

200 LEVEL

FIRST SEMESTER CURRICULUM

Course Code	Course Title	U	L	T	P
CSC 203	Computer Programming I	3	1	-	2
CSC 205	Discrete Computation	3	2	1	-
CSC 217	Data Structures and Algorithms	3	2	-	1
CSC 209	Computer Hardware and Digital Logic	3	2	-	1
CSC 271	Numerical Computation	3	2	1	-
CSC 215	Information Technology Law & Ethics	1	1	-	-
MTS 213	Linear Algebra I	2	2	-	-
MTS 241	Mathematical Methods I	3	2	1	-
Total		21	15	3	3
*CSC 201	Introduction to Computer Science	3	2	-	1
(for Sciences, Engineering and Non-Agricultural Major)					
*CSC 221	Computer Science for Agricultural				
	Students (for B.Agric Students)	2	2	-	1

**Courses for Non-major Students*

200 LEVEL

SECOND SEMESTER CURRICULUM

Course Code	Course Title	U	L	T	P
CSC 204	Computer Programming II	3	2	-	1
CSC 206	Theory of Computation	2	2	-	-
CSC 214	System Analysis and Design	3	2	-	1
CSC 218	Foundations of Sequential Programming	3	2	-	1
MTS 216	Linear Algebra II	2	2	-	-
PHS 242	Electronics I	3	2	1	-
ETS 206	Entrepreneurial Studies & Change Mgt	2	2	-	-
GNS 201	Writing and Literary Appreciation	1	1	-	-
GNS 203	Use of Library	1	1	-	-
GNS 202	Elements of Politics & Government	1	1	-	-
GNS 204	Logic & History of Science	2	2	-	-
Total		23	19	1	3

*Mgt - Management

CSC 201: INTRODUCTION TO COMPUTER SCIENCE (3 Units)

(For Sciences, Engineering and Non-Agricultural Major)

Definition of computers and computing system, historical background, generations and characteristics of Computer. Basic functional components of computing system, classification of Computers hardware and software, computer hardware: functional components, modern input/output units. Software: system software, operating systems and utilities, application software: areas of application of computers. Data storage and internal representation of data, bits and character representation concept of data, data compression, records file, basic models of files processing and their advantages. Problem solving Strategies, concept and role of algorithm in problem solving process, implementation strategies, concepts and properties of algorithm, the science of algorithm and concept of abstraction, Algorithm representation and discovery, iterative and recursive structures. Algorithmic tools, pseudocode, flowcharts, introduction to efficiency and correctness of algorithms, introduction to computer programming with emphasis on C or C++. Practical: students are to have hands on practical experience in the Computer Laboratory and are expected to gain a high level of proficiency in problem solving with computers and computer programming.

CSC 221: COMPUTER SCIENCE FOR AGRICULTURAL STUDENTS (2 Units)

(For B.Agric Students with one Year Farm Practical)

Computer Hardware: History, classifications, configurations, input devices and output devices. Computer Software: operating systems (DOS, MS windows, Linux etc). Software package (Word Processing, spreadsheet, database, graphics and statistical packages). Problem Solving Strategies, concept, properties and role of algorithm in problem solving process, Algorithmic tools: Pseudocode, flowcharts, introduction to programming. Introduction systems, decision support systems, geographic information systems, precision farming and mapping, agricultural information dissemination tool.

Practical: Students are to have hands on practical experience in the Computer Laboratory and are expected to gain a high level of proficiency in computer usage.

CSC 203: COMPUTER PROGRAMMING I (3 Units)

Introduction to Problem solving methods and algorithm development, designing, coding, debugging and documenting programmes using techniques of a good programming language style, programming language and programming algorithm development. Principles of Good Programming. Programming Language Elements. A widely used programming language should be used in teaching the above. E.g. C

CSC 205: DISCRETE COMPUTATION (3 Units)

Basic Set Theory: Basic definition, Relations, Equivalence Relations Partition, Ordered Sets. Boolean Algebra & Lattices, Logic, Graph theory: directed and undirected graphs, Graph Isomorphism, Basic graph Theorems, Matrices; Integer and Real matrices, Boolean Matrices, Matrices mod m, Path matrices. Adjacency Vector/Matrices. Path adjacency matrix, Numerical & Boolean Adjacency matrices. Applications to counting, Discrete Probability Generating function:

Pre-requisite: MTS 101

CSC 217: DATA STRUCTURES AND ALGORITHMS (3 Units)

Primitive types, Arrays, Records Strings and string processing, Data representation in memory, Stack and Heap allocation, Queues, TREES. Implementation Strategies for stack, Queues, trees. Run time storage management, pointers, reference and linked structures.

