

BHARATI VIDYAPEETH
DEEMED TO BE UNIVERSITY

PUNE, INDIA

FACULTY OF MANAGEMENT STUDIES

Board of Studies in Computer Applications

Bachelor of Computer Applications Programme

(Under Choice Based Credit System)

To be effective from 2022-23 at Part I

Semester I

Course Number	Course Title	Credits	Hours / Week			IA Marks	EoTE Marks
			L	T	P		
101	Fundamentals of Information Technology	4	3	1	-	40	60
102	Algorithm and Program Design	4	3	1	-	40	60
103	C Programming	4	3	1	-	40	60
104	Organization of IT Business	4	3	1	-	40	60
105	Discrete Mathematics	4	3	1	-	40	60
106	Lab on MS-Office Suite	2	-	-	4	40	60
107	Lab on C Programming	2	-	-	4	40	60
108	General course-I **	1	2	-	-	50	-
Total		25	17	5	8	330	420

**** Student can select Any One of the following Courses as General Course-I in consultation with HOD/Coordinator:**

- i. Human Universal Values
- ii. Community Work I
- iii. Career & Life Skills
- iv. Communication Skills

Course Number	Course Name	L-T-P- Credits	Year of Introduction
101	Fundamentals of Information Technology	3-1-0 = 4C	2022-23
Course Objective:	The main objective is to introduce IT in a simple language to all undergraduate students, regardless of their specialization. It will help them to pursue specialized programs leading to technical and professional careers and certifications in the IT industry. The focus of the subject is on introducing skills relating to IT basics, computer applications, programming, interactive medias, Internet basics		
Cognitive Abilities	Course Outcome as per Blooms Taxonomy		
Remembering	Have a basic understanding of personal computers and their operations.		
Understanding	Understand basic concepts and terminology of information technology.		
Applying	Identify common computer hardware and software elements and understand how they interact with each other		
Analyzing	Demonstrate how to MS-Office software tools for word processing, mathematical processing and presentations.		
Evaluating	Demonstrate knowledge on different I/O devices, how they are used to operate instructions.		
Creating	Apply principles underlying social, environmental and ethical aspects in operating computer devices.		
References (Books, Websites etc)	<ol style="list-style-type: none"> 1. Computer Fundamentals by P. K. Sinha, BPB Publication 2. Fundamentals of Computers by V. Rajaraman, PHI Publication 3. Quick Reference for MS-Office 2007 by Vishnu Singh, Asian Publisher 		
Suggested MOOC :			
Please refer these websites for MOOCS:			
NPTEL /			
Swayamwww.			
edx.com			
www.coursera.com			
Course Plan			
Unit	Contents		
1	Introduction to Computer: Computer Characteristics, Concept of Hardware, Software , Evolution of computer and Generations, Types of Computer – Analog and Digital computers, Hybrid Computers, General Purpose and Special Purpose Computer, Limitations of Computer Applications of Computer in Various Fields.		
2	Input/Output Devices: Input Device – Keyboard, Mouse, Scanner, MICR, OMR. Output Devices – VDU, Printers – Dot Matrix, Daisy-wheel, Inkjet, Laser, Line Printers and Plotters.		
3	Computer Memory: Memory Concept, Memory Cell, Memory Organisation, Semiconductor Memory – RAM, ROM, PROM, EPROM, Secondary Storage Devices – Magnetic Tape, Magnetic Disk (Floppy Disk and Hard Disk.), Compact Disk.		

4	<p>Software: Software and its needs, Types of S/W. System Software: Operating System, Utility Programs Programming Language: Machine Language, Assembly Language, High Level Language their advantages & disadvantages. Application S/W and its types: Word Processing, Spread Sheets Presentation, Graphics, DBMS s/w, Algorithms and Flow Charts.</p>
5	<p>Networking: Concept, Basic Elements of a Communication System, Data Transmission Media, Topologies, LAN, MAN, WAN, Internet</p>
6	<p>MS Office: Introduction to MS Office, Components and Features.</p> <p>MS Word: Creating Letter, Table, Fonts, Page Layout Document, Formatting, Spell Check, Print Preview, Template, Color, Mail Merge, Auto Text, Inserting Picture, Word Art.</p> <p>MS Excel: Introduction to Excel, Sorting, Queries, Graphs, Scientific Functions.</p> <p>PowerPoint: Introduction to PowerPoint, Creation of Slides, Inserting Pictures, Preparing Slide Show with Animation.</p> <p>MS Access: Creation and Manipulation of Files.</p>

Course Number	Course Name	L-T-P- Credits	Year of Introduction
102	Algorithm and Program Design	3+1+0= 4C	2022-23
Course Objective:	To understand good principles of algorithm design, elementary analysis of algorithms, and fundamental data structures. The emphasis is on choosing appropriate data structures and designing correct and efficient algorithms to operate on these data structures.		
Cognitive Abilities	Course Outcome as per Blooms Taxonomy		
Remembering	Argue the correctness of algorithms using inductive proofs and invariants.		
Understanding	Learn good principles of algorithm design;		
Applying	learn how to analyze algorithms and estimate their worst-case and average-case behaviour (ineasy cases);		
Analyzing	Analyze randomized algorithms. Employ indicator random variables and linearity of expectation to perform the analyses. Recite analyses of algorithms that employ this method of analysis.		
Evaluating	Compare between different data structures. Pick an appropriate data structure for a design situation.		
Creating	Explain what competitive analysis is and to which situations it applies. Perform competitive analysis.		
References (Books, Websites etc) :			
1. How to Solve it by a Computer by Dromey R. G., PHI			
2. Data Structure, Algorithms and Applications in C++ by Sartaj Sahni, Universities Press			
Suggested MOOC :			
Please refer these MOOCS websites for suitable			
MOOCSwww. edx.com			
www.coursera.com			
www.alison.com			
Course Plan			
Unit	Contents		
1	Introduction: Concept, of Problem, Procedure and Algorithm, Algorithm Representation through Pseudo -Code and Flow - Charts, Tracing of Algorithms Such as Swapping, Counting, Finding the Sum, Product, maximum, minimum, of a list of numbers.		
2	Concept of Structured Programming and Procedure Oriented Programming: Introduction, Concept, Basic Control Structure, Benefits of Structured Programming and Procedure Oriented Programming		
3	Design of Algorithm and Implementation through programming Problem Analysis and Design of Algorithms for problems such as (1) Swapping (2) Counting (3) Finding the Sum, Product, maximum, minimum of a finite list of numbers, and (4) Simple variations of the above problem realization that, there may be alternative algorithm and that one algorithm may be better (in some sense) than the other.		

4	Problem Analysis and Design 1: Design of algorithm for problem such as generating prime numbers, Evaluation of polynomial, Sum of first n factorials, Finding nth term of Fibonacci sequence.
5	Problem Analysis and Design 2: Design of algorithm for problem such as Finding largest and second largest of list ,Determining nth root of a number, compute GCD and Base Conversion
6	Concept of Array, Sort and Search Technique: Introduction of Array, Array manipulation such as removing the duplicates, Partitioning of anarray, listing of prime numbers, finding prime factor of a number, The problem of search andMerge, Linear, Binary search algorithms, The Problem of Sorting, Selection, Insertion and Bubble

Course Number	Course Name	L-T-P- Credits	Year of Introduction
103	C Programming	3-1-0 = 4C	2022-23
Course Objective:	This is a first course in programming. The objective of this paper is to teach the Programming Language C. However, the process of learning a computer language will also be emphasized. Emphasis is also on semantics and problem solving.		
Cognitive Abilities	Course Outcome as per Blooms Taxonomy		
Remembering	To solve a given problem using programming/algorithm		
Understanding	Understand and use control statements and operators		
Applying	Read, understand and design C programs using control structures.		
Analyzing	Trace the given C program manually.		
Evaluating	Effectively use of Arrays and functions and implement Programs with pointers, perform pointer arithmetic, and use the pre-processor.		
Creating	Write C program for simple applications of real life using structures and Unions.		
References (Books, Websites etc) :			
1. Let us C - Y.Kanetkar, BPB Publications			
2. The 'C' programming language - B.W.Kernighan, D.M.Ritchie, PHI			
3. Programming in ANSI C - Balaguruswami, TMH			
Suggested MOOC :			
Please refer these websites for MOOCS:			
NPTEL /			
Swayam			
www.			
edx.com			
www.course			
ra.com			
Course Plan			
Unit	Contents		
1	Introduction to C Language History, Structures of C Programming, Function as building blocks, Language Fundamentals, Character set, C Tokens, Keywords, Identifiers, Variables, Constant, Data Types, Comments		
2	Operators Types of operators, Operator Precedence and Associativity, Expression, Statement and types of statements, Built in Operators and functions, Console based I/O and related built in I/O function- printf(), scanf(), getch(), getchar(), putchar(), Concept of header files, Preprocessor directives - #include, #define		
3	Control Structures Decision making structures - if statement, if-else statement, Nested if-else statement, switch statement Loop Control structures - while loop, do-while loop, for loop, Nested for loop Other statements - break keyword, continue keyword, goto keyword, exit function		

