UNIVERSITI TEKNOLOGI MARA

CSC238: OBJECT ORIENTED PROGRAMMING

Course Name (English)	OBJECT ORIENTED PROGRAMMING APPROVED
Course Code	CSC238
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 apply Object-Oriented concepts to store and retrieve data using text files.
Transferable Skills	1. Demonstrate analytical skills using technology. 2. Demonstrate ability to analyse issues/problems from multiple angles and make suggestions.
Teaching Methodologies	Lectures, Lab Work, Tutorial
CLO	CLO1 Differentiate between Structured and Object-Oriented Programming approaches. CLO2 Explain main characteristics of Object Oriented Programming – abstraction, encapsulation, inheritance and polymorphism. CLO3 Apply programming basics and concept of classes to solve problems. CLO4 Use Object-Oriented Programming concepts to store and retrieve data using text files. CLO5 Demonstrate Object-Oriented Programming concepts and techniques to solve problems using inheritance and polymorphism.
Pre-Requisite Courses	No course recommendations

Topics
1. OOP vs Structured Programming 1.1) Structured Programming Approach & the limitation 1.2) Object-Oriented Programming Approach
2. Introduction To Object Oriented Programming (OOP) 2.1) Introduction to objects 2.2) Elements of an object: attribute, behaviour, state 2.3) Characteristics of OOP: abstraction, encapsulation, inheritance, polymorphism 2.4) Message passing
3. Basic Concepts Of Classes 3.1) Class concept 3.2) Class definition 3.3) Data members 3.4) Basic types of methods 3.5) Methods definition 3.6) Difference of Class and Object 3.7) Object creation and application

4. Classes - Intermediate 4.1) Predefined classes and wrapper classes 4.2) Concept of Package 4.3) Static fields 4.4) Method overloading 4.5) Objects as parameter 4.6) Object as method type 4.7) Array of objects 4.8) Composite objects
5. File Input/ Output 5.1) Basic concept of file input/output 5.2) Opening and closing files 5.3) Storing and retrieving data using Object-Oriented Programming 5.4) File and Exceptions
6. Inheritance 6.1) Basic Inheritance concept 6.2) Relationships 6.3) Object class 6.4) Access levels 6.5) Array of sub classes 6.6) Generalization and specialization
7. Polymorphism 7.1) Polymorphism concept 7.2) Abstract classes and methods 7.3) Method overriding 7.4) Concrete sub classes and methods

Assessment Breakdown	%
Continuous Assessment	100.00%

Details of Continuous Assessment

Assessment Type	Assessment Description	% of Total Mark	CLO
Final Test	n/a	30%	CLO5
Individual Project	n/a	2%	CLO2
Individual Project	n/a	2%	CLO1
Individual Project	n/a	2%	CLO4
Individual Project	n/a	6%	CLO5
Individual Project	n/a	8%	CLO3
Quiz	n/a	20%	CLO3
Test	n/a	10%	CLO4
Test	n/a	20%	CLO3

Reading List

Reference Book Resources

- **Farrel Joyce 2019, *Java Programming*, 9 Ed., Course Technology**
- **Horstmann C.S 2018, *Brief Java: Early Objects*, 9 Ed., Wiley [ISBN: 978-119499138]**
- **Deitel H. M. & Deitel P. J. 2018, *Java How To Program*, 11 Ed., Pearson [ISBN: 978-013474335]**
- **Liang, Daniel 2017, *Introduction To Java Programming*, 11 Ed., Pearson**
- **Malik D.S., Nair P.S. 2012, *Java Programming: From Problem Analysis to Program Design*, 5 Ed., Course Technology**
- **Wu C. Thomas 2010, *An Introduction to Object-Oriented Programmin*, 5 Ed., McGraw Hill**

Article/Paper List	This Course does not have any article/paper resources
Other References	This Course does not have any other resources