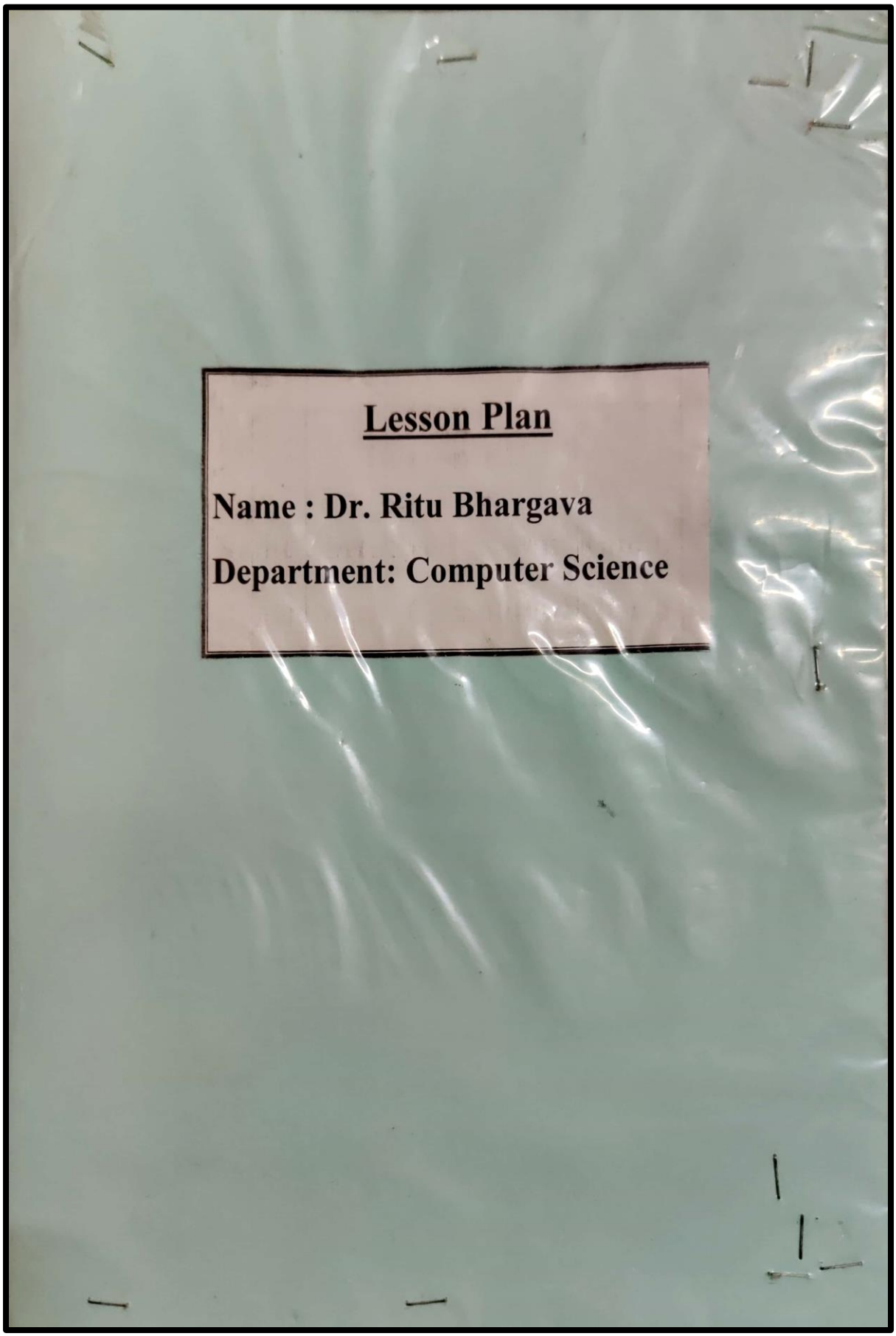
Lesson Plan
Name : Dr. Ritu Bhargava
Department: Computer Science

Faculty Name: - Dr.Ritu Bhargava
Subject: - Database Technologies -I
Class: - VCA SEM -V
Year: - 2017-2018

