situations/social issues through skits. (writing scripts and performing) **3.** **Word Power** a. Collocation 4. **Grammar in Context**: Working With Clauses

Semester -III					
Course code:	**General English**		**T/P**	**Credit**	**Hrs./Week**
2232E	**ENGLISH FOR ENRICHMENT – I**		**T**	**3**	**6**
Unit - 1	**Poetry** 1. Let me not to the Marriage of True Minds - William Shakespeare 2. Stooping by Woods on a Snowy Evening - Robert Frost 3. The Lotus- Toru Dutt				
Unit - 2	**Prose** 1. My Greatest Olympic Prize- Jesse Owens 2. Early Influences- Dr.A.P.J.AbdulKalam 3. On Keyhole Morals- A.G.Gardiner				
Unit - 3	**Short Stories** 1.The Selfish Giant- Oscar Wilde 2. Tree Speaks- C.Rajagopalachari 3.The Diamond Necklace- Guy De Maupassant				
Unit - 4	**Biography** 1. Abraham Lincoln- J.B.Neilson 2. Indira Gandhi- A Profile- R.Sunder Raju				
Unit - 5	**Grammar and Composition** 1. Sentence Patterns 2. Kinds of Sentences 3. Active Voice and Passive Voice 4. Reported Speech 5. Letter Writing (Formal and Informal) 6. Writing Cover Letter and Resume Writing				
Text Book: *Snow Flakes, Edited by Dr.V.Nagarajan and Prof.P.Madhan, Harrows Publications, Chennai.* Modern English – *A Book of Grammar Usage and Composition* by N.Krishnaswamy, Macmillan Publishers.					

Semester -IV				
Course code: 2242E	General English	T/P	C	H/W
	ENGLISH FOR ENRICHMENT – II	T	3	6

Unit - 1	**Drama** The Merchant of Venice- William Shakespeare
Unit - 2	**Fiction** *Brave New World* – Aldous Huxley
Unit - 3	**One Act Plays** 1. The Bishop's Candle Sticks- Norman Mackinnel 2. Chitra- Rabindranath Tagore 3. Refugees – Asif Currimbhoy
Unit - 4	**Grammar** 1. Concord 2. Question Tag 3. Degrees of Comparison
Unit - 5	**Composition** 1. Expansion of Proverbs 2. Group Discussion 3. Conversation (Apologizing, Requesting, Thanking)

Text Book

The Merchant of Venice- William Shakespeare

Brave New World – Aldous Huxley, *Manimekalai Publications, Chennai.*

One-Act Plays, edited by *Dr.V.Nagarajan and Prof.P.Madhan,* Harrows *Publications, Chennai.*

Modern English – *A Book of Grammar Usage and Composition* by N.Krishnaswamy, Macmillan Publishers.

Semester - V		
ENGLISH FOR CAREER DEVELOPMENT/ EMPLOYABILITY SKILLS		**H/W**
		2
Objectives	➢ To enable students to consolidate the language skills needed for facing Competitive Examinations ➢ To promote skills of verbal and grammatical reasoning ➢ To improve levels of reading comprehension and writing skills. ➢ To equip learners with the rhetorical and stylistic skills needed for cogent and critical writing. ➢ To enable learners face different competitive examinations.	
Unit -I	Basic in English Grammar and Usage: Articles, Prepositions, Tenses, Concord, Question Tag.	
Unit-II	Homophones – Homonyms – Phrases and Idioms- One-word Substitution – Reading Comprehension.	
Unit- III	Error Correction	
Unit- IV	Letter Writing (Formal and Informal) – Note- Making	
Unit -V	Expansion of Proverbs – Writing Essays.	

Books for Reference:

Bhatnagar, R. P. , 2009 *English for Competitive Examination*. New Delhi: Laxmi Publishers India

Krishnaswamy, N. , 2000 *Modern English: A Book of Grammar, Usage and Composition*. India Laxmi Publishers.

Pillai, Radhakrishna. , 2002 G. *English Grammar and Composition*. Emerald Publishers.

