



**JAI HIND COLLEGE
BASANTSING INSTITUTE OF SCIENCE
&
J.T.LALVANI COLLEGE OF COMMERCE
(AUTONOMOUS)**

"A" Road, Churchgate, Mumbai - 400 020, India.

**Affiliated to
University of Mumbai**

Program: B.Sc.IT

Proposed Courses: Information Technology

Semester I

**CBCS NEP Based Syllabus with effect from the academic year
2023-24**

FYUGP Credit Structure from 2023-24 (Across All courses)										
Level	Sem	Major (Sub-1)	Elective	Minor (Sub-2)	OE	VSC	IKS Generic	OJT, FP, RP, CEP	Cum Cr/Sem	Degree/Cum Cr
						SEC	AEC, VEC	CC		
4.5 (2023-24)	Sem 1	4	0	4	4	4	6	0	22	44 UG certificate
	Sem 2	4	0	4	4	4	4	2	22	
	Cum Cr	8	0	8	8	8	10	2	44	
<p>A student will decide which of the 2 subjects (Sub-1 or Sub-2) will be major and minor at the end of the second semester (ie the first year) Major subject-specific IKS of 2 credits must be done as 2 units (could be 1 unit + 1 unit) from Sem 3 to Sem 6</p> <p>Exit option with a UG Certificate in Major with an additional 4 credits core NSQF course/internship OR continue with Major & Minor</p>										
5 (2024-25)	Sem 3	8	0	4	2	2	2	4	22	88 UG Diploma
	Sem 4	8	0	4	2	2	2	4	22	
	Cum Cr	24	0	16	12	12	14	10	88	
<p>Exit option with a UG Diploma in Major & Minor with an additional 4 credits core NSQF course/internship OR continue with Major & Minor</p>										
5.5 (2025-26)	Sem 5	12	4	2	0	2	0	2	22	132 UG Degree
	Sem 6	12	4	2	0	0	0	4	22	
	Cum Cr	48	8	20	12	14	14	16	132	
6 (2026-27)	Sem 7	12	4	4	0	0	0	2	22	176 UG Honours
	Sem 8	12	4	0	0	0	0	6	22	
	Cum Cr	72	16	20	12	14	14	24	176	
6 (2026-27)	Sem 7	10	4	4	0	0	0	4	22	176 UG Honours with Research
	Sem 8	10	4	0	0	0	0	8	22	
	Cum Cr	68	16	20	12	14	14	28	176	
Four-Year UG Honours with Research Degree with Major and Minor										

PI note: 1 credit = 15 hr of T and 30 hr of P T=Theory P=Practical (dry Lab or wet Lab)/Hands-on/Experiential learning)



FY. B.Sc(Information Technology)

Academic Year 2023-2024

B.Sc.IT NEP based Syllabus Semester I 2023-24

Category	Course Code	Course Title	Lecture/Practical	Credits	Total Credits
Major	JUSIT-DSC101	Introduction to Programming I	45L/15P	3+1	4
Minor	JUSIT-MIN102	Mathematics - I	45L/15P	3+1	4
OE1	JUSIT-OE101	Financial Literacy	30L	2	2
OE2	JUSIT-OE102	Logics, Reasoning and Aptitude	30L	2	2
VSC	JUSIT-VSC101	Computer Oriented Architecture	15L/15P	2	2
SEC	JUSIT-SEC101	Basics of Web designing	15L/15P	2	2
IKS	JUSIT-IKS101	Indian Knowledge System	30L	2	2
VEC	JUSIT-VEC101	Digital Literacy	30L	2	2
AEC	JUSIT-AEC101	English Communication Skill	30L	2	2

Major

Course Code : JUSIT-DSC101	Course Title : Introduction to Programming I	Credits: 03 Lectures/Week: 03
Course description	The purpose of this course is to incorporate programming skills in learners to build their logical and analytical thinking which in turn helps them to solve real world problems.	
Learning objectives	<ul style="list-style-type: none"> ● To learn the fundamental programming concepts and methodologies which are essential to building good C/C++ programs. ● Read, understand and trace the execution of programs written in C Language. ● Understand how to apply the procedure oriented and object-oriented concepts. ● Ability to handle possible errors during program execution. 	
Course Outcomes	<ul style="list-style-type: none"> ● Able to develop C and C++ programs. ● Acquire decision making and looping concepts. ● Design and develop modular programming. ● Explore usage of Functions, Arrays and Effective utilization of pointers and preprocessor directives. 	
	THEORY	45 Lectures
Sub Unit	Unit – I:	15 Lectures
1.	Introduction: Types Operators and Expressions: Arithmetic operators, unary operators, relational and logical operators, assignment operators, assignment operators, the conditional operator, library functions of Programming languages, History, features and application, Simple program logic, program development cycle, pseudocode statements and flowchart symbols, sentinel value to end a program, programming and user environments, evolution of programming models, desirable program characteristics.	
2.	Fundamentals: Structure of a program, Compilation and Execution of a Program, Character Set, identifiers and keywords, data types, constants, variables and arrays, declarations, expressions, statements, Variable definition, symbolic constants.	
3.	Operators and Expressions: Arithmetic operators, unary operators, relational and logical operators, assignment operators, assignment operators, the conditional operator, library functions.	
4	Data Input and output: Single character input and output, entering input data, scanf function, printf function, gets and puts functions, interactive programming.	
5	Conditional Statements and Loops: Decision Making Within a Program, Conditions, Relational Operators, Logical Connectives, If	

