

COURSE OUTCOMES:

At the end of the course, the student should be able to:

- Apply propositional logic in practical problems.
- Solve combinatorial problems using counting principle and mathematical induction.
- Demonstrate efficient use of graph theory in solving connectivity and shortest path problems.
- Apply divisibility theory and canonical decompositions in problems.
- Solve practical problems using classical theorems of number theory.

TEXT BOOKS:

1. Rosen K.H., "Discrete Mathematics and its Applications", 7th Edition, Tata McGraw Hill Pub. Co. Ltd., New Delhi, Special Indian Edition, 2017.
2. Tremblay J.P. and Manohar R., "Discrete Mathematical Structures with Applications to Computer Science", Tata McGraw Hill Pub. Co. Ltd, New Delhi, 1st Edition, 2017.
3. Koshy. T., "Elementary Number Theory with Applications", Elsevier Publications, New Delhi, 2nd Edition, 2007.

REFERENCES:

1. Grimaldi R.P., "Discrete and Combinatorial Mathematics: An Applied Introduction", 4th Edition, Pearson Education Asia, Delhi, 2007.
2. Niven I, Zuckerman H.S. and Montgomery. H.L., "An Introduction to Theory of Numbers", John Wiley and Sons, Singapore, 2004.

WEB REFERENCES:

- <https://nptel.ac.in/courses/111106086/>
- <https://nptel.ac.in/courses/111106155/>
- <https://nptel.ac.in/courses/111106102/>
- <https://nptel.ac.in/courses/111101137/>
- <https://nptel.ac.in/courses/111103020/>

Mapping of CO with PO

	Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1	2	3	-	-	-	2	-	-	1
CO2	3	2	1	2	3	-	-	-	2	-	-	1
CO3	3	2	1	2	3	-	-	-	2	-	-	1
CO4	3	2	1	2	3	-	-	-	2	-	-	1
CO5	3	2	1	2	3	-	-	-	2	-	-	1
AVG	3	2	1	2	3	-	-	-	2	-	-	1

JIT2301	OBJECT ORIENTED PROGRAMMING	L	T	P	C
		3	0	0	3

COURSE OBJECTIVES:

- To learn the basic concepts of OOP and getting started with C++
- To study the properties and usage of inheritance and polymorphism in C++
- To understand file and exception handling and exploring on templates
- To learn the OOP principles of JAVA and creation of package
- To learn interface and thread concept. Also, to learn the design of an GUI based application using JavaFX

UNIT I BASICS OF C++ 9

Object Oriented Programming: Concepts of Object-Oriented Programming - Origins of C++ -- Keywords - Classes and Objects – Constructors – Destructors – Static Data Members - Static Member Functions – Arrays Fundamentals – String Operations.

UNIT II INHERITANCE AND POLYMORPHISM 9

Inheritance: Single, Multi-Level, Multiple, Hierarchical and Hybrid – Abstract Classes - Polymorphism- Function Overloading: Overloading Constructor Functions - Copy Constructors- Operator Overloading: Unary Operators – Binary operators.

UNIT III FILES, TEMPLATES AND EXCEPTION HANDLING 9

Files: File Stream Operations - File Pointers Manipulation-Templates: Function templates – Class Templates – Exception handling: Try, Catch and Throw- Handling Derived-Class Exceptions - Exception Handling Options.

UNIT IV FUNDAMENTALS OF JAVA AND PACKAGES 9

An Overview of JAVA: Three OOP Principles – Java Class – Simple Program - This Keyword - Finalize Method- Inheritance: Basics- Using Super- Method Overriding- Using Final- Packages: Defining Package – Access Protection - Importing Packages

UNIT V INTERFACES, THREADS AND GUI 9

Interfaces: Design and Implementation – Default Interface Methods - Thread Model: Creating a Thread – Synchronization – Interthread Communication – Multithreading - JavaFX: Basic Concepts – JavaFX Controls - Application Development.

TOTAL: 45 PERIODS

COURSE OUTCOMES:

At the end of the course, the student should be able to:

- Design a C++ programs with classes, objects and static member functions.
- Develop a C++ program using inheritance and polymorphism concept.
- Work with files and can handle exceptions. Also, design a program using template.
- Develop a simple Java Program and can create and import a package.
- Design an interface, synchronize various tasks and develop an GUI using JavaFX.

TEXT BOOKS:

1. Herbert Schildt, C++: The Complete Reference, 4th Edition, McGraw Hill Education, 2017.
2. Herbert Schildt, Java: The Complete Reference, 11th Edition, McGraw Hill Education, 2019.
3. J. F. DiMarzio, JavaFX A Beginners Guide, McGraw Hill Professional, 2011.

REFERENCE BOOKS:

1. Bjarne Stroustrup, The C++ Programming Language, 4th Edition, Addison-Wesley, 2013
2. E. Balagurusamy, Object Oriented Programming with C++, 8th Edition, McGraw Hill, 2020.
3. E. Balaguruswamy, Programming with JAVA - A Primer, Third Edition, McGraw-Hill Professionals, 2014.
4. R. Nageswara Rao and Kogent Solutions Inc., Core Java: An Integrated Approach, Dreamtech Press, 2008.

WEB REFERENCES:

1. [Java Tutorial - GeeksforGeeks](#)
2. [C++ Programming Language - GeeksforGeeks](#)
3. [C++ Tutorial | Learn C++ Programming Language - Scaler Topics](#)
4. [Java Tutorial | Learn Java Programming - Scaler Topics](#)
5. [Learn Java Programming \(programiz.com\)](#)
6. [JavaFX Tutorial \(tutorialspoint.com\)](#)

Mapping of CO with PO/PSO

	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	-	-	-	-	-	-	-	1	1	3	1	3
CO2	3	3	3	-	-	-	-	-	-	-	1	1	3	1	3
CO3	3	3	3	-	-	-	-	-	-	-	1	1	3	1	3
CO4	3	3	3	-	-	-	-	-	-	-	1	1	3	1	3
CO5	3	3	3	-	-	-	-	-	-	-	1	1	3	1	3
AVG	3	3	3	-	-	-	-	-	-	-	1	1	3	1	3

JCS2301	DATA STRUCTURES AND ALGORITHMS	L	T	P	C
		3	0	0	3

COURSE OBJECTIVES

- To understand the concepts of ADTs
- To design linear data structures – lists, stacks, and queues
- To learn the non-linear data structure trees and its types.
- To understand the concepts of graphs and its applications.
- To understand sorting, searching, and hashing algorithms

UNIT I ABSTRACT DATATYPE

9

Introduction to Data structures- Abstract Data Types (ADTs) – List ADT – Array-based implementation – Linked list implementation – Singly linked lists- Doubly-linked lists -Circularly linked lists– Applications -Polynomial Manipulation

UNIT II LINEAR STRUCTURE

9

Stack ADT–Implementation- Array and Linked List- Applications- Queue ADT– Implementation – Array and Linked List –Applications- Infix to Postfix conversion- Evaluating arithmetic expressions.

