ज्ञानेन प्रकाशते जगत्
INDUS
UNIVERSITY

INDUS INSTITUTE OF TECHNOLOGY& ENGINEERING
Constituent Institute of Indus University

Subject: Probability, Statistics & Numerical Methods

Program: B. Tech CE/CSE/IT | **Subject Code: MA0311** | **Semester: III**

Teaching Scheme (Hours per week)				Examination Evaluation Scheme (Marks)				
Lecture	**Tutorial**	**Practical**	**Credits**	**University Theory Examination**	**University Practical Examination**	**Continuous Internal Evaluation (CIE)-Theory**	**Continuous Internal Evaluation (CIE)-Practical**	**Total**
3	**1**	**0**	**4**	**40**	**0**	**60**	**0**	**100**

Unit 1	**Basics of Probability:** Introduction to Probability, Characteristics of random variable, Probability mass function, cumulative distribution function, probability density function. **Probability distributions:** Discrete distributions: Binomial distribution, Poisson distribution, Continuous distributions: Normal distribution	10 hours
Unit 2	**Statistics:** Introduction and application of statistics, types of statistics, testing of hypothesis**,** Mean, standard deviation, coefficient of variation, F-test , t-test , Chi Square test, Correlation and regression.	10 hours
Unit 3	**Interpolation** Finite differences and Interpolation: Finite differences Forward, Backward & Central difference operators and difference tables. Interpolation, Interpolation Formulae with equal intervals: Newton’s forward, Newton’s backward, Central difference interpolation by Stirling’s formulae Interpolation Formulae with unequal intervals: Lagrange’s & Newton’s divided difference interpolation Numerical Integration: Trapezoidal rule, Simpson’s 1/3 rule, Simpson’s 3/8 rule. Numerical differentiation: Using Newton’s forward and backward interpolation formula	12 hours
Unit 4	**Numerical Methods** Basic Errors. Solution of Algebraic and Transcendental Equations: Bisection method, Regula-Falsi method, Newton-Raphson method., Convergence condition for these methods, Numerical methods in Linear Algebra: Gauss-Jacobi, Gauss-seidel method Largest Eigen values and corresponding Eigen vectors: By power method Numerical Solutions of ordinary differential equations: Taylor’s Method, Euler’s Method, Improved Euler Method (Heun’s Method), Runge-Kutta method of order four	13 hours

Text Book: B. V. Ramana, “Higher Engineering Mathematics”, Tata McGraw Hill.

Reference Books:

1. Erwin Kreyszig, “Advanced Engineering Mathematics” (8th Edition), Wiley Eastern Ltd., New Delhi.
2. Dr. B.S. Grewal, “Higher Engineering Mathematics”, Khanna Publishers, New Delhi
3. Murray Spiegel , “Advanced Mathematics for Engineering & Science: Schaum’s Outline Series”, Tata McGraw Hill Publication
4. Merel C Potter, J.L. Goldberg, “Advanced Engineering Mathematics” (3rd Edition), Oxford India Publication.

INDUS INSTITUTE OF TECHNOLOGY& ENGINEERING
Constituent Institute of Indus University

Subject: Computer Organization and Architecture

Program: B.Tech Computer Engineering | **Subject Code: CE0320** | **Semester: III**

Teaching Scheme (Hours per week)				Examination Evaluation Scheme (Marks)				
Lecture	**Tutorial**	**Practical**	**Credits**	**University Theory Examination**	**University Practical Examination**	**Continuous Internal Evaluation (CIE)-Theory**	**Continuous Internal Evaluation (CIE)-Practical**	**Total**
3	**0**	**0**	**3**	**40**	**0**	**60**	**0**	**100**

Course Objectives

1. To conceptualize the basics of organizational and architectural issues of a digital computer.
2. To analyze performance issues in processor and memory design of a digital computer.
3. To understand various data transfer techniques in digital computer.
4. To analyze processor performance improvement using parallelism.

CONTENTS

UNIT-I

Basic Computer Organization and Data Representation [12 hours]

Overview of computer organization, CPU organization components classification of computerarchitecture, Register, types of register, Bus, types of bus, quantitative techniques in computer design,measuring and reporting performance, Amdahl's Law, number system, fixedpointrepresentation, floating point representation.

