3rd YEAR ODD SEMESTER

CSE 3100 **Contact hours/week: 3/2**
Web Based Application Lab/Project **Credits: 0.75**
Prerequisite: None
Students will Work in Groups or Individually to Develop Web based Applications and Design a Web Site by Adding Client Side and Server Side Scripting and Interfacing the Web Applications to a Database.

CSE 3101 **Contact hours/week: 3**
Database Systems **Credits : 3.00**
Prerequisite: None
Concepts of Database Systems: Files and Databases, Database Management Systems;
Transaction Management, Structure of a DBMS, Applications.
Entity-Relationship Concepts: Entity Types, Entity Set, Attribute and Key, Relationships,
Relation Types, Entity Relationship, ER Modeling, ER Diagrams, Database Design using
ER Diagrams, Enhanced Entity-Relationship (EER) Model.
Normalization: Normal Forms, Normalized Relations and Database Performance; De-Normalization.
Relational Model: Structure of Relational Databases, Relational Algebra, Relational Algebra Operations, Modification of the Database, Introduction to Views, Pitfalls in Relational Database Design.
SQL: Data Definition Language, Data Manipulation Language, Basics of SQL, Query Designing in SQL using Aggregate Functions and Nested Queries, Embedded SQL, Triggers, Procedures; Indexes; Declarative Constrains and Database Triggers.
Concurrency Control: Lock based Protocols, Timestamp based Protocols, Validation based Protocols, Deadlock.

Recovery System: Failure Classification, Storage Structure, Recovery and Atomicity, Log-based Recovery, Recovery with Concurrent Transactions, Advanced Recovery Techniques, RAID Model.
Advanced Database Management Systems: No SQL Systems, Distributed Systems, Object-Oriented System, Temporal, Database Security, Data Warehousing and Data Mining, Database Administration and Tuning.

CSE 3102 **Contact hours/week: 3**
Sessional based on CSE 3101 **Credits: 1.50**
Prerequisite: None
Sessional based on the theory of course CSE 3101.

CSE 3103 **Contact hours/week: 3**
Data Communication **Credits: 3.00**
Prerequisite: None
Fundamental: Representation of Signals in Time and Frequency D omain, Properties of Fourier Transform, Delta Function, Auto-Correlation and Cross-Correlation.
Data Communication and Network Model: Data Communication, Fundamental of Networks, History of the Internet, Protocols and Standards.
Signal and System, Transmission Media, Interfaces: Analog and Digital Data, Periodic
Analog Signals, Digital Signals, Transmission Impairment, Data Rate Limits and Performance.
Digital and Analog Transmission: Digital to Digital Conversion, Line Encoding Schemes, Block Coding, Scrambling, Analog to Digital Conversion, Transmission Modes, Digital to Analog Conversion, Bandwidth Utilization, Analog to Digital Conversion.
Multiplexing, Spreading and Switching: Multiplexing, Spread Spectrum, Packet-Switched Data Networks, Circuit Switched Data Networks, Virtual Circuit Networks.
Transmission Medium: Guided Media and Unguided Media.

CSE 3104 **Contact hours/week: 3/2**
Sessional based on CSE 3103 **Credits: 0.75**
Prerequisite: None
Sessional based on the theory of course CSE 3103.

CSE 3105 **Contact Hours/week: 3**
Software Engineering **Credits:3.00**
Prerequisite: None
Introduction: Introduction to Software and its Nature, Software Engineering Methods, Professional and Ethical Responsibility of a Software Engineer.
Software Process Model: Different Types of Software Process Model and their Implementations, Costs of Software Engineering.
Software Requirement Analysis: Software Requirements Analysis and their Applications, Software Prototyping, Basic Concepts of Different Formal Software Specification.
Design of Software: Software Design and its Different Techniques, Software Configuration Managements. System Structuring, Control Models, Modular Decomposition, Domain-Specific Architecture.
Software Testing: Software Validation and Verification: Verification and Validation Planning, Software's Testing Strategies and Different Type of Testing Techniques, Art of Debugging.
Software Quality Assurance: Management and its Quality Assurance, Software Cognitive Fundamentals, Concepts of Software Reengineering and Web Engineering.
Advance Topics: Software Reliability Metrics, Software Reliability Specification,

