Bharatiya Vidya Bhavan's

M. M. College of Arts, N.M. Institute of Science, H.R.J. College of Commerce. (Bhavan's College) Autonomous

(Affiliated to University of Mumbai)

Syllabus for: F. Y. B. Sc (Information Technology)
Program: B. Sc (Information Technology)

Program Code: B. Sc. IT
Course Code: BH.USIT

Choice Based Credit System (CBCS)

with effect from academic year 2023-24(under NEP2020)

PROGRAM OUTCOMES

	PO Description
PO	**A student completing Bachelor's Degree in Science program will be able to:**
PO-1	Create, select, and apply appropriate current techniques, resources in the core areas of information management, programming, networking, and cyber security, web systems and green technologies.
PO-2	Identify, formulate, use research literature, analyze information technology related problems and design the system or provide the solution for the problem.
PO-3	Apply ethical principles and commit to professional ethics and responsibilities and norms of the Information Technology practice.
PO-4	Understand the impact of the Information Technology solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO-5	Design solutions for system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the societal, and environmental considerations.
PO-6	Function in multidisciplinary teams by working cooperatively, creatively and responsibly as a member of a team.

PROGRAM SPECIFIC OUTCOMES

	Description
PSO	**A student completing Bachelor's Degree in BSc. Program with the subject of Information Technology will be able to**
PSO-1	think analytically, creatively and critically in developing robust, extensible and highly maintainable technological solutions to simple and complex problems.
PSO-2	analyze a problem, design, implement the computing requirements, and evaluate computer-based system, process, component, or program to meet desired needs.
PSO-3	manage complex IT projects with consideration of the human, financial and environmental factors
PSO-4	adhere to the highest standards of ethics, including relevant industry and organizational codes of conduct
PSO-5	communicate effectively with a range of audiences both technical and non-technical.
PSO-6	develop an aptitude to engage in continuing professional development

PROGRAM OUTLINE

YEAR	SEMESTER	COURSE TYPE	COURSE CODE	COURSE TITLE	CREDITS
F.Y.B. Sc IT	I	MAJOR	BH.USIT.MAJ101	Imperative and Object Oriented Programming	03
F.Y.B. Sc IT	I	MINOR-A	BH.USIT.MIN101	Database Management System	03
F.Y.B. Sc IT	I	MINOR-B	BH.USIT.MIN102	Digital Logic Design	03
F.Y.B. Sc IT	I	OPEN ELECTIVE	BH.USIT.OE101	Numerical Method -I	04
F.Y.B. Sc IT	I	VOCATIONAL SKILL ENHANCEMENT COURSE	BH.USIT.VSEC101	Microprocessor & Microcontroller	03
F.Y.B. Sc IT	I	ABILITY ENHANCEMENT COURSE	BH.USIT.AEC101	Technical Communication Skills - I	02
F.Y.B. Sc IT	I	VALUE EDUCATION COURSE	BH.USIT.VEC101	Technical Communication Tools -I	02
F.Y.B. Sc IT	I	IKS	BH.USIT.IKS101	Indian Knowledge System	02
F.Y.B. Sc IT	I	MAJOR	BH.USIT.MAJ1P1	Imperative and Object Oriented Programming Practical	01
F.Y.B. Sc IT	I	MINOR-A	BH.USIT.MIN1P1	Database Management System Practical	01
F.Y.B. Sc IT	I	MINOR-B	BH.USIT.MIN1P2	Digital Logic Design Practical	01
F.Y.B. Sc IT	I	VOCATIONAL SKILL ENHANCEMENT COURSE	BH.USIT.VSEC1P1	Microprocessor & Microcontroller Practical	01
F.Y.B. Sc IT	II	MAJOR	BH.USIT.MAJ201	Python Programming	03
F.Y.B. Sc IT	II	MINOR-A	BH.USIT.MIN201	Data Analytics	03
F.Y.B. Sc IT	II	MINOR-B	BH.USIT.MIN202	Operating System	03
F.Y.B. Sc IT	II	OPEN ELECTIVE	BH.USIT.OE201	Numerical Method-II	04

F.Y.B. Sc IT	II	VOCATIONAL SKILL ENHANCEMENT COURSE	BH.USIT.VSEC201	Web programming	03
F.Y.B. Sc IT	II	ABILITY ENHANCEMENT COURSE	BH.USIT.AEC201	Technical Communication Skills- II	02
F.Y.B. Sc IT	II	VALUE EDUCATION COURSE	BH.USIT.VEC201	Technical Communication Tools -II	02
F.Y.B. Sc IT	II	MAJOR	BH.USIT.MAJ2P1	Python Programming Practical	01
F.Y.B. Sc IT	II	MINOR-A	BH.USIT.MIN2P1	Data Analytics Practical	01
F.Y.B. Sc IT	II	MINOR-B	BH.USIT.MIN2P2	Operating System Practical	01
F.Y.B. Sc IT	II	VOCATIONAL SKILL ENHANCEMENT COURSE Practical	BH.USIT.VSEC2P1	Web programming Practical	01

SEMESTER I & II:(As per NEP 2020)

PREAMBLE

The B.Sc. Information Technology programme was started in 2001 with an aim to make the students employable and impart industry oriented training. The main objectives of the course are:

- to think analytically, creatively and critically in developing robust, extensible and highly maintainable technological solutions to simple and complex problems.
- 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.
- to be capable of managing complex IT projects with consideration of the human, financial and environmental factors.
- to work effectively as a part of a team to achieve a common stated goal.
- to adhere to the highest standards of ethics, including relevant industry and organizational codes of conduct.
- to communicate effectively with a range of audiences both technical and non-technical.
- to develop an aptitude to engage in continuing professional development.
- The new syllabus is aimed to achieve the objectives. The syllabus spanning three years covers the industry relevant courses. The students will be ready for the jobs available in different fields like:
- Software Development (Programming)
- Website Development
- Mobile app development
- Embedded Systems Programming
- Embedded Systems Development
- Software Testing
- Networking
- Database Administration
- System Administration
- Cyber Law Consultant
- GIS (Geographic Information Systems)
- IT Service Desk
- Security

And many others The students will also be trained in communication skills and green computing.

DETAILED SYLLABUS

SEMESTER I

Programme: BSc.IT		Semester: I	
Course: **Imperative and Object Oriented Programming(Major)**		Course Code: BH.USIT.MAJ101	
Teaching Scheme		**Evaluation Scheme (Theory)**	
Lecture (Periods per week)	**Credits (Theory)**	**Internal Continuous Assessment (ICA) (Marks - 40)**	**Semester End Examination (SEE) (Marks: 60)**
3	**3**	**40**	**60**

COURSE OBJECTIVES:

- Understand object oriented programming concepts
- learn c++ program using composition of objects, polymorphism operator overloads.
- implement encapsulation, inheritance ,file I/O, exception handling.

COURSE OUTCOMES: After successful completion of the course, the learner should be able to
- Understand and apply C++ concepts, Operators and design the program.
- Apply the object oriented concepts ,design Classes & Objects, friend function, constructors and destructors,analyze polymorphism in program
- Design & implement various forms of inheritance, explore various Stream classes, I/O operations and exception handling.