	Statement, If-Else Statement, While Loop, Do While, For Loop, Nested Loops, Infinite Loops, Switch Statement.	
	Unit – II:	15 Lectures
1.	Functions: defining a function, accessing a function, passing arguments to a function, specifying argument data types, function prototypes recursion, modular programming and functions, standard library of c functions, prototype of a function, formal parameter list, return type, function call, block structure, passing arguments to a function Arrays: Definition, Processing, passing arrays to functions, multidimensional arrays, arrays and strings.	
2.	Pointers: Fundamentals, Declarations, Pointers Address Operators, Pointer Type Declaration, Pointer Assignment, Pointer Initialization, Pointer Arithmetic, Functions and Pointers, Arrays and Pointers, Pointer Arrays, passing functions to other functions.	
3.	Object Oriented Methodology: Introduction, Advantages and Disadvantages of Procedure Oriented Language, what is Object Oriented? What is Object Oriented Development?, Object Oriented Themes, Benefits and Application of OOPS	
4	Principles of OOPS: OOPS Paradigm, Objects, Classes, Data Abstraction and Data Encapsulation, Inheritance, Polymorphism, Dynamic Binding, Message Passing.	
	Unit – III:	15 Lectures
1.	Classes and Objects: Simple classes (Class specification, class members accessing), Defining member functions, passing object as an argument, Returning object from functions, friend classes.	
2.	Constructors and Destructors: Introduction, Default Constructor, Parameterized Constructor and examples, Destructors	
3.	Polymorphism: Concept of function overloading, overloaded operators, overloading unary and binary operators, overloading comparison operator, overloading arithmetic assignment operator, Data Conversion between objects and basic types	
4	Inheritance: Introduction, understanding inheritance, Advantages provided by inheritance, choosing the access specifier, Derived class declaration, derived class constructors, class hierarchies, multiple inheritance, multilevel inheritance, containership, hybrid inheritance.	
5	Working with Files: Introduction, File Operations, Various File Modes, File Pointer and their Manipulation.	
	Evaluation Scheme I. Continuous Assessment (C.A.) - 25 Marks (i) C.A.-I : Test – 10 Marks of 20 mins. duration (ii) C.A.-II : Case Study/ Assignment/ Problem Solving/Mini Project/ Presentations – 10 Marks	

	<p>(iii) Attendance -05 Marks</p> <p>II. Semester End Examination (SEE)- 50 Marks</p> <p>Q.1 Answer any two -12 Marks</p> <p>Q.2 Answer any two -12 Marks</p> <p>Q.3 Answer any two -12 Marks</p> <p>Q.4 Answer any two -14 Marks</p>	
References:	<ol style="list-style-type: none"> 1. Programming with C, Tata McGRAW-Hill, Byron Gottfried, 1996 2. "C" Programming", Brian W. Kernighan and Denis M. Ritchie, PHI 3. Let us C, Yashwant P. Kanetkar, BPB publication 4. E. Balagurusamy. Object Oriented Programming with C++: Tata McGrawHill 	

<p>Course Code: JUSIT-DSCPR101</p>	<p>Practical Title: Introduction to Programming I Practical (Credits : 01 Practicals/Week: 01)</p>
	<ol style="list-style-type: none"> 1. Basic Programs in C <ol style="list-style-type: none"> a) Write a program to display the message HELLO WORLD. b) Write a program to declare some variables of type int, float and double. Assign some values to these variables and display these values. c) Write a program to find the addition, subtraction, multiplication and division of two numbers. d) Write a program to swap two numbers without using third variable 2. Conditional statements and loops(basic) In C <ol style="list-style-type: none"> e) Write a program to enter a number from the user and display the month name. If number >13 then display invalid input using switch case. f) Write a program to check whether the number is even or odd. g) Write a program to check whether the number is positive, negative or zero. h) Write a program to check whether the entered number is prime or not. i) Write a program to find the largest of three numbers.

- a) Write a program to find the sum of squares of digits of a number.
- b) Write a program to find the sum of numbers from 1 to 100.
- c) Write a program to print the Fibonacci series.
- d) Write a program to find the reverse of a number.
- e) Write a program to find whether a given number is palindrome or not.
- f) Write a program to check whether the entered number is Armstrong or not.

3. Functions and Recursive Functions in C

- a) Function without parameter and without return type.
- b) Function without parameter and with return type.
- c) Function with parameter and without return type
- d) Function with parameter and with return type.
- e) Write a program to find the factorial of a number using a recursive function.
- f) Write a program to find the sum of natural number using a recursive function.

4. Arrays in C

- a) Write a program to find the largest value that is stored in the array.
- b) Write a program using pointers to compute the sum of all elements stored in an array.
- c) Write a program to arrange the 'n' numbers stored in the array in ascending and descending order.
- d) Write a program that performs addition and subtraction of matrices.
- e) Write a program that performs multiplication of matrices.

5. Pointers in C

- a) Write a program to demonstrate the use of pointers.
- b) Write a program to perform addition and subtraction of two pointer variables.

