ALAGAPPA UNIVERSITY – AFFILIATED COLLEGES

B. Voc., Software Development

SYLLABI

[For the candidates admitted from the Academic Year 2023 – 2024 onwards]

ALAGAPPA UNIVERSITY
(A State University Accredited with "A+" grade by NAAC (CGPA: 3.64) in the Third Cycle and Graded as Category-I University by MHRD-UGC)
Karaikudi -630 003, Tamil Nadu.

ALAGAPPA UNIVERSITY, KARAIKUDI
NEW SYLLABUS FOR AFFILIATED COLLEGES
UNDER CBCS PATTERN WITH EFFECT FROM 2023-24 ONWARDS
B. Voc (SOFTWARE DEVELOPMENT)
Programme Structure

Sem.	Part	Course Code	Courses	Course Name	Credits		Hours / Week	T/P	Marks		Total
					Skill (S)	General (G)			Int.	Ext.	
I	I	2311T	T/OL	தமிழ் இலக்கிய வரலாறு-I / Other Languages– I *	--	3	3	T	25	75	100
	II	2312E	E	General English–I *	--	3	3	T	25	75	100
	III	23VSD1C1	CC 1	Fundamentals of C Programming	5	--	5	T	25	75	100
		23VSD1P1	CC 2	**Practical** :C Programming	5	--	5	P	25	75	100
		23VSD1P2	CC 3	**Practical** :Office Automation	4	--	4	P	25	75	100
		23VSDA1	AL - IA	Fundamentals of Digital Computers and Programming	4	--	4	T	25	75	100
	IV	23VSD1G1	G 1	Life Coping Skills – Basic	--	4	4	T	25	75	100
		23VSD1SP	SEC - I	Quantitative Aptitude #	--	2	2	P	25	75	100
				Total	**18**	**12**	**30**		**200**	**600**	**800**
II	I	2321T	T/OL	தமிழ் இலக்கிய வரலாறு-II / Other Languages–II*	--	3	3	T	25	75	100
	II	2322E	E	General English – II*	--	3	3	T	25	75	100
	III	23VSD2C1	CC 4	Web Technology	5	--	5	T	25	75	100
		23VSD2P1	CC 5	**Practical :** Web Technology	5	--	5	P	25	75	100
		23VSD2P2	CC6	**Practical** : **Desktop Publishing And Multimedia Lab**	4	--	4	P	25	75	100
		23VSDA2	AL - IB	Operations Research	4	--	4	T	25	75	100
	IV	23VSD2G1	G 2	Life Coping Skills – Advanced	--	4	4	T	25	75	100
		23VSD2GP	G 3	Interview Techniques & Interpersonal Communications#	--	2	2	P	25	75	100
				Total	**18**	**12**	**30**		**200**	**600**	**800**
III	I	2331T	T/OL	**தமிழக வரலாறும் பண்பாடும்** /Other Languages– III*	--	3	3	T	25	75	100
	II	2332E	E	General English -III	--	3	3	T	25	75	100
	III	23VSD3C1	CC 7	Operating systems	5	--	5	T	25	75	100
		23VSD3P1	CC 8	**Practical**: Data Structures and Algorithms using C++	5	--	5	P	25	75	100
		23VSD3P2	CC 9	**Practical :** Content management system	4	--	4	P	25	75	100
		23VSDAP3	AL - IIA	**Practical :** Linux and Shell Programming	4	--	4	P	25	75	100
	IV	23VSD3G1	G 4	Professional Etiquettes	--	1	2	T	25	75	100
		23VSD3GP	G 5	Extension Activities #	--	1	--	P	25	75	100
		23VSD3S1	SEC- II	Entrepreneurship	--	2	2	T	25	75	100
		233AT/ 23VSD3S2	SEC- III	**Non-major Elective** 1. Adipadai Tamil 1 (or) 2.IT Skills for Employment	--	2	2	T	25	75	100
				Total	**18**	**12**	**30**		**325**	**675**	**1000**

Sem	Part	Course Code	Course Code	Course Name	Credits		Hours Week	T/P	Marks		Total
					Skill (S)	General (G)			Int.	Ext.	
IV	I	2341T	T/OL	தமிழும் அறிவியலும் /Other Languages–IV *	--	3	3	T	25	75	100
	II	2342E	E	General English-IV	--	3	3	T	25	75	100
	III	23VSD4E1/ 23VSD4E2	DSE 1	A. Data Communication Networks (or) B. Computer Graphics	4	--	4	T	25	75	100
		23VSD4C1	CC 10	Fundamentals of Accounting	3	--	4	T	25	75	100
		23VSD4P1	CC 11	**Practical**: RDBMS	4	--	4	P	25	75	100
		23VSD4P2	CC 12	**Practical :**XML	4	--	4	P	25	75	100
		23VSDAP4	AL- IIB	**Practical** : PC Assembling and Troubleshooting	3	--	4	P	25	75	100
		23VSD4IV	G 6	Industry Visit and Comprehensive viva @	--	2	--	PR	25	75	100
		23BES4	SEC - IV	Environmental Studies	--	2	2	T	25	75	100
		234AT/ 23VSD4S1	SEC- V	**Non-major Elective** 1. Adipadai Tamil 2 (or) 2. Small Business Management	--	2	2	T	25	75	100
				Total	**18**	**12**	**30**		**325**	**675**	**1000**
V	III	23VSD5E1/ 23VSD5E2	DSE 2	A. Software Engineering (or) B. Cloud Computing	4	--	4	T	25	75	100
		23VSD5C1	CC 13	Java Programming	4	--	4	T	25	75	100
		23VSD5P1	CC 14	**Practical**: Java Programming	4	--	4	P	25	75	100
		23VSD5P2	CC 15	**Practical :**Python	3	--	3	P	25	75	100
		23VSD5P3	CC 16	**Practical** : Software Design	3	--	3	P	25	75	100
	IV	23VSD5G1	G 7	Python Programming	--	4	4	T	25	75	100
		23VSD5P4	G 8	Android Programming#	--	4	4	P	25	75	100
		23VSD5P5	G 9	Competitive Examination Skills#	--	2	2	P	25	75	100
		23BVE5	G 10	Value Education	--	2	2	T	25	75	100
				Total	**18**	**12**	**30**		**300**	**600**	**900**
VI	III	23VSD6I	CC 17	Industrial Internship	12	--	12	PR	100	100	200
		23VSD6D	CC 18	Dissertation and viva voce@	6	--	6	PR	25	75	100
	IV	23VSD6P1	G 11	**Practical** : Open Source	--	4	4	P	25	75	100
		23VSD6P2	G 12	**Practical** : Distributed Programming	--	4	4	P	25	75	100
		23VSD6G1	G 13	Corporate Grooming and Finishing skills	--	4	4	T	25	75	100
				Total	**18**	**12**	**30**		**200**	**400**	**600**
				Grand Total	**108**	**72**	**180**		**1550**	**3550**	**5100**

Note :

* Common Syllabus of Affiliated colleges, Alagappa University will be followed

#Fully internal Course: Examination will be conducted internally

@External Examination will be conducted as Viva-voce Examination

Additional hours may be allotted for Library / Yoga

- T/OL – 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
- MOOCs – Massive Open Online Courses
- T/P – Theory/Practical

Language Courses

Semester	Course Name
1	Tamil/Other Languages– I *
	Communicative English–I *
2	Tamil / Other Languages – I *
	Communicative English – II *
3	Tamil/Other Languages– III *
	English – III *
4	Tamil/Other Languages– IV *
	English – IV*

Skill Subjects

A. Core Courses

Semester	Course Name
1	**Core I** : Fundamentals of C Programming
	Core II - Practical :C Programming Lab
	Core III - Practical :Office Automation -Lab
2	**Core – IV** : Web Technology
	Core - V - Practical : Web Designing Lab
	Core - VI - Practical : Desktop Publishing and Multimedia Lab
3	**Core –VII** :Operating systems
	Core-VIII - Practical: Data Structure and Algorithms using C++ Lab
	Core–IX - Practical : Content management system Lab
4	**Core- X**: Fundamentals of Accounting
	Core- XI - Practical: RDBMS Lab
	Core–XII - Practical :XML Lab
5	**Core– XIII :** Java Programming
	Core- XIV - Practical: Java Programming Lab
	Core–XV - Practical : Python Lab
	Core–XVI - Practical : Software Design Lab
6	**Core - XVII :** Industrial Internship
	Core - XVIII : Dissertation and viva voce@

B. Allied Courses

Semester	Course Name
1	**Allied I** –Fundamentals of Digital Computers and Programming
2	**Allied – II** : Operations Research
3	**Allied -III-Practical :** Linux and Shell Programming Lab
4	**Allied - IV - Practical** : PC Assembling and Troubleshooting Lab

C. Discipline Specific Electives

Semester	Course Name
4	A. Data Communication Networks(or) B. Computer Graphics
5	A. Software Engineering(or) B. Cloud Computing

General Courses

Semester	Course Name
1	Life Coping Skills – Basic
2	Life Coping Skills – Advanced
3	Professional Etiquettes #
	Extension Activities#
4	Interview Techniques & Interpersonal Communications #
	Industry Visit and Comprehensive viva @
5	Python Programming
	Android Programming
	Competitive Examination Skills
	Quantitative Aptitude #
6	Open Source Lab
	Distributed Programming Lab
	Corporate Grooming and Finishing skills

Skill Enhancement Course

Semester	Course Name
1	Value Education *
2	Environmental Studies*
3	Entrepreneurship *
	Non-major Elective–I:* 1. Adipadai Tamil 2. Advance Tamil 3.IT Skills for Employment/MOOC'S
4	**Non-major Elective–II**:* 1. Adipadai Tamil 2. Advance Tamil 3. Small Business Management /MOOC'S

* Common Syllabus of Affiliated colleges, Alagappa University will be followed
#Fully-internal Course: Examination will be conducted internally
@External Examination will be conducted as Viva-voce Examination

Practical Subjects:

The following list of parameters are considered for the evaluation of practical examination.