Detailed Syllabus: (per session plan)

Unit	Description	Periods
1	STARTING WITH C++: C++ Overview, features C++ Character Set, C++ Tokens, Variables, Counting Tokens, Data Types, Qualifiers, Range of Data Types, Structure of a C++ Program, Styles of, Writing C++ Programs, Operators and Expressions, Declaring Constants, Type Conversion, Decision Making: An Introduction, Unconditional Branching Using Goto , Introduction to Looping Operators , Scope Resolution Operator, Reference Variables, New and Delete operators, Malloc Vs. New ,Pointer Member Operators, FUNCTION IN C++: Function Declaration/Prototyping ,The Main	15

	Function in C++,Recursion ,Call by Reference ,Call by Reference Vs Call by Address , Return by Reference ,Inline Function ,Function Overloading ,Function with Default Arguments	
2	CLASS AND OBJECTS IN C++ : Working with Class, Structure in C++ ,Accessing Private Data Passing and Returning Object ,Array of Object ,Friend Function ,Static Class Members ,Constant Member Function CONSTRUCTOR AND DESTRUCTOR: Introduction, Constructor with Parameters, Implicit and Explicit Call to Constructor, Copy Constructor, Dynamic Initialization of Objects, Dynamic Constructor, Destructor OPERATOR OVERLOADING: Introduction, Operator Overloading with Binary Operator Overloading Assignment (=) Operator, Overloading Unary Operators, Overloading Using Friend Function, Rules of Operator Overloading, Type Conversion.	15
3	INHERITANCE IN C++: Introduction, Types of Inheritance, Public, Private and Protected Inheritance, Multiple Inheritance, Hierarchical Inheritance, Virtual Base Class, Constructor and Destructor in Inheritance POINTERS TO OBJECTS AND VIRTUAL FUNCTIONS: Pointer to Objects, The This Pointer, What is Binding in C++? , Virtual Functions ,Working of a Virtual Function ,Rules for Virtual Function ,Pure Virtual Function and Abstract Class ,Object Slicing ,Some Facts about Virtual Function ,Virtual Destructor INPUT-OUTPUT AND MANIPULATORS IN C++: Introduction, C++ Stream Classes, Unformatted Input/Output, Formatted Input /Output Operations, Manipulators	15
	Total	**45**
Reference Books: (Latest Edition) 1. Demystified ObjectOriented Programming with C++Dorothy R. KirkPackt Publishing Lt 1stEdition 2021 2. C++ Programming: An Object-Oriented Approach Behrouz A. Forouzan , Richard F.Gilberg McGraw-Hill Education 1st edition 2020	

Programme: BSc.IT	Semester: I
Course: **Imperative and Object Oriented Programming Practical (Major)**	Course Code: BH.USIT.MAJ1P1
Teaching Scheme	**Evaluation Scheme (Practical)**
Practical (Periods per week per batch)	**Credits (Theory)**	**Semester End Practical Examination (Marks: 50)**
2	**1**	**50**

PRACTICALS (Section 1): Imperative and Object Oriented Programming Practical

Unit No.	Description
1	a) Write a c++ program to find greatest of three numbers. b) Write a c++ program to check if an integer n is a prime number. c) Using user defined functions, write a c++ program to generate n terms of Fibbonacci series where n is a value supplied by user.
2	a) Design a c++ class Student to accept name of the student , roll_no, percentage. Display the same. Use class and object. b) Write a C++ program for structure bank employee to print name of the employee, account_no and balance. Display the same also display the balance after withdraw and deposit. c) Write a C++ program to design a class having static member function named showcount() which has the property of displaying the number of objects created of the class.
3	a) design a c++ code to demonstrate friend function. b) Design a C++ code to overload binary ++ operator(for eg, string object, any user defined class).
4	a) Design a class for single level inheritance using public and private type derivation. b) Design a class for multiple inheritance. c) Implement the hierarchical inheritance.
5	a) Implement a class to show the use of virtual function. b) Show the implementation of abstract class. c) Implement the concept of method overriding.

6	a) String operations for string length and string concatenation. b) String operations for string reverse, string comparison. c) Console formatting functions.
7	a) Show the implementation for exception handling. b) show the implementation for exception handling for strings. c) Show the implementation of exception handling for using the pointers.
8	a) Design a class FileDemo 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.

Programme: BSc.IT		Semester : I	
Course: Database Management Systems(Minor-A)		Course Code: BH.USIT.MIN101	
Teaching Scheme		**Evaluation Scheme(Theory)**	
Lecture (Periods per week)	**Credits (Theory)**	**Internal Continuous Assessment (ICA) (Marks - 40)**	**Semester End Examination (SEE) (Marks: 60)**
3	**3**	40	60

Course Objectives:

- To Develop understanding of concepts and techniques for data management and learn about widely and used systems for implementation and usage.
- To Develop understanding of concepts and techniques for data management along with concepts of database at advance level.
- To Develop understanding of concepts and techniques for real life application

COURSE OUTCOMES: After successful completion of the course, the learner should be able to

- Master various concepts of database and relational database model
- Design an ERD model for any Real-life Application .
- Use the database management system softwares using query language.

Detailed Syllabus: (per session plan)

Unit	Description	Periods
1	**Introduction to Databases and Data Models:** relational databases, database architecture, the importance of data models, Basic building blocks. **ER Diagram Database design and ER Model:** overview, ER Model, ER Diagrams, ERD Issues, Codd's rules.	15
2	**Relational Algebra and Calculus:** Relational algebra: introduction, Selection and projection, set operations, renaming, Joins, Division, syntax, semantics. Operators, grouping and ungrouping, relational comparison. Calculus: Tuple relational calculus, Domain relational Calculus, calculus vs algebra **Constraints, Views and SQL**: Types of constrains, Introduction to views, updates on views, comparison between tables and views	15
3	**SQL:** data definition, aggregate function, Null Values, nested sub queries, Joined relation. **Transaction management and Concurrency:** Control Transaction management: ACID properties, serializability and concurrency control,	15

	Lock based concurrency control (2PL, Deadlocks), Time stamping methods, optimistic methods, database recovery management.	
	Total	**45**

Reference Books:(Latest Edition)

1. Database System and Concepts by A Silberschatz, H Korth, S Sudarshan, McGraw- Hill.
2. Database Systems by Rob Coronel, Cengage Learning, Twelfth Edition.
3. Programming with PL/SQL for Beginners by H. Dand, R. Patil and T. Sambare, X –Team.
4. Introduction to Database System by C.J.Date, Pearson.

