SEMESTER I

Branch: B.Sc.(IT)	Semester-I
Subject Code: 1101	Lecture: 02 Credit: 02
Course Opted	Ability Enhancement Compulsory Course-I
Subject Title	Communication Skills

Course Objectives

- To make SWOT as a tool to identify Individual's and Organization's Strengths, Weaknesses, Opportunities and Threats.
- To demonstrate the fundamental concepts and methods of communication.
- To learn positive body language for better connect.
- To enable students to build strong vocabulary for effective writing and communication.
- To promote technology driven communication through Emails, telephone and Power Point presentations.
- To facilitate fluent speaking skills in social, academic and professional situations.

Course Outcomes

- SWOT analysis will help to improve personality or business by identifying and working on it
- Positive body Language will enable students to break the barrier of unfamiliarity and helps to form a better connect with the recipients of information
- Develop interpersonal skills for effective communication by understanding methods of Communication
- Enhance verbal and non-verbal communication ability through Vocabulary Building, Body language, Presentations.
- Provide with the practical skills and knowledge necessary to express themselves clearly, with confidence and power, in a variety of speaking situations.

Module	Sr. No.	Topic and Details	No. of Lectures Assigned	Marks Weightage
	1.	**Ice Braking** Introduction to know more about the Trainer/Teacher and Candidates **SWOT Analysis** To Identify Individual and Business Strengths/ Weaknesses/Opportunities/Threats • Introduction • The SWOT framework • Application of SWOT • Case study	4	8
Unit I	2.	**Communication** • Basics of Communication • Factors of Communication • Barriers to Communication – Physical, Psychological, Semantics, Organizational and	4	8

		Interpersonal Barriers; How to overcome Barriers.		
	3.	**Body Language** To Learn Positive body Language using Non-verbal Communication Non Verbal Communication- Personal appearance, Facial Expression, Movement, Posture, Gesture, Eye Contact etc.	4	8
	4	**Vocabulary Building** ● Root words (Etymology) ● Meaning of Words in Context ● Synonyms & Antonyms ● Collocations ● Prefixes & Suffixes ● Standard Abbreviations	2	4
Unit III	5	**Technology driven writing** **Email Etiquettes** To Learn Email writing skills ● Format of Emails ● Features of Effective Emails • Language and style of Emails	3	6
	6	**Telephone Etiquettes** To handle Telephonic round of Interview • Telephone communication techniques • Telephone Etiquettes	2	4
	8	**Public Speaking** • Finding out environment • Preparing text • Composition of presentation • Using Visual aids • Speakers Appearance and Personality **Applications of above using** **1) Group Discussion** To assess Candidates' Public speaking skills **2) Personal Interviews** Conducting Mock/Personal Interviews to perform well during Interviews	6	12
		TOTAL	**25**	**50**

Recommended Readings:

1. Urmila Rai and S. M. Rai, 'Business Communication', Himalaya Publishing House
2. Alan Sarsby, SWOT Analysis-a guide to SWOT for Business Studies Students
3. Sanjay Kumar & Pushp Lata, 'Communication Skills – A workbook ', New Delhi: Oxford University Press.
4. M Ashraf Rizvi, 'Effective Technical Communication', McGraw-Hill.
5. Locker, Kitty O. Kaczmarek, Stephen Kyo. (2019).'Business Communication: Building Critical Skills', McGraw-Hill.
6. Murphy H, 'Effective Business Communication', McGraw-Hill.

7. Raman & Sharma,'Technical Communication: Principles and practice', New Delhi: Oxford UniversityPress.

Branch: B.Sc.(IT)	Semester-I
Subject Code: 1102	Lecture: 04 Credit: 04
Course Opted	Core Course-1 (Theory)
Subject Title	PROBLEM SOLVING USING C

Course Objectives:

- The course is designed to provide complete knowledge of C language.
- Students will be able to develop logics which will help them to create programs, applications in C.
- Ability to design and develop Computer programs, analyzes, and interprets the concept of pointers, declarations, initialization, operations on pointers and their usage. Able to define data types and use.
- By learning the basic programming constructs, they can easily switch over to any other language in future.
- The students will be able to develop applications

Course Outcomes:

- Students will be able to develop logic which will help them to create programs in C.
- Demonstrate an understanding of computer programming language concepts.
- Ability to design and develop Computer programs, analyze, and interpret the concept of pointers, declarations, initialization, operations on pointers and their usage.
- Able to define data types and use.
- By learning the basic programming constructs, they can easily switch over to any other language in future.
- The students will be able to develop applications

