

<b>Module code</b>	SS-3403		
<b>Module Title</b>	Programming for Scientists		
<b>Degree/Diploma</b>	Undergraduate GenNEXT Bachelor degree		
<b>Type of Module</b>	Breadth		
<b>Modular Credits</b>	4	<b>Total student Workload</b>	10 hours/week
		<b>Contact hours</b>	4 hours/week
<b>Prerequisite</b>	None		
<b>Anti-requisite</b>	SS-3407 Computer Programming		
<b>Aims</b>			
The module is designed for students to understand the fundamental principles of programming and to apply the basic programming concepts in problem solving and software development.			
<b>Learning Outcomes</b>			
<i>On successful completion of this module, a student will be expected to be able to:</i>			
Lower order :	20%	<ul style="list-style-type: none"> <li>- understand the basic principles of programming concepts</li> <li>- understand the basic programming concepts to design a solution to a computational problem</li> </ul>	
Middle order	60%	<ul style="list-style-type: none"> <li>- construct expressions using arithmetic, Boolean, bitwise and pointer operations</li> <li>- construct nested code blocks using selection and iteration</li> <li>- use common standard library functions</li> <li>- implement functions</li> </ul>	
Higher order:	20%	<ul style="list-style-type: none"> <li>- write programs to solve numerical problems</li> </ul>	
<b>Module Contents</b>			
<ul style="list-style-type: none"> <li>- Program development: programming cycle, programming tools</li> <li>- Data types: signed, unsigned, bits, pointers, integer, string, double</li> <li>- Memory allocation: static, stack, heap, variables, arrays (index access, pointer access)</li> <li>- Operations: arithmetic, bitwise, typecast, pointer arithmetic and indirection</li> <li>- Control structures: sequence, selection, loop</li> <li>- Arrays: memory allocation, index access, pointer access</li> <li>- Common library functions: console IO, file IO, string, memory</li> </ul>			
<b>Assessment</b>	Formative assessment	Practical Exercises and Feedback	
	Summative assessment	Examination: 50% Coursework: 50% <ul style="list-style-type: none"> <li>- 1 class test (25%)</li> <li>- 1 written assignment (25%)</li> </ul>	