Probability and Statistics

II B.Tech IV Semester (18MA003)

Lectures	:	4 Periods/Week,Tutorial: 0	Continuous Internal Assessment	:	50
Credits	:	3	Semester End Examination (3 hours)	:	50

UNIT - I (12 Periods)

Continuous Random Variables, Normal Distribution, Normal Approximation to the Binomial Distribution, Uniform Distribution, Gamma Distribution and its applications, Beta Distribution and its applications, Joint Distributions (Discrete),Joint Distributions (Continuous).Populations and Samples, Law of large numbers,Central limit theorem and its applications,The sampling distribution of the mean (unknown),The sampling distribution of the variance.
(Sections 5.1, 5.2, 5.3, 5.5,5.7, 5.8, 5.10, 6.1, 6.2, 6.3, 6.4 of Text Book (1))

UNIT - II (12 Periods)

Point estimation, Interval estimation, Tests of Hypotheses, Null Hypothesis and Tests of hypotheses, Hypothesis concerning one mean, Comparisons-Two independent Large samples, Comparisons-Two independent small samples, Paired sample t test.
(Sections 7.1,7.2, 7.4, 7.5, 7.6, 8.2, 8.3, 8.4 of Text Book (1))

UNIT - III (12 Periods)

The estimation of variances,Hypotheses concerning one variance,Hypotheses concerning two variances, Estimation of proportions, Hypotheses concerning one proportion, Hypotheses concerning several proportions, Procedure for Analysis of Variance (ANOVA) for comparing the means of k (¿2) groups- one way classification(Completely randomized designs), Procedure for Analysis of Variance (ANOVA) for comparing the means of k (¿2) groups- two way classification(Randomized block designs).
(Sections 9.1, 9.2, 9.3, 10.1, 10.2, 10.3, 12.2, 12.3 of Text Book (1))

UNIT - IV (12 Periods)

Multivariate Analysis: The concept of bivariate relationship, scatter diagram, Pearsons correlation and correlation matrix. Simple linear regression model and assumptions, Least Squares Estimation of the parameters of the model, Testing the significance of the model. Regression versus Correlation, Multiple linear regressionmodel with k explanatory variables and assumptions of the model. Least Square Estimation of regression coefficients. Concept of the coefficient of determination . Test for significance of the regression model and individual regression coefficients.Applications of multiple regression analysis.
(1st and 2nd Chapters of Text Book [2])

TEXT BOOKS:

1. Miller & Freunds Probability and Statistics for Engineers, Richard A. Johnson, 8th Edition, PHI.
2. Introduction to Linear Regression Analysis, Douglas C. Montgomery, E.A. Peck and G.G. Vining, 3rdedition, Wiley

REFERENCES:

1. R.E Walpole, R.H. Myers & S.L. Myers Probability & Statistics for Engineers and Scientists, 6th Edition, PHI.
2. Fundamentals of Mathematical Statistics, S.C.Gupta and V.K.Kapoor,11th Edition, Sultan Chand & Sons.

3. Murray R Spiegel, John J.Schiller, R. AluSrinivasa, Probability & Satistics, Schaums outline series.
4. K.V.S.Sarma,Statistics Made Simple Do it yourself on PC,Prentice Hall India, Second Edition, 2015.

Web Technologies

II B.Tech II Semester (18IT402)

Lectures	:	3 Periods/Week,Tutorial: 1	Continuous Internal Assessment	:	50
Credits	:	3	Semester End Examination (3 hours)	:	50

Prerequisites:

none

Course Objectives:

Students will be able to

CO1: Analyze a web page and identify its elements and attributes.

CO2: Build dynamic web pages using JavaScript (client side programming).

CO3: Create web pages using XHTML and Cascading Styles sheets.

CO4: Students will be able to write a well formed / valid XML documents

CO5: Understand Web server and its working also working with Ajax for asynchronous communication.

CO6: Use Jquery framework to design web pages.

Course Outcomes:

After the course the students are expected to be able to

CLO1: Design web pages with different elements and attributes.

CLO2: Build websites with dynamic functionality using javascript

CLO3: Identify the functionality of XML and create an XML document and display data from XML document.

