

<b>Faculty</b>	Natural Sciences		
<b>Home Department</b>	Computer Science		
<b>Module Topic</b>	Problem Solving, Algorithms, and Programming		
<b>Generic Module Name</b>	Computer Science 101		
<b>Alpha-numeric Code</b>	<b>COS101</b>		
<b>NQF Level</b>	5		
<b>NQF Credit Value</b>	30		
<b>Duration</b>	Year		
<b>Proposed semester to be offered</b>	Both Semesters		
<b>Programmes in which the module will be offered</b>	BSc (Computer Science) (3221,3023); BSc (Physical Science) (3233,3120)		
<b>Year level</b>	1		
<b>Main Outcomes</b>	<p>On completion of this module students should be able to:</p> <ul style="list-style-type: none"> <li>• Read, understand and solve problems.</li> <li>• Apply problem solving techniques.</li> <li>• Have acquired improve analytical thinking.</li> <li>• Understand sequence, selection, repetition and control structures.</li> <li>• Design an algorithm to solve a given problem.</li> <li>• Express an algorithm in pseudocode/structured diagram.</li> <li>• Implement algorithms in high-level programming language (e.g. Java).</li> <li>• Understand the Software Development Life cycle.</li> <li>• To pass parameters and use arrays.</li> <li>• Understand &amp; implement the Object Oriented (OO) paradigm &amp; inheritance.</li> <li>• Design and present a team project.</li> </ul>		
<b>Main Content</b>	<ul style="list-style-type: none"> <li>• Problem solving; algorithm design; trace tables; constructs.</li> <li>• Abstraction;</li> <li>• Pseudocode.</li> <li>• Structured diagramming techniques (top-down design).</li> <li>• Arrays and data structures.</li> <li>• Development and application of simple algorithms.</li> <li>• High level programming language fundamentals.</li> <li>• Basic data types &amp; methods.</li> <li>• The Software Development Life Cycle.</li> <li>• Design tools and object oriented design.</li> <li>• Inter-modular communication: Parameter passing and variable scope.</li> <li>• Objects as parameters.</li> <li>• Introduction to inheritance.</li> <li>• Data modeling, File I/O and recursion.</li> </ul>		
<b>Pre-requisite modules</b>	None		
<b>Co-requisite modules</b>	None		
<b>Prohibited module Combination</b>	None		
<b>Breakdown of Learning Time</b>	<b>Hours</b>	<b>Timetable Requirement per week</b>	<b>Other teaching modes that does not require time-table</b>
<i>Contact with lecturer: / tutor:</i>	112	<i>Lectures p.w.</i>	3
<i>Assignments &amp; tasks:</i>	20	<i>Practicals p.w.</i>	1
<i>Practicals:</i>	84	<i>Tutorials p.w.</i>	1

<i>Tutorials:</i>	0			
<i>Tests &amp; Examinations:</i>	20			
<i>Selfstudy:</i>	64			
<i>Other:</i>	0			
<b>Total Learning Time</b>	<b>300</b>			
<b>Methods of Student Assessment</b>	Continuous Assessment (CA): 60% Final Assessment (FA): 40%			
<b>Assessment Module type</b>	Continuous and Final Assessment (CFA)			