Sheth NKTT College of Commerce and Sheth JTT College of Arts,Thane
(Autonomous)
(Affiliated to University of Mumbai)
Credit Structure as per NEP-2020
(w.e.f. 2024-25)

F.Y. B.Sc. (Information Technology) Sem II

	Semester I Subjects	Credits		Semester II Subjects	Credits
Major **BSP101** **BSM102**	1. Principles of programming with C 2. Database Management System	2 2	**BSO201** **BSM202**	1. Object Oriented Programming with C++ 2. Microprocessor Architecture with 8085	2 2
Major **BSPDP103**	1. Principles of programming with C and DBMS Practical	2	**BSOMP203**	1. Object Oriented Programming with C++ and Microprocessor Architecture with 8085 Practical	2
Minor	-	-	**BSN204**	Numerical Methods	2
BSD104 **BSO105**	OE 1: Digital Marketing OE 2: Organizational Behavior	2 2	**BSF205** **BSI206**	OE1: Financial Market OE2: Introduction to Corporate Law	2 2
BST106 **BSTPP107**	1. VSC: Discrete Mathematics 2. SEC: Discrete Mathematics Practical	2 2	**BSE207** **BSEP2011**	1. VSC: Fundamentals of Digital Electronics 2. SEC: Fundamentals of Digital Electronics Practical	2 2
BSC108 **BSG109** **BSK110**	1. AEC: Corporate communication-I 2. VEC: Green Technology:I 3. IKS: Evolution of IT	2 2 2	**BSW208** **BSG209**	1. AEC: Corporate communication-II 2. VEC: Green Technology-II	2 2
BSS1011 **BSL1011** **BSP1011**	1. CC: NSS/ Sports/ Cultural/ Yoga	2	**BSS2010** **BSL2010** **BSP2010**	1. CC: NSS/ Sports/ Cultural/ Yoga	2
	Total	**22**			**22**

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Programme Name: **F Y B. Sc (Information Technology)**	**Semester: II**
Course Category/Vertical: Major	
Name of the Dept: **Science and Technology**	
Course Title: **Object Oriented Programming with C++**	
Course Code: **BSO201**	Course Level: **4.5**
Type: **Theory**	
Course Credit: 2 credits	
Hours Allotted: 30 Hours	
Marks Allotted: 50 Marks	
Course Objectives: 1. Be able to explain the difference between Object Oriented programming and procedural programming and program using more advanced C++ features such as composition of classes and objects. 2. Be able to understand Concept of Polymorphism and virtual functions and Exception Handling.	
Course Outcomes: CO1. Understand the concept of OOPs, feature of C++ language, apply various types of Datatypes, Operators, Conversions while designing the program and also understand and apply the concepts of Classes & Objects, friend function, constructors, destructors in program design, various forms of inheritance. CO2. Apply & Analyze runtime polymorphism, Exception Handling and working with file	
Description of the course:	The Object-Oriented Programming (OOP) syllabus introduces fundamental concepts such as classes, objects, methods, and attributes. Students learn key principles, including encapsulation, inheritance, polymorphism, and abstraction, which are essential for designing modular and reusable code.

Syllabus: NEP 2020 w.e.f 2024-25

Unit No.	Content	Hours
I	**Object Oriented Methodology**: Introduction, Advantages and Disadvantages of Procedure Oriented Languages, Application of OOPS, Principles of OOPS: Objects, Classes, Data Abstraction and Data Encapsulation, Inheritance, Polymorphism, Dynamic Binding, Message Passing. **Classes and Objects**: Simple classes (Class specification, class members accessing), Defining member functions, passing object as an argument, Returning object from functions, friend classes, friend function. **Constructors and Destructors**: Introduction, Default Constructor, Parameterized Constructor and examples, Destructors. Program development using Inheritance: Introduction, Advantages provided by inheritance, choosing the access specifier, Derived class declaration, derived class constructors, class hierarchies, multiple inheritance, multilevel inheritance, hybrid inheritance.	15
II	**Polymorphism:** Concept of function overloading, overloaded operators, overloading unary and binary operators. **Virtual Functions**: Introduction and need, Pure Virtual Functions, this Pointer, abstract classes, virtual destructors. **Exception Handling**: Introduction, Exception Handling Mechanism, Concept of throw & catch with example.	15
	Total Hours	**30**

