INTI INTERNATIONAL UNIVERSITY

COURSE STRUCTURE

Programme: DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY

<table>
<tr><td>1.</td><td colspan="7">Name of Course/Module : OBJECT-ORIENTED PROGRAMMING</td></tr>
<tr><td>2.</td><td colspan="7">Course Code: ICT2100</td></tr>
<tr><td>3.</td><td colspan="7">Rationale for the inclusion of the course/module in the programme :
This course teaches Object Oriented Programming as one of the most important programming styles that allows writing programs with clear modular structure and provides a good framework for code libraries where software components can be easily reused by programmers. The module focuses on Java itself to demonstrate the OOP concepts in this module because Java is an important OOP language that can produce high-tech programs including utilities and business applications. The course covers OOP as one of the most critical topics in the context of software engineering.</td></tr>
<tr><td rowspan="3">4.</td><td rowspan="2">Student Learning Time (SLT)</td><td colspan="5">Total Face to Face</td><td colspan="2">Total Student Independent Learning Time</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>O</td><td>A</td><td>B/O</td><td>IL</td></tr>
<tr><td>L = Lecture
T = Tutorial
P = Practical(Lab)
O= Others
A= Assessment
B/O=Blended /Online learning
IL= Independent learning</td><td>18</td><td>10</td><td>28</td><td></td><td>7</td><td>14</td><td>83</td></tr>
<tr><td>5.</td><td colspan="7">Credit Value: 4</td></tr>
<tr><td>6.</td><td colspan="7">Prerequisite (if any): ICT1103 Structured Programming</td></tr>
<tr><td>7.</td><td colspan="7">Learning outcomes:
On completion of the course, students will be able to:
1. Apply appropriately the class basics, methods, various types of data structures and control structures of Java to write programs that produce expected results.
2. Describe the main concepts of object-oriented programming (OOP), and describe how the OOP concepts are incorporated into Java programming language and into Java programs.
3. Solve a variety of problems using Java OOP concepts (e.g., abstraction, inheritance, and polymorphism).
4. Develop event-driven GUI applications, using the Java GUI features and the mechanisms of Event handling and Exception handling.</td></tr>
<tr><td>8.</td><td colspan="7">Synopsis:
This course introduces Object Oriented Programming (OOP) using the Java programming language. Emphasis is placed on dealing with methods, classes and objects, applying OOP concepts, event-driven programming and exception handling for the development of practical solutions using Java.</td></tr>
<tr><td>9.</td><td colspan="7">Mode of Delivery: Lectures, Tutorials are done face to face and online, Laboratory.</td></tr>
<tr><td>10.</td><td colspan="7">Assessment Methods and Types:
Coursework and Examination
Tests, Practical, Project and Final Exam</td></tr>
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11. Content outline of the course/module and the SLT per topic:

Sessions	Topics	LO	L	T	P	B/O	O	A	IL
1-2	**Introduction to Java Programming** Key features of Java technology, write and execute simple Java application, Display text, Escape sequences, Using comments, Data types, variables and constants, Arithmetic operators, Input/Output.	*1*	2		2	1			
3- 4	**Expressions and Flow Control** Type casting, Relational operators, Logical operators, Selection control structures, Repetition control structures, Break and continue statements.	*1*	3	1	4	3			
5-6	**Methods** Predefined methods of classes Math and String, user-defined methods, value-returning and void methods, Passing objects as parameters.	*2,3*	1	1	2	1			
7-10	**Fundamental of Classes** Class basics, instance variables, instance methods, accessor and mutator methods, constructors, creating objects, Using object references, *this* keyword, classes versus objects.	*2,3*	1	1	2	1			
11-12	**Arrays and String Handling** Declare and create arrays of primitive or object types, Accessing array elements, Passing arrays to methods, Sorting and Searching arrays, Multidimensional arrays. Using Java's built-in String methods, properties of class String, creating String objects.	*1,3*	1	1	2	1			
13-20	**Object-Oriented Programming** Static versus instance variables, object oriented concepts (e.g., abstraction, composition, encapsulation, inheritance, and polymorphism), public and private access modifiers, overloading and overriding methods, Interfaces, Abstract Classes, final methods, type casting, and Enumeration types.	*2,3*	5	3	8	3			
21-24	**Building Java GUI Applications** Use Abstract Window Toolkit (AWT) package and Java Swing components, Containers, Layout managers to create GUI application.	*4*	2	2	4	2			

	25-26	**GUI Event Handling** Define events and event handling, concept of adaptor classes, use of inner classes in event handling.	*4*	2		2	1			
	27-28	**Exception Handling** Checked versus unchecked exceptions, Identify common exceptions; define exception classes; declaring and handling Exceptions, Catching multiple exceptions.	*4*	1	1	2	1			
		TOTAL		18	10	28	14		7	83

Lecture (L), Tutorial (T), Practical (P), O (Other), Assessment (A), B/O ((Blended/Online learning); Independent Learning (IL); Learning Outcome (LO)

12. Main reference(s) supporting course:

- ***Liang, Y. D., Intro to Java Programming, Comprehensive Version, 10th Edition, Pearson, 2014 ISBN 13: 978-0-13-376131-3***
- Gaddis T, Starting Out with Java: From Control Structures through Objects, 5th Edition, Addison Wesley, 2012. ISBN-13: 9780132855839

Additional references:

- Savitch W., Java: An Introduction to Problem Solving and Programming, 7th Edition, Addison Wesley, 2014. ISBN-13: 9780133862119
- Lewis J. and DePasquale P.,(2013) Java: Foundations: Introduction to Program Design and Data Structures, 3rd Edition, Addison Wesley, ISBN-13: 978-0133370461
- Deitel & Deitel, Java How to Program (early objects) (9th Edition), 2011. ISBN-13: 978-0132575669.

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13. Other additional information (if any):

LABORATORY WORK:

Week	Lab Lessons
1-2	Introduce the Java programming compiler and runtime environment compile and run simple Java applications variables and data types in Java.
3-4	Variable declaration and initialization Input/output using Scanner class Input/output using Dialog box Mathematical operands in Java
5-6	Flow control: if and if-else structure, switch structure, loops, nested loops
7-8	User-defined methods, predefined methods
9-10	Class basics, define classes and create objects.
11-12	Declare and create arrays, use arrays, use methods from class String
13-20	Cover all taught OOP concepts
21-22	***GUI Event handling***
23-26	***GUI applications***
27-28	***Exception handling***

ASSESSMENT:

Test	20%
Lab Tutorials	20%
Project	20%
Final Examination	40%

FINAL EXAMINATION FORMAT:
Duration: 2 hours
Section A: Answer TWO compulsory questions.
Section B: Answer any TWO out of THREE questions.
All questions carry equal marks.

GRADING SCALE:
A+ (90-100), A (80-89), A- (75-79), B+ (70-74), B (65-69), B- (60-64), C+ (55-59), C (50-54), C- (45-49), D (40-44), F (0-39).
Resit Pass (50-100), Resit Fail (0-49).

Important Note:
A student who obtains a grade C- (45 -49 marks) in a 100% coursework module is required to resubmit the coursework component determined by the lecturer and ascertained at the Exam Board. Resubmission marks will be capped at a maximum of 50 marks or a grade C.

A passing mark can only be achieved when the student attempts both the coursework and final exams.

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