CSC126

FUNDAMENTALS OF ALGORITHMS AND COMPUTER PROBLEM SOLVING

SEMESTER MAC – JULY 2025 (20252)

COURSE INFORMATION

Course Name	:	Fundamentals of Algorithms and Computer Problem Solving
Course Code	:	CSC126
Credit Hour	:	3
Course Learning Outcomes	:	1. Determine the concepts of algorithms, problem-solving and programming control structures in computer programming. 2. Display practical skills in algorithm and computer program developments. 3. Demonstrate communication skills in tasks related to computer program solutions.
Course Description	:	This course is an introduction to problem solving using a structured programming language. It emphasizes algorithm development; pseudocodes and flowchart, writing computer programs, as well as common good practices in writing programs. Students will be taught to create, compile and run programs in a structured programming language chosen and solve problems involving the 5 basic algorithms: summation, average, counting, as well as determining the minimum and maximum values of a set of data. Teaching methods will involve lectures and practical computer lab work. Students will be assessed through written assessments as well as programming assignments. In the end they are expected to work in a team to analyze simple real-world problems, organize effective algorithmic

solutions for the problems and construct computer programs to solve them.

☺ LECTURER DETAILS

Name	:	Puan Nora Yanti binti Che Jan
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SCHEME OF WORK & ASSESSMENTS			
SAM	**WEEK**	**TOPIC**	**REMARKS**
1	1	**Topic 1: Introduction to Programming** ⇢ Introduction to computer programs ⇢ Program development life cycle: Problem analysis, Algorithm design, Algorithm implementation, Program testing & debugging, Program maintenance and Documentation ⇢ Details of problem analysis: Input, process and output ⇢ Algorithm design and representation ⇢ Basic control structures: sequence, selection, repetition	
	2	**Topic 2: Sequence structure**	
	3	⇢ Data & data types (integers, floating-point data, character, string, Boolean) ⇢ Variable declarations ⇢ Assignment statements ⇢ Constant declarations ⇢ Output statements ⇢ Input statements ⇢ The sequence of a complete program ⇢ Mathematical operators, operands & expressions ⇢ Operator precedence ⇢ The difference between syntax & logic error	

		⇢ Good & secure programming practices	
	4	**Topic 3: Selection Control Structure** ⇢ Example of problems requiring selection structure	Quiz [10%] Topics covered: 1 & 2 only Duration: 1 hour CLO: 1
	5	⇢ Boolean values, relational operators & expressions ⇢ Logical operators ⇢ Operator precedence ⇢ One-way selection ⇢ Two-way selection ⇢ Multiple selection: Linear selection structures, Nested selection structures	
2	6		Assignment [25%] Topics covered: 2 & 3 only Duration: One week CLO: 2
	7	**Topic 4: Repetition Control Structure** ⇢ Example of problems requiring repetition control structure ⇢ Three requirements of a repetition structure: initialization, condition & updating ⇢ Counter-controlled loop: `for`, `while` and `do..while` ⇢ Sentinel-controlled loop: `while` and `do..while` ⇢ Basic iterative problems: summation, average, counting, minimum, maximum ⇢ Nested loops	
	8		Briefing of group project proposal & final report
	9		
3	10		
	11	**Topic 5: Functions** ⇢ Introduction to functions ⇢ Library functions & function calls	Submission of group project proposal
	12		

		⇢ User-defined functions ⇢ Function header, function body & function call ⇢ The concept of parameters ⇢ Parameter passing: pass-by-value ⇢ `return` statement ⇢ Parameter passing: pass-by-reference ⇢ `void` functions	
	13	**Topic 6: Arrays** ⇢ Declaration and initialization of arrays for integers & floating-point data	Test [30%] Topics covered: 3 - 5 only Duration: 2 hours CLO: 1
	14	⇢ Array input / output ⇢ Basic algorithms to process arrays: summation, average, counting, minimum, maximum ⇢ The type of problems that require the use of arrays	
STUDY WEEK			
4	15	Group Project [35%] Final report submission & presentation CLO: 3	
	16		
	17		

🕮 RECOMMENDED TEXT

1. Malik, D. S. (2018), *C++ Programming: From Problem Analysis to Program Design*, 8th, Cengage Learning, ISBN: 9781337102087