SOPHIA COLLEGE FOR WOMEN

(EMPOWERED AUTONOMOUS)

Affiliated to the University of Mumbai

Programme: Bachelor of Science

Course: Information Technology

Syllabus for the Academic Year 2025-2026

based on the National Education Policy 2020

SOPHIA COLLEGE FOR WOMEN (EMPOWERED AUTONOMOUS)

DEPARTMENT OF INFORMATION TECHNOLOGY

	SEMESTER 1		
COURSE TYPE	**COURSE CODE**	**COURSE TITLE**	**CREDITS**
MAJOR	T111MJ	PROGRAMMING IN C	3
MAJOR PRACTICAL	T111MJP	PROGRAMMING IN C PRACTICAL	1
MINOR	T111MN	DISCRETE MATHEMATICS	3
MINOR PRACTICAL	T111MNP	DISCRETE MATHEMATICS PRACTICAL	1
OPEN ELECTIVE (OE) 1	TOE101	FUNDAMENTALS IN IT	2
OPEN ELECTIVE (OE) 2	TOE102	OFFICE AUTOMATION	2
VOCATIONAL SKILL COURSE (VSC) 1	TVSC101	DIGITAL ELECTRONICS	(1+1) =2
VOCATIONAL SKILL COURSE (VSC) 2	TVSC102	OPERATING SYSTEMS	(1+1) =2
ABILITY ENHANCEMENT COURSE (AEC)	TAEC101	TECHNICAL COMMUICATION SKILLS	2
VALUE EDUCATION COURSE (VEC)	TVEC101	GREEN COMPUTING	2
INDIAN KNOWLEDGE SYSTEM	TIKS101	HISTORY OF COMPUTING IN INDIA	2

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Preamble:

Information Technology (IT) refers to the use, development, and management of computer systems, software, and networks to process, store, retrieve, and exchange information. It encompasses a broad range of technologies and practices aimed at solving problems, improving efficiency, and enabling communication within and between organizations and individuals.

In an era marked by rapid digital transformation and technological advancements, our program is designed to equip students with a comprehensive understanding of the foundational and emerging concepts in Information Technology.

Our BSc IT curriculum integrates theoretical knowledge with practical skills, preparing students to tackle real-world challenges and excel in a diverse range of IT careers. Through a combination of rigorous coursework, industry-relevant projects, and learning experiences, we aim to develop well-rounded professionals who are adept at problem-solving and equipped with the tools to drive technological innovation.

PROGRAMME OBJECTIVES

PO 1	To think analytically and creatively in developing robust, extensible and maintainable technological solutions to simple and complex problems
PO 2	To imbibe quality software development practices
PO 3	To apply their knowledge and skills to be employed and excel in IT professional careers and/or to continue their education in IT and/or related post graduate programmes
PO 4	To communicate effectively with a range of audiences both technical and non-technical
PO 5	To work effectively as a part of a team to achieve a common stated goal

PROGRAMME SPECIFIC OUTCOMES

PSO 1	Demonstrate understanding of fundamental concepts in information technology, including programming, databases, networking, and software engineering principles
PSO 2	Apply technical skills in software development, system analysis, and design using various tools and technologies
PSO 3	Develop proficiency in identifying, formulating, and solving IT-related problems using appropriate techniques, algorithms, and methodologies
PSO 4	Apply concepts of computing, data structures, and software engineering to solve problems using AI and BI technologies.
PSO 5	Develop effective communication skills, both oral and written, essential for articulating technical concepts and collaborating in a team environment

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MAJOR: Programming in C	**Semester – 1**
Course Title: Programming in C	**Course Code: T111MJ**

Course objectives:

1. The course aims to train the student to the basic concepts of the C-programming language.
2. It aims to train the students to understand the concept of conditional statement, loop, nested loop and break a large problem into smaller parts as a module or function.
3. It aims to train the students to understand the concept of string and be able to use an array.to store multiple pieces of homogeneous data
4. It aims to train the students to understand the concept of pointer, and use a structure to store multiple pieces of heterogeneous data.
5. This course involves a lab component which is designed to give the student hands-on experience with the concepts.

