



The Islamia University of Bahawalpur

Department of Physics

<Course Code – PHY-205>- <Course Title : Scientific Computing>

Form number	COURSE OUTLINE / DOCUMENT	
COURSE INSTRUCTOR INFORMATION	Name	Mr. M. Usman Mustafa
	Email ID	usman.mustafa.1232@gmail.com

DEGREE INFORMATION	Program	Batch	Semester	SECTION-B
	BS(Hons)	2019	2nd	FALL 2019-23

COURSE INFORMATION	Code	Title	Credit hours
	Phy-205	Scientific Computing	2+1
		SC	3

TEXT BOOK(S) INFORMATION	Title of Book		Fundamentals of C++: Understanding Programming and Problem solving.	Edition
	Author(s)		K. A. Lambert & D. W. Nance	
Reference Book (s)	1.	Title of Book	M. Morris Mono; Computing System Architecture	
	2.	Title of Book	Object Oriented Programming (OOP) Using C++ by tasleem mustafa	
		Imprint details	IT series	

Description of Course:	This course will focus on the basic concepts of computer programing and introduction to computer; introduction to hardware & software; languages; assembly language; introduction to c++; data type & operators; data representation and transfer; anathematic & relational operators; escape sequences & manipulator; condition statements, loops introduction of built— in functions; arrays and so on.		
	C++ is the fundamental computer language that is widely used for solving problems of science as well as for physics. Successful completion of this course will provide students a comprehensive understanding of computer and c++ language, and enable them to analyze and solve many problems with the help of c++.		

Course Objectives (CO):	
1.	To introduce basic concepts of computer & C++ with emphasis on the basic programing of c++.
2.	To introduce the basics of c++ including data type; operators; manipulator, loops and arrays.
3.	Familiarization with basic programing that will help to solve problems related to physics,
4.	Familiarization with Assembly Language directives, macros, operators, and program structures.
5.	Learning Programming methodology to be able to create system level software tools and application programs
6.	Understanding of interrelationship between hardware and software



The Islamia University of Bahawalpur

Department of Physics

Weeks	Contents/Topics	Comments (if any)
Week-01	<u>Introduction to Computer Programing</u> <ul style="list-style-type: none"> <input type="checkbox"/> Introduction to programing <input type="checkbox"/> Algorithm <input type="checkbox"/> Flowchart <input type="checkbox"/> Program Development Process <input type="checkbox"/> Computer Languages <input type="checkbox"/> Computer Languages Classification <input type="checkbox"/> Language Processor 	Lecture-1 & Lecture-2
Week-02	<u>Introduction to C++</u> <ul style="list-style-type: none"> <input type="checkbox"/> History <input type="checkbox"/> Syntax of C++ <input type="checkbox"/> Characteristics of C++ <input type="checkbox"/> Structure of C++ <ul style="list-style-type: none"> <input type="checkbox"/> Preprocessor Directive <input type="checkbox"/> Main function <input type="checkbox"/> Body of C++ <input type="checkbox"/> Creating and running C++ program <input type="checkbox"/> C++ tokens <input type="checkbox"/> Debugging in c++ <input type="checkbox"/> Comments. <input type="checkbox"/> Example & exercise 	Lecture-3 & Lecture-4
Week-03	<u>Programming in C++</u> <ul style="list-style-type: none"> <input type="checkbox"/> Identifier <input type="checkbox"/> Keywords <input type="checkbox"/> Data types <input type="checkbox"/> Constants <input type="checkbox"/> Operators <input type="checkbox"/> Assignment Operators <input type="checkbox"/> Example & Exercise 	Lecture-5 & Lecture- 6
Week-04	<u>Input and Output in C++</u> <ul style="list-style-type: none"> <input type="checkbox"/> Standard input & output. <input type="checkbox"/> Escape Sequences. <input type="checkbox"/> C++ Manipulator. <input type="checkbox"/> Programming Exercise 	Lecture-7 & Lecture-8
Week-05	<u>Conditional Structures</u> <ul style="list-style-type: none"> <input type="checkbox"/> Control Structure <input type="checkbox"/> Relational Operators <input type="checkbox"/> If- Structure <input type="checkbox"/> Programming Exercise 	Lecture-9 & Lecture-10
Week-06	<u>IF-Else Structure</u> <ul style="list-style-type: none"> <input type="checkbox"/> If-else Statement <input type="checkbox"/> Multiple if-else-if statement <input type="checkbox"/> Programming Exercise. 	Lecture-11 & Lecture-12



The Islamia University of Bahawalpur

Department of Physics

Week-07	<u>Programming Practice</u> <ul style="list-style-type: none"> <input type="checkbox"/> Basic Programs of C++ <input type="checkbox"/> Practice of Programs 	Lecture-13 & Lecture-14
Week-08	<u>Programming Practice</u> <ul style="list-style-type: none"> <input type="checkbox"/> Programs And theory revision <input type="checkbox"/> Sample Paper of Mind Exam 	Lecture-15 & Lecture-16
Week-09	<u>Looping Structure</u> <ul style="list-style-type: none"> <input type="checkbox"/> Loops <input type="checkbox"/> Types of Loop <input type="checkbox"/> For loop <input type="checkbox"/> Exercise 	Lecture-17 & Lecture-18
Week-10	<u>Types of Loops</u> <ul style="list-style-type: none"> <input type="checkbox"/> Practice of for loop <input type="checkbox"/> While loop 	Lecture-19 & Lecture-20
Week-11	<u>Do-while Loop</u> <ul style="list-style-type: none"> <input type="checkbox"/> Examples of do-while loop <input type="checkbox"/> Practice of do-while loop 	Lecture-21 & Lecture-22
Week -12	<u>Practice of Loops</u> <ul style="list-style-type: none"> <input type="checkbox"/> Programs Related to Loops <input type="checkbox"/> Practice of Loops 	Lecture-23 & Lecture-24
Week 13	<u>Arrays</u> <ul style="list-style-type: none"> <input type="checkbox"/> Initialization & declaration of Array <input type="checkbox"/> One-dimensional array <input type="checkbox"/> Practice Exercise of Arrays 	Lecture-25 & Lecture-26
Week-14	<u>Multidimensional Arrays</u> <ul style="list-style-type: none"> <input type="checkbox"/> Initialization & declaration <input type="checkbox"/> Practice exercise 	Lecture-27 & Lecture-28
Week-15	<u>Functions</u> <ul style="list-style-type: none"> <input type="checkbox"/> Types of Functions <input type="checkbox"/> Built-in Functions <input type="checkbox"/> Practice Exercise 	Lecture-29 & Lecture-30
Week-16	<u>Practice of Functions and Programming</u> <u>Sample of Final term paper</u> <u>Revision</u>	Lecture-31 & Lecture-32

Marks Distribution:

Particulars	% Marks
1. Sessional	20
3. Mid Term-I	30
6. Final Exam	50
Total:-	100

SEPECIAL INSTRUCTIONS
(Specific to the subject being taught)

Your textbooks should be the main source of all your work. All of you are highly recommended to read the textbook in order to get good knowledge of Assembly Language.