4	<p>Functions Introduction, Purpose of function, Function declaration/ Function prototype, Function definition, Function call, return statement, Function parameters, Types of functions, Call by value , Storage classes, Recursion, Examples on recursive function</p>
5	<p>Arrays and Strings Introduction to one-dimensional Array, Definition, Declaration, Initialization, Accessing and displaying array elements, Arrays and functions, Introduction to two-dimensional Array, Definition, Declaration, Initialization, Accessing and displaying array elements, Introductions to Strings, Definition, Declaration, Initialization, Input, output statements for strings, Standard library functions, Implementations with standard library functions</p>
6	<p>Structures and Pointers Structure – User defined datatypes, Concept of structure, Union; Member access operator Introduction to pointer, Definition, Declaring and Initializing pointer variable, Indirection operator and address of operator, Accessing variable through its pointer, Pointer arithmetic, Dynamic memory allocation, Pointers & Functions, Pointers & Array, Pointers & Structures</p>

Course Number	Course Name	L-T-P- Credits	Year of Introduction
104	Organization of IT Business	3-1-0 = 4C	2022-23
Course Objective:	To acquaint students with fundamentals of Business Organization and management systems as abody of knowledge.		
Cognitive Abilities	Course Outcome as per Blooms Taxonomy		
Remembering	Students shall know about business and its structure also students shall know about various forms of business		
Understanding	Students will have sound knowledge about overall business environment.		
Applying	Apply and enlighten with nature and scope of IT business organization		
Analyzing	To enable them with office equipment's and system		
Evaluating	To make them understand of the office function and its significance on office layout		
Creating	Understand the complexities associated with management of human resources in the IT organizations and integrate the learning in handling these complexities.		
References (Books, Websites etc) :			
<ol style="list-style-type: none"> 1. Modern Business Organization and Management by S.A. Sherlekar ,– (Himalaya Publishing House) 2. Fundamental of Business Organization & Management by Y.K. Bhushan –(S Chand Publishers).; Business Organization and Management by C. R. Basu, -Tata McGraw Hill, Publishing House, New Delhi, 1998 3. Information Technology for Management by Henry C. Lucas,Jr - Tata McGraw Hill,7th edition. 4. It Services Business Management: Concepts, Processes and Practices by S.S. Dubey, PHI Publication 			
Suggested MOOC :			
Please refer these websites for MOOCS:			
NPTEL / Swayam			
www.edx.com			
www.coursera.com			
Course Plan			
Unit No.	Details		
1	Nature of Business Concept of Business – Meaning, Definition, Nature and Scope, Characteristics of Business. Business as an Economic Activity. Objectives of Business. Structure of Business (Classification of Business Activities. Requisites for Success in Modern Business.		
2	Evolution of Business Beginning and development of Commerce, Evolution of Industry, Industrial Revolution, Beginning and growth of Indian Business, Industrialization in India.		

3	<p>Forms of Business Ownership Introduction to various forms – Factors affecting choices of an deal form of ownership, features Merits and Demerits of Sole Proprietorship – Joint Hindu Family Business – Partnership – Joint Stock Company – Co-operative Organization, Public Enterprises.</p>
4	<p>Formation of a Company Stages in formation and incorporation of a company (e Promotion – incorporation and registration – Capital Subscription – Commencement of Business. - Documents of a Company i.e. Memorandum of Association – Articles of Association – Prospectus.</p>
5	<p>The Impact of information technology on the Business Modern Organizations- IT runs the Airlines, Technology Transforms, Securities Industry, Creating New Types of Organization- Examples of Designs using IT Variables, Adding peoples to the design.</p>
6	<p>Strategic Issues of Information Technology IT and Corporate Strategy- Some examples of Technology strategy, value chain, A framework for the strategic use of IT. Creating and sustaining a Competitive edge- Using resource to advantage, protecting an IT innovation. Integrating Technology with the Business Environment.</p>

Course Number	Course Name	L-T-P- Credits	Year of Introduction
105	Discrete Mathematics	3-1-0 =4C	2022-23
Course Objective:	To give general idea about mathematics and its application in Business		
Remembering	Write an argument using logical notation and determine if the argument is valid or is not valid		
Understanding	Understand the basic principles of sets and operations in sets.		
Applying	Prove basic set equalities. Find the probability for given problem.		
Analyzing	Determine when a function is 1-1 and "onto".		
Evaluating	Demonstrate an understanding of relations and functions and be able to determine their properties.		
Creating	Model the given facts in logic statement.		

References (Books, Websites etc) :

Discrete Mathematics & its Applications by Kenneth Rosen
Discrete Mathematics by Semyour Lipschutz & Marc Lipson

Suggested MOOC :

Please refer these websites for MOOCS:
NPTEL / Swayam
www.edx.com
www.coursera.com

Course Plan

Unit	Contents
1	Set Theory : Definition of a set, Representation of elements of sets, Methods of representing sets, types of sets, operations on sets , cardinality of a set, Principle of Inclusion and Exclusion, Venn Diagram, Proof by using Venn diagram
2	Functions and Relations : Definition of Function, Types of Functions ,Composite Function, Relation definition, representation of relations
3	Logic: Propositions, Logic Operations-Negation, Disjunction, Conjunction, Conditional and Biconditional, Truth Tables of compound propositions, Translating English sentences in to logical statements and vice versa, Logic gates and circuits
4	Matrices: Matrix Definition, General Form, Representation of matrix in computers, Types of matrices, Operations on matrices: Addition, Subtraction and Multiplication, transpose , row / column transformations , Inverse of the matrix by Co-factor and Adjoint method, solutions to three variable problems by using matrices, application problems of matrices
5	Permutations and Combinations: Concept- Permutation, Combination, Sum and Product rules, problems on Permutation and combination (with wording atleast, atmost, neither nor, any one etc.)

6

Probability:

Concept and problem solving, general probability, conditional probability, partitions, Bayes Theorem

Course Number	Course Name	L-T-P- Credits	Year of Introduction
106	Lab on MS-Office Suite	0-0-4 =2C	2022-23

Course Objective: The objective of this course is to help the student gain proficiency in text editing and formatting, spreadsheet and database processing/analysis, and presentation preparation. An additional objective of the course is for the student to gain basic knowledge of modern-day computing technology.

Cognitive Abilities **Course Outcome as per Blooms Taxonomy**

Remembering Students are able to prepare documentation using MS-Word.

Understanding Demonstrate an advanced knowledge of the Word Processing package of MS-Office and a knowledge of how to design & create effective and structured documents like technical reports, letters, brochures, etc.,

Applying Demonstrate the skills in the appropriate use of various features of the spread sheet package MS Excel and also to create useful spreadsheet applications like tabulated statements, balance sheets, statistical charts, business statements, etc.

Analyzing Demonstrate the skills in making an effective presentation with audio and video effects using the MS Excel package

Evaluating Draw graphical pictures, flow charts, block diagrams etc., using the drawing tools available in MS Word or MS Power Point and incorporate them into documents and presentations.