COURSE OUTCOMES:

The learner will be able to:

1. Read, understand and trace the execution of programs in C language.
2. Draw flowchart and write the C code for a given algorithm.
3. Implement the concept of control statements, loops, and functions to write a C program.
4. Implement Programs with pointers and arrays, perform pointer arithmetic, and use the pre-processor.
5. Implement Programs with structures and union.

Lectures per week (1 Lecture is 60 minutes)		**3**	
Total number of Hours in a Semester		**45**	
Credits		**3**	
Evaluation System	**Semester End Examination**	**2 Hours**	**50 marks**
	Internal Assessment	**--**	**50 marks**

UNIT 1 Concepts	Introduction to C: History of C, Types of Programming languages, Language translator, Structure of C Program, Advantages of C, Header Files, Algorithm, Rules of Algorithm, Flowchart C Declarations: Character Set, Delimiters, Token, Keyword, Identifies, Constants, Variable, Rules for declaring variable, Data Types, Type conversion. Operators and Expressions: Arithmetic operators, relational operators, logical operators, assignment operators, Increment/Decrement operators, the conditional operator, Operator Precedence and Associativity Data Input and output: scanf function, printf function, gets and puts functions.	15 hours

UNIT 2 Theories	Decision Statements: If Statement, If-Else Statement, Nested if – else statement, switch case statement, goto, break, continues statement. Loops: While Loop, Do While, For Loop, Nested Loops, Infinite Loops Functions: Defining a function, function types, return statement, call by value and reference, Recursion, Types of recursion, Rules for Recursive Function Program structure: Storage classes, automatic variables, external variables, static variables, Preprocessor Directives	15 hours
UNIT 3 Application	Array: Array Declaration, Array Initialization, Types of Array String and Standard Function: Declaration and Initialization of String, Display of Strings with Different Formats, String Standard Functions Pointers: Features of Pointers, Pointers and Address, Pointer Declaration Structures and Unions: Introduction of Structure, Union, Union vs Structure	15 hours

MAJOR: Programming in C PRACTICAL		**Semester – 1**	
Course Title: Programming in C Practical		**Course Code: T111MJP**	
Lectures per week (1 Lecture is 60 minutes)		**2**	
Total number of Hours in a Semester		**30**	
Credits		**1**	
Evaluation System	**Practical Examination**	**2 Hours**	**50 marks**

List of Practical: (Can be done in any imperative language)

1	**Basic Programs**
	a. Write a program to display the message HELLO WORLD. b. Write a program to find the addition, subtraction, multiplication and division of two numbers.
2	**Programs on variables:**
	a. Write a program to swap two numbers without using a third variable. b. Write a program to find the area of rectangle, square and circle.
3	**Conditional statements:**

	a. Write a program to display the greatest of three numbers. b. Write a program to enter a number from the user and display the month name. If number >13 then display invalid input using switch case.
4	**Loops:**
	a. Write a program to find the factorial of a number. b. Write a program to check whether the entered number is prime or not.
5	**Function:**
	a. Write a function to find the reverse of a number. b. Write a program to find the sum of natural numbers using a recursive function.
6	**Array**
	a. Write a program to find the largest value that is stored in the array. b. Write a program that performs addition and subtraction of matrices.
7	**Pointers**
	a. Write a program to demonstrate the use of pointers. b. Write a program to perform addition and subtraction of two pointer variables.
8	**Structures and Unions**
	a. Programs on structures. b. Programs on unions

REFERENCES:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1	Programming with C	Byron Gottfried	Tata McGRAWHill	2nd	1996
2	Programming Logic and Design	Joyce Farell	Cengage Learning	8th	2014

3	"C" Programming"	Brian W. Kernighan and Denis M. Ritchie.	PHI	2nd	
4	Let us C	. Yashwant P. Kanetkar	BPB publication	18th	
5	Programming in C	Ashok N. Kamthane	Pearson	Third Edition	2019