Total Marks: 100 (Internal: 25 marks, External: 75 Marks)

For Internal Marks:

i. Internal test	:	20
ii. Record Work	:	05

Total	**:**	**25**

For External Marks:

i. Aim, Procedure / Algorithm and Program	:	15
ii. Coding and Compilation	:	20
iii. Debugging	:	20
iv. Results	:	20

Total	**:**	**75**

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Semester - I				
Course code: 23VSD1C1	**Core Course - 1**	**T/P**	**C**	**H/W**
	FUNDAMENTALS OF C PROGRAMMING	**T**	**5**	**5**

Objectives	• To understand the fundamentals of 'C 'programming language. • To impart Programming skills with C language • To enable the students to make use of the constructs in 'C' language for programming
Unit -I	**Overview of C:** History of C – Importance of C – Basic Structure of C Programs – Programming Style – Character Set – C Tokens – Keywords and Identifiers – Constants, Variables and Data Types – Declaration of Variables – Defining Symbolic Constants – Declaring a variable as a constant – overflow and underflow of data – **Operators and Expressions:** Arithmetic, relational, logical, assignment operators – increment and decrement operators, conditional operators, bitwise operators, special operators – Arithmetic Expressions- Evaluation of Expressions – Precedence of Arithmetic Operators – Type Conversions in Expressions – Operator Precedence and Associativity Mathematical functions.
Unit- II	**Managing I/O Operations:** Reading and Writing a Character – Formatted Input, Output – **Decision Making & Branching:** if statement - if else statement - nesting of if else statements - else if ladder – switch statement – the ?: operator – go to statement – the while statement – do statement – the for statement – jumps in loops.
Unit -III	**Arrays:** One-Dimensional Arrays – Declaration, Initialization – Two-Dimensional Arrays – Multi-dimensional Arrays – Dynamic Arrays – Initialization. **Strings:** Declaration, Initialization of string variables – reading and writing strings – string handling functions
Unit -IV	**User-defined functions:** need – multi-function programs – elements of user defined functions – definition – return values and their types – function calls, declaration, category – all types of arguments and return values – nesting of functions – recursion – passing arrays, strings to functions – scope visibility and lifetime of variables. **Structures and Unions:** Defining a structure – declaring a structure variable – accessing structure members – initialization – copying and comparing – operation on individual members – array of structures – arrays within structures – structures within structures – structures and functions –unions – size of structures – bit fields.
Unit -V	**Pointers:** the address of a variable – declaring, initialization of pointer variables – accessing a variable through its pointer – chain of pointers – pointer increments and scale factors – pointers and character strings – pointers as function arguments – pointers and structures. **Files**: Defining, opening, closing a file – IO Operations on files – Error handling during IO operations – command line arguments.

Text Book:

Balagurusamy, E. (2012). *programming in ANSI C*. Tata McGraw-Hill Education.

Books for Reference:

Gottfried, B. (2006). *Schaum's Outline of Programming with C*. McGraw-Hill Professional Publishing

Kamthane, A. (2006). *Programming with ANSI and Turbo C*. Pearson Education India.

Schildt, H. (2021). C The Complete Reference..

Kanetkar, Y. (1999). Let us C, BPB Pub. *New Delhi*.

Outcomes	This course gave insights about: • Principles and building blocks of 'C' language • To develop programs using 'C' language. • To apply and implement programs to solve simple real-world problems

Semester - I				
Course code: 23VSD1P1	**Core Practical I**	**T/P**	**C**	**H/W**
	C PROGRAMMING LAB	**P**	**5**	**5**

Objectives	• To understand the basic concept of C Programming, and its different modules that include conditional, looping expressions, Arrays and Functions

1. Write a C program to perform all arithmetic operations.
2. Write a C program to find the sum and average of given set of numbers.
3. Write a C program to check the given number is prime or not.
4. Write a C program to calculate simple interest and compound interest.
5. Write a C program to find the area of a triangle.
6. Write a C program to prepare EB bill using if…else if ladder.
7. WriteaCprogramtoprintthegradeofastudentusingswitch…casestatement.
8. Write a C program to print Fibonacci Series using while statement.
9. Write a C program to sort numbers in ascending order using for statement.
10. Write a C program to search an element in an array.
11. Write a C Program to generate student mark list using array of structures
12. WriteaCprogramtoswap/interchangetwovariableswithoutusingtemporaryvariable.
13. Write a C Program to implement the various string handling function
14. Write a C program to sort 10 names in Ascending order
15. Write a C program to find factorial of given number using recursion.
16. Write a C program to add two matrices.
17. Write a C program to multiply two matrices.
18. Write a C program to transpose a matrix.
19. Write a C Program to count number of characters, words, and lines in a text file
20. Write a C Program to create and process pay bill using file

Outcomes	After Completing this course, the students are able to: • Obtain practical knowledge in structured programming • Develop simple applications using C language

Semester - I				
Course code: 23VSD1P2	**Core Practical II**	**T/P**	**C**	**H/W**
	OFFICE AUTOMATION LAB	**P**	**4**	**4**

Objectives

- To impart the knowledge about the Office Automation and the features of MS-Office
- To develop the learner's skills to effective usage of Office Automation package
- To familiarize the facilities available in Open Office and to learn about the accessibility features within the OpenOffice.org suite of applications and to learn to customize them.

MS-Word

1. Create a document file for your Resume
2. Create a document file for a Leave Letter
3. Use of Header & Footer, Bullets & Numbering in a document
4. Create class Timetable using Table option in word – use different table formats
5. Creating Charts within word
6. Create mail and cover using Mail Merge feature
7. Create a table and do table arithmetic and sort text
8. Drawing Flow Charts and smart arts
9. Create a simple word macro and use it

MS-Excel

1. Create a spreadsheet and use different type of cell references
2. Create a spreadsheet to Calculate Student Marks, Result (pass or fail), Total, Percentage and grade
3. Create a spreadsheet for Tax Calculation
4. Use different categories of Functions (Mathematical / Financial / Statistical)
5. Use Conditional Formatting
6. Create a spreadsheet for Sorting and Filtering data
7. Draw Chart – use different formats

MS-PowerPoint

1. Design a Slide Show to explain about a topic of your own interest.
2. Design a Slide Show with animation effects.

MS-Access

Create a Table: Title, Author name, Year of Publishing, Price
Write queries to

- Get the details of all the books.
- Get the details of all the books whose price between 500 and 1000.
- Get the details of all the books whose year of Publishing is 2002 or 2005.

Open Office

1. Document Creation and formatting
2. Inserting objects to documents
3. Table creation and manipulation
4. Mail-merge
5. Spreadsheet creation
6. Managing data in spreadsheets
7. Charts and graphs
8. Creating presentations
9. Formatting and adding animation to presentations

Outcomes

After Completing this course, the students are able to:

- Obtain practical knowledge in office automation
- get insight about the facilities in MS Office packages
- gain knowledge about Open office package

Semester - I				
Course code: 23VSDA1	**Allied – I**	**T/P**	**C**	**H/W**
	FUNDAMENTALS OF DIGITAL COMPUTERS AND PROGRAMMING	**T**	**4**	**4**

Objectives	• To impart the knowledge about principles of Digital Computers • To facilitate the students with fundamentals of Logic Gates and Circuits • To enable the students to learn about algorithms and flowcharts for solving problems.
Unit -I	**Introduction:** Computer Characteristics – Brief History – Technical Evolution of Computers – Categories – Hardware – Software – Need for Computer Literacy – Uses and Impact – Organization of Computers – CPU – Components of CPU – Types of Computer Memory – Communication Pathways –CPU at Work – Computer Registers – Data Representation. **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 - II	**Digital Logic:** The Basic Gates-NOT, OR, AND – Universal Logic Gates - NOR, NAND – And - OR Invert Gates – Positive &Negative Logic.**Combinational Logic Circuits:** Boolean Laws and Theorems – Sum of Products method – Truth table to Karnaugh map – Pairs, Quads and Octets – Karnaugh Simplification – Sum of Products and Product of Sums – Simplification – NAND and NOR Implementation.
Unit -III	**Data Processing Circuits:** Multiplexers – Demultiplexers – 1 to 16 Decoder – BCD To Decimal Decoders – Seven Segment Decoders. Encoders – Exclusive OR Gates – Parity Generator Checkers – Read Only Memory – Programmable Array Logic
Unit -IV	**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. Clock waveforms– Flip-flops – RS flip flops – JK flip flop – Registers – Types of Registers
Unit -V	**Algorithms and Flow Charts:** Programming task – Pseudo code & Algorithms – Flowchart basics – Developing algorithms and flowcharts for solving simple problems. Flowcharts for sequential, selection and iterative programming structures

Text Book:

Leach, D. P., Malvino, A. P., & Saha, G. (2010). *Digital Principles and Applications*.

Jaiswal, S. (1999). *Information Technology today*. Galgotia Publications.

Books for Reference:

Mano, M. M. (2017). *Digital logic and computer design*. Pearson Education India.

Salivahanan, A. S. (2009). *Digital Circuits and Design, 3E*. Vikas Publishing House Pvt Ltd.

Luciano Manelli, (2017).*Understating Algorithms and Flowcharts*, Create Space Independent Publishing Platform.

Goel, A. (2010). *Computer fundamentals*. Pearson Education India.

Dromey, R. G. (1982). *How to Solve it by Computer*. Prentice-Hall, Inc.

Outcomes	This course gave insights about: • Various components of computer systems and its circuits • Analyze and design algorithms and flowcharts for solving problems.

Semester - I				
Course code: 23VSD1G1	**General – 1**	**T/P**	**C**	**H/W**
	LIFE COPING SKILLS - BASIC	**T**	**4**	**4**

Objectives	• To understand life skills, its concept, process and practices. • To develop the competence in application of life skills for effective learning and planning for career. • To provide orientation in Life Coping Skills
Unit -I	**Self –Concept, Self-Acceptance and Personality Development:**Concept and definition of Self-Esteem, Factors influence Self-Esteem, Low Vs High Self-Esteem, Step to raise Self Esteem, Definition of Self of Self Concept, Characteristics of the Self-Concept, Introduction, Definition and Theoretical perspective of self-Acceptance, Benefits of Self-Acceptance, Characteristics and Elements of Personality and Identity of the Individual.
Unit -II	**Positive Thinking, Motivation and Self Actualization:** Positive Thinking and Positive Attitude, The power of positive thinking, positive imaging, Concept and Theories of Motivation and Self-Actualization and Factors of Motivation
Unit -III	**Goal Setting:** Definition of Goal Setting, Different types of Goals, Importance of Goal setting, Obstacles to set Goals and Steps to Goal Setting.
Unit -IV	**Coping Skills:** Depression, Fear, Anger and Failure – Definition, Symptoms, Causes and Impact of Depression, How to overcome Depression, Theoretical Input of Fear, Kinds of Fear, Coping with Fear, Ways to overcome Fear, Consequence of Anger, Managing Anger, Steps toward Anger Management, Positive Attitude towards Failure, Coping with Failure
Unit -V	**Leadership:** Emergence and Functions of Leader, Characteristics of Leadership, Attributes of Leadership, Types of Leadership, Characteristics of Successful Leadership

Text Book:

Xavier Alphones, S.J. (2004). *We Shall Overcome - A Textbook on Life Coping Skills*. Chennai: ICRDCE Publication.

Books for Reference:

Frydenberg, E. (2010). *Think positively!: A course for developing coping skills in adolescents*. A&C Black.

Harper, F. G., & LPC-S, A. C. S. (2019). *Coping Skills: Tools & Techniques for Every Stressful Situation*. Microcosm Publishing.

Outcomes	After Completing this course, the students are able to: • Identify their conflict styles and the basic values of self and others • develop meaningful inter-personal relationships in different environments. • Inculcate a positive mind set and a humanistic attitude.

