Module code	SM-2302		
Module Title	Software for Mathematicians		
Degree/Diploma	Bachelor of Science (Mathematics)		
Type of Module	Major Option		
Modular Credits	4	**Total student Workload**	10 hours/week
		Contact hours	4 hours/week
Prerequisite	None		
Anti-requisite	None		

Aims

Mathematical software is what bridges higher mathematics to real world applications. On completing this module, the student should be able to use several popular mathematical software packages to effectively implement mathematical solutions to real world problems. This module enables students to conduct applied mathematical and statistical research.

Learning Outcomes

On successful completion of this module, a student will be expected to be able to:

Lower order :	0%	
Middle order :	10%	- Identify and apply software processes to mathematical problems - Plan coding solutions using pseudocode
Higher order:	90%	- Create functions to solve mathematical problems - Design and perform mathematical simulations - Justify appropriateness of coding techniques - Perform version control of computer code - Carry out data importation and perform basic analyses on it - Produce plots and graphics - Create and typeset a mathematics document - Carry out research that is reproducible - Work independently and in a team to solve coding problems

Module Contents

- Programming in at least two mathematics-oriented computer languages
- Linear and differential equations
- Data wrangling and visualisations
- Basic statistical analyses
- Typesetting a (mathematics) document
- Version control
- Creating reproducible research

Assessment	Formative assessment	Tutorial and feedback.
	Summative assessment	Examination: 0%
		Coursework: 100% - Four topical quizzes (20%) - Two mini individual assignments (20%) - Two mini group assignments (30%) - One project assignment with written report (30%)