Curriculum for Undergraduate Degree (B. Voc.) in Software Development (w.e.f. AY: 2021-22)

Part III: Detailed Curriculum

First Semester

Course Name:	**Effective English Skills**		
Course Code:	UGEN101		
Semester:	First	**Credit:**	3
L-T-P:	3-0-0	**Pre-Requisites:**	
Full Marks:	50		
Examination Scheme:	Semester Examination: 35	Continuous Assessment:10	Attendance: 05

Course Objectives:	
1	To help the learner to write descriptive and narrative paragraph, letters, reports notices etc. and also practice skills of note making
2.	To help the learner to use English effectively and appropriately in the office environment
3.	To help the learner to use proper writing skills in English

Course Contents:

Module No.	Description of Topic	Contact Hrs.
1	**Functional Grammar and usage**: 1. agreement/concord: number – gender etc. 2. Tenses: simple past (negatives/interrogatives) present perfect, past perfect continuous, past perfect, expressing future time (will and going to) 3. Passive voice (perfect tenses and modals) 4. Modals (must, should ought to, would) 5. Linking words (to like because although, instead of, if, as, since, who, which that, when however, inspiteof) 6. Reported speech, statements, questions (yes/no)	10L
2.	**Functional Writing Skills**1. Paragraph writing • Describing objects • Describing people • Narrating events, stories 2. Letter writing • Application for leave • Application for jobs • Asking for information form various agencies (e.g. Last date for getting prospects; price of items before placing doers etc.) 3. Note making 4. Ending (punctuation, spelling, appropriate vocabulary, structures)	10L
3.	**Listening and speaking skills**: 1. Introducing yourself/friends in formal and informal situations. 2. Inviting people (over the phone and face to face) giving details of occasion, time place and date. Acceptance and refusal of invitation – formal and informal. 3. Seeking and supplying information (example opening an account in a bank, applying for loans	10L

	etc.) 4. Talking and conveying messages (over the phone and face to face). 5. Giving directions / instruction. 6. Discussing contemporary issues related to environment, child labour, gender bias etc. 7. Listening to excepts form television and radio. 8. Listening to poems/plays (prescribed). 9. Listening to speeches / talks. 10. Listening to songs like "We shall overcome".	
4	**English for Office Use**: 1. Using the telephone taking and passing messages. 2. Receiving messages 3. Marking noting on files and circular. 4. Writing office notes, memos, notices, agendas for meetings. 5. Telegrams and fax messages. 6. Writing business letters, application enquires, complaints. 7. Filling in forms, cheques, pay in slips etc	6L
Total		**36L**

Course Outcomes:	
After completion of the course, students will be able to:	
1	To be well equipped with the basic knowledge of English for vocational purpose
2.	To demonstrate his/her ability to write error free while making an optimum use of correct Business Vocabulary & Grammar.

Learning Resources:	
1	Effective Communication Skills, Kulbhushan Kumar, Khanna Publishing House
2	Business Communications, Varinder Bhatia, Khanna Publishing House

Course Name:	**Computer Fundamentals & C Programming**		
Course Code:	USD102		
Semester:	First	**Credit:**	3
L-T-P:	3-0-0	**Pre-Requisites:**	Mathematics/Basic Computer Knowledge
Full Marks:	50		
Examination Scheme:	Semester Examination: 35	Continuous Assessment:10	Attendance: 05

Course Objectives:	
1	To provide the basic knowledge about computer both hardware and software.
2	To provide the knowledge of programming on C, so that they will be able to solve problems using computer programming.

Course Contents:		
Module No.	**Description of Topic**	**Contact Hrs.**
1	Evolution of computers, types of computers, basic idea of number system and binary arithmetic, brief idea of logic gates and truth table and their applications. Idea about different components of computer like CPU,	4L