CLO4: Recognize the use of web servers and know the functionality of web servers.

CLO5: Design web pages with functionality using Jquery.

UNIT - I **(15 Periods)**

HTML5: Fundamentals of HTML, Working with Text, Organizing Text in HTML, Working with Links and URLs, Creating Tables, Working with Images, Colors, and Canvas, Working with Forms.

UNIT - II **(15 Periods)**

CSS: Overview of CSS, Backgrounds and Color Gradients in CSS, Fonts and Text Styles, Creating Boxes and Columns Using CSS, Displaying, Positioning, and Floating an Element, List Styles, Table Layouts. Dynamic HTML: Overview of JavaScript, JavaScript Functions, Events, Image Maps, and Animations.

UNIT - III **(15 Periods)**

Dynamic HTML(Cont..): JavaScript Objects, Working with Browser Objects, Working with Document Object. Document Object Model: Understanding DOM Nodes, Understanding DOM Levels, Understanding DOM Interfaces - Node , Document, Element, Attribute.

UNIT - IV (15 Periods)

XML: Working with Basics of XML, Implementing Advanced Features of XML, Working with XSLT. AJAX: Overview of AJAX, Asynchronous Data Transfer with XMLHttpRequest, Implementing AJAX Frameworks, Working with jQuery.

TEXT BOOKS:

1. Kogent Learning Solutions Inc.,HTML5 Black Book: Covers CSS3, Javascript, XML, XHTML, Ajax, PHP and Jquery.

REFERENCES:

1. 1. Jason Cranford Teague, Visual Quick Start Guide CSS, DHTML &AJAX, 4e, Pearson Education.
2. 2. Tom NerinoDoli smith, JavaScript & AJAX for the web, Pearson Education 2007.
3. 3. Joshua Elchorn, Understanding AJAX, Prentice Hall 2006.

Data Base Management System
II B.Tech IV Semester (18IT403)

Lectures	:	4 Periods/Week,Tutorial: 1	Continuous Internal Assessment	:	50
Credits	:	3	Semester End Examination (3 hours)	:	50

Prerequisites:

Data Structures

Course Objectives:

CO1: Determine the importance of Database and Database Design.

CO2: Explain the basic concepts of relational data model, entity-relationship model, relational database design.

CO3: Understand ER concepts and ER Mapping to Relational Model.

CO4: Apply the concepts of SQL, Relational Algebra, Relational Calculus and Apply the Normalization process to construct the Database.

CO5: Familiar with basic database storage structures and access techniques: file and page organizations,indexing methods.

CO5: Understand the concepts of transaction management, Concurrency control techniques and recovery strategies of DBMS .

Course Outcomes:

After completion of course the students are expected to be able to

CLO1: Familiarize with fundamental concepts of database.

CLO2: Understand various database architectures.

CLO3: Compare various database architectures.

CLO4: Design relations for Relational databases using conceptual data modeling.

CLO5: Practice data base design.

CLO6: Implement formal relational operations in relational algebra.

CLO7: Compare various relational operations.

CLO8: Practice SQL basic and complex queries.

CLO9: Identify the Indexing types.

CLO10: Understand normalization process for relational databases.

CLO11: Compare various normal forms.

CLO12: Understand relational database design algorithms.

CLO13: Understand transaction processing concepts.

CLO14: Familiarize with concurrency control techniques.

CLO15: Understand recovery techniques for database.

UNIT - I (17 Periods)

Databases and Database Users: Introduction - An Example, Characteristics of the Database Approach, Actors on the Scene, Workers behind the Scene, Advantages of Using the DBMS Approach.
Database System Concepts and Architecture : DataModels, Schemas and Instances ,Three-Schema Architecture and Data Independence, Database Languages and Interfaces, The Database System Environment, Centralized and Client/Server Architectures for DBMSs.
Data Modeling Using the Entity-Relationship (ER) Model : Using High-Level Conceptual Data Models for Database Design, An Example Database Application, Entity Types, Entity Sets, Attributes, and Keys - Relationship Types, Relationship Sets, Roles, and Structural Constraints, Weak Entity Types, Refining the ER Design for the COMPANY Database - ER Diagrams, Naming Conventions, and Design Issues.