Modules	Sr. No.	Topic and Details	No. of Lectures Assigned	Marks Weightage %
UNIT -I	1	**Introduction to problem solving:** • Concept: Steps in problem solving (Define Problem, Analyze Problem, Explore Solution), • Problem solving techniques : (Trail & Error, Brain Storming, Divide & Conquer). • Algorithms and Flowcharts (Definitions, Characteristics, Advantage & Disadvantages, Symbols, Examples), Pseudo-code(Definition, Conditional statements, Loops),etc	4	16
	2	**Overview of programming languages:** • Definition of the program, • Concept- Source code, Object code, Compilation, Interpretation, Execution, Input and Output, Debugging etc.	4	

		• Expressions, control structures; subroutines, Storage management; scoping rules; bindings for names		
UNIT-II	3	**Introduction to 'C' Language** : History of C Programming , Structures of 'C' Programming, Simple example, Basic Input/ Output, Function as building blocks.	4	20
		Language Fundamentals : Character set, C Tokens, Keywords, Identifiers, Variables, Constant, Data Types, Comments.		
	4	**Operators** : • Types of operators, Precedence and Associativity, Expression, Statement and types of statements, Build in Operators and function. • Console based I/O and related built in I/O Function: printf(), scanf(), getch(), getchar(), putchar(),etc; • Concept of header files, Preprocessor directives: #include, #define, Conditional statements and Loops. • Storage types: Automatic , external, register and static variables	6	
UNIT-III	5	**Control structures** • Decision making structures : If, If-else , Nested If , Nested If –else, else-if-ladder,Switch case • Loop Control structures : While, Do-while, For Loop, Nested for, while, do-while loop. • Jumping statements: break, continue, goto, exit.	8	34
	6	**Functions:** Definition, Basic types of function, Declaration and definition, Function call, Types of function, Parameter passing, Call by value, Call by reference, Recursion, String Functions	6	
	7	**Pointers:** Introduction to pointers, Pointer notation, Pointer arithmetic,Null Pointer,pointer to pointer.	3	
UNIT-IV	8	**Arrays:** • Definition, Declaration, Initialization, Bounds checking, • One-Dimensional Array, Two-Dimensional	6	30

		Array, • Passing array to a function, pointer to Array.		
	9	**Structure and Union**: • Introduction to Structure, Definition, Declaration of Structure Variables, .Dot Operator, Nested Structure, Array of Structure, pointer to structure, • Introduction to Union, Difference between Structure and Union .	4	
	10	**Dynamic memory allocation :** Malloc(),Calloc(),Realloc(),free(). **File Handling**: • Concept of File, Definition, File operations(create, open, read, move , write, close), • File opening Mode, Closing a file, Input/output operations, Creating and reading a file, • Command Line Argument.	5	
Total			50	100

Text and Reference Books :

1. C: The Complete Reference (Fourth Edition), Tata McGraw-Hill Education Pvt. Ltd., 2000
2. C – programming E.Balagurusamy Tata McGray Hill, 1990
3. Ramkumar and Agrawal, "Programming in ANSI C", Tata McGraw Hill, 1996.
4. Y.P Kanetkar, "Let Us "C", , Infinity Science Press,2008
5. Venu Gopal, "Programming in C" ,Tata Mcgraw-Hill Publishing company Limited,1997

Branch: B.Sc(IT)	**Semester-I**
Subject Code: 1201	**Lecture: 02** **Credit: 02**
Course Opted	**Core Course-1 (Practical)**
Subject Title	**PROBLEM SOLVING USING C LAB**

Course Objectives:

- To enable the students to learn a programming language.
- To learn problem solving techniques
- To teach the student to write programs in C and to solve the problems.

Course Outcomes:

The student would be able

- Read, understand and trace the execution of programs written in C language.
- Write the C code for a given algorithm.