	Memory (Primary Memory & Secondary Storage), I/O devices etc.	
2	Introduction to software and firmware, types of software, brief idea about Operating System, compiler, interpreter, assembler and application software.	3L
3	Introduction to programming concept, knowledge of good programming practice. Brief idea about Algorithm and Flow chart.	2L
4	Introduction to C programming: character set, C tokens like literal, punctuator, operators (types of operators), identifiers. C data type and concept of variables. Input/output functions. Format specifiers and escape sequences. Pre-processor directives & macro. Arithmetic statements.	6L
5	C control structure: if-else, if-else if-else, nested if structure. Switch structure.	3L
6	Loop structure of C: while, do-while and for loop (idea of nested loop). Use of break and continue statement. Idea of infinite loop.	4L
7	Concept of array (1D and 2D), character string and pointers.	5L
8	C functions: difference between inbuilt library function and user defined function. Concept of user defined function, function prototype, function with and without argument, function call (call by value & call by address) and function definition. Idea of recursive function. Command line arguments.	4L
9	Concept of user defined data type: structure, array of structures, union and their applications.	2L
10	Basic idea of file handling using C: Difference between text and binary files, opening of text file, reading a file, writing to a file, closing of a file.	3L
Total		**36L**

Course Outcomes:	
After completion of the course, students will be able to:	
1	Have a basic knowledge of computer.
2	Develop logic to solve a problem.
3	Apply knowledge of C to write a program for problem solving.

Learning Resources:	
1	Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, Prentice Hall of India.
2	Byron Gottfried, Schaum's Outline of Programming with C, McGraw-Hill
3	YashavantKanetkar, Let Us C, BPB Publication.
4	Computer Fundamentals, Pradeep K. Sinha and Priti Sinha, BPB Publications.

Course Name:	**Web Designing**
Course Code:	USD103

Semester:	First	**Credit:**	3
L-T-P:	3-0-0	**Pre-Requisites:**	
Full Marks:	50		
Examination Scheme:	Semester Examination: 35	Continuous Assessment:10	Attendance: 05

Course Objectives:	
1	Understand the principles of creating an effective web page
2	Develop skills in analyzing the usability of a web site.
3	Understand how to plan and conduct user research related to web usability.
4	Learn the language of the web: HTML and CSS. JavaScript

Course Contents:

Module No.	Description of Topic	Contact Hrs.
1	Introduction to HTTP, HTML, Basic HTML Tags, Body Tags, Coding Style, Modifying & formatting Text, Lists – Unordered, Ordered, Definition, Insert Links -Linking to another Document, Internal Links, Email Links, Relative and Absolute Links, Insert Images - Referencing Images, Clickable Images, Image Placement and Alignment, Image Size, Image Margins, Image Formats, Image Maps- Defining an Image Map, Advanced Coloring Body Content, Working with tables - Basic Tables, Table Attributes, Table Cell Attributes, Table Row Attributes, Tables Inside of Tables, Invisible Space Introduction to Forms – Creating forms with different components of forms. Creating Frames, Working with Frame : -Based Pages- Creating Windows, Single Window Frames, Creating Column Frames, Creating Row Frames, Creating Complex Frames	8L
2	Cascading Style Sheet (CSS) – Introduction, creating style, using inline and external CSS, Creating Divs with ID style, Creating Tag& Class style, creating borders, Navigation links, creating effects with CSS.	6L
3	DESIGNING ACCESSIBLE TABLES - Understanding Tables & Accessibility, Using Tables for Tabular Data, styling a Table, Editing Table Layouts, Adding Style to a Table Using CSS CREATING WEBSITES WITH FRAMES - Introducing Frames, creating a Frameset, Opening Pages into Frames, Controlling Scrollbars & Borders, Targeting Links in Frames CUSTOMIZING THE INTERFACE - Opening an Existing Site, Reviewing Menu Options & Preferences, Previewing in Browsers & Device Central Introduction to Responsive Web Designing – Introduction, advantages, creating and using responsive web pages	6L
4	DESIGNING WEBSITES WITH DREAMWEAVER HTML Editor - Introduction to WYSIWYG HTML editor, advantages of using HTML editors, Creating a New Site, Creating a New Page, Adding Images with Alternate Text, Inserting & Formatting Text, Aligning Images, Creating an Email Link, Linking to Other Websites, Testing & Targeting Links,	6L