Prasad, Hari M, and Uma R. Shina. 2005 *Objective English for Competitive Examination.* New Delhi: Tata McGraw - Hill Education Pvt. Ltd.,

Outcomes	➢ Plan to face various types of Competitive Examinations. ➢ Evaluate and use various types of discourse. ➢ Adopt right patterns of language in their writing. ➢ Develop rhetorical and stylistics skills. ➢ Assess ideas from various points of view.

SEC

Semester - I					
Course code:	**SEC –I**	T/P	C	H/ W	
22BVE1	**VALUE EDUCATION**	T	2	2	
Objectives	➢ To impart humanism values among the student under various religious thoughts ➢ To make them awareness of ethics and civil rights ➢ To familiarities the students with basic features of extracurricular activities such NSS and NCC and relevance of Abdul Kalam and Mother Teresa efforts to teach values ➢ To impart skills by preparing project works such as writing poems and stories				
Unit -I	Definition – Need for Value Education – How Important Human Values are – Humanism and Humanistic Movement in the World and in India – Literature on the Teaching of Values Under Various Religions Like Hinduism, Buddhism, Christianity, Jainism, Islam, Etc. Agencies for Teaching Value Education in India – National Resource Centre for Value Education – NCERT– IITS and IGNOU.				
Unit-II	**Vedic Period – Influence** of Buddhism and Jainism – Hindu Dynasties – Islam Invasion – Moghul Invasion – British Rule – Culture Clash – Bhakti Cult – Social Reformers – Gandhi – Swami Vivekananda – Tagore – Their Role in Value Education.				
Unit- III	**Value Crisis – After Independence:** Independence – Democracy – Equality – Fundamental Duties – Fall of Standards in All Fields – Social, Economic, Political, Religious and Environmental – Corruption in Society. Politics Without Principle – Commerce Without Ethics – Education Without Character – Science Without Humanism – Wealth Without Work – Pleasure Without Conscience – Prayer Without Sacrifice – Steps Taken by The Governments – Central and State – To Remove Disparities on the Basis of Class, Creed, Gender.				
Unit -IV	**Value Education on College Campus:** Transition from School to College – Problems – Control – Free Atmosphere – Freedom Mistaken for License – Need for Value Education – Ways of Inculcating It – Teaching of Etiquettes – Extra-Curricular Activities – N.S.S., N.C.C., Club Activities – Relevance of Dr.A.P.J. Abdual Kalam's Efforts to Teach Values – Mother Teresa.				
Unit -V	**Project Work** 1. Collecting Details about Value Education from Newspapers, Journals and Magazines. 2. Writing Poems, Skits, Stories Centering on Value-Erosion in Society. 3. Presenting Personal Experience in Teaching Values. 4. Suggesting Solutions to Value – Based Problems on the Campus.				

Reference and Textbooks: -

Chakrabarti, M. (1997). *Value education: changing perspectives*. Kanishka Publishers.

Eknath Ranade (1991). *Swami Vivekananda's Rousing Call to Hindu Nation*. Centenary Publication

Karabi Kakoti, *Value Education – Need of the Hour*.

Radhakrishnan, S. (1968). *Religion and culture*. Orient Paperbacks, New Delhi

Saraswathi, T. S. (Ed.). (1999). *Culture, socialization and human development: Theory, research and applications in India.* SAGE Publications Pvt. Limited.

Satchidananda, M. K. (1991). *Ethics, education, Indian unity and culture.* Ajanta Publications, Delhi.

Venkataiah, N. (Ed.). (1998). *Value education*. APH Publishing, New Delhi.

Outcomes	After studied, the student will be able to ➢ Knowledge about Humanism and Humanistic Movement in the World and in India ➢ Understand the Social Reformers and Their Role in Value Education ➢ Explore the theories of Fundamental Duties, Ethics, Extra-Curricular Activities – N.S.S., N.C.C ➢ Know the concept of Value Education on College Campus, Project Work regarding Writing Poems, Skits, Stories Centering on Value-Erosion in Society

