UNDERGRADUATE ICT CURRICULUM – 2025

Programming Language

Structured Programming

data types, operators, expressions, control structures, functions, pointers, arrays, strings, file i/0, error handling, graphics, egiachics

North Americon CS programs (MIT, Stanford), ACM/IEEE curriculum

Object Oriented Programmin

classes, objects, inheritance, polymorphism, templates, multithreading

North American CS programs ACM/IELE curiculum

Theory

Discrete Math

set theory, relations, functions, propositional calculus, predicate calculus, induction counting. recurrence relations

Rosen's Discrete Mathematics (USA)

Graph Theory

graphs, trees, spanning trees, shortest paths, cut-vertices, briges, k-connected graphs

Standard graph theory texts (USA/ Europe), North American CS progms

Theory of Computation

DFA, NFA, PDA, Turing Machines, context-free grammars, context free languages

Sipser, introduction to the Theory of Computation (USA)

Data Structures & Algorithms

Arrays, lists, stacks, queues, trees, graphs, heaps, B-trees, Fibonacci heaps, algorithm design techniques, divide & conquer, dynamic programming, greedy, backtracking, branch & bound

CLRS (USA), North American algorithm courses

Database Systems

ER model, relational model, SQL, normalization, indexing (B+-trees, hash lables), transaction management, concurtency,