BASIRHAT COLLEGE

DEPARTMENT OF COMPUTER SCIENCE

LESSON PLAN-2023JAN-JUNE

B.Sc. Program with Computer Science (GE/DSC)

Semester-ll

Paper Title- DBMS

Paper Code- CMSGCOR02T

Credits-4

COURSE OUTCOME: -

After completion of this course the students will be able –

CO1 . Identify the basic concepts and various data model used in database design ER modelling concepts and architecture use and design queries using SQL.

CO2 . Apply relational database theory and be able to describe relational algebra expression, tuple and domain relation expression fro queries.

CO3 . Recognize and identify the use of normalization and functional dependency, indexing and hashing technique used in database design.

CO4 . Recognize/ identify the purpose of query processing and optimization and also demonstrate the basic of query evaluation.

CO5 . Apply and relate the concept of transaction, concurrency control and recovery in database.

CO6 . Discuss recovery system and be familiar with introduction to web database.

MONTH	COURSE/ TOPIC	TEACHER	CLASS HOUR	TUTORIAL
January	**Introduction to Database Management Systems**: Characteristics of database approach, **DDL Commands** ● Create table, alter table, drop table	**DP**	**DP-10** **FA-8**	**THEORYTICAL-7** **PRACTICAL -5** **TUTORIAL -4**

	datamodels, DBMS architecture and data independence.	**FA**		
February	**Entity Relationship and Enhanced ER Modeling:** Entity types, relationships, SQL-99: Schema Definition , **DML Commands** ● Select , update, delete, insert statements ● Condition specification using Boolean and comparison operators (and, or, not,=,<>,>,<,>=,<=) constraints, and object modeling. Arithmetic operators and aggregate functions(Count, sum, avg, Min, Max) ● Multiple table queries (join on different and same tables) ● Nested select statements ● Set manipulation using (any, in, contains, all, not in, not contains exists, not exists, union, intersect, minus, etc.) ● Categorization using group by……..having ● Arranging using order by	**DP** **FA**	**DP-8** **FA-4**	**THEORYTICAL-5** **PRACTICAL -3** **TUTORIAL -4**
March	**Relational Data Model :** Basic concepts, relational constraints, 1. Create tables with relevant foreign key constraints	**DP**	**DP-24** **FA-8**	**THEORYTICAL-16** **PRACTICAL -10** **TUTORIAL -6**

	2. Populate the tables with data 3. Perform the following queries on the database : 1. Display all the details of all employees working in the company. 2. Display ssn, lname, fname, address of employees who work in department no 7. 3. Retrieve the birthdate and address of the employee whose name is 'Franklin T. Wong' 4. Retrieve the name and salary of every employee 5. Retrieve all distinct salary values. 6. Retrieve all employee names whose address is in „Bellaire“ 7. Retrieve all employees who were born during the 1950s 8. Retrieve all employees in department 5 whose salary is between 50,000 and 60,000(inclusive) 9. Retrieve the names of all employees who do not have supervisors 10. Retrieve SSN and department name for all employees relational algebra 11. Retrieve the name and address of all employees who work for the 'Research' department 12. For every project located in 'Stafford', list the project number, the controlling department number, and the department manager's last name, address, and birthdate. 13. For each employee, retrieve the employee's name, and the name of his or her immediate supervisor.	**FA**		

	14. Retrieve all combinations of Employee Name and Department Name 15. Make a list of all project numbers for projects that involve an employee whose last name is 'Narayan‟ either as a worker or as a manager of the department that controls the project. 16. Increase the salary of all employees working on the 'ProductX' project by 15%. Retrieve employee name and increased salary of these employees.			
April	**Database design:** ER and EER to relational mapping, functional dependencies, 17. Retrieve a list of employees and the project name each works in, ordered by the employee's department, and within each department ordered alphabetically by employee first name. 18. Select the names of employees whose salary does not match with salary of any employee in department 10. 19. Retrieve the name of each employee who has a dependent with the same first name and same sex as the employee. 20. Retrieve the employee numbers of all employees who work on project located in Bellaire, Houston, or Stafford. 21. Find the sum of the salaries of all employees, the maximum salary, the minimum salary, and the average salary. Display with proper headings.	**DP** **FA**	**DP-22** **FA-8**	**THEORYTICAL-16** **PRACTICAL - 10** **TUTORIAL -4**