MINOR: Discrete Mathematics	**Semester – 1**
Course Title: Discrete Mathematics	**Course Code: T111MN**

COURSE OBJECTIVES:

1. The course objective is to provide students with an overview of discrete mathematics. To introduce the concepts of mathematical logic and set theory.
2. To introduce the concepts of logic and Elementary Number Theory.
3. To learn various concepts like sequences and recurrence relations.
4. To demonstrate Relations on Sets, Reflexivity, Symmetry, and Transitivity property. Understanding basic concepts and properties related to Graphs and Trees.
5. To acquire the basic knowledge of Probability Axioms, Conditional Probability, Multiplication rule.

COURSE OUTCOMES:

1. To perform the operations associated with sets, functions, and relations. Construct truth tables for expressions involving the logical connectives.
2. Construct correct direct and indirect proofs involving elementary number theory. State and explain the Quotient Remainder Theorem (Division Algorithm).
3. Define and use the terms related to functions. Explain one-to-one, onto functions. Students will be able to solve problems based on each concept.
4. State and explain binary relation, reflexive, symmetric, transitive, equivalence relations. Explain Properties of Graphs, Trees and use graph theory for solving problems.
5. Apply principles of Probability, Permutations to solve various problems

Lectures per week (1 Lecture is 60 minutes)		**3**	
Total number of Hours in a Semester		**45**	
Credits		**3**	
Evaluation System	**Semester End Examination**	**2 Hours**	**50 marks**
	Internal Assessment	**--**	**50 marks**

UNIT 1 Concepts	**Set Theory** Introduction, Sets and Elements, Subsets, Venn Diagrams, Set Operations, Algebra of Sets, Finite Sets, Power Sets, Partitions, **Elementary Number Theory**: Rational Numbers, Divisibility, Division into Cases and the Quotient-Remainder Theorem	**15 hours**

	Functions: Functions Defined on General Sets, One-to-One and Onto, Inverse Functions, Logarithmic Functions, Composition of Functions, Cardinality	
UNIT 2 Theories	**Sequences and Recursion** Sequences, Second order linear homogenous recurrence relations with constant coefficients **Probability** Introduction, Probability Axioms, Sample Space and Events, Finite Probability Spaces, Conditional Probability, the Multiplication Rule **The Logic of Compound Statements:** Logical Form and Logical Equivalence, Conditional Statements	**15 hours**
UNIT 3 Application	**Relations:** Relations on Sets, Reflexivity, Symmetry, and Transitivity, Equivalence Relations. **Graphs**: Definitions and Basic Properties, Trails, Paths, and Circuits, Matrix Representations of Graphs, Subgraphs, Isomorphism's of Graphs **Trees**: Introduction, Trees, Rooted Trees, Isomorphism's of Graphs, the Pigeonhole Principle, The Inclusion–Exclusion Principle	**15 hours**

MINOR: DISCRETE MATHEMATICS PRACTICAL		**Semester – 1**	
Course Title: DISCRETE MATHEMATICS PRACTICAL		**Course Code: T111MNP**	
Lectures per week (1 Lecture is 60 minutes)		**2**	
Total number of Hours in a Semester		**30**	
Credits		**1**	
Evaluation System	**Practical Examination**	**2 Hours**	**50 marks**

List of Practical: Write the programs for the following using SCILAB	
1.	**Set Theory**
a.	Inclusion Exclusion principle.
b.	Power Sets
c.	Mathematical Induction
2.	**Functions and Algorithms**
a.	Recursively defined functions
b.	Cardinality

c.	Polynomial evaluation
d.	Greatest Common Divisor
3.	**Counting**
a.	Sum rule principle
b.	Product rule principle
c.	Factorial
d.	Permutations
e.	Permutations with repetitions
f.	Combinations
g.	Combinations with repetitions
4.	**Probability Theory**
a.	Sample space and events
b.	Finite probability spaces
5.	**Graph Theory and Directed Graphs**
a.	Paths and connectivity
b.	Adjacency matrix
6.	**Properties of integers**
a.	Division algorithm
b.	Primes
7.	**Recurrence relations**
a.	Linear homogeneous recurrence relations with constant coefficients
b.	Solving linear homogeneous recurrence relations with constant coefficients
c.	Solving general homogeneous linear recurrence relations