UNIT III TREE STRUCTURE

9

Tree ADT – Terminologies- Tree traversals - Binary Tree ADT – Complete and Full Binary Tree- Expression trees- Binary search trees – AVL trees – Heaps – Priority Queue using Heap- B Tree.

UNIT IV GRAPH STRUCTURES

9

Graph ADT – Representations of graph – Types of graph- Graph traversals – Topological ordering – Applications- Shortest path: Dijkstra’s algorithm– Minimum spanning trees: Prim’s and Kruskal’s algorithm.

UNITV SORTING AND SEARCHING

9

Sorting: Bubble sort – selection sort – insertion sort – merge sort – quick sort – Searching: linear search – binary search – Hashing: hash functions – Separate Chaining, Open addressing- Rehashing.

TOTAL: 45 PERIODS

COURSE OUTCOMES:

At the end of the course, the student should be able to:

- Explain abstract data types
- Design, implement, and analyze linear data structures, such as lists, queues and stacks, according to the needs of different applications.
- Explore deeper into algorithms that operate on trees such as tree traversals and tree balancing concepts
- Model problems as graph problems and implement efficient graph algorithms to solve them.
- Design, implement, and analyze efficient tree structures to meet requirements such as searching, indexing, and sorting.

TEXT BOOKS

1. Michael T. Goodrich, Roberto Tamassia, and Michael H. Goldwasser, “Data Structures & Algorithms in Python”, An Indian Adaptation, John Wiley & Sons Inc., 2021.
2. Devraj Ganguly,”Introduction to Data Structures and Algorithms”: A Conceptual Guide. Paperback – 19 May 2021

REFERENCES:

1. Lee, Kent D., Hubbard, Steve, “Data Structures and Algorithms with Python” Springer Edition 2015
2. Rance D. Necaie, “Data Structures and Algorithms Using Python”, John Wiley & Sons, 2011
3. Aho, Hopcroft, and Ullman, “Data Structures and Algorithms”, Pearson Education, 1983.
4. Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, and Clifford Stein, “Introduction to Algorithms”, Second Edition, McGraw Hill, 2002.
5. Mark Allen Weiss, “Data Structures and Algorithm Analysis in C++”, Fourth Edition, Pearson Education, 2014.

WEB REFERENCES:

1. <https://dl.acm.org/doi/10.5555/577958>
2. <https://www.javatpoint.com/data-structure-tutorial>
3. <https://www.javatpoint.com/data-structures-and-algorithms-in-c-set-1>
4. <https://www.w3schools.in/data-structures/intro>

CO- PO MAPPING:

CO's	PO's												PSO's	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
1	1	1	1	1	1	-	-	-	2	-	2	1	1	1
2	2	3	2	2	2	-	-	-	2	-	2	2	3	2
3	2	2	3	2	3	-	-	-	3	-	2	2	3	2
4	3	3	3	1	1	-	-	-	3	-	2	2	3	2
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AVG.	2	2	2	2	2	-	-	-	3	-	2	2	3	2

JIT2321	DIGITAL PRINCIPLES AND COMPUTER ORGANIZATION	L	T	P	C
		3	0	2	4

COURSE OBJECTIVES:

- To design digital circuits using simplified Boolean functions
- To analyze and design combinational circuits
- To understand the basic structure and operation of a digital computer.
- To study the design of the data path unit, and control unit for the processor and to familiarize with the hazards.
- To understand the concept of various memories and I/O interfacing.

UNIT I	BOOLEAN ALGEBRA AND LOGIC GATES	9
	Number Systems — Arithmetic Operations — Binary Codes- Boolean Algebra and Logic Gates — Properties of Boolean Algebra — Boolean Functions — Canonical and Standard Forms — Simplification of Boolean Functions using Karnaugh Map — Logic Gates	
UNIT II	COMBINATIONAL LOGICS	9
	Combinational Circuits –Binary Adder – Subtractor – Decimal Adder — Binary Multiplier - Magnitude Comparator – Decoder – Encoder – Multiplexers – De-multiplexer	
UNIT III	COMPUTER FUNDAMENTALS	9
	Functional Units of a Digital Computer: Von Neumann Architecture – Operation and Operands of Computer Hardware Instruction – Instruction Set Architecture (ISA): Memory Location, Address and Operation – Instruction types– Addressing Modes	
UNIT IV	PROCESSOR	9
	Instruction Execution – Building a Data Path – Designing a Control Unit – Pipelining – Data Hazard – Control Hazards.	
UNIT V	MEMORY AND I/O	9
	Memory Concepts and Hierarchy – Cache Memories: Mapping and Replacement Techniques – Virtual Memory – DMA – I/O – Accessing I/O: Parallel and Serial Interface – Interrupt I/O	

TOTAL: 45 PERIODS

List of Experiments

1. Verification of Boolean theorems using logic gates.
2. Design and implementation of combinational circuits using gates for arbitrary functions.
3. Implementation of 4-bit binary adder circuits
4. Implementation of 4-bit binary Subtractor circuits.
5. Implementation of code converters.
6. Implementation of BCD adder.
7. Implementation of encoder and decoder circuits.
8. Implementation of functions using Multiplexers
9. Implementation of functions using Demultiplexers.
10. Simulator based study of Computer Architecture.

TOTAL: 30 PERIODS

COURSE OUTCOMES:

At the end of the course, the student should be able to:

- Simplify Boolean functions using KMap
- Design combinational circuits and analyze the design procedures
- State the fundamentals of computer systems and analyze the execution of an instruction
- Analyze different types of control design and identify hazards
- Identify the characteristics of various memory systems and I/O communication

TEXT BOOKS:

1. M. Morris Mano, Michael D. Ciletti, “Digital Design : With an Introduction to the Verilog HDL, VHDL, and System Verilog”, Sixth Edition, Pearson Education, 2018.
2. David A. Patterson, John L. Hennessy, “Computer Organization and Design, The Hardware/Software Interface”, Sixth Edition, Morgan Kaufmann/Elsevier, 2020.

REFERENCES:

1. Carl Hamacher, Zvonko Vranesic, Safwat Zaky, Naraig Manjikian, “Computer Organization and Embedded Systems”, Sixth Edition, Tata McGraw-Hill, 2012.
2. William Stallings, “Computer Organization and Architecture – Designing for Performance”, Tenth Edition, Pearson Education, 2016.
3. M. Morris Mano, “Digital Logic and Computer Design”, Pearson Education, 2016.

