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| 1 | Name of Course/Module | **OBJECT ORIENTED PROGRAMMING** |
| 2 | Course Code | **DOS2053** |
| 3 | Name(s) of academic staff | ABDUL HASIB SADIQIN B. ADAM SHUKRI |
| 4 | Rationale for the inclusion of the course/module in the programme | The rationale of this module is to provide students with the understanding and concepts of object-oriented programming in JAVA. |
| 5 | Semester and Year offered | Semester 3, Year 2 |
| 6 | Total Student Learning Time (SLT) | Face to Face | Independent Learning | Total Guided and Independent Learning |
|  | L = LectureT = TutorialP = PracticalO= Others | L | T | P | O | 61 | 120 |
| 28 | 0 | 21 | 10 |
| 7 | Credit Value | 3 |
| 8 | Prerequisite (if any) | Not applicable |
| 9 | Learning Outcomes | At the end of the course, the students will be able to:1. Understand the key features of object-oriented technology available in Java language.
2. Analyze and solve programming problems in order to complete a development of any applications developed using Java.
3. Understand the basic notions and techniques for algorithm development.
4. Construct the algorithm, data structures and graphical interfaces using Java correctly and effectively.
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| 10 | Transferable Skills: | * Thinking and scientific skills
* Communication skills
* Teamwork and responsibility
* Information management
* Information and Communication Technology
* Problem Solving
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| 11 | Teaching-learning and assessment strategy |

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| **Teaching – Learning Strategy** | **Assessment Strategy** |
| Lectures & Discussion | * Quizzes
* Test
* Assignment
* project and presentation
* final examination.
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| Practical | * Lab test
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| 12 | Synopsis | The Java language is and object oriented programming language and platform. It contains language facilities and libraries for networking and designed to execute code from remote sources securely. The Java language introduces some new features that did not exist in other languages like C and C++. Students will understand the object-oriented features of Java and how they relate to concepts from object-oriented design by using the object-oriented features of Java to efficiently implement abstract data-structures with clean and simple interfaces. The object-oriented features of Java to implement object-oriented designs of reasonable size and complexity. With this languages student will understand the basic principles used to implement the abstract data structures and graphical interfaces in Java. |
| 13 | Mode of Delivery | Lecture, Practical and Discussion |
| 14 | Assessment Methods and Types |

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| **Assessment Method** | **Type** |
| Quizzes (5%) | Multiple choice questions / short answer questions |
| Test (15%) | Objective, Structure and short essay. |
| Practical Lab (10%) | Lab Test |
| Assignments (10%) | Application of knowledge on case study |
| Project & Presentation (20%) | Presentation and Report Submission |
| Final Examination (40%) | Application through comprehension / a case study analysis, Short essay and long essay questions |

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| 15 | Mapping of the course/module to the Programme Aims /Programme Educational Objectives (PEO)

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| --- | --- |
| Course Learning Outcome (CLO) | Programme Educational Objectives  |
| PEO1 | PEO2 | PEO3 | PEO4 | PEO5 |
| Understand the key features of object-oriented technology available in Java language. |  | / |  |  |  |
| Analyze and solve programming problems in order to complete a development of any applications developed using Java. |  |  | / |  |  |
| Explain the basic notions and techniques for algorithm development. |  |  |  | / |  |
| Construct the algorithm, data structures and graphical interfaces using Java correctly and effectively. |  |  |  |  | / |

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| 16 | Mapping of the course/module to the Programme Learning Outcomes:-

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| --- | --- |
| Course Learning Outcome (CLO) | Programme Learning Outcome |
| PLO1 | PLO2 | PLO3 | PLO4 | PLO5 | PLO6 | PLO7 | PLO8 |
| Understand the key features of object-oriented technology available in Java language. |  | / |  |  |  |  |  |  |
| Analyze and solve programming problems in order to complete a development of any applications developed using Java. |  |  | / |  |  |  |  |  |
| Explain the basic notions and techniques for algorithm development. |  |  |  |  | / |  |  |  |
| Construct the algorithm, data structures and graphical interfaces using Java correctly and effectively. |  |  |  |  | / |  |  |  |

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| 17 | Content outline of the course/module and the SLT per topic |
| WEEK | TOPICS | STUDENT LEARNING TIME (SLT) | TOTAL | ASSESSMENT |
| LECTURE | TUTORIAL | PRACTICAL | TEST & EXAM | INDEPENDENT LEARNING |
| 1 | **Chapter-1****Object Oriented Programming (OOP) vs Structured Programming*** Definition of Structure and OOP
* Characteristics of Java

