

M.L.Dhanukar College of Commerce
Teaching Plan: 2021 - 22

Department: **Information Technology**

Semester: III

Class: **S.Y.B.Sc.I.T.**

Subject: **Python Programming**

Name of the Faculty: **Archana Talekar**

| Month | Topics to be Covered | Internal Assessment | Number of Lectures |
|------------------|---|---------------------|--------------------|
| June | Unit I <ul style="list-style-type: none"> • Introduction • Variables and Expressions • Conditional Statements • Looping • Control statements | | 10 |
| July | Unit II <ul style="list-style-type: none"> • Functions: Function Calls, Math Functions, Functions Definitions and Uses, Parameters and Arguments, Return Values, Boolean Functions • Strings: Sequence, Traversal with for Loop, String Slices, Searching, Looping, Counting, String Methods, Comparison, Operations Unit III <ul style="list-style-type: none"> • Lists • Tuples and Dictionaries • Files • Exceptions | | 20 |
| August | Unit IV <ul style="list-style-type: none"> • Regular Expressions • Classes and Objects • Multithreaded Programming • Modules Unit V <ul style="list-style-type: none"> • Creating the GUI Form and Adding Widgets • Layout Management • Look and Feel Customization | | 20 |
| September | Unit V <ul style="list-style-type: none"> • Storing Data in Our MySQL Database via Our GUI | | 10 |

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M.L. Dahanukar College of Commerce

Teaching Plan: 2021 - 22

Department: I.T.

Class: S.Y.B.Sc.(I.T.)

Semester: III

Subject: Data Structures

Name of the Faculty: Sweta Chheda

| Month | Topics to be Covered | Internal Assessment | Number of Lectures |
|--------------|---|----------------------------|---------------------------|
| June | Unit I Chap 1: Introduction: Data and Information, Data Structure, Classification of Data Structures, Primitive Data Types, Abstract Data Types, Data structure vs. File Organization, Operations on Data Structure, Algorithm Complexity of an Algorithm, Asymptotic Analysis and Notations, Big O Notation, Big Omega Notation, Big Theta Notation, Rate of Growth and Big O Notation. Chap 2: Array: Introduction, One Dimensional Array, Memory Representation of One-Dimensional Array, Traversing, Insertion, Deletion, Searching, Sorting, Arrays, Multidimensional Arrays, Memory Representation of Two-Dimensional Arrays, General Multi-Dimensional Arrays, Sparse Arrays, Sparse Matrix, Memory Representation of Special kind of Matrices, Advantages and Limitations of Arrays. | | 14 |
| July | Unit II Chap 3: Linked List: Linked List, One-way Linked List, Traversal of Linked List, Searching, Insertion in Linked List, Deletion from Linked List, Copying a List into Other List, Circular Linked List, Applications of Circular Linked List, Two way Linked List, Traversing a Two way Linked List, Searching in a Two way linked List, Insertion of an element in Two way Linked List, Deleting a node from Two way Linked List, Header Linked List, Applications of the Linked list, Storage of Sparse Arrays, Implementing other Data Structures. Unit III Chapter 5: Queue: Introduction, Queue, Operations on the Queue, Memory Representation of Queue, Array representation of queue, Linked List Representation of Queue, Circular | | 20 |

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| | <p>Queue, Some special kinds of queues, Deque, Priority Queue, Application of Priority Queue, Applications of Queues.</p> <p>Chapter 4: Stack: Introduction, Operations on the Stack Memory Representation of Stack, Array Representation of Stack, Applications of Stack, Evaluation of Arithmetic Expression, Matching Parenthesis, infix and postfix operations, Recursion.</p> | | |
| August | <p>Unit IV Chap 6: Sorting and Searching Techniques Bubble, Selection, Insertion, Merge Sort.</p> <p>Chap 7: Tree: Tree, Binary Tree, Properties of Binary Tree, Memory Representation of Binary Tree, Operations Performed on Binary Tree, Reconstruction of Binary Tree from its Traversals, Huffman Algorithm, Binary Search Tree, Operations on Binary Search Tree, Heap, Memory Representation of Heap, Operation on Heap, Heap Sort.</p> <p>Unit V Chapter 9: Hashing Techniques Hash function, Address calculation techniques, Common hashing functions Collision resolution, Linear probing, Quadratic, Double hashing, Bucket hashing, Deletion and rehashing.</p> <p>Chapter 10: Graph: Introduction, Graph, Graph Terminology, Memory Representation of Graph, Adjacency Matrix Representation of Graph, Adjacency List or Linked Representation of Graph, Operations Performed on Graph, Graph Traversal, Applications of the Graph, Reachability, Shortest Path Problems, Spanning Trees.</p> | | 20 |
| September | <p>Unit IV Chapter 8: Advanced Tree Structures: Red Black Tree, Operations Performed on Red Black Tree, AVL Tree, Operations performed on AVL Tree, 2-3 Tree, B-Tree.</p> | | 6 |

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Teaching Plan: 2021 - 22

Department: I.T.

Class: S.Y.B.Sc.(I.T.)