Programme: BSc.IT			Semester: I	
Course: **Database Management Systems Practical (Minor-A)**			**Course Code: BH.USIT.MIN1P1**	
Teaching Scheme			**Evaluation Scheme (Practical)**	
Practical (Periods per week per batch)		**Credits (Theory)**	**Semester End Practical Examination (Marks: 50)**	
2		**1**	**50**	
PRACTICALS (Section 1): Database Management Systems Practical				
Unit No.	**Description**			
1	SQL Statements – 1 · Writing Basic SQL SELECT Statement · Restricting and Sorting Data			
2	SQL Statements – 2 · Single-Row Functions · Displaying Data from Multiple Tables			
3	SQL Statements – 3 · Aggregating Data Using Group Functions · Subqueries			
4	Manipulating Data · Using INSERT statement · Using DELETE statement · Using UPDATE statement			
5	· Creating and Managing Tables · Including Constraints			
6	Creating and Managing other database objects · Creating Views · Other Database Objects · Controlling User Access			
7	Using SET operators, Date/Time Functions,			

	· Using SET Operators · Datetime Functions	
8	Using GROUP BY clause (advanced features) and advanced subqueries · Enhancements to the GROUP BY Clause · Advanced Subqueries	

Programme: BSc.IT		Semester: I	
Course: Digital Logic Design(Minor-B)		Course Code: BH.USIT.MIN102	
Teaching Scheme		**Evaluation Scheme (Theory)**	
Lecture (Periods per week)	**Credits (Theory)**	**Internal Continuous Assessment (ICA) (Marks - 40)**	**Semester End Examination (SEE) (Marks: 60)**
3	**3**	**40**	**60**

COURSE OBJECTIVES:

- To know the concepts of digital electronics, apply circuit components and prepare truth table
- To understand the working of combinational circuits
- To Analyze sequential circuits working

COURSE OUTCOMES: After successful completion of the course, the learner should be able to

- Realize, identify the structure of various number systems and its application in digital design.
- Analyze and design various combinational circuits.
- Design sequential circuits,flip-flops, counters registers .

Detailed Syllabus: (per session plan)

Unit	Description	Periods
1	Number System: Analog System, digital system, number system, binary number system, octal number system, hexadecimal number system conversion of number system, floating point numbers, binary coded decimal, Excess – 3 code, Binary Arithmetic: Binary addition, Binary subtraction, Negative number representation, Subtraction using 1's complement and 2's complement, Binary multiplication and division, Arithmetic in octal number system, Arithmetic in hexadecimal number system. Boolean Algebra and Logic Gates, Logic (AND OR NOT), Boolean theorems,	15

	Boolean Laws, De Morgan's Theorem, Perfect Induction, Reduction of Logic expression using Boolean Algebra, Deriving Boolean expression from given circuit, and Exclusive OR gates, Universal Logic gates, Implementation of other gates using universal gates, Input bubbled logic, Minterm, Maxterm Karnaugh Maps minterms and sum of minterm form, maxterm and Product of maxterm form, Reduction technique using Karnaugh – 2/3/4 variable K-maps. Grouping of variables in K-maps.	
2	Combinational Logic Circuits, Arithmetic Circuits: Adder, BCD Adder, ,Parallel Adder, Binary Subtractors, BCD Subtractor, Comparator Encoder and Decoder: Multiplexer, Demultiplexer, Decoder	15
3	Sequential Circuits: Flip-Flop, Terminologies used, S-R flip-flop, D flip-flop, JK flipflop, Race-around condition, Master – slave JK flip-flop, T flipflop. Counters: synchronous, asynchronous counters it's working. Registers: parallel and shift registers, serial shifting, serial–in serial–out, serial–in Parallel–out, parallel–in parallel–out.	15
	Total	**45**

Reference Books: (Latest Edition)
1. Digital Electronics and Logic Design N. G. Palan   2. Make Electronics Charles Platt   3. Modern Digital Electronics R. P. Jain   4. Digital Principles and Applications Malvino and Leach   5. Digital Electronics: Principles, Devices and Applications, Anil K. Maini Wiley

Programme: BSc.IT		Semester: I	
Course: Digital Logic Design Practical (Minor-B)		Course Code: BH.USIT.MIN1P2	
Teaching Scheme		**Evaluation Scheme (Practical)**	
Practical (Periods per week per batch)	**Credits (Theory)**	**Semester End Practical Examination (Marks: 50)**	
2	**1**	**50**	

PRACTICALS (Section 1): Digital Logic Design practical

Unit No.	Description
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. c. Implementation of Basic Logic Gates using Universal gates.
2	Implement the given Boolean expressions using minimum number of gates. a. Verifying De Morgan's laws. b. Implement other given expressions using minimum number of gates. c. Implement other given expressions using minimum number of ICs.
3	Implement combinational circuits. Design and implement combinational circuit based on the problem given and minimizing using K-maps.
4	Implement code converters. a. Design and implement Binary – to – BCD code converter b. Design and implement Binary – to – XS-3 code converter
5	Implement Adder and Subtractor Arithmetic circuits. a. Design and implement Half adder and Full adder. b. Design and implement BCD adder, XS – 3adder. c. Design and implement binary subtractor.
6	Implement Arithmetic circuits. a. Design and implement a 2-bit by 2-bit multiplier. b. Design and implement a 2-bit comparator.
7	Implement Encode and Decoder and Multiplexer and Demultiplexer. a. Design and implement 8:3 encoder. b. Design and implement 3:8 decoder. c. Design and implement 4:1 multiplexer. Study of IC 74153, 74157 d. Design and implement 1:4 demultiplexer. Study of IC 74139
8	Study of flip-flops and counters. a. Study of IC 7473, IC 7474, IC 7476. b. Conversion of Flip-flops. c. Design of 3-bit synchronous counter using 7473 and required gates. d. Design of 3-bit ripple counter using IC 7473.

Programme: BSc.IT		Semester: I	
Course: Numerical Method -I (Open Elective)		Course Code: BH.USIT.OE101	
Teaching Scheme		**Evaluation Scheme (Theory)**	
Lecture (Periods per week)	Credits (Theory)	Internal Continuous Assessment (ICA) (Marks - 40)	Semester End Examination (SEE) (Marks: 60)
4	4	40	60

COURSE OBJECTIVES:

- To understand and apply Mathematical Modelling Techniques and to recognize different types of error and Conservation Law.
- To find solutions to complex algebraic and transcendental equations. To determine the unknown values using Interpolation techniques.
- To calculate solutions to simultaneous equations and carry out integration to find out are under curve.
- To relate two sets of value using correlation and regression and derive a equation of relationship.

COURSE OUTCOMES: After successful completion of the course, the learner should be able to

- Solve the mathematical problems computationally by developing codes working in embedded systems.
- Apply various mathematical formulations on real life engineering and business problems.
- Interpret and estimate the chances and effects of an event.
- Apply discrete and continuous probability distributions to various practical problems

Detailed Syllabus: (per session plan)

Unit	Description	Periods
1	**Errors:** Errors and Their Computations, Rounding off numbers to n significant digits, to n decimal places, Absolute, relative and percentage errors, A general error formula. **Interpolation**: Finite Difference Operators and their relations, Detection of Errors using difference table, Differences of a polynomial, Newtons Interpolation Formulae (Forward and Backward), Lagrange′s Interpolation Formula, Divided differences and Newtons General Interpolation formula.	15

2	**Solution of Algebraic and Transcendental Equations:** Bisection method, The method of False position, The iteration method, Aitkens Δ^2 process, Newton- Raphson Method. **Numerical Differentiation and Integration:** Numerical Differentiation, Numerical Integration, General quadrature formula, Trapezoidal rule, Simpsons $1/3^{rd}$ rule, Simpsons $3/8^{th}$ rule	15
3	**Linear Programming:** Lines and hyperplanes - convex sets, convex hull - Formulation of a Linear Programming Problem - Theorems dealing with vertices of feasible regions and optimality - Graphical solution - Simplex method (including Big-M method and two-phase method) - Revised simplex method - Dual problem - Duality theory - Dual simplex method - Sensitivity analysis	15
4	**Random variables:** Review of probability; Probability distributions with discrete and continuous random variables - Joint probability mass function, Marginal distribution function, Joint density function – Independent random variables - Mathematical Expectation - Moment generating function - Chebyshev′s inequality - Weak law of large numbers - Bernoulli trials Theoretical **Probability Distributions**: Binomial, Negative Binomial, Geometric, Poisson, Normal, Rectangular, Exponential, Gaussian, Beta and Gamma distributions and their moment generating functions; Fit of a given theoretical model to an empirical data.	15
	Total	**60**

Reference Books: (Latest Edition)
- Numerical Methods for Engineers and Scientists, MK Jain, SRK Iyengar and RK Jain, New Age International.
- Applied Numerical Analysis, C.F.Gerald and P.O.Wheatley, Addison-Wesley.
- An Introduction to Numerical Analysis, K. Atkinson, Numerical Analysis, John Wiley.
- Introduction to Numerical Analysis, F.B. Hildebrandt, Courier Coporation.

