زانكۆى پۆليته‌كنيكى هه‌ولێر
ERBIL POLYTECHNIC UNIVERSITY
EPU 1996

Kurdistan Region Government
Ministry of Higher Education
and Scientific Research
Erbil Polytechnic University

Ministry of Higher Education & Scientific Research
2006 KRG Iraq
وه‌زاره‌تى خوێندنى باڵا و تویژینه‌وه‌ى زانستى

Module (Fundamental of Programming II) Catalogue

2023-2024

College/ Institute	Erbil Technology College
Department	Information & Communication Technology Engineering (ICTE)
Module Name	Fundamental of Programming II
Module Code	FOP204
Degree	Technical Diploma ✱ Bachelor ☐ High Diploma ☐ Master ☐ PhD ☐
Semester	Three
Qualification	Master degree in computer science
Scientific Title	Assistant Lecturer
ECTS (Credits)	5
Module type	Prerequisite ☐ Core ✱ Assist. ☐
Weekly hours	8
Weekly hours (Theory)	(2) hr Class (91)Total hrs Workload
Weekly hours (Practical)	(2) hr Class (71)Total hrs Workload
Number of Weeks	12
Lecturer (Theory)	Chiman Haydar Salh
E-Mail & Mobile NO.	Chiman.salh@epu.edu.iq
Lecturer (Practical)	
E-Mail & Mobile NO.	
Websites	

Course Book

Course Description	This course could be considered as the main course where basic concepts will be explained. These concepts are frequently repeated in the other programs. From the nineties to the present day, the world has witnessed rapid development and prosperity in the field of science, especially in the field of information technology. As a result of this rapid development, people must provide the means and mechanisms to control and organize this information. Electronic devices are designed and operated by one of the operating systems developed by one of the programming languages such as: C, C++, C#, Visual Basic, and so on. Therefore, any operating system or any application program' that you want to create in the purpose of executing any specific job must be made by one of those programming languages that are classified as a high-level language. C++ is an important programming language to create an application program, therefore, you need to know or learn the basic concepts in the C++ language to create this kind of program.
Course objectives	This course gives students an opportunity to know the basic concepts in programming specially the fundamentals steps and how to writing a program in C++ language, So in this course the student will learn how to build flow chart for any program and how to convert it to program and vice versa, also will get a good information about variables and constants and how to deal with them and also will learn how to apply the operator and mathematical operations' in C++ languages. Additionally, this course is the base part in understanding other programming languages.
Student's obligation	The Students should be attendant in class at more than 1:30 hours during lecturing, and to pass this course should fulfill the following requirements: 1. The absence should be less than 9%. 2. The student has to submit almost all the assignments, essays, and reports and also. 3. The student must pass the exams and quizzes which have been done during the study year. Activations & good behavior is important in class for student, and also present seminar it is required.
Required Learning Materials	The ways that we are using in our teaching for this course are: 1. Data show. 2. White Board. 3. Word Documents. 4. Notebook. 5. Group activity. 6. Computer Lab.

Task		Weight (Marks)	Due Week	Relevant Learning Outcome
Paper Review		0		0
Assignments	5	5%		14%
	2	2%		2%
	0	0%		8%
	10	10%		8%
	0	0		0
	0	8%		0%
Quiz		8		8%
Lab.		10		10%
Midterm Exam		25		25%
Final Exam		40		40%
Total		100		100%

Specific learning outcome:

The main goal of this course is to improve student programming skills. In the first stage, the student took basic information about how to program, and how to write statements code in the C++ language and then ran the program. In the second stage, the student will improve his/her skill in programming and how to do a sample project. Therefore, taking this course will help the student to come in contacting with the reality of life and individually will help the student easily find a job, especially in the programming field. Nowadays, IT has a very important role in all fields of life because of the facility and speed provided by IT. So, programming is very important in the IT world and can be considered as a backbone of IT. That's why interest in programming is very important and directed relation with the companies and other job marketing needs.