	22. Find the sum of the salaries and number of employees of all employees of the „Marketing" department, as well as the maximum salary, the minimum salary, and normal forms up to third normal form. 23. Select the names of employees whose salary is greater than the average salary of all employees in department 10. 24. For each department, retrieve the department number, the number of employees in the department, and their average salary. 25. For each project, retrieve the project number, the project name, and the number of employees who work on that project. 26. Change the location and controlling department number for all projects having more than 5 employees to „Bellaire" and 6 respectively. 27. For each department having more than 10 employees, retrieve the department no, no of employees drawing more than 40,000 as salary. 28. Insert a record in Project table which violates referential integrity constraint with respect to Department number. Now remove the violation by making necessary insertion in the Department table.			
May June	27. For each department having more than 10 employees, retrieve the department no, no of employees drawing more than 40,000 as salary.	**DP**	**DP-6** **FA-10**	**THEORYTICAL-4** **PRACTICAL -2** **TUTORIAL -4**

	28. Insert a record in Project table which violates referential integrity constraint with respect to Department number. Now remove the violation by making necessary insertion in the Department table. 29. Delete all dependents of employee whose ssn is „123456789". 30. Delete an employee from Employee table with ssn = „12345"(make sure that this employee has some dependents, is working on some project, is a manager of some department and is supervising some employees). Check and display the cascading effect on Dependent and Works on table. In Department table MGRSSN should be set to default value and in Employee table SUPERSSN should be set to NULL 31. Perform a query using alter command to drop/add field and a constraint in Employee table.	**FA**		
		TOTAL	**102**	
		ALL TOTAL		

Resources :

Books:

1. R. Elmasri, S.B. Navathe, Fundamentals of Database Systems 6th Edition, Pearson Education, 2010.
2. R. Ramakrishanan, J. Gehrke, Database Management Systems 3rd Edition, McGraw-Hill, 2002.
3. A. Silberschatz, H.F. Korth, S. Sudarshan, Database System Concepts 6th Edition, McGraw Hill, 2010.
4. R. Elmasri, S.B. Navathe Database Systems Models, Languages, Design and application Programming, 6th Edition, Pearson Education, 2013.

B.Sc. Program with Computer Science (GE/DSC)

Semester-lV

Paper Title- Computer System Architecture

Paper Code- CMSGCOR04T

Credits-4

COURSE OUTCOME: -

After completion of this course the students will be able –

CO1 . Identify the basic concepts of gates.

CO2 . Identify the concepts of different types of combinational circuit.

CO3 .Introduction to computers and CPUs, as well as concepts of stored programmes.

CO4. Instruction, Instruction Cycle, Interrupt, and Interrupt Cycle are all covered in this course.

CO5 . familiarity with Addressing Modes, I/O Bus Concept, and DMA Controller.

CO6 . familiarity with Memory Hierarchy, Cache Memory, Replacement Algorithms, Mobile Devices Architecture & Synchronous and Asynchronous Data Transfer.

MONTH	COURSE/ TOPIC	TEACHER	CLASS HOUR	TUTORIAL
January	**Introduction:** Logic gates, boolean algebra, combinational circuits, circuit simplification, flip-flops and sequential circuits, Create a machine based on the following architecture: Register Set Refer to Chapter-5 of Morris Mano for description of instructions.	**DP** **FA**	**DP-4** **FA-9**	**THEORYTICAL-6** **PRACTICAL -3** **TUTORIAL -4**

	decoders, multiplexors, registers, counters and memory units. ii) Create the micro operations and associate with instructions as given in the chapter (except interrupts). Design the register set, memory and the instruction set. Use this machine for the assignments of this section. iii) Create a Fetch routine of the instruction cycle. iv) Simulate the machine to determine the contents of AC, E, PC, AR and IR registers in hexadecimal after the execution of each of following register reference instructions: a. CLA e. CIR i. SNA b. CLE f. CIL j. SZA c. CMA g. INC k. SZE d. CME h. SPA			
February	**Data Representation and basic Computer Arithmetic:** Number systems, complements, fixed and floating point representation, character representation, 5. Simulate the machine for the following memory-reference instructions with I= 0 and address part = 082. The instruction to be stored at address 022 in RAM. Initialize the memory word at address 082 with the operand B8F2 and AC with A937. Determine the contents of AC, DR, PC, AR and IR in hexadecimal after the execution. a. ADD f. BSA b. AND g. ISZ	**DP** **FA**	**DP-6** **FA-6**	**THEORYTICAL-5** **PRACTICAL -3** **TUTORIAL -4**

	c. LDA d. STA e. BUN addition, subtraction, magnitude comparison. 6. Simulate the machine for the memory-reference instructions referred in above question with I= 1 and address part = 082. The instruction to be stored at address 026 in RAM. Initialize the memory word at address 082 with the value 298. Initialize the memory word at address 298 with operand B8F2 and AC with A937. Determine the contents of AC, DR, PC, AR and IR in hexadecimal after the execution.			
March	**Basic Computer Organization and Design:** Computer registers, bus system, instructionset, timing and control, instruction cycle, memory reference, input-output and interrupt. 7. Modify the machine created in Practical 1 according to the following instruction format: **Instruction format** 0 2 3 4 15	**DP** **FA**	**DP-12** **FA-20**	**THEORYTICAL-16** **PRACTICAL - 10** **TUTORIAL -6**
April	**Central Processing Unit:** Register organization, arithmetic and logical micro-operations,	**DP**	**DP-8** **FA-18**	**THEORYTICAL-14** **PRACTICAL - 10**