UNIT-II

Instruction Set Architecture [12 hours]

Instruction, instruction format, instruction execution cycle, instruction timing cycles, ISA, ISA design issue, types of ISA, Accumulator organization, stack organization, memory-memory organization, register memory organization, register-register organization, addressing mode, RISC, CISC,8085 microprocessors, Architecture, Operations of 8085, Instruction Set for 8085, Addressing Modes of 8085.

UNIT-III

Pipeline [12Hours]

What is pipeline, Flynn's taxonomy for Parallel Processing, types of pipeline, Arithmetic Pipeline, Instruction Pipeline, measuring performance of pipeline, types of hazard, structural hazard, data hazard, control hazard, method for avoiding hazard, Vector Processing, Array Processors, Parallel Processing

UNIT-IV

Memory Organization [12 Hours]

Memory Hierarchy, types of memory, Main Memory, Auxiliary Memory, Inclusion, Coherence and locality properties, Cache Memory, Organization of cache memory, performance of cache memory with examples, cache memory mapping algorithms, cache optimization techniques, Virtual Memory, demand paging, page replacement algorithms.

Course Outcomes

At the end of this subject, students should be able to:
After successful completion of the course, student will able:

1. To understand and describe the basics of various architectural units of the Computer System
2. To apply the knowledge of combinational and sequential logical circuits to mimic a simple computer architecture
3. To demonstrate the simulations for basic computer operations
4. To recognize the importance of parallelism in computer architecture
5. To understand the basic working of various memory system.
6. This course is the bridge between digital electronics and microprocessor.

Text Books:

1. Computer system Architecture Mano, M. Morris Pearson publication
2. Computer Architecture and Organization Ghoshal, Subrata Pearson publication

Reference Books:

1. Carl Hamacher -Computer Organization, Fifth Edition, Tata McGraw Hill.
2. John P Hayes -Computer Architecture & Organization–McGraw Hill
3. William Stallings-Computer Organization and Architecture, Seventh Edition, Pearson Education

Web Resources

1. https://nptel.ac.in/courses/106/105/106105163

2. https://www.youtube.com/channel/UC2GUBG_WsP0OO5tXXocwp3Q/videos

ज्ञानेन प्रकाशते जगत् INDUS UNIVERSITY				**INDUS INSTITUTE OF TECHNOLOGY& ENGINEERING** **Constituent Institute of Indus University**				
Subject: Digital Electronics								
Program: B. Tech CE/CSE/IT					**Subject Code: EC0319**			**Semester: III**
Teaching Scheme (Hours per week)				**Examination Evaluation Scheme (Marks)**				
Lecture	**Tutorial**	**Practical**	**Credits**	**University Theory Examination**	**University Practical Examination**	**Continuous Internal Evaluation (CIE)-Theory**	**Continuous Internal Evaluation (CIE)-Practical**	**Total**
3	**0**	**2**	**4**	**40**	**40**	**60**	**60**	**200**

Course Objectives:

By participating in and understanding all facets of this course a student will:

1. Understand number representation and conversion between different representations in digital electronic circuits.
2. Perform the analysis and design of various digital electronic circuits.
3. Understand concept of Optimization of logic circuits using Karnaugh maps.
4. Analyze logic processes and implement logical operations using combinational logic circuits
5. Analyze logic processes and implement logical operations using sequential logic circuits.
6. Analyze sequential systems in terms of state machines.

CONTENTS

UNIT-I

[12 hours]

Number System:
Decimal, Binary, Octal, Hexadecimal number system, Conversion of numbers from one number system to other, complement method of addition ,subtraction using 9's and 10's compliment method & 1's and 2's complement method.

Binary Codes:

Weighted and Non-weighted code, 8421 BCD code, XS-3 code, Gray code, Binary to Gray conversion, Gray to Binary conversion

Logic Gates & Boolean Algebra: AND, OR, NOT, NAND, NOR, X-OR, X-NOR, BUFFER, Axioms and laws of Boolean algebra, D'morgans theorem, Duality, Reduction of Boolean expression

UNIT-II

[12 hours]

Boolean Algebra - II & Simplification of Boolean Functions: Converting AND/OR/INVERT logic to NAND/NOR logic , POS and SOP expressions, Simplification of Boolean expression using Karnaugh Map for 2 to 5 variables, Don't care conditions and Tabulation method

Combinational Logic: Introduction, Design Procedure, Code Conversion, Multilevel NAND and NOR circuit

UNIT-III

[12hours]