	Organizing Files & Folders CREATING & INSERTING IMAGES - Optimizing Images for the Web, Saving GIFs & PNGs in Photoshop, Inserting GIFs, Adjusting Transparency Settings, Saving JPGs for the Web	
5	JavaScript – Introduction, use of JavaScript in WebPages. Understand JavaScript event model, use some basic event and control webpage behaviour.	4L
6	Introduction to Internet. Web Hosting - What is Domain? Introduction to DNS, how to register a Domain? What is web hosting? How to get a web hosting? Host your website on web Server. File transfer through internet. Protocol. Example of some protocol, Creation of email-id, different parts of mail id and URL.	6L
Total		**36L**

Course Outcomes:	
After completion of the course, students will be able to:	
1	Discover how does web works really, what makes web sites work.
2	Employ fundamental computer theory to basic programming techniques.
3	How to and where to start research, planning for website.
4	How to host a website

Learning Resources:	
1	Web Design Complete Reference (Osborne Complete Reference Series)
2	Mastering Html, Css & Javascript Web Publishing,
3	https://www.w3schools.com

Course Name:	**Operating System**		
Course Code:	USD104		
Semester:	First	**Credit:**	3
L-T-P:	3-0-0	**Pre-Requisites:**	
Full Marks:	50		
Examination Scheme:	Semester Examination: 35	Continuous Assessment:10	Attendance: 05

Course Objectives:	
1	To Learn Operating System concepts and algorithms
2	To gain the knowledge about the applications of algorithms

Course Contents:		
Module No.	**Description of Topic**	**Contact Hrs.**
1	Introduction: Types of Operating Systems, OS Services, Concept of Virtual Machine.	3L

2	Processes: Definition, Process Relationship, Different states of a Process, Process State transitions, Process Control Block (PCB), Context switching Thread: Definition, Benefits of threads, Types of threads, Concept of multithreads, Process Scheduling: Foundation and Scheduling objectives, Types of Schedulers, Scheduling criteria: CPU utilization, Throughput, Turnaround Time, Waiting Time, Response Time; Scheduling algorithms: Pre-emptive and Non pre-emptivealgo, FCFS, SJF, RR	6L
3	Deadlocks: Definition, Necessary and sufficient conditions for Deadlock, RAG, Deadlock Prevention, Deadlock Avoidance: Banker's algorithm, Deadlock detection and Recovery.	4L
4	Inter-process Communication: Critical Section, Race Conditions, Mutual Exclusion, The Producer Consumer Problem, Semaphores, Classical IPC Problems: Producer-Consumer Problem, Reader's & Writer's Problem, Dinning Philosophers Problem etc.	5L
5	Memory Management: Basic concept, Logical and Physical address map, Memory allocation: Contiguous Memory allocation– Fixed and variable partition– Internal and External fragmentation and Compaction; Paging, Protection and sharing, Disadvantages of paging, segmentation	6L
6	Virtual Memory: Basics of Virtual Memory – Hardware and control structures – Locality of reference, Page fault, Dirty page/Dirty bit – Demand paging, Page Replacement algorithms: Optimal, First in First Out (FIFO), Not recently used (NRU) and Least Recently used (LRU).	6L
7	Disk Management: Disk structure, Disk scheduling - FCFS, SSTF, SCAN, C-SCAN	3L
8	Concise overviews of Windows, LINUX, MAC and android OS	3L
Total		**36L**

Course Outcomes:	
After completion of the course, students will be able to:	
1	Recall and understand introductory concepts of operating system
2	Apply process scheduling methods and deadlock handling schemes
3	Understand inter process communication
4	Understand and apply memory management and disk management procedures

Learning Resources:	
1	Operating System Concepts, Silberschatz, Galvin and Gagne, Wiley
2	Principles of Operating System, Naresh Chauhan, Oxford

Course Name:	**Programming for Problem Solving Lab**		
Course Code:	USD192		
Semester:	First	**Credit:**	1.5
L-T-P:	0-0-3	**Pre-Requisites:**	Mathematics/Basic Computer Knowledge
Full Marks:	100		
Examination	Semester Examination:	Continuous	Attendance:

Scheme:	35	Assessment:10	05

Course Objectives:	
1	To provide students hands on knowledge about writing program usingC.Also provide the idea of debugging and execution of program.
2	To make students familiar with application software like MS Word, MS Excel and MS Power Point.