Creating To perform accounting operations and to develop presentation skills

Reference books :-

Microsoft Office 2000, Michael Busby and Russel A. Stultz, BPB publications

Microsoft Office 2007, Rulkosky, Seguin and Rulkosky, BPB Publications

Suggested MOOC :

Please refer these websites for MOOCS:

NPTEL / Swayam

www.edx.com

www.coursera.com

Course Plan

Unit	Details
1	Information Technology Essentials, Windows and Internet Explorer: Verify the components of a typical computer system, Explore, maintain files, and customize the Windows operating system, Review using the Internet Explorer.
2	MS Word: Introduction: Introduction to MS Word, Menus, Shortcuts, Document types Working with Documents: a) Opening Files – New & Existing, Saving Files b) Formatting page and Setting Margins c) Converting files to different formats : Importing, Exporting , Sending files to others d) Editing text documents : Inserting , Deleting ,Cut, Copy, paste , Undo, Redo ,

	<p>Find, Search, Replace</p> <p>e) Using Toolbars, Ruler, Icons and help</p> <p>f) Formatting Documents:</p> <ul style="list-style-type: none"> • Setting Font Styles: Font selection – style, size, color etc., Type face – BoldItalic, underline, Case settings, Highlighting, Special symbols • Setting Paragraph style: Alignments, Indents, Line space, Margins and Bullets and Numbering • Setting Page Style: Formatting, Border & Shading, Columns, Header & footer, Setting Footnotes, Inserting manual Page break, Column break and line break, Creating sections and frames, Inserting Clip arts, inserting pictures and other files, Anchoring & Wrapping • Setting Document Styles: Table of Contents, Index, Page Numbering, data & Time, Author etc., Creating Master Documents <p>Creating Tables: Table settings, Borders, Alignments, Insertion, deletion, Merging, Splitting, Sorting, Formula</p> <p>Drawing: Inserting Pictures/Files etc., Drawing Pictures, Formatting & Editing pictures, Grouping and ordering, Rotating</p> <p>Tools: Word Completion, Spell Checks, Macros, Mail merge, Templates, Using Wizards, Tracking, Changes, Security</p>
3	<p>MS Power Point:</p> <p>Introduction: Opening new Presentation, Different presentation templates, Setting backgrounds, Selecting presentation layouts</p> <p>Creating a presentation: Setting presentation style, Adding Text to the presentation</p> <p>Formatting a presentation: Adding style, Color, gradient fills, Arranging objects, Adding Header & Footer, Slide background, Slide layout</p> <p>Adding Graphics to the presentation: Inserting pictures, movies, tables, etc into the presentation, Drawing Pictures using Draw</p> <p>Adding effects to the presentation: Setting Animation & transition effect, Adding audio and video</p> <p>Printing Handouts and Generating standalone presentation viewer</p>

4	<p>MS Excel:</p> <p>Introduction: Spreadsheet & its Applications , Opening spreadsheet, Menus & Toolbars & icons, Shortcuts , Using help</p> <p>Working with Spreadsheets: Opening a File, Saving Files, Setting Margins, Converting files to different formats : Importing, Exporting and Sending files to others</p> <p>Spreadsheet addressing : Rows, Columns & Cells, Referring cells and Selecting cells</p> <p>Entering and Editing Data: Entering Data, Cut, Copy, paste, Undo, Redo, Find, Search & Replace, Filling continuous rows, columns, Inserting -Data, cells, column, rows & sheets, Manual breaks</p> <p>Computing data : Setting Formula, Finding total in a column or row, Mathematical Operations(Addition, Subtraction, Multiplication, Division, Exponentiation), Using other Formula</p> <p>Formatting Spreadsheets: Formatting – Cell, row, column & Sheet: Alignment, Font, Border & shading, highlighting values Hiding/Locking Cells</p> <p>Worksheet : Sheet Name , Row & Column Headers, Row Height, Column Width, Visibility – Row, Column, Sheet , worksheet Security</p> <p>Formatting – worksheet: Sheet Formatting & style - background, color, Borders & shading, Anchoring objects, Formatting layout for Graphics, Clipart etc.,</p> <p>Working with sheets : Sorting, Filtering, Validation, Consolidation, Subtotal , Creating Charts, Selecting charts, Formatting charts, label, scaling etc.,</p> <p>Using Tools: Error Checking, Spell Checks, Macros, Formula Auditing, Creating & using Templates, Tracking changes, customization, printing worksheet</p>
5	<p>Working with Excel Functions:</p> <p>Concept of Functions, Commonly used functions: Sum, Max,Min, Average, Count, Today, Now, Datedif, Countif, CountA, CountBlank, Round, RoundUp, RoundDown, ABS, Sign, Ceiling, Floor, Trim, Value, Clean, sqrt, if, sumif</p>
6	<p>MS Access:</p> <p>What is an Access Database, Opening a Database File, Create Table, Create and modify fields of tables, Construct simple queries, Saving and Running Queries</p>

Course Number	Course Name	L-T-P- Credits	Year of Introduction
107	Lab on C Programming	0-0-4=2C	2022-23
Course Objective :	This is companion course of C Programming		
Cognitive Abilities	Course Outcome as per Blooms Taxonomy		
Remembering	Develop skills to write simple programming concepts using C language.		
Understanding	Implement a real world problem using basic constructs of C language.		
Applying	Develop an application using Decision making and looping And Make use of proper operators to solve problem.		
Analyzing	Make use of Arrays and pointers efficiently and handling strings.		
Evaluating	Comprehend the dynamic memory allocation and pointers in C.		
Creating	Able to define new data types using enum, structures and typedef.		

References (Books, Websites etc) :

1. Let us C - Y.Kanetkar, BPB Publications
2. Programming in C - Gottfried B.S., TMH
3. The 'C' programming language - B.W.Kernighan, D.M.Ritchie, PHI
4. Programming in ANSI C - Balaguruswami, TMH
5. C- The Complete Reference - H.Sohildt, TMH
6. A Structured Programming Approach using C – B.A. Forouzan & R.F. Gillberg, THOMSON Indian Edition
7. Computer fundamentals and programming in C – Pradip Dey & Manas Ghosh, OXFORD

Sr.No	Programming Exercises
1	Compilation and Executing programs Arithmetic operations Use of Symbolic constants Demonstrating the following gcc options -o, -c, -D, -l, -I, -g, -E Programs to demonstrate use of operators and Input/output <i>gcc or an equivalent compiler is assumed.</i>
2	Program to demonstrate the following – Branching

	<ul style="list-style-type: none"> - Nested Branching - Looping - Selection
3	<p>Working with functions</p> <ul style="list-style-type: none"> - Writing function prototype and definition - Using functions to solve problems (Calling a function) - Using recursion - Storage classes - Using register, extern and static
4	<p>Arrays and Strings</p> <p>1D - Linear Search, Sort</p> <p>2D - Matrix operations</p> <p>Strings: program to do operations on string using library and user defined functions</p> <p>Finding length of string, String concatenation, removing extra spaces, get substring, check whether second string is part of another, converting string to lowercase, uppercase etc.</p>
5	<p>Structures</p> <p>Making use of structures to define new types(user defined types)</p> <p>Arrays of structure, display all elements of array and sorting of them.</p>
6	<p>Pointers,</p> <p>Programs to demonstrate working of pointer; need of pointer</p> <p>Pointer as parameter to function</p> <p>Comparison of pointer with arrays and using pointer to refer an array</p> <p>Creating pointer dynamically by using dynamic memory allocation</p> <p>Array of Pointers, Ragged Arrays, Function pointer</p>

Course Number	Course Name	Credits	Year of Introduction
108	Universal Human Values	1	2022-23
Course Objectives:	<ul style="list-style-type: none"> • To acquaint students in managerial communication from every perspective that is globally demanding. • To acquaint students with the required skills for effective communication in business organizations • To enable students to develop confidence and expertise in composing effective communication skills essential in Business Situations 		
Cognitive Abilities	Course Outcome as per Blooms Taxonomy		
Remembering	To provide an overview of Prerequisites to Human Values		
Understanding	Understand the role of a human being in ensuring harmony in self and society		
Applying	To actualize a harmonious environment wherever they work		
Analyzing	To analysing ethical dilemma while discharging duties in professional life.		
Evaluating	To evaluate ethical and unethical decisions and take a right stand		
Creating	To develop a harmonious environment for holistic development of self and body.		
References (Books, Websites etc) :			
<ol style="list-style-type: none"> 1. Human Society in Ethics & Politics by Bertrand Russell 2. Ethical Philosophy of India Nagin & co Julundhar by I.C. Sharma . 3. Whatman has made of man by Mortimer. J. Adler 			
Online Resources:			
<ol style="list-style-type: none"> 1. https://fdp-si.aicte-india.org/download/Guidelines/G008%20Facilitator%20(Mentor)%20Manual%20Version%202.1.pdf 2. https://citizenchoice.in/course/Universal-Human-Values/Unit%201/Happiness-and-Prosperity 			
MOOCs:			
Swayam.gov.in			
https://epgp.inflibnet.ac.in			
Course Plan			
Unit	Contents		
1	Introduction to Value Education & Harmony in Human Being <ol style="list-style-type: none"> 1. Value Education, Definition, Concept and Need for Value Education. 2. Self exploration as a means of Value Education. Harmony in the Human Being <ol style="list-style-type: none"> 1. Human Being is more than just the Body. 2. Harmony of the Self ('I') with the Body - happiness and physical facility 3. Understanding Myself as Co-existence of the Self and the Body. 4. Understanding Needs of the Self and the needs of the Body. 5. Understanding the activities in the Self and the activities in the Body. 		