Month	No. Of Lectures	Areas covered	Other Activities
July	16	Basic DBMS terminology, DBMS v/s File processing system, advantages and disadvantages of DBMS, DBA and his responsibilities, Data Abstraction, physical and logical data independence, architecture of DBMS: Client/server architecture, 2 Tier & 3 Tier.	Assignments
August	18	Overview of hierarchical, network and relational models, comparison of network, hierarchical and relational models. Entity-Relationship Model: Concept, Entity, Entity Set, Attributes, degree of relationship, Relationships, keys(types), Aggregation,	Assignments
September	18	Generalization, Specialization Implementation of sequential, random & indexed sequential file organization. Relational Model: Storage organization for relations,	Conducted test
October	18	Relational Algebra: Set Operators(Union ,Intersection, Set-Difference, Cartesian Product) Relational Operators: (Select, Project, Rename, Join) , Decomposition of Relation Schemes,	Assignment
November	04	Dependencies and its types, Normalization up to BCNF.	Revision

Reference Books:

1. Fundamentals of Database Systems- Elmasri And Navathe Benjamin/Cummings Publishing Co. Inc.
2. An Introduction to Database Management System - Bipin C. Desai
3. An Introduction to Database system-C.J. Date Narosa Publishing House.

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RBhargava

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Subject: Open Source Operating System
Class: - BCA SEM -V
Year: - 2017-2018

Month	Areas covered	Other Activities
July	Introduction of Open Source Software, Need of Open Source, comparison with Closed source / Proprietary software. Linux Architecture, Linux file system (inode, Super block, Mounting and Unmounting), Types of File system	Assignment and Project
August	Kernel, Process Management in Linux. Shell Commands: user access commands, directory commands, file manipulation commands, security and protection commands, inter user and inter-machine communication, information commands, process management commands, program development and debugging commands	Lab Exercises Quiz
September	system administration commands, I/O Redirection and Piping, Relation and Absolute path, hard link and soft link, Linux Directory types, User and its Home Directory Vi editor,Shell Programming – Introduction to Shell, Various Shell of Linux, Shell Variables, Shell keywords	Assignment and Internal Exam Lab Exercises
October	Control statements- if-then-else, case-switch, While, Until, Find, Shell Metacharacters. Booting and Shutting down	Lab Exercises Class Test
November	BootLoaders: LILO, GRUB, Bootstrapping, init Process.	Revision and Remedial Classes

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References Books:

1. A practical Guide to Linux, Sobell, Pearson.
2. A Practical Guide to Linux Commands, Editors, and Shell Programming, Sobell, Pearson.
3. A Practical Guide to Fedora and Red Hat Enterprise Linux, Sobell, 5e, Pearson.
4. Redhat Linux 6.0 Administration Wiley

Faculty Name: - Dr.Ritu Bhargava
Subject: - Computer Architecture
Class: - MSc. (Previous) Computer Science SEM -I
Batch:- 2017-2018

Month	No. Of Lectures	Areas covered	Other Activities
July	16	Number system • Base to Decimal • Decimal To Base • Base To Base Arithmetic operations • Binary Addition • Binary Subtraction • Binary Multiplication • Binary Division Complements • 1's and 2's complements • 9's and 10's complement BCD • addition and subtraction • BCD to binary convertor • Binary to Gray • Gray to Binary Excess-3 code.	Assignments based on Number Conversions, Arithmetic operations, complements and codes
August	18	Boolean algebra and minimization techniques Boolean logic operations, basic laws of Boolean algebra Demorgan's theorem, SOP and POS, karnaugh map. Logic gates, Arithmetic Circuits: Half adder, Full adder Combinational Circuits: • Multiplexors, • De-multiplexors, • Decoders	Assignments

		• Encoders, Sequential Circuits: • Latches , • Flip-flops Registers, shift registers.	
September	**18**	Register transfer language, inter-register transfer, arithmetic micro operation, logic and shift micro operation, Instruction Codes Instruction Format, Timing and Control, Input/Output and Interrupts. Processor Bus organization, Arithmetic logic unit, Stack Organization,	Conducted test
October	**18**	Block diagram of 8085 and pin configuration Data transfer instructions, arithmetic, logical, shift, rotate, flag, compare, jump instruction, subroutine, loop, Addressing modes	Assignment
November	**04**	Associative memory, virtual memory, cache memory, cache coherence	Revision

Reference Books:

1. Computer Architecture and Organization, Hayes, Tata McGraw Hill
2. Computer Architecture and Logic Design, Thomas C, Tata McGraw Hill
3. Computer System Architecture, M. Morris Mano, PHI
4. Digital computer, M. Morris Mano, PHI
5. Computer Architecture, William Stallings, Pearson

