



1st Semester

CSE-1101: Introduction to Computer Systems [2.0 credit, 30 Hours Lecture]

Introduction to computations; Early history of computing devices; Computers; Major components of a computer; Hardware: processor, memory, I/O devices; Software: Operating system, application software; Basic architecture of a computer; Basic Information Technology; The Internet; Number system: binary, octal, hexadecimal, binary arithmetic; Basic programming concepts; Program development stages: flow charts; Programming constructs: data types, operators, expressions, statements, control statements, functions, array.

CSE-1103: Programming Fundamentals [3.0 credits, 45 Hours Lecture]

Structured programming language: data types, operators, expressions, control structures; Functions and program structure: parameter passing conventions, scope rules and storage classes, recursion; Header files; Preprocessor; Pointers and arrays; Strings; Multidimensional array; User defined data types: structures, unions, enumerations; Input and Output: standard input and output, formatted input and output, file access; Variable length argument list; Command line parameters; Error Handling; Graphics; Linking; Library functions.

Reference language: C

CSE-1104: Programming Fundamentals Lab I [1.5 credits, 45 Hours Lecture]

Laboratory works based on CSE-1103.

CHEM-1105: Chemistry [3.0 credit, 45 Hours Lecture]

Atomic structure, quantum numbers, electronic configuration, periodic table; Properties and uses of noble gases; Different types of chemical bonds and their properties; Molecular structure of compounds; Selective organic reactions; Different types of solutions and their compositions; Phase rule, phase diagram of monocomponent system; Properties of dilute activities. The properties of the

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4th Semester

CSE-2201: Algorithms [3.0 credits, 45 Hours Lecture]

Techniques for analysis of algorithms; Methods for the design of efficient algorithms: divide and conquer, greedy method, dynamic programming, back tracking, branch and bound; Basic search and traversal techniques; Topological sorting; Connected components, spanning trees, shortest paths; Flow algorithms; Approximation algorithms; Parallel algorithms; Algebraic simplification and transformations; Lower bound theory; NP-completeness, NP-hard and NP-complete problems.

CSE-2202: Algorithms Lab. [1.5 credits, 45 Hours Lecture]

Laboratory work based on CSE 2201.

CSE-2203: Database Management System [3.0 credits, 45 Hours Lecture]

Concepts of database systems; Models: Entity-Relationship model, Relational model; Relational algebra; SQL; Integrity constraint; Relational database design; File organization and retrieval, file indexing; Transaction manager; Concurrency controller; Recovery manager; Security system; Database administration; Advanced database management systems: distributed, multimedia, object-oriented, object-relational; Some applications using SQL.

CSE-2204: Database Management System Lab. [1.5 credits, 45 Hours Lecture]

Laboratory works based on CSE 3101.

CSE-2205: Computer Architecture [3.0 credits, 45 Hours Lecture]

Information representation; Measuring performance; Instructions and data access methods: operations and operands of computer hardware, representing instruction, addressing styles; Arithmetic Logic Unit (ALU) operations, floating point operations, designing ALU; Processor design: datapaths – single cycle and multicycle implementations; Control Unit design - hardwared and microprogrammed; Hazards; Exceptions; Pipeline: pipelined datapath and control, superscalar and dynamic pipelining; Memory organization: cache, virtual memory, channels; DMA and Interrupts; Buses; Multiprocessors: types of multiprocessors, performance, single bus multiprocessors, multiprocessors connected by

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