Programme: BSc.IT		Semester: I	
Course: Microprocessor & Microcontroller (Vocational Skill Enhancement)		Course Code: BH.USIT.VSEC101	
Teaching Scheme		Evaluation Scheme (Theory)	
Lecture (Periods per week)	Credits (Theory)	Internal Continuous Assessment (ICA) (Marks - 40)	Semester End Examination (SEE) (Marks: 60)
3	3	40	60

COURSE OBJECTIVES:

- To introduce the learner with the architecture and operation of typical microprocessor and microcontroller.
- To familiarize the learners with the programming and interfacing of microprocessors and microcontrollers.
- To understand the concepts of interrupts.

COURSE OUTCOMES: After successful completion of the course, the learner should be able to

- Program the microprocessor and microcontroller for developing an application.
- Demonstrate programming ability using the various addressing modes and data transfer instructions of the target microprocessor and microcontrollers.
- Understand the interrupt handling effectively.

Detailed Syllabus: (per session plan)

Unit	Description	Periods
1	**Introduction:** To Introduce the basics of microprocessors and microcontrollers technology and related applications. Study of the architectural details and programming of 16 bit 8086 microprocessor and its interfacing with various peripheral ICs.	15
2	**System BUS Architecture:** INTEL 8086 Microprocessor: Pin Functions, Architecture, Addressing Modes, Instruction Set, Timing Diagrams, Interrupts, Programming Examples.	15
3	**The 8051 Microcontrollers:** Overview of 8051 family, 8051 Microcontroller hardware, Input/output pins, Ports, and Circuits, External Memory. Factors to be considered in selecting a controller, Different addressing modes supported by 8051, The 8051 instruction set.	15
	Total	45

Reference Books: (Latest Edition)

1. Microcomputer systems: The 8086/8088 Family-Architecture, Programming and design by Yu Cheng Liu, Glenn A. Gibson, Prentice hall of India.
2. Microprocessor 8086: Architecture Programming and Interfacing by Sunil Mathur.
3. Introduction to Embedded systems by Shibu KV, Tata McGraw-Hill.
4. The 8051 Microcontroller and Embedded systems by Muhammad Ali Mazidi, Pearson.

Programme: BSc.IT			Semester: I
Course: **Microprocessor & Microcontroller Practical (Vocational Skill Enhancement)**			**Course Code: BH.USIT.VSEC1P1**
Teaching Scheme			**Evaluation Scheme (Practical)**
Practical (Periods per week per batch)		**Credits (Theory)**	**Semester End Practical Examination (Marks: 50)**
2		**1**	**50**

PRACTICALS (Section 1): Microprocessor & Microcontroller Practical

Unit No.	Description
1	Programs for 16bit arithmetic operations of 8086 (using various addressing modes)
2	Program for sorting an array for 8086
3	Program for searching for a number or character in a string for 8086
4	Program for string manipulations for 8086
5	Program for digital clock design using 8086
6	**A.** Serial I / O: Configure 8051 serial port for asynchronous serial communication with serial port of PC exchange text messages to PC and display on PC screen. Signify end of message by carriage return. **B.** To demonstrate interfacing of seven-segment LED display and generate counting from 0 to 99 with fixed time delay. **C.** Interface 8051 with D/A converter and generate square wave of given frequency on oscilloscope.
7	**A.** Interface 8051 with D/A converter and generate triangular wave of given frequency on oscilloscope. **B.** Using D/A converter generate sine wave on oscilloscope with the help of lookup table stored in data area of 8051.
8	Interface stepper motor with 8051 and write a program to move the motor through a given angle in clock wise or counter clock wise direction.

Programme: BSc.IT		Semester: I
Course: Technical Communication Skills - I (Ability Enhancement Course)		Course Code: BH.USIT.AEC101
Teaching Scheme		Evaluation Scheme (Theory)
Lecture (Periods per week)	Credits (Theory)	Semester End Examination (SEE) (Marks: 50)
2	2	50

COURSE OBJECTIVES:

- To study the basic of communication functions for internal as well as outside the organization.
- To study the various level of the hierarchy and the ways of communication inside the organization and communicate with the different bodies in the market.

COURSE OUTCOMES: After successful completion of the course, the learner should be able to
- Understand the nature, concept and basics of communications.
- Understand various functions and ways of manager towards inside and outside of the organization and applying them to the modern business world.

Detailed Syllabus: (per session plan)

Unit	Description	Periods
1	**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	15
2	**Writing Business Messages and Documents**: Business writing, Business Correspondence, Instructions Business Reports and Proposals, Career building and Resume writing. **Developing Oral Communication Skills for Business**: Effective Listening, Business Presentations and Public Speaking, Conversations, Interviews	15
	Total	30

Reference Books: (Latest Edition)

1. Communication Skills Dr. Nageshwar Rao Dr. Rajendra P. Das Himalaya Publishing House.
2. Basic Business Communication: Skills for Empowering the Internet Generation Lesikar Raymond V and Marie E. Flatley. Tata McGrawHill
3. Business Communication Edited by Meenakshi Raman and Prakash Singh Oxford University Press

Programme: BSc.IT		Semester: I	
Course: Technical Communication Tools -I (Value Education Course)		Course Code: BH.USIT.VEC101	
Teaching Scheme		**Evaluation Scheme (Theory)**	
Lecture (Periods per week)	**Credits (Theory)**	**Semester End Examination (SEE) (Marks: 50)**	
2	2	50	

COURSE OBJECTIVES:

- To express thoughts feelings and ideas of learners by using features of MS Word.
- To articulate formal and informal reports.

COURSE OUTCOMES: After successful completion of the course, the learner should be able to

- Understand the basics of communications tools using MS word.
- Understand various functions and ways of manager towards inside and outside of the organization and applying them to the modern business world.