- Implement Programs with pointers and arrays, perform pointer arithmetic, and use the pre-processor. •
- Write programs that perform operations using derived data types.
- Implement simple file operations

Modules	Sr.No.	**Topic and Details**	No. of **Lectures/ Practicals** Assigned	Marks Weightage %
UNIT-I	1	• Implementations of Operators : Built in Operators and function, Arithmetic, Logical, Relational, bitwise, Precedence and Associativity, composite statements. Unary, binary and ternary operators.	4	08
	2	• Concept of header files, Preprocessor directives: #include, #define. And macros implementations ,		
	3	• Console based I/O and related built in I/O function: printf(), scanf(), getch(), getchar(), putchar();		
UNIT-II	4	• Implementation of Control Statement: Decision Making Statements, if, Nested if, if-else, Nested if-else, if-else-if, switch, etc. The Conditional Expression, static variables	12	24
		• Implementation of Iterative Statements- The for loop, . The while loop, The do-while loop,		
		• Implementation of Jumping Statements- The goto & label ,The break & continue, The exit() function		
	5	• Implementation of Functions: Defining and accessing, passing arguments, Function prototypes, function calling mechanism, call by value, call by reference, recursive function.		
		• Implementation of String Manipulations		
	6	• Implementation of Pointer Declaration and Initialization of Pointer variables, pointer Arithmetic, Pointers and Character Strings		

UNIT-III	7	• Implementation of 1-D and multi dimension Array, One-Dimensional Array, Two-Dimensional Array, Passing array to a function, pointer to Array.	5	10
	8	• Programs Using Structure and Union : Defining and Declaring Structure Variables, .Dot Operator, Nested Structure, Array of Structure, pointer to structure, Examples of Union.		
UNIT-IV	9	• Programs using Dynamic Memory Allocation : Malloc(),Calloc(),Realloc(),free().	4	8
	10	• Programs using I/O Operations File Handling : File operations(create, open, read, move, write, close) Input/output operations on file Character by – (fgetc, fputc), Reading and writing files		
Total			25	50

Text and Reference Books:

1. C: The Complete Reference (Fourth Edition), Tata McGraw-Hill Education Pvt. Ltd., 2000
2. C – programming E.Balagurusamy Tata McGray Hill, 1990
3. Ramkumar and Agrawal, "Programming in ANSI C", Tata McGraw Hill, 1996.
4. Y.P Kanetkar, "Let Us "C", , Infinity Science Press,2008
5. Venu Gopal, "Programming in C" ,Tata Mcgraw-Hill Publishing company Limited,1997

Branch: B.Sc.(IT)	Semester-I
Subject Code: 1103	Lecture: 04 Credit: 04
Course Opted	Core Course-2 (Theory)
Subject Title	Introduction to IT & Operating Systems

Learning outcomes:

a) To understand basic organization of computer and different computer peripherals and interfaces,

b) To define different number systems their interconversion and binary arithmetic.

c) To understand the basics of Networking

d) To understand the main components of an operating system and their functions.

e) To describe the various CPU scheduling algorithms and remove deadlocks.

f) To understand the concepts and implementation Memory management policies and virtual memory.

g) To use disk management and disk scheduling algorithms for better utilization of external memory.

Modules	Sr. No.	Topic and Details	No. of Lectures Assigned	Marks Weightage %
UNIT –I	1	**Number Systems:** Binary, Octal Decimal Hexadecimal and Their interconversion, Computer Arithmetic. **Computer Software:** System and Application Software. **Type of Computers:** Digital, Analog, Hybrid Computers	3	6
	2	Definition : Data, Information; Characteristics and Interpretation, Data & its logical & physical concepts Definition of Computer, Features, Block Diagram of Computer System, Computer Generations, **Primary Memory Devices:** RAM, ROM, PROM, EPROM, CACHE Memory, Registers.	3	6
UNIT – II	3	**Secondary Storage Devices:** : Sequential and Direct Access Devices, Magnetic and Optical Storage, Flash Drive/USB Pendrive **Printers:** Impact and Non-Impact Printers. **Computer Languages:** Machine, Assembly, High Level	2	4
	4	**Networks: Type of Networks (LAN, MAN, WAN, etc), Network configuration:** topologies, Layered approach for network Models, TCP/IP and the OSI Reference Model And Working, Comparison of TCP/IP and OSI reference model, WWW, HTTP, e-Mail, GIAS, Search engine,	6	12