2	Harmony in the Family and Society and Harmony in the Nature <ol style="list-style-type: none">1. Family as a basic unit of Human Interaction and Values in Relationships.2. The Basics for Respect and today's Crisis: Affection, e, Guidance, Reverence, Glory, Gratitude, Prosperity and Love.3. Comprehensive Human Goal: The Five Dimensions of Human Endeavour.4. Harmony in Nature: The Four Orders in Nature.5. The Holistic Perception of Harmony in Existence.
3	Professional Ethics <ol style="list-style-type: none">1. Value based Life and Profession.2. Professional Ethics and Right Understanding.3. Competence in Professional Ethics.4. Issues in Professional Ethics – The Current Scenario.

Course Number	Course Name	Credits	Year of Introduction
108	Community Work I	1	2022-23
Course Objective:	This course aims to expose the students to social issues and help them Participate in community service through trips/events organized at institute, state level etc and also to Volunteer at events like fundraising activities, fairs, festivals, slums, non profit organization etc		
Cognitive Abilities	Course Outcome as per Blooms Taxonomy		
Remembering	To enable students to understand history, philosophy, values, ethics and functions of social work profession, and its linkages with other social science disciplines.		
Understanding	To equip students with knowledge on core and ancillary methods of professional social work, and its practice base		
Applying	To inculcate in the students values of enquiry and research; and thereby develop problem solving and decision making abilities		
Analyzing	To prepare professionals to practice in diverse social work settings and also address contemporary issues and concerns such as of marginalized and exclusive population		
Evaluating	To develop young professionals with good communication skills and quest for a selfmotivated life-long learning, focusing on skilling and re-skilling in their respective field of social work		
Creating	To imbibe in the learners the values of social justice, human rights, empathy, hard and honest work- thereby developing in them the vision to work towards an egalitarian society		
Course Plan			
Unit	Contents		
1	History, meaning, Goals, values, functions, role and process of community work. Professional and voluntary community work. Attitudes, roles and skills of a community worker .		
2	Social concerns in India: poverty, unemployment, population, problems faced by women – dowry, domestic violence, etc. Social problems - terrorism, corruption, caste conflict, drug abuse, AIDS, ETC.		
3	Types of community work. Caring for needy, helping the poor, fundraising drives-organizing. COMMUNITY HOURS: Participate in community service trips/events organized at institute, state level etc , Volunteer at events like fundraising activities, fairs, festivals, slums, non profit organization etc , Submit a report on a particular type of community involvement undertaken.		

Course Number	Course Name	Credits	Year of Introduction
108	Career & Life Skills	1	2022-23
Course Objective:	Students will be able to understand self potential and ways to enhance capabilities.		
Cognitive Abilities	Course Outcome as per Blooms Taxonomy		
Remembering	Practice and develop Emotional Competency		
Understanding	Understand and gain an edge through Professional Competency		
Applying	To help students make well-informed, thoughtful decisions regarding your future as adults.		
Analyzing	To gain Self Competency and Confidence		
Evaluating	To develop behaviors and attitudes that help students contribute to the community in a positive manner.		
Creating	Give you skills and knowledge to contribute to the well-being and respect of the self and others		

References (Books, Websites etc) :

LifeChoices Series: - LifeChoices: Careers, Healthy & Well, Relationships, Venturing Out

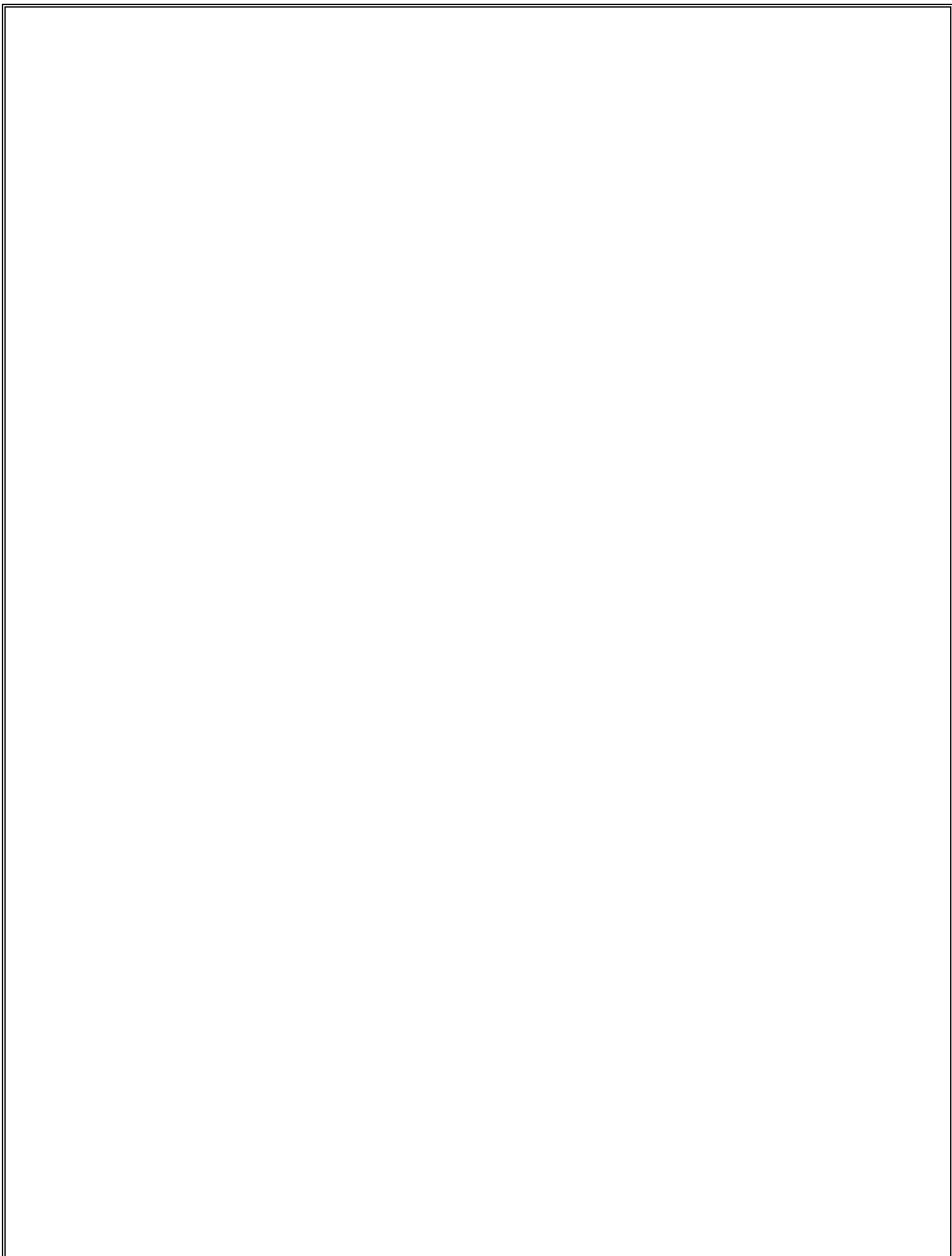
Online Resources:

1. The life-changing magic of tidying up: the japanese art of decluttering and organizing - marie kondo
2. How to organize (just about) everything: more than 500 step-by-step instructions for everything from organizing your closets to planning a wedding to creating a flawless filing system – peter walsh