6. Classes and methods

- a) Design an employee class for a. reading and displaying the employee information, the getInfo() and displayInfo() methods will be used respectively. Where getInfo() will be private method.

- b) Design the class student containing getData() and displayData() as two of its methods which will be used for reading and displaying the student information respectively. Where getData() will be private method.
- 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. Where readNo() will be a private method.
- d) Write a program to demonstrate function definition outside class and accessing class members in function definition

7. Using friend functions.

- 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

8. Constructors and method overloading.

- 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 StaticDemo to show the implementation of static variables and static functions.

9. Inheritance

- a) Design a class for single level inheritance using public and private type derivation.
- b) Design a class for multiple inheritance
- c) Implement hierarchical inheritance.

10. File handling

- a) Design a class FileDemo open a file in read mode and

	<p>displays the total number of words and lines in the file.</p> <p>b) Design a class to handle multiple files and file operations</p> <p>c) Design a editor for appending and editing the files</p>
	<p>Evaluation scheme – 25 marks i.e. (50/2 marks)</p> <p>(i) Program – 40 marks</p> <p>(ii) Viva – 5 marks</p> <p>(iii) Journal- 5 marks</p>



Minor

Course Code JUSIT-MIN101	Course Title: Mathematics - I	Credits: 03 Lectures/Week: 03
Course description	The course covers fundamentals of set theory, functions and relations, also logics and validating the reasoning, understanding the probability and graph theory with its applicative area.	
Learning objectives	<ul style="list-style-type: none"> ● Construct correct direct and indirect proofs. ● To develop logical thinking and its application to computer science ● Use counterexamples. ● Apply logical reasoning to solve a variety of problems. 	
Course Outcomes	<ul style="list-style-type: none"> ● Understand a problem description, and then identify, compare, and apply appropriate algorithms to solve it. ● Evaluate different ways to implement an algorithm, and implement it as part of an executable program. ● Formulate statements and problems in logical form ● Understand, at least at a high level, one or more established techniques for automated reasoning and the algorithms involved 	
	THEORY	45 lectures
Sub Unit	Unit – I	15 lectures
1.	<p>The Logic of Compound Statements: Logical Form and Logical Equivalence, Conditional Statements, Valid and Invalid Arguments.</p> <p>Quantified Statements: Predicates and Quantified Statements, Statements with Multiple Quantifiers, Arguments with Quantified Statements.</p>	
2.	<p>Set Theory: Definitions and the Element Method of Proof, Properties of Sets, Disproof, Algebraic Proofs, Boolean Algebras, Russell’s Paradox and the Halting Problem.</p>	
3.	<p>Functions: Functions Defined on General Sets, One-to-One and Onto, Inverse Functions, Composition of Functions, Cardinality with Applications to Computability</p>	
	Unit – II:	15 lectures
1.	<p>Relations: Relations on Sets, Reflexivity, Symmetry,</p>	

	and Transitivity, Equivalence Relations, Partial Order Relations.	
2.	Graphs and Trees: Definitions and Basic Properties, Trails, Paths, and Circuits, Matrix Representations of Graphs, Isomorphism's of Graphs, Trees, Rooted Trees, Isomorphism's of Graphs, Spanning trees and shortest paths.	
	Unit – III:	15 lectures
1.	Counting and Probability: Introduction, Possibility Trees and the Multiplication Rule, Counting Elements of Disjoint Sets: The Addition Rule, The Pigeonhole Principle, Counting Subsets of a Set: Combinations, r- Combinations with Repetition Allowed, Probability Axioms and Expected Value, Conditional Probability, Bayes' Formula and Independent Events.	
	Evaluation scheme I. Continuous Assessment (C.A.) - 25 Marks (i) C.A.-I : Test – 10 Marks of 20 mins. duration (ii) C.A.-II : Case Study/ Assignment/ Problem Solving/Mini Project/ Presentations – 10 Marks (iii) Attendance -05 Marks II. Semester End Examination (SEE)- 50 Marks Q.1 Answer any two -12 Marks Q.2 Answer any two -12 Marks Q.3 Answer any two -12 Marks Q.4 Answer any two -14 Marks	
References:	1. Think Python - 2nd Edition by Allen Downey 2. An Introduction to Computer Science using Python 3- 2nd Edition by Jason Montojo, Jennifer Campbell, Paul Gries 3. Python GUI Programming Cookbook - 2nd Edition by Burkhard A. Meier 4. Exploring Python - by Timothy A. Budd 5. Core Python Applications Programming - 3rd Edition by Wesley J.Chun 6. https://docs.python.org/3/tutorial	

Course Code: JUSIT- MINPR101	Practical Title: Mathematics - I Practical (Credits : 01 Practicals/Week: 01)
	1. Sets Theory a) Inclusion Exclusion principle. b) Power Sets. c) Mathematical Induction.

