

MODULE DESCRIPTOR