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R Bhargava

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Faculty Name: - Dr.Ritu Bhargava
Subject: - Data Warehousing and Data Mining
Class: - MSc. (Final) Computer Science SEM -III
Batch: - 2017-2018

Month	No. Of Lectures	Areas covered	Other Activities
July	16	Data Warehousing: Introduction to Data Warehouse, Data mart, Data warehouse architecture, Multidimensional Data Model (data cube) OLAP Techniques: Roll-up, slicing and dicing, drilldown, pivot, Approaches to OLAP servers (MOLAP,ROLAP,HOLAP) OLTP, Warehouse schema(star schema, snowflake schema, fact constellation) metadata,. Data Warehouse ETL Process (data extraction, data cleaning, data transformation, loading).	Assignments
August	18	Data Mining: Introduction, Definition, KDD vs. DM, DBMS vs. DM, DM Techniques: verification model, discovery model: discovery of association rule, discovery of classification rule, clustering, discovery of frequent episodes, deviation detection, Issues and Challenges in DM, DM Applications (Business and E-commerce, Scientific, Engineering and Health care, Web data)	Assignments and Quiz
September	18	Association Rules, Market basket analysis, Association Rules: Apriori Algorithm, Partition, Incremental, FP-tree growth algorithms, learning techniques(supervised and unsupervised). Classification: Hierarchical and non-hierarchical techniques, Partitioning	Conducted test Lab Exercise on WEKA
October	18	Clustering: K-MEDOID Algorithm K-means clustering, hierarchical clustering. Decision Trees: decision tree, types of decision tree Decision tree induction, Tree pruning, Extracting classification rules from decision trees	Lab Exercise on WEKA Assignment
November	04	Decision tree construction ,algorithms: CART, ID3, J48, Decision tree construction with presorting.	Revision

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Faculty Name: - Dr.Ritu Bhargava
Subject: - Data Structures and Algorithm-I
Class: - BCA SEM -II
Year: - 2017-2018

Month	Areas covered	Other Activities
December	Fundamental Notations: Data Structures and its Types: Primitive and Composite Data Types	Assignment
January	Arrays: - Concept of Arrays, Single dimensional array, Two dimensional array storage strategy of multidimensional arrays, Index Formula for single and multidimensional Array.	Quiz and Lab Exercises
February	Operations on Arrays with Algorithms (Insertion, deletion), Advantages and disadvantages. Sorting and Searching :-Introduction, Search algorithm (Linear and Binary),	Assignment and Internal Exam
March	Concept of sorting, Sorting algorithms (Bubble Sort, Insertion Sort, Selection Sort). Linked Lists:- Introduction to linked list and double linked list, Representation of linked lists in Memory, Traversing a linked list, Searching linked list,	Class Test
	Insertion and deletion into linked list, Doubly linked lists, Traversing doubly linked lists.	Revision and Remedial Classes

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Reference Books

1. Data Structures & Algorithms through 'C' - Hariom Pancholi – Genius Publications
2. Data Structures and algorithms in C++- Adam Drozdex, Vikas Publications
3. Expert Data Structures with 'C' – R.B.Patel - Khanna Book Publications
4. An introduction to data structures with applications -Jean-Paul Tremblay, P.G. Sorenson, TMH
5. Data Structures in C/C++-Tanenbaum, PHI

Subject: - Operating System
Class: - BCA SEM -IV
Year: - 2017-2018

Month	Areas covered	Other Activities
December	Introduction to Operating Systems, goals of OS, Operations of OS	Assignment
January	Classes of OS, batch processing, multi-processing, time sharing, distributed , real time systems, system calls, structure of OS, layer design of DOS, Unix.	Quiz
February	Process concept, process scheduling, fundamental of scheduling, scheduling criteria, long medium short term scheduling, CPU scheduling algorithms: FCFS, SJF, Priority, RR, Threads.	Assignment and Internal Exam
March	Logical versus physical address, contiguous allocation, fragmentation, compactation, swapping, segmentation, paging, page replacement algorithm, virtual memory, virtual memory with paging, demand paging.	Class Test
April	Virtual memory with paging, demand paging.	Revision and Remedial Classes

Reference:

1. Operating System Concepts, Galvin, Addison Wesley
2. Operating Systems, Ritchie, BPB Publications.

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Faculty Name: - Dr.Ritu Bhargava
Subject: - Database Technologies -II
Class: - VCA SEM -VI
Year: - 2017-2018