WEB REFERENCES:

- <https://www.geeksforgeeks.org/difference-between-multiplexer-and-demultiplexer/>
- <https://www.geeksforgeeks.org/introduction-of-sequential-circuits/>

- <https://www.geeksforgeeks.org/microarchitecture-and-instruction-set-architecture/>
- NPTEL :: Com <https://archive.nptel.ac.in/courses/106/105/106105163/>
- Difference bet <https://www.geeksforgeeks.org/difference-between-serial-port-and-parallel-ports/>

Mapping of CO with PO/PSO

	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	3	1	2	2	3	3	2	3	3	1	2	2	3
CO2	3	3	3	-	-	2	2	2	3	1	2	3	3	3	1
CO3	3	2	3	-	-	3	3	2	3	3	3	3	3	2	2
CO4	1	3	3	-	-	3	2	3	3	2	3	2	3	3	2
CO5	3	3	3	-	-	2	3	3	2	3	2	3	2	3	2
AVG	2.6	2.6	3	1	2	2.4	2.6	2.6	2.6	2.4	2.6	2.4	2.6	2.6	2

JIT2322	DATA COMMUNICATION AND COMPUTER NETWORKS	L	T	P	C
		3	0	2	4

COURSE OBJECTIVES

- To study the fundamentals of networking.
- To learn the OSI reference model-physical layer.
- To understand Error detection and Flow control.
- To learn about routing and addressing.
- To study about transmission control and application layer protocols.

UNIT I INTRODUCTION TO DATA COMMUNICATION **9**
 Data Communication - Networks - Network Types - The OSI Model - Layers in the OSI Model - TCP/IP Protocol Suite - Data Transmission - Analog Transmission - Digital Transmission - Transmission impairment - Wired LANs: Ethernet

UNIT II PHYSICAL LAYER **9**
 Introduction - Physical Layer - Digital data - digital signals - Analog data - Analog signals - Synchronous and Asynchronous transfer - Multiplexing - Frequency division multiplexing- Time division multiplexing - Transmission media - Twisted Pair - Coaxial cable - Optical Fibers - Wireless transmission – Microwaves - Radio waves - Infrared.

UNIT III DATA LINK LAYER **9**
 Introduction - Link Layer Addressing – Framing - Flow Control - Error Control - Error Detection and Correction - Stop and Wait Protocols - Sliding Window Protocols – HDLC - Media Access Control (MAC) - Random Access - Controlled Access.

UNIT IV NETWORK LAYER **9**

Network Layer Services - Packet switching - Performance - IPV4 Addresses - Network Layer Protocols: IP, ICMP v4 - Unicast Routing Algorithms - Protocols - Multicasting Basics - Congestion Control Algorithms.

UNIT V TRANSPORT LAYER AND APPLICATION LAYER **9**

Transport Layer Protocols - Services - Port Numbers - User Datagram Protocol - Transmission Control Protocol - DNS - Email -WWW and HTTP.

TOTAL: 45 PERIODS

List of Experiments

1. Basic networking devices and Commands
 - i) Study of different internetworking devices in a computer network.
 - ii) Basic Networking Commands like hostname, ifconfig, ping, host, telnet, nslookup, netstat
 - iii) Assign IP address to the PC connected to the internet.
2. Write a code for simulating ARP /RARP protocols.
3. Write a socket program for HTTP web page upload and download.
4. Applications of TCP Sockets like
 - i) Echo client and echo server
 - ii) Chat
 - iii) File Transfer
5. Applications of UDP Sockets
 - i) Domain Name System
 - ii) File Transfer Using UDP
6. Study of different network topology and adding traffic to the network, using simulation tool
7. Implementation of Stop and Wait Protocol and sliding window protocols
8. Implementation and study of Go back-N and selective repeat protocols
9. Implementation of distance vector routing algorithm
10. Implementation of Link state routing algorithm
11. simulation of Congestion Control Algorithms

TOTAL: 30 PERIODS

COURSE OUTCOMES:

At the end of the course, the student should be able to:

- Understand the concept of Computer networks and Data Transmission.
- Understand different types of protocols used for transmission of data.
- Apply error detection and flow control techniques.
- Explain different addressing and routing algorithms.
- Describe about transport layer and application layer protocols.

TEXT BOOKS:

1. Behrouz Forouzan, “Data Communications and Networking”, Edition 5, Tata McGraw Hill., 2017.
2. Andrews S. Tanenbaum, David J Wetherall, “Computer Networks”, Edition 5, Pearson Education, 2012.

REFERENCES:

1. William Stallings, “Data & Computer Communications”, PHI, Edition 6, 2012.
2. Data Communications and Networks- 2nd edition -Achyut S Godbole- and AtulKahate Tata McGraw-Hill, 2017.
3. Computer Networking - James F. Kurose & Keith W. Ross- PEARSON, 6th EDITION, 2017.
4. Computer Communications and Networking Technologies - Michael A. Gallo & William M. Hancock- BROOKS&COLE, 2001.

WEB REFERENCES:

1. https://www.tutorialspoint.com/data_communication_computer_network/data_communication_computer_network_tutorial.pdf
2. <https://www.sciencedirect.com/topics/computer-science/data-communication-network>
3. <https://www.citethisforme.com/topicideas/technology/data%20communication%20and%20net%20working%20references-39792182>
4. <https://link.springer.com/book/10.1007/978-1-4020-7870-5>
5. <https://www.iitg.ac.in/eee/syllabusdetails.php?sln=WEo0emtEZHM2U0VmTkR5MXgwNU5oUT09>

CO-PO MAPPING:

CO\PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	1	1	2	3	-	-	-	2	1	2
CO2	2	2	1	1	1	1	-	-	-	2	2	2
CO3	2	1	2	1	1	2	-	-	-	2	1	2
CO4	2	3	2	2	2	1	-	-	-	2	2	2
CO5	2	2	3	2	2	3	-	-	-	1	2	2
AVG	2	2	2	1	2	2	-	-	-	2	2	2

JCS2311	DATA STRUCTURES AND ALGORITHMS LABORATORY	L	T	P	C
		0	0	4	2

COURSE OBJECTIVES

- To implement linear and non-linear data structures
- To identify and implement appropriate data structures for various applications
- To execute different operations of search trees
- To implement various sorting and searching algorithms
- To implement hashing techniques

LIST OF EXERCISES

1. List ADT using Python with insert, delete, search and modify operations
2. Implementation of Singly linked list.
3. a. Stack ADT using arrays
b. Stack ADT using linked list
4. a. Queue ADT using arrays
b. Queue ADT using linked list
5. Infix to Post fix conversion
6. Binary Search Trees
7. AVL Trees
8. Implement graph traversal techniques BFS and DFS.
9. Bubble sort, Selection sort, Insertion sort
10. Linear search and Binary search
11. Hashing-Linear Probing and Quadratic Probing

TOTAL:60 PERIODS

COURSE OUTCOMES:

At the end of the course, the student should be able to:

- Identify appropriate data structures for specified problem definition
- Implement operations like searching, insertion, deletion, traversing mechanism etc. on various data structures.
- Apply appropriate linear /non-linear data structure operations for solving a given problem.
- Implement appropriate sorting/searching technique for given problem
- Apply appropriate hash functions that result in a collision free scenario for data storage and retrieval.