References:

1. Object Oriented Programming in C++, E Balagurusamy
2. Object-Oriented Programming in C++, Robert Lafore
3. Programming with ANSI C++, Bhushan Trivedi

Programme Name: **FYB. Sc (Information Technology)**	**Semester: II**
Course Category: Major	
Name of the Dept: **Science and Technology**	
Course Title: **Microprocessor Architecture with 8085**	
Course Code: **BSM202** Course Level:**4.5**	
Type: **Theory**	
Course Credit: 2	
Hours Allotted: 30 Hours	
Marks Allotted: 50 Marks	

Course Objectives:

  To make learner understand

1. The microprocessor architecture and memory interface.
2. I/O interfacing with microprocessor and 8085 basic instructions.
3. The assembly programs using 8085.
4. The concept of looping, counters, and time delays in 8085 with instructions.
   The concept of stack and subroutine.

Course Outcomes:

CO1. Understand basic knowledge of microprocessors and understand the architecture of
     a microprocessor 8085.

CO2. Map memory with processor understands the instruction set of 8085 and concepts
     of timers and subroutine.

Description of the course:	Microprocessor Architecture with 8085 provides fundamental knowledge about computer architecture, instruction cycle, components of microprocessor, Intel 8085 and assembly programming.

Syllabus: NEP 2020 w.e.f 2024-25

Unit No.	Content	Hours
I	**Microprocessor, microcomputers, and Assembly Language:** Microprocessor, Microprocessor Instruction Set and Computer Languages, From Large Computers to Single-Chip Microcontrollers, Applications. **Microprocessor Architecture and Microcomputer System:** Microprocessor Architecture and its operations, Memory, I/O Devices, Microcomputer System, Logic Devices and Interfacing, Microprocessor-Based System Application. **8085 Microprocessor Architecture and Memory Interface:** Introduction, 8085 Microprocessor unit, 8085-Based Microcomputer, Memory Interfacing, Interfacing the 8085 memory segment. **Interfacing of I/O Devices:** Basic Interfacing Concepts, Interfacing Output Displays, Interfacing Input Devices, Memory Mapped I/O, Testing and Troubleshooting I/O Interfacing Circuits.	15
II	**Introduction to 8085 Assembly Language Programming:** The 8085 Programming Model, Instruction Classification, Instruction, Data and Storage, writing assembling and Execution of a simple program, Overview of 8085 Instruction Set, Writing and Assembling Program. **Introduction to 8085 Instructions:** Data Transfer Operations, Arithmetic Operations, Logic Operation, Branch Operation, Writing Assembly Languages Programs, Debugging a Program. **Programming Techniques with Additional Instructions:** Programming Techniques: Looping, Counting and Indexing, Additional Data Transfer and 16-Bit Arithmetic Instructions Arithmetic Instruction Related to Memory, Logic Operations: Rotate, Logics Operations: Compare, Dynamic Debugging. **Counters and Time Delays:** Counters and Time Delays, Illustrative Program: Hexadecimal Counter, Illustrative Program: zero-to-nine (Modulo Ten) Counter, Generating Pulse Waveforms, Debugging Counter and Time-Delay Programs **Stacks and Sub-Routines:** Stack, Subroutine, Restart, Conditional Call, Return Instructions, Advanced Subroutine concepts.	15
	Total Hours	**30**

References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Microprocessors Architecture, Programming and Applications with the 8085.	Ramesh Gaonkar	PENRAM	Fifth	2012
2.	Computer System Architecture	M. Morris Mano	PHI		1998
3.	Structured Computer Organization	Andrew C. Tanenbaum	PHI		
4.	8080A/8085 Assembly Language Programming	Lance A. Leventhel	Osborne		1978

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Programme Name:**F Y B.Sc (Information Technology)**	**Semester: II**
Course Category/Vertical: Major	
Name of the Dept: **Science and Technology**	
Course Title: **Object Oriented Programming with C++ and Microprocessor Architecture with 8085 – Practical**	
Course Code: **BSOMP203**	Course Level: 4.5
Type: **Practical**	
Course Credit: 2 credits (1 credit = 30 Hours of Practical work in a Semester)	
Hours Allotted: 60 Hours	
Marks Allotted: 50 Marks	

Course Objectives (CO):

1. Be able to explain the difference between Object Oriented programming and procedural programming and program using more advanced C++ features such as composition of objects, operator overloads, inheritance and polymorphism, file I/O, exception handling, etc.
2. Concept of classes and objects, constructors and destructors, Polymorphism and virtual functions.
3. To make learner understand the microprocessor architecture and memory interface and I/O interfacing with microprocessor with 8085 basic instructions.
4. To understand the assembly programs using 8085 and the concept of looping, counters, and time delays in 8085 with instructions also the concept of stack and subroutine.