Mindset: the new psychology of success -carol s. Dweck

Course Plan

Unit	Contents
1	<p>Introduction to Life Management Life management-definition, scope and application, concept of emotions, self belief, setting realistic goals, understanding system</p> <p>Developing Emotional Potential and Physical Potential Improving thinking skills, improving study skills, planning education Eating habits, healthy foods, staying healthy, changing habits-the self change model</p>
2	<p>Developing Your Intellectual Potent Effective communication, effective listening, effective speaking ,getting along with others, functioning in groups, how to delegate. Definition-stress, handling change and stress, managing time, managing money, formulation of career plan, bring it all together</p>
3	<p>Career and Life Choices Managing personal, lifelong career development. Resource Choices... Making responsible decisions in the use of finances and other resources that reflect personal values and goals as well as a commitment to self and others. Personal Choices... Understand the emotional/psychological, intellectual, social, spiritual, and physical dimensions of health and how these dimensions of health work together to contribute to personal well-being.</p>



Course Number	Course Name	Credits	Year of Introduction
108	Communication Skills	1	2022-23
Course Objectives:	<ul style="list-style-type: none"> • To acquaint students in managerial communication from every perspective that is globally demanding. • To acquaint students with the required skills for effective communication in business organizations • To enable students to develop confidence and expertise in composing effective communication skills essential in Business Situations 		
Cognitive Abilities	Course Outcome as per Blooms Taxonomy		
Remembering	To provide an overview of Prerequisites to Business Communication.		
Understanding	Understand how to converse in business situations		
Applying	How to Write effective e-mail and Letters.		
Analyzing	To underline the nuances of Business communication.		
Evaluating	To put in use the basic mechanics of Grammar.		
Creating	To impart the correct practices of the strategies of Effective Business writing.		
References (Books, Websites etc) :			
<ol style="list-style-type: none"> 1. Business Communication by Verma Shalini, , Vikas Publications 2. Effective Communication by Urmila Rai and S. M Rai , (Himalaya Publishing House) 3. Communication for Business by Shirley Taylor, , Pearson Education, New Delhi 4. Basic Business Communication by Raymond Lesikar, Marie E Flatley,–(Tata McGraw –Hill) 			
Online Resources:			
1. http://www.notesdesk.com/notes/business-communications/business-communication-and-its-types/			
MOOCs:			
<ol style="list-style-type: none"> 1. https://eDx.com/: 2. https://www.edx.org/course/business-communications-ubcx-bus2x 3. https://Coursera.com/: 4. https://www.coursera.org/courses?languages=en&query=business%20communication 			
Course Plan			
Unit	Contents		
1	Concept and Nature of Communication Meaning and Introduction, Importance and Nature of Communication. Process and Objectives of Communication. Channels of Communication, Barriers to Communication, Overcoming barriers, Seven C‘ s of effective communication Verbal Communication Verbal Communication (oral) – Meaning, Advantages, Disadvantages, Essentials of		

	<p>effective oral communication, Types. Speaking Skills – Meaning and importance – Guidelines for preparing a Speech – Strategies for good conversation Exercises on Verbal communication.</p>
2	<p>Non – Verbal Communication Meaning , Importance, Uses of non verbal communication, Body Language, Gestures, Postures, Para Language, non verbal aspects of written communication. Listening, Reading Skills, Presentation Skills Listening Skills – Meaning and importance – Types – Listening Barriers – Overcoming barriers to improve Listening skills. Exercises on Listening Skills, Reading Skills – Meaning and importance – Steps for better reading. Exercises to improve Reading Skills , Introduction and importance, Planning the Presentation. Presentation Structure. Organizing the Presentation. Qualities of a skillful Presenter. Use of Visual aids in Presentation.</p>
3	<p>Written Communication Writing Skills – Meaning and importance of written communication in business, Business Letters : Tactful use of language – Structure of a Business letter - Business letter formats – Types of letters: Letters of inquiry and Reply, Letters placing orders and reply, Letter of Complaint, Claims and Adjustments, Sales letters, Job application letters.</p>

SEMESTER II

Course Number	Course Title	Credits	Hours / Week			IA Marks	EoTE Marks
			L	T	P		
201	Web Development Technology	4	3	1	-	40	60
202	DBMS I	4	3	1	-	40	60
203	Data Structures using C	4	3	1	-	40	60
204	Computer Organization and Architecture	4	3	1	-	40	60
205	Financial Accounting	4	3	1	-	40	60
206	Lab on Data Structures using C	2	-	-	4	40	60
207	Lab on Web Development Technology (with Mini Project)	2	-	-	4	40	60
208	General Course II ** / MOOC based course *	4	2	-	-	100	-
Total		28	17	5	8	380	420

***Students/Learners have to complete MOOC Course Compulsory [Please refer MOOCS guidelines as per point number XVIII].**

**** Student can select Any One of the following Courses as General Course-II in consultation with HOD/Coordinator:**

- i. Environmental Studies
- ii. Community Work II (Swaccha Bharat Abhiyan)
- iii. Sectoral Analysis
- iv. Smart Cities

Semester II

Course Number	Course Name	L-T-P- Credits	Year of Introduction
201	Web Development Technology	3-1-0 = 4C	2022-23
Objectives	<ul style="list-style-type: none"> • To make student able to study web development techniques • Make the website development simple with the wordpress 		
Cognitive Abilities	Course Outcome as per Blooms Taxonomy		
Remembering	Basic Browser and Website handling tags.		
Understanding	By remembering basic concepts student will understand different Website components		
Applying	Student will apply this acquired knowledge of Website components in designing a website		
Analyzing	Student will have ability to analyse and decide appropriate components for designing a website.		
Evaluating	Student will have ability to make the efficient website design.		
Creating	Student will get ability to design and develop attractive website by using all different components, themes and plugins		
References (Books, Websites etc)	Wordpress Web Design for Dummies - A Wiely Brand- Lisa Sabin - Wilson Wordpress All in One for Dummies - A Wiely Brand - Lisa Sabin- Wilson Wordpress to Go- Sarah McHarry-		
Suggested MOOC:	Please refer these websites for MOOCS: NPTEL / Swayam www.edx.com www.coursera.com		
Course Plan			
Unit	Contents		
1	Overview Content Management System , Introduction to WordPress , Installation of WordPress , Installation of MY SQL, Working of Wordpress, Basics of wordpress, Benefits, Website and Blog		
2	HTML Basic of HTML, Different Basic Tags, List , Table, Text Formatting		
3	Basics and Dashboard Concept of Domain Name, Web hosting, FTP Basics, Setting Up Wordpress, Setting MySQL database, Understanding Dashboard, Settings(General,Writing,Reading,Discussion,Media etc), Configuration with different Options		
4	Designing and Publishing Setting up categories, Categories Management (Add, Edit,Delete, Arrange), Exploring permalinks, Discovering RSS options, Writing and editing posts and pages(Add, Edit,Delete, Preview, Publish), Managing and moderating comments WordPress Themes: Basics of Themes, Downloading, installing, and activating themes, Installing themes from Dashboard		

5	Flexing and Extending Wordpress Media Management: Images, Audio, and Video : Adding images, photo galleries, and videos to the posts, Uploading audio files Using WordPress Plugins: Basics of Plugins, Finding, downloading, and unpacking plugin files, Using the plugins with WordPress, Uploading and installing plugins, Activating and managing plugins
6	Customizing WordPress Advanced Themes and Templates: Basic website structure, Basics of Template, Understanding The Loop and Main Index template, Combining Theme and Template Refining WordPress Themes: Exploring basic CSS and defining CSS properties and values, Setting a background color, creating a header, and customizing navigation menu. Working with fonts Introduction to Widgets and Template Tag, User Management