TEXT BOOKS:

1. Yashavant Kanetkar,“Understanding Pointer sin C & C++”, 5th Revised & Updated Edition, BPB Publications,2018.
2. Rance D.Necaise, “Data Structures and Algorithms Using Python”, Wiley Publications, 2010.

LIST OF EQUIPMENT FOR A BATCH OF 30 STUDENTS:

SOFTWARE: Ubuntu C / Python

HARDWARE: Standalone desktops 30 Nos. (or) Server supporting 30 terminals or more

WEBSITE REFERENCES:

- <https://www.geeksforgeeks.org/data-structures/>
- <https://www.worldscientific.com/worldscibooks/10.1142/5256>
- <https://www.programiz.com/dsa>
- <https://www.youtube.com/watch?v=8hly31xKli0>
- <https://www.codechef.com/certification/data-structures-and-algorithms/prepare>

	Program Outcomes												PSO		
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	3	3	3	-	-	-	-	-	-	-	1	1	3	1	3
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CO3	3	3	3	-	-	-	-	-	-	-	1	1	3	1	3
CO4	3	3	3	-	-	-	-	-	-	-	1	1	3	1	3
CO5	3	3	3	-	-	-	-	-	-	-	1	1	3	1	3
AV G	3	3	3	-	-	-	-	-	-	-	1	1	3	1	3

JIT2311	OBJECT ORIENTED PROGRAMMING LABORATORY	L	T	P	C
		3	0	2	4

COURSE OBJECTIVES:

- To understand basics of Object-Oriented Programming with C++ and Java programming language
- To know the principles of polymorphism and templates
- To define exceptions and use of inheritance
- To develop a java application with threads and interfaces
- To design and build Graphical User Interface Application using JAVAFX

LIST OF EXERCISES

1. a) Develop a C++ code to create a class and object and print the member variables.
b) Develop a C++ program to show the working of default constructor, parametrized constructor and copy constructor and destruct any object.
2. Implement a C++ code to demonstrate the concept of static member function.
3. Develop a menu driven C++ program to find area of two-dimensional objects (any three) using function overloading.
4. (a) Develop a C++ code to overload the unary operators using operator function
(b) Develop a C++ code to overload binary operators using operator function
5. (a) Implement a C++ code to swap any two values using function template.
(b) Implement a C++ code to find the maximum of any three values using a class template.
6. Develop a C++ code to handle division-by-zero and out-of-range exception.
7. a) Implement a Java code to print the sum, multiply, subtract, divide and remainder of two numbers. Get the input from the user.
(b) Develop a Java program to print and return the current class instance using this keyword.
8. Develop an application with Employee class with Emp_name, Emp_id, Address, Mail_id, Mobile no as members. Inherit the classes, Programmer, Assistant Professor, Associate Professor and Professor from employee class. Add Basic Pay (BP) as the member of all the inherited classes with 97% of BP as DA, 10 % of BP as HRA, 12% of BP as PF, 0.1% of BP for staff club fund. Generate pay slips for the employees with their gross and net salary.
9. Develop a Java program to create a 'Geometry' package with relevant classes (For e.g. Circle/ Square/ Polygon and so on.) and export it.
10. Create an interface for 'Playable' with classes Football, Volleyball and Basketball.
11. Develop a Java code to implement the concept of Thread.
12. Design and develop an application using JavaFX.

TOTAL :60 Periods

COURSE OUTCOMES

At the end of the course, the student should be able to:

- Apply the concepts of classes and objects to solve simple problems
- Develop programs using polymorphism and templates
- Handle the exceptions and inherit a class
- Build Java applications with thread models and interfaces
- Develop an GUI based application in JavaFX using event handling concept and controls

TEXTBOOKS

1. Herbert Schildt, “C++: The Complete Reference”, 4th Edition, McGraw Hill Education, New Delhi, 2017.
2. Herbert Schildt, “Java: The Complete Reference”, 11th Edition, McGraw Hill Education, New Delhi, 2019.
3. Herbert Schildt, “Introducing JavaFX 8 Programming”, 1st Edition, McGraw Hill Education, New Delhi, 2015.

WEBSITE REFERENCES

1. [C++ Programming | Neso Academy](#)
2. cplusplus.com/doc/tutorial/
3. [C++ Tutorial \(w3schools.com\)](http://www.w3schools.com/C++/)
4. [Introduction to Java \(w3schools.com\)](http://www.w3schools.com/Java/)
5. [Java Tutorials for Beginners \(tutorialspoint.com\)](http://www.tutorialspoint.com/java/)

Mapping of CO with PO/PSO

	Program Outcomes												PSO		
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
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CO2	3	3	3	-	-	-	-	-	-	-	1	1	3	1	3
CO3	3	3	3	-	-	-	-	-	-	-	1	1	3	1	3
CO4	3	3	3	-	-	-	-	-	-	-	1	1	3	1	3
CO5	3	3	3	-	-	-	-	-	-	-	1	1	3	1	3
AV G	3	3	3	-	-	-	-	-	-	-	1	1	3	1	3

JNC2361	DISASTER RISK REDUCTION AND MANAGEMENT	L	T	P	C
		3	0	0	3

COURSE OBJECTIVE

- To impart knowledge on concepts related to disaster, disaster risk reduction, disaster management
- To acquaint with the skills for planning and organizing disaster response

UNIT I HAZARDS, VULNERABILITY AND DISASTER RISKS 9

Definition: Disaster, Hazard, Vulnerability, Resilience, Risks – Types of Disasters: Natural, Human induced, Climate change induced –Earthquake, Landslide, Flood, Drought, Fire etc – Technological disasters- Structural collapse, Industrial accidents, oil spills -Causes, Impacts including social, Economic, political, environmental, health, psychosocial, etc.- Disaster vulnerability profile of India and Tamil Nadu - Global trends in disasters: urban disasters, pandemics, Complex emergencies, - Inter relations between Disasters and Sustainable development Goals

UNIT II DISASTER RISK REDUCTION (DRR) 9

Sendai Framework for Disaster Risk Reduction, Disaster cycle - Phases, Culture of safety, prevention, mitigation and preparedness community Based DRR, Structural- nonstructural measures, Roles and responsibilities of- community, Panchayati Raj Institutions / Urban Local Bodies (PRIs/ULBs), States, Centre, and other stakeholders- Early Warning System – Advisories from Appropriate Agencies.- Relevance of indigenous Knowledge, appropriate technology and Local resources.