Semester - I				
Course code: 23VSD1SP	**SEC-I**	**T/P**	**C**	**H/W**
	QUANTITATIVE APTITUDE	**P**	**2**	**2**

Objectives	• To demonstrate various principles in solving mathematical problems and thereby reduce the time taken for performing job functions and to enable the students to acquire skills for facing their job interviews • To learn to critically evaluate and solve various real-life problems using mathematical techniques
Unit -I	Numbers, HCF, LCM, Decimal Fractions, Simplification, Square Roots, cube roots, averages, Problems in numbers and ages.
Unit -II	Surds, Indices, Percentages, Profit and Loss, Ratio and Proportion, Partnership, Chain Rule, Time and Work, Pipes and Distances.
Unit -III	Time and distance, Problems on Trains, Boats and Streams, Allegation, Simple Interest, Compound Interest, Logarithms, Area.
Unit -IV	Volume and Surface Area, Races and Games of Skill, Calendar, Clocks, Stocks and Shares, Permutation and Combination, Probability.
Unit -V	True discount, Banker's Discount, Height and Distances, Odd man out and Series, Tabulation, Bar graphs, Pie charts, Line Graphs.

Note:

- Thispaperishavingtheobjectiveofimpartingrequiredskillsinordertofacepreliminary screening tests during the placement interviews.
- At the end of the semester, **internal evaluation will be done for100 marks** with 50 objective type questions each of two marks.

Books for Reference:

Aggarwal,RS.(2018).*QuantitativeAptitudeforCompetitiveExaminations.*NewDelhi:SChand&Co. Ltd.

Barron's,(2016).*Guide for GMAT*. New Delhi: Galgotia Publications.

Outcomes	After Completing this course, the students are able to: • gain awareness about competitive examinations • get trained in different skills required for clearing the competitive examinations

Semester - II				
Course code: 23VSD2C1	**Core – 4**	**T/P**	**C**	**H/W**
	WEB TECHNOLOGY	**T**	**5**	**5**

Objectives	• To impart the fundamentals of Web basic concepts. • To understand the various steps in designing a creative webpage using HTML/CSS • To design dynamic website using HTML, CSS, JavaScript and XML.
Unit -I	**Web – Basic Concepts:** Internet – Internet based services – WWW – HTTP – URL – Website – Web Server – Web Browser – SMTP Server – ISP – HTML – Hyperlink – DNS – W3C – Types of Web browser – Types of Web Server – Web tools – Web domain
Unit -II	**Introduction to HTML:** Markup Languages-editing HTML-common tags-header-text styling-linking-images-formatting text-special characters, horizontal rulers and line breaks-unordered list –nested and ordered list –tables and formatting-forms-linking-frames.
Unit -III	**CSS:** Introduction, Levels of style sheets, Style specification formats, Selector forms, Property value forms, Font properties, List properties, Color, Alignment of text, The Box model, Background images, The and tags, Conflict resolution.
Unit -IV	**JavaScript:** Introduction - Control Structures : Selection Structure: If structure –While structure – Assignment operators – Increment / Decrement operators - for structure – switch structure – Do...While structure – break and continue statements - Logical operators.
Unit -V	**JavaScript Events:** Registering Event handlers – event On Click and on load – Event on mouse move and on mouse out – on focus and on blur. **XML:** Introduction – Structuring data – XML namespace – Document Type Definition (DTD)

Text Book:

H.M.Deitel, P.J.Deital & T.R.Neito, *Internet and World wide web - How to Program*. Pearson Education Asia-Addison Wesley Longman pvt Ltd

Gopalan, N. P., & ADIKESAVAN, T. (2014). *Web Technology: A Developer's Perspective*. PHI Learning Pvt. Ltd

Books for Reference:

Duckett, J. (2011). *Beginning HTML, XHTML, CSS, and Javascript*. John Wiley & Sons.

Bates, C. (2002). *Web Programming Building Internet Applications*. John Wiley & Sons.

Srinivasan, M. (2012). *Web Technology*. Pearson Education India.

Outcomes	After Completing this course, the students are able to: • get in depth knowledge about the Web basics. • design creative and dynamic websites using HTML, CSS, Javascript and XML

Semester - II				
Course code: 23VSD2P1	**Core Practical III**	**T/P**	**C**	**H/W**
	WEB TECHNOLOGY LAB	**P**	**5**	**5**

Objectives	• To impart the fundamentals of Web basic concepts. • To understand the various steps in designing a creative webpage using HTML/CSS • To design dynamic website using HTML, CSS, JavaScript and XML.

1. Create a form having number of elements (Textboxes, Radio buttons, Checkboxes, and so on). Write JavaScript code to count the number of elements in a form.
2. Create a HTML form that has number of Textboxes. When the form runs in the Browser fill the textboxes with data.
3. Write JavaScript code that verifies that all textboxes has been filled. If a textboxes has been left empty, popup an alert indicating which textbox has been left empty.
4. Develop a HTML Form, which accepts any Mathematical expression. Write JavaScript code to Evaluates the expression and Displays the result.
5. Create a page with dynamic effects. Write the code to include layers and basic animation.
6. Write a JavaScript code to find the sum of N natural Numbers. user-definedefined function)
7. Write a JavaScript code block using arrays and generate the current date in words, this should include the day, month and year.
8. Create a form for Student information. Write JavaScript code to find Total, Average, Result and Grade.
9. Create a form for Employee information. Write JavaScript code to find DA, HRA, PF, TAX, Gross pay, Deduction and Net pay.
10. Create a form consists of a two Multiple choice lists and one single choice list
    (a)The first multiple choice list, displays the Major dishes available
    (b)The second multiple choice list, displays the Starters available.
    (c)The single choice list, displays the Soft drinks available.
11. Create a web page using two image files, which switch between one another as the mouse pointer moves over the image. Use the on Mouse Over and on Mouse Out event handlers.

Outcomes	After completing this course, the students are able to: • Get the knowledge to analyze the given assignment to select sustainable web development and design methodology • To develop interactive website creation skills and make the students to analyse the usability of a website

Semester - II				
Course code: 23VSD2P2	**Core Practical IV**	**T/P**	**C**	**H/W**
	DESKTOP PUBLISHING AND MULTIMEDIA LAB	**P**	**4**	**4**

Objectives	• To identify components of desktop publishing, such as text, graphics, and different page layout • It imparts the techniques the multimedia so that the students will come across to produce an appropriate design.

Pagemaker

- Introduction to Pagemaker
- Editing Text in the Document
- Creating a Text Block with Text Tool
- Placing Text in a Frame
- Formatting a Document
- Demonstrate Drawing Tools

Photoshop

- Introduction to Photoshop
- Learn to Photoshop various Tools
- Design a Student ID card using Photoshop
- Design an Invitation using Photoshop
- Using Photoshop design Flex Banners
- Design a Web Page layout using the slice tool using Photoshop
- Design a Black and White photo into a Colored photo
- Apply Text Effect in Various Text Using Photoshop

Flash

- Introduction to Flash interface and Tools
- Working with Layers in Flash
- Making basic Animation with Tweens
- Develop an image with the help of basic shapes in Flash
- Animate an image using motion, shape tweening, and actions using Flash
- Design an animation to bounce a ball using Flash.
- Masking in Flash

CorelDRAW

- Design a visiting card using CorelDRAW
- Using the Color Palette
- Using Layers and Tables
- Design the Flyer with Coupon

Outcomes	After Completing this course, the students are able to: • To Manage images appropriately and Demonstrate design and animation concepts

Semester - II				
Course code: 23VSDA2	**Allied – 2**	**T/P**	**C**	**H/W**
	OPERATIONS RESEARCH	**T**	**4**	**4**

Objectives	• To introduce the various Operations Research and their usages. • To enable the students to effectively solve the Resource Management problems using Operations Research.
Unit -I	**Introduction:** Development of OR – Definition of OR – Modeling – Features of OR – Main phases of OR – Tools, techniques & methods – scope of OR.
Unit -II	**LPP:** Linear Programming Problem – formulation of LPP – slack & surplus variables – Graphical solution of LPP – Simplex method – Artificial variable Technique – Big – M method – Two phase method.
Unit -III	**Assignment Problem:** Mathematical formulation of assignment problem – method for solving the assignment problem – Traveling salesman problem
Unit -IV	**Transportation Problem:** Mathematical formulation of transportation problem – Initial feasible solution – Optimal solution – Degeneracy in TP – Unbalanced TP
Unit -V	**PERT & CPM:** Basic differences between PERT and CPM.-Arrow Networks, time estimates, Earliest expected time -Latest – allowable occurrences time -Forward Pass Computation Backward Pass Computation- Representation in Tabular Form - Critical Path - Probability of meeting scheduled date of completion, Calculation on CPM network- Various floats for activities.

Text Book:

Sharma, S. D., & Sharma, H. (2017) *Operations Research: Theory, Methods, and Applications*; Kedar Nath Ram Nath Publishers

Books for Reference:

Taha, H. A. (2011). *Operations research: an introduction* (Vol. 790). Upper Saddle River, NJ, USA: Pearson/Prentice Hall.

Kalavathy, S. (2002). *Operations research*. Vikas Publishing House.

S.Arumugam & A.Thangapandi Issac. (2003) *Linear programming*, New gamma Publishing House.

Kandiswarup, P. K. Gupta and Man Mohan. (2011). *Operations Research*, 12th Revised edition, S. Chand & Sons Education Publications, New Delhi.

Hamdy A. Taha . (2012). *Operations Research-An Introduction*, Nineth edition, published by Dorling Kindersley (India) Pvt. Ltd., licensees of Pearson Education in South Asia.

Prem Kumar Gupta and D. S. Hira . (2014). *Operations Research* , S. Chand & Company Ltd, Ram Nagar, New Delhi.

G. Srinivasan. (2017). *Operations Research: Principles and Applications*, PHI, NewDelhi

Outcomes	After completing this course, the students are able to: • identify and develop operational research models from the verbal description of the real system. • understand the mathematical tools that are needed to solve optimization problems. • use mathematical software to solve the proposed models

Semester - II				
Course code: 23VSD2G1	**General – 2**	**T/P**	**C**	**H/W**
	LIFE COPING SKILLS - ADVANCED	**T**	**4**	**4**

Objectives	• To make the students manage stress and time effectively. • To enable the students to become good team players to acquire problem-solving skills, and creative and critical thinking abilities to develop decisions, and build healthy relationships with their teammates.
Unit -I	**Meaning and Attitude to Success:** Meaning and Definition of Success-Obstacles to Success- The winning Edge –Struggle-Overcoming Obstacles-Measuring Success-Qualities that make a person successful. A Recipe for Success-Guidelines to Measure True Success.
Unit -II	**Problem Solving and Decision Making**: Meaning of Problem Solving- Ways to solve problems-Principles for managing problems positively. Meaning of Decision Making-Decision making process-The Five Cs of decision making.
Unit -III	**Time management and Stress Management:** Meaning and Importance of Time Management-Time Factor-Steps for Avoiding Lateness Problems-Tips for time management. Meaning and Kinds of Stress -Types of Stress-How does Stress affect you-Source of Stress-Responses to Stress -Good, Bad and Ugly forms of Stress-How to manage stress-Commandments for Managing Stress.
Unit -IV	**Coping with Criticism and Conflict :** Definition of Criticism- Beliefs about Criticism-Types of Criticism-Response to Criticism- Coping with Criticism-Self Criticism-Giving Criticism to others-Receiving Criticism-Negative Assertion- Fogging-Negative Enquiry. Meaning of Conflict-Constructive or destructive- Constructive nature of Conflicts-Strategies for Managing Conflicts- Tactics of Conflict Management.
Unit -V	**Teamwork:** Meaning of Teamwork-Needed qualities for working as a Team-Team Learning: Questioning. Valuing Diversity- Communicating-Learning Review.

