1	**Name of Course/ Module** : OBJECT ORIENTED PROGRAMMING						
2	**Course Code** : DFT4024						
3	**Name (s) of academic staff** :						
4	**Rationale for the inclusion of the course/ module in the programme :** The course applies the object programming methodology, in contrast to the methods introduced before. The method is relevant to the current industry and mobile based application. Most complex software systems are designed and built using Object Oriented Programming languages.						
5	**Semester and Year offered:** Semester 4 / Year 2						
6	**Student Learning Time (SLT)**	**Dependent Learning (DL)**				**Independent Learning (IDL)**	**Total**
	L = Lecture P = Practical T = Tutorial O = Others	**L**	**P**	**T**	**O**	76	160
		27	46	0	11		
7	**Credit value** : 4						
8	**Prerequisites (if any)** : DFC1042 Problem Solving and Program Design						
9	**Learning Outcomes :** Upon completion of the course, students should be able to: CLO 1 : explain the concepts of object oriented design, methodology and programming in application development. (C2, PLO1) CLO 2 : design a program by applying the Object Oriented Concepts using appropriate programming tools. (C3, P3, PLO1, PLO2) CLO 3 : solve problems using the Object Oriented Programming approach and exception handling to produce well engineered program. (C4, P3, A3, PLO1, PLO2, PLO4, PLO9)						
10	**Transferable Skills:** Skills and how they are developed and assessed, project and practical experience and Internship a. Knowledge b. Practical Skills c. Critical Thinking and Problem Solving Skills d. Leadership and Teamwork Skills Skills are assessed through : Laboratory Task, Test (Practical) and Project for Generic Student Attribute (GSA). Knowledge are assessed through theoretical methods (Quiz & Test)						
11	**Teaching-Learning and assessment strategy** a. Teaching-Learning Strategy Implemented in Problem Based Learning (PBL), guided by lecturers through Face-to-Face and Blended Learning approach. b. Assessment Strategy The course assessment is carried out through Coursework Assessment (CA) and Final Examination (FE).						
12	**Synopsis** OBJECT ORIENTED PROGRAMMING course introduces students to the principles and concepts behind the paradigm of Object Oriented Programming. This course introduces students to write, compile and run programs, make effective use of some of the standard packages, write object-oriented code using classes and objects, inheritance and polymorphism.						

13 Mode of Delivery

Interactive Lecture, Discussion, Laboratory Activity, Brainstorming and Buzz Group.

14 Assessment Methods and Types

The course assessment is carried out in two sections:

a. Coursework (CA) - 70%

Coursework is continuous assessment that measures knowledge, technical skills and soft skills.

i.	Quiz	(3) -	10%
ii.	Test (Theory & Practical)	(1) -	30%
iii.	Laboratory Task	(4) -	10%
iv.	Project	(1) -	20%

b. Final Examination (FE) - 30%

15 Mapping of the course/ module to the Programme Aims

Course Learning Outcome/ Programme Educational Objectives (PEO)	PEO1	PEO2	PEO3	PEO4	PEO5
i. Explain the concepts of object oriented design, methodology and programming in application development. (C2, PLO1)	√				
ii. Design a program by applying the Object Oriented Concepts using appropriate programming tools. (C3, P3, PLO1, PLO2)	√	√			
iii. Solve problems using the Object Oriented Programming approach and exception handling to produce well engineered program. (C4, P3, A3, PLO1, PLO2, PLO4, PLO9)	√	√		√	

Programme Educational Objectives (PEO)

PEO 1 : Possess relevant knowledge, skills and aptitude to meet job specifications, organisational and system needs;

PEO 2 : Can utilise current computing tools and techniques by applying knowledge and interpreting information to solve problems, can execute and be responsible for routine tasks;

PEO 3 : Have effective communication skills to convey information, problems and solutions;

PEO 4 : Have teamwork and interpersonal skills, entrepreneurial awareness and are aware of their social and ethical responsibilities; and

PEO 5 : Possess skills for lifelong learning and career development.