Course Number	Course Name	L-T-P- Credits	Year of Introduction
202	DBMS I	3-1-0 = 4C	2022-23
Objectives	<ul style="list-style-type: none"> • It is foundational course on data modelling • Imparts knowledge of the concepts related to database and operations on databases • It gives idea how database is managed in various environments with emphasis on security measures as implemented in database management systems 		
Cognitive Abilities	Course Outcome as per Blooms Taxonomy		
Remembering	Using some basic concepts of data information and processing development of DBMS		
Understanding	Students will understand DBMS concept relational databases how database tables queries are designed and used		
Applying	Student will apply database concept of DDL and DCL to design organisational database		
Analyzing	Students will acquire knowledge of DBMS/RDBMS its architecture and various operations on database. Student will be able to store and share data into database and use it for processing purpose		
Evaluating	ability to select RDBMS tool to design and store data also used query processing tool to process the data		
Creating	Design database for an organisation in given case study.		
References (Books, Websites etc) :			
1) Database System Concepts By Henry Korth and A. Silberschatz			
2) Database Systems Concepts, Designs and Application by Shio Kumar Singh, Pearson			
3) Database Management Systems by Debabrata Sahoo ,Tata Macgraw Hill			
Suggested MOOC :			
Please refer these websites for MOOCS:			
NPTEL / Swayam			
www. edx.com			
www.coursera.com			
Course Plan			
Unit	Contents		
1	Introduction of Database Management System: Difference between Data, Information, Data Processing & Data Management. File Oriented Approach, Database oriented approach to Data Management, Need for DBMS, Characteristic of Database, Database Architecture: Levels of Abstraction, Database schema and instances, 3 tier architecture of DBMS, Data Independence. Database users, Types of Database System. Database Languages, DBMS interfaces.		
2	Data Modeling: Data Models, Logical Data Modeling: Hierarchical Data Model, Network Data Model, Relational Data Model, Advantages and Disadvantages of Logical Data Modeling. Conceptual Data Modeling: Entity Relationship Model, Entities, Attributes, Types of Attributes, Relationships, Degree of relationship Set, Mapping Cardinalities, Keys, ER Diagram Notations, Roles Participation: Total and Partial, Strong and Weak Entity Set.		
	Case studies on ERD.		

3	<p>Normalization: Keys: Composite, Candidate, Primary, Secondary, Foreign, Super key, CODD's Rules, Mapping conceptual model into Relational Model. Functional Dependencies, Decomposition, Lossy and Lossless Decomposition, Dependency Preserving Decomposition Advantages and Disadvantages of Normalization, Normal Forms (1NF, 2NF, 3NF,) Case Studies on Normalization.</p>
4	<p>File Structures and Data Administration: File Organization, Overview of Physical Storage Media, Magnetic Disk, RAID, Tertiary Storage, Storage Access, Data Dictionary Storage, Organization of File (Sequential, Clustering), Indexing and Hashing, Basic Concepts, indices, B+ Tree index file, B- tree index file, Static hashing, Dynamic Hashing, Data administration, Role and Responsibility of DBA</p>
5	<p>Transaction and Concurrency Control Multiprogramming and Multiprocessing, Basic Database access operations, Concept of transaction, transaction state, ACID properties, Schedules, Serializability of schedules., Concurrency Control, lock based protocols, timestamp based protocols, Multiple granularity, Multiple Version Techniques, Deadlock and its handling, Wait-Die and Wound-Wait, Deadlock prevention without using timestamps, Deadlock detection and time outs</p>
6	<p>Database Recovery and security Management: Database Recovery, Types of Failures, and Data access. Recovery and atomicity, Recovery Techniques Algorithms: Log Based Recovery, Check points, Shadow Paging, Recovery with concurrent transactions</p>

Course Number	Course Name	L-T-P- Credits	Year of Introduction
203	Data Structures Using C	3-1-0= 4C	2022-23
Objectives	<ul style="list-style-type: none"> To understand file handling in C To develop skills to analyse the problem given and to design and develop an efficient solution to given problem To develop capability to choose appropriate data structures for given problem To imbibe programming skills and thereby making industry ready 		
Cognitive Abilities	Course Outcome as per Blooms Taxonomy		
Remembering	Using concept of C programming language for solving Real world problem		
Understanding	By remembering basic concepts student will understand concept of concrete data structure and abstract data structure and file handling		
Applying	Student will acquire knowledge of data structure and ability to design and develop program using linear and nonlinear data structure and file handling		
Analyzing	Student will have ability to analyse the problem to choose appropriate Data Structure to solve the given problem		
Evaluating	Student will have ability to apply suitable Data Structure to solve the problem		
Creating	Student will get ability to apply knowledge of abstract data structure and file handling to design and develop appropriate data structure.		
References (Books, Websites etc) :	<ol style="list-style-type: none"> Behrouz A. Forouzan and Richard F. Gilberg , 2nd Edition, Thomson, 2003, Computer Science A Structured Programming Approach Using C Basavraj S Anami, Shanmukhappa Angadi, Sunil Kumar S Manvi, PHI Publications, 2010. A Holistic approach to learning C. Aaron Tenanbaum, Pearson Education, Data Structures using C and C++, Second Edition. Robert Kruse & Bruce Leung, Data Structures & Program Design in C, Pearson Education. 		
Suggested MOOC :	Data structures and Algorithms, Prof. Sudarshan Iyengar, IITRopar, 8 weeks, Rerun Feb 05, 2018 https://onlinecourses.nptel.ac.in/noc16_cs06 at NEPTel		

Course Plan

Unit	Contents
1	<p>Elementary Data Structures:</p> <p>Basic concepts such as data object, array, and record; Operations and relations on data objects; definition of data structure; Built-in data types as examples of data structures; concept of abstract data type; notation to specify an abstract data type; concepts of pre-conditions and post-conditions; Implementation of an ADT in a language; Specification and implementation of simple data structures such as Integer, Rational, Currency, Date, Temperature, distance, Pay, Marks, Grade_card etc.</p>
2	<p>Linear Data Structures:</p> <p>(Representation in Memory and operations like insertion, deletion and traversal) – single and multidimensional array, Pointer arrays, single linked list, circular linked list, double linked list</p>

3	Particular Linear Data Structures: Stack: Representation in Memory and operations like insertion, deletion and traversal Stack Applications: implementation of recursion, factorial calculation Queue: Representation in memory and operations, Circular queue, Dequeue, applications of queue.
4	File Handling: Concept of File, Types of File , Operations on File-Create, read, write , append, Searching and Matching of data from a file.
5	Hierarchical data structures : General trees and related concepts; depth first and breadth first traversal of trees; n-ary trees and important properties of n-ary trees; binary trees and their properties; binary tree traversal algorithms.
6	The problem of searching and Sorting : Searching problems: Linear ,binary, Hash and their efficiency, Sorting problem: Bubble, Insertion, Selection, Merge, Quick and their efficiencies.

Course Number	Course Name	L-T-P- Credits	Year of Introduction
204	Computer Organization and Architecture	3-1-0= 4C	2022-23
Objectives	<ul style="list-style-type: none"> To learn structure and functioning of various hardware components of digital computer To study interactions and communication among these hardware components 		
Pre Requisite	Basic Knowledge of Computer Components and devices		
Cognitive Abilities	Course Outcome as per Blooms Taxonomy		
Remembering	Remember different number systems, binary addition and subtraction, 2's complement representation, basic Boolean identities and operations with this representation.		
Understanding	To understand the structure, function and characteristics of computer systems.		
Applying	To explain the function of each element of a memory hierarchy and identify and compare different methods for computer I/O.		
Analyzing	Analyze the architecture of central processing unit and some of the design issues in terms of speed, technology, cost, performance of Memory and I/O devices.		
Evaluating	To Know the design of the various functional units and components of computers.		
Creating	To identify the elements of modern instructions sets and their impact on processor design and write short Assemble language programs.		
References (Books, Websites etc) :	M Morris Mano Computer systems Architecture third edition Prentice Hall of India Publication		
Suggested MOOC :	Please refer these websites for MOOCS: NPTEL / Swayamwww. edx.com www.coursera.com		

Course Plan

Unit	Contents
1	Introduction To Digital Computer: Data Representation – Data Types –Number systems, Complements, Arithmetic Operations – Representations – Fixed –Point, Floating – Point , Decimal Fixed – Point – Binary Codes- Logic Gates, Boolean Algebra, Map Simplification – CombinationalCircuits: Half-Adder, Full Adder- Flip Flops - Sequential Circuits
2	Introduction To Digital Components And Micro Operations: ICs – Decoders – Multiplexers – Registers – Shift Registers – Binary Counters – MemoryUnit– RegisterTransferLanguage–RegisterTransfer–BusAndMemory Transfers – Arithmetic, Logic And Shift Micro Operations , Arithmetic Logic Shift Unit.
3	Computer organization: Instruction Codes – Computer Registers – Computer Instructions – Timing And Control – Instruction Cycle – Memory Reference Instructions – I/O And Interrupt – Machine Language – Assembly Language – Assembler.
4	Memory Organization: Memory Hierarchy – Main Memory – Auxiliary Memory – Associative Memory – Cache Memory – Virtual Memory – Memory Management.