Text Book:

Xavier Alphones, S.J. (2004). *We Shall Overcome - A Textbook on Life Coping Skills*. Chennai: ICRDCE Publication.

Books for Reference:

Greenberger, D., & Padesky, C. A. (2015). *Mind over mood: Change how you feel by changing the way you think*. Guilford Publications.

Lohmann, R. C. (2022). *15-Minute Focus: Anger, Rage, and Aggression: Brief Counseling Techniques that Work*. National Center for Youth Issues.

Patil, N., & Dudhade, B. *Youth development through Life Skills development*.

Outcomes	After Completing this course, the students are able to: • The students gain noteworthy knowledge in Life Coping Skills • The students will be able to face the challenges of the new millennium, ruled by globalization and market forces.

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Semester - II				
Course code: 23VSD2GP	**General Practical**	**T/P**	**C**	**H/W**
	INTERVIEW TECHNIQUES & INTERPERSONAL COMMUNICATIONS #	**P**	**2**	**2**

Objectives	• To understand the purpose behind the interview process and preparation techniques for the carrier interviews • To learn about Social skills and Conflict skills to become a successful person • To acquire interpersonal skills in order to improve the relationships with human behavior
Unit -I	**Basic of Interview** –Important aspects of interview-Maintaining interview files-Important of background information about the job, the organization and the interviewer-Things to do before interview-preparing for the interview- Facing panel interview-Handling appropriate questions-Standard Interview formats-Sample Questions.
Unit -II	**Preparation for interview-**Information consideration before the interview-Entering into the interview room-Giving answers to the questions-Recapturing the interviewer's attention-questions to ask towards the end of the interview-Things to do after interview – Second interview.
Unit -III	**Interview Behaviors-**Grooming for interview-Checklist for interview-Three essential interview Skills-Ten sticky interview situations and handling them-Avoiding ten interview blunders-Job interviews do's and Don'ts-Informal interviews Do's and Don'ts-Ready for unexpected interview-Strengths and weakness-Interview body language-interview etiquette-Basics of group discussion.
Unit -IV	**Social Skills and Conflict Management Skills** - Component of Social Skills, effective ways of dealing with people - Types of conflict (intrapersonal, intra group and inter group conflicts) - Basic concepts, cues, signals, symbols and secrets of body language - Significance of body language in communication and assertiveness training. - Conflict stimulation and conflict resolution techniques for effective conflict management
Unit -V	**Interpersonal Skills** - Concept of team in work situation, promotion of team sprit, characteristics of team player - Awareness of ones own leadership style and performance - Nurturing leadership qualities - Emotional intelligence and leadership effectiveness-self awareness, self-management, self-motivation, empathy and social skills - Negotiation skills- preparation and planning, definition of ground rules, clarification and justification, bargaining and problem solving, closure and implementation

Note:

- ThispaperaimsatimpartingSoftSkillstothestudentstobecomesuccessfulpersoninboth interviews and work places.
- The**evaluationforthispaperfor100marks (internally)**willbecarriedoutinthreestages.
  - InterpersonalCommunicationSkills(25marks)andInterviewPreparationSkills(25 marks) will be evaluated by the faculty who are handling the subject.
  - AMockInterview(50marks)willbeconductedandevaluatedbythefacultyofthe Department and an external examiner.

Text Book:

Abdulhashen, (2012). *Interview Manual.* New Delhi: Ramesh Publishing House.

Books for Reference:

Hurlock,E.B.(2006).*PersonalityDevelopment.*NewDelhi:TataMcGrawHill

Anandamurugan, S. (2011). *Placement Interviews.* New Delhi: Tata McGraw Hill

Outcomes	After Completing this course, the students are able to: • understand the purpose of interviews & aware of the processes involved in different types of interviews • Know how to prepare for interview& be clear about the importance of self-presentation • Remember an interview is not one way traffic! Recruitment • Costs are high and employers want you as much as you want them.

Semester - III				
Course code: 23VSD3C1	**Core Course III**	**T/P**	**C**	**H/W**
	OPERATING SYSTEMS	**T**	**5**	**5**

Objectives	• To understand the services provided by and the design of an operating system. • To understand the structure and organization of the file system.
Unit -I	**Introduction**: Operating Systems - Computer-System Organization - Computer-System Architecture - Operating-System Structure - Operating-System Operations - Process Management - Memory Management - Storage Management - Protection and Security - **Operating-System Structures**: Operating-System Services: User and Operating-System Interface - System Calls - Types of System Calls - System Programs
Unit -II	**Processes**: Process Concept - Process Scheduling - Operations on Processes - Interprocess Communication - **Process Synchronization**: Background - The Critical-Section Problem - Peterson's Solution - Synchronization Hardware - Mutex Locks - Semaphores - Classic Problems of Synchronization – Monitors.
Unit -III	**CPU Scheduling**: Basic Concepts - Scheduling Criteria - Scheduling Algorithms - Thread Scheduling - Multiple-Processor Scheduling - Real-Time CPU Scheduling - **Deadlocks**: System Model - Deadlock Characterization - Methods for Handling Deadlocks - Deadlock Prevention - Deadlock Avoidance - Deadlock Detection - Recovery from Deadlock
Unit -IV	**Main Memory**: Background - Swapping - Contiguous Memory Allocation - Segmentation - Paging - Structure of the Page Table - **Virtual Memory**: Background - Demand Paging - Copy-on-Write - Page Replacement - Allocation of Frames - Thrashing - Memory-Mapped Files - Allocating Kernel Memory
Unit -V	**Mass-Storage Structure**: Overview of Mass-Storage - Structure - Disk Structure - Disk Attachment - Disk Scheduling - Disk Management - Swap-Space Management - RAID Structure - Stable-Storage Implementation - **File-System Implementation**: File-System Structure - File-System Implementation - Directory Implementation - Allocation Methods - Free-Space Management - Efficiency and Performance – Recovery

Text Book:

Abraham Silberschatz, Peter Baer Galvin. (2003). *Operating System Concepts*. (6th Edn). New Delhi: John Wiley & Sons Inc.

Books for Reference:

Achyut S. Godbole & Atul Kahate. (2011). *Operation Systems*, (3rd Edn). Tata McGraw Hill.

Andrew S. Tanenbaum. (2014). *Modern Operating Systems.* (4th Edn). Pearson Pvt., Ltd.

HarveyM.Deitel.(2007).*AnIntroductiontoOperatingSystem*.(3rdEdn).PearsonEducationIndia.

Outcomes	After Completing this course, the students are able to: • Understands the different services provided by Operating System at different level. • Learn real life applications of Operating System in every field.

Semester - III				
Course code: 23VSD3P1	**Core Practical V**	**T/P**	**C**	**H/W**
	DATA STUCTURES & ALGORITHMS USING C++ LAB	**P**	**5**	**5**

Objectives	• To Understand the Data Structures and Computer Algorithms concept. • To know how to use the Data Structures and Computer Algorithms for real world problems.

1. Sum of Array elements
2. Search an element in an Array
3. Implementing Stack as an array.
4. Implementing Stack as a linked list.
5. Convert Infix expression to Postfix expression using stack.
6. Convert Infix expression to Prefix expression using Stack.
7. Implementing Queue as an Array.
8. Implement Queue as a linked list.
9. Binary tree traversals.
10. Implement Binary Search Tree.
11. Linear Search
12. Binary Search
13. Bubble Sort
14. Insertion Sort
15. Merge Sort
16. Quick Sort
17. Selection Sort
18. Minimum Spanning Tree

Outcomes	After Completing this course, the students are able to: • to understand the concept of Data Structures and Computer Algorithms • to compare various techniques by executing the programs using Data Structures and Computer Algorithms

Semester - III				
Course code: 23VSD3P2	**Core Practical VI**	**T/P**	**C**	**H/W**
	CONTENT MANAGEMENT SYSTEM LAB	**P**	**4**	**4**

Objectives	• To make website plan and understand site structure • To demonstrate communicating messages to the target audience • To get familiarize about developing sites or blogs using WordPress

1. Introduction to CMS
2. Introduction to Word Press
3. WordPress Installation
4. Demonstrate Dashboard
5. Demonstrate Word Press Settings
6. Demonstrate Word Press Categories
7. Demonstrate Word Press Post
8. Demonstrate Word Press Media
9. Demonstrate Word Press Pages
10. Demonstrate Word Press Tags
11. Demonstrate Links
12. Demonstrate Word Press Comments
13. Maintenance of Session.
14. Demonstrate Word Press Plugins
15. Demonstrate Word Press User
16. Demonstrate Word Press Appearance
17. Create a website using Word Press

Outcomes	After Completing this course, the students are able to: • Familiar with dynamic website development • Install, configure, and design Word Press blogs for technical communication and collaboration. • Publish SEO-Optimized blog posts and create content marketing calendars.

Semester - III				
Course code: 23VSDAP3	**Allied Practical I**	**T/P**	**C**	**H/W**
	LINUX AND SHELL PROGRAMMING LAB	**P**	**4**	**4**

Objectives	• To familiarize basic concepts of shell programming • To demonstrate use of system calls • To demonstrate Inter process communication.