Course Outcomes (OC):

OC 1. Understand the concept of OOPs, feature of C++ language, apply various types of Datatypes, Operators, Conversions while designing the program.

OC 2. Understand and apply the concepts of Classes & Objects, friend function, constructors & destructors in program design, various forms of inheritance

OC 3. Understand basic knowledge of microprocessors and understand the architecture of a microprocessor 8085.

OC 4. Map memory with processor understands the instruction set of 8085 and concepts of timers and subrounting.

Syllabus: NEP 2020 w.e.f 2024-25

Sr. No.	Content	Hours
I	**Object Oriented Programming with C++**	
	Practical No. 1	
a	Write a C++ program to create a simple calculator.	
b	Write a C++ program to convert seconds into hours, minutes and seconds.	
c	Write a C++ program to find the volume of a square, cone, and rectangle.	
	Practical No. 2	
a	Write a C++ program to find the greatest of three numbers.	
b	Write a C++ program to find the sum of even and odd n natural numbers	
c	Write a C++ program to generate all the prime numbers between 1 and n, where n is a value supplied by the user	
	Practical No. 3	
a	Write a C++ program using classes and object Student to print name of the student, roll_no. Display the same.	
b	Write a C++ program for Structure bank employee to print name of the employee, account_no. & balance. Display the same also display the balance after withdraw and deposit	
c	Design the class Demo which will contain the following methods: readNo(), factorial() for calculating the factorial of a number, reverseNo() will reverse the given number, isPalindrome() will check the given number is palindrome, isArmstrong() which will calculate the given number is armStrong or not. WherereadNo() will be private method.	
d	Write a program to demonstrate function definition outside class and accessing class members in function definition.	
	Practical No. 4	
a	Write a friend function for adding the two complex numbers, using a single class	
b	Write a friend function for adding the two different distances and display its sum, using two classes.	
c	Write a friend function for adding the two matrix from two different classes and display its sum	
d	Write a Program to find Maximum out of Two Numbers using friend function.	
	Practical No. 5	
a	Design a class Complex for adding the two complex numbers and also show the use of constructor.	
b	Design a class Geometry containing the methods area() and volume() and also overload the area()function	
c	Design a class Static Demo to show the implementation of static variable and static function	
d	Write a C++ program to overload new/delete operators in a class.	
e	Write a C++ Program to generate Fibonacci Series by using Constructor to initialize the Data Members.	
	Practical No. 6	
a	Overload the operator unary(-) for demonstrating operator overloading	
b	Overload the operator + for adding the timings of two clocks, and also pass objects as an argument.	

c	Overload the + for concatenating the two strings. For e.g "Py"	
	Practical No. 7	
a	Implement the concept of method overriding.	
b	Show the use of virtual function	
c	Show the implementation of abstract class.	
	Practical No. 8	
a	Write a C++ Program that illustrate single inheritance.	
b	Write a C++ Program that illustrate multiple inheritance.	
c	Write a C++ Program that illustrate multi-level inheritance.	
d	Write a C++ Program that illustrate Hierarchical inheritance.	
	Practical No. 9	
a	Show the implementation of exception handling	
b	Show the implementation for exception handling for strings	
c	Show the implementation of exception handling for using the pointers.	
	Practical No. 10	
a	Design a class File Demo open a file in read mode and display the total number of words and lines in the file.	
b	Design a class to handle multiple files and file operations	
c	Design a editor for appending and editing the files	
d	Design a class File Demo open a file in read mode and display the total number of words and lines in the file.	