	<p>2. Functions and Algorithms</p> <ul style="list-style-type: none"> a) Recursively defined functions b) Cardinality c) Polynomial evaluation d) Greatest Common Divisor <p>3. Boolean Algebra</p> <ul style="list-style-type: none"> a) Basic definitions in Boolean Algebra <p>4. Directed Graphs</p> <ul style="list-style-type: none"> a) Adjacency matrix b) Path matrix <p>5. Graph Theory</p> <ul style="list-style-type: none"> a) Minimum spanning tree b) Shortest Path <p>6. Recurrence relations</p> <ul style="list-style-type: none"> a) Linear homogeneous recurrence relations with constant coefficients b) Solving linear homogeneous recurrence relations with constant coefficients c) Solving general homogeneous linear recurrence relations <p>7. Counting</p> <ul style="list-style-type: none"> a) Sum rule principle b) Product rule principle c) Factorial d) Binomial coefficients e) Permutations f) Permutations with Repetition g) Ordered partitions h) Combinations i) Combinations with repetitions j) Unordered partitions <p>8. Probability Theory</p> <ul style="list-style-type: none"> a) Sample space and events b) Finite probability spaces c) Equiprobable spaces d) Addition Principle e) Conditional Probability f) Multiplication theorem for conditional probability
	<p>Evaluation scheme – 25 marks i.e. (50/2 marks)</p> <ul style="list-style-type: none"> (iv) Program – 40 marks (v) Viva – 5 marks (vi) Journal- 5 marks

Open Elective 1

Course Code JUSIT-OE101	Course Title: Financial Literacy	Credits: 02 Lectures/Week: 02
Course description	The course covers the basics concept of financial literacy and budgeting ; savings and investing and financial planning and personal tax planning.	
Learning objectives	<ul style="list-style-type: none"> ● To understand the basic components of Financial Literacy such as savings, investment, taxation and insurance ● To understand the importance of financial planning 	
Course Outcomes	<ul style="list-style-type: none"> ● Develop the ability to do personal and family financial planning ● Build capability to analyze banking and insurance products ● Learn basics of investment and tax planning 	
	THEORY	30 lectures
Sub Unit	Unit – I:	10 lectures
1.	Financial Literacy a) Five pillars of financial literacy – save, invest, budget, manage debt and tax planning b) Benefits of financial literacy	
2.	Budgeting a) Income & expenses b) Setting priorities: difference between needs and wants c) Budgeting	
	Unit – II:	10 lectures
1.	Saving a) Benefits of saving and financial discipline b) Methods of saving	
2.	Investment a) Concept of time value of money and its importance b) Choosing between financial products to invest: Rate of return vs risk	
	Unit – III:	10 lectures

1.	Financial goals a) Importance of financial goals b) Steps to set financial goals	
2.	Personal tax planning a) Tax structure in India b) Need and importance of tax planning	
	<p>Evaluation Scheme</p> <p>I. Continuous Assessment (C.A.) - 25 Marks</p> <p>(i) C.A.-I : Test – 10 Marks of 20 mins. duration</p> <p>(ii) C.A.-II : Case Study/ Assignment/ Problem Solving/Mini Project/ Presentations – 10 Marks</p> <p>(iii) Attendance -05 Marks</p> <p>II. Semester End Examination (SEE)- 25 Marks</p> <p>Q.1 Answer any two -06 Marks</p> <p>Q.2 Answer any two -06 Marks</p> <p>Q.3 Answer any two -06 Marks</p> <p>Q.4 Answer any two -07 Marks</p>	
References:	<p>References:</p> <ol style="list-style-type: none"> 1. Singh, Abhishek Kumar and Rajni (2022), Financial Literacy, Ist edition,JSR Publishing House LLP, India 2. Sinha, Madhu (2017), Financial Planning: A Ready Reckoner, McGraw Hill, USA <p>Suggested Readings:</p> <ol style="list-style-type: none"> 3. The Richest Man in Babylon by George S. Clason 4. The Intelligent Investor by Benjamin Graham 	

Open Elective 2

Course Code JUSIT-OE102	Course Title: Logic, Reasoning and Aptitude	Credits: 02 Lectures/Week:02
Course description	Logical, Reasoning skills help students in improving their decision-making skills, problem-solving skills, and setting goals. These personal skills are necessary for building a stable career foundation in the IT industry.	
Learning objectives	<ul style="list-style-type: none"> ● Ability to use numbers and mathematical concepts to solve mathematical problems ● Ability to analyze the data using data interpretation ● Ability to solve verbal and non-verbal reasoning problems ● Ability to understand and evaluate statement based problems 	
Course Outcomes	<ul style="list-style-type: none"> ● Will be able to analyze data, understanding technical reports ● Improving decision-making and problem-solving skills. ● Develop Critical Thinking Skills ● Will be able to solve aptitude tests for gaining a career in the IT industry 	
	THEORY	30 lectures
Sub Unit	Unit – I	10 Lectures
	Picture Reasoning Verbal Reasoning Syllogism Input Output Critical Reasoning Statement Reasoning	
	Unit – II:	10 Lectures
	Tabular Graph Line Graph Pie Chart Bar Diagram Data Sufficiency Permutation and Combination	
	Unit – III:	10 Lectures
	Analytical Problems Relation Problem Arrangements Questions Decision Making Problems Comprehension of Technical Writing	