Detailed Syllabus: (per session plan)

Unit	Description	Periods
1	Use of word processing tools for communication. Use of various tools like spell checker, header, footer etc. Make formal and informal letters, creating resume. Designing brochures and flyers using templates in word.	15
2	Writing reports, minutes of meeting, action plan using MS word. Communication- Email, Mail Merge, Video and Web Conferencing using different online platforms available. Communication exercise - word processing tool for different personal correspondences.	15
		30

Reference Books: (Latest Edition)

1. Communication Skills Dr. Nageshwar Rao   Dr. Rajendra P. Das Himalaya Publishing House.
2. Basic Business Communication: Skills for Empowering the Internet Generation Lesikar Raymond V and Marie E. Flatley. Tata McGrawHill
3. Business Communication Edited by Meenakshi Raman and Prakash Singh Oxford University Press

Programme: BSc.IT			Semester: I	
Course: Indian Knowledge System			Course Code: BH.USIT.IKS101	
Teaching Scheme			**Evaluation Scheme (Theory)**	
Lecture (Periods per week)		**Credits (Theory)**	**Semester End Examination (SEE) (Marks: 50)**	
2		2	50	

COURSE OBJECTIVES:

- To introduce to the overall organization of Indian Knowledge system
- To learn the multi-dimensional nature of IKS and their importance in the contemporary society

COURSE OUTCOMES: After successful completion of the course, the learner should be able to

- Understand overview of Indian Knowledge system.
- Explore application potential of Indian Knowledge system.

Detailed Syllabus: (per session plan)

Unit	Description	Periods
1	**Indian Knowledge System:** An Introduction, Indian Knowledge System: An Overview, The Vedic Corpus, Philosophical Systems, Wisdom through the Ages. **Foundational Concepts for Science and Technology:** Linguistics, Number System and Units of Measurement, Knowledge: Framework and Classification	15
2	**Science, Engineering and Technology in IKS:** Mathematics, Astronomy, Engineering and Technology: Metals and Metalworking, Engineering and Technology: Other Applications, Town Planning and Architecture **Humanities and Social Sciences in IKS**: Health, Wellness and Psychology, Governance and Public Administration	15
	Total	30

Reference Books: (Latest Edition)

1. Introduction To Indian Knowledge System : Concepts And Applications, Mahadevan, B.Bhat, Vinayak Rajat, Nagendra Pavana R.N.
2. Online Resources, https://iksindia.org

Programme: BSc.IT		Semester: II	
Course: **Python Programming (Major)**		Course Code: BH.USIT.MAJ201	
Teaching Scheme		**Evaluation Scheme (Theory)**	
Lecture (Periods per week)	**Credits (Theory)**	**Internal Continuous Assessment (ICA) (Marks - 40)**	**Semester End Examination (SEE) (Marks: 60)**
3	**3**	40	60

COURSE OBJECTIVES:

- To acquire core python features to write python programs and apply python syntax to design user defined functions
- To demonstrate the use of the built-in data structures like list and dictionary, tuple and understand file operations
- Interpret and develop Object Oriented programing in Python , Construct basic GUI applications and develop the ability to write database applications using python

COURSE OUTCOMES: After successful completion of the course, the learner should be able to

- Acquire basic principles of Python programming language
- Implement data structures List, Tuples and Dictionaries in Python
- Identify, Apply the object-oriented concepts of data encapsulation, inheritance, and polymorphism using python to develop small-scale software, GUI applications, implement database operations

Detailed Syllabus: (per session plan)

Unit	Description	Periods
1	Introduction: The Python Programming Language, History, features, Installing Python, Running Python program, Debugging: Syntax Errors, Runtime Errors, Semantic Errors, Experimental Debugging, Formal and Natural Languages, The Difference Between Brackets, Braces, and Parentheses, Variables and Expressions Values and Types, Variables, Variable Names and Keywords, Type conversion, Operators and Operands, Expressions, Interactive Mode and Script Mode, Order of Operations. Conditional Statements: if, if-else, nested if –else	15

	Looping: for, while, nested loops Control statements: Terminating loops, skipping specific conditions	P a g e
	Functions: Function Calls, Definitions and Uses, Flow of Execution,	
	Parameters and Arguments, Variables and Parameters Are Local, Stack	
	Diagrams, Fruitful Functions and Void Functions, Composition,	
	Modules: Importing module,Importing with from, Return Values	
	Strings: A String Is a Sequence, Traversal with a for Loop, String Slices, Strings Are Immutable, Searching, Looping and Counting, String Methods, The in Operator, String Comparison, String Operations.	
2	Lists: Values and Accessing Elements, Lists are mutable, traversing a List, Deleting elements from List, Built-in List Operators, Concatenation, Repetition, In Operator, Built-in List functions and methods	15
	Tuples: Accessing values in Tuples, Tuple Assignment, Tuples as return values, Variable-length argument tuples, Basic tuples operations, Concatenation, Repetition, in Operator, Iteration, Built-in Tuple Functions	
	Dictionaries: Creating a Dictionary, Accessing Values in a dictionary, Updating Dictionary, Deleting Elements from Dictionary, Properties of Dictionary keys, Operations in Dictionary, Built-In Dictionary Functions, Built-in Dictionary Methods	
	Files: Text Files, The File Object Attributes, DirectoriesExceptions: Built-in Exceptions, Handling Exceptions, Exception with Arguments, User-defined Exceptions, Regular Expressions – Concept of regular expression, various types of regular expressions, using match function.	
3	Classes and Objects:Class Definition, Creating Objects, Instances as Arguments, Instances as return values, Built-in Class Attributes, Inheritance, Method Overriding, Data Encapsulation, Data Hiding	15
	Multithreaded Programming: Thread Module, creating a thread, synchronizing threads.	
	Creating the GUI Form and Adding Widgets: Widgets: Button, Canvas, Checkbutton, Entry, Frame, Label, Listbox, Menubutton, Menu, Message, Radiobutton, Scale, Scrollbar, text, Toplevel, Spinbox, PanedWindow, LabelFrame, tkMessagebox. Handling Standard	

	attributes and Properties of Widgets,Layout Management Storing Data in MySQL Database via GUI: Connecting to a MySQL	
	database from Python, Configuring the MySQL connection, Designing the Python GUI database, Using the INSERT , UPDATE ,DELETE command, Storing and retrieving data from MySQL database.	
	Total	**45**

Reference Books: (Latest Edition)

1. Think Python Allen Downey O'Reilly
2. Python GUI Programming Cookbook Burkhard A. Meier Packt
3. Introduction to Problem Solving with Python E. Balagurusamy TMH 1 st
4. Murach's Python programming Joel Murach, Michael Urban SPD
5. Object-oriented Programming in Python Michael H. Goldwasser, David Letscher Pearson Prentice Hall
6. Exploring Python Budd TMH

Programme: BSc.IT		Semester: II
Course: Python Programming Practical (Major)		Course Code: BH.USIT.MAJ2P1
Teaching Scheme		**Evaluation Scheme (Practical)**
Practical (Periods per week per batch)	**Credits (Theory)**	**Semester End Practical Examination (Marks: 50)**
2	**1**	**50**

PRACTICALS (Section 1): Python Programming Practical

Unit No.	Description
1	Write python programe for the following
	a. Accept an integer number n from the user and check whether the number is even or odd,
	b. Write a program to generate the Fibonacci series.
	c. Write a user defined function to check the input value is Armstrong and also write the function for Palindrome.
	d. Write a recursive function to print the factorial for a given number.
2	a. Write a function that takes a character (i.e. a string of length 1) and returns True if it is a vowel, False otherwise.

