

VIDUSH SOMANY INSTITUTE OF TECHNOLOGY & RESEARCH, KADI

REMID SEM EXAM SYLLABUS - SEP 2026

Compiler Design (CE701-N)	
Unit	Detailed Syllabus
1	Introduction to Compiling Overview of the Translation Process- A Simple Compiler,Difference between interpreter, assembler and compiler,Overview and use of linker and loader , types of Compiler,Analysis of the Source Program,The Phases of a Compiler, Cousins of the Compiler, The Grouping of Phases,Front-end and Back-end of compiler,pass structure-A simple one-pass compiler: overview
2	Lexical Analyzer Introduction to Lexical Analyzer,Input Buffering,Specification of Tokens,Recognition of Tokens,A Language for Specifying Lexical Analyzers, Finite Automata From a Regular Expression,Design of a Lexical Analyzer Generator,Optimization of DFA
3	Parsing Theory- Syntax Analyzer The role of a parser,Context free grammars,Top Down and Bottom up Parsing Algorithms,Top-Down Parsing,Bottom-Up Parsing,Operator-Precedence Parsing,LR Parsers,Using Ambiguous Grammars,Parser Generators,Automatic Generation of Parsers. Parsing Theory- Syntax Directed Translation Syntax-Directed Definitions,Construction of Syntax Trees,Bottom-Up Evaluation of S-Attributed Definitions,L-Attributed Definitions,Syntax directed definitions and translation schemes
4	Error Recovery Error Detection & Recovery,Ad-Hoc and Systematic Methods

Language Processors and Compiler Design (CS701-N)	
Unit	Detailed Syllabus
1	Introduction to Compiler Overview of the Translation Process- A Simple Compiler,Difference between interpreter, assembler and compiler,Overview and use of linker and loader, types of Compiler,Analysis of the Source Program,The Phases of a Compiler, Cousins of the Compiler, The Grouping of Phases,Front-end and Back-end of compiler,pass structure,A simple one-pass compiler: overview,Language Processing of few languages (compiler and interpreter based languages like C,C++, PHP, Perl, Java, Python).
2	Lexical Analyzer Introduction to Lexical Analyzer,Input Buffering,Specification of Tokens, Recognition of Tokens,A Language for Specifying Lexical Analyzers, Finite Automata from a Regular Expression,Design of a Lexical Analyzer Generator,Optimization of DFA
3	Parsing Theory- Syntax Analyzer The role of a parser,Context free grammars,Top Down and Bottom up Parsing Algorithms,Top-Down Parsing,Bottom-Up Parsing,Operator-Precedence Parsing,LR Parsers,Using Ambiguous Grammars,Parser Generators, Automatic Generation of Parsers. Parsing Theory- Syntax Directed Translation Semantic Analyzer,Syntax-Directed Definitions,Construction of Syntax Trees, Bottom-Up Evaluation of S-Attributed Definitions,L-Attributed Definitions, Syntax directed definitions and translation schemes
4	Error Recovery & Type Checking Error Detection & Recovery,Ad-Hoc and Systematic Methods,Specification of a simple type checker,Type Conversions.

Distributed Systems (CT704A-N)	
Unit	Detailed Syllabus
1	Concepts of Distributed Systems Introduction, Distributed computing models, Software concepts, Design issues in distributed systems, Client-server model, WWW
2	Basic Network Communications LAN and WAN technologies, Classification of Networks, Protocols for Network Systems, ATM, Protocols for Distributed systems-FLIP, VMTP
3	Interprocess Communication Message Passing and its features, IPC message format, IPC synchronization, Buffering, multi datagram messaging, process addressing techniques, failure handling, Formal Models for message passing systems, Group communication, Group Management, Message ordering
4	Remote Communication Introduction, RPC basics, RPC implementation, RPC Communication and Other issues, Sun RPC, RMI basics, RMI Implementation, Java RMI
5	Distributed System Synchronization Introduction, Clock synchronization, Logical clocks and Global state, Mutual exclusion, Election algorithms: Bully algorithm, Ring algorithm, Leader election in rings, Deadlocks in Distributed systems.
6	Distributed System Management Resource management, Task management approach, Load balancing approach, Load sharing approach, Process Management, Process migration, threads, fault tolerance

Cloud Computing (IT704D-N)	
Unit	Detailed Syllabus
1	Introduction to Cloud Computing: Cloud Computing in a Nutshell, Roots of Cloud Computing, Layers and Types of Clouds, Desired Features of a Cloud, Cloud Service Models, Challenges and Risks

2	Migrating into a Cloud: Introduction, Broad Approaches to Migrating into the Cloud, The Seven-Step Model of Migration into a Cloud
3	Enriching the 'Integration as a Service' Paradigm for the Cloud Era: Introduction, The Evolution of SaaS, The Challenges of SaaS Paradigm, Approaching the SaaS Integration Enigma, The Integration Methodologies, SaaS Integration Products and Platforms, SaaS Integration Services, SaaS Integration Appliances
4	The Enterprise Cloud Computing Paradigm: Introduction and Background, Issues for Enterprise Applications on the Cloud, Transition Challenges, Enterprise Cloud Technology and Market Evolution, Business Drivers Toward a Marketplace for Enterprise Cloud