Combinational Circuits with MSI & LSI

The Half-adder, The Full-adder, The Half-subtractor, The Full-Subtractor, Parallel Binary Adders, Binary Subtractor, Adder- Subtractor, BCD adder, Code converters, Parity bit Generators/Checkers, Comparators, Decoders, BCD to 7-Segment Decoders, Encoders, , Multiplexers, Applications of Multiplexer, Demultiplexers , Circuit implementation using PLDs (PLA, PAL)

Flip Flop :

S-R Flip-flop, JK Flip-flop, D Flip-flop, T Flip-flop, Master-slave Flip-flop, Conversion of Flip flop

UNIT-IV

[12hours]

Shift Registers, Counters & FSM Design

Shift Registers: Serial-in Serial-out Shift register, Serial-in Parallel-out Shift register, Parallel-in Serial-out Shift register, Parallel-in Parallel-out Shift register

Counters: Asynchronous counter, Design of Asynchronous counter, Synchronous counters, Design of Synchronous counter

FSM Design: State Diagram, State Table, State Assignment, Moore and Mealy Model

Course Outcomes:

At the end of this subject, students should be able to:

1. Understand number representation and able to perform conversion between different representation in digital electronic circuits.
2. Familiar with basic logic gates and independently or work in team to create logiccircuits using logic gates.
3. Remember Boolean algebra and apply basic properties of Boolean algebra to simplifyBoolean functions by using the basic Boolean properties.
4. Optimize logic circuits using Karnaugh maps.
5. Analyze logic processes and implement logical operations using combinational logiccircuits.
6. Understand concepts of sequential circuits and to analyze sequential systems in terms ofstate machines.

Text Books:

1) Morris Mano, "Digital Logic and Computer Design", Pearson , ISBN 13: 9788177584097

Reference Books:

1) Ronald J. Tocci, Gregory L. Moss, "Digital Systems", 10 Ed, Pearson, ISBN 9780135103821
2) D.C.Green, "Digital Electronics"5th Ed., Pearson, 2005, ISBN-9788177580686

Web Resources:

1) Digital Circuits & Systems
   http://nptel.ac.in/courses/117106086/1
2) Circuits and Electronics
   https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-002-circuits-and-electronics-spring-2007/index.htm

LIST OF EXPERIMENTS

Experiment. No.	Title	Learning Outcomes
1.	To Verify the behavior of Logic Gates using Truth Table and Familiarization with Digital Integrated Circuits	Upon successful completion of this course students should be able to: 1. Implementation for basic logic gates & digital Circuits using ICs. 2. Implementation & analyze the operation of medium & high complexity standard combinational circuits like the encoder, decoder, multiplexer, demultiplexer, adder ,subtractor 3. Implementation & analyze the operation of a flip-flop and examine relevant timing diagrams 4. Implementation & analyze the operation of counters and shift registers Design and operate practical digital logic circuits
2.	Familiarization with the Different Portions of the Datasheet for a Digital IC and Using the Datasheet to Gather Relevant Information to Utilize the IC as a Component in another Digital Logic Circuit	
3.	Realization of basic gates using Universal Gates.	
4.	Verification of Demorgans Theorem.	
5.	Implementation of Half Adder & Full Adder Circuits.	
6.	Implementation of Half Subtractor & Full Subtractor Circuits	
7.	Implementation of Multiplexes (4-1 MUX/8-1 MUX)	
8.	Implementation of Decoders (3-8 Decoder/4-16 decoder)	
9.	Realization of Flip-Flop using Gates.	
10.	Implementation of Shift Registers using Flip Flop. (Serial-in Serial-out Shift register, Serial-in Parallel-out Shift register, Parallel-in Serial-out Shift register, Parallel-in Parallel-out Shift register)	
11.	Implementation of Asynchronous Counters (4 bit Up/down)	
12.	Implementation of Synchronous Counters (4 bit Up/down)	

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Subject: Object Oriented Concepts with UML								
Program: B. Tech CE/CSE/IT				**Subject Code: CE0316**			**Semester: III**	
Teaching Scheme (Hours per week)				**Examination Evaluation Scheme (Marks)**				
Lecture	**Tutorial**	**Practical**	**Credits**	**University Theory Examination**	**University Practical Examination**	**Continuous Internal Evaluation (CIE)-Theory**	**Continuous Internal Evaluation (CIE)-Practical**	**Total**
3	**0**	**2**	**4**	**40**	**40**	**60**	**60**	**200**

Course Objectives:

1. To learn the fundamental programming concepts and methodologies which are essential to building good C/C++ programs.
2. To write reusable modules, functions and classes as per Object Oriented Concepts.
3. To enhance employment of students, making good use of the object-oriented programming paradigm to simplify the design and implementation process
4. To encourage the practical problem solving skills.
5. To code, document, test, and implement a well-structured, robust computer program using the C/C++ programming language.