**Lab:*** Using Eclipse (Differentiate between C++ and JAVA
 | 2 |  | 2 |  | 4 | 8 |  |
| 2 | **Chapter-2****Introduction to Object Oriented Programming (OOP)*** Definition of Object
* Difference between Object and Class
* Characteristics of OOP

**Lab:*** Using Eclipse (Differentiate between C++ and JAVA
 | 2 |  | 1 | 1 | 3 | 7 | Lab test (1) |
| 3 | **Chapter-3****Basic Concept of Classes*** Class concept and definition
* Data members
* Method definition and basic types of methods

**Lab:*** Using Eclipse (OOP JAVA)
 | 2 |  | 1.5 | 0.5 | 3 | 7 | Quiz 1 |
| 4 | **Chapter-3****Basic Concept of Classes*** Difference of class and object
* Object creation and application

**Lab:*** Using Eclipse (OOP JAVA)
 | 2 |  | 2 |  | 4 | 8 |  |
| 5 | **Chapter-4****Classes - Intermediate** * Predefined classes and wrapper classes
* Concept of Package
* Static fields
* Method overloading

**Lab:**Using Eclipse (OOP JAVA) | 2 |  | 2 |  | 4 | 8 |  |
| 6 | **Chapter-4****Classes - Intermediate** * Objects as parameter
* Object as method type

**Lab:**Using Eclipse (OOP JAVA) | 2 |  | 2 |  | 4 | 8 |  |
| 7 | **Chapter-4****Classes - Intermediate** * Array of objects
* Composite objects

**Lab:**Using Eclipse (OOP JAVA) | 2 |  |  | 2 | 4 | 8 | Test 1 |
| 8 | **Chapter-5****File Input Output** * Basic concept of file input/output
* Opening and closing files

**Lab:*** Using Eclipse (OOP JAVA)
 | 2 |  | 1.5 | 0.5 | 3 | 7 | Quiz 2 |
| 9 | **Chapter-5****File Input Output** * Storing and retrieving data using Object-Oriented Programming
* File and Exceptions

**Lab:*** Using Eclipse (OOP JAVA)
 | 2 |  | 2 |  | 4 | 8 |  |
| 10 | **Chapter-6****Inheritance** * Basic concept of inheritance
* Understand Relationships, Object class and access levels

**Lab:**Using Eclipse (OOP JAVA) | 2 |  | 2 |  | 4 | 8 |  |
| 11 | **Chapter-6****Inheritance** * Using array of sub classes and generalization and specialization

**Lab:**Using Eclipse (OOP JAVA) | 2 |  | 1 | 1 | 3 | 7 | Lab test (2) |
| 12 | **Chapter-7****Polymorphism*** Polymorphism concept
* Abstract classes and methods

**Lab:**Using Eclipse (OOP JAVA) | 2 |  |  | 2 | 4 | 8 | Test 2 |
| 13 | **Chapter-7****Polymorphism*** Method overriding
* Concrete sub classes and methods

**Lab:**Using Eclipse (OOP JAVA) | 2 |  | 2 |  | 4 | 8 |  |
| 14 | **Revision, Project and Presentation** | 2 |  | 2 |  | 4 | 8 |  |
| 15 | Study Week |  |  |  |  |  |  |  |
| 16-17 | Examination |  |  |  | 3 | 9 | 12 |  |
|  | Total | 28 |  | 21 | 10 | 61 | 120 |  |
|  | Notional Hours | 40 |  |
|  | Credit Value | 3.0 |  |
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| 18 | 1. Main references supporting the course
 | 1. **An Introduction to Object Oriented Programming with Java**

Author: C. THOMAS wuPublisher: Mc grawhill international edition Language: EnglishISBN: 0-7-111680-X1. **Objects First with Java: A Practical Introduction Using BlueJ**

Author: David Barnes & Michael KöllingPublisher: Prentice HallLanguage: EnglishISBN: 978-0-13-504587-9 |
| 1. Additional references supporting the course
 | 1. **Introduction to Java Programming**

Author: Y. Daniel LiangPublisher: PearsonLanguage: EnglishISBN: 0-273-77138-8 |
| 19 | * Other additional information
 | 1. Internet
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