Blockchain Technology (CT703D-N)	
Unit	Detailed Syllabus
1	Background Theories: Cryptographic Hash Functions (SHA), Cryptographically Secured, Digital Signature, Public Key Cryptography (RSA), Chain of Blocks, Merkle Trees, Smart Contract, Centralized Vs. Distributed network. Actors and components in Blockchain solution.
2	Bitcoin: Basics, Creation/Projections of Coins, Double-spending attack, Bitcoin Anonymity, Basics of Bitcoin Script (FORTH), Bitcoin transactions through script.
3	Introduction to Blockchain: A typical block structure, chain of block, distributed ledger, Permissioned and Permission-less Model, Constructing a chain, Orphan block, Block propagation, Introduction to mining
4	Consensus: Why consensus, Distributed consensus, Consensus in Synchronous and Asynchronous systems, Consensus in Bitcoin, Proof of Work (PoW) Protocol, Attacks: Double spending, Sybil, DoS. Other consensus mechanism: Proof of Stake, Proof of Burn, Proof of Elapsed Time.
5	Mining: What is mining, Mining Difficulty, Miner, Mining pool, Mining

	pool methods
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Web Data Management (IT701 -N)	
Unit	Detailed Syllabus
1	Data Model Introduction to Modeling Web Data, Semi structured data, XML, Web Data Management with XML, XML Standards, XML and Syntax, XML Data Model, XLink, and XPointer.
2	XPath and XQuery Introduction, Basics of XPath and XQuery, XPath: Steps and path expressions, Evaluation of path expressions, Generalities on axes and node tests, Axes, Node tests and abbreviations, Predicates, XPath 2.0; FLWOR expressions in XQuery: Defining variables - the for and let clauses, filtering—the where clause, The return clause, Advanced features of XQuery; XPath foundations
3	Typing Motivating Typing, Automata, Schema Languages for XML, Typing Graph Data: Graph Semi structured Data, Graph Bisimulation, Data guides.
4	XML Query Evaluation XML fragmentation, XML identifiers: Region-based identifiers, Dewey- based identifiers, Structural identifiers and updates; XML evaluation techniques: Structural join, Optimizing structural join queries, Holistic twig joins

Cyber Security (CT702-N)	
Unit	Detailed Syllabus
1	Introduction to Cyber Crime Cyber Crime and Information Security, Classification of Cyber crime-Email Spoofing, Spamming, Internet Time Theft, Salami Attack, Data Hacking, Credit Card Frauds, Identity Theft, Password Sniffing, Software Piracy, Web

	Jacking, Forgery, Online Frauds.
2	Information Security Concepts Information Security Overview , Information Security Services , Goals for Security, E-commerce security, Computer Forensics, Digital Forensics Science, Digital Forensics Life Cycle.
3	Phishing and Identity Theft Methods of Phishing, Phishing Techniques, Spear phishing, Types of phishing scams, Phishing Toolkits and Spy Phishing, Phishing Countermeasures, Identity Theft, Types and Techniques of identity thefts and its counter measures
4	Security Threats and Vulnerabilities Overview of Security threats, Attacks, Hacking Techniques, Insecure Network connections.

Natural Language Processing (CT703C-N)	
Unit	Detailed Syllabus
1	Introduction to NLP Introduction to NLP: Text Preprocessing: Regular Expression, Tokenization, Stemming, Minimum Edit Distance
2	N-Gram Language Model Intro. N-Gram N-gram probability estimation and perplexity Smoothing technique (Laplace/good Turing/Kneser-Ney/interpolation)
3	Text Representation Bag-of-words: TF/IDF, Count vector Vector Space Model Latent Semantic Analysis Word embedding Word2Vec Glove FastText Sentence embedding technique: Doc2Vec
4	Text classification and clustering

	The text classification problem Feature Selection Naive Bayes text classification k-nearest neighbors Support Vector Machine Flat Clustering K-means algorithm Hierarchical clustering
5	MORPHOLOGY AND PART OF SPEECH TAGGING Morphology Part of Speech Tagging—Rule-Based Part of Speech Tagging Markov Models: Hidden Markov Models Viterbi algorithms Maximum entropy models. Sequence Processing with Recurrent Networks Simple Recurrent Neural Networks Applications of Recurrent Neural Networks Deep Networks: Stacked and Bidirectional RNNs Managing Context in RNNs: LSTMs and GRUs Words, Subwords, and Characters
6	Text Parsing Syntax parsing grammar formalisms and treebanks Parsing with Context-Free Grammars Features and Unification Statistical parsing and probabilistic CFGs (PCFGs)