Linux Commands:

1. Mkdir
2. Cd
3. Rm, rm –f
4. Cp
5. Move
6. Rename
7. Cat,cat>,cat>>
8. Find Command: -name,-uname,-size,-ctime,-mtime
9. Search a given string in a file (grep command)
10. Making group: groupadd command
11. Useradd with –d,-s,-c,-G switch
12. Usermod
13. Userdel,groupdel
14. Is ,Is –I,chmod(with alphabet or numeric permissions)
15. Chown and chgrp command
16. Edit Crontab file to wall message on system on particular time automatically

Vi editor:

1. Create file, edit, save and Quit
2. Highlighting the searched term within a file
3. Cut, yank, undo

Shell Scripting:

1. Write a shell script to print a message.
2. Write a shell script to access arguments passed on command line.
3. Write a shell script to create files with the names passed on command line.
4. Write a shell script to input file name and create multiple directories individually for the name in the file given.
5. Write a shell script to input number from user and display whether it is prime number or not.
6. Write a shell script to list all the files in any directory given by the user
7. Write a shell script that receives any number of file names as arguments checks if every argument supplied is a file or a directory

Outcomes	After Completing this course, the students are able to: • Familiar with Linux commands and Vi editor • Use shell script to create files and perform operations on files and directories

Semester - III				
Course code: 23VSD3G1	**General – 3**	**T/P**	**C**	**H/W**
	PROFESSIONAL ETIQUETTES	**T**	**1**	**2**

Objectives	• To impart various etiquettes, dress code in business environment. • To impart understanding about behavioural styles in business environment
Unit -I	**Business Etiquette, Greeting and Introduction:** who to introduce first, Guidelines for Determining Importance, A few tips, Shaking Hands, Use of Names, Business Card, Remembering Names.
Unit -II	**The well Groomed Man:** Hair, Face, Hands, Personal Hygiene, formal dress code, Shirts and Trousers, Business Suits, Ties, Shoes, Belt, Socks, Handkerchief, wallet, Jewellery, Eyeglasses, Fragrance, Business Casuals. The well Groomed Women: Hair,PersonalHygiene,Makeup,HandandNails,Feet,Shoes,Jewellery,Formal Dresscode,IndianDressing,WesternDressing,Accessories,BusinessCasuals.
Unit -III	**Workplace Etiquette:** Behavior, Body Language, Everyday Courtesies, Use of office Machine Etiquette,Using Facilities, Washroom Etiquette, Holding Doors, ElevatorEtiquette,ManagingConflict,VisitingOtherOffices,ReceivingVisitors inYourOffices,TelephoneEtiquette,CellPhoneEtiquette,MeetingEtiquette
Unit -IV	**DiningEtiquette:**RationaleforaDiningEtiquette,TableSetting,NapkinUse, CutleryAwareness,EatingConsideration,EatingSoup,BreakingBread,Managing Difficult Food, Specific Dishes, Avoiding Elementary Dining Mistakes, KnowingWines
Unit -V	**Restaurant Etiquette:** Reservation, Ordering, Problems, Paying Bills and Tipping, Buffet Dining Etiquette. Office Party Etiquette: some Consideration, when is a Person a Bad Guest. Travel Etiquette: Airplane Travel, Hotel Stay. Cross-Cultural Consideration: Awareness, Cultural Sensitivities of some Countries, Giving Gifts. Email Etiquettes.

Text Book:

Barbara Pachter, & Marjorie Brody, (1994). *Business Etiquette*. New York: Mcgraw-Hill Education.

Sarvesh Gulati, (2012). *Corporate Grooming and Etiquette.* Kolkatta: Rupa Publications Pvt. Ltd.

Books for Reference:

Ferguson, (2009). *Professional Ethics and Etiquette*. New York: Infobase Publishing.

Shitkal Kakkar Mehra, (2012). *Business Etiquettes - A Guide for the Indian Professional*. New Delhi:Harper Collins India Publisher.

Outcomes	After Completing this course, the students are able to: • well verse with business Etiquette, workplace Etiquette, dinning Etiquette, and restaurant Etiquette. • improve Professional behaviour in business environment.

Semester - III				
Course code: 23VSD3GP	**General – 4**	**T/P**	**C**	**H/W**
	EXTENSION ACTIVITY	**P**	**1**	**-**

Objectives	• To enable the students to learn and understand the culture, living environment, values as well as the problems of rural people • To bring desirable changes in knowledge, skill and attitude of rural people.

1. Extension Activities will be organized for 2 days in the Third Semester. The programme may be organized in any Saturday and Sunday.
2. A meeting of all the staff of the College (Teaching, Administrative and Technical Staff) be conducted before departing to the camp in which every aspect like Programme to be carried out, accommodation, food, medical aid, transport facilities, etc., should be thoroughly discussed.
3. One credit will be allotted for this Extension Activities. The marks allotted for the camp will be 100.
4. Each student participating in the camp will be **evaluated internally for 100 marks**. The criteria for evaluation of Extension Activities will be as follows:

S.No.	Criteria	Maximum Marks
1.	Interaction with villagers / rural people	10
2.	Participation / Attitude towards work	10
3.	Participation in interaction and discussion	10
4.	Knowledge of problems / issues	10
5.	Organizing & decision-making ability	20
6.	Expression: a) Activity / Cultural Programme	10
	b) Report Writing	20
7.	Ability to adjust and work in a team	10
	Total	**100**

Outcomes	After Completing this course, the students are able to: • get awareness about the culture and living environment of rural people. • analyze the problems of rural people and find solutions.

Semester III				
Course Code		**T/P**	**C**	**H/W**
23VSD3S2	**IT Skills for Employment**	**T**	**2**	**2**

Objectives:

- Understand the components of computer
- Understand Internet and its terminology
- Understand basic cyber safety and security norms

Unit- 1	Introduction to Computers –Types of Computer - Hardware – Motherboard-Processor-RAM –ROM – SMPS – Graphics Card– Storage Devices – Hard Disc – SSD – DVD – CD – Pen drive- – Input/Output Devices – Keyboard – Mouse – Mic- Monitor-Camera-Types of Printer, Scanner, Projector. Basic of Computer network-Modem, Hub, Switch, Bridge, Routers-Wi-Fi – Bluetooth. Introduction to Free and Open Source Software(FOSS) – Need of Open Sources – Advantages of Open Sources– Copy rights- Software piracy.
Unit- 2	Basics of Operating System –Difference between various operating systems-User Interface of windows 10 OS - create , Copy ,Move and delete files and folders -Use of pen drive -CD-DVD Burning -Windows tools and features-Disk Space management-Disk Clean up-Managing Recycle Bin-Disk defragmentation -Add/ remove software's and programs.
Unit- 3	Basic operating of word processing - Creating, opening and closing documents- Use of shortcuts- Creating and Editing of Text - Formatting the text - Find and replace - Drawing Table-Page layout-Header / Footer - Setting page number-Creating simple applications like - resume - letter writing ,job application ets- Printing document. Basics of Excel worksheet & its importance-creating simple worksheets- formulas-conditional formatting-sort-filter- chart. Introduction to PowerPoint-understand various views of presentation, animations, transitions, header, footer etc.
Unit -4	Internet – ISP- Word wide web (www)- web browser-search engine- creating & using an email account like gmail or any other- checking email and composing Email-Attaching documents- Usageof CC & BCC. Understanding IP address-Bandwidth -Storing and retrieving file through google drive –sharing files and folders-google docs - language translation -voice to text, text to voice application-Google Meet-Zoom-Social media merits and demerits. Online educational websites (Moocs-nptel - Swayam Central- spoken-tutorial.org)-Video tutorials- Step to use Government portals like aadhaar-Election commission website-Eservices(eservices.tn.gov.in) etc-– Job Portals - Online Bill payment- Online fund transfer using UPI gateway.
Unit- 5	Internet Safety concerns: (Digital Footprints, Threats, Virus, Worm, Trojan Horse, Spam, Malware,Adware, Spyware, Snooping)-Security Measures :(Antivirus, Firewall)- Cyber Crime: (Phishing, Pharming, Spoofing, Hacking, Cracking, Identity Theft)Cyber Safety (IT Act, Cyber Laws).

Reference Books :

Vikas B. Agarwal Jyoti P. Mirani, *Computer Fundamentals* -Publisher: Nirali Prakashan (1 August 2019)

Lambert Joan, Lambert Steve, *Windows 10 Step By Step*, Publisher : PHI Learning Pvt Ltd

Mike Mc Grath and Michael, *Office 2016 In Easy Steps*, Price Publisher: BPB Publications

Adesh K. Pandey, *Internet Fundamentals*

James KL, *The Internet : A Users Guide*

Jaago Teens, *Cyber Safety For Everyone* - BPB Publications (October 12, 2019) Refer website's and You tube tutorials .	
Outcomes	➢ Skills to work efficiently with windows, word, excel, powerpoint presentation. ➢ Skills to use internet for various purpose with safe and secure.

Semester - IV				
Course code: 23VSD4E1	**Discipline Specific Elective – 1**	**T/P**	**C**	**H/W**
	A. DATA COMMUNICATION NETWORKS	**T**	**4**	**4**

Objectives	• To understand the concept of Computer network • To impart knowledge about networking and inter networking devices.
Unit -I	Introduction – Network Hardware – Software – Reference Models – OSI and TCP/IP Models – Example Networks: Internet, ATM, Ethernet and Wireless LANs - Physical Layer – Theoretical Basis for Data Communication - Guided Transmission Media
Unit -II	Wireless Transmission - Communication Satellites – Telephone System: Structure, Local Loop, Trunks and Multiplexing and Switching. Data Link Layer: Design Issues – Error Detection and Correction.
Unit -III	Elementary Data Link Protocols - Sliding Window Protocols – Data Link Layer in the Internet - Medium Access Layer – Channel Allocation Problem – Multiple Access Protocols – Bluetooth.
Unit -IV	Network Layer - Design Issues - Routing Algorithms - Congestion Control Algorithms – IP Protocol – IP Addresses – Internet Control Protocols.
Unit -V	Transport Layer - Services - Connection Management - Addressing, Establishing and Releasing a Connection – Simple Transport Protocol – Internet Transport Protocols (ITP) - Network Security: Cryptography.

Text Book:

Tanenbaum, A. S. (2003). *Computer networks*. 4th Edition, Pearson Education India.

Books for Reference:

Behrouz A Fourouzan.(2017). *Data Communications and Networking*. (4th Edn). Mcgraw Hill.

Halsall, F. *Data communications, computer networks and open systems*. Addison Wesley Longman Publishing Co., Inc.

Bertsekas, D., & Gallager, R. (2021). *Data networks*. Athena Scientific.

Lamarca, (2002) *Communication Networks.* Tata McGraw- Hill.

Outcomes	After Completing this course, the students are able to: • understand the principles of computer networks and data communication. • Know the importance of protocols used for data communication

Semester - IV				
Course code: 23VSD4E2	**Discipline Specific Elective – 1**	**T/P**	**C**	**H/W**
	B. COMPUTER GRAPHICS	**T**	**4**	**4**

Objectives	• To understand the concept of Computer network • To impart knowledge about networking and inter networking devices.
Unit -I	**Overview of graphics Systems:** Video Display Device - Refresh Cathode-Ray tubes Raster - Scan Displays Random - Scan Displays - Color CRT Monitors - Direct view Storage tubes Flat - Panel Displays Three - Dimensional Viewing Devices, Stereoscopic and Virtual - Reality Systems - Raster - Scan Systems Video Controller - Random - Scan Systems Video Controller - Random-Scan Systems
Unit -II	**Input device**: Keyboard- Mouse - Trackball - Space ball and Joysticks - Data Glove – Digitizers Image Scanners - Touch Panels - Light pens. Voice Systems - Hard-Copy Devices - Line Drawing Algorithms-DDA Algorithms - Circle generating Algorithm Properties of Ellipses.
Unit -III	**Two-Dimensional Geometric Transformation:** Basic Transformations - Translation - Rotation - Scaling - Matrix Representations and Homogeneous Coordinates - Other Transformations Reflections Two-DimensionalViewing: Windows to view point coordinate Transformations - Clipping Operations - Point Clipping - Line Clipping - Curve Clipping - Text Clipping - Exterior Clipping.
Unit -IV	**Three Dimensional Concepts:**Three-Dimensional Display method - Parallel projection - Depth cueing visible line and surface - Three Dimensional Geometric and modelling Transformations: Translation - Rotation - Scaling - Composite Transformations. Three-Dimensional Viewing: Viewing pipeline - Viewing Coordinates - Projections - Parallel Projections - Perspective Projections.
Unit -V	**Visible Surface Detection Methods:** Classification Visible Surface Detection Algorithms - Back Face Detection - Depth - Buffer Method - A-Buffer Method - Scan line method - Depth sorting method - BSP tree method - Area Subdivision Method.

