

**Syllabus for First Degree Programme in Mathematics
of the University of Kerala**

**Semester V
Computer Programming-I**

CODE: MM 1545

Instructional hours per week: 5

No.of credits: 4

Module 1 ALGORITHMS AND DATA (15 hours)

Control structures, combining control structures, the goto statement, diagrams for algorithms, subroutines, recursion, a solution to the "Tower of Hanoi", power control structures, data types and data structures, variables, vectors, arrays, queues and stacks, trees, tree sort.

TEXT: David Harel, *Algorithmics-The Spirit of Computing*, Second edition, Pearson Education Asia, Section 2 of Part I

Module 2 BASIC UNIX COMMANDS AND CONCEPTS (25 hours of which 12 hours are for lab.)

Logging in, setting a password, virtual consoles, popular commands, shells, file-name extension, saving output, manual pages, file ownership and permission, changing owner group and permission, start-up files, important directories, process.

Programming with gcc: gcc features, basic gcc usage, using multiple source files, enabling debugging code, creating libraries and shared libraries.

TEXT: Matt Welsh et al., *Running Linux*- O'REILLY - Third Edition.
Chapter 4 and Section 1 of Chapter 12

Module 3 C LANGUAGE—BASIC SYNTAX AND EXAMPLES (25 hours of which 12 hours are for lab.)

Variables, operators (relational, logical, increment and decrement, etc.), formatted input/output, control structure (if, if-else, nested if-else), loops (while, do-while, for, switch-case), simple programs. One dimensional and two dimensional arrays, strings, programs: bubble sorting, addition multiplication and transpose of matrices.

TEXT: E. Balaguruswamy, *Programming in ANSI C*

Module 4 POINTERS AND STRUCTURES IN C (25 hours of which 12 hours are for lab.)

Understanding pointers—declaring and initializing pointer, pointer variable, pointer expressions, pointers and arrays, simple programs on pointers; Structure—definition and initialisation, comparison of structure.

Variables, arrays of structures, arrays within structures, structure within arrays, pointers and structures, structures and functions, simple programs.

TEXT: E. Balaguruswamy, *Programming in ANSI C*