

Module Title	Reference CM1014
Problem Solving And Modelling In Computing	SCQF SCQF
Keywords	Level 7
Geometry, Sequences and Series, Statistics,	SCQF Points 30
Probability, Class, Object, Use Case, Sequence	ECTS Points 15
Diagram, Systems Analysis and Design, Lifecycle	Created March
	2007
	Approved July
	2007
	Amended July 2014
	Version No. 3

This Version is No Longer Current

The latest version of this module is available [here](#)

Prerequisites for Module

None, in addition to course entry requirements.

Descriptive statistics. Measures of central tendency and dispersion.

Probability rules.

Corequisite Modules

None.

Objects, classes, inheritance, messages, polymorphism, class hierarchy, structural view, user view, interaction view, CASE tool.

Precluded Modules

None.

Specify different lifecycles (linear and spiral models) and associated software process activities (waterfall, RUP, agile and prototyping).

Aims of Module

To provide students with the understanding of problems which arise in computing situations and the practical skills for the efficient solution of these problems.

Indicative Student Workload

<i>Contact Hours</i>	Full Time
Assessment	10
Lectures	48
Supervised Labs	24
Tutorials/Seminars	24

Learning Outcomes for Module

Directed Study

On completion of this module, students are expected to be able to:

1. Recognise and solve, using appropriate mathematical techniques, a set of computational problems.
2. Apply basic statistical techniques and derive measures of probability for a given set of data.
3. Introduce the concept of a software lifecycle; compare and contrast activities within lifecycle phases.
4. Apply basic object-oriented systems analysis and design techniques to a given problem and to model its solution using a CASE tool.

Indicative Module Content

Coordinate geometry. Graph drawing, straight lines and other functions, parameterisation, distance metrics.

Sequences and series and relationship to loops.
Computational complexity.
Financial mathematics.

Sets. Functions. Boolean algebra.

Directed Study	50
Unsupervised labs	24

Private Study

Private Study	120
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Mode of Delivery

This module is delivered throughout the teaching session using a mixture of lectures, tutorials and computer laboratory sessions (where appropriate).

Assessment Plan

	Learning Outcomes Assessed
Component 1	1,2,3,4

Component 1 - Coursework

Indicative Bibliography

1. ROSEN, K., 2012. Discrete Mathematics and Its Applications. 7th ed. McGraw-Hill.
2. BRITTON, C., and DOAKE, J., 2005. A Student Guide to Object Oriented Development. Elsevier.
3. SOMMERVILLE, I., 2011. Software Engineering. 9th ed. Pearson.