REFERENCES:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Discrete Mathematics with Applications	Sussana S. Epp	Cengage Learning	4th	2010
2.	Discrete Mathematics, Schaum's Outlines Series	Seymour Lipschutz, Marc Lipson	Tata MCGraw Hill		2007
3.	Discrete Mathematics and its Applications	Kenneth H. Rosen	Tata MCGraw Hill		
4.	Discrete mathematical structures	B Kolman RC Busby, S Ross	PHI		
5.	Discrete structures	Liu	Tata MCGraw Hill		

OE 1: Fundamentals of IT	**Semester – 1**
Course Title: Fundamentals of IT	**Course Code: TOE101**

COURSE OBJECTIVES:

1. To Provide the Basic Concepts in Information Technology
2. The course is intended to familiarize students with the basics of Technology.
3. The course is designed to empower students with the knowledge of Computer Basic.
4. This course is designed to teach students the basic organization of computer and memory.
5. This course is designed to introduce skills relating to IT basics, computer applications

COURSE OUTCOMES:

1. The students should be able to learn IT in a simple language, regardless of their specialization.
2. The students will be able to pursue specialized programs leading to technical and professional careers and certifications in the IT industry.
3. Students will be able to have a basic understanding of personal computers and their operations.
4. The student will be able to Understand basic concepts and terminology of information technology.
5. Be able to identify basic issues related to information security.

Lectures per week (1 Lecture is 60 minutes)	**2**
Total number of Hours in a Semester	**30**

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Credits		2
UNIT 1	**Introduction to Computers**: Introduction, Definition, Characteristics of computer, Evolution of Computer, Block Diagram Of a computer, Classification of Computers, Applications of Computer, Capabilities and limitations of computer, **Basic Computer Organization:** Role of I/O devices in a computer system. Output Units: Monitors and its types. Printers: Impact Printers and its types. Input and Output devices, Memory and storages devices, Different ports and its uses.	15 hours
UNIT 2	**CPU and Memory** - Secondary Story Devices - Input Devices - Output Devices Computers at Home, Education, Entertainment, Science, Medicine and Engineering – **Introduction to Computer Security** - Computer Viruses, Worms. **Primary Vs Secondary Storage**, Data storage & retrieval methods. Primary Storage: RAM ROM, PROM, EPROM, EEPROM. Secondary Storage: Magnetic Tapes, Magnetic Disks. Cartridge tape, hard disks, Floppy disks Optical Disks, Compact Disks,	15 hours

REFERENCES:

Books and References:					
Sr. No.	**Title**	**Author/s**	**Publisher**	**Edition**	**Year**
1.	Fundamentals of Information Technology, Alexis Leon And Mathews Leon, Vikas Publishing House Pvt. Ltd, 2009	Mathews Leon,	Vikas Publishing House Pvt Ltd		
2.	Introduction to Information Technology, ITL Education Solutions limited, Pearson Education		Pearson Education		
3.	Fundamentals of Computers and Information Technology, M.N Doja, 2005				

4.	Computer Fundamentals by P.K.Sinha				

OE 2: Office Automation	**Semester – 1**
Course Title: Office Automation	**Course Code: TOE102**

COURSE OBJECTIVES:

1. The course is structured to equip students with crafting professional word documents and PPT using Microsoft suite tools.
2. The course is designed to empower students to work on basic power point utilities and tools which help them create basic power point presentation
3. This course is designed to familiarize the students in preparation of documents and PPT
4. It will help students in demonstrating interactive presentations.
5. The course is designed to develop competence in related to production & presentation of messages in multiple formats & understand the importance of body language.