	<p>Evaluation Scheme:</p> <p>I. Continuous Assessment (C.A.) - 25 Marks</p> <p>(i) C.A.-I : Test – 10 Marks of 20 mins. duration</p> <p>(ii) C.A.-II : Case Study/ Assignment/ Problem Solving/Mini Project/ Presentations – 10 Marks</p> <p>(iii) Attendance -05 Marks</p> <p>II. Semester End Examination (SEE)- 25 Marks</p> <p>Q.1 Answer any two -06 Marks</p> <p>Q.2 Answer any two -06 Marks</p> <p>Q.3 Answer any two -06 Marks</p> <p>Q.4 Answer any two -07 Marks</p>	
<p>References:</p>	<p>Textbook:</p> <ol style="list-style-type: none"> 1. Goleman, D. (1996) Emotional Intelligence: Why it Can Matter More Than IQ, Bloomsbury Publishing 2. A Modern Approach to Logical Reasoning by R.S. Aggarwal <p>Additional References:</p> <ol style="list-style-type: none"> 2. Meah, M. (2011) Competency Questions Made Easy, Sapere Media. 3. Povah, N. & Povah, L., (UK edn) (2009). Succeeding at Assessment Centres for Dummies, John Wiley & Sons. 	

VSC

Course Code: JUSIT-VSC101	Course Title: Computer Oriented Architecture	Credits:02 Lectures/Week:01
Course description	The purpose of the course is to introduce principles of computer organization and the basic architectural concepts. And introduces various ICs to specify various computer operations.	
Learning objectives	<ul style="list-style-type: none"> ● To understand the structure, function and characteristics of computer systems. ● To understand the function of each element of a memory hierarchy ● To acquire the basic knowledge of digital logic levels and application of knowledge to understand digital electronics circuits. ● To analyze and synthesize combinational and Sequential logic circuits 	
Course Outcomes	<ul style="list-style-type: none"> ● To Understand the architecture and functionality of central processing unit ● Illustrate in a better way the I/O and memory organization ● Covers the design and application of digital logic circuits, including combinational and sequential logic circuits. 	
	THEORY	15 lectures
Sub Unit	Unit – I:	5 lectures
1.	INTRODUCTION: Organization and Architecture, Structure and Function, Computer Components and Functions, Interconnection Structures.	
2.	Operating System: What are Operating Systems, What Operating Systems Do, Operating-System Structure, Operating-System Operations	
3.	Memory System Organization: Characteristics of Memory Systems, Memory Hierarchy, Internal Memory: RAM, SRAM and DRAM, Cache Memory: Design Principles, Virtual Memory, External Memory: Magnetic Discs, Optical Memory, Flash Memories	
	Unit – II:	5 lectures
1.	I/O Systems: I/O Modules, Programmed I/O Overview of Programmed I/O, I/O Channels and Processors	

2.	Number System: Data Representation (Binary, Octal and hexadecimal) Binary number system, octal number system, hexadecimal number system, conversion from one number system to another, BCD code, Excess – 3 code, ASCII Code. Arithmetic: 1's complement and 2's complement, Binary Arithmetic, Arithmetic in octal number system, Arithmetic in hexadecimal number system	
3.	Logic Gates: Logic (AND OR NOT), Exclusive OR and Exclusive NOR gates Universal Logic gates, Implementation of other gates using universal gates, Boolean Algebraic theorems	
	Unit – III: Mention name, if there	5 lectures
1.	KMAP: SOP, Reduction technique using Karnaugh maps – 2/3/4 variable K-maps, don't care condition	
2.	Combinational Logic: Arithmetic Circuits-Half adder, the full adder, half subtractor, full subtractor. Multiplexer, de-multiplexer, BCD to seven segment Decoder	
3.	Flip flop: SR, S-R flip-flop, D flip-flop, JK flip-flop, Race-around condition, Master – slave JK flip-flop, T flip-flop, Excitation table. Application of Flip Flops.	
	<p>Evaluation Scheme</p> <p>I. Continuous Assessment (C.A.) - 25 Marks</p> <p>(i) C.A.-I : Test – 10 Marks of 20 mins. duration</p> <p>(ii) C.A.-II : Case Study/ Assignment/ Problem Solving/Mini Project/ Presentations – 10 Marks</p> <p>(iii) Attendance -05 Marks</p> <p>II. Practical Examination - 25 Marks</p>	
References:	<ol style="list-style-type: none"> 1. Computer Organization & Architecture, William Stallings, 8th Edition 2. Operating System Concepts. New Jersey, NJ, John Wiley and Sons, Abraham Silberschatz, Peter B. Galvin, Greg Gagne, 9th Edition. 3. Modern Digital Electronics, R P Jain, 4th Edition 4. Digital Design, M Morris Mano, 4th Edition 	

Course Code: JUSIT- VSC101	Practical Title: Computer Oriented Architecture
	<ol style="list-style-type: none"> 1. Linux commands: Working with directories and files <ol style="list-style-type: none"> 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

- c. ps, top, kill
 - d. grep, locate, find
 - e. date, cal, uptime, w, whoami, finger, uname, man, df, du, free, whereis, which.
 - f. Compression: tar, gzip, vi editor
2. Windows (DOS) Commands
 - a. Date, time, prompt, md, cd, rd, path.
 - b. Chkdsk, copy, format, cls, defrag, del, move
 - c. Diskcomp, diskcopy, diskpart, doskey, echo
 - d. fc, find, rename, set, type, ver
 3. Study of AND, OR, NOT, XOR, XNOR, NAND and NOR gates
 - a. IC 7400, 7402, 7404, 7408, 7432, 7486, 74266
 4. Verifying De Morgan's laws using a minimum number of gates/ICs.
 5. Design Code converter
 - a. Design and implement Binary – to – Gray code converter.
 - b. Design and implement Gray – to – Binary code converter.
 6. Design Combinational Circuit
 - a. Design and implement 4:1 multiplexer and 1:4 demultiplexer.
 - b. Implementation of digits using seven segment displays.
 7. Study and design mod –n counter synchronous counter
 8. Design registers
 - a. Design serial –in serial – out
 - b. serial –in parallel –out,
 - c. parallel –in parallel –out shift registers