Course Contents:

Module No.	Description of Topic	Contact Hrs.
1	Familiarization with C compiler and the corresponding IDE. Programs based on Input-Output statements, arithmetic operations	2P
2	Program to be written using if-else if-else-if-else ladder, nested if and switch structure.	2P
3	Program based on while, do-while, for loops. Problems given on nested loops (pattern, series etc.)	3P
4	Programs to be written on 1D and 2D array. Programs on string handling and pointers.	3P
5	Programs based on user defined functions (call by value and call by reference). Programs using recursive function.	3P
6	Programs on structure, union and file handling.	3P
7	Introduction to word processor. Practice on different utilities (mail merge, wizard and templates etc.) of MS Word.	3P
8	Introduction to worksheet software. Practice on different utilities (query and filtering, creating and using macro etc.) of MS Excel.	3P
9	Preparation of slides for presentation using different utilities of MS Power Point.	2P
Total		**24P**

Course Outcomes:	
After completion of the course, students will be able to:	
1	Write, debug and execute a C program to solve problems using computer.
2	Explore skills in MS Word, MS Excel and MS Power Point in profession.

Learning Resources:	
1	Byron Gottfried, Schaum's Outline of Programming with C, McGraw-Hill.
2	Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, Prentice Hall of India.
3	YashavantKanetkar, Let Us C, BPB Publication.
4	MS-Office, Dr. S. S. Srivastava. Firewall Media (An Imprint of Laxmi Publications Pvt.

	Ltd.)

Course Name:	Web Designing Lab		
Course Code:	USD193		
Semester:	First	**Credit:**	1.5
L-T-P:	0-0-3	**Pre-Requisites:**	
Full Marks:	50		
Examination Scheme:	Semester Examination: 35	Continuous Assessment:10	Attendance: 05

Course Objectives:	
1	To Acquire knowledge and Skills for creation of Web Site considering both client-side Programming.
2	To create Web application using tools and techniques used in industry.
3	To be familiarized with **open source Frameworks** like Dreamweaver for web development.

Course Contents:

Module No.	Description of Topic	Contact Hrs.
1	What is HTML HTML Documents Basic structure of an HTML document Creating an HTML document Mark up Tags, Heading-Paragraphs, Line Breaks,HTML Tags. HTML - Introduction HTML – Elements, HTML - Tags HTML - Text Formatting :-Pre, Attributes, Font, Text Links, Comments, Lists Images, Image Links Tables - Bgcolor, Color Codes, Color Chart, Background HTML – Forms :-Input, Text Fields, Password, Reset, Submit, Checkboxes, Radio, Select, Hidden Fields, Upload, Textarea Special Tags :- HTML - Body, Meta, Style, Div, Layouts HTML - Frames Formatting Tags :- Bold, Paragraphs, Headings, LineBreaks, Horizontal Rule, Italic, Code, Superscript, Subscript, Strikethrough	6P
2	Concept of CSS ,Creating Style Sheet , CSS Properties CSS Styling(Background, Text Format, Controlling Fonts) Working with block elements and objects	6P

	Working with Lists and Tables CSS Id and Class Box Model(Introduction, Border properties, Padding Properties, Margin properties) CSS Advanced(Grouping, Dimension, Display, Positioning, Floating, Align, Pseudo class, Navigation Bar, Image Sprites, Attribute sector) CSS Color Creating page Layout and Site Designs	
3	Introduction • JavaScript Overview • JavaScript Syntax • Type of JavaScript • Embedding Script In HTML File • Variable Operators • Arithmetic • Logical • Comparison • Assignment • Conditional Conditional Statement & Looping Statement • If •If . . . Else • Switch • While • Do/while • For	4P
4	Designing Websites With Dreamweaver HTML Editor.	4P
5	Use of Internet, Creating email-id, Surfing through internet.	4P
Total		**24P**

Course Outcomes:	
After completion of the course, students will be able to:	
1	Design a basic web site using HTML and CSS to demonstrate responsive web design.
2	Will be familiarized in using Dreamweaver.

Learning Resources:	
1	Web Designing and Development: Training Guide by Satish Jain, BPB Publication.
2	Web Designing and Development by Tanweer Alam, Khanna Publishing House