5	Central Processing Unit: General Register Organization – Control Word – Stack Organization – Instruction Format – Addressing Modes – Data Transfer And Manipulation – Program Control, RISC
6	Input – Output Organization: Peripheral Devices – Input-Output Interface – Asynchronous Data Transfer – Modes Of Transfer – Priority Interrupt – DMA – IOP – Serial Communication.

Course Number	Course Name	L-T-P- Credits	Year of Introduction
205	Financial Accounting	3-1-0 = 4C	2022-23
Course Objective	1. To impart basic accounting knowledge 2. To lay a foundation for further study of accounting at higher level 3. To enable the students to understand basic accounting principles, practice and its applications in modern business activities		
Cognitive Abilities	Course Outcome as per Blooms Taxonomy		
Remembering	The knowledge of financial accounting especially journal entries needs to be remembered.		
Understanding	Debit and credit entries needs to be understand as per the rules		
Applying	The students are expected to apply the knowledge of journal entries and prepare trial balance. They are expected to learn preparation of financial statements.		
Analyzing	The students are expected to analyse trial balance and prepare financial statements.		
Evaluating	The problems right from journal entries of the transactions to the preparation of final account is to be taught and evaluated accordingly.		
Creating	The students are expected to create case studies on preparation of financial statements and are expected to solve.		
References (Books, Websites etc) :	1. Dr. S. N. Maheshwari , Financial Accounting For Management: (Vikas Publishing House) 2. Robert Anthony, David Hawkins, Business Accounting. (Tata McGraw –Hill) 3. M.G.Patkar, Book-Keeping & Accountancy.Std XI(FYJC) Commerce 4. Anil Chowdhry , Fundamentals of Accounting & Financial Analysis (PearsonEducation) M.E.Thukaram Rao, Accounting for Managers.(New Age International Publishers)		
Suggested MOOC :	Please refer these websites for MOOCS: NPTEL / Swayam www. edx.com www.coursera.com		

Course Plan

Unit	Contents
1	Introduction: Need for Accounting, Meaning and definition of book keeping, System of Book keeping. Financial Accounting-definition, Scope and objectives. Accounting v/s Book Keeping. Limitations of Financial Accounting, End users of financial statement.
2	Accounting Principles, Concepts and Conventions: Accounting Principles-definition and importance, Accounting Concepts and Conventions, Branches of accounting.
3	Journal and ledger: Journal-importance and utility, classification of accounts, journalizing of transactions. Ledger- meaning and utility, posting and balancing of account

4	Subsidiary Books And Trial Balance: Cash book, purchase book, sales book.Trial Balance- meaning and purpose, preparation of a trial balance.
5	Preparation of final accounts: Preparation of Trading and Profit & Loss Account and Balance Sheet of sole proprietary business.
6	Computerized Accounting: Computers and Financial application, Accounting Software packages.(Orientation level)

Course Number	Course Name	L-T-P- Credits	Year of Introduction
206	Lab on Data structures using C	0-0-4 =2C	2022-23
Course Objective :	This is companion course of C Programming II		
Cognitive Abilities	Course Outcome as per Blooms Taxonomy		
Remembering			
Understanding			
Applying			
Analyzing			
Evaluating			
Creating			
Expected Outcome :			
The students will develop adequate programming skills with respect to following			
<ol style="list-style-type: none"> 1. Define basic data structures such as Date, Currency and Rational; and using it. 2. Defining and using and updating Linear data structures : arrays and Linked List 3. Should define data types such as stack, queue and List 4. Able to read and write data into files. 5. Able to define hierarchical data types; manipulate and use it. 6. Able to understand searching and sorting mechanism and use various algorithms on it. 			
References (Books, Websites etc) :			
<ol style="list-style-type: none"> 1. Behrouz A. Forouzan and Richard F. Gilberg , 2nd Edition, Thomson, 2003, Computer Science A Structured Programming Approach Using C 2. Basavraj S Anami, Shanmukhappa Angadi, Sunil Kumar S Manvi, PHI Publications, 2010. A Holistic approach to learning C. 3. Aaron Tenanbaum, Pearson Education, Data Structures using C and C++, Second Edition Robert Kruse & Bruce Leung, Data Structures & Program Design in C, Pearson Education 			

Lab on Data structures using C

Sr. No	Programming Exercises

1	<p>Elementary Data Structures</p> <ul style="list-style-type: none"> - Write a program having functionality of one dimension and two dimension arrays with use of simple data types such as Integer, Float, Date etc. - Write a program where in mathematical calculations involves such as average, percentage calculation, Factorial calculation and Matrix multiplication - Write program for structure implementation for array and pointers. - Create an object of the class to achieve various functionalities of accounting such as Net Pay calculation, Tax deduction, Gross pay etc.
2	<p>Linear Data Structures</p> <ul style="list-style-type: none"> - Demonstrate various functionalities for Link list, Circular link list and double link list with the reference of array and pointer. - Write a C program to insert and delete string / integer data from specific place of linked list. - Search a specific string/ integer in a given data set also find how many times it occurs or repeats in a set given
3	<p>Particular Linear Data Structures</p> <ul style="list-style-type: none"> - Write program for implementation of recursion - Demonstrate Insertion, Deletion and Searching functionalities with their nomenclatural for – Stack, Queues, Circular Queues - Do necessary assumption for implementation of it
4	<p>File Handling</p> <ul style="list-style-type: none"> - Program to create and write data into files - Program to read data from files. - Programs on pattern matching on data of files and using this pattern matching at the time of reading and writing data into file
5	<p>Hierarchical data structures</p> <ul style="list-style-type: none"> - Programs for defining data structure to represent a tree. Creating tree and adding data/nodes into it. - Programs to traverse trees: DFS, BFS and other - Deleting and nodes in tree
6	<p>The problem of search and Sorting</p> <ul style="list-style-type: none"> - Programs to use linear/sequential searching and binary searching - Programs to implement standard sorting algorithms with efficiency measurement - Reading data form and using it with various sorting algorithms

Course Number	Course Name	L-T-P- Credits	Year of Introduction
207	Lab on Web Development Technology (with Mini Project)	0-0-4 =2C	2022-23
Course Objective:	Word Press is an Open Source software system used by millions of people around the world to create beautiful websites and blogs. It is completely customizable by the use of themes and plugins.		
Cognitive Abilities	Course Outcome as per Blooms Taxonomy		
Remembering	Learning how to design website using wordpress		
Understanding	Learning how to design website using wordpress		
Applying	Ability to use in plugin and widget in website		
Analyzing	Analyze the case for appropriate website design		
Evaluating	Testing of developed application for defined objectives		
Creating	Study Wordpress as a Content Management System		
Expected Outcome :			
At the end of this course, student should be able to understand			
<ul style="list-style-type: none"> • To understand Wordpress as a Content Management System • To learn how to design Website using Wordpress • To learn use of Themes and Templates in Wordpress • To learn use of Plugin and Widget in Website 			
References (Books, Websites etc) :			
Wordpress Web Design for Dummies - A Wiely Brand- Lisa Sabin - Wilson			
Wordpress All in One for Dummies - A Wiely Brand - Lisa Sabin- Wilson			
Wordpress to Go- Sarah McHarry			
Programming Exercises			
1	Open Admin Dashboard Goto Settings- > General and Set the Following Attribute values		
	<ol style="list-style-type: none"> 1. Site Title 2. Site Tagline 3. TimeZone 4. Date Format 		
2	Open Admin Dashboard Goto Permalinks- > Set the Following Attribute values		
	<ol style="list-style-type: none"> 1. Common Settings (all + Custom) and take screen of user-side Brower address 		
3	Open Admin Dashboard Goto User		
	<ol style="list-style-type: none"> 1. create New User 2. Update the profile of existing user 		
4	Open Admin Dashboard Goto Plugin		
	<ol style="list-style-type: none"> 1. Install New Plugin 2. Activate Plugin 		