16 Mapping of the course/ module to the Programme Learning Outcomes

Course Learning Outcome (CLO)/ Programme Learning Outcomes (PLO)	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9
i. Explain the concepts of object oriented design, methodology and programming in application development. (C2, PLO1)	√								
ii. Design a program by applying the Object Oriented Concepts using appropriate programming tools. (C3, P3, PLO1, PLO2)	√	√							
iii. Solve problems using the Object Oriented Programming approach and exception handling to produce well engineered program. (C4, P3, A3, PLO1, PLO2, PLO4, PLO9)	√	√		√					√

Programme Learning Outcomes (PLO)

PLO 1 : Apply the foundation of computing, mathematics and soft skills to be competent and possess strong understanding in related Information Technology (IT) fields;
PLO 2 : Practice technical skills by applying appropriate methodologies, models and techniques in IT fields;
PLO 3 : Communicate effectively with IT Professionals, other professionals and community;
PLO 4 : Demonstrate strong analytical and critical thinking skills to troubleshoot and solve problems within realistic constraints by applying knowledge, principles and skills in IT;
PLO 5 : Demonstrate an awareness of and consideration for society, health, safety, legal and cultural issues and their consequent responsibilities;
PLO 6 : Acquire life-long learning and professional development to enrich knowledge and competencies;
PLO 7 : Inculcate entrepreneurial skills in the related discipline that contributes towards national growth and be competitive in IT industries;
PLO 8 : Adhere to professional codes of ethics and enhance humanistic values to adapt to the real challenges in working environment; and
PLO 9 : Demonstrate effective leadership and teamwork skills.

17 Content outline of the course/ module and the SLT per topic

Course Outline (Suggested Sequence of Topics)	Recommended Time Allocation					
	L	P	T	O	IDL	Total
1.0 INTRODUCTION TO OBJECT-ORIENTED PROGRAMMING (OOP) a. Programming techniques. b. Object Oriented concepts and terminologies. c. Notation that is used for OOAD by Unified Modelling Language (UML). d. Class diagram.	2	4	0	0.45	5.25	11.70
2.0 FUNDAMENTALS OF THE JAVA PROGRAMMING LANGUAGE a. Java terminology and environment. b. Programming style and documentation in Java. c. Java architecture components. d. Java source code. e. Java complier. f. Java Virtual Machine.	2	4	0	2.45	5.25	13.70

	3.0 CLASSES AND OBJECTS a. Design class. b. Types of access specifier (public, private and protected) c. Built-in classes in Java library. d. Identifier, variables, constant and operators e. Type casting to change the data types. f. Input and output statement in Java programs. g. Branching statements and arrays. h. Method in Java programs. i. Class objects. j. Method overloading in Java programs. k. Constructor and constructor overloading in Java programs. l. Data field encapsulation in Java programs. m. String in Java programs. n. Built-in and user-define package.	8	12	0	2.95	25.75	48.70
	4.0 INHERITANCE AND POLYMORPHISM a. Relationships between Classes. b. Multiplicity of relationship (one-to-one, one-to-many, many-to-many, etc) in Class diagrams. c. Inheritance d. Polymorphism. e. Overriding method. f. Abstract Classes. g. Interface.	14	22	0	2.70	35.50	74.20
	5.0 MULTI-THREADING AND EXCEPTION HANDLING a. Concept of Threading. b. Multitasking and multithreading. c. Life cycle of a thread. d. Exception handling.	1	4	0	2.45	4.25	11.70
	TOTAL	**27**	**46**	**0**	**11**	**76.00**	**160.00**
18	• **Main references supporting the course** Gerard Prudhomme. (2019) *Java Programming Applications*. Arcler Education Incorporated (ISBN: 9781774073193) GreatKnowledgeSharing.com. (2019) *Basic Java Programming for Kids and Beginners*. iUniverse (ISBN: 9781532078767)						

	• **Additional references supporting the course** Iuliana Cosmina. (2018) Java for Absolute Beginners: Learn to Program the Fundamentals the Java 9+ Way. Apress. (ISBN: 9781484237786) Mitsunori Ogihara. (2018) Fundamentals of Java Programming. Springer. (ISBN: 9783319894911)
19	**Other additional information :** **Practical session activity** Students perform hands-on activities using Java Programming software such as Eclipse, J2SDK, JCreator, Netbeans or JBuilder. **Recommended Project** Students are required to complete one (1) project on application system development using Java Programming Language in 'hack it together' – hackathon style. The Scope and Sequences develop by lecturers based on the AST- Assessment Specification Table. Students need to collaborate effectively as a member of a group. Hackathon can be conducted in a day or two, supervised by the lecturers.