II	**Microprocessor Architecture**	
	1 - Perform the following Operations related to memory locations:	
	a) Exchange the contents of memory locations C200H and C201H.	
	b) Add the contents of memory locations C200H and C201H and place the result in the memory locations C202H and C203H. Subtract the contents of memory location C201H from the memory location C200H and place the result in memory location C004H.	
	2 - Simple assembly language programs I:	
	a) Add the 16-bit number in memory locations C200H and C201H to the 16-bit number in memory locations C202H and C203H. The most significant eight bits of the two numbers to be added are in memory locations C200H and C202H. Store the result in memory locations C204H and C205H with the most significant byte in memory location 4005H.	
	b) Subtract the 16-bit number in memory locations C202H and C203H from the 16- bit number in memory locations C200H and C201H. The most significant eight bits of the two numbers are in memory locations C201H and C203H. Store the result in memory locations C204H and C205H with the most significant byte in memory location C205H.	

	3- Simple assembly language programs II :	
	a) Find the l's complement of the number stored at memory location C200H and store the complemented number at memory location C300H.	
	4 - Register Operations I:	
	a) Write a program to shift 8-bit data four bits right. Assume that data is in register C.	
	b) Program to shift 16-bit data 1 bit left. Assume data is in the HL register pair	
	c) Write a program to count the number of l's in the contents of D register and store the count in the B registers.	
	5 - Multiple memory locations I:	
	a) Multiply two 8-bit numbers stored in memory locations C200H and C201H by repetitive addition and store the result in memory locations C300H and C301H.	
	b) Divide the 16-bit number stored in memory locations C200H and C201H by the 8 bit number stored at memory location C202H. Store the quotient in memory locations C300H and C301H and remainder in memory locations C302H and C303H.	
	6 - Multiple memory locations II:	
	a) Find the number of negative elements (most significant bit 1) in a block of data. The length of the block is in memory location C200H and the block itself begins in memory location C201H. Store the number of negative elements in memory location C300H.	
	b) Find the largest number in a block of data. The length of the block is in memory location C200H and the block itself starts from memory location C201H. Store the Maximum number in memory location C300H. Assume that the numbers in the block are all 8-bit unsigned binary numbers.	
	7 - Calculations with respect to memory locations:	
	a) Write a program to sort given 10 numbers from memory location C200H in the ascending order.	
	b) Calculate the sum of a series of even / odd numbers from the list of numbers. The length of the list is in memory location C200H and the series itself begins from memory location C201H. Assume the sum to be an 8 bit number so you can ignore carries and store the sum at memory location C250H.	
	8- Calculations with respect to memory locations:	
	a) Find the square of the given numbers from memory location C100H and store the result from memory location C200H.	

	b) A list of 50 numbers is stored in memory, starting at C200H. Find the number of negative, zero and positive numbers from this list and store these results in memory locations C300H, C301H, and C302H respectively.	
	Total Hours	**60**

Programme Name: **F Y B. Sc (Information Technology)**	**Semester: II**

Course Category/Vertical: Minor	
Name of the Dept: **Science and Technology**	
Course Title: **Numerical Methods**	
Course Code: **BSN204**	Course Level:4.5
Type: **Theory**	
Course Credit: 2 credits	
Hours Allotted: 30 Hours	
Marks Allotted: 50 Marks	

Course Objectives:

1. To be able to precisely solve problems using mathematical modeling & find solution for a solvable to unsolvable problems.

2. To find an answer or solution close to answer, without even knowing what the answer is

Course Outcomes:

Learners will be able to,

CO1: Understand the numerical technique to find the roots of non linear equation & difference operator with use of interpolation

CO2: Understand the numerical differentiation & integration.

Description the course:	As an IT student, learning numerical methods gives you a strong foundation in mathematical modeling and computational approaches, which are useful in a variety of fields and occupations.

Syllabus: NEP 2020 w.e.f 2024-25

Unit No.	Content	Hours
I	**Introduction**: Differential Equations, Matrix Analysis, Matrix Eigenvalue Problem, Errors and Approximations, Iterative Methods. **Numerical Solution of Equations of a Single Variable:** Numerical Solution of Equations, Bisection Method, Regular Falsi Method, Fixed Point Method, Newton's raphson Method, Secant Method. **Numerical Solution of Systems of Equations:** Linear Systems of Equations, Numerical Solution of Linear Systems, Gauss Elimination Method. **Interpolation**: forward difference, Backward difference, Newton's forward difference interpolation, Newton's Backward difference Interpolation, Polynomial Regression, and Polynomial Interpolation.	15
II	**Numerical Differentiation and Integration:** Numerical Differentiation, Numerical Integration: Trapezoidal, Simpson $1/3^{rd}$ rule, Simpsons $3/8^{th}$ rule. **Numerical solution of 1st & 2nd Order differential equation:** Euler's method, Modified Euler's method, Runge-katta method for 1st and 2nd order differential equation	15
	Total Hours	30

