



Future Academy
Higher Future Institute for Specialized Technological Studies

Course Specification

1- Course information:

Course Code:	CSC112
Course Title:	Programming Lang. (1)
Year/level	1 st
Academic Programs	Computer Science Program (B.Sc.)
Contact hours/ week	(Theoretical = 3hrs, Practical = 3hrs), Total = 6hrs

2- Course aims:

This course aims to provide students with comprehensive knowledge regarding the fundamental concepts of structured programming and algorithmic problem solving such as primitive data types, casting, control structures, functions and passing parameters using different methodologies such as passing parameters by value and passing Parameters by Reference, Using Array to store data, Top down design, and mechanics of compiling, running, testing and debugging programs.

3- Intended learning outcomes of the course (ILOs):

a- Knowledge and understanding:

On successful completion of this course, the student should be able to:

- a1- **Recognize** the main difference between Low level languages and High Level Language, as well as, the major High Level Language programming paradigms
- a2- **Define** what is mean by Integrated Development Environment "IDEs"
- a3- **Recognize** what is mean by Variables and constants and how we can use them.
- a4- **Determine** the main features of the built-in datatype and data conventions
- a5- **Identify** the importance of using Control Flow Statements, as well as, the structure and the appropriate use of each statement
- a6- **Recognize** the importance of using the user defined datatype such as Structure and Enumeration
- a7- **Present** the basic concepts of building programs using functions and how to pass parameters to functions using different methodologies
- a8- **Identify** the basic concepts of building one-Dimensional and 2-Dimentional Array.

b- Intellectual skills:

On completing this course, the student should be able to:

- b1- **Develop** small programs and organize the output of each one.
- b2- **Describe** a wide range of problems using the basic programming instructions
- b3- **Clarify** constructing programs using *Structures and Enumerations*
- b4- **Formulate** programs using *Function based paradigm*

c- Professional and practical skills:

At the end of this course, the student will be able to:

- c1- **Prepare** simple programs to use the basic programming elements such as using comment statements, variables, constants and the different types of built-in data types.
- c2- **Examine** mathematical equations using arithmetic, logical operators, data types conversions and cmath library function.
- c3- **Analyze** code flow using if-else statements, switch statement, for loop, while loop and do-while statements.
- c4- **Solve** programs using structured based paradigm.
- c5. **Prepare** programs using function based paradigm
- c6- **Utilize** program using 1-D and 2-D array

d- General and transferable skills:

On successful completion of this course, the student should be able to:

- d1- **Compute** the personal responsibility by working to multiple deadlines in relation to the course requirements.
- d2- **Working in groups** to the deployment of communication skills.

4- Course contents

Week No.	Topics/units	Number of hours		ILO's
		Lecture hours	Practical hours	
1	Introduction to programming languages, binary system and data representation	3	2	a1
2	Binary system and data representation	3	2	a1
3	Using Different IDEs, Basic program construction & comments	3	2	a2, c1
4	Variables, Datatypes Input/output(I/O) + Quiz 1	3	2	a3, a4, b1, b2, c1

5	Casting "data conversions", relational operators and using 'setwidth' manipulator	3	2	a3, a4, b1, b2, c2, d1
6	Loops statements, for loop, while loop, do-while statements	3	2	a5, b1, b2, c3 , d1, d2
7	Midterm Exam	3		
8	Decisions statements, if –else statement, Switch case statement	3	2	a5, b1 , b2, c3, d1
9	Nested loop and if else statement	3	2	a5, b1 ,b2, c3, d1
10	Structure/Enumeration	3	2	a6, b1 , b2, b3, c4, d1, d2
11	Building programs using Function + Quiz 2	3	2	a7, b4 , c5
12	passing parameters by value and by Reference	3	2	a7, b4 , c5
13	Using Static and Dynamic 1-D and 2-Dimensional Arrays,	3	2	a8, c6
14	Final Revision	3	2	

5- Teaching and learning methods

Methods	ILO's																			
	a1	a2	a3	a4	a5	a6	a7	a8	b1	b2	b3	b4	c1	c2	c3	c4	c5	c6	d1	d2
Lectures	√	√	√	√	√	√	√		√		√	√	√	√	√	√	√	√		√
Practical sections										√	√	√	√	√	√	√	√	√	√	
Self-learning																				
Problem solving							√		√	√	√	√	√	√	√	√	√			
Assays and reviews																				
Discussion groups									√											√
Brainstorming																				
Blended-learning																				
E-learning																				

6- Teaching and learning methods for Low-achieving students

- Additional teaching office hours for those who need help.
- More assignments to assess their ability for understanding the course.
- Encourage the teamwork for those students with other advanced ones to increase their participation and understanding.

7- Student assessment

Assessment method	Time	Grade weight (%)	Week	ILOs
Course Work (Tutorial Exercise and Assignments)	Through the semester	10	Every Week	a3, a4, a5, a6, a7, b2, b3, b4, c1, c2, c3, c4, d1
Quiz 1	Through the lecture	5	Week#4	a1, a2,c1
Mid-term exam	1 hours	10	Week#7	a3, a5, c1, c2, c3
Quiz 2	Through the lecture	5	Week#11	a3, a4 a5, a6, b3, c4
Practical exam	2 hours	10	Week#14	b2, c1, c2, c3, a7
Final Written exam	2 hours	60	Week# 15-16	a1, a2, a3, a4, a5, a6, a7, c1, c2, c3

8-List of references

8.1. Student notebooks:

Comprehensive instructor notes ("PowerPoint slides") are available on the course web page ("Google Classroom")

8.2. Essential textbooks:

- Big C++: Late Objects, Cay S. Horstmann ,Third Edition, ISBN-13: 978-1119739678

8.3. Recommended textbooks:

- Object-Oriented Programming in C++, Robert lafore, Fourth Edition, ISBN-13: 978-0672323089, 2002

8.4. Journals, Periodical and Reportsetc.

8.5. Websites

- <https://www.geeksforgeeks.org/c-plus-plus/>
- <https://www.w3schools.com/cpp/default.asp>
- <https://www.learncpp.com/>

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