Module Title: Programming Fundamentals
Module Code: CMS1515
Module Value: 2.0
Duration: 30 weeks
Class-Contact Hours: Lecture 30 hours.
Tutorial 30 hours.
Laboratory 60 hours.
Assessment Scheme: Continuous Assessment 50%
Examination 50%

Module Rationale/Aims:
· to introduce the concepts and techniques in design, implementation and testing of a program;
· to introduce the manipulation of data types and data structures;
· to introduce the concept of object-oriented programming and its use on the Web environment;
· to provide a practical introduction to a popular programming language.
Learning Objectives:
Students will be able to:
· understand the basic concepts in object-oriented programming;
· apply the basic techniques of object-oriented programming;
· develop programs in a systematic way;
· test and debug programs.
Syllabus Keywords:
Algorithm, arrays, class, data types, encapsulation, file, graphics, GUI, inheritance, method, object, operators, polymorphism, pseudo-code, recursion, repetition, selection, sequence, stream, strings, test plan, test data, program documentation
Textbooks/References:
H.M. Deitel, P.J. Deitel, Java How to Program, latest edition, Prentice-Hall International. Roger Garside, John Mariani, Java: First Contact, latest edition, International Thomson Publishing. Mary Campione, Kathy Walrath, The Java Tutorial, latest edition, Addison-Wesley.Key Content Area:

Content Lecture Tut/Lab.

1 Introduction to Programming Concepts

a Steps in program development

b Algorithm and pseudo-code

c Program development environment and tools

d Program documentation

e Testing strategies

2 Data Types and Control Structures

a Primitive data types

b Operators and expressions

c Selection structures

d Repetition structure

e Arrays

f Strings

3 Graphical User Interface

a Applets

b Basic GUI components

4 Introductory Object-Oriented Programming

a Classes and objects

b Methods

c Inheritance

d Polymorphism

5 Files and Streams

a Concepts of files and streams

b Sequential files

c Random access files