

B.Sc. (Information Technology) (Semester System)

Syllabus for the Batch from Year 2023 to Year 2026

Semester–III

Pattern of Question Paper - Eight questions of equal marks (Specified in the syllabus), two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Paper I : INTRODUCTION TO PYTHON

Time: 3 Hrs. M. Marks: 100

Credits: L T P

3 1 0

Month wise Division	Syllabus Unitization
August	SECTION–A Introduction to Python: Process of Computational Problem Solving, Python Programming Language Data and Expressions: Literals, Variables and Identifiers, Operators, Expressions, Strings, Statements and Data Types, SECTION-B Control Structures: Boolean Expressions (Conditions), Logical Operators, Selection Control, Nested conditions, Debugging Lists : List Structures, Lists (Sequences) in Python, Iterating Over Lists (Sequences) in Python
September	SECTION–B Functions: Fundamental Concepts, Program Routines, Flow of Execution, Parameters & Arguments SECTION–C Iteration: While statement, Definite loops using For, Loop Patterns, Recursive Functions, Recursive Problem Solving, Iteration vs. Recursion Dictionaries: Dictionaries and Files, Looping and dictionaries,
October-November	SECTION–C Advanced text parsing Files: Opening Files, Using Text Files, String Processing, Exception Handling SECTION–D Objects and Their Use: Introduction to Object Oriented Programming Modular Design: Modules, Top-Down Design, Python Modules Using Databases and SQL: Database Concepts, SQLite Manager Firefox Add-on, SQL basic summary, Basic Data modeling, Programming with multiple tables

Prescribed Book

Book Name – Computational Problem Solving Using Python

Author – Sushil Bhardwaj

Publisher – Kalyani Publishers

Paper II - Data Structure
Time: 3 Hrs. M. Marks: 100

Credits: L T P
3 1 0

Month wise Division	Syllabus Unitization
August	SECTION–A Basic Data Structure: Introduction to elementary Data Organization, Common Operation on Data Structures, Algorithm Complexity, Big O Notation, Time – Space trade off between Algorithms. Arrays: Array Defined, Representing Arrays in Memory, Various Operations on Linear Arrays, Multidimensional Arrays SECTION–D Sorting and Searching: Sorting Algorithms, Bubble Sort, Searching Algorithms, Linear Search and Binary Search.
September	SECTION--B Linked Lists Types of Linked Lists, Representing Linked Lists in Memory, Advantages of using Linked Lists over Arrays, Various Operations on Linked Lists. Stacks: Description of STACK structure, Implementation of Stack using Arrays and Linked Lists, Applications of Stacks – Converting Arithmetic expression from infix notation to polish and their subsequent evaluation, Quicksort Technique to sort an array
October-November	SECTION--C Queues: Description of queue structure, Implementation of queue using arrays and linked lists, Description of priorities of queues, Dequeues. Trees: Description of Tree Structure and its Terminology, Binary Trees and Binary Search Trees and their representation in Memory SECTION–D Graphs: Description of Graph Structure, Implement Graphs in Memory using Adjacency Matrix, Path Matrix.

Prescribed Book

Book Name – Data Structure

Author – Seymour Lipschutz

Publisher – McGraw Hill Company

Paper III - System Analysis & Design

Time: 3 Hrs. M. Marks: 100

**Credits: L T P
3 1 0**

Month wise Division	Syllabus Unitization
August	<u>SECTION-A</u> System Planning and Analysis: Introduction to systems development life cycle and role of different stages. Requirement analysis, Problem definition, Feasibility Study and its importance Information Gathering Tools, Cost Benefit Analysis, Role and Responsibilities of System Analyst
September	<u>SECTION-B</u> System Design: Input/Output Design, Modular and Structured Design, Tools for structured design and system design considerations. <u>SECTION-C</u> System Implementation: System testing, Quality assurance, Documentation tools, Managing system implementation.
October-November	<u>SECTION-D</u> System Testing: Introduction to testing and its types System Maintenance: Concept of maintenance and its importance, types of maintenance

Prescribed Book

Book Name – System Analysis & Design

Author – M Awad

Publisher – Kalyani Publisher

Multimedia Technology and Applications Multimedia Technology and Applications

Time: 3 Hrs. M. Marks: 100

Credits: L T P
3 1 0

Month wise Division	Syllabus Unitization
August	<p><u>SECTION-A</u> Introduction: Multimedia, history of Multimedia, components, uses of multimedia. Multimedia market, resources for multimedia developers, types of products. Hardware and software, multimedia computer architecture. Overview of Multimedia application softwares (e.g. Adobe Photoshop, Audacity, Final Cut Pro, WordPress, Blender) Text: Elements of Text, Text data files, using text in Multimedia applications, font editing & design tools, Hypermedia & Hypertext.</p>
September	<p><u>SECTION-B</u> Images: Still Images – Bitmaps, Vector Drawing, 3D Drawing & rendering, Natural Light & Colours, Computerized Colours, Colour Palletes, Image File Formats Graphics: Elements of graphics, images and colour, graphics file and application formats, obtaining images for multimedia use, using graphics in multimedia applications</p> <p><u>SECTION-C</u> Sound: Digital Audio, MIDI Audio, MIDI vs Digital Audio, Audio File Formats. Video: How Video Works, Analog Video, Digital Video, Video File Formats, Video Shooting and Editing.</p>
October-November	<p><u>SECTION-D</u> Animation: Principle of Animations. Animation Techniques, Animation File Formats Making Multimedia: Stages of a multimedia project, requirements to make good multimedia, Multimedia Hardware, Macintosh and Windows production Platforms, Hardware peripherals, Connections, Memory and storage devices, Multimedia software and Authoring tools.</p>

SEMESTER-III

	BIT03004L (PROGRAMMING LAB-I)	Credits
		L T P
		0 0 2
Lab – I:	Based on Python, Programming Language	50 Marks

SEMESTER-III

	BIT03005L: (PROGRAMMING LAB-II)	Credits
		L T P
		0 0 2
Lab – II:	Data Structure	50 Mark