CONTENTS

UNIT-I

[12 hours]

Introduction to C++:

Concepts of OOP: Introduction OOP, Procedural Vs. Object Oriented Programming, Principles of OOP, Benefits and applications of OOP C++Basics: Overview, Program structure, namespace, identifiers, variables, constants, enum, operators, typecasting, control structures C++ Functions: Simple functions, Call and Return by reference, Inline functions, Macro Vs. Inline functions, Overloading of functions, default arguments, friend functions

UNIT-II

[12 hours]

Objects and classes:

Basics of object and class in C++, Private, protected and public Members, static data and static function, Constructors and their types, Destructors, Arrays & Strings: A standard C++ string class. Operator Overloading: Overloading unary and binary operators, Operator Overloading with friend function, Data Conversion, type conversion, class to class, basic to class, class to basic.

UNIT-III

[12 hours]

Inheritance:

Concept of Inheritance, types of inheritance: single, multiple, multilevel, hierarchical, hybrid, protected members, overriding, virtual base class, constructor in derived classes

Polymorphism:

Pointers in C++, Pointes and Objects, this pointer, virtual and pure virtual functions, implementing polymorphism I/O management: Concept of streams, cin and cout objects, C++ stream classes, Unformatted and formatted I/O, manipulators

UNIT-IV

[12 hours]

File management:

File stream, C++ File stream classes, File management functions, File modes, Binary and random files

Object-oriented Design:

Object modeling using UML, Three models, Class Model (Object and Class Diagram), State model (state Diagram) and Interaction model (Use case diagrams, Activity diagrams, Interaction diagrams).

Course Outcomes:

At the end of this subject, students should be able to:

1. Understand the difference between the top-down and bottom-up approach.
2. Describe the object-oriented programming approach in connection with C++.
3. Illustrate the process of data file manipulations using C++.
4. Apply the concepts of object-oriented programming.
5. Apply virtual and pure virtual function & complex programming situations.
6. Design and implement C++ programs for complex problems, making good use of the features of the language such as classes, inheritance and templates.

Text Books:

1. Object oriented Programming with C++, Tata Mc Graw Hill Publication Co. Ltd, Fourth Edition, 2000, ISBN: 97800746203802)

2. Object oriented programming in turbo C++, Robert Lefore, Galgotia Publication Pvt. Ltd. First Edition, 1994, ISBN9788185623221

Reference Books:

1. The Complete Reference C++, Herbert Schildt, Tata Mcgraw Hill Publication, Fourth Edition,ISBN-10:00704118322)

2. The C++ programming language, Bjarne Stroustrup, Addison, Fourth Edition, ISBN-10: 0321563840

Web Resources

1. https://www.youtube.com/watch?v=tFYRTWFXSgY
2. https://www.youtube.com/watch?v=8fDao3MBbwk
3. https://www.youtube.com/watch?v=zagx5hdXBLw

LIST OF EXPERIMENTS

Experiment. No.	Title	Learning Outcomes
1	Basics of programming	To understand how C++ improves C with object-oriented features.
2	2.1 Write a program to calculate the area of circle, rectangle and square using function overloading. 2.2 Write a program to demonstrate the use of default arguments in function overloading.	To learn how to overload functions and operators in C++.

	2.3 Write a program to demonstrate the use of returning a reference variable.	
3	3.1 Create a class student which stores the detail about roll no, name, marks of 5 subjects, i.e. science, Mathematics, English, C++. The class must have the following:• Get function to accept value of the data members.• Display function to display values of data members.• Total function to add marks of all 5 subjects and store it in the data members named total. 3.2 Create a function power() to raise a number m to power n. the function takes a double value for m and int value for n, and returns the result correctly. Use the default value of 2 for n to make the function calculate squares when this argument is omitted. Write a main that gets the values of m and n from the user to test the function. 3.3 Write a basic program which shows the use of scope resolution operator. 3.4 Write a C++ program to swap the value of private data members from 2 different classes.	To learn how to design C++ classes for code reuse.
4	4.1 Write a program to illustrate the use of this pointer. 4.2 An election is contested by five candidates. The candidates are numbered 1 to 5 and the voting is done by marking the candidate number on the ballot paper. Write a program to read the ballots and count the votes cast for each candidate using an array variable count. In case a number is read outside the range of 1 to 5, the ballot should be considered as a ‘spoilt ballot’ and the program should also count the number of spoilt ballots. 4.3 Write a program to call member functions of class in the main function using pointer to object and pointer to member function.	To learn how to design C++ pointers
5	5.1 Using friend function find the maximum number from given two numbers from two different classes. Write all necessary functions and constructors for the program. 5.2 Using a friend function, find the average of three numbers from	To learn how to implement constructors and class member functions.