	b. Define a function that computes the length of a given list or string.
	c. Define a procedure histogram() that takes a list of integers and prints a histogram to the screen.
	For example, histogram([4, 9, 7]) should print the following:
	****
	*********
	*******
3	a.Write the program for the following:
	a Input list elements and write a program that prints out all the elements of the list that are less than number n.
	b.Write a program that takes two lists and returns True if they have at least one common member.
	c. Write a Python program to clone or copy a list
4	Write the program for the following:
	a. Write a Python script to sort (ascending and descending) a dictionary by value.
	b. Write a Python script to concatenate following dictionaries to create a new one.
	c. Write a Python program to sum all the items in a dictionary.
5	Write the program for the following:
	a. Write a Python program to read an entire text file.
	b. Write a Python program to append text to a file and display the text.
	c. Write a Python program to read last n lines of a file
6	Write the program for the following:
	a. Design a class that store the information of student and display the same
	b. Implement the concept of inheritance, different types of inheritance using python
7	a.Write a program to implement exception handling.
	b.Write code to develop and use user defined modules

| 8 | Write the program for the following:

a. Try to configure the widget with various options like: bg="red", family="times", size=18

b. Try to change the widget type and configuration options to experiment with other widget types like Message, Button, Entry, Checkbutton, Radiobutton, Scale etc. |
|---|---|

Programme: BSc.IT		Semester: II	
Course: Data Analytics (Minor-A)		Course Code: BH.USIT.MIN201	
Teaching Scheme		**Evaluation Scheme (Theory)**	
Lecture (Periods per week)	**Credits (Theory)**	**Internal Continuous Assessment (ICA) (Marks - 40)**	**Semester End Examination (SEE) (Marks: 60)**
3	3	40	60

COURSE OBJECTIVES:

- To develop the Data Processing skill in MS Excel
- To develop the Data Analysis and Data Visualization skill

COURSE OUTCOMES: After successful completion of the course, the learner should be able to

- Understand and apply the basic concepts used for data analysis
- Use the advanced data analytical and data visualization techniques

Detailed Syllabus: (per session plan)

Unit	Description	Periods
1	Introduction to MS Excel - MS Excel Options – Ribbon - Sheets - Saving Excel File as PDF, CSV and Older versions - Using Excel Shortcuts - Copy, Cut, Paste, Hide, Unhide, and Link the Data in Rows, Columns and Sheet - Using Paste Special Options - Formatting Cells, Rows, Columns and Sheets - Protecting & Unprotecting Cells, Rows, Columns and Sheets. Functions: - Logical Functions - Date and Time Functions - Information Functions -Math and Trigonometry	15
2	Functions - Statistical Functions - Text Functions - Charts:- Simple Bar Chart – Multiple Bar Chart – Subdivided Bar Chart – Pie Chart – Donut Chart - Line Chart – Histogram – Scatter Plot - Radar Chart – Bubble Chart – BiAxis chart – Plotting Density Function and Distribution Function. Vlookup, Hlookup , Index, Address, Match, Offset, Transpose - Conditional Formatting - Data Sorting and Filtering	15

	- Pivot Tables - Chart Templates – Adding Add-Ins in Excel - Solver – Goal Seek.	
3	Statistical measures – Mean, Variance, Percentiles, Quartlies - Pearson correlation – Spearman's Rank correlation – Parametric tests – test for single population mean , equality of mean for two independent sample , paired t test, testing correlation coefficient, Non parametric tests – Mann Whitney U test.	15
	Total	**45**

Reference Books: (Latest Edition)

1. Microsoft Excel Functions & Formulas by Bernd Held.

2. Excel Functions and Formulas Paperback by Bernd Held.

3. Microsoft Excel Data Analysis and Business Modeling Paperback by Winston.

Programme: BSc.IT		Semester: II	
Course: Data Analytics Practical		**Course Code: BH.USIT.MIN2P1**	
Teaching Scheme		**Evaluation Scheme (Practical)**	
Practical (Periods per week per batch)	**Credits (Theory)**	**Semester End Practical Examination (Marks: 50)**	
2	**1**	50	

PRACTICALS (Section 1): Data Analytics Practical

Unit No.	Description
1	a. Design and Prepare class time table using different Text formatting b. Create a payslip with details of employee salary c. Prepare an Excel sheet to calculate students result and grades based on their marks
2	Prepare an excel sheet to enter some strings and perform the following text functions a. Find length of strings b. Convert strings into uppercase and lowercase. c. Remove extra spaces in the strings d. Extract substrings from the strings
3	Draw different types of charts for weather analysis of 5 success five years
4	Prepare an excelsheet for creating a pie chart for data analysis(for eg budget, equity stock).
5	Prepare an excel sheet to illustrate the sorting , filtering.
6	Prepare an excel sheet to illustrate the concept of sub totals.
7	Prepare an excel sheet for restricting data entry using data validation feature.
8	Create and demonstrate to analyze the data using a pivot table.

Programme: BSc.IT		Semester: II	
Course: Operating System (Minor-B)		Course Code: BH.USIT.MIN202	
Teaching Scheme		**Evaluation Scheme (Theory)**	
Lecture (Periods per week)	Credits (Theory)	Internal Continuous Assessment (ICA) (Marks - 40)	Semester End Examination (SEE) (Marks: 60)
3	3	40	60

COURSE OBJECTIVES:
- To Learn the mechanisms adopted by operating systems for process management and IPC.
- To Make the learners clear with various views and management policies adopted by O.S. as pertaining with Memory Management, File and I/O operations, Deadlocks.
- To brief the learners about functionality of various OS like Linux and Windows XP and multiple processors

COURSE OUTCOMES: After successful completion of the course, the learner should be able to
- Analyze the structure of OS and basic architectural components involved in design.
- Describe the various Data Structures and algorithms used for File Management, Memory Management, Deadlocks and I/O Management.
- Conceptualize the components involved in designing a contemporary as well modern Operating System.

Detailed Syllabus: (per session plan)

Unit	Description	Periods
1	Introduction, Processes and Threads, **Memory Management:** Memory abstraction: address spaces, virtual memory, page replacement algorithms, design issues for paging systems, implementation issues, and segmentation. **File Systems:** Files, directories, file system implementation, file-system management and optimization, MS-DOS file system.	15
2	**Input-Output:** Principles of I/O hardware, Principles of I/O software. **Deadlocks:** introduction to deadlocks, the ostrich algorithm, deadlock detection and recovery, deadlock avoidance, deadlock prevention, issues**.**	15
3	Virtualization: History, requirements for virtualization, type 1 and 2 hypervisors, techniques for efficient virtualization, hypervisor microkernels, memory virtualization, I/O virtualization. **Case Study on LINUX ,Windows and Android**	15

History Overview, Processes, Memory management, I/O, file system, security.	
Total	**45**

Reference Books:

1. Modern Operating Systems, Andrew S Tanenbaum, Herbert Bos, Pearson publisher, latest edition.
2. Operating Systems – Internals and Design Principles : Willaim Stallings
3. Operating System Concepts : Abraham Silberschatz, Peter B. Galvineg Gagne Wiley publisher

Programme: BSc.IT		Semester: II	
Course: Operating System Practical (Minor-B)		**Course Code: BHITMIN2P2**	
Teaching Scheme		**Evaluation Scheme (Practical)**	
Practical (Periods per week per batch)	**Credits (Theory)**	**Semester End Practical Examination (Marks: 50)**	
2	**1**	**50**	