UNIT - II (17 Periods)

The Relational Algebra and Relational Calculus : Unary Relational Operations: SELECT and PROJECT, Relational Algebra Operations from Set Theory, Binary Relational Operations: JOIN and DIVISION, Additional Relational Operations, The Tuple Relational Calculus, The Domain Relational Calculus.
Schema Definition, Constraints, Queries, and Views : SQL Data Definition and Data Types, Specifying Constraints in SQL, Schema Change Statements in SQL, Basic Queries in SQL, More Complex SQL Queries, INSERT, DELETE, and UPDATE Statements in SQL , Views (Virtual Tables) in SQL.

UNIT - III (18 Periods)

Indexing Structures for Files: Types of Single-Level Ordered Indexes, Multilevel Indexes - Dynamic Multilevel Indexes Using B-Trees and B+-Trees.
Functional Dependencies and Normalization for Relational Databases: Informal Design Guidelines for Relation Schemas, Functional Dependencies, Normal Forms Based on Primary Keys - General Definitions of Second and Third Normal Forms, Boyce-Codd Normal Form. **Relational Database Design Algorithms and Further Dependencies:** Properties of Relational Decompositions -Lossless Join Decomposition and Dependency Preserving Decomposition, Algorithms for Relational Database Schema Design, Multi-valued Dependencies and Fourth Normal Form, Join Dependencies and Fifth Normal Form.

UNIT - IV (18 Periods)

Introduction to Transaction Processing Concepts and Theory: Introduction to Transaction Processing, Transaction and System Concepts, Desirable Properties of Transactions, Characterizing Schedules Based on Recoverability, Characterizing Schedules Based on Serializability.
Concurrency Control Techniques: Two-Phase Locking Techniques for Concurrency Control, Concurrency Control Based on Timestamp Ordering, Multi version Concurrency Control Techniques, Validation (Optimistic) Concurrency Control Techniques, Granularity of Data Items and Multiple Granularity Locking.
Database Recovery Techniques : Recovery Concepts, Recovery Techniques Based on Deferred Update, Recovery Techniques Based on Immediate Update, Shadow Paging.

TEXT BOOKS:

1. Fundamentals of Database Systems, Ramez Elmasri and Navate Pearson Education, 6th edition.

REFERENCES:

1. Data base Management Systems, Raghurama Krishnan, Johannes Gehrke, TATA McGrawHill 3rd Edition.
2. Data base System Concepts, Silberschatz, Korth, McGraw hill, 5th edition.
3. Introduction to Database Systems, C.J.Date Pearson Education.

Script Programming
II B.Tech II Semester (18IT404)

Lectures	:	3 Periods/Week,Tutorial: 1	Continuous Internal Assessment	:	50
Credits	:	3	Semester End Examination (3 hours)	:	50

Prerequisites:

Course Objectives:

Students will be able to

CO1: Identify syntaxes and semantics of Python.

CO2: to create scripts that can be used in different applications in relevant scenarios.

CO3: study object oriented concepts of Python.

Course Outcomes:

After the course the students are expected to be able to

CLO1: Write scripts with basic python constructs and using control flow.

CLO2: Identify the usage of functions and write scripts using functions.

CLO3: Use different data stuctures like tuples,lists and dictionaries.

CLO4: Handle exceptions while writing scripts using exception handling techniques in python.

CLO5: Write scripts with object oriented concepts like inheritance and encapsulation.

CLO6: Write scripts that can work on files and directories.

CLO7: Write scripts for performing searching using Regular expressions

UNIT - I **(14 Periods)**

Introduction: Overview, History of Python, Python Features, Environment Setup. Variables, expressions, and statements: values and types, variables, names and keywords, statements, operators and operands, expressions, order of operations, modulus operator, string operations, asking the user for input, comments, choosing mnemonic variable names.
Conditional execution: Boolean expressions, logical operators, conditional execution, alternative execution, chained conditionals, nested conditionals, catching exceptions using try and except, short-circuit evaluation of logical expressions.

