University of Technology Computer Engineering Department Academic Year 2023-2024 1st Year- Second semester- All Branches	

CE136	Algorithm Design and Programming Techniques	4 Hr/Week	4 Units

Contents of syllabus	Hours
Problem Solving: process, Analyze (requirement, Design algorithm, Tracing algorithm, Example, Design problems, flowchart	4
Problem Analysis: Algorithm discovery, Algorithm design strategies , Stepwise refinement, Control requirements.	4
Implementing algorithm	4
Data Definition Structures: Types, constants, variables, Expressions: Arithmetic, Logical; Precedence rules; Control Structures: Sequencing; Input and output statements; Assignment statement;	4
Control Structures: Selection: one-way (if .. then), two-way (if .. then .. else), multiple (switch);	4
Control Structures: Repetition (while structure);	4
Control Structures: Repetition (do while for);	4
Control Structures: Combination;(combination of selection & repetition programming)	4
Functions: Parameters definition and passing (functions depth look); prototypes	4

Functions: Parameters definition and passing (Scope: local and global variables);	4
Data Structures: One and two dimensional arrays;	4
Abstract data type: Records (struct definition statement); Strings (use of main operations: Concatenate, string copy, compare, etc.);	4
Strings; Files (use of main operations of a sequential file: open, reset, rewrite, read, write, eof)	4
Files; Pointers;	4
Simple I/O —reading and writing files Testing and debugging Program development and object-oriented design Programming style considerations	4

References:

- **Programming in C++ ,Balgurusamy, Tata M|cGraw Hill**
- **Programming in C++, Schuam outline series .**
- **Algorithms with C++,Yashwant Kanetker,BPB publication**
- **practical C++ programming,O'Reilly.**