Semester:III

Subject: Computer Network

Name of the Faculty: Amit Bane

| Month | Topics to be Covered | Internal Assessment | Number of Lectures |
|-------|--|---------------------|--------------------|
| June | <p>1.Data communications, networks, network types, Internet history,standards and administration.</p> <p>2.Protocol layering, TCP/IP protocol suite, The OSI model.</p> <p>3.Data and signals, periodic analog signals, digital signals, transmission impairment, data rate limits, performance.</p> <p>4.Digital-to-digital conversion, analog-to-digital conversion, transmission modes, digital-to-analog conversion, analog-to-analog conversion.</p> | | 14 |
| July | <p>1.Multiplexing, Spread Spectrum</p> <p>2.Guided Media, Unguided Media</p> <p>3.Introduction, circuit switched networks, packet switching, structure of a switch.</p> <p>4.Link layer addressing, Data Link Layer Design Issues, Error detection and correction, block coding, cyclic codes, checksum, forward error correction, error correcting codes, error detecting codes.</p> <p>5.DLC services, data link layer protocols, HDLC, Point-to-point protocol.</p> <p>6.Random access, controlled access, channelization, Wired LANs – Ethernet Protocol, standard ethernet, fast ethernet, gigabit ethernet, 10 gigabit ethernet,</p> | | 20 |

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|-----------|---|--|----|
| August | <p>1.Introduction, IEEE 802.11 project, Bluetooth, WiMAX, Cellular telephony, Satellite networks.</p> <p>2. Network layer services, packet switching, network layer performance, IPv4 addressing, forwarding of IP packets, Internet Protocol, ICMPv4, Mobile IP</p> <p>3.Introduction, routing algorithms, unicast routing protocols.</p> <p>4.IPv6 addressing, IPv6 protocol, ICMPv6 protocol, transition from IPv4 to IPv6.</p> <p>3.Introduction, Transport layer protocols (Simple protocol, Stop-and-wait protocol, Go-Back-n protocol, Selective repeat protocol, Bidirectional protocols)</p> | | 20 |
| September | <p>1. Transport layer services, User datagram protocol, Transmission control protocol.</p> <p>2. World wide-web and HTTP, FTP, Electronic mail, Telnet, Secured Shell, Domain name system.</p> | | 06 |

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M.L. Dahanukar College of Commerce

Teaching Plan: 2021 - 22

Department: I.T

Class: **S.Y.B.Sc.(I.T)**

Semester: III

Subject: Database Management System

Name of the Faculty: Supritha Bhandary

| Month | Topics to be Covered | Internal Assessment | Number of Lectures |
|-----------|--|---------------------|--------------------|
| June | Introduction to database and transactions What is database system, purpose, view of data, relational databases, database architecture Data models: importance, business rules, degree of data abstraction. | | 14 |
| July | Database design and ER model: overview, ER model, issues, weak entity sets, codd's rule Relational data model Logical view of data, keys, integrity rules, relational database design, atomic domain and normalization Relational Algebra and calculus Introduction, selection and projection, set operations, joins, tuple relational calculus | | 22 |
| August | Constraints and views: types of constraints, data independence, security, aggregate functions, NULL values, triggers Transaction Management and concurrency: ACID properties, serializability and concurrency control, 2PL, time stamping methods, database recovery management | | 20 |
| September | PL-SQL: Identifiers and keywords, sequences, control structures, cursors, collections and composite data types, exception handling, procedures, functions, packages | | 04 |

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M.L. Dahanukar College of Commerce

Teaching Plan: 2021- 22

Department: I.T.

Class: S.Y.B.Sc.(I.T.)

Semester: III

Subject: Database Management Systems

Name of the Faculty: Navneet Kaur Nagpal

| Month | Topics to be Covered | Internal Assessment | Number of Lectures |
|-----------|--|---------------------|--------------------|
| June | What is database system, purpose, applications, advantages, file processing system, types of database users, DBA ,data abstraction, instances and schema, business rules, database architecture, data models, DDL, DML, DCL, DQL | | 16 |
| July | ER data model, constraints on relationship, types of attributes, ER diagrams, weak entity sets, strong entity sets, generalization, specialization, basic building block, codd's rules, UML, types of database keys, integrity rules, Normalization and types of normal forms, relational database, Relational algebra, operations(select, project, composition, rename, join, division, grouping, set operations), tuple calculus, domain calculus, calculus vs algebra | | 24 |
| August | integrity constraints, pattern matching test ,views, joins, aggregate functions, null values, subqueries, nested subquery, transaction management, process of transaction, ACID properties, serial transaction, concurrent transaction, problems due to concurrent transaction, states of transaction, serializability, lock based protocol(shared mode and exclusive mode), two phase locking protocol, deadlock, timestamp, deadlock prevention, deadlock detection recovery, database recovery management | | 20 |
| September | Pl/sql, variable declaration, variable scope, constants, comments, % type attributes, sequence, control structure(if , if then else, case, loop, while, for, goto), cursors(implicit, explicit), exception handling, package, procedure, function, trigger | | 20 |

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Teaching Plan: 2021 - 22

Department: I.T.

Class: S.Y.B.Sc.(I.T.)

Semester:III

Subject: Applied Mathematics

Name of the Faculty: Amit Limbasia

| Month | Topics to be Covered | Internal Assessment | Number of Lectures |
|--------------|--|----------------------------|---------------------------|
| June | Matrices Complex Number Differential Equation | | 16 |
| July | Differential Equation with Constant Coefficient Differential equation of the first order of a degree higher than the first Degree Laplace Transform – I Inverse Laplace Transform | | 26 |
| August | Triple Integration Beta Gamma Function Error Function Double Integration & Applications of integration Differentiation Under the Integral Sign | | 18 |

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