UNIT - II **(14 Periods)**

Functions: function calls, built-in functions, type conversion functions, random numbers, math functions, adding new functions, definitions and uses, flow of execution, parameters and arguments, fruitful functions and void functions.
Iteration: updating variables, the while statement, infinite loops and break, finishing iterations with continue, definite loops using for, loop patterns.
Strings: a string is a sequence, getting the length of a string using len, traversal through a string with a loop, string slices, strings are immutable, looping and counting, the in operator, string comparison, string methods, parsing strings, format operator.

UNIT - III (14 Periods)

Files I/O: persistence, opening files, text files and lines, reading files, searching through a file, letting the user choose the file name, using try except and open, writing files. Lists: a list is a sequence, lists are mutable, traversing, operations, slices, methods, deleting elements, functions, strings, parsing lines, objects and values, aliasing, arguments.

Dictionaries: dictionary as a set of counters, dictionaries and files, looping and dictionaries, advanced text parsing. Tuples: tuples are immutable, comparing tuples, tuple assignment, dictionaries and tuples, multiple assignment with dictionaries, the most common words, using tuples as keys in dictionaries, sequences.

UNIT - IV (14 Periods)

Regular expressions: character matching in regular expressions, extracting data using regular expressions, combining searching and extracting, escape character.

Object-Oriented Programming: Managing Larger Programs, Using Objects, starting with Programs, Subdividing a Problem Encapsulation, First Python Object, Classes as Types, Object Lifecycle, Many Instances, Inheritance.

TEXT BOOKS:

1. Python for Everybody, 2016 Edition by Charles R. Severance.

REFERENCES:

1. Learning Python 5th edition by Mark Lutz-Oreilly publcations.
2. Python Programming for absolute beginners-3rd edition (Web downloads available)
3. Introduction to Computation and Programming using Python, by John Guttag, PHI Publisher, Revised and Expanded version (Referred by MIT).

Computer Networks

II B.Tech IV Semester (18IT405)

Lectures	:	3 Periods/Week,Tutorial: 1	Continuous Internal Assessment	:	50
Credits	:	3	Semester End Examination (3 hours)	:	50

Prerequisites:

Operating System

Course Objectives:

CO1: Learn types of communications, topologies, OSI, TCP/IP protocol architectures along with error detection and correction mechanisms and also the working of data link layer.

CO2: Understand the working of network layer issues along with the identification of shortest path among different nodes using various algorithms.

CO3: know the transport layer issues, establishment of remote procedure calls and TCP segment header.

CO4: Learn the working of different application protocols such e-mail, www, http.

Course Outcomes:

After the course the students are expected to be able to

CLO1: Identify the layered Architecturecture of computer networks.

CLO2: Analyze various Routing Algorithms in Network Layer.

CLO3: Understand the design issues of TCP and UDP in Transport Layer.

CLO4: Explain Working procedure of DNS,WWW and E-Mail.

UNIT - I **(14 Periods)**

Data Communications & Networking Overview: A Communications Model, Data Communications, Data Communication Networking.
Protocol Architecture: The Need for a Protocol Architecture, A Simple Protocol Architecture, OSI, The TCP/IP Protocol Architecture.
Digital Data Communication Techniques: Asynchronous & Synchronous Transmission, Types of Errors, Error Detection, Error Correction
Data Link Control: Flow Control, Error Control, High-Level Data link Control (HDLC).

UNIT - II **(14 Periods)**

Network Layer: Network Layer Design Issues, Store-and-Forward Packet Switching, Services Provided to the Transport Layer, Implementation of Connectionless Service, Implementation of Connection-Oriented Service, Comparison of Virtual-Circuit & Datagram Subnets.
Routing Algorithms: The Optimality Principle, Shortest Path, Routing, Flooding, Distance Vector Routing, Link State Routing, Hierarchical Routing
Congestion Control Algorithms: General Principles of Congestion Control, Congestion Prevention Policies, Congestion Control in Virtual-Circuit Subnets, Congestion Control in Datagram Subnets, Load Shedding, Jitter Control.
Quality of Service: Requirements, Techniques for Achieving Good Quality of Service. The Network

Layer in the Internet: The IP Protocol, IP Addresses, Internet Control Protocols.