		Domain name etc.		
UNIT – III	**5**	**Operating System:** Purpose of Operating Systems, OS Structure, Services of Operating System. **Types of Operating System (Explain concepts):** Single processor systems, Multiprogrammed, Batch, Time sharing-Interactive, Multitasking, Multiprocessor systems, Parallel systems, Distributed systems, Special purpose systems, Real Time systems, Multimedia systems Handheld Systems	8	16
	6	**Processes:** Concept, process states, Scheduling, Operations on Processes, Cooperating Process, Process Synchronization. **Threads:** Concept, Multithreading models, Threading issues	10	20
UNIT –IV	**7**	**CPU Scheduling:** Concept, Scheduling Criteria, Scheduling Algorithms (FCFS, SJF, RR, Priority). **Memory Management:** Concept, Swapping, Contiguous Memory Allocation, Paging, Segmentation. Virtual Memory: Basics of Virtual Memory – Hardware and control structures – Locality of reference, Page fault, Working Set, Dirty page/Dirty bit – Demand paging (Concepts only) – Page Replacement policies : Least Recently used (LRU) Optimal (OPT) , Second Chance (SC), First in First Out (FIFO), , Not recently used (NRU).	12	24
	8	**Deadlock:** Concept, System Model, Characterization, Handling Deadlock, Detection, Prevention, Avoidance.	6	12
TOTAL			50	100

Text Books

1. P. K. Sinha & Priti Sinha , "Computer Fundamentals", BPB Publications, Sixth Edition, 2018
2. Silberschatz, Galvin, Gagne "Operating System Principles" John Wiley & Sons, 7th Edition, 2006

REFERENCES:

1. Dr. Madhulika Jain, "Information Technology Concept", BPB Publication 2nd Edition. , 2018
2. Andrew Tanenbaum, Modern Operating Systems, Prentice Hall. , 2nd Edition, 2001.
3. William Stallings, Operating Systems, Prentice Hall, 6th Edition 2009
4. Harvey M. Deitel, An introduction to operating systems. Addison-Wesley, 2nd Edition 1990
5. Andrew Tanenbaum & Albert Woodhull, Operating Systems: Design and Implementation. Prentice-Hall, 3rd Edition 2006
6. Douglas Comer, Operating System Design - The XINU, 2nd Edition

Branch: B.Sc(IT)	Semester-I
Subject Code: 1202	**Lecture: 04** **Credit: 04**
Course Opted	**Core Course 2 - Practical**
Subject Title	**UNIX/LINUX- Operating Systems – LAB**

Modules	Sr.No.	**Topic and Details**	No. of **Lectures/Practicals** Assigned	Marks Weightage %
UNIT-I	1	Getting started –Commands	3	6
	2	The Unix Architecture and command usage – Commands ,General-purpose utilities	2	4
UNIT-II	3	The File system –Commands	2	4
	4	Handling ordinary files, Basic file attributes	2	4
UNIT-III	5	The vi Editor	5	10
	6	Simple Filters, Filters using regular expressions - use of grep command	3	6
UNIT-IV	7	Introduction to shell concept and writing shell script	5	10
	8	Essential Shell Programming	3	6
Total			25	50

Text and reference Books:

1. The Linux Kernel Book Rem Card, Eric Dumas and Frank Mevel Wiley Publications sons, 2003
2. Unix Concepts and Applications by Sumitabha Das, Fourth Edition, TMH, 2017
3. MySQL Bible Steve Suehring John Wiley sons, 2002
4. Programming PHP Rasmus Lerdorf and Levin Tatroe O'Reilly Publications, 2002
5. Terry Collings, Kurt Wall, "Red Hat Linux Network and System Administration" 3rd edition Wiley.
6. Neil Mathews, "Beginning Linux Programming" 4th edition, Wrox Press, 2007
7. P.Koparkar, "Unix For You", Tata McGraw-Hill, 2001
8. Y.P.Kanetkar, "Unix Shell programming", BPB publications , 1st Edition 2013

Branch: B.Sc.(IT)	Semester-I
Subject Code: 1104	Lecture: 04 Credit: 04
Course Opted	Core Course-3 (Theory)
Subject Title	Mathematics-I

Course Objective:

- To introduce fundamental concepts of differential and applications of discrete structures and differential equations in the field of computer science
- Work with matrices and determine if a given square matrix is invertible.
- To learn about First order differential equations
- To introduce the basics of the theory of sets and some of its applications.

Learning Outcomes:

- After the completion of the course, Students will be able to
- Find the inverse of a square matrix. Solve the matrix equation Ax = b using row operations and matrix operations. Find the determinant of a product of square matrices, of the transpose of a square matrix, and of the inverse of an invertible matrix
- Will understand First order differential equations
- Will learn the basics of the theory of sets and some of its applications