COURSE OUTCOMES:

1. The students should be able to: Make Word Documents and Power Point Presentations in the Professional Environment.
2. Demonstrate ability to. Prepare and present effective documentation and presentation skills.
3. The students will be able to apply good technical skills to create the Word Docs and PPT.
4. Students will be able to design documents and presentations and will be able to use various Business Communication Aids
5. The student will be able to write create official correspondence and also learn to make and give effective presentations.

Lectures per week (1 Lecture is 60 minutes)	**2**
Total number of Hours in a Semester	**30**
Credits	**2**

UNIT 1	**Features of MS- Word**: Getting Started Components of Word Window Creating Document, Working with Clipboard, Font, Paragraph, Styles, Editing, Pages, Tables, Illustrations, Add-ins, Media, Links, Comments, Header & Footer, Symbols, Themes, Page Background, Page Setup, Paragraph, Mail Merge, Proofing, Language, Protect, Views, Page Movement, Zoom, Macros	15 hours

UNIT 2	**Power Point Presentation:** Using Design Templates, Creating Blank Presentation Inserting Objects PowerPoint Views Saving & Printing Your Works Working With Colors & Transitions About Slide Show Timings Navigating During Presentation. PPT Orientation, Slide Layouts, Inserting Text, Word Art, Formatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows,Animation, Recording, Master slide,Media,Links, Add ins, proofing, illustrations, links, symbols, comments, design, Accessibility , comments, compare	15 hours

REFERENCES:

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Introduction to Information Technology, ITL Education Solutions limited, Pearson Education		Pearson Education		
2.	The Complete Computer upgrade and repair book,3rd edition Cheryl A Schmidt, WILEY Dreamtech	Cheryl A Schmidt	WILEY Dreamtech	3rd edition	
3.	Comdex Information Technology course tool kit Vikas Gupta, WILEY Dreamtech,2005	Vikas Gupta,	WILEY Dreamtech,		
4.	PC Hardware and A + Handbook – Kate J. Chas PHI (Microsoft				

VSC 1: DIGITAL ELECTRONICS	**Semester – 1**
Course Title: DIGITAL ELECTRONICS	**Course Code: TVSC101**

COURSE OBJECTIVES:

1. To introduce the basics of logic in digital electronics as an entry level course.
2. To interpret and assess number systems
3. To analyze and design logic circuits.

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COURSE OUTCOMES: 1. Apply number system techniques in real digital systems 2. Understand and develop digital applications 3. Derive and design logic circuits	
Lectures per week (1 Lecture is 60 minutes)	**1**
Total number of Hours in a Semester	**15**
Credits	**1**

UNIT 1	**Number System:** Analog System, digital system, numbering system, binary number system, octal number system, hexadecimal number system, weighted codes binary coded decimal, non-weighted codes Excess – 3 code, Gray code **Binary Arithmetic:** Binary addition, Binary subtraction and Binary multiplication **Boolean Algebra and Logic Gates:** Introduction, Logic (AND OR NOT), Boolean theorems, Boolean Laws, De Morgan's Theorem, exclusive OR and Exclusive NOR gates, Universal Logic gates, Implementation of other gates using universal gates.	15 hours

VSC 1: DIGITAL ELECTRONICS PRACTICAL		**Semester – 1**	
Course Title: DIGITAL ELECTRONICS PRACTICAL		**Course Code: TVSC101**	
Lectures per week (1 Lecture is 60 minutes)		**2**	
Total number of Hours in a Semester		**30**	
Credits		**1**	
Evaluation System	**Practical Examination**	**2 Hours**	

List of Practical	
1.	**Study of Logic gates and their ICs and universal gates:**
a.	Study of AND, OR, NOT, XOR, XNOR, NAND and NOR gates
b.	IC 7400, 7402, 7404, 7408, 7432, 7486, 74266
2.	**Implement AND, OR, NOT, XOR, XNOR using NAND gates.**
3.	**Implement AND, OR, NOT, XOR, XNOR using NOR gates.**
4.	**Implement the given Boolean expressions using minimum number of gates.**
a.	Verifying De Morgan's laws.