UNIT - III (14 Periods)

The Transport Layer: Services Provided to the Upper Layers,Transport Service Primitives,Berkeley sockets

Elements of Transport Protocols: Addressing, Connection Establishment, Connection Release, Flow Control and Buffering, Multiplexing, Crash Recovery

The Internet Transport Protocol (UDP): Introduction to UDP, Remote Procedure Call, The Real-Time Transport Protocol.

The Internet Transport Protocols (TCP): Introduction to TCP, The TCP Service Model,The TCP Protocol, The TCP Segment Header, TCP Connection Establishment, TCP Connection Release, Modeling TCP Connection Management, TCP Transmission Policy, TCP Congestion Control, TCP Timer Management. .

UNIT - IV (14 Periods)

Application Layer: The Domain Name System (DNS): The DNS Name Space, Resource Records, And Name Servers.

Electronic Mail: Architecture & Services, The User Agent, Message Formats, Message Transfer, Final Delivery.

World Wide Web: Architectural Overview, Static Web Documents, Dynamic Web Documents, HTTP Hyper Text Transfer Protocol, Performance Enhancements .

TEXT BOOKS:

1. Behrouz A.Forouzan,Data Communications and Networking,4th edition, TMH.
2. Tanenbaum,Computer Networks,5th Edition,Pearson Education,2011.

REFERENCES:

1. Wayne Tomasi,Introduction to Data Communications and Networking,PHI Publications
2. God Bole,Data Communications & Networking,TMH Publications.
3. Kurose & Ross, COMPUTER NETWORKS A Top-down approach featuring the Internet, Pearson Education,AlbertoLeon,Garciak.

Design and Analysis of Algorithms
II B.Tech - IV Semester (18IT406)

Lectures	:	3 Periods/Week,Tutorial: 1	Continuous Internal Assessment	:	50
Credits	:	3	Semester End Examination (3 hours)	:	50

Prerequisites:

Data Structures

Course Objectives:

Students will be able to

CO1: Understand about designing and effectiveness of an algorithm, and divide and conquer method.

CO2: Understand the optimal solution finding with the greedy and dynamic programming method.

CO3: Easy know the major graph algorithms and their analyses, and backtracking information.

CO4: Get the ability to branch with bound value and NP problems.

Course Outcomes:

After the course the students are expected to be able to

CLO1: Explains Algorithm design and efficiency and master theorem.

CLO2: Solve divide and conquer and greedy problems.

CLO3: Design the algorithms like dynamic and graph type tasks.

CLO4: Recognize the solutions for back tacking and branch and bound and also NP problems.

UNIT - I **(14 Periods)**

Introduction: Algorithm, Pseudo code for expressing algorithms, Performance Analysis-Space complexity, Time complexity, Asymptotic Notation- Big oh-notation, Omega notation, Theta notation and Little oh notation, Probabilistic analysis, Amortized analysis

Master Theorem: Introduction, Generic Form- Case1, Case2, Case3, Inadmissible equations, Application to common algorithms

UNIT - II **(16 Periods)**

Divide and conquer : General method , applications - Quick sort, Merge sort, Strassens matrix multiplication.

Greedy method : General method, applications-Job sequencing with deadlines, Fractional knapsack problem, Minimum cost spanning trees - Prims, Kruskal, Single source shortest path problem - Dijkstra.

UNIT - III **(15 Periods)**

Dynamic Programming: General method, applications - 0/1 knapsack problem, Travelling salesperson problem, Longest common sequence algorithm, Multistage graphs using Forward & Backward approach, Reliability design.

Graph Searching and Traversal: Graph traversals - Depth first, Breadth first, Bio Connected Components, Strongly Connected Components.

UNIT - IV (15 Periods)

Back tracking: General method, applications-n-queen problem, sum of subsets problem.

Branch and Bound: General method, applications - 0/1 knapsack problem- LC Branch and Bound solution.

NP-Hard and NP-Complete problems: Basic concepts, non deterministic algorithms, NP-Hard and NP Complete classes, Cooks theorem.

TEXT BOOKS:

1. E. Horowitz, S. Sahni and S.Rajsekran, Fundamentals of Computer Algorithms, Galgotia Publication.

REFERENCES:

1. T. H. Cormen, Leiserson, Rivest and Stein, Introduction of Computer Algorithm, PHI.
2. Sara Basse, A.V. Gelder, Computer Algorithms, Addison Wesley.