	stack organization, micro programmed control. c. Create two new microinstructions as follows : i. Check the opcode of instruction to determine type of instruction (Memory Reference/Register Reference/Input-Output) and then jump accordingly. ii. Check the I bit to determine the addressing mode and then jump accordingly.	**FA**		**TUTORIAL -2**
May June	**Programming the Basic Computer:** Instruction formats, addressing modes, instruction codes, machine language, assembly language, input output programming. **Input-output Organization:** Peripheral devices, I/O interface, Modes of data transfer, direct memory access.	**DP** **FA**	**DP-4** **FA-6**	**THEORYTICAL-4** **PRACTICAL -2** **TUTORIAL -4**
		TOTAL	**93**	
		ALL TOTAL		

Resources :

Books:

1. M. Mano, Computer System Architecture, Pearson Education 1992.

2. A. J. Dos Reis, Assembly Language and Computer Architecture using C++ and JAVA, Course Technology, 2004

3. W. Stallings, Computer Organization and Architecture Designing for Performance, 8th Edition, Prentice Hall of India ,2009

4. Digital Design, M.M. Mano, Pearson Education Asia, 1979

B.Sc. Program with Computer Science (GE/DSC)

Semester-VI

Paper Title- Software Engg

Paper Code- CMSGDSE03T

Credits-6

COURSE OUTCOME: -

After completion of this course the students will be able –

CO1 . Apply the concepts of life cycle models to choose the appropriate model.

CO2 . Analyse the requirements and design the software.

CO3 . Construct or implement the software based on the industry standards

CO4 . Design and develop test cases

CO5 . Work with version control and work on configuration and release management plans

CO6 . Acquire knowledge on testing.

MONTH	COURSE/ TOPIC	TEACHER	CLASS HOUR	TUTORIAL
January	**Basic concepts** : Components of data communication, standards and organizations, NetworkClassification, Network Topologies ; network protocol; layered network architecture; overview overview of OSI reference model; overview of TCP/IP protocol suite.	**DP** **FA**	**DP-10** **FA-2**	**THEORYTICAL-6** **PRACTICAL -4** **TUTORIAL -2**
February	**Physical Layer** : Cabling, Network Interface Card, Transmission Media Devices-Repeater, Hub, Bridge, Switch, Router, Gateway.	**DP** **FA**	**DP-2** **FA-4**	**THEORYTICAL-4** **PRACTICAL -2** **TUTORIAL -0**

March	**Data Link Layer** : Framing techniques; Error Control; Flow Control Protocols; Shared media protocols - CSMA/CD and CSMA/CA.	**DP** **FA**	**DP-12** **FA-8**	**THEORYTICAL-11** **PRACTICAL -7** **TUTORIAL -2**
April	**Network Layer** : Virtual Circuits and Datagram approach, IP addressing methods – Subnetting; Routing Algorithms (adaptive and non-adaptive) **Transport Layer:** Transport services, Transport Layer protocol of TCP and UDP	**DP** **FA**	**DP-14** **FA-8**	**THEORYTICAL-12** **PRACTICAL -8** **TUTORIAL -2**
May June	**Application Layer** : Application layer protocols and services – Domain name system, HTTP, WWW, telnet, FTP, SMTP **Network Security** : Common Terms, Firewalls, Virtual Private Networks **Network Security** : Common Terms, Firewalls, Virtual Private Networks	**DP** **FA**	**DP-4** **FA-4**	**THEORYTICAL-3** **PRACTICAL -1** **TUTORIAL -4**
		TOTAL	**68**	
		ALL TOTAL		

Resources :

Books:

1. Roger S.Pressman, Software engineering- A practitioner‟s Approach, McGraw-Hill

2. Ian Sommerville, Software engineering, Pearson education Asia, 6th edition, 2000.

3. Pankaj Jalote- An Integrated Approach to Software Engineering, Springer Verlag, 1997.

4. James F Peters and Witold Pedryez, “Software Engineering – An Engineering Approach”, John Wiley and Sons, New Delhi, 2000.

5. Ali Behforooz and Frederick J Hudson, “Software Engineering Fundamentals”, Oxfor University Press, New Delhi, 1996.

6. Pfleeger, ”Software Engineering”, Pearson Education India, New Delhi, 1999.

7. Carlo Ghezzi, Mehdi Jazayari and Dino Mandrioli, “Fundamentals of Software Engineering”, Prentice Hall of India, New Delhi, 1991.