References:

Sr.No	Title	Authors	Publisher	Edition	Year
1	Numerical Methods for Engineers and Scientists Using MATLAB	Ramin S. Esfandiar	CRC Press	2nd	2017
2	Introductory Methods of Numerical Method	S. S. Sastry	PHI	5th	2012
3.	Numerical methods	T Veerarajun T Ramachadran	Tata Mc Graw Hill	7th	2011

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Programme Name: **FYB.Sc (Information Technology)**	**Semester: II**
Course Category/Vertical: Open Elective	
Name of the Dept: **Science and Technology**	
Course Title: **Financial Markets**	
Course Code: **BSF205**	Course Level: **4.5**
Type: **Theory**	
Course Credit: 2 Credit	
Hours Allotted: 30 Hours	
Marks Allotted: 50 Marks	
Course Objectives:	
1. To provide students with the complete understanding of Indian financial Markets and its evolution. 2. To give an overview of financial markets, its classification and importance	
Course Outcomes:	
CO1. After the successful completion of the course the student will have Knowledge about Indian financial Markets as well as a brief understanding of financial systems in other nations. CO2. Students will be aware about financial markets and its types.	

Description the course:	Basic Knowledge of Indian Financial Market , Types and Understanding of Financial System

Syllabus: NEP 2020 w.e.f 2024-25

Unit No.	Content	Hours
I	**Module-1: Indian Financial System And Financial Markets** An introduction to the financial system, Components of Financial System Financial Markets, Definition, Functions Classification: Primary Market & Secondary Market Financial Markets Structure, Financial instruments	15
II	**Module-2: Commodity And Derivative Market** Introduction to Commodities Market - Meaning History & Origin, Types of Commodities Traded, Structure of Commodities Market in India Participants in Commodities Market, Introduction to Derivatives Market – Meaning, Elements of a Derivative Contract, Types of Derivatives, Types of Underlying Assets Participants in Derivatives Market, Difference Between Forwards & Futures	15
	Total Hours	**30**

References:

- Financial Services and Markets By Dr.S. Gurusamy- Thomson Publication

- Banking & Financial Markets in India By Niti Bhasin - New NC Century

- Indian Financial System By Dr.S.C.Bihari - International Book House Pvt Ltd

- Financial Institutions And Markets By Bhole and Mahakud – Mc Graw Hill

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Programme Name: **FYB.Sc. (Information Technology)**	**Semester: II**
Course Category: Open Elective	
Name of the Dept: **Science and Technology**	
Course Title: **Introduction to Corporate Law**	
Course Code: **BSI206**	Course Level: 4.5
Type: Theory	
Course Credit: 2 Credits	
Hours Allotted: 30 Hours	
Marks Allotted: 50 Marks	
Course Objectives: 1: To acquaint students with corporate business laws in India. 2: To acquaint students with changing trends in the corporate legislation and its implementation in decision making and operations.	
Course Outcomes: CO1: Student will be able to understand corporate business laws in India. CO2: Students will be able to adapt to the changing trends in the corporate legislations and exploit the opportunities to strengthen their competitive advantages.	
Relevance: 1. Basic knowledge about formation of company is acquired. 2. Knowledge of Intellectual Properties gained.	
Scope: 1. Individuals would be able to incorporate corporate entity of their own 2. Individual would be able to register Intellectual Property. 3. With registered IPs, proprietors stand to earn royalties and other commercial rewards.	