Text Book:

Pauline Baker, M., & Hearn, D. (2017). Computer Graphics C Version Second Edition.

Books for Reference:

Mukherjee, D. P. (1998). *Fundamentals of computer graphics and multimedia*. PHI Learning Pvt. Ltd.

Foley, J. D., Van, F. D., Van Dam, A., Feiner, S. K., Hughes, J. F., & Hughes, J. (1996). *Computer graphics: principles and practice* (Vol. 12110). Addison-Wesley Professional.

Anirban Mukhopadhyay, Arup Chattopadhyay. *Introduction to Computer Graphics and Multimedia*. (2nd Edn.). Vikas Publishing House

Outcomes	After Completing this course, the students are able to: • Understand the basics of computer graphics, different graphics systems and applications of computer graphics. • Discuss various algorithms in Computer Graphics.

Semester-IV				
Course code: 23VSD4C1	**Core Course**	**T/P**	**C**	**H/W**
	FUNDAMENTALS OF ACCOUNTING	**T**	**3**	**4**

Objectives	• To develop an insight of principles and technique of accounting • To provide students the fundamentals of computerized accounting Concepts
Unit -I	**Accounting principles:**Bookkeeping – Double Entry system – Merits and Demerits of Double Entry System – Accounting Concepts and Conventions – Journal – Ledger
Unit -II	**Final Accounts:** preparation of Trial Balance - Final Accounts with Simple Adjustments.
Unit -III	**Depreciation Accounting:** Meaning – Causes - Objectives – Straight line method - Written-down-value method - Annuity method.
Unit -IV	**Computerised Accounting:** Meaning – Advantages – Manual Accounting Vs Computerised Accounting –Components of the Tally.ERP 9 – Creation of a Company – Selection of a Company – Shutting a selected Company – Display and Alteration of a Company.
Unit -V	**Tally.ERP 9:** Groups – Default Groups in Tally.ERP 9 – Ledger Accounts : Default Ledger – Creation of Ledgers : Single and Multiple – Displaying, Altering and Deleting Ledger Accounts- Voucher: Meaning in Tally.ERP 9 – Types – Creation of New Voucher – Displaying – Altering and Cancelling a Voucher.

Text Book:

Gupta, R. L., & Radhaswamy, M. (2001). *Advanced accountancy*. Sultan Chand & Sons.

Kasi Vairavan P. (2010). *Computer application in accounting software (TALLY): step by step learning guide and solution to problems*. Kalamohan Creations Pte Ltd

Books for Reference:

Maheshwari, S. N., Maheshwari, S. K., & Maheswari, S. K. (2013). *An Introduction to Accountancy*. Vikas Publishing House.

Arulanandam, M. A., & Raman, K. S. (2008). *Advanced Accountancy*. Himalaya Publishing House.

Outcomes	After Completing this course, the students are able to: • Understand the accounting concepts and conventions. • Prepare financial statement in accordance with generally accepted accounting principles. • Understand the various methods of charging depreciation and the accounting procedure. • Understand the skills to fundamental concepts of Computerized accounting. • Develop skills to prepare Computerized accounting

Semester - IV				
Course code: 23VSD4P1	**Core Practical VII**	**T/P**	**C**	**H/W**
	RDBMS LAB	**P**	**4**	**4**

Objectives	• To improve the programming skills of the students in Relational Database Management Systems (RDBMS) • To impart the concepts and programming techniques related to query processing using SQL and PL/SQL

SQL :

1. DDL: Table Creation and description of tables
2. DML: Data Insertion, Deletion, Updating and Selection.
3. DML: Operators (Arithmetic, Relational, Logical),
4. DML: SQL Functions (Single Row Function, Group Functions).
5. DML: Set operations
6. DML: Join operations
7. Creation of Nested queries
8. Creation of Synonym, Sequence & Index
9. Creation and manipulation of View.

PL/SQL :

1. Working with control structures using PL/SQL block
2. Creation and manipulation of Cursors
3. Simple programs using Functions & Procedure
4. Creation and manipulation of Packages
5. Creation and manipulation of Triggers

Outcomes	After Completing this course, the students are able to: • design and execute SQL queries for real-time applications. • implement PL/SQL structures in relational database systems.

Semester - IV				
Course code: 23VSD4P2	**Core Practical VIII**	**T/P**	**C**	**H/W**
	XML LAB	**P**	**4**	**4**

Objectives	• To impart the knowledge about the XML features and its role in Data transformation in Hyper medium. • To acquire the skills for creating XML documents, DTD, Style sheets using CSS and XSL for real-time requirements

1. Explanation of XML document Skeleton
2. Simple XML document creation
3. XML document for book sellers
4. XML document for an online E-Commerce portal
5. XML document for a pharmaceutical retailer
6. XML document to maintain the details of physicians in a Hospital.
7. Writing of DTD to minimum of three use cases
8. Validation using DTD
9. Writing of Style sheets using CSS for three XML documents
10. Writing of Style sheets using XSL for three XML documents
11. Creating XSL templates
12. Illustrating XML Namespaces
13. SAX and DOM

Outcomes	After Completing this course, the students are able to: • Construction of complex queries over XML documents using XPath and XQuery. • Programming XML with DOM and SAX.

Semester - IV				
Course code: 23VSDAP4	**Allied Practical II**	**T/P**	**C**	**H/W**
	PC ASSEMBLING & TROUBLESHOOTING LAB	**P**	**3**	**4**

Objectives	• To assemble/setup and to upgrade Personal Computer systems • To learn to perform installation, configuration, and to upgrade a Microcomputer Hardware and Software. • To learn to diagnose and troubleshoot the microcomputer systems Hardware and Software, and other peripheral equipment issues

1. Assemble a PC by fixing motherboard, processor and cooling fan.
2. Fix a Hard drive and DVD and connect the Data, power cables.
3. Connect the power cables with SMBS
4. Install windows Operating System with service pack
5. Install an Audio driver software and check the functionality
6. General scanner troubleshooting
   - Verify cables connected properly to the back of the scanner
   - Ensure that the scanner is getting power
   - Additional parallel port scanner troubleshooting
   - Verify the LPT port mode
7. General microphone troubleshooting
   - Sound drivers not setup properly
   - Not connected properly
   - Issues with microphone
8. Testing of serial and parallel ports.

Outcomes	After Completing this course, the students are able to: • Able to identify the essential components of a computer and troubleshoot hardware components • Able to recommend hardware and to develop a computer system proposal/presentation for a client • Able to assemble a computer with essential components.

Semester-IV				
Course code: 23VSD4IV	**General – 6**	**T/P**	**C**	**H/W**
	INDUSTRY VISIT AND COMPREHENSIVE VIVA@	**P**	**2**	**-**

Objectives

- To expose the students about real time working environment, experience and to gain the knowledge through hands on observation and job execution in the Industry

An industry visit will be organized for 2 days in the fourth semester by the department. The student has to visit a live working industry at the weekend for 2 days. The students will learn about the latest technology trends and make up their minds about their future job or area of interest. At the end of the industrial visit, the student should prepare an industrial visit documentation report (not less than 25 pages, A4 size). The students will be evaluated internally for 100 marks. The criteria for evaluation will be as follows:

S.No.	Criteria	Maximum Marks
1.	Document report evaluation by Department staff	25
2.	Comprehensive viva-voce conducted by the Department with two examiners	75
Total		**100**

Outcomes

After Completing this course, the students are able to:

- get practical experience firsthand how these concepts are put into action.
- bridge the gap between classroom theoretical training and practical learning in a real-life environment.
- identify their prospective areas of work.
- gives students a platform to enhance their interpersonal skills.
- get to see the best practices opted by different companies for similar work.
- use the case study approach within the visit to bring out critical thinking among students.

Semester - V				
Course code: 23VSD5E1	**Discipline Specific Elective – 2**	**T/P**	**C**	**H/W**
	A. SOFTWARE ENGINEERING	**T**	**4**	**4**

Objectives	• To learn the basic concepts of Software Engineering and the various phases in Software Development • To make the students to become a Software developer with conventional SDLC methodologies.
Unit -I	**Introduction:** The Software Engineering Discipline - Software Development Projects - Emergence of Software Engineering - Software Life Cycle Models: Classical Waterfall Model - Iterative Waterfall Model - Prototyping Model - Spiral Model.
Unit -II	**Software Project Management:** Responsibilities of a Software Project Manager - Project Planning - Metrics for Project Size Estimation - Project EstimationTechniques-EmpiricalEstimationTechniques-COCOMO-RiskManagement-RequirementsAnalysisandSpecifications:RequirementsGatheringandAnalysis-SRS.
Unit -III	**Software Design:** Cohesion and Coupling - Function-Oriented Software Design: Structured Analysis - DFDs - Structured Design - Object Modeling: Overview of Basic Object-Orientation Concepts - UML Diagrams - Activity Diagram-State Chart Diagram-User Interface Design: Characteristics of a Good User Interface-Basic Concepts.
Unit -IV	**Coding and Testing:** Coding - Software Documentation - Testing - Unit Testing - Black-Box Testing - White-Box Testing - Debugging - Integration Testing-SystemTesting-SoftwareReliabilityandQualityManagement:SoftwareReliability-SoftwareQualityandManagementSystem.
Unit -V	**Computer Aided Software Engineering:** Case Environment -Characteristics of CASE Tools- Maintenance: Characteristics of a Software Maintenance-Software Reverse Engineering-Estimation of Maintenance Cost - Software Reuse: A Reuse Approach.

Text Book:

T K.K.Aggarwal and Yogesh Singh. (2008). *Software Engineering*. (3rd ed.) New Age International Publishers.

Books for Reference:

RogerS.Pressman.(2017).*SoftwareEngineering–APractitioner'sApproach*.(7thed.).McGraw. HillInternational.

Fairley, R. (1985). *Software engineering concepts*. McGraw-Hill, Inc.

Jalote, P. (2012). *An integrated approach to software engineering*. Springer Science & Business Media.