Course References:

1. A GETWAY TO THE C++ LANGUAGE. ARAM M. KHAYAT, 2008.
2. Object Oriented Programming with C++, E. BALAGURUSAMY
3. Object Oriented Programming in C++, Robert Lafore.
4. Fundamental of C++ Programming and Numerical Analysis, Twana Kamal Hagi, 2008.
5. https://www3.ntu.edu.sg/home/ehchua/programming/cpp/cp3_OOP.html
6. http://www.cplusplus.com/doc/tutorial.
7. http://www.studytonight.com/cpp/cpp-and-oops-concepts.php
8. www.cprogramming.com/tutorial.html.

Course topics (Theory)	Week	Learning Outcome
Review Second Semester	1	Selection Structure, Repetition Structure
Break and continue (local and global), Scope of Variables.	2	loops
Array 1D	3	array
Array 2D	4	array
String	5	String
Pointer	5	Pointer
Function	6	Function
Type of function	7	Types
Call by reference and call by value	8	value
Overloading function	9	Overloading
Inline function	11	Inline
Friend Function	12	Friend
C++ Recursion	13	Recursion
Class and object	14	OOP
Practical Topics	**Week**	**Learning Outcome**
Review Second Semester	1	Selection Structure, Repetition Structure C++.
Break and continue (local and global), Scope of Variables.	2	Loops, C++.
Array 1D	3	array, C++.
Array 2D	4	array, C++.
String	5	String, C++.
Pointer	5	Pointer, C++.

Function	6	Function, C++.
Type of function	7	Types, C++.
Call by reference and call by value	8	value, C++.
Overloading function	9	Overloading, C++.
Inline function	11	Inline, C++.
Friend Function	12	Friend, C++.

Questions Example Design

Q1/ the output of the following programs and discuss all the possibilities.

1. void main ( ) {
  for (int i = 0; i <= 10; i+=2)
    cout << i << endl;   }

2. void main ( ) {
  char buffer[6] ={'A','B','C','D','E','\0' };
  cout << "output the string:" << endl;
    for (int i = 0; i < 4; i++) {
      cout << buffer;
      cout << endl;   }

Q2/Write a C++ program to read 3*4 2D-array, then find the summation of each row.

Q3/ Choose the correct answer for the following.
1. Which of the following accesses the seventh element stored in the array?

 a. array [6] b. array [7] c. array (7) d. array

2. For finding the number of characters in the string, which function is used?

  a. str ( ) b. str_len ( ) c. string ( ) d. strlen ( )

3. What is the index number of the last element of an array with 9 elements?
  a. 9 b. 8 c. 0 d. Programmer-defined

Q4/ What is the difference between <u>cin. getline</u> and <u>cin</u> in C++?
  Explain the program.

Answer:
  1. **Q1/** 0 2 4 6 8 10
  2. **output the string:**
     ABCDE
     ABCDE

ABCDE
ABCDE

Q3/
```
#include<iostream>
using namespace std;
void main()
{
        int a[3][4];
        int i, j, sum = 0;
        for (i = 0; i < 3; i++)
                for (j = 0; j < 4; j++) {
                        cin >> a[i][j];
                }
        for (i = 0; i < 3; i++)
        {
                sum = 0;
                for (j = 0; j < 4; j++)
                        sum += a[i][j];
                cout << "summation of row "<< i <<" is :" << sum << endl;
        }
        system("pause");
}
```

Q3/ **1. a**
   2. d
   3. b

```
#include<iostream>
using namespace std;
void main()
{

char buffer[20];
        cout<<"enter the name:"<<endl;
        cin>>buffer;
        cout<<buffer<<endl;
```

```
        }
void main()
{
        char buffer[20];
        cout<<"enter the name:"<<endl;
        cin.getline(buffer,20);
        cout<<buffer<<endl;
        system("pause");
        }
```

Extra notes:

Dear Student...

As we know, there are some factors or reasons (the postponement of the study, Holidays, National holidays, Eids, etc.) that are causing the inability to study (15) lectures in the annual study (15 weeks). Therefore, to improve the scientific level and maintain the standardization for diploma programs in IT, we will try to finish 80% of the prescribed curriculum in (12) weeks rather than 15 weeks. This means we will try to take or study more subjects than what is prescribed to study every week.

External Evaluator

I have reviewed this course book, it is perfect and fit for this subject at the level of college student, so I have no suggestion.

Soran Abdulrahman

Assistant Lecture(Erbil Technology Institute) Information Communication Technology Engineering department