Web Technologies Lab

II B.Tech IV Semester (18ITL41)

Practical	:	3 Periods/Week	Continuous Internal Assessment	:	50
Credits	:	1	Semester End Lab Examination (3 hours)	:	50

List Of Experiments

1. Design web pages to demonstrate different types of styles in CSS.
2. Write java scripts covering Function, recursive functions, Arrays and Objects.
3. Demonstrate collection objects.
4. Demonstrate event model.
5. Write well-formed and valid XML documents.
6. Write code for displaying XML using XSL.
7. Demonstrate Document Object Model for an XML document.
8. Demonstrate web applications using AJAX
9. Installation of IIS and Apache Tomcat servers
10. Demonstrate web applications using Jquery.

RDBMS Lab

II B.Tech IV Semester (18ITL42)

Practical	:	3 Periods/Week, Self Study: 0	Continuous Assessment	:	40
Final Exam	:	3 Hours	Final Exam Marks	:	60

LIST OF EXPERIMENTS

1. **Working with DDL, DML, DCL and Key Constraints**
   Creation, Altering and Dropping of Tables and Inserting Rows into a Table (Use Constraints While Creating Tables) Examples Using Select Command.
2. **Working with Queries and Nested QUERIES**
   Queries (along with sub Queries) using ANY, ALL, IN, EXISTS, NOTEXISTS, UNION, INTERSET, Constraints.
3. **Working with Queries USING Aggregate Operators & views**
   Queries using Aggregate Functions (COUNT, SUM, AVG, MAX and MIN), GROUP BY, HAVING and Creation and Dropping of Views.
4. **Working with Conversion Functions & String Functions**
   Queries using Conversion Functions (TO_CHAR, TO_NUMBER AND TO_DATE), String Functions (CONCATENATION, LPAD, RPAD, LTRIM, RTRIM, LOWER, UPPER, INITCAP, LENGTH, SUBSTR AND INSTR), Date Functions (SYSDATE, NEXT_DAY, ADD_MONTHS, LAST_DAY, MONTHS_BETWEEN), LEAST, GREATEST, TRUNC, ROUND, TO_CHAR, TO_DATE.
5. **Working with LOOPS using PL/SQL**
   Program Development using WHILE LOOPS, FOR LOOPS, Nested Loops using ERROR Handling.
6. **Working with Functions Using PL/SQL**
   Program Development using Creation of Stored Functions, Invoke Functions in SQL Statements and Write Complex Functions.
7. **Working with Stored Procedures**
   Programs Development using Creation of Procedures, Passing Parameters IN and OUT of PROCEDURES.
8. **Working with CURSORS**
   Develop Programs using Features Parameters in a CURSOR, FOR UPDATE CURSOR, WHERE CURRENT of Clause and CURSOR Variables.
9. **Working with Triggers using PL/SQL**
   Develop Programs using BEFORE and AFTER Triggers, Row and Statement Triggers and INSTEAD OF Triggers.

TEXT BOOKS:

1. Oracle PL/SQL by Example, Benjamin Rosenzweig, Elena Silvestrova, Pearson Education 3rd Edition.
2. Oracle Database Logic PL/SQL Programming, Scott Urman, Tata Mc-Graw Hill.
3. SQL and PL/SQL for Oracle 10g, Black Book, Dr .P.S. Deshpande.

Script Programming Lab

II B.Tech IV Semester (18ITL43)

Practical	:	3 Periods/Week	Continuous Internal Assessment	:	50
Credits	:	1	Semester End Lab Examination (3 hours)	:	50

List Of Experiments

1. Write a script to print some Pythagorean triples.
2. Write a script that demonstrates Regular expression support by the language.
3. Write a script that demonstrates Object Oriented Program support by the language.
4. Write a script to print Fibonacci numbers up to and including the first commandline argument.
5. Write a simple script that displays the mean and median of an array of values, passed in on the command line.
6. Write a script to Implement Merge sort
7. Write a script to Implement Quick sort
8. Write a script to implement Depth first search
9. Write a script to implement Breadth first search
10. Write a script to implement Linear Search
11. Write a script to implement Binomial Search

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