5.	**Implement code converters.**
a.	Design and implement Binary – to – Gray code converter.
b.	Design and implement Gray – to – Binary code converter.
6.	**Implement Adder Arithmetic circuits.**
a.	Design and implement Half adder and Full adder.
7.	**Implement Arithmetic circuits.**
a.	Design and implement a 2-bit comparator.

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Digital Electronics and Logic Design	N. G. Palan	Technova		
2.	Digital Principles and Applications	Malvino and Leach	Tata McGraw Hill		

VSC 2: OPERATING SYSTEMS	**Semester – 1**
Course Title: OPERATING SYSTEMS	**Course Code: TVSC102**

Course objectives:

1. To understand the services provided by OS and the design of an operating system.
2. To make aware of different types of Operating System and their services.
3. To understand what a process is and learn different process scheduling algorithms to achieve better performance of a computer system.

COURSE OUTCOMES:

Through the study of this course, students will gain a comprehensive understanding on the concepts and functions of a modern operating system.

Students will be able to:

1. Explain the role of the operating system as a high-level interface to the hardware.
2. Use OS as a resource manager that supports multiprogramming.
3. Understands the different services provided by Operating System at different level.
4. Explain the low-level implementation of CPU dispatch.

Lectures per week (1 Lecture is 60 minutes)	**1**
Total number of Hours in a Semester	**15**
Credits	**1**

UNIT 1 Concepts + Theories	**Introduction:** What is an operating system? Storage structure, Single processor systems, multi-processor systems, multiprogramming, time sharing, operating services **Process Management:** Introduction to processes, process control block, types of schedulers, five state process model, seven state process model, list of times used in scheduling algorithms, types of scheduling algorithm: first come first serve algorithm, round robin scheduling algorithm	15 hours

VSC 2: OPERATING SYSTEMS PRACTICAL			**Semester – 1**
Course Title: OPERATING SYSTEMS PRACTICAL		**Course Code: TVSC102**	
Lectures per week (1 Lecture is 60 minutes)		**2**	
Total number of Hours in a Semester		**30**	
Credits		**1**	
Evaluation System	**Practical Examination**	**2 Hours**	

1.	**Windows (DOS) Commands – 1**
a.	Date, time, prompt, md, cd, rd, path.
b.	Copy, xcopy, format, cls, del, move.
2.	**Windows (DOS) Commands – 2**
a.	Find, rename, set, type, ver
3.	**Linux commands: Working with Directories:**
a.	pwd, cd, absolute and relative paths, ls, mkdir, rmdir
b.	file, touch, rm, cp, mv, rename, head, tail, cat, tac, more, less
4.	**Linux commands: Working with files:**
a.	ps, top, kill, pkill, locate, find

b.	date, cal, uptime, whoami, finger, uname, man, free
5.	**Working with Windows Desktop and utilities**
a.	WordPad
b.	Paint
6.	**Working with Linux Desktop and utilities**
a.	The vi editor
b.	Terminal

REFERENCES:

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Modern Operating Systems	Andrew S. Tanenbaum, Herbert Bos	Pearson	4th	2014
2.	Operating Systems – Internals and Design Principles	Willaim Stallings	Pearson	8th	2009
3.	Operating System Concepts	Abraham Silberschatz, Peter B. Galvineg Gagne	Wiley	8th	
4.	Operating Systems	Godbole and Kahate	McGraw Hill	3rd	

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AEC : TECHNICAL COMMUNICATION SKILLS	**Semester – 1**
Course Title: Technical Communication Skills	**Course Code: TAEC101**

COURSE OBJECTIVES:

1. The course is intended to emphasize the essential aspects of effective written and verbal communication necessary for professional success. Familiarize students with the basics of Technology-enabled Business Communication.
2. The course is designed to empower students to carry out day to day communication at the work place. To impart adequate understanding of various types of communication to facilitate efficient interpersonal communication. To impart the correct practices and strategies of Effective Business writing
3. This course is designed to develop the skills of the students in preparing for job search and negotiating their use in GDs and interviews. Helps students in Communicating across Functional Areas.
4. Understanding Ethics in Business Communication and Business Communication Aids.
5. The course is designed to develop competence in communication skills related to production & presentation of messages in multiple formats & understand the importance of body language.