Semester - II				
Course code:	**SEC-II**	**T/P**	**C**	**H/ W**
22BES2	**ENVIRONMENTAL STUDIES**	**T**	**2**	**2**
Objectives	➢ To understand the multidisciplinary nature of environmental studies such as forest, water, mineral and energy and land resources. ➢ To portray the eco system bio diversity and its conservation. ➢ To impart the knowledge of environmental pollution ➢ To know the importance of field work to study common plants, insects and birds and visit local areas to document environmental assets.			
Unit -I	**The Multidisciplinary Nature of Environmental Studies:** Definition, Scope and importance - Need for public awareness			
Unit-II	**Natural Resources:** Renewable and non-renewable resources A). **Forest Resources:** Use and Over-Exploitation, Deforestation, Case Studies, Timber Extraction, Mining, Dams and Their Effect on Forests and Tribal People. B). **Water Resources:** Use and Over-Utilization of Surface and Ground Water, Floods, Drought, Conflicts over Water, Dams- Benefits and Problems. C). **Mineral Resources:** Use and Exploitation, Experimental Effects of Extracting and Using Mineral Resources, Case Studies. D). **Food Resources:** World Food Problems, Changes Caused by Agriculture and Overgrazing, Effects of Modern Agriculture, Fertilizer-Pesticide Problems, Water Logging, Salinity, Case Studies. E). **Energy Resources:** Growing Energy Needs, Renewable and Non-Renewable Energy Sources, Use of Alternate Energy Resources, Case Studies. F). **Land Resources:** Land as a Resource, Land Degradation, Main Induced Landsides, Soil-Erosion and Desertification. ➢ Role of Individual in Conservation of Natural Resources ➢ Equitable Use of Resources for Sustainable Lifestyle			
Unit- III	**ECOSYSTEMS, BIO-DIVERSITY AND ITS CONSERVATION** **Ecosystems:** Concept of an Ecosystem, Structure and Function of an Ecosystem, Energy Flow in The Ecosystem, Food Chains, Food Webs and Ecological Pyramids. **Biodiversity and Its Conservation:** Introduction- Definition: Genetic, Species and Ecosystem Diversity**,** Bio-Geographical Classification of India**,** Value of Biodiversity: Consumptive Use, Productive Use, Social Ethical, Aesthetic and Option Values. Biodiversity at Global, National and Local Levels**,** India as a Mega-Diversity Nation**,** Hot Spots of Biodiversity**,** Threats to Biodiversity: Habitat Loss, Poaching of Wildlife, Man-Wildlife Conflicts**,** Endangered and Endemic Species of India**,** Conservation of Biodiversity: In-Situ And Ex-Situ Conservation of Biodiversity**.**			
Unit -IV	**Environmental Pollution:** Causes, Effects And Control Measures of: **A).**Air Pollution, **B).** Water Pollution, **C).** Soil Pollution, **D).** Marine Pollution, **E).** Noise Pollution, **F).** Thermal Pollution, **G).** Nuclear Hazards.			
Unit -V	**Field Work** ➢ Visit to a Local Area to Document Environmental Assets–River/ Forest/ Grassland/ Hill/ Mountain ➢ Visit to a Local Polluted Site- Urban/Rural/Industrial/Agricultural ➢ Study of Common Plants, Insects, Birds ➢ Study of Simple Ecosystem-Pond, River, Hill Slopes, etc.,			

Reference and Textbooks: -

Agarwal, K. C. (2001). *Environmental Biology*. Nidi Publication Ltd.

Bharucha, E. (2002). *The Biodiversity of India* (Vol. 1). Mapin Publishing Pvt Ltd, Ahamedabad, India.

Brunner, C. R. (1993). *Hazardous waste incineration*. Mcgraw Hill Inc.

Clark, R. B., Frid, C., & Attrill, M. (2001). *Marine pollution* (Vol. 5). Oxford: Oxford university press.

Cunningham, W. P., Cooper, T. H., Gorham, E., & Hepworth, M. T. (1998). *Environmental encyclopedia*.

De, A.K. (1990). *Environmental Chemistry*. Wiley Eastern Ltd.

Gleick, H.P.(1993). *Water In Crisis, Pacific Institute For Studies In Dev, Environment & Security*. Stockholm Env. Institute, Oxford University Press.

Goel, P. K., & Trivedi, R. K. (1998). *An introduction to air pollution*. Technoscience Publication, India.

Hawkins, R. E. *Encyclopedia of Indian Natural History.* Bombay Natural History Society, Bombay.