	three different classes. Write all necessary member functions and constructor for the classes. 5.3 Define currency class which contains rupees and paisa as data members. Write a friend function named AddCurrency ( ) which add 2 different Currency objects and returns a Currency object. Write parameterized constructor to initialize the values and use appropriate functions to get the details from the user and display it. 5.4 Create Calendar class with day, month and year as data members. Include default and parameterized constructors to initialize a Calendar object with a valid date value. Define a function AddDays to add days to the Calendar object. Define a display function to show data in “dd/mm/yyyy” format.	
6	6.1 Create a class named ‘String’ with one data member of type char *, which stores a string. Include default, parameterized and copy constructor to initialize the data member. Write a program to test this class. 6.2 Write a base class named Employee and derive classes Male employee and Female Employee from it. Every employee has an id, name and a scale of salary. Make a function ComputePay (in hours) to compute the weekly payment of every employee. A male employee is paid on the number of days and hours he works. The female employee gets paid the wages for 40 hours a week, no matter what the actual hours are. Test this program to calculate the pay of employee. 6.3 Create a class called scheme with scheme_id, scheme_name, outgoing_rate, and message charge. Derive customer class form scheme and include cust_id, name and mobile_no data.Define necessary functions to read and display data. Create a menu driven program to read call and message information for a customer and display the detail bill.	To learn how to implement copy constructors and class member functions.
7	7.1 Write a program with use of inheritance: Define a class publisher that stores the name of the title. Derive twoclasses book and tape, which inherit publisher. Book class contains member data called	To learn how containment and inheritance promote code reuse in C++.

	page no and tape class contain time for playing. Define functions in the appropriate classes to get and print the details. 7.2 Create a class account that stores customer name, account no, types of account. From this derive classes cur_acc and sav_acc to include necessary member function to do the following:• Accepts deposit from customer and update balance• Compute and Deposit interest• Permit withdrawal and Update balance. 7.3 Write a base class named Employee and derive classes Male employee and Female Employee from it. Every employee has an id, name and a scale of salary. Make a function ComputePay (in hours) to compute the weekly payment of every employee. A male employee is paid on the number of days and hours he works. The female employee gets paid the wages for 40 hours a week, no matter what the actual hours are. Test this program to calculate the pay of employee.	
8	8.1 Create a class vehicle which stores the vehicleno and chassisno as a member. Define another class for scooter, which inherits the data members of the class vehicle and has a data member for a storing wheels and company. Define another class for which inherits the data member of the class vehicle and hasa data member for storing price and company. Display the data from derived class. Use virtual function. 8.2 Create a base class shape. Use this class to store two double type values that could be used to compute the area of figures. Derive two specific classes called triangle and rectangle from the base shape. Add to the base class, a member function get_data() to initialize the base class data members and another member function display_area() to compute and display the area of figures. Make display_area() as a virtual function and redefine this function in the derived class to suit their requirements. 8.3 Write a program to demonstrate the use of pure virtual function. 8.4 For multiple inheritance, write a program to show the invocation of constructor and destructor. 8.5 Create a class string with character array as a data member and write a program to add two strings with use of operator overloading	To learn how inheritance and virtual functions implement dynamic binding with polymorphism.