Syllabus: NEP 2020 w.e.f 2024-25

Unit No.	Content	Hours
I	**COMPANIES ACT, 2013** Nature, Features and Classification of Companies Advantages of companies as against other organizations Formation of companies Roles, Duties and Responsibilities of Key Managerial Personnel Corporate Governance & Social Responsibilities	15
II	**INTELLECTUAL PROPERTY RIGHTS** Definition, Features and Classification of IPRs Advantages of IPRs to the proprietary / inventors The Patents Act, 1970 The Copyrights Act, 1957 The Trademarks Act, 1999	15
	Total Hours	**30**

References:

- Taxmann, Companies Act 2013
- M.C.Bhandari, Guide to Company Law Procedures, LexisNexis Butterworths Wadhwa, Nagpur
- A.K. Mujumdar, Dr. G.K. Kapoor: Company Law and Practice; Taxmann, New Delhi.
- V.S. Datey: Corporate and Securities Law; Taxmann, New Delhi.
- B. L. Wadhera on patent, Trademarks, and copyright law.
- P. Narayan on intellectual property law.

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Programme Name: F Y **B.Sc (Information Technology)**	**Semester: II**

Course Category/Vertical: Vocational Skill Course

Name of the Dept: **Science and Technology**

Course Title: **Fundamental of Digital Electronics**

Course Code: **BSE207**	Course Level:4.5

Type: Theory

Course Credit: 2 credits

Hours Allotted: 30 Hours

Marks Allotted: 50 Marks

Course Objectives:

1: To introduce the basics of logic in digital electronics & interpret, analyze the conversions of number systems & Boolean expressions and design simple logic circuits using tools such as Boolean Algebra and Karnaugh Mapping.

2: To understand the state of a memory cell and its types using flip-flops & create simple digital systems using counters, registers & implement its application

Course Outcomes:

CO1: Apply number conversion techniques in real digital systems & Solve Boolean algebra expressions & derive and design logic circuits by applying minimization in SOP and POS forms

CO2: Design and develop Combinational and Sequential circuits & understand and develop digital Applications

Description the course:	Digital electronics finds applications in numerous fields such as telecommunication, Industrial automation & Embedded system. Digital electronics expertise is pervasive across various sectors, driven by technological advancements, innovation, and the increasing integration of digital technologies into everyday life and industrial processes.

Syllabus: NEP 2020 w.e.f 2024-25

Unit No.	Content	Hours
I	**Digital Systems and Binary numbers** Introduction to Number systems, Positional Number systems, Conversions (converting between bases), non-positional number systems, Binary Codes, number representation and storage in computer system. **Logic gates and Logic Circuits** Basic and Universal Gates **Boolean algebra and Gate level minimization** Introduction, Postulates of Boolean Algebra, Two Valued Boolean Algebra, Principle of Duality, Basic Theorems of Boolean Algebra, Boolean Functions and their Representation, Gate-Level Minimization	15
II	**Combinational logic** Introduction, Analysis and Design Procedure for Combinational Logic Circuits, Types of Combinational Circuit. **Sequential circuits** Introduction, Latch, Flip-Flops, Registers, Counters, Review Questions **Applications** Bit Arithmetic and Logic unit, Carry look ahead generator, Binary Multiplication and Division algorithm, Booth's multiplication algorithm	15
	Total Hours	**30**

References:

Sr.No	Title	Author	Publisher	Edition	Year
1.	Fundamentals of Digital Electronics and Logic Design	Subir Kumar Sarkar, Asish Kumar De, Souvil Sarkar	Pan Stanford Publishing	1st	2014
2.	Digital Electronics Principles, Design and Applications	Anil K Maini	Wiley	1st	2007
3.	Fundamental of Information Technology	Srivastava Cheton	Kalyani Publisher	2nd	2009

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Programme Name: **FYB.Sc (Information Technology)**	**Semester: II**
Course Category/Vertical: Skill Enhancement Course	
Name of the Dept: **Science and Technology**	
Course Title: **Fundamental of Digital Electronics Practical**	
Course Code: **BSEP2011** Course Level:4.5	
Type: **Practical**	
Course Credit: 2 credits	
Hours Allotted: 60 Hours	
Marks Allotted: 50 Marks	
Course Objectives: 1. To apply and test the gates learnt using various IC's . 2. To evaluate the Boolean expression to reduce and minimize the gates used	

Course Outcomes: Learners will be able to,
   CO1. Construct basic and universal logic circuits & Verify the functionalities of various IC's.
   CO2. Design circuits using K-maps minimization technique & test Encoders, Decoders, Multiplexers and Demultiplexers	

Description the course:	The practical knowledge gained by students of IT in digital electronics prepares them for careers in hardware design, embedded systems development, telecommunications for communication protocol , testing & troubleshooting & safety compliance.