Heywood, V. H., & Watson, R. T. (1995). *Global biodiversity assessment* (Vol. 1140). Cambridge: Cambridge university press.

Jadhav, H. V., & Bhosale, V. M. (2006). *Environmental Protection and laws*. Himalaya Publishing House.

McKinney, M. L., & Schoch, R. M. (1996). *Environmental Science: Systems and Solutions* (St. Paul, MN).

Mhaskar, A. K. *Matter Hazardous*. Techno-Science Publications.

Miller, T. G. (1989). *Environmental Science: Working with the earth (2 nd).* Wadsworth Publicing Co.

Narain, S., Mahapatra, R., Das, S., Misra, A., Parrey, A. A., Pandey, K., & Banerjee, S. (2014). *Down to Earth*. Centre for Science and Environment.

Odum, E. P., & Barrett, G. W. (1971). *Fundamentals of ecology* (Vol. 3, p. 5). Philadelphia: Saunders.

Rao, M.N., & Datta, A.K. (1987). *Waste Water Treatment*. Oxford & Ibh Publ, Co.Pvt. Ltd.

Sharma, B. K. (2001). *Environmental Chemistry–6th Revised Edition*.

Townsend, C.R., Begon, M., & Harper, J.L. (2008). *Essentials of Ecology* (3rd edition). Oxford: Blackwell Publishing.

Trivedi, R. K. (2010). *Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards*. Vol. I and II, Enviro Media.

Wanger, K.D. (1998). *Environmental Management*. Saunders Co. Philadelphia, USA.

Outcomes	On successful completion of the subject, the students acquired knowledge about: ➢ Renewable and non-renewable resources. ➢ Species and Ecosystem Diversity**,** Bio-Geographical Classification of India**,** Value of Biodiversity: ➢ Causes, Effects and Control Measures of environmental pollution ➢ Field work knowledge of studying eco system pond, river, hill and common plants, insects and birds ➢ Documentation of environmental assets

Semester - III					
Course code: **22BE3**	**SEC-III**		**T/P**	**C**	**H/ W**
	ENTREPRENEURSHIP		**T**	**2**	**2**

Objectives	➢ To enable the students to understand the concept of Entrepreneurship and to learn the professional behaviour about Entrepreneurship. ➢ To identify significant changes and trends which create new business opportunities? ➢ To analyse the institutional arrangement for potential business opportunities. ➢ To provide conceptual exposure on converting ideas to an women entrepreneurship
Unit -I	Entrepreneur – Meaning – Importance – Definition – Types – Functions – Qualities of an Entrepreneur – Entrepreneurship as a career.
Unit-II	Business Promotion – Product selection – Form of ownership – Plant location – land, building, water and power, raw material, machinery, power and other infrastructural facilities– Licensing, registration and local bye laws.
Unit- III	Institutional arrangements for entrepreneurship development – DIC, SIDCO, NSIC, SISI – Institutional finance to entrepreneurs – TIIC, SIDBI, Commercial banks – Incentives to small scale industries.
Unit -IV	Project report – Meaning and importance – Project report – Format of a report (as per requirements of financial institutions) – Project appraisal – Market feasibility – Technical feasibility – Financial feasibility and economic feasibility – Break even analysis.
Unit -V	Entrepreneurship development in India – Women entrepreneurship in India – Sickness in small scale industries and their remedial measures.

Reference and Textbooks: -

Entrepreneurship and Management of Small business – Centre for Entrepreneurship Development, Madurai

Joseph Paul, N. Ajit kumar and T.Mampilly. *Entrepreneurship development*. Himalayan Publishing House.

Khan, M.A. *Entrepreneurship Development Programmes in India*. Kanishka Publishing House, Delhi

Saravanavel, P. (1997). *Entrepreneurial Development*. *Ess Pee kay Publishing House, Chennai*.

Vasant Desai. *Dynamics of Entrepreneur Development and Management*. Himalayan Publishing House.

Outcomes	After studied, the student will be able to ➢ To understand the significance of entrepreneurship and entrepreneur qualities. ➢ To know about the developing ideas and techniques of business. ➢ To understand about the procedures of startup. ➢ To identify the institutional support provided to entrepreneurs. ➢ To analyse the women entrepreneurship development