



UNIVERSITI TEKNOLOGI MARA

CSC435: OBJECT-ORIENTED PROGRAMMING

Course Name (English)	OBJECT-ORIENTED PROGRAMMING APPROVED
Course Code	CSC435
MQF Credit	3
Course Description	This course is the continuation of the Fundamental of Computer Problem Solving course. It will emphasis on solving simple to more complex problems using a programming language that supports Object-Oriented programming. The main concepts of Object-Oriented programming are discussed. Principles and techniques taught will include objects and classes, abstraction, encapsulation, inheritance and polymorphism. Students will also be taught on how to write event-driven GUI application and solve problems using text files.
Transferable Skills	Demonstrate ability to analyse issues/problems from multiple angles and make suggestions. Demonstrate ability to investigate problems and provide effective solutions.
Teaching Methodologies	Lectures, Lab Work, Tutorial
CLO	CLO1 Apply object-oriented programming concepts. CLO2 Propose problem solving using advanced object-oriented programming techniques. CLO3 Display practical skills using object-oriented programming in GUI-based application.
Pre-Requisite Courses	No course recommendations
Topics	
1. Introduction to Object Oriented Programming (OOP) 1.1) Introduction to object 1.2) Elements of an object: attributes and behaviours 1.3) Characteristics of OOP: abstraction, encapsulation, inheritance, and polymorphism	
2. Programming Basics 2.1) Structured language vs OOP language 2.2) Introduction to Java Application 2.3) Data types – primitives and references 2.4) Control structures 2.5) Array of primitives data types 2.6) Packages	
3. Basic Concepts of Classes 3.1) Class concept 3.2) Class definition 3.3) Class members 3.4) Basic types of methods 3.5) Methods definition 3.6) Static fields and methods 3.7) Predefined classes and wrapper classes	
4. Classes - Intermediate 4.1) Method overloading 4.2) Objects as parameter 4.3) Objects as return type 4.4) Array of reference data types 4.5) Composite objects 4.6) Application – simple sorting and searching algorithm	

5. Inheritance

- 5.1) Inheritance concept
- 5.2) Access levels – public, protected, private, and package
- 5.3) Inheriting instance fields and methods
- 5.4) Calling super class constructor and methods
- 5.5) Object class
- 5.6) Array of sub class types
- 5.7) Application of super and sub classes

6. Polymorphism

- 6.1) Polymorphism concept
- 6.2) Abstract classes and methods
- 6.3) Method overriding
- 6.4) Concrete sub classes and methods
- 6.5) Array of super class types

7. File Input/Output

- 7.1) Characters and Streams
- 7.2) Text files – characters
- 7.3) File and Exceptions
- 7.4) Selected text file classes – File, FileReader, BufferedReader, FileWriter, PrintWriter, and BufferedWriter

8. GUI and Event Driven Programming

- 8.1) Event-driven programming
- 8.2) GUI Packages – AWT and Swing
- 8.3) Basic Components – JButton, JTextField, JLabel, JFrame, JPanel , JCheckBox, and JRadioButton
- 8.4) Events Handlers - events listeners and events source
- 8.5) Layout manager – FlowLayout, BorderLayout, and GridLayout

Assessment Breakdown	%
Continuous Assessment	50.00%
Final Assessment	50.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Group Project	Group Project	10%	CLO3
	Lab Exercise	5 Lab Exercises	10%	CLO2
	Quiz	Quiz 1	5%	CLO1
	Quiz	Quiz 2	5%	CLO2
	Test	Test 1	10%	CLO1
	Test	Test 2	10%	CLO2

Reading List	Recommended Text	<ul style="list-style-type: none"> • Cay S. Horstmann 2015, <i>Core Java Volume I--Fundamentals</i>, Tenth Ed., Prentice Hall USA
	Reference Book Resources	<ul style="list-style-type: none"> • Peter Sestoft 2016, <i>Java Precisely</i>, Revised Ed., MIT Press Ltd USA • Walter J. Savitch and Kenrick Mock 2015, <i>Absolute Java</i>, Sixth Ed., Pearson Education Limited UK • Herbert Schildt 2014, <i>Java: A Beginner's Guide</i>, Sixth Ed., McGraw Hill Education USA • Patricia Liguori and Robert Liguori 2017, <i>Java Pocket Guide</i>, Fourth Ed., O'Reilly Media USA • Paul Deitel and Harvey Deitel 2017, <i>JAVA: How to Program</i>, Eleventh Ed., Pearson Education Limited UK
Article/Paper List	This Course does not have any article/paper resources	
Other References	This Course does not have any other resources	