	concept. 8.6 Create a class distance which contains feet and inch as a data member. Overhead = =, <and> operator for the same class. Create necessary functions and constructors too.	
9	9.1 Create a class MARIX of size mxn. Overload + and –operators for addition and subtraction of the MATRIX. 9.2 Define a class Coord, which has x and y coordinates as its data members. Overload ++and –operators for the Coord class. Create both its prefix and postfix forms. 9.3 Create one class called Rupees, which has one member data to store amount in rupee and create another class called Paise which has member data to store amount in paise. Write a program to convert one amount to another amount with use of type conversion. 9.4 Create two classes Celsius and Fahrenheit to store temperature in terms of Celsius and Fahrenheit respectively. Include necessary functions to read and display the values. Define conversion mechanism to convert Celsius object to Fahrenheit object and vice versa. Show both types of conversions in main function.	To learn how to overload functions and operators in C++.
10	10.1 Write a program to create a function template for finding maximum value contained in an array. 10.2 Write a program to create a class template for the ‘Array’ class. 10.3 Create a template for the bubble sort function. 10.4 Write a program to illustrate the use of insertion and extraction operators for Text mode Input/Output.	To learn how to design and implement generic classes with C++ templates.
11	11.1 Write a program to illustrate the use of put(), get() and getline() functions for Text mode Input/Output. 11.2 Write a program to illustrate the use of read() and write()	To learn how to design and implement files with C++.

	functions for Binary mode Input/Output. 11.3 Write a program to illustrate the use of manipulators in file handling.8.Write a program to illustrate the use of file pointer manipulation functions. 11.4 Write down a program to Copy source file ‘source.txt’ to destination file. 11.5 A file contains a list of telephone numbers in the following format: a) Ram 47890 b) Krishna 878787 c) -------------------- d) ------------------- The names contain only one word and the names and telephone numbers are separated by white space. Write a Program to read the tel.dat file and display the content. The names should be left justified and the number right-justified.	

ज्ञानेन प्रकाशते जगत् INDUS UNIVERSITY	**INDUS INSTITUTE OF TECHNOLOGY& ENGINEERING** **Constituent Institute of Indus University**

Subject: Database Management System		
Program: B. Tech CE/CS/IT	**Subject Code: CE0317**	**Semester: III**

Teaching Scheme (Hours per week)				**Examination Evaluation Scheme (Marks)**				
Lecture	**Tutorial**	**Practical**	**Credits**	**University Theory Examination**	**University Practical Examination**	**Continuous Internal Evaluation (CIE)-Theory**	**Continuous Internal Evaluation (CIE)-Practical**	**Total**
3	**0**	**2**	**4**	**40**	**40**	**60**	**60**	**200**

Course Objectives:

1. Transform an information model into a relational database schema and to use a data definition language and/or utilities to implement the schema using a DBMS.
2. Design and implement a database schema for a given problem-domain.
3. Understand Functional Dependency and Functional Decomposition and Normalize a database
4. Formulate query, using SQL, solutions to a broad range of query and data update problems.
5. To design and build a simple database system and demonstrate competence with the fundamental tasks involved with modeling, designing, and implementing a DBMSfor skill enhancement.

CONTENTS

UNIT-I

[12 hours]

Introductory concepts of DBMS: Introduction and applications of DBMS, Purpose of data base, Data, Independence, Database System architecture- levels, Mappings, Database, users and DBA

Entity-Relationship model : Basic concepts, Design process, constraints, Keys, Design issues, E-R diagrams, weak entity sets, extended E-R features – generalization, specialization, aggregation, reduction to E-R database schema

UNIT-II

[12 hours]

Relational Model: Structure of relational databases, Domains, Relations, Relational algebra – fundamental operators and syntax, relational algebra queries, tuple relational calculus

Relation Database Design: Functional Dependency – definition, trivial and non-trivial FD, closure of FDset, closure of attributes, irreducible set of FD, Normalization – 1Nf, 2NF,3NF, composition using FD- dependency preservation, BCNF, Multivalued dependency, 4NF, Join dependency and 5NF

UNIT-III

[12 hours]

Transaction Management and Security:

Transaction concepts, properties of transactions, serializability of transactions, testing for serializability, System recovery, Two- Phase Commit protocol, Recovery and Atomicity, Log-based recovery, concurrent executions of transactions and related problems, Locking mechanism, solution to concurrency related problems, deadlock, , two-phase locking protocol, Isolation, Intent locking

Security: Introduction, Discretionary access control, Mandatory Access Control, Data Encryption

UNIT-IV

[12 hours]

SQL & PL/SQL Concepts:

SQL: Basics of SQL, DDL,DML,DCL, structure – creation, alteration, defining constraints – Primary key, foreign key, unique, not null, check, IN operator, aggregate functions, Built-in functions –numeric, date, string functions, set operations, sub-queries, correlated sub-queries, join, Exist, Any, All , view and its types., transaction control commands.