UNIT III DISASTER MANAGEMENT 9

Components of Disaster Management – Preparedness of rescue and relief, mitigation, rehabilitation and reconstruction- Disaster Risk Management and post disaster management – Compensation and Insurance- Disaster Management Act (2005) and Policy - Other related policies, plans, programmes and legislation - Institutional Processes and Framework at State and Central Level- (NDMA – SDMA-DDMA-NRDF- Civic Volunteers)

UNIT IV TOOLS AND TECHNOLOGY FOR DISASTER MANAGEMENT 9

Early warning systems -Components of Disaster Relief: Water, Food, Sanitation, Shelter, Health, Waste Management, Institutional arrangements (Mitigation, Response and Preparedness, – Role of GIS and Information Technology Components in Preparedness, Risk Assessment, Response and Recovery Phases of Disaster – Disaster Damage Assessment. - Elements of Climate Resilient Development –Standard operation Procedure for disaster response – Financial planning for disaster Management

UNIT V DISASTER MANAGEMENT: CASE STUDIES 9

Discussion on selected case studies to analyse the potential impacts and actions in the context of disasters-Landslide Hazard Zonation: Earthquake Vulnerability Assessment of Buildings and Infrastructure: Case Studies, Drought Assessment: Case Studies, Coastal Flooding: Storm Surge Assessment, Floods: Fluvial and Pluvial Flooding: Case Studies; Forest Fire: Case Studies, Man Made disasters: Case Studies, Space Based Inputs for Disaster Mitigation and Management and field works related to disaster management.- Field work-Mock drill -

TOTAL : 45 PERIODS

TEXT BOOKS:

1. Taimpo (2016), Disaster Management and Preparedness, CRC Publications
2. Singh R (2017), Disaster Management Guidelines for earthquakes, Landslides, Avalanches and tsunami, Horizon Press Publications
3. Singhal J.P. “Disaster Management”, Laxmi Publications, 2010. ISBN-10: 9380386427
ISBN- 13: 978-9380386423
4. Tushar Bhattacharya, “Disaster Science and Management”, McGraw Hill India Education Pvt. Ltd., 2012. ISBN-10: 1259007367, ISBN-13: 978-1259007361]

REFERENCES

1. Govt. of India: Disaster Management Act, Government of India, New Delhi, 2005.
2. Government of India, National Disaster Management Policy, 2009.
3. Shaw R (2016), Community based Disaster risk reduction, Oxford University Press

COURSE OUTCOME:

CO1: To impart knowledge on the concepts of Disaster, Vulnerability and Disaster Risk reduction (DRR)

CO2: To enhance understanding on Hazards, Vulnerability and Disaster Risk Assessment prevention and risk reduction

CO3: To develop disaster response skills by adopting relevant tools and technology

CO4: Enhance awareness of institutional processes for Disaster response in the country and

CO5: Develop rudimentary ability to respond to their surroundings with potential Disaster response in areas where they live, with due sensitivity

JPT2041	SOFT SKILLS AND APTITUDE
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OBJECTIVE:

1. To make students analyze and solve problems in technical as well as aptitude. Enhance the technical skills and basics of programming language
2. To make the students understand how to apply the practical knowledge with real time applications.
3. To make the students think and draw a conclusion from different scenarios.
4. To help the students understand C programming concepts

UNIT-I SOFT SKILLS AND APTITUDE - I 6

Synonyms - Antonyms - Odd Words - Idioms and Phrases - Error Spotting - Interpersonal Communication- Sentence Correction - Resume Writing Skills - Interview Skills.

UNIT-II SOFT SKILLS AND APTITUDE-II 6

Reading Comprehension - Sentence Improvement - Jumbled Sentences - Parts of speech - Fact, Inference, Judgements - . Paragraph formation -Fill in the Blanks - Group Discussion - Mock Interview Sessions.

UNIT III QUANTITATIVE APTITUDE 6

Number Theory - Divisibility rule - LCM and HCF - Simplification - Surds and Indices - Average - Percentage

UNIT IV LOGICAL REASONING 6

Number and letter Series - Coding and Decoding - Ranking and Ordering - Odd man out - Image Based Relationships

UNIT V TECHNICAL APTITUDE IN C-I 6

Pointers - Pointer dereferencing - Functions - Call by value, Call by reference - Structures - Structure Pointers - Arrays - One Dimensional, Two Dimensional, Multi Dimensional - Sorting - Time Complexity - Strings - String Methods.

TOTAL: 30 PERIODS

COURSE OUTCOMES:

At the end of the course, the student should be able to:

- Develop different types of content using the skills learnt
- Manage time and stress competently
- Find answers to real time application problems
- Use Logical reasoning skills to solve problems differently
- Apply C programming concepts for coding

TEXT BOOKS:

1. Dr.RS Aggarwal, "Quantitative Aptitude", S Chand Publishing, 2020
2. Dr.R.S Aggarwal. "A Modern Approach To Verbal Reasoning",S. Chand Publishing, 2017
3. Dr. R. S. Aggarwal, "A Modern Approach to Non-Verbal Reasoning". S. Chand Publishing, 2017
4. Pradip Dey, ManasGhosh, "Fundamentals of Computing and Programming in C. First

REFERENCES:

1. Data Communications and Networks- 2nd edition -Achyut S Godbole- and AtulKahate Tata McGraw-Hill, 2017.
2. Computer Networking - James F. Kurose & Keith W. Ross- PEARSON, 6th EDITION, 2017. 3. Computer Communications and Networking Technologies - Michael A. Gallo & William M. Hancock- BROOKS&COLE, 2001.

WEB REFERENCES:

- <https://www.indiabix.com/aptitude-questions-and-answers>
- <https://m4maths.com/placement-puzzles.php>
- www.freshersworld.com

JMA2402	APPLIED LINEAR ALGEBRA (For CSE, CSE (AI&ML), CSE (CS), CS&BS, AI&DS, IT & ECE)	L	T	P	C
		2	2	0	3

COURSE OBJECTIVES:

- To impart knowledge of consistency of system of equations through Rouche-Capellitheorem.
- To familiarize students in the concepts of vector spaces, bases and dimension.
- To enable students understand concepts of linear transformation, Eigenvalues, Eigenvectors and Diagonalizability.
- To introduce inner product spaces, orthogonalization and least square approximations.