SEC

Course Code JUSIT-SEC101	Course Title: Basics of Web Designing	Credits: 2 Lectures/Week: 2
Course description	This course appears to provide a comprehensive introduction to web development, covering various aspects from the basics of writing and markup to advanced topics like database integration.	
Learning objectives	<ul style="list-style-type: none"> ● To design valid, well-formed, scalable, and meaningful pages using emerging technologies. ● To develop and implement client-side and server-side scripting language programs. ● To develop and implement Database Driven Websites. ● To develop web applications based on the CMS WordPress 	
Course Outcomes	<ul style="list-style-type: none"> ● This course would help students to learn about writing, markup and coding involved in Web development, which includes Web content, Web client and server scripting. ● It would give interdisciplinary knowledge on the application area, client and server scripting, and database technology used in web development. 	
	THEORY	15 lectures
Sub Unit	Unit – I:	5 lectures
1.	Internet and the World Wide Web: What is Internet? Introduction to internet and its applications, E-mail, telnet, FTP, e-commerce, video conferencing, E-business. Internet service providers, domain name server, internet address, World Wide Web (WWW): World Wide Web and its evolution, uniform resource locator (URL), browsers – internet explorer, Netscape navigator, opera, Firefox, chrome, Mozilla. search engine, web server – apache, IIS, proxy server, HTTP protocol	
2.	HTML5: Introduction, Why HTML5? Formatting text by using tags, using lists and backgrounds, Creating hyperlinks and anchors. Style sheets, CSS formatting text using style sheets, formatting paragraphs using style sheets.	
3.	HTML5 Page layout and navigation: Creating navigational aids: planning site organization, creating text-based navigation bar, creating graphics based navigation bar, creating graphical navigation bar, creating image	

	map, redirecting to another URL, creating division based layouts: HTML5 semantic tags, creating divisions, creating HTML5 semantic layout, positioning and formatting divisions.	
	Unit – II:	5 lectures
1.	HTML5 Tables, Forms and Media: Creating tables: creating simple table, specifying the size of the table, specifying the width of the column, merging table cells, using tables for page layout, formatting tables: applying table borders, applying background and foreground fills, changing cell padding, spacing and alignment, 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.	
2.	Java Script: Introduction, Client-Side JavaScript, Server-Side JavaScript, JavaScript Objects, JavaScript Security	
3.	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	
4.	Statements: Break, comment, continue, delete, do...while, export, for, for...in, function, if...else, import, labeled, return, switch, var, while, with	
	Unit – III	5 lectures
1.	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	
2.	Events and Event Handlers: General Information about Events, Defining Event Handlers, event, onAbort, onBlur, onChange, onClick, onDoubleClick, onDragDrop, onError, onFocus, onKeyDown, onKeyPress, onKeyUp, onLoad, onMouseDown, onMouseMove, onMouseOut, onMouseOver, onMouseUp, onMove, onReset, onResize, onSelect, onSubmit, onUnload	
3.	jQuery: Introduction, Syntax, Selectors, Event ,Effects	
	Evaluation Scheme	

	<p>I. Continuous Assessment (C.A.) - 25 Marks</p> <p>(i) C.A.-I : Test – 10 Marks of 20 mins. duration</p> <p>(ii) C.A.-II : Case Study/ Assignment/ Problem Solving/Mini Project/ Presentations – 10 Marks</p> <p>(iii) Attendance -05 Marks</p> <p>III. Practical Examination -25 Marks</p>	
References:	<p>Textbook:</p> <ol style="list-style-type: none"> 1. Thomas Powell , (-) Web Design The Complete Reference, TataMcGrawHill 2. Faithe Wempen , (2011).HTML5 Step by Step, MicrosoftPress 3. Eric Freeman, (2013).Head First HTML5 programming,O'Reilly 4. Thomas Powell and Fritz Schneider, (-).JavaScript 2.0: The Complete Reference, Tata McGraw 5. Hill 6. WordPress For Dummies, LisaSabin-Wilson 	

Course Code: SIT-SEC101	Practical : Basics of Web Designing
	<p>1. Use of Basic Tags:</p> <ol style="list-style-type: none"> a) Design a web page using different text formatting tags. b) Design a web page with links to different pages and allow navigation between webpages. c)Design a web page demonstrating all Style sheet types <p>2. Image maps, Tables, Forms and Media:</p> <ol style="list-style-type: none"> 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. <p>3. JavaScript:</p> <ol style="list-style-type: none"> 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 JavaScript. c)Write a JavaScript program to display all the prime numbers between 1 and 100. d)Write a JavaScript program to accept a number from the user and display the sum

of its digits.

e) 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).

f) Write a JavaScript program to design a simple calculator.

