UNIVERSITY of TECHNOLOGY, MAURITIUS

SCHOOL OF INOVATIVE TECHNOLOGIES AND ENGINEERING

Module Information Pack

BSc (Hons.) Computer Science with Network Security

BCNS24AFT_2

Module Name: Programming Techniques 1

Module Code: BCNS1102C

Academic Year 2024 – Semester 1

Programme Director: Assoc. Prof. Dr. (Mrs.) Sandhya Armoogum
Programme Coordinator: Prof Dr. V. Armoogum
Module Coordinator: Mr. A. Gopee
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Lecture Day and Time: Fridays 13.00 - 16.00 – Blended Mode
Lecture & Practical in Lab G 1.2 and online (Alternate weeks)

Credits & Level: 6 credits, Level 1
Pre-requisites (If applicable): None
Co-requisites (If applicable): None
Method of Delivery
& frequency of Class: **15 weeks;**
15 x 3 hours sessions of Lectures/Practical/Tutorials
Method and Criteria
of Assessment: 1**00% Coursework (Class Test (20 %) + Assignment 1 (30 %)**
+ Assignment 2 (50 %) including presentation)

Summary of Module Content:

Brief history of Programming and its evolution, Programming language and Paradigms; Primitive Data type sand Block; Writing Algorithms: Algorithms and problem-solving, Definition of Source Code & Compiler, Integrated Development Environments (IDEs), JAVA programming basics & JAVA simple programs, Basic Input and Output System, Data types & Variables; Decision making, branching and Switch; Looping; Swing basic; Arrays; Module (methods): Procedures and functions, overloading, signatures, recursion; Object-Oriented Programming concepts, classes and objects; Wrapper Class, Use of Modifiers with Classes & Methods; Design of Accessors and Mutator Method; Encapsulation and use of constructors; Arrays of objects; Unified Modeling Language approach in Object-Oriented Programming.

Module Aims:

1. To appreciate how and why programming languages have evolved through the years.
2. To equip the students with the skills and knowledge necessary to analyze and design programs in an **Object-Oriented** programming language like **JAVA**.
3. To introduce the concepts necessary for the construction of larger programs
4. To foster the ability to adhere to specification when writing modules of larger programs.

Learning Objectives and Outcomes:

By the end of the course the students should

a. Be able to decompose a verbal problem description into an appropriate sequence of steps.
b. Be able to identify which data is needed to represent information in the problem.
c. Be able to express solutions in pseudo-code and JAVA language statements.
d. Be able to write, compile, test and debug programs
e. Have sufficient fluency and appreciation of JAVA programming to equip themselves for future modules which examine program design in greater depth.

Lecture Schedule

Week	Topics
1	History of Programming and its evolution, Problem Solving and Algorithm, IDEs, JAVA program structure + **Assignment 1 and 2 Set**
2 3	Writing JAVA programs, Variables, Operators & Expressions. Operators & Expressions, JAVA programming basics
4 5	Flow Control: Conditional Processing + UML diagrams Flow Control: Looping programs + UML diagrams
6 7	**Follow up with Assignment +** Looping Looping programs (continued) + UML diagrams
8	**Assignment Submission 1 + Presentation (30% overall)** Arrays & Strings
9 10	**Class Test (20 %)** Swing Basic **+ Follow up with Assignment 2**
11 12	Functions/Methods: Functions/Methods: Calling Methods I/O with simple text files
13 14 15	Object-Oriented Programming concepts **Assignment Submission 2 + Presentation (50% overall)** **Assignment Presentation**

READING LIST

SOME RECOMMENDED TEXT :

1. Java in a Nutshell, Fifth Edition By David Flanagan
2. Object Oriented Programming concepts in JAVA by Balaguruswamy
3. Computing Concepts with JAVA Essentials by Cay Horstmann
4. JAVA: How to program Deitel & Deitel
5. Schaum's Outline Programming with JAVA
6. Programming in Java" by Balagurusamy
7. Java How to Program, Deitel

SOME OTHER READING TEXT/ ARTICLES/ WEBSITES:

1. Java2s.com
2. Oracle java Documentation
3. https://docs.oracle.com/**java**se/tutorial/
4. http://www.informit.com/guides/guide
5. http://www.cs.wustl.edu/~schmidt/JAVA/
6. http://www.learnjavaonline.org/