

## Module: Programming 172

<b>Module name:</b>	Programming 172
<b>Code:</b>	PRG172
<b>NQF level:</b>	5
<b>Type:</b>	Core – Bachelor of Information Technology
<b>Contact time:</b>	38 hours
<b>Structured time:</b>	6 hours
<b>Self-directed time:</b>	46 hours
<b>Notional hours:</b>	90 hours
<b>Credits:</b>	9
<b>Prerequisites:</b>	PRG171

### Purpose

The aim of this course is to expand on the already mastered knowledge obtained from Programming 171. This module will broaden the students programming skills base taking into an account of collections, abstract data types, parametrised method and enumeration.

### Outcomes

Upon successful completion of this module, the student will be able to demonstrate:

- An informed understanding of built-in data types, collections, enumeration and practices and an informed understanding of the key terms, concepts, facts, general principles, rules and theories in the programming domains.
- The ability to select and apply proper use of collections and enumerations within the software domain, and to plan and manage an implementation process within this are of concern.
- The ability to identify, evaluate and solve, routine problems presented by the correct choice of a collection within a familiar context, and to apply solutions based on relevant evidence and procedures or other forms of explanation appropriate to programming languages, discipline or practice, demonstrating an understanding of the consequences.
- The ability to select appropriate abstract data types and its representation.

### Assessment

- Continuous evaluation of work through 1 assignment.
- Continuous evaluation of work through formative tests and summative test which assesses the theoretical knowledge.
- Continuous evaluation of two projects, whereby the student must evaluate and present results on given problems.
- Final assessment through a written examination.


## Teaching and Learning

### Learning materials

#### Prescribed Book

- Lecturer hand-outs and samples.
- Programming: Introduction 2 – IT without frontiers series.
- Online prescribed sources.
- Own notes.

#### Additional Material

-  Sprankle, M., Hubbard, J. (2011). *Problem Solving and Programming Concepts* (9th Edition). Pearson.[ ISBN-13: 978-0132492645]

### Learning activities

The teaching and learning activities consist of a combination of formal lectures on theoretical and practical concepts, exercises and discussions. One mandatory assignment and two projects must be completed during the course. The experiences and progress on these practical components form the content of class discussions.

### Notional learning hours

Activity	Units	Contact Time	Structured Time	Self-Directed Time
Lecture		27.0		13.0
Formative feedback		5.0		
Project	2	6.0		15.0
Assignment	1			3.0
Test	2		4.0	8.0
Exam	1		2.0	7.0
		<b>38.0</b>	<b>6.0</b>	<b>46.0</b>

### Syllabus

- Built-in data types
- Abstract Data Types
- Parameterised methods
- Enumeration
- Use appropriate abstractions to facilitate writing programs: collections, procedures, application programming interfaces, and libraries.
- Collections
  - Queue
  - Stack
  - List