4. Javascript Objects:

Design a web page demonstrating different Core JavaScript references (Array,

Boolean, Date, Function, Math, Number, Object, String, RegExp).

5. JQuery:

Program based on JQuery

6. Email: Write a program to send email with attachment.

7. Sessions and Cookies:

Write a program to demonstrate use of sessions and cookies.

8. Wordpress:

Webpages based on Wordpress



IKS

Course Code JUSIT-IKS101	Course Title: Indian Knowledge System	Credits: 02 Lectures/Week: 02
Course description	Explore the historical context and cultural significance of ancient Indian knowledge systems. Highlight the relevance of this knowledge in today's society, showcasing how it has shaped modern India.	
Learning objectives	<ul style="list-style-type: none"> ● To understand and appreciate the importance of ancient Indian knowledge to a society. ● To introduce the overall organization of vedic corpus. ● To understand the nature of contributions made by Indian ancient mathematicians and astronomers. ● To understand the basic elements of the Indian calendar. 	
Course Outcomes	<ul style="list-style-type: none"> ● Appraise the importance of Vedas and develop a basic understanding. ● Recognise the key role played by Aryabhata and others in the field of mathematics. ● Develop familiarity with Science, Engineering and Technology heritage of india. ● Summarize the contributions of Shrushtu, Charak , Patanjali in the field of ayurvedic medicine. 	
	THEORY	30 lectures
Sub Unit	Unit – I:	10 lectures
1.	Introduction to IKS : Definition and significance of IKS, Regional literature and oral traditions , Classification of literature. Introduction to the 4 Vedas , Classification of Indian philosophical systems. Key characters of purana and their role in food and medicine, geography, astronomy, foetal development, etc . Status of Indigenous S & T.	
	Unit – II:	10 lectures
1.	Mathematics and Astronomy of IKS : Mathematics in Chanda-Sutras ,The Composition Law Bhavana , The Chakravala Algorithm. The celestial coordinate system and spherical geometry. The elements of Indian calendar, notion of year, solar and lunar months, notion of thithi, Solar and lunar eclipses calculations. Planetary models: Comparison with Keplers model, Nilakantha Somayaji’s revision of planetary model, Aryabhata and Siddhantic tradition, Tithi, Karana, Nakshatra, Yoga, Vara.	
	Unit – III:	10 lectures
1.	Traditional practices in India : Traditional systems of	

	<p>medicine, and overview of AYUSH (Traditional Indian Systems of Medicine). Contributions of Shrushuta, Charak , Patanjali etc Ayurveda, Tridoshas and disease management</p> <p>Mining and ore extraction- medicinal and other applications</p> <p>Manufacture of Steel wax casting of idols and artifacts</p>	
	<p>Evaluation Scheme</p> <p>Continuous Assessment (C.A.) - 50 Marks</p> <p>(i) C.A.-I : Test – 20 Marks of 40 mins. duration</p> <p>(ii) C.A.-II : Case Study/ Assignment/ Problem Solving/Mini Project/ Presentations – 20 Marks</p> <p>(iii) Attendance -10 Marks</p>	
References:	<ol style="list-style-type: none"> 1. S. N. Sen and K. S. Shukla, History of Astronomy in India, 2nd Ed., INSA, Delhi, 2001. 2. S. Balachandra Rao, Indian Astronomy An Introduction, Universities Press, Hyderabad, 2000 3. B. Mahadevan, V. Bhat, Introduction to Indian Knowledge Systems, PHI, 2022 4. B. Mahadevan, V. Bhat, Introduction to Indian Knowledge Systems, PHI Learning Pvt. Ltd, 2022. 5. D.M. Bose, S.N. Sen, B.V. Subbarayappa. A concise history of Science in India, Universities Press, Ed. 2, 2009, Hyderabad. 	

VEC

Course Code : JUSIT-VEC101	Course Title: Digital Literacy	Credits: 2 Lectures/Week: 02
Course Description	The course aims to help students stay organized, collaborate with others, and create professional documents. From creating and presenting documents, reports and proposals to analyzing data in Excel.	
Learning objectives	<ul style="list-style-type: none"> ● Understand digital world and need for digital literacy ● Create awareness about digital India ● Explore, communicate and collaborate in cyberspace ● Building awareness on cybersafe and security 	
Course Outcomes	<ul style="list-style-type: none"> ● Demonstrates proficiency using digital tools. ● Uses digital media and environments to communicate effectively. ● Uses digital media and environments to acquire knowledge or skill. ● Learn methods for safe online practices, including how to protect their personal information online. 	
	THEORY	(15 Lectures)
Sub Unit	Unit – I:	5 Lectures
	Computers: History of computer Generation of computer Basic of computers Classification of computers Basic parts of computers computer virus and security Computer applications.	
	Unit – II:	5 Lectures
	Word formatting: Formatting text Formatting paragraph Modify page Layout text to speech Analysis using Excel: Excel Calculation Excel fill handle Excel formula Excel functions importing data presentation of data	

	application of data analysis	
	Unit – III:	5 Lectures
	<p>Presentations: Creating presentation Slide layouts Transitions Use of tome.app, prezi, Canva</p> <p>Environmental values: Benefits of Green Computing Strategies of Green Computing Power management Green computing applications</p>	
	<p>Evaluation Scheme</p> <p>Continuous Assessment (C.A.) - 50 Marks</p> <p>(i) C.A.-I : Test – 20 Marks of 40 mins. duration</p> <p>(ii) C.A.-II : Case Study/ Assignment/ Problem Solving/Mini Project/ Presentations – 20 Marks</p> <p>(iii) Attendance -10 Marks</p>	
References	<p>1. Microsoft Office 2019 Step by Step Book by Curtis Frye and Joan Preppernau</p> <p>2. Toby Velte, Anthony Velte, Robert Elsenpeter (2008). Green IT: Reduce Your Information System's Environmental Impact McGraw Hill</p>	

