

Course unit title:	Programming Principles I
Course unit code:	CSC131
Type of course unit: (Compulsory/optional)	Compulsory
Level of course unit: (First, second or third cycle)	Bachelor (1st cycle)
Year of study:	1
Semester when the unit is delivered:	1
Number of ECTS credits allocated:	6
Name of lecturer(s):	TBA
Learning outcomes of the course unit:	
<p>Upon successful completion of this course students should be able to:</p> <ul style="list-style-type: none"> • Design, compile and execute a simple program. • Define primitive data types, basic statements and write programs containing selection and repetition control structures. • Specify, implement and use methods/functions. • Declare and manipulate arrays, as well as design programs that use arrays. • Specify and use pointers (if applicable) • Build solutions to basic programming problems. 	
Mode of delivery:	Face-to-face
Prerequisites and co-requisites:	None
Recommended optional program components:	None
<p>Course contents:</p> <p>Objective: To introduce the basic ideas of problem solving and programming, using the principles of top-down design, stepwise refinement, and procedural abstraction. The students get practical experience with an object oriented or a structured programming language along with its use in the construction and execution of complete programs that solve simple algorithmic problems. Basic data types, input/output conventions, selection and iteration structures are presented.</p> <p>Description: Introduction to Computers: What is a computer, Basic Computer Organization, Operating Systems, Low and High Level Languages, History and evolution of important programming</p>	

languages, The Internet and the World Wide Web.

Introduction To Programming: Primitive data types and variable definition. Basic input output statements, formatting program output, arithmetic operators, order of precedence. Writing, compiling and executing a simple computer program, Algorithms. Pseudocode.

Control Structures: The if, if/else and switch selection structures. The while and for repetition structures, assignment operators, increment and decrement operators, the break and continue statements, logical operators.

Characters & Strings:

Strings, characters and relevant methods, string manipulation, variable size strings, regular expressions (if applicable)

Methods/Functions: Program modules, Using methods/functions from existing libraries, Method/function definitions and prototypes, Argument Promotion and Casting, Duration of identifiers, Scope rules, Method overloading, references and reference parameters.

Arrays: Introduction to arrays, array declaration and allocation, initializing array elements, accessing array elements, manipulation of arrays, passing arrays to methods/functions.

Pointers (if applicable): Pointer variables, working with pointers, pointer operators and pointer arithmetic. Calling functions by reference. Using pointers in place of arrays. Pointers to pointers, 2D arrays using pointers. Arrays of pointers; pointers to functions.

Problem Solving:

Representing and refining algorithms, using Sub-programs for sub-problems, decision steps in algorithms, tracing a program on algorithm, problem solving strategies, generalizing a solution, debugging and testing programs, common programming errors.

**Recommended
or
required reading:**

Hanly J., Koffman E., *Problem solving and program design in C, 7/e*, Pearson, 2013

Deitel P., Deitel H., *C How to program, 7/e*, 2013

Cheng H, *C for Engineers and Scientists, an interpretive approach*, McGraw-Hill, 2010

Deitel & Deitel, *C++ – HOW TO PROGRAM*, Prentice Hall

Elliot B. Koffman and Ursula Wolz, *PROBLEM SOLVING WITH JAVA*, Addison Wesley

N. Dale, C. Weems and M. Headighton : *PROGRAMMING AND PROBLEM SOLVING WITH C++*, Jones and Bartlett.

	<p>Charatan, Q., & Kans, A., JAVA IN TWO SEMESTERS, McGraw-Hill</p> <p>Deitel & Deitel, JAVA – HOW TO PROGRAM, Prentice Hall</p> <p>Walter Savitch, JAVA – AN INTRODUCTION TO PROBLEM SOLVING AND PROGRAMMING, Prentice Hall</p> <p>Bruce Eckel, THINKING IN JAVA, Prentice Hall</p>						
Planned learning activities and teaching methods:	<table border="1"> <tr> <td>Class Instruction:</td> <td>42 Hours</td> </tr> <tr> <td>Consultation:</td> <td>15 Hours</td> </tr> </table>	Class Instruction:	42 Hours	Consultation:	15 Hours		
Class Instruction:	42 Hours						
Consultation:	15 Hours						
Assessment methods and criteria:	<table border="1"> <tr> <td>Examinations</td> <td>75%</td> </tr> <tr> <td>Class Participation / Assignments</td> <td>25%</td> </tr> <tr> <td></td> <td>100%</td> </tr> </table>	Examinations	75%	Class Participation / Assignments	25%		100%
Examinations	75%						
Class Participation / Assignments	25%						
	100%						
Language of instruction:	English						
Work placement(s):	No						
Place of Teaching:	<p>Regular Classroom European University Cyprus, Nicosia</p> <p>Computer Laboratory European University Cyprus, Nicosia</p>						