COURSE OUTCOMES:

1. The students should be able to: Apply Verbal and Non-Verbal Communication Techniques in the Professional Environment. Students will be able to deliver messages that incorporate the appropriate use of organizing content, language, vocabulary, kinesics, eye contact, appearance, visual aids, and time constraints.
2. Demonstrate ability to interpret texts and observe the rules of good writing. Prepare and present effective presentations aided by ICT tools.
3. The students will be able to apply good Oral Communication Skills for Business purpose like in meetings, conferences, GDs etc.
4. Students will be able to conduct themselves using proper business ethics and will be able to use various Business Communication Aids
5. The student will be able to write impressive official correspondence and also learn to make and give effective presentations.

Lectures per week (1 Lecture is 60 minutes)	**2**
Total number of Hours in a Semester	**30**
Credits	**2**

UNIT 1 Concepts	**The Seven Cs of Effective Communication**: Completeness, Conciseness, Consideration, Concreteness, Clarity, Courtesy, Correctness **Understanding Business Communication**: Nature and Scope of Communication, Non-verbal Communication, Cross-cultural communication, Technology-enabled Business Communication **Barriers to communication** Definition of Noise, classification of Barriers Non-verbal Communication Introduction, Definition,	15 hours

	significance of nonverbal, forms of non -verbal communication, types of non-verbal communication	
UNIT 2 Theories	**Communication Skills for Business**: Effective Listening, Business Presentations and Public Speaking, Conversations, Interviews, **Writing Business Messages and Documents:** Business writing, Business Correspondence, Instructions **Developing Oral Communication Skills for Business**: Meetings and Conferences, Group Discussions and Team Presentations, Team Briefing, **Understanding Specific Communication Needs**: Corporate Communication, Persuasive Strategies in Business Communication, Ethics in Business Communication, Business Communication Aids	15 hours

REFERENCES:

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Business Communication	Edited by Meenakshi Raman and Prakash Singh	Oxford University Press	Second	
2.	Professional Communication	ArunaKoneru	Tata McGraw Hill		
3.	Strategies for improving your business communication	Prof. M. S. Rao	Shroff publishers and distributors		2016
4.	Business Communication	Dr. Rishipal and Dr. Jyoti Sheoran	SPD		2014
5.	Graphics for Learning: Proven Guidelines for Planning, Designing, and Evaluating Visuals in Training Materials	Ruth C. Clark, Chopeta Lyons,	Pfeiffer, Wiley		2011

6.	Basic Business Communication: Skills for Empowering the Internet Generation	Lesikar Raymond V and Marie E. Flatley.	Tata McGraw-Hill	10th	2005
7.	Nonverbal Communication: Notes on the Visual Perception of Human Relations	Ruesh, Jurgen and Weldon Kees	University of California Press		1966
8.	Business Communication Today	Bovee, Courtland L.;Thill, John V.	Pearson Education Ltd.		2015
9.	Communication Skills	Dr. NageshwarRao Dr. Rajendra P. Das	Himalaya Publishing House		

VEC : GREEN COMPUTING	**Semester – 1**
Course Title: GREEN COMPUTING	**Course Code: TVEC101**

COURSE OBJECTIVES:

1. The goal of studying green computing is to attain economic viability and improve the way computing devices are used.
2. Green computing practices include the development of environmentally sustainable production practices, energy efficient computers and improved disposal and recycling procedures
3. To understand the concept of minimizing power utilization in technology.
4. To know how the way of work is changing and understand implementation of Paperless work

COURSE OUTCOMES:

Learners will be able to,

1. Understand the concept of Green IT and problems related to it.
2. Know different standards for Green IT.
3. Understand the how power usage can be minimized in Technology.
4. Learn about how the way of work is changing.