Syllabus: NEP 2020 w.e.f 2024-25

Sr. No	Content	Hours
I	**Study of basic gates :** A. To verify the truth tables of OR, AND, NOT B. To study IC 7404,7432, 7408	
II	**Study of universal gates:** A. To verify the truth tables of NAND, NOR To study IC 7400, 7402	
III	**Study of Boolean expressions** A. To verify De Morgan's laws B. Implement the given expression using a minimum number of gates	
IV	**Design and implement code converters** A. Design the circuit and implement Binary to BCD code converter B. Design the circuit and implement Binary to XS-3 code converter	
V	**Implement Adder circuits** A. Design the circuit and implement Half Adder B. Design the circuit and implement Full Adder	
VI	**Implement Subtractor circuits** A. Design the circuit and implement Half Subtractor B. Design the circuit and implement Full Subtractor	
VII	**Implement Encoders** Design and implement 8: 3 encoder	
VIII	**Implement Decoders** Design and implement 3:8 decoder	
IX	**Multiplexers** Design and implement 4:1 multiplexer	
X	**Demultiplexer** . Design and implement 1:4 Demultiplexers	
	Total Hours	**60**

References:

Sr.No	Title	Author	Publisher	Edition	Year
1.	Fundamentals of Logic Design	Charles H Roth, Jr. , Larry L Kinney	Cengage Learning	7th	2014
2.	Digital Electronics Principles, Design and Applications	Anil K Maini	Wiley	1 st	2007

Programme Name: FYB.Sc. (Information Technology)	Semester: II
Course Category/Vertical: Ability Enhancement Course	
Name of the Dept: **Science and Technology**	
Course Title: **Corporate Communication – II**	
Course Code: **BSW208** Course Level:4.5	
Type: **Theory**	
Course Credit: 2 credits	
Hours Allotted: 30 Hours	
Marks Allotted: 50 Marks	

Course Objectives:

1. To inculcate basic soft skills in learners and develop their leadership skills
2. To develop the overall personality of students by enabling them to adopt effective time management skills, becoming aware about emotional intelligence, learning about personal branding and make learners aware about basic etiquettes to be followed in personal and professional lives

Course Outcomes:

CO1. Learners would develop effective soft skills and leadership skills and would be able to differentiate between listening and hearing and its impact on communication
CO2. Learners would develop their personality, learn time management skills, etiquettes, develop emotional intelligence along with their personal branding skills

Description the course: .	Soft Skills are an integral part of individual development. The course will introduce the learners to the soft skills required for communication in the business world as well as in personal lives. They would be able to showcase the same in the required scenarios in the professional world. Effective learning of soft skills would enable the learners to upgrade their skills and grab positions like soft skill trainers and personality grooming professionals.

Syllabus: NEP 2020 w.e.f 2024-25

Unit No.	Content	Hours
I	**Introduction to Soft Skills – I** **Soft skills** – Meaning, features, scope, importance, relevance of soft skills in the corporate world, relevance of soft skills in personal space, Soft skills v/s hard skills **Listening skills** – Meaning, Importance, Essentials of good listening skills, Qualities of a good listener, Types of listening skills, Barriers to effective listening, Process of listening, Active v/s Passive Listening **Leadership** – Meaning, Attributes of a good leader, Styles of leadership, Leading through change	15
II	**Personality Development and Etiquettes** **Personality** – Meaning, Determinants of personality, Personality Traits – Locus of Control, Type A and Type B Personality, Machiavellianism, Self-Monitoring **Time Management** – Meaning, Importance, principles of time management, 4 P's, 4D's of time management, Challenges in time management, Tips for good time management. **Etiquettes** – Meaning, Importance, Ethics v/s Etiquettes. **Types of Etiquettes** – Telephone Etiquettes, Email Etiquettes, Meeting Etiquettes, Dining Etiquettes, Cubicle Etiquettes, Dressing and Grooming Etiquettes, Social media Etiquettes, Internet Etiquettes, Workplace Etiquettes	15
	Total Hours	**30**

References:

1. Daniel Coleman, Emotional Intelligence, Bantam Book, 20 ICT Academy of Kerala, "Life Skills for Engineers", McGraw Hill Education (India) PrivateLtd.,2016.