Ghezzi, C., Jazayeri, M., & Mandrioli, D. (1991). *Fundamentals of software engineering*. Prentice-Hall, Inc.

Outcomes	After Completing this course, the students are able to: • understand the principles of computer networks and data communication. • Know the importance of protocols used for data communication

Semester - V				
Course code: 23VSD5E2	**Discipline Specific Elective – 2**	**T/P**	**C**	**H/W**
	B. CLOUD COMPUTING	**T**	**4**	**4**

Objectives	• To introduce the fundamental principles of cloud computing and its related paradigms • To discuss the concepts of virtualization technologies along with the architectural models of cloud computing • To understand the cloud computing technologies available in the market place
Unit -I	**Introduction:** Cloud computing at a glance – Vision – Definition of Cloud – The Cloud Computing reference model –Characteristics and benefits – Challenges. Historical developments –Building cloud computing environment.
Unit -II	**Principles of Parallel computing and Distributed Computing:** Eras of Computing – Parallel vs Distributed Computing – Elements of Distributed Computing – Technologies for Distributed Computing
Unit -III	**Virtualization:** Characteristics of virtualized environment – Taxonomy of virtualization techniques – Virtualization and Cloud Computing – Pros and cons of virtualization – Technology examples
Unit -IV	**Cloud Computing Architecture:** The Cloud reference model – Architecture – Infrastructure and Hardware as a service – Platform as a service – Software as a service – Types of Clouds – Economics of the cloud – Open Challenges
Unit -V	**Cloud platforms in Industry:** Amazon web services – Compute services – Storage services – Communication services – Additional services – Google AppEngine – Architecture – Life Cycle –Cost model – Observations - Microsoft Azure – Core concepts – SQL Azure - Windows Azure platform appliance – Observations – Cloud Applications

Text Book:

Buyya, R., Vecchiola, C., & Selvi, S. T. (2013). *Mastering cloud computing: foundations and applications programming*. Newnes.

Books for Reference:

Beard, H. (2008). *Cloud Computing Best Practices for Managing and Measuring Processes for On-Demand Computing, Applications and Data Centers in the Cloud with SLAs*. Emereo Pty Ltd.

Bahga, A., & Madisetti, V. (2013). *Cloud computing: A hands-on approach*. CreateSpace Independent Publishing Platform.

Buyya, R., Broberg, J., & Goscinski, A. M. (Eds.). (2010). *Cloud computing: Principles and paradigms*. John Wiley & Sons.

Miller, M. (2008). *Cloud computing: Web-based applications that change the way you work and collaborate online*. Que publishing.

Outcomes	After Completing this course, the students are able to: • learn the fundamental principles of cloud computing and its related paradigms • describe the concepts of virtualization technologies along with the architectural models of cloud computing • understand the cloud computing technologies available in the market place

Semester - V				
Course code: 23VSD5C1	**Core Course V**	**T/P**	**C**	**H/W**
	JAVA PROGRAMMING	**T**	**4**	**4**

Objectives	• To understand the fundamental concepts of Object-Oriented programming with Java language. • To understand the facilities of Java language such as, Applets, Exception handling and I/O streams
Unit -I	**Basic Concepts of OOPS:** Benefits of OOPS- Java History-Java Features- Java Environment- Java Tokens- Constants- Variables- Data Types – Operators and Expressions- Decision Making and Branching- Decision Making and Looping.
Unit -II	**Classes,ObjectsandMethods:**ClassesandObjects-Constructors-`MethodOverloading-StaticMembers-Inheritance-OverridingMethods-FinalVariables, FinalMethodsandFinalClasses-FinalizerMethod-AbstractMethodsandAbstract Classes-Visibility Control- Arrays- Strings.
Unit -III	**Applets:** The Life Cycle of an Applet – The Applet Class – Development and Execution of a Simple Applet – Syntax of Applet Tag – Methods in the Graphics Class. Abstract Windowing Toolkit: Events – Listeners – Event Handling Methods.
Unit -IV	**Exception Handling:** Default Exception Handling – Exception and Error Classes – Catch Block Searching Pattern – 'Throw' Statement – 'Throws' Statement – Custom Exceptions. Threads: Life Cycle of a Thread – Creating and Running Threads – MethodsintheThreadClass–Settingthepriorityofathread–Synchronization– Dead Lock–Inter Thread Communication
Unit -V	**I/OStreams:** Input Stream and Output Stream classes – Reader and Writer classes – DataOutputStreamandDataInputStreamClasses.DatabaseConnectivity:JDBC-ODBC Connection.

Text Book:

E.Balagurusamy.*ProgrammingwithJAVA*,(4thEdn).NewDelhi:TataMcGrawHill.

C.Muthu. (2011). *Programming with JAVA*. (2nd Edn).Vijay Nicole .Imprints Private Limited, Chennai.

Books for Reference:

Herbert Schildt. (2009). *Complete Reference Java 2*. (5th Edn.) Tata McGraw-Hill. Limited.

Ben Evans and David Flanagan, (2019), *Java in a Nutshell*, Seventh Edition. O'Reilly Media, Inc.

Cay S. Horstmann, Gary Cornell, (2018), *Core Java 2* Volume 1 ,11th Edition, Prentice Hall.

Paul Deitel, Harvey Deitel, (2018), *Java: How to Program (Early Objects)*, 11th Edition, Prentice Hall

James Gosling, Bill Joy, Guy L Steele Jr, Gilad Bracha, Alex Buckley,(2015), *The Java Language Specification, Java SE 8th Edition (Java Series)*, Published by Addison Wesley.

David J. Eck,(2015), *Introduction to Programming Using Java* 8th Edition, Published by CreateSpace Independent Publishing Platform

Outcomes	After Completing this course, the students are able to: • comprehend the efficiency and complexity of Java language in designing the Software components. • acquire knowledge themselves in the area of Internet Programming

Semester - V				
Course code: 23VSD5P1	**Core Practical IX**	**T/P**	**C**	**H/W**
	JAVA PROGRAMMING LAB	**P**	**4**	**4**

Objectives	• To understand the fundamental concepts of Java Programming, and its different modules that includes Interfaces, Packages, Threads, I/O streams, Applets and JDBC

1. Creating simple Classes and Objects
2. Creating Constructor and Destructor
3. Working with Copy Constructor
4. Working with parameterized constructor
5. Working with Inheritance
6. Illustrating Method Overloading
7. Working with Method Overriding
8. Creation of Interfaces
9. Creation and implementation of Packages
10. Working with Threads
11. Illustrating Multithreading
12. Working with Input / Output streams
13. Drawing images using Applet
14. JDBC connectivity

Outcomes	After Completing this course, the students are able to: • understand and implement the Object-Oriented Programming concepts using Java • practice Exception Handling, Graphical User Interface and Event Handling using Java.

Semester - V				
Course code: 23VSD5P2	**Core Practical X**	**T/P**	**C**	**H/W**
	PYTHON LAB	**P**	**3**	**3**

Objectives	• To develop higher-order programming skills in core Python • To apply the theoretical elements of Python for problem solving

1. Decision Making and Looping statements.
2. Arithmetic and Relational Operators on Strings.
3. Built-In String Functions.
4. Create and Access Strings and Substrings (using Indexing and Slicing).
5. Function Definition & Function call.
6. Create and Access Lists.
7. Built-In List Functions.
8. Create and Access Tuples.
9. Built-In Tuple Functions.
10. Create and Access Dictionaries.
11. Built-In Dictionary Functions.
12. Files and Exceptions.
13. Create classes and objects
14. Inheritance
15. Polymorphism

Outcomes	After Completing this course, the students are able to: • Analyze and understand the various programming constructs through simple python programs • Illustrate the programming elements of Python

Semester - V				
Course code: 23VSD5P3	**Core Practical XI**	**T/P**	**C**	**H/W**
	SOFTWARE DESIGN LAB	**P**	**3**	**3**

Objectives	• To impart comprehensive knowledge on Software design • To introduce different types ofUML diagrams used for Software design

1. Parts of UML diagrams
2. Create following UML diagrams for Bank ATM Transaction System
   - Class Diagrams
   - Use case Diagrams
   - Sequence Diagrams
   - Component Diagrams
   - Collaboration Diagrams
3. Create following Static UML diagrams for Library Management System
   - Class Diagrams
   - Component Diagrams
   - Deployment Diagram
4. Create following Dynamic UML diagrams for Student Mark Analysing System
   - Use case Diagrams
   - Sequence Diagrams
   - Collaboration Diagram
   - State chart Diagram
   - Activity Diagram

Outcomes	After Completing this course, the students are able to: • gain comprehensive knowledge on Software design • describe different types of UML diagrams used for Software design

Semester - V				
Course code: 23VSD5G1	**General – 7**	**T/P**	**C**	**H/W**
	PYTHON PROGRAMMING	**T**	**4**	**4**

Objectives	• To develop logical thinking, problem solving and implementation skills using Python. • To understand the data structures of Python namely lists, dictionaries and tuples. • To augment the knowledge on object-oriented programming using Python
Unit- I	**Introduction to Python:** Introduction – Python overview – Getting started – Comments – Python identifiers – Reserved keywords – Variables – Standard data types – Operators – Statements and Expressions – String operations – Boolean expressions. Control Statements: The for loop – while statement – if-elif-else statement – Input from keyboard.
Unit -II	**Functions:** Introduction – Built-in functions – User defined functions – Function Definition – Function Call - Type conversion – Type coercion – Python recursive function. Strings: Strings –Compound data type – len function – String slices – String traversal – Escape characters – String formatting operator – String formatting functions.
Unit -III	**Tuples:** Tuples – Creating tuples – Accessing values in tuples – Tuple assignment – Tuples as return values – Basic tuple operations – Built-in tuple functions. Lists: Values and accessing elements – Traversing a list – Deleting elements from list – Built-in list operators & methods.
Unit -IV	**Dictionaries:** Creating dictionary – Accessing values in dictionary – Updating dictionary – Deleting elements from dictionary – Operations in dictionary - Built-in dictionary methods. Files and Exceptions: Introduction to File Input and Output - Writing Structures to a File - Using loops to process files Processing Records - Exception.
Unit -V	**Classes and Objects in Python:** Overview of OOP – Data encapsulation – Polymorphism – Class definition – Creating objects – Inheritance – Multiple inheritances – Method overriding – Data encapsulation – Data hiding

Text Book:

Martin C. Brown. (2018). *Python: The Complete Reference*, McGraw-Hill Ltd.

Books for Reference:

Balagurusamy. E. (2017). *Introduction to Computing and Problem Solving using Python*.Tata McGraw-Hill. Limited.

Summerfield, M. (2010). *Programming in Python 3: a complete introduction to the Python language*. Addison-Wesley Professional.

Lutz, M. (2013). *Learning python: Powerful object-oriented programming*. O'Reilly Media, Inc.

Chun, W. J. (2009). *Python fundamentals*. Prentice Hall.