CSC209: COMPUTER HARDWARE AND DIGITAL LOGIC (3 Units)

Data representation, and number bases, Fixed and Floating point systems, representation. Fundamental building blocks, logic expression, sum of product forms. Computer circuits; diode arrays, PIAs etc, Integrated circuits fabrication process. Use of MSI, LSI and VLSI IC' hardware Design. Primary and Secondary memories; core memory, etc. Magnetic devices; disks, tapes, video disks etc. Peripheral devices; printers, CRT's, keyboards, character recognition. Operational amplifiers; Analog-to- digital and Digital-to-analog converter.

CSC 271: NUMERICAL COMPUTATION (3 Units)

Approximation, significant figures, Errors; Truncation, Round-off, Recursive Computation (e.g. Herner's method and synthetic division for polynomials), polynomials and their zeroes (for at most degree 4). Bisection rule, Newton-Raphson rule, computations of functions and series. Numerical differentiation, Solution of ordinary differential equations, Direct and iterative methods for solution of linear system, Least square polynomial approximations. Introduction of numerical solution of partial differential equations. Students will be expected to prepare flow charts, write programs in C, C++ , JAVA to compute the above.

Pre-requisite: MTS 101 OR MTS 102

CSC 215: INFORMATION TECHNOLOGY LAW AND ETHICS (1 Unit)

Proliferation of Computers in our World; Computers and the Business World; Medicine and Computers; Computers and Education; Computers and the e-Government; Computers and the Law; Privacy versus Freedom of Information; Ethics and Professionalism; Intellectual Property Rights.

CSC 204: COMPUTER PROGRAMMING II (3 Units)

Principle of good programming, structured programming concepts, Debugging and testing, string processing, internal searching and sorting, recursion. Use a programming language different from that in CSC 203. E.g. C++, Python... **Pre-requisite: CSC 102**

CSC 206: THEORY OF COMPUTATION (2 Units)

Formal grammars and automata; meaning of alphabet, string, concatenation, language and level of language; regular expression, regular grammar and context-free languages, deterministic and non-deterministic parsing of context free languages; recursive language, finite state automata, turing machine, pumping lemma, chomsk normal form and CYK algorithm. **Pre-requisites** MTS 101

CSC 214: SYSTEM ANALYSIS AND DESIGN (3 Units)

System concept, organization of a Data Processing department, Feasibility study: project identification and selection fact-finding and analysis; process of system design, design problem identification, definitions and solutions, physical and implementation, data capture, data recording transmission, conversion and possible effect, file design control and security, personnel training, system testing and maintenance, evaluation process, system documentation, report writing and presentation.

CSC218: FOUNDATIONS OF SEQUENTIAL PROGRAMMING (3 Units)

The relationship between H/L languages and the computer architecture that underlies their implementation: basic machine architecture, assembles specification and translation of P/L block structured languages, parameter passing mechanisms.

CSC 301: STRUCTURED PROGRAMMING (3 Units)

Structured programming elements, structured design principles, abstraction modularity, stepwise refinement, structured design techniques. Teaching of a particular structured programming languages e.g. C++, Python, PASCAL, ALGOL etc. **Pre-requisite:** CSC 203 or 204.

CSC305: ALGORITHM AND COMPLEXITY ANALYSIS (3 Units)

Basic algorithm analysis: asymptotic analysis of upper and average complexity bounds; standard complexity classes time and space tradeoffs in algorithm analysis, recursive algorithm.

Algorithm strategies: Fundamental computing algorithms: numerical algorithms, sequential and binary search algorithms; sorting algorithms, binary search trees, hash tables, graphs and its representation. **Pre-requisite:** CSC 217.

CSC 307: COMPILING TECHNIQUES (3 Units)

Review of compilers, assemblers and interpreters, structure and functional aspects of a typical compiler, syntax, semantics and pragmatics, functional relationship btw lexical analysis, expression analysis and code generation. Internal form of course programme. Use of a standard compiler, as a working example. Error detection and recovery. Grammars and languages, the parsing problem and the scanner. **Pre-requisite:** CSC 206

CSC 309: INFORMATION TECHNOLOGY MANAGEMENT (3 Units)

Concept and principles of Management, Functions of management. Information Technology Management. Challenges of Management. Technology assimilation. Information technology's strategies, IT policy and strategy, IT planning and strategic issues for senior executives. Developing the firm's IT strategy. IT controls and asset protection, Chief Information Officer duties and responsibilities. Team management, project management tools, software risk and quality assurance.