UNIT I	MATRICES AND SYSTEM OF LINEAR EQUATIONS	9+3
Matrices – Row Echelon form – Rank – Non-homogeneous system of linear equations – Homogeneous system of linear equations – Rouché-Capelli theorem (without proof) – Consistency – Gauss Jordan method – Gauss Seidel method		
UNIT II	VECTOR SPACES	9+3
Definition of field – Vector spaces – Subspaces – Properties – Linear combinations – Linear independence and linear dependence – Span – Bases and dimensions		
UNIT III	LINEAR TRANSFORMATION	9+3
Linear transformation – Properties – Kernel and Range – One-to-One correspondence – Rank and Nullity – Dimension theorem		
UNIT IV	DIAGONALIZATION	9+3
Matrix representations of linear transformations – Eigenvalues and eigenvectors – Diagonalizability.		
UNIT V	INNER PRODUCT SPACES	9+3
Inner products and norms – Gram Schmidt orthogonalization process – Least square approximation		

TOTAL: 60 PERIODS

COURSE OUTCOMES:

At the end of the course, the student should be able to:

- Apply Rouché-Capelli theorem for solving system of equations.
- Solve problems occurring in vector spaces and subspaces.
- Conceptualize linear transformation and use it in real-time problems.
- Demonstrate efficient use of matrix representations and diagonalization.
- Solve problems using orthogonalization process and use least square approximations.

TEXT BOOKS:

1. Grewal B.S., "Higher Engineering Mathematics", Khanna Publishers, New Delhi, 44th Edition, 2021.
2. Kreyszig Erwin., "Advanced Engineering Mathematics", John Wiley and Sons, 10th Edition, New Delhi, 2016.
3. Friedberg. A.H., Insel. A.J. and Spence. L., "Linear Algebra", Prentice Hall of India, New Delhi, 2004.

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1. Kumaresan. S., "Linear Algebra – A Geometric Approach", Prentice – Hall of India, New Delhi, Reprint, 2010.
2. Lay D.C., "Linear Algebra and its Applications", 5th Edition, Pearson Education, 2015.

WEB REFERENCES:

- <https://nptel.ac.in/courses/111107105/>
- <https://nptel.ac.in/courses/108104174/>
- <https://nptel.ac.in/courses/111104137/>
- <https://nptel.ac.in/courses/111106135/>
- <https://nptel.ac.in/courses/111108157/>

Mapping of CO with PO

	Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2	3	-	-	-	2	-	-	1
CO2	3	2	2	2	3	-	-	-	2	-	-	1
CO3	3	2	2	2	3	-	-	-	2	-	-	1
CO4	3	2	2	2	3	-	-	-	2	-	-	1
CO5	3	2	2	2	3	-	-	-	2	-	-	1
AVG	3	2	2	2	3	-	-	-	2	-	-	1

JIT2401	SOFTWARE ENGINEERING	L	T	P	C
		3	0	0	3

COURSE OBJECTIVES

- To study the different software process models and developments
- To learn the fundamental concepts of requirements engineering and Analysis Modeling
- To analyze and apply the various software design methodologies.
- To acquire knowledge in various testing methodologies and tools
- To attain the knowledge in Project Management process

PREREQUISITE:

- Nil

UNIT – I: INTRODUCTION TO SOFTWARE ENGINEERING AND SOFTWARE PROCESS 9

Introduction to Software Engineering: Software engineering- a layered technology, a process framework, the capability maturity model integration (CMMI). **Process models:** The waterfall model, incremental process models, evolutionary process models, the unified process.

UNIT – II: REQUIREMENT ANALYSIS AND SPECIFICATION 9

Functional Requirements - Non-functional Requirements - Software requirement analysis and specification: Value of good SRS, requirement process, requirement Specification using Data flow Diagram. Case study - ATM, Library Management System.

UNIT – III: SOFTWARE DESIGN 9

Design Engineering: Design process and design quality, design concepts, the design model. **Creating an architectural design:** software architecture, data design, architectural styles and patterns, architectural design, conceptual model of UML diagrams. Case studies - Point of Scale System, Online Ticket Reservation System.

UNIT – IV: TESTING AND MAINTENANCE 9

Testing Strategies: A strategic approach to software testing, test strategies for conventional software, black-box and white-box testing, validation testing, system testing, the art of debugging.

UNIT – V: PROJECT MANAGEMENT 9

Risk management: Reactive Vs proactive risk strategies, software risks, risk identification, risk projection, risk refinement, RMMM, RMMM plan. **Quality Management:** Quality concepts, software quality assurance, software reviews, formal technical reviews, statistical software quality assurance, software reliability, the ISO 9000 quality standards.

TOTAL: 45 PERIODS

COURSE OUTCOMES

At the end of the course, the student should be able to:

1. Identify the key activities in managing a software project and compare different process models.
2. Apply concepts of Requirements Engineering and Analysis Modeling
3. Apply systematic procedures in software design and systems.
4. Compare the various testing strategies.
5. Handle project management system and qualities.

TEXTBOOKS:

1. Software Engineering, A practitioner's Approach- Roger S. Pressman, 6th edition, Mc Graw Hill International Edition.
2. Software Engineering- Sommerville, 7th edition, Pearson Education.
3. The unified modeling language user guide Grady Booch, James Rumbaugh, Ivar Jacobson, Pearson Education.

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1. Software Engineering, an Engineering approach- James F. Peters, Witold Pedrycz, John Wiley.
2. Software Engineering principles and practice- Waman S Jawadekar, The Mc Graw-Hill Companies.
3. Fundamentals of object-oriented design using UML Meiler page-Jones: Pearson Education.

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- <https://www.geeksforgeeks.org/software-engineering/>
- <https://www.javatpoint.com/software-engineering>
- https://www.tutorialspoint.com/software_engineering/index.htm

Mapping of CO with PO/PSO

	Program Outcomes												PSO		
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO-1	3	-	2	-	-	-	-	-	-	2	2	2	3	3	3
CO-2	3	-	2	-	-	-	-	-	-	-	2	-	3	3	3
CO-3	1	-	2	-	-	-	-	-	-	1	2	-	3	3	3
CO-4	3	-	2	-	-	-	-	-	-	1	2	-	3	3	3
CO-5	2	-	2	-	-	-	-	-	-	1	2	-	3	3	3
AVG	3	-	2	-	-	-	-	-	-	2	2	-	3	3	3

JCS2401	DATABASE MANAGEMENT SYSTEMS	L	T	P	C
		3	0	0	3

COURSE OBJECTIVES:

- To learn the working of various data models and get exposed to SQL querying
- To design data base with ER models and understand the significance of normalization
- To understand the fundamental concepts of transaction processing- concurrency control techniques and recovery procedures
- To have an introductory knowledge about the Storage and Query processing Techniques
- To familiarize the students with different types of advanced databases

UNIT I DATA MODELS AND QUERYING 9

Purpose of Data base System–Views of data–Data Models–Data base System Architecture
Introduction to relational databases–Relational Model–Keys–Relational Algebra–SQL fundamentals–Advanced SQL features–Embedded SQL–Dynamic SQL.