Severance, C. R. (2009). *Python for everybody*. Charles Severance.

Outcomes	After Completing this course, the students are able to: • Understand the core elements of the Python Programming • Resolve on the ideal usage of complex data structures as well as exceptions. • Describe the files, OOPs concepts in python

Semester - V				
Course code: 23VSD5P4	**General – 8**	**T/P**	**C**	**H/W**
	ANDROID PROGRAMMING	**P**	**4**	**4**

Objectives	• To understand the fundamental concepts of android programming. • To independently create simple Android Applications.
Unit -I	Introduction: What is Android? – History of Embedded Device Programming – Open Handset Alliance and Android – Introduction to Android
Unit -II	Downloading and Installing: Eclipse – Downloading and Installing the JRE – Downloading and Installing the Eclipse. Downloading the Android SDK – Android Plugins for Eclipse – Configuring the Plugins for Eclipse.
Unit -III	Exploring the Android SDK: Android Documents – Samples – Run the API demo sample application – Android tools – APIs – Application Life Cycle – Standard ASP Application Life Cycle – Android Application Life Cycle
Unit -IV	Hello World Application: Creating first Android Project in Eclipse – Examining the Android Created files – Using an image – Code based UI – XML based UI - Using the Command-Line Tools and the Android Emulator: Creating a Shell Activity Using the Windows CLI – Creating the Hello World! Activity in the Windows CLI – Hello World! on Linux
Unit -V	Using Intents and the Phone Dialer – Lists, Menus and Other Views – Using the Cell Phone's GPS Functionality – Using the Google API with GTalk

Text Books:

DiMarzio, J. (2008). *Android a programmers guide*. McGraw-Hill, Inc.

Books for Reference:

Burnette, E. (2009). *Hello, Android introducing Google's mobile development platform 2nd*.

Mednieks, Z. R., Dornin, L., Meike, G. B., & Nakamura, M. (2012). *Programming android*. " O'Reilly Media, Inc."

Clifton, I. G. (2013). *Android user interface design: turning ideas and sketches into beautifully designed apps*. Addison-Wesley.

Outcomes	After Completing this course, the students are able to: • understand the fundamentals of Android programming • develop simple Android Applications

Semester - V				
Course code: 23VSD5P5	**General – 9**	**T/P**	**C**	**H/W**
	COMPETITIVE EXAMINATION SKILLS	**P**	**2**	**2**

Objectives	• To build a sense of awareness among students through proper guidance about various competitive examinations • To motivate students for prospective career in government and corporate sector • To intensively guide students for competitive examinations like TNPSC, UPSC, SSC, RRB, IBPS etc.
Unit -I	Public Service Commission: Tamil Nadu Public Service Commission (TNPSC) and its role -History of TNPSC - Constitutional Provisions on the Formation, Functions, and Powers of Public Service Commissions for the Union and for the States - TNPSC and its rules of Procedure.
Unit -II	Eligibility and examination pattern: TNPSC - Union Public Service Commission (UPSC) - Staff Selection Commission (SSC) - Railway Recruitment Board (RRB) – Institute of Banking Personnel Selection (IBPS).
Unit -III	Intelligence, creativity & application, testing & assessment - Types, verbal abilities & fluency.
Unit -IV	Numerical ability: Numbers, simplification, time and work, percentage, fraction, speed and distance, simple and compound interest, ratio and proportion Spatial and perceptual abilities, situation reaction test.
Unit -V	Memory and inductive reasoning, Logical reasoning, Coding and Decoding, Direction Test, Syllogism.

Books for Reference:

Rai, A. (1994). *Intelligence tests*. Sterling Publishers Pvt. Ltd.

Competition success review magazines.

Outcomes	After Completing this course, the students are able to: • gain awareness about competitive examinations • get trained in different skills required for clearing the competitive examinations

Semester - VI			
Course code: 23VSD6I	**INDUSTRIAL INTERSHIP**	**C**	**H/W**
		12	**12**

Objectives

- To get exposure about the work environment in the industry
- To gain training from the industry experts
- To gain practical knowledgeandparticipate in Industry projects

The student has to attach himself / herself with an organization related to his / her specialization approved by the Department for a period of 2 weeks for Industrial Internship Training with Project. One personnel of that industry and a faculty of the Department will be external and internal guides of the project respectively. The training, project theme, workflow and other related guidelines can be had from the Industry. The development of the project may be done in the Industry by utilizing 14 lab hours per week. At the end of the internship, the student should produce a certificate of internship from the organization.

The monitoring of the progress and project evaluation for **100 marks (Internal)can be collectively done by both the external and internal guide**.

The final internship evaluation for **200 marks (External)**should be given as below.

S.No.	Criteria	Assessment by	Maximum Marks
1.	Evaluation of the Intern based on the project work assigned by the Industry	Industry – External guide	100
2.	Evaluation of the Intern based on demonstration of the project work assigned by the Industry	Department – Internal guide with one additional staff member	100
Total			**200**

Cumulative **200 marks (Internal + External)**

Outcomes

After Completing this course, the students are able to:

- Participate in the projects in industries during his or her industrial training
- Describe use of advanced tools and techniques encountered during industrial training
- Interact with industrial personnel and follow engineering practices and discipline prescribed in industry.
- Prepare professional work reports and presentations

Semester - VI			
Course code: 23VSD6D	**DISSERTATION AND VIVA VOCE**	**C**	**H/W**
		6	**6**

Objectives

- Check that the dissertation is the candidate's own work.
- confirm that the candidate understands what he or she has written.
- investigate the candidate's awareness of where his or her original work sits in relation to the wider research field.
- provide the candidate with an opportunity to justify their arguments and conclusions.
- establish whether the dissertation is of a sufficiently high standard to merit the award of the UG degree

A maximum of two students can combine and do a project in the subject related to Software Development with the guidance of a teacher who will be the internal guide. The development of the project will be done in the Department by utilizing 4 lab hours per week and the monitoring of the progress and project evaluation for 25 marks will be done by the internal guides. At the end of the semester, the student should prepare a project documentation report(not less than75 pages) and submit it to the respective department. The final project viva-voce for 75 marks should be conducted by the Department with two examiners and the cumulative 100 marks will be given by the Department.

Internal Mark – 25 (By Internal Guide)

External Mark – 75 (Viva voce by two examiners)

Cumulative – 100 Marks

Outcomes

After Completing this course, the students are able to:

- Knowledge of the most advanced research in the candidate’s specialization area (Track) of Software Development, respectively
- In-depth understanding of academic theory and the preparation of high-quality research pertinent to the field of study
- Ability to select appropriate research methods and techniques suitable for the candidate’s research field
- In-depth understanding the current state of the art in the individual research area, and the ability to appropriately employ methods and existing research results in the development of new knowledge, theories and presentation of research in the individual research area

Semester - VI				
Course code: 23VSD6P1	**General Practical**	**T/P**	**C**	**H/W**
	OPEN SOURCE LAB	**P**	**4**	**4**

Objectives	• To introduce and impart the programming principles, language structures of PHP & PEARL • To enable the students to create a complete Website using PHP and MySQL

PHP:

1. Simple programs using PHP
2. Simple programs using Controls and Functions
3. Working with functions
4. Programs for working with String Functions
5. Illustrating the working with Arrays.
6. HTML forms and PHP
7. Passing Variables to PHP from HTML forms.
8. Creating simple Database in MySQL and connectivity with PHP
9. Display Student Information using PHP and MySQL.
10. Develop a College Application Form using PHP and MySQL
11. File System Functions, Network Functions, Date and Time Functions.
12. File Upload and Converting Image File Types
13. Maintenance of Session.
14. Managing Cookies.
15. Message Passing Mechanism between Pages

PEARL:

1. Simple Programming
2. Numerical Values & operators
3. String variables and operators
4. Taking user input
5. Arrays
6. For and Foreach loop

Outcomes	After Completing this course, the students are able to: • Implement various applications using build systems • Understand the installation of various packages in open source operating systems • Create simple GUI applications using Gambas 3 • Understand various version control systems • Understand the kernel configuration and virtual environment

Semester - VI				
Course code: 23VSD6P2	**General Practical**	**T/P**	**C**	**H/W**
	DISTRIBUTED PROGRAMMING LAB	**P**	**4**	**4**

Objectives	• To understand the underlying concepts of distributed programming techniques in developing a Software product using distributed environment. • To understand and implement timing and other events in distributed environment and to understand and use the concepts of ADO.NET and AJAX

1. Form Design using Various Web Controls
2. Ad Rotator and Calendar Control, Login Control (Page Should Expire after 3 wrong attempts)
3. Working with Validation Controls
4. Illustrating Cookie Manipulation
5. State Management (using Session and Application)
6. Data Retrieval, Updating using ADO.NET (using Stored Procedure)
7. Template Creation using Data List and Data Grid
8. Sorting and Paging using Data Grid
9. Day Planner Preparation using XML and ADO.NET
10. Illustrating Data Caching
11. Partial Page Refresh using AJAX
12. Creating and Testing a Simple Web Service

Outcomes	After Completing this course, the students are able to: • Understand the Microsoft .NET Framework and ASP.NET page structure • Design web application with variety of controls • Access the data using inbuilt data access tools • Use Microsoft ADO.NET to access data in web Application • Configure and deploy Web Application • Develop secured web application

Semester - VI				
Course code: 23VSD6G1	**General – 13**	**T/P**	**C**	**H/W**
	CORPORATE GROOMING AND FINISHING SKILLS	**T**	**4**	**4**

Objectives	• To enhance and sharpen the required skills and proper business etiquettes among the students to build good corporate relationship with the customers and their colleagues • To learn to build a consistent professional image with respective organization's vision and mission
Unit -I	Professionalism: Professional approach & behaviour – rational vs. emotional decisions – analysis of self-competence and self confidence – qualities of an effective executive.
Unit -II	House Keeping Skills: Cleanliness at work place – Organizing the Work Table and Shelves – Spatial Utility and Energy Saving habits – Office Files and Personal Computer / Laptop management
Unit -III	Front Office Skills: Reception and Greeting – Telephone manners – effective visitor appointments management – Preparation to attend office meetings – preparation to hold office meetings
Unit -IV	Front Office Skills: Reception and Greeting – Telephone manners – effective visitor appointments management – Preparation to attend office meetings – preparation to hold office meetings
Unit -V	Documentation: Objectives, Report writing, How to write minutes, Preparation methods, and Report for media?

Books for Reference:

Naveen Kumar, Sudan A. S; Managerial Skill Development, First Edition (2004), Anmol Publications

Lesikar & Flatley, Basic Business Communication, New Delhi: Tata McGraw Hill

www.executiveworld.com

www.selfconfidence.co.uk

www.senselang.com.

Outcomes	After Completing this course, the students are able to: • Build a consistent professional image with organization vision and mission • Build good corporate relationships with your customers • Influence others with power image and relevant body language • Enhancing confidence in presenting yourself • Exercise proper business etiquette