2. Caruso, D. R. and Salovey P, "The Emotionally Intelligent Manager: How to Develop and Use the Four Key Emotional Skills of Leadership", John Wiley & Sons, 2004.

3. Kalyana, "Soft Skill for Managers"; First Edition; Wiley Publishing Ltd, 2015.

Programme Name: FYB.Sc(Informationn Technology)	Semester:II
Course Category/Vertical: Value Education Course	
Name of the Dept: **Science and Technology**	
Course Title: **Green Technology – II**	
Course Code: **BSG209** Course Level:4.5	
Type: Theory	
Course Credit: 2 credits	
Hours Allotted: 30 Hours	
Marks Allotted: 50 Marks	

Course Objectives:

1. Understand issues and modern approaches of Green Computing and alternatives for cooling your data center and the need for making computer networks and communications energy efficient.
2. Understand cloud computing in the context of environmental sustainability and various elements of clouds that contribute to total energy consumption

Course Outcomes:

CO1. Develop knowledge about the concept green IT standards and certifications related to sustainable IT products as well as Describe green IT in relation to technology.

CO2. Evaluate IT use in relation to environmental perspectives and Formulate plans for reducing IT heating and cooling requirements as well as Implement Green IT in RealLife

Description the course:	The course introduces the learners to the concept of sustainable approach to IT resource management, focusing on minimizing environmental impact in the context of environmental concerns. The learners could upgrade their current understanding towards Green IT practices, reducing energy consumption and electronic waste, promoting efficient, cost-effective, and environmentally sustainable IT systems. Students would be able to explore new areas of IT professionals with expertise in Green IT.

Syllabus: NEP 2020 w.e.f 2024-25

Unit No.	Content	Hours
I	**Overview and Issues**: Problems: Toxins, Equipment Disposal, Company's Carbon Footprint: Measuring, 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, Power Consumption, Reducing Power Use, Data De-Duplication, Virtualization, Monitors, Power Supplies, Wireless Devices	15
II	**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, Datacentre Design, Centralized Control, Design for Your Needs. Green Networks and Communications: Introduction, Objectives of Green Network Protocols, Green Network Protocols and Standards. **Green Cloud Computing and Environmental Sustainability :** Introduction, What is Cloud Computing ?, Cloud Computing and Energy Usage Model: A Typical Example, Features of Clouds Enabling Green Computing, Green Cloud Architecture	15
	Total Hours	**30**

References:

1) Green IT Toby Velte, Anthony Velte, & Robert Elsenpete McGraw Hill 2008
2) Harnessing Green It Principles And Practices San Murugesan, G.R. Gangadharan WILEY
3) Green Computing Tools and Techniques for Saving Energy, Money and Resources Bud E. Smith CRC Press 2014.

Scheme of Examination

Course with Credit	External Examination	Internal Examination	Total
Credit 4	60 marks	40 marks	100 marks
Credit 2	30 marks	20 marks	50 marks

Internal Examination Structure (Theory)

Internal examination	40 marks	20 marks
Project Presentation/Case Study /Quiz/Group Discussion	10 marks	5 marks
Assignment /Active class Participation/Attendance	10 marks	5 marks
Class test	20 marks	10 marks
Total	40 marks	20 marks

Structure for Class Test

For 10 marks	
Q1. Fill in the blank (5 Marks) a. b. c. d. e. Q2. Answer in one or two lines (5 Marks) a. b. c. d. e.	10 Marks

External Examination (For 60 Marks)

Q. No.	External	Marks: 60
Q .1 (From Module 1)	Answer the following questions (Any 3) A B C D E F	15 Marks
Q. 2 (From Module 2)	Answer the following questions (Any 3) A B C D E F	15 Marks
Q. 3 (From Module 3)	Answer the following questions (Any 3) A B C D E F	15 Marks
Q. 4 (From Module 4)	Answer the following questions (Any 3) A B C D E F	15 Marks

External Examination (For 30 Marks)

Q. No.	External	Marks: 30
Q .1 (From Module 1)	Answer the following questions (Any 3) A B C D E F	15 Marks
Q. 2 (From Module 2)	Answer the following questions (Any 3) A B C	15 Marks

	D		
	E		
	F		

Practical Exam Evaluation: 50 marks

1	Practical Question 1	20
2	Practical Question 1	20
3	Journal	5
4	Viva Voce	5