UNIT II DESIGN AND NORMALIZATION 9

Entity-Relationship model – E-R Diagrams – Enhanced-ER Model – ER-to-Relational Mapping Functional Dependencies–Non-loss Decomposition–First-Second-Third Normal Forms Dependency Preservation – Boyce/Codd Normal Form – Multi-valued Dependencies and Fourth Normal Form–Join Dependencies and Fifth Normal Form.

UNIT III TRANSACTION PROCESSING 9

Transaction Concepts–ACID Properties– Schedules–Serializability–Concurrency Control–Needfor Concurrency – Locking Protocols – Two Phase Locking – Deadlock – Transaction Recovery- SavePoints –Isolation Levels–SQL Facilities for Concurrency and Recovery.

UNIT IV DATA ORGANIZATION AND QUERY OPTIMIZATION 9

RAID – File Organization – Organization of Records in Files – Indexing and Hashing OrderedIndices – B+ tree Index Files – B tree Index Files – Static Hashing – Dynamic Hashing – QueryProcessing Overview–Query optimization.

UNIT V ADVANCED DATABASES 9

OODBMS- - Object-Based Databases - OO Data Model - OO Languages – Object Relational Databases - ODMG Object Model - XML – Structure of XML - Temporal Databases – Mobile Databases – Spatial Databases.

TOTAL: 45 PERIODS

COURSE OUTCOMES:

At the end of the course, the student should be able to:

- Design efficient databases and extract information with SQL queries
- Develop preliminary design of normalized databases

- Analyze the various transactions and provide smooth access of data
- Create organized databases and write optimized queries
- Apply the various advanced database concepts and security to the current project

TEXTBOOKS

1. Abraham Silberschatz, HenryF. Korth, S.Sudharshan, “Database System Concepts”, Seventh Edition, TataMcGraw Hill,2020
2. Ramez Elmasri, Shamkant B.Navathe, “Fundamentals of Database Systems”, Seventh Edition, Pearson Education, 2017.

REFERENCES

1. Raghu Ramakrishnan, Johannes Gehrke , “Database Management Systems”, Third Edition, McGraw-HillCollege Publications, 2015.
2. C.J.Date, A.Kannan, S.Swamynathan, “An Introduction to Database Systems”, EighthEdition, Pearson Education, 2008.
3. G.K.Gupta, “Database Management Systems” ,Tata McGrawHill, 2011.

WEBSITE REFERENCE

- <https://www.tutorialspoint.com/dbms/index.htm>
- <https://www.mygreatlearning.com/academy/learn-for-free/courses/database-management-systems-dbms>
- <https://www.w3schools.in/dbms/>
- https://sqlzoo.net/wiki/SQL_Tutorial

Mapping of CO with PO/PSO

	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	2	3	3	2	3	1	3	2	3	3	3	3
CO2	3	3	3	2	3	3	1	3	2	3	2	3	2	3	3
CO3	3	3	3	2	3	3	2	3	2	3	2	3	3	3	3
CO4	3	3	3	1	3	3	2	3	2	3	2	3	3	2	3
CO5	3	3	3	2	3	3	2	3	1	3	2	3	3	3	2
AVG	3	3	3	1.8	3	3	1.8	3	1.6	3	2	3	2.8	2.8	2.8

JIT2421	OPERATING SYSTEMS	L	T	P	C
		3	0	2	4

COURSE OBJECTIVES:

- To understand the basics and functions of operating systems.
- To analyze scheduling algorithms and process synchronization.
- To interpret various memory management schemes.
- To classify and familiar with storage management and file systems.
- To be familiar with the basics of virtual machines and Mobile OS

PREREQUISITE:

- Computer Architecture

UNIT I COMPONENTS OF AN OS 9

Computer System - Elements and organization; Operating System Overview - Objectives and Functions - Evolution of Operating System; Operating System Structures – Operating System Services - User Operating System Interface - System Calls – System Programs .

UNIT II PROCESS MANAGEMENT 9

Processes - Process Concept - Process Scheduling- Inter-process Communication; CPU Scheduling - Scheduling criteria - Scheduling algorithms; Process Synchronization - The Critical-Section problem - Synchronization hardware – Semaphores – Mutex - Classical problems of synchronization - Monitors; Deadlock - Methods for handling deadlocks, Deadlock prevention, Deadlock avoidance, Deadlock detection, Recovery from deadlock.

UNIT III MEMORY MANAGEMENT 9

Main Memory - Swapping - Contiguous Memory Allocation – Paging - Structure of the Page Table - Segmentation, Segmentation with paging; Virtual Memory - Demand Paging – Copy on Write - Page Replacement - Allocation of Frames –Thrashing.

UNIT IV STORAGE MANAGEMENT 9

Mass Storage system – Disk Structure - Disk Scheduling and Management; File-System Interface - File concept - Access methods - Directory Structure - Directory organization - File system mounting - File Sharing and Protection; File System Implementation - File System Structure - Directory implementation - Allocation Methods - Free Space Management

UNIT V VIRTUAL MACHINES AND MOBILE OS 9

Virtual Machines – History, Benefits and Features, Building Blocks, Types of Virtual Machines and their Implementations, Virtualization; Mobile OS - iOS and Android Architecture , SDK Frameworks.

TOTAL: 45 PERIODS

LIST OF EXPERIMENTS:

1. Basics of UNIX commands
2. Write programs using the following system calls of UNIX operating system fork, exec, getpid, exit, wait, close, stat, open dir, read dir
3. Write C programs to simulate UNIX commands like cp, ls, grep, etc.
4. Write C programs to implement the various CPU Scheduling Algorithms
5. Bankers Algorithm for Dead lock Avoidance
6. Implementation of Dead lock Detection Algorithm
7. Implementation of the following Memory Allocation Methods for fixed partitiona)FirstFit b)WorstFit c)BestFit
8. Implementation of Paging Technique of Memory Management
9. Implementation of the following Page Replacement Algorithmsa)FIFO b)LRUc)LFU

TOTAL: 30 PERIODS

COURSE OUTCOMES:

At the end of the course, the student should be able to:

- Classify operating system components and system calls based on functionality
- Analyze and evaluate CPU scheduling algorithms and assess the solutions for synchronization problems and dead lock prevention
- Familiarize in memory management and storage management techniques
- Analyze the File System Interface, Directory Structure
- Compare iOS and Android Operating Systems.