AEC

Course Code JUSIT-AEC101	Course Title: English Language Skill	Credits:02 Lectures/Week:02
Course description	This course introduces the learners to the basics of English language and enhances the learners' use of linguistic skills for improved expression.	
Learning objectives	<ul style="list-style-type: none"> ● Enhance their understanding of basic language skills ● Apply basic language skills to different contexts and narratives ● Become equipped to use language skills effectively in creative spheres 	
Course Outcomes	<ul style="list-style-type: none"> ● Understood the basics of grammar and nuances of language ● Illustrated the ability to use the language components accordingly ● Constructed original and creative texts 	
	Mention THEORY OR PRACTICAL	30 lectures
Sub Unit	Unit – I: Basic Language Skills	10 lectures
1.	Articles, prepositions, conjunctions Types of Sentences (Simple, Compound, Complex) Question Tags Direct and Indirect Speech Active and Passive Voice	
	Unit – II: Applied Language Skills	10 lectures
1.	Texts and paragraphs that incorporate the above taken from: - Scientific journals - Literary texts - Newspaper articles - Any other relevant source	
	Unit – III: Creative Writing (to be covered in Tutorials)	10 lectures
1.	Essays Blogs stories Dialogues	
	Evaluation Scheme	
	<p style="text-align: center;">I. Continuous Assessment (C.A.) - 25 Marks</p> <p style="text-align: center;">(i) C.A.-I : Test – 10 Marks of 20 mins. duration</p> <p style="text-align: center;">(ii) C.A.-II : Case Study/ Assignment/ Problem Solving/Mini Project/ Presentations – 10 Marks</p> <p style="text-align: center;">(iii) Attendance -05 Marks</p> <p style="text-align: center;">II. Semester End Examination (SEE)- 25 Marks</p> <p style="text-align: center;">Q.1 Answer any two -06 Marks</p>	

	<p>Q.2 Answer any two -06 Marks Q.3 Answer any two -06 Marks Q.4 Answer any two -07 Marks</p>	
<p>References:</p>	<ol style="list-style-type: none"> 1. Barker, Alan. (2010). Improve your Communication Skills (Revised Second Edition). New York, Philadelphia and New Delhi: Kogan Press Limited. Print. 2. and New Delhi: Kogan Press Limited. Print. 3. Bellare, Nirmala. (1998). Reading Strategies. Vols. 1 and 2. New Delhi. Oxford University Press. Print. 4. Blass, Laurie, Kathy Block and Hannah Friesan. (2007). Creating Meaning. Oxford: Oxford University Press. 5. Buscemi, Santi and Charlotte Smith. (1994). 75 Readings Plus. Second Edition New York: McGraw-Hill. Print. 6. Career Skills Library. (2009). Communication Skills (Third Edition). New York: Ferguson Publishing. Print. 7. Doff, Adrian and Christopher Jones. (2004). Language in Use (Intermediate and Upper Intermediate). Cambridge: Cambridge University Press. Print. 8. Glendinning, Eric H. and Beverley Holmstrom. (2004). Second edition. Study Reading: A Course in Reading Skills for Academic Purposes. Cambridge: Cambridge: Cambridge University Press. Print. 9. Greenbaum, Sidney and Gerald Nelson. (2002). An Introduction to English Grammar (Second Edition). London: Longman. Print. 10. Grellet, F. (1981). Developing Reading Skills. Cambridge: Cambridge University Press. Print. 11. Hamp-Lyons, Liz and Ben Heasley (2006). Second edition. Study Writing: A Course in Writing Skills for Academic Purposes. Cambridge: Cambridge: Cambridge University Press. Print. 12. Hood, J.H. (2013). How to Book of Writing Skills: Improve your English report, email or business. USA: WordCraft Global. Print. 13. Langan, John. (2008). College Writing Skills with Readings (Seventh Edition). New York: McGraw Hill Higher Education. Print. 14. Mohan Krishna & Banerji, Meera (1990). Developing Communication Skills. New Delhi: Macmillan India. Print. 15. Seely, John. (2013). The Oxford Guide to Effective Writing and Speaking: How to communicate clearly (Third Edition). Oxford: Oxford University Press UK. Print. 16. Websites: <ol style="list-style-type: none"> a. http://www.onestopenglish.com b. www.britishcouncil.org/learning-learn-english.htm c. http://www.teachingenglish.org.uk d. http://www.usingenglish.com/ e. Technical writing, online textbook (David McMurrey): http://www.io.comi—hcexres/textbook/ f. http://www.pearsoned.co.uk/AboutUs/ELT/ 7) http://www.howisay.com g. http://www.thefreedictionary.com/ 	