PRACTICALS (Section 1): Operating System Practical

Unit No.	Description
1	Installation of virtual machine software.
2	Installation of Linux operating system (RedHat / Ubuntu) on virtual machine.
3	Installation of Windows operating system on virtial machine.
4	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, strings, chmod
5	Linux commands: Working with files: a. ps, top, kill, pkill, bg, fg, b. grep, locate, find, locate. c. date, cal, uptime, w, whoami, finger, uname, man, df, du, free, whereis, which. d. Compression: tar, gzip.
6	Windows (DOS) Commands – 1 a. Date, time, prompt, md, cd, rd, path. b. Chkdsk, copy, xcopy, format, fidsk, cls, defrag, del, move.
7	Windows (DOS) Commands – 2 a. Diskcomp, diskcopy, diskpart, doskey, echo b. Edit, fc, find, rename, set, type, ver
8	Working with Windows and Linux Desktop and utilities

Programme: BSc.IT		Semester: II	
Course: Numerical Method-II (Open Elective)		Course Code: BH.USIT.OE201	
Teaching Scheme		**Evaluation Scheme (Theory)**	
Lecture (Periods per week)	**Credits (Theory)**	**Internal Continuous Assessment (ICA) (Marks - 40)**	**Semester End Examination (SEE) (Marks: 60)**
4	4	40	60

COURSE OBJECTIVES:

●   To understand and apply Mathematical Modelling Techniques and to recognize different types of error and Conservation Law.

●   To find solutions to complex algebraic and transcendental equations. To determine the unknown values using Interpolation techniques.

●   To calculate solutions to simultaneous equations and carry out integration to find out are under curve.

●   To relate two sets of value using correlation and regression and derive a equation of relationship.

COURSE OUTCOMES: After successful completion of the course, the learner should be able to

●   Solve the mathematical problems computationally by developing codes working in embedded systems.

●   Apply various mathematical formulations on real life engineering and business problems.

●   Interpret and estimate the chances and effects of an event.

●   Apply discrete and continuous probability distributions to various practical problems

Detailed Syllabus: (per session plan)

Unit	Description	Periods
1	**Numerical solution of first order ordinary differential equations**: Taylor Series method, Euler′s method, Modified Euler′s methods, Runge – Kutta Methods 2nd and 4th order Multistep (explicit and implicit) methods for initial value problems, Linear and nonlinear boundary value problems, Quasilinearization and Shooting methods.	15
2	**Least Squares Curve Fitting Procedures:** Fitting a straight line. Nonlinear curve fitting: Power function $y = ax^n$, polynomials of degree 2 and Exponential function $y = ce^{dx}$	15

	Correlation and Regression: Scatter diagram - Linear and polynomial fitting by the method of least squares - Linear correlation and linear regression - Rank correlation - Correlation of bivariate frequency distribution	
3	**Polynomial and System of linear algebraic equations:** Polynomial equations, Sturm sequence, Birge-vieta method, Graeffe′s roots squaring method, Linear systems of equations, Direct methods - Triangularization method, Cholesky method, Iteration methods - Jacobi iteration method	15
4	**Eigenvalue problems:** Eigenvalues and eigenvectors, Jacobi methods for symmetric matrices, Rutihauser method for arbitrary matrices, Power method, Inverse Power method	15
	Total	**60**

Reference Books:
- Numerical Methods for Engineers and Scientists, MK Jain, SRK Iyengar and RK Jain, New Age International.
- Applied Numerical Analysis, C.F.Gerald and P.O.Wheatley, Addison-Wesley.
- An Introduction to Numerical Analysis, K. Atkinson, Numerical Analysis, John Wiley.
- Introduction to Numerical Analysis, F.B. Hildebrandt, Courier Coporation.

Programme: BSc.IT		Semester: II	
Course: Web Programming (Vocational Skill Enhancement)		Course Code: BH.USIT.VSEC201	
Teaching Scheme		**Evaluation Scheme (Theory)**	
Lecture (Periods per week)	Credits (Theory)	Internal Continuous Assessment (ICA) (Marks - 40)	Semester End Examination (SEE) (Marks: 60)
3	3	40	60

COURSE OBJECTIVES:
- To understand basic web pages design using HTML5, Apply CSS to design, presenting information , Incorporate navigation .
- To understand scripting language java script for event handling, add interactive components to web pages.
- To Use PHP server side scripting to transfer data

COURSE OUTCOMES: After successful completion of the course, the learner should be able to
- Select and apply HTML 5,CSS for processing, information in web pages. using visual elements, controls.
- Develop the ability to analyze, identify the technology required to build and implement Event handling in web pages using client-side scripting.
- Identify, transfer and manipulate data , using server-side scripting.

Detailed Syllabus: (per session plan)

Unit	Description	Periods
1	Internet and the World Wide Web ,e-commerce, video conferencing, Internet service providers ,domain name server, internet address browsers, search engine,URL, HTTP protocol ,types, web saver – apache, IIS, proxy server HTML5 Formatting tags, lists and backgrounds, Creating hyperlinks and anchors. Style sheets, CSS formatting text using style sheets, formatting paragraphs using style sheets. HTML5 -Page layout and navigation Layout, Semantic tags, image map, Tables, Formatting, Forms Input Control , creating user forms: creating basic form, using check boxes and option buttons, creating lists, additional input types in HTML5,Incorporating sound and video: audio and video in HTML5, HTML multimedia basics, embedding video clips, incorporating audio on web page	15
2	Java Script: Introduction, Client-Side JavaScript, Server-Side JavaScript, JavaScript Objects, JavaScript Security,	15

	Operators: Assignment Operators, Comparison Operators, Arithmetic Operators, % (Modulus), ++(Increment), --(Decrement), -(Unary Negation), Logical Operators, Short-Circuit Evaluation, String Operators, Special Operators, ?: (Conditional operator), , (Comma operator), delete, new, this, void Statements: Break, comment, continue, delete, do...while, export, for, for...infunction, if...else, import, labelled, return, switch, var, while, with, Core JavaScript (Properties and Methods of Each) : Array, Boolean, Date, Function, Math, Number, Object, String, regExp Document and its associated objects: document, Link, Area, Anchor, Image, Applet, Layer Events and Event Handlers : General Information about Events, Defining Event Handlers, event, onAbort, onBlur, onChange, onClick , onDblClick , onDragDrop , onError, onFocus, onKeyDown, onKeyPress, onKeyUp, onLoad, onMouseDown, onMouseMove, onMouseOut, onMouseOver, onMouseUp, onMove, onReset, onResize, onSelect, onSubmit, onUnload	
3	**PHP:** Why PHP and MySQL? Server-side scripting, PHP syntax and variables, comments, types, control structures, branching, looping, termination, functions, passing information with PHP, GET, POST, formatting form variables, superglobal arrays, strings and string functions, regular expressions, arrays, number handling, basic PHP errors/problems	15
	Total	**45**

Reference Books: (Latest Edition)

- Web Design The Complete Reference Thomas Powell Tata McGraw Hill
- HTML5 Step by Step Faithe Wempen Microsoft Press.
- JavaScript 2.0: The Complete Reference Thomas Powell and Fritz Schneider TMH
- PHP Project for Beginners Sharanam Shah ,Vaishali Shah SPD.
- PHP 6 and MySQL Bible Steve Suehring ,Tim Converse ,Joyce Park Wiley.