Statistical Testing and Reliability Growth Modeling, Use of CASE Tools and Technological Support in Engineering Software, Introduction to Unified Modeling Language–UML

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CSE 3107 **Contact Hours/week: 3**
Applied Statistics and Queuing Theory **Credits:3.00**
Prerequisite: None

Introduction: Statistics and its Importance, Population and Sample, Variable and Constants, Statistical Data, Data Collection and Presentation, Construction of Frequency
Distribution and Graphical Presentation.

Measures of Central Tendency: Arithmetic Mean, Geometric Mean, Harmonic Mean, Median, Mode, Weighted Mean.

Measures of Dispersion: Range, Standard Deviation, Variance, Moments, Skewness and Kurtosis.

Correlation Theory: Linear Correlation and its Measures and Significance, Rank Correlation.

Regression Analysis: Linear and Non-Linear Regression, Least-Square Method of Curve
Fittings.

Probability: Elementary Concepts, Laws of Probability – Additive and Multiplicative Law,
Conditional Probability and Bay's Theorem, Random Variables, Mathematical Expectation.

Probability Distributions: Binomial Distribution, Poisson Distribution and Normal Distribution.

Queuing Theory: Stochastic Processes, Discrete Time Markov Chain and Continuous Time Markov Chain. Birth-Death Process in Queuing. Queuing Models: M/M/1,M/M/C,M/G/1,M/D/1,G/M/1 Solution of Network of Queue-Closed Queuing Models
and Approximate Models. Application of Queuing Models in Computer Science.

CSE 3109 **Contact Hours/week: 3**
Microprocessors and Assembly Language **Credits:3.00**
Prerequisite: CSE 2103

Microcomputer System: Introduction to Different Types of Microprocessors and its Applications, Organization of Intel 8086/8088 Microprocessor, the Component of Microcomputer System, I/O Device, Interrupt Structures, I/O Interfacing, DMA, Co-Processors, RISC Processors, Power PC Processor, CISC Processor, Direct Video RAM Accessing, Memory Module.

Introduction of Assembly Language: Program Structure and its Components, Few Basic Instruction, Input/Output Instruction.

Flag Register and Flow Control: The Flag Register, Flow Control Instructions, Conditional and Unconditional Jumps, Branching and Looping Structures.

Logic and Arithmetic Operation: Logic, Shift and Rotate Instruction, Multiplication and Division Instructions.
Arrays and Data Structure: Arrays and Related Addressing Modes, DUP Operator, Register Indirect Modes, Based and Indexed Addressing Modes, Basic Stack Operations, Procedures Declaration, Communication between Procedures, Calling a Procedure.
String Manipulation: The String Instructions, Director Flag, Moving a String, Storing a String, Loading a String, Scanning a String, Comparing Strings, Substring Operation.

CSE 3110 **Contact Hours/week: 3**
Sessional based on CSE 3109 **Credits: 1.50**
Prerequisite: None
Sessional based on the theory of course CSE 3109.

CSE 3112 **Contact Hours/week: 3/2**
Technical Writing and Presentation **Credits: 0.75**
Prerequisite: None
Introduction: Issues of Technical Writing and Effective Oral Presentation in Computer Science and Engineering.
Writing Issues: Writing Styles of Definitions, Propositions, Theorems and Proofs; Preparation of Reports, Research Papers.
Thesis and Books: Abstract, Preface, Contents, Bibliography and Index; Writing of Book
Reviews and Referee Reports.
Writing and Presentation Tools: LATEX; Diagram Drawing Software; Presentation Tools.