Lectures per week (1 Lecture is 60 minutes)	**2**
Total number of Hours in a Semester	**30**
Credits	**2**

UNIT 1	**Overview and Issues:** Problems: Toxins, Power Consumption, Equipment Disposal, Company's Carbon Footprint: Measuring, Details, reasons to bother, Plan for the Future, Cost Savings: Hardware, Power. **Initiatives and Standards:** Global Initiatives: United Nations, Basel Action Network, Basel Convention, North America: The United States, Canada, Australia, Europe, WEEE Directive, RoHS, National Adoption, Asia: Japan, China, Korea **Minimizing Power Usage:** Power Problems, Monitoring Power Usage, Servers, Low-Cost Options, Reducing Power Use, Data De-Duplication, Virtualization, Management, Bigger Drives, Involving the Utility Company, Low Power Computers, PCs, Linux, Components, Servers, Computer Settings, Storage, Monitors, Power Supplies, Wireless Devices, Software.	15 hours
UNIT 2	**Cooling:** Cooling Costs, Power Cost, Causes of Cost, Calculating Cooling Needs, Reducing Cooling Costs, Economizers, On-Demand Cooling, HP's Solution, Optimizing Airflow, Hot Aisle/Cold Aisle, Raised Floors, Cable Management, Vapour Seal, Prevent Recirculation of Equipment Exhaust, Supply Air Directly to Heat Sources, Fans, Humidity, Adding Cooling, Fluid Considerations, System Design, Datacenter Design, Centralized Control, Design for Your Needs, Put Everything Together. **Changing the Way of Work:** Old Behaviours, starting at the Top, Process Reengineering with Green in Mind, Analysing the Global Impact of Local Actions, Steps: Water, Recycling, Energy, Pollutants, Teleworkers and Outsourcing, Telecommuting, Outsourcing, how to Outsource.	15 hours

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Green IT	Toby Velte, Anthony Velte, Robert Elsenpeter	McGraw Hill		2008

2.	Green Data Center: Steps for the Journey	Alvin Galea, Michael Schaefer, Mike Ebbers	Shroff Publishers and Distributers		2011
3.	Green Computing and Green IT Best Practice	Jason Harris	Emereo		
4.	Green Computing Tools and Techniques for Saving Energy, Money and Resources	Bud E. Smith	CRC Press		2014

IKS: HISTORY OF COMPUTING IN INDIA		**Semester – 1**	
Course Title: HISTORY OF COMPUTING IN INDIA		**Course Code: TIKS101**	
Course objectives: This course is intended to introduce students to the history of science and technology in Ancient India and to familiarize them with the major developments in GENERATION OF COMPUTERS.			
COURSE OUTCOMES: After the completion of the course, the students will have a comprehensive understanding of the development of science and technology in different fields of computing in ancient India.			
Lectures per week (1 Lecture is 60 minutes)		**2**	
Total number of Hours in a Semester		**30**	
Credits		**2**	
Evaluation System	**Semester End Examination**	**Hours**	**marks**
	Internal Assessment	**--**	**marks**

UNIT 1 CONCEPTS	Laying the foundation (1955-1970), early computer installations, self-reliant growth of the computer industry (1970-1977), government policy, government initiatives	15 hours
UNIT II THEORIES	Private sector enters the computer industry (1978-1990), government initiatives (in the private sector), consequences of government policy, the period of rapid growth of the it industry (1998-2010)	15 hours

REFERENCES:

Sr. No.	Title	Author/s
1.	"The first Computer in India", in Computer Education in India – Past, Present and Future",	Mohi Mukherjee,
2.	HISTORY OF COMPUTING IN INDIA 1955 - 2010	V.RAJARAMAN