Module Title: Advanced Programming Methods
Module Code: CMS5521
Module Value: 1.5
Duration: 30 weeks
Class-Contact Hours: Lecture 30 hours.
Tutorial 30 hours
Laboratory 30 hours.
Assessment Scheme: Continuous Assessment 50 %
Examination 50 %

Module Rationale/Aims:
· to learn advanced programming methods by using popular programming languages;
· to develop advanced programming skills;
· to appreciate and understand object-oriented programming paradigm.
Learning Objectives:
Students will be able to:
· develop object-oriented programs using advanced techniques;
· build robust applications in cross-platform environment;
· exploit object-oriented concepts to develop larger commercial Internet systems.
Syllabus Keywords:
Object, class, object-oriented, API, inheritance, variable, method, constructor, applet, application, servlet, message passing, encapsulation, exception, package, interface, super class, adapter, polymorphism, abstract class, final class, event handling, garbage collection, multithreaded, GUI, database access, RMI, socket communications, serialization, internationalization, JDBC, ODBC, database connectivity, JavaBeans
Textbooks/References:
Java Programming Language, Student Guide, latest edition, Sun Microsystems. Mary Campione, Kathy Walrath, The Java Tutorial, latest edition, Addison-Wesley. Campione, Walrath, Huml, The Java Tutorial Continued, latest edition, Addison-Wesley. Various training materials from Web site http://java.sun.com Kernighan, B.W. and Ritchie, D. M., The C Programming Language, latest edition, Prentice-Hall.
Harbison, S.P. and Steele, G.L.Jr, C: A Reference Manual, latest edition, Prentice-Hall.Key Content Area:

Content Lecture Tut/Lab

1 The Java Programming Language Basics

a Getting Started

b Identifiers, Keywords, and Types

c Expressions and Flow Control

d Arrays

2 Object-Oriented Programming

a Objects and Classes

b Advanced Language Features

3 Exception Handling

a Exceptions

4 Developing Graphical User Interfaces

a Building GUIs

b The AWT Event Model

c The AWT Component Library

d Foundation Classes

5 Multithreading

a Threads

6 Communications

a Stream I/O and Files

b Networking

7 Comparisons between object-oriented languages and procedural languages

8 Advanced Topics

a Collections

b Business Components

c Database Access

d Servlets

e Course Programming Projects

f Application Program Interface