PL/SQL: Cursors, Stored Procedures, Stored Function, Database Triggers

Course Outcomes:

At the end of this subject, students should be able to:

1. Identify the basic concepts and various data model used in database design ER modeling concepts and architecture used.
2. Apply relational database theory and be able to describe relational algebra expression, tuple and domain relation expression fro queries
3. Recognize and identify the use of normalization and functional dependency, indexing and hashing technique used in database design.
4. Apply and relate the concepts of Ttransaction, Concurrency and Recovery techniques in database.
5. Utilize the knowledge of basics of SQL and construct queries using SQL. Perform PL/SQL programming using concept of Cursor Management, Error Handling, Package and Triggers.
6. Justify database solution to an information technology problem. Working on existing database systems, designing of database, creating relational database, analysis of table design.

Text Books:

1. Database System Concepts, Abraham Silberschatz, Henry F. Korth & S.Sudarshan, McGraw Hill.
2. SQL- PL/SQL by Ivan Bayross.

Reference Books:

1) An Introduction to Database Systemsby C. J. Date.
2) Raghu Ramakrishnan and Johannes Gehrke, Database Management Systems (3/e), McGraw Hill, 2003.
3) Peter Rob and Carlos Coronel, Database Systesm- Design, Implementation and Management (7/e), Cengage Learning, 2007.
4) Ramez Elmasri and Shamkant B. Navathe, Fundamentals of Database Systems (5/e), Pearson Education, 2008.
5) Understanding SQL by Martin Gruber, BPB.

Web Resources

1. https://beginnersbook.com/2015/04/dbms-tutorial/

2. https://www.jbiet.edu.in/coursefiles/cse/HO/cse2/DBMSI-III.pdf

3. https://www.geeksforgeeks.org/dbms/

4. https://mrcet.com/downloads/digital_notes/IT/Database%20Management%20Systems.pdf

5. https://lecturenotes.in/subject/38/database-management-system-dbms

LIST OF PRACTICALS

Practical No.	Title	Learning Outcomes
1	Introduction to SQL. Data Definition in SQL (CREATE, ALTER and DROP), Data Types.	CO5
2	Draw E-R diagram and convert entities and relationships to relation table for a given scenario. A. Two assignments shall be carried out i.e. consider two different scenarios (eg. bank, college) B. Write relational algebra queries for a given set of relations.	CO1,CO2
3	Design a Database and create required tables. For e.g. Bank, College Database.	CO5,CO6
4	Perform the following: a. Viewing all databases, Creating a Database, Viewing all Tables in a Database, Creating Tables (With and Without Constraints), Inserting/Updating/Deleting Records in a Table, Saving (Commit) and Undoing (rollback)	CO5,CO6
5	Apply the constraints like Primary Key , Foreign key, NOT NULL to the tables.	CO5
6	Perform the following: a. Altering a Table, Dropping/Truncating/Renaming Tables, Backing up / Restoring a Database.	CO5

7	For a given set of relation schemes, create tables and perform the following Simple Queries, Simple Queries with Aggregate functions, Queries with Aggregate functions (group by and having clause), Queries involving- Date Functions, String Functions , Math Functions	CO5
8	Join Queries- Inner Join, Outer Join Subqueries- With IN clause, With EXISTS clause	CO5
9	For a given set of relation tables perform the following: Creating views (with and without check option), Dropping views, Selecting from a view	CO5
10	Perform the following operation for demonstrating the insertion , updation and deletion using the referential integrity constraints.	CO5
11	Write a PL/SQL block to insert record into emp2table. Accept value at runtime.	CO5
12	Write a PL/SQL block to reserve a given number.	CO5
13	Write a PL/SQL block to check given num is odd or even.	CO5
14	Write a PL/SQL block to accept id of employee (emp2 table) from user and fetch a record of that employee. Check the salary and update the salary Column as follows: a. If salary >10000and salary<=20000, then salary = salary+30% of salary. b. If salary>20000 and salary<=30000, then salary =salary+ 40% of salary.	CO5
15	Write a PL/SQL block that will display the information of the first 5 employee holding the highest salary of emp2 table	CO5
16	Write a PL/SQL block that merge ft_work and pt_work. Fetch name of emp from pt_work, check if it is in ft_work. If it is not there then insert that record in ft_work, otherwise display appropriate message.	CO5
17	Create trigger on supplier table which allow access between 9 AM to 5 PM only.	CO5

