CO1105 Introduction to Object Oriented Programming

Prerequisites:	Essential: CO1102 Desirable: -
Lectures: Tutorials: Laboratories:	 20 hours 10 hours 20 hours Independent Study: 100 hours
Assessment:	Coursework: 100% + Exam: 0%Formative CourseworkSummative CourseworkNoneClass Tests: 2 in totalAssignments: 1 in total

Credits: 15 **Convenor:** *Dr.Karim Mualla* **Semester:** 2^{*nd*}

Learning Outcomes Students should be able to:

- Define, discuss and explain classes and objects, inheritance, abstraction and interfaces; write simple programs.
- Define and explain topics such as dynamic despatch, message passing, encapsulation, information hiding and polymorphism; write simple programs.
- Analyse program behaviour using exceptions and testing. Write programs using integrated development environments, tool support and debuggers.
- Solve small scale computing problems that are suited to OO development by designing solutions and then coding the design.

Explanation of Prerequisites CO1102: Programming Fundamentals, and knowledge of mathematics up to GCSE level.

Module Description Programming and programming skills build part of the foundation of every computer science degree. Many of the ideas and concepts are shared between different programming languages. In this module we focus on Java, which is an object-oriented language. The object-oriented concepts build the backbone of this module. Starting with the fundamental ideas of classes, attributes and methods we develop many practical examples. Throughout the module we will focus on the implementation and the design techniques of OOP software products. Step by step we use the UML notations and diagrams to represent and reason about different design options.

Syllabus

- Introduction to Java: Virtual Machine, Editors, Compiler, Development Environments
- Introduction to Object Oriented Programming, Modeling, Design and Development Concepts
- Strings and Numerical Data
- Defining Your Own Classes
- Selection Statements
- Repetition Statements
- Methods and Parameters Handling

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- Overloaded methods and constructors
- Introduction to Inheritance
- Exception Handling
- Arrays and ArrayLists
- Introduction to Overriding and Polymorphism
- Input/Output Programming
- Introduction to Recursion

Reading List

- [B] C. Thomas Wu, An Introduction to Object-Oriented Programming with Java, 5th (international) edition ISBN: 978-0071283687 (4th) 9780124077263 (5th), McGraw-Hill..
- [B] R. Pressman and D.Ince, Software Engineering, *ISBN: 0071238409, A Practitioners Approach, European 6th edition,* McGraw Hill.
- [B] I. Sommerville, Software Engineering, 7th edition, ISBN: 0321210263, Addison-Wesley.

Convenor's Notes

Resources Resources Departmental web page (Blackboard), text book web site, Dr. Java (IDE), study guide, lab and tutorial worksheets, lecture rooms and computer projection facilities.

Module Evaluation Course questionnaires, course review.