Programme: BSc.IT		Semester: II
Course: **Web Programming Practical** (Vocational Skill Enhancement Course)		Course Code: BH.USIT.VSEC2P1
Teaching Scheme		**Evaluation Scheme (Practical)**
Practical (Periods per week per batch)	**Credits (Theory)**	**Semester End Practical Examination (Marks: 50)**
2	1	50

PRACTICALS (Section 1): Web Programming Practical

Unit No.	Description
1	**Use of Basic Tags** a. Design a web page using different text formatting tags. b. Design a web page with links to different pages and allow navigation between web pages. c. Design a web page demonstrating all Style sheet types
2	**Image maps, Tables, Forms and Media** a. Design a web page with Imagemaps. b. Design a web page demonstrating different semantics c. Design a web page with different tables. Design a webpages using table so that the content appears well placed. d. Design a web page with a form that uses all types of controls. e. Design a web page embedding with multimedia features.
3	**Java Script** a. Using JavaScript design, a web page that prints factorial/Fibonacci series/any given series. b. Design a form and validate all the controls placed on the form using Java Script. c. Write a JavaScript program to display all the prime numbers between 1 and 100.
4	**Java Script** a. Write a JavaScript program to accept a number from the user and display the sum of its digits. b. Write a program in JavaScript to accept a sentence from the user and display the number of words in it. (Do not use split () function).
5	**Control and looping statements and Java Script references** a. Design a web page demonstrating different conditional statements. b. Design a web page demonstrating different looping statements. c. Design a web page demonstrating different Core JavaScript references (Array, Boolean, Date, Function, Math, Number, Object, String, regExp).
6	**Basic PHP I** a. Write a PHP Program to accept a number from the user and print it factorial. b. Write a PHP program to accept a number from the user and print whether it is prime or not.
7	**Basic PHP II** a. Write a PHP code to find the greater of 2 numbers. Accept the no. from the user b. Write a PHP program to display the following Binary Pyramid:

	1 0 1 1 0 1 0 1 0 1
8	**String Functions and arrays** a. Write a PHP program to demonstrate different string functions. b. Write a PHP program to create one dimensional, associative array.

Programme: BSc.IT		Semester: II	
Course: **Technical Communication Skills-II(Ability Enhancement Course)**		Course Code: BH.USIT.AEC201	
Teaching Scheme		**Evaluation Scheme (Theory)**	
Lecture (Periods per week)	**Credits (Theory)**	**Semester End Examination (SEE) (Marks: 50)**	
2	2	50	

COURSE OBJECTIVES:

- To study the basic of communication functions for internal as well as outside the organization.
- To study the various level of the hierarchy and the ways of communication inside the organization and communicate with the different bodies in the market.

COURSE OUTCOMES: After successful completion of the course, the learner should be able to

- Understand the nature, concept and basics of communications.
- Understand various functions and ways of manager towards inside and outside of the organization and applying them to the modern business world.

Detailed Syllabus: (per session plan)

Unit	Description	Periods
1	**Active Listening** Introduction, Type of listening, Traits of good listener, Active vs Passive listening, Implication of effective listening **Effective presentation Strategies** Introduction, Defining purpose, Analyzing audience and Locale, Organizing contents, preparing outline, Visual Aids, Understanding Nuances of delivery, Kinesics **Interview** Introduction, objectives, types of interview, job interviews	15
2	**Communication across Functional areas** Financial communication, MIS **Ethics in Business Communication** Ethical communication, Values, ethics and communication, ethical dilemmas facing manager, strategic approaches to corporate ethics **Creating and Using Visual Aids** Object, Models, Handouts, Charts and Graphs, Text Visuals , Formatting Computer generated charts, graphs and visuals	15
	Total	**30**

Reference Books:

1. Communication Skills Dr. Nageshwar Rao   Dr. Rajendra P. Das Himalaya Publishing House.
2. Basic Business Communication: Skills for Empowering the Internet Generation Lesikar Raymond V and Marie E. Flatley. Tata McGrawHill
3. Business Communication Edited by Meenakshi Raman and Prakash Singh Oxford University Press

Programme: BSc.IT		Semester: II	
Course: **Technical Communication Tools -II** (Value Education Course)		Course Code: BH.USIT.VEC201	
Teaching Scheme		**Evaluation Scheme (Theory)**	
Lecture (Periods per week)	Credits (Theory)	Semester End Examination (SEE) (Marks: 50)	
2	2	50	

COURSE OBJECTIVES:

- To express thoughts feelings and ideas of learners by using features of MS Power Point.
- To articulate formal and informal reports.

COURSE OUTCOMES: After successful completion of the course, the learner should be able to

- Understand the basics of communications tools using MS Power Point.
- Understand various functions and ways of manager towards inside and outside of the organization and applying them to the modern business world.

Detailed Syllabus: (per session plan)

Unit	Description	Periods
1	**Use of presentation tools like PowerPoint for communication and presentation skills.** Describe the common user interface; examples of how power point follows the same convention as other office applications, How to start, open,modify and view an existing presentation, steps to print a power point presentation, Powerpoint views, types of views, Use the outline view to create and edit a presentation, display and hide text within the outline view.	15
2	Powerpoint layouts: how to change layouts of objects on an existing slide, Use Microsoft clip gallery to add or change the clip arts on a slide.Apply Design templates on new or an existing presentation, Add transition effects to the slides in a presentation, apply build effects to the bullets and graphical objects in a specific slide.	15
	Total	**30**

Reference Books: (Latest Edition)

- Communication Skills Dr. Nageshwar Rao   Dr. Rajendra P. Das Himalaya Publishing House.
- Basic Business Communication: Skills for Empowering the Internet Generation Lesikar Raymond V and Marie E. Flatley. Tata McGrawHill
- Business Communication Edited by Meenakshi Raman and Prakash Singh Oxford University Press

Theory Examination Pattern:

A) Internal Assessment- 40%- 40 Marks

Sr No	Evaluation type	Marks
1	Internal Class Test with Objective type questions and Short Notes (CIA-I)	20
2	One Assignment (CIA-II)	20
	TOTAL	40

Assignment types can include:

1. Case studies
2. Power Point Presentation
3. Small project & report submission
4. Literature review on recent technologies in IT
5. Preparation of research poster for application of IT

B) External Examination- 60%- 60 Marks Semester End Theory Examination: 60 marks (for offline Mode)

Duration - The examinations shall be of 2 hours duration. Paper Pattern:

1. There shall be 03 question of 20 mark comprising of objective questions and short answer questions.
2. All questions shall be compulsory with internal choice within questions.
3. The unitized questions would have subjective and objective type of questions.

Rubrics of evaluation for ESE

Unit	Knowledge	Understanding	Analysis & critical thinking	Total marks/unit
from all units	6	6	8	20
1	3	3	4	10
2	3	3	4	10
3	3	3	4	10
4	3	3	4	10
Total	18	18	24	60
% Weightage	33.33	33.33	33.34	100

Rubrics of evaluation for CIA-2 Assignment: <u>Presentation/debate</u>

Parameters	Max Marks	Excellent/ Advanced (4point)	Proficient (3point)	Approaching proficiency (2point)	Beginning scale (1point)
CONTENT	10				
Content: Logic	02				
Content: knowledge	03				
Content: Code Elegance-	03				
Content: Demonstration/ Execution/Testing	02				
Content: Modularity level Specifications	-				
Effective communication skill	10				

The course code, Examination pattern, conduction will be as per the guidelines/policy issued by the controller of examination of the college/ guidelines issued by the university.