18	Create trigger on Supplier Detail on update or insert of Sname to convert Sname into capital letter.	CO5
19	Create a stored procedure which accept CNUM from the user and print that order is placed by that customer or not. Also write a PL/SQL block for using this procedure.	CO5
20	Create a database.	CO5,CO6

INDUS INSTITUTE OF TECHNOLOGY& ENGINEERING
Constituent Institute of Indus University

Subject: Human Values and Professional Ethics

Program: B. Tech CE/CS/IT | **Subject Code: SS0301** | **Semester: III**

Teaching Scheme (Hours per week)				Examination Evaluation Scheme (Marks)				
Lecture	Tutorial	Practical	Credits	University Theory Examination	University Practical Examination	Continuous Internal Evaluation (CIE)- Theory	Continuous Internal Evaluation (CIE)- Practical	Total
2	0	0	2	0	0	100	0	100

Course Objectives:

1. To Facilitates arriving at correct decisions because, correct decisions formbasis for success anywhere and in any venture.
2. To decode Success.
3. To achieve Emotional stability through righteous earning of wealth.
4. To understand and discriminate between ethical and unethical practices.
5. To study moral issues and critical decision making.
6. To understand the role of ethics in promoting sustainable

Course Contents:

Music with invocation of thought process, Decoding success: Skill or a trait or both?, Decoding self to decode success, Understanding Self-Confidence, Self- respect, Self-esteem, False prestige towards removal of Identity crisis, Components of self (mind, body, spirit), Idea of self (Which of the three am I?), Mind and conscience, Psychosomatic (mind over matter) effect and disease, Effect of ethics and values on well being, Handling insecurity, anxiety and pressure, Handling failures, guilt, Status and success, Success redefined., Happiness being the key to success and not vice-versa, From self to society to global-sustainability.

Course Outcomes:

CO1: Identify the ways to decode success and redefining it for global sustainability [BT-1]

CO2: Understand the Difference between the ethical and unethical practices in surrounding and explore the reasons behind them.[BT-2]

CO3: Apply correct decisions to form basis for success in all ventures of life[BT-3]

CO4: Analyse various components of self (mind, body, soul) [BT-4]

CO5: Estimate the Emotional stability through righteous earning of wealth[BT5]

CO6: Develop the thought process for promoting sustainable practices in multiple domains of life and society. [BT6]

Books:

1) The Mahabharata box set - Bibek Debroy, ISBN-13: 978-0143424789

2) The Valmiki Ramayana, Set of 3 Vols - Bibek Debroy, ISBN-13: 978-0143441144

3) Honest truth of dishonesty Dan Ariely, Harper (2012), ISBN: 0062183591 / 9780062183590

4) “Seven Spiritual Laws of Success”, Deepak Chopra, Amber-Allen Publisher, ISBN: 9782290339954

5) “The Vedas and Upanishads for Children”, Roopa pai,Hachette India, ISBN:9789351952961

6) The Gita : for Children - Roopa Pai, Hachette India Local; Latest edition, ISBN: 9789351950127

7) Go for Growth, Narsinhbhai K Patel, Ahmedabad Management Association

8) Be a Winner, Narsinhbhai K Patel, Ahmedabad Management Association

9) Swadharma: Puranic stories for childrena

10) Pearls of Wisdom from Hinduism – Nicholas Sutton and Hanuman Dass

11) The Power of Dharma: The Universal Moral Principle - Nicholas Sutton andHanuman Dass

10) Two Vedic Tales: Stories from The Mahabharata and the Puranas

11) Inside Job (documentary) - Matt Damon (Actor), Gylfi Zoega (Actor), & 1More Rated: U/A (Parental Guidance) Format: Blu-ray

12) Ethical and Spiritual Values in Indian Scriptures - Ved Prakash Bhatia

13) The Upanishads Demystified : Ethical values - Ved Prakash Bhatia

14) Lying - Sam Harris

15) Free Will - Sam Harris

16) Deep Work: Rules for Focused Success in a Distracted World Paperback –Cal Newport

17) The Elephant in the Brain: Hidden Motives in Everyday Life - Kevin Simlerand Robin Hanson

18) Trust Me I'm Lying: Confessions of a Media Manipulator - Ryan Holiday

19) Who's in Charge?: Free Will and the Science of the Brain - Michael S.Gazzaniga

20) The Ethical Brain: The Science of Our Moral Dilemmas - Michael S.Gazzaniga

21) Misbehaving Paperback – by Richard H Thaler