Month	Areas covered	Other Activities
December	Relational query language: DDL, DML, DCL, database integrity: entity integrity, domain integrity, referential integrity,	Assignment
January	Security, authorization access matrix, concurrency control. locking, serializability, recovery techniques Transaction management, life cycle of transaction, ACID Properties, E.F.Codd's rules, Constraints: Null Constraint, Primary Key, Unique key constraint,Foreign Key constraint,domain key constraint, Check Constraints, & Not Null. Searching, Matching & Basic Oracle Functions: String, Numeric, and Aggregate Functions.	Assignment
February	Introduction to SQL: Characteristics of SQL, Advantages of SQL, SQL data types and literals, Types of SQL commands, SQL operators, Tables, views and indexes,	Assignment and Internal Exam
March	Queries based on group By clause, order by clause, having clause, Unions, Intersection, Minus SQL. Joins	Lab Exercises
April	Sub queries	Lab Exercises and Revision

Reference Books:

SQL, PL/SQL the Programming Language of Oracle,Ivan Bayross

Database System Concepts, Avi Silberschatz, Henry F. Korth, and S. Sudarshan

Fundamentals of Database Systems, Ramez Elmasri

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Faculty Name: - Dr.Ritu Bhargava
Subject: - Internet Protection and Security
Class: - BCA SEM -VI
Year: - 2017-2018

Month	Areas covered	Other Activities
December	Introduction to the concepts of security: need for security, types of attacks.	Assignment
January	Cryptographic techniques: plain text and cipher text, substitution and transposition techniques: Caesar cipher, modified Caesar cipher, monoalphabetic cipher, Vigenere cipher, hill cipher, Vernam Cipher. stegnography, key range and key size.	Quiz
February	Computer based symmetric key cryptographic algorithm: Introduction, algorithm types: stream cipher and block cipher and mode: ECB, CBC, CFB, OFB. An overview of symmetric key cryptography, basics of data encryption standard DES,Computer based asymmetric cryptographic algorithm: Introduction of asymmetric key cryptography.	Assignment and Internal Exam
March	An overview of asymmetric key cryptographic, and the RSA algorithm. Internet security protocols: basic concepts, secure socket layer SSL, Secure hyper text transfer protocol.	Class Test
April	User authentication mechanism: passwords, certificate based authentication, biometrics authentication.	Revision and Remedial Classes

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Reference:

1.Pieprzyk Josef and et.al; Fundamentals of Computer Security, Springer-Verlag, 2008.

2. Trappe & Washington, Introduction to Cryptography, 2nd Ed. Pearson.,2006

3.Johannes A. Buchmann, "Introduction to cryptography", Springer- Verlag, 2004

Faculty Name: - Dr.Ritu Bhargava
Subject: -
Class: - MSc. (Previous) Operating System SEM -II
Batch: - 2017-2018

Month	No. Of Lectures	Areas covered	Other Activities
December	03	Introduction to Operating Systems, Goals of OS, operation of OS Classes of OS • Batch processing, • Multi-processing • Time sharing • Distributed • Real time systems	Assignment
January	18	System calls, structure of OS, layer design of DOS, Unix. Process concept, scheduling criteria, Process scheduling: • Long Term • Short Term Scheduling • Mid-Term Scheduling CPU scheduling algorithms • FCFS • SJF • R-R • Priority Concepts of threads. Logical versus physical address, Swapping, contiguous allocation, Fragmentation Compactation Segmentation, paging, segmentation with	Assignment

		paging, page replacement algorithm, virtual memory, virtual memory with paging, demand paging,	
February	**16**	Dead lock, characterization, Methods for handling dead locks, prevention, avoidance Thrashing, allocation of frame. Critical section, critical region, inter-process communication, monitor and semaphores.	Assignment and Internal Exam
March	**16**	History of Linux, Linux architecture, Linux File System, file naming, types of files, Commands: • User access commands • Directory commands • File manipulation commands • Information maintenance commands • Process control commands • Printing Commands • Communication Commands • Program Development and Debugging Commands • Security commands • I\O redirection Commands and Piping Commands • Basic networking commands in Linux	Lab Exercises
April	**04**	VI editor, locating files in Linux, filter, pipe, shell variables, local and global variables, command substitution, if, while, for, shift,	Lab Exercises and Revision

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