Modules	Sr. No.	Topic and Details	No. of Lectures Assigned	Marks Weightage %
UNIT-I	1	Matrices and Determinants Definition of a matrix; Operations on matrices; Square Matrix and its inverse; determinants; properties of determinants; the inverse of a matrix; solution of equations using matrices and determinants; solving equations using determinants; eigen values and eigen vectors of a matrix	14	28
UNIT-II	2	Differential Equation First order differential equations; practical approach to Differential equations; first order and first degree differential equations; homogeneous equations. Linear equations; ; Exact Differential Equations.	14	28
UNIT-III	3	Set Theory: Definition of Sets, Subsets, Cardinality of Sets, types of sets: Equal Sets, Universal Sets, Finite and Infinite Sets, proper set, power sets, Operations on Sets: Union, Intersection, Complement of Sets, set difference, Cartesian Product, Venn Diagrams, and Algebra of sets	6	12
	4	Properties of integers: Definition of GCD, LCM, Theorems Euclidean algorithm and problems	5	10

UNIT-IV	5	Relations: Definitions of Relation, Reflexive Relation, Symmetric Relation, Transitive relation, Equivalence Relation	6	12
	6	Functions : Define Function ,Injective functions ,Surjective functions, Bijective functions, Composite function, Inverse of a function, Domain and Range	5	10
		Total	50	100

Outcomes:

On the successful completion of the course, the student will be able to:

- Apply the knowledge of matrices to solve the problems
- Understand the theory and techniques of set, functions ,relation .
- Understand some basic properties discrete structures, and be able to relate these to practical examples.
- Apply the knowledge and skills obtained to investigate and solve problems related to differential equations .

Text & Reference Books:

- Kolman, Busby and Ross, "Discrete mathematical Structures and graph theory" , 6th Edition, 2009
- Alan Doerr, K. Levasseur , "Applied discrete structure for computer science", Galgotia publications, 1988
- P. N. Wartikar & J. N. Wartikar, "Elements of Applied Mathematics", 7th, Pune Vidyarthi Graha, 1988,
- Grewal. B.S, "Higher Engineering Mathematics", 41 st Edition, Khanna Publications, Delhi, 2011.
- Dass, H.K., and Er. Rajnish Verma," Higher Engineering Mathematics", S. Chand Private Ltd., 2011.

Branch: B.Sc(IT)	Semester-I
Subject Code: 1105	Lecture: 02 Credit: 02
Course Opted	Skill Enhancement Course - 1
Subject Title	PRINCIPLES & PRACTICES OF ACCOUNTS

Course objective:-

- Introduces students to the world of accounting and understanding basics concepts of accounting to final account.
- The objective of the course is to strengthen the fundamentals of accounting and provide strong foundation for other accounting courses.
- It will be demonstrated how a practical understanding and interpretation of accounting reports and other accounting tools can improve decision-making in the organization.

Course Outcomes:-

- Students will be able to learn fundamental accounting concepts, Conventions & terminologies.
- Students will be able to describe the importance, functions & objectives of books of entry, subsidiary books, bank reconciliation statement and Final accounts.
- Students will be able to prepare books of entry, subsidiary books, bank reconciliation statement and Final accounts using double entry book keeping.

Modules	Sr.No.	**Topic and Details**	No. of Lectures Assigned	Marks Weightage %
Unit –I	1	**Introduction to Book – Keeping & Accountancy** Accounting Terminologies, Accounting Principles, Basic Concepts, Double Entry Book – keeping System, Types of Vouchers & Specimen of Vouchers. **Journal:** Meaning, Importance and Utility of Journal Specimen of Journal ; Writing of Journal Entries on the basis of vouchers	6	12
Unit-II	2	**Ledger** Meaning, Need and Specimen of Ledger Posting of Entries from Journal to Ledger. **Subsidiary Books** Meaning, Need and Types of Subsidiary Books, Purchase Book, Sa les Book, Purchase Return Book, Sales Return Book, Simple Cash Book with Only Cash Column, Cash Book with Cash and Discount Columns, Cash Book with Cash, Bank and Discount Columns & Analytical Petty Cash Book.	6	12
Unit-III	3	**Bank Reconciliation Statement**:- Importance, Types **Trial Balance and Rectification of Errors**:- Objective, Preparation of Trial Balance	6	12
Unit-IV	4	Final Accounts: Trading and Profit & Loss Account, Balance Sheet	7	14

		TOTAL	25	50

Reference and Text Books:-

1. Fundamentals of Accounting, Kalyani Publishers, S P Jain and K L Narang 2017.
2. Fundamentals of Accounting, Universal Publications, B S Raman, 2017
3. Accounting for Managers, Himalaya Publishing House, R Venkata Raman and Srinivas, 2017
4. S.N. Maheshwari& S.K. Gupta “Introduction to Accounting” 2016