	<ol style="list-style-type: none"> 3. Update Plugin 4. Deactivate Plugin 5. Delete Plugin
5	<p>Install Woocommerce Plugin</p> <ol style="list-style-type: none"> 1. Add Product (Description, MRP, Sales Rate, Short Description) 2. Add Upsell and Cross Sell Product) 3. Create Product category and assign to Product
6	<p>Modify Woocommerce Plugin Settings</p> <ol style="list-style-type: none"> 1. TAX – Add GST Slabs 2. Shipping (Free and Paid Shipping) 3. General Setting -Address and Currency 4. Product Page 5. Payment Gateway 6. Email Setting
7	<p>Open Admin Dashboard</p> <p>Goto Pages</p> <ol style="list-style-type: none"> 1. Create New Page and Publish 2. Add Content to Page <ol style="list-style-type: none"> a. Section b. Inner Section c. Image Scroll d. Video e. Image Box f. Testimonials
8	<p>Open Admin Dashboard</p> <p>Goto Posts</p> <ol style="list-style-type: none"> 1. Create Blog and Publish 2. Display Blog on Page using widget
9	<p>Open Admin Dashboard</p> <p>Goto Appearance -> Menus</p> <ol style="list-style-type: none"> 1. Add Item To Menu 2. Create Dropdown Menu (submenu) 3. Add separator to Menu
10	<p>Open Admin Dashboard</p> <p>Goto Appearance -> Customize</p> <ol style="list-style-type: none"> 1. Global – Change color, button and container type 2. Header Builder – Add Item to display in Header 3. Footer Builder – Add Item to display in Footer 4. Homepage – Set Your Front Page

Course Number	Course Name	L-T-P- Credits	Year of Introduction
208	Environmental Studies	2-0-0 = 4C	2022-23
Course Objectives	<ul style="list-style-type: none"> To understand the nature and function of the natural environment affecting society. 		
Cognitive Abilities	Course Outcome as per Blooms Taxonomy		
Remembering	Students will remember the meaning of the terms		
Understanding	To bring about awareness among the students about environment and sustainable development		
Applying	Students will try to analyse the impact of activity on environment and its effect on the environment		
Analyzing	Student will able to apply the awareness knowledge in taking eco-friendly actions in society		
Evaluating	Students will able to judge what is right and wrong for the environment in their day to day decisions		
Creating	Students will understand the need and way of Sustainable development and will pass the knowledge to the next generation		
References (Books, Websites etc) :			
<ul style="list-style-type: none"> Agrawal K.C.:Environmental Biology:Nidhi Publishers Ltd(2001) Bharucha Erach: The Biodiversity of India: Mapin Publishing Pvt. Ltd. Jadhav H and Bhosale V.M.: Environmental Protection and Laws: Himalaya Publishing House. Miller T.G. Jr.: Environmental Science: Wadsworth Publishing Co. 			
Suggested MOOC :			
Course Plan			
Unit	Contents		
1	<p>The multidisciplinary nature of environment studies: Definition, scope and importance-need of public awareness.</p> <p>Natural Resources: Renewable and non-renewable resources viz: Forest resources, Water resources, Mineral Resources, Food resources, Energy resources, Land resources</p>		
2	<p>Ecosystem: Concept of ecosystem, structure and function of an ecosystem, producers, consumers and decomposers .Energy flow in the ecosystem, Ecological succession, food chains, food webs and ecological pyramids, introduction, types, characteristics features structure and function of the following ecosystem, forest ecosystem ,grassland ecosystem, Desert ecosystem, Aquatic ecosystems, ponds, stream, lakes, rivers, estuaries.</p>		

3

Biodiversity and its conservations:

Introduction, Definition: genetic, species and ecosystem diversity, Biogeographically classification of India, value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option vales, India as a mega diversity nation, Hot-Spots of biodiversity, Threats to biodiversity: habitat loss, poaching of wildlife, Man wildlife conflicts, Endangered and endemic species of India, Conservation of biodiversity: In situ and Ex-situ conservation of biodiversity.

Environmental Pollution:

Definition- Causes, effects and control measures ; Types of Pollution -Air pollution, water pollution, soil pollution, marine pollution, noise pollution, thermal pollution, and nuclear hazards.

Course Number	Course Name	Credits	Year of Introduction
208	Community Work II – Swachh Bharat Abhiyan	4	2022-23
Course Objective:	This course aims to expose the students to Swachh Bharat Abhiyan initiative of the government.		
Cognitive Abilities	Course Outcome as per Blooms Taxonomy		
Remembering	Learn the related terms		
Understanding	Gain knowledge of cleanliness		
Applying	Implementation of government schemes		
Analyzing	Solve case studies		
Evaluating	Create awareness among society regarding swachhata schemes		
Creating	Undertake a project / case study.		
References (Books, Websites etc) : www.swachhbharaturban.in/ swachhbharatmission.gov.in			
Course Plan			
Unit	Contents		
1	History, meaning, Goals of Cleanliness initiatives		
2	Initiators of cleanliness drive in India. Sant Ghadage Baba, Mahatam Gandhi, Efforts taken towards the Swachh Bharat Abhiyan, Swachh Bharat Mission		
3	Impact of Cleanliness initiatives. Social Awareness, Case Studies.		
	COMMUNITY HOURS: Internship of 15 days (100 hours) to be undertaken Submit a report on a particular type of community involvement undertaken		

Course Number	Course Name	Credits	Year of Introduction
208	Sectoral Analysis	4	2022-23
Course Objective:	<ul style="list-style-type: none"> • To expose the students to the different sectors of the economy • To enable the students to understand the importance and contribution of the sectors to business, economy and global environment • To expose the students towards rural problems To awaken sense of responsibility amongst students towards senior citizens 		
Cognitive Abilities	Course Outcome as per Blooms Taxonomy		
Remembering	Remember the different sectors of economy		
Understanding	Understand the economy		
Applying	Apply knowledge to study different sectors of businesses.		
Analyzing	Analyze the case study for future economical growth		
Evaluating	Compare the performance of businesses at different levels		
Creating	Awaken sense of responsibility to solve internal problems.		
References (Books, Websites etc) :			
<ol style="list-style-type: none"> 1. S.A. Sherlekar ,Modern Business Organization And Management – (Himalaya Publishing House) 2. Y.K. Bhushan ,Fundamental Of Business Organization & Management – (S Chand Publishers) 3. Basu, C. R.; <i>Business Organization And Management</i>, Tata Mcgraw Hill, Publishing House, New Delhi, 1998 4. Business World 			
Course Plan			
Unit	Contents		
1	Introduction to the sectors of the economy		
2	Detailed view of the IT, Manufacturing, Agriculture, Banking Insurance, Service Sector, Retail		
3	Project work on detailed analysis of any one sector – national and global scenario		

Course Number	Course Name	Credits	Year of Introduction
208	Smart Cities	4	2022-23
Course Objective:	To give exposure to tools and techniques applicable for planning, controlling & monitoring of Smart Infrastructure and Cities. This subject would also enable to develop insight for managing project risks, uncertainties and complexities of smart cities project.		
Cognitive Abilities	Course Outcome as per Blooms Taxonomy		
Remembering	Remember practices and dimensions of smart cities		
Understanding	Understand the concepts related to smart cities		
Applying	Apply global experience of smart cities planning.		
Analyzing	Analyze the standards of city planning		
Evaluating	Evaluate the city plan using benchmarks.		
Creating	Ability to study the cases with respect to best practices.		
References (Books, Websites etc) :			
Suggested MOOC :			
Course Plan			
Unit	Contents		
1	Introduction to Smart Cities, •Introduction to "City Planning", Understanding Smart Cities		
2	Dimensions of Smart Cities, Global Experience of Smart Cities, Smart Cities –Global Standards and Performance, Benchmarks, Practice Codes, India "100 Smart Cities" Policy and Mission		
3	<ul style="list-style-type: none"> •Smart City Planning and Development •Financing Smart Cities Development •Governance of Smart Cities, Case Studies on Smart Cities 		