TEXT BOOKS

1. Abraham Silberschatz, Peter Baer Galvin and Greg Gagne, “Operating System Concepts”, 9th Edition, John Wiley and Sons Inc., 2018.
2. William Stallings, “Operating Systems – Internals and Design Principles”,

7th Edition, Prentice Hall, 2018.

REFERENCES

1. Andrew S. Tanenbaum, “Modern Operating Systems”, Second Edition, Addison Wesley, 2014.
2. Charles Crowley, “Operating Systems: A Design-Oriented Approach”, Tata McGraw Hill Education, 2018.
3. D M Dhamdhere, “Operating Systems: A Concept-Based Approach”, Second Edition, Tata McGraw Hill Education.

WEBSITE LINKS

1. https://www.tutorialspoint.com/operating_system/os_overview.htm/
2. <https://www.geeksforgeeks.org/introduction-of-process-management/>
3. <https://technobyte.org/memory-management-os-simple-explanation/>
4. <https://inst.eecs.berkeley.edu/~eecsba1/sp97/reports/eecsba1a/index-os.html/>

Mapping of CO with PO/PSO

	Program Outcomes												PSO		
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO1	3	3	3	3	-	-	-	-	2	-	-	3	3	3	3
CO2	3	3	3	3	-	-	-	-	2	-	-	3	3	3	3
CO3	3	3	3	3	-	-	-	-	2	-	-	3	3	3	3
CO4	3	3	3	3	-	-	-	-	2	-	-	3	3	3	3
CO5	3	3	3	3	3	2	-	-	2	-	-	3	3	3	3
AVG	3	3	3	3	0.6	0.4	-	-	2	-	-	3	3	3	3

JCS2411	DATABASE MANAGEMENT SYSTEMS LABORATORY	L	T	P	C
		0	0	4	2

COURSE OBJECTIVES:

- To familiarize with DDL, DML and DCL Commands
- To learn the use of nested and join queries
- To understand functions, procedures and procedural extensions of databases
- To be familiar with database triggers for specific application
- To develop applications using front-end tools and back-end DBMS

PREREQUISITE:

- Basics of Programming Concepts

LIST OF EXPERIMENTS

1. Data Definition Commands, Data Manipulation Commands for inserting, deleting, updating and retrieving Tables and Transaction Control statements.
2. Database Querying – Simple queries, Nested queries, Sub queries and Joins.
3. Creation of Views, Sequences, Indexes, Savepoint and commit constraints.
4. Database Programming: Implicit and Explicit Cursors with PL/SQL block.
5. Creation of PL/SQL Procedures and Functions.
6. Creation of PL/SQL Triggers.
7. Exception Handling.
8. Database Design using ER modeling, Normalization and Implementation for any application.
9. Database Connectivity with Front End Tools
10. Mini project (Application Development) in one of the following systems
 - a) Student database system
 - b) Inventory Control System
 - c) Online Library Management
 - d) Hospital Management System
 - e) Railway Reservation System
 - f) Personal Information System
 - g) Online Course registration and maintenance System
 - h) Attendance Management System
 - i) Hotel Management System
 - j) E-commerce portal

k) Online auction system

TOTAL: 60 PERIODS

COURSE OUTCOMES:

At the end of the course, the student should be able to:

- Execute typical data definitions, data control and data manipulation commands
- Familiarize with Nested and Join Queries for extracting combinatorial data
- Implement simple applications that use Views
- Develop PL/SQL procedures, functions and packages
- Develop applications using Front-end & Back-end Tools and also to handle report generation.

REFERENCE BOOKS

1. Abraham Silberschatz, Henry F. Korth, S. Sudharshan, “Database System Concepts”, Seventh Edition, Tata McGraw Hill, 2020.

WEB REFERENCES

- <https://www.w3schools.com/sql/default.asp>
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- https://www.tutorialspoint.com/python/python_database_access.html
- <https://sqlzoo.net>

Mapping of CO with PO/PSO

	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	3	2	2	2	3	2	3	3	2	2	3	3	3
CO2	1	2	3	2	2	1	3	1	2	2	2	2	3	3	3
CO3	2	2	3	3	2	3	3	2	1	3	3	2	3	3	3
CO4	3	2	3	3	1	1	3	1	3	2	3	3	3	3	3
CO5	3	2	3	1	3	2	3	2	2	3	3	3	3	3	3
AVG	2	2	3	2.2	2	1.8	3	1.6	2.2	2.6	2.6	2.4	3	3	3

JPT2041	SOFTSKILLS AND APTITUDE	L	T	P	C
		0	0	2	1

OBJECTIVES:

1. To help students learn various forms of writing and develop content
2. To help students acquire time and stress management skills
3. To facilitate students to gain required knowledge to understand practical concepts in aptitude
4. To develop the thinking and analytical skills of students
5. To gain knowledge in concepts of C programming language

UNIT - I SOFT SKILLS AND APTITUDE-III 5

Communication – on Specific topics – both oral and written – Content development – various forms of writing and specific writing – Brainstorming – Individual – Concept focusing – Public Speaking – Analytical writing.

UNIT - II SOFT SKILLS AND APTITUDE-IV 5

Importance of Time – Time Management techniques – The art of prioritizing and scheduling – Stress – Positive and Negative Stress - Stress Management techniques – SWOT Analysis

UNIT III QUANTITATIVE APTITUDE 6

Profit and Loss and Discount – Simple and Compound interest - Ratio and Proportions – Allegations and Mixtures – Problem on Ages

UNIT IV LOGICAL REASONING 6

Directions – Blood Relation – Linear and Circular Arrangement – Cross variables – Set Theory

UNIT V TECHNICAL APTITUDE IN C-II 6

Strings - Storage Classes – Pointers – Preprocessor directives - Structures – Union. Type def – Input/Output – File I/O - Header Files – Type casting – Error handling – Command Line Arguments – Variable Arguments – Memory Management - Bitwise operators

TOTAL: 30 PERIODS

COURSE OUTCOMES

At the end of the course, the student will be able to

- Develop different types of content using the skills learnt
- Manage time and stress competently
- Find answers to real time application problems
- Use Logical reasoning skills to solve problems differently
- Apply C programming concepts for coding

TEXT BOOKS:

1. Dr. R.S Agrawal, “Quantitative Aptitude” and Non Verbal Reasoning published in 2000.
2. S.Chand – A Modern Approach to Logical Reasoning Published in 2000.
3. Pradip Dey, ManasGhosh, "Fundamentals of Computing and Programming in C. First

WEBSITES:

<https://www.indiabix.com/aptitude/questions-and-answers/>

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[www.freshers world.com](http://www.freshersworld.com)

www.careerride.com

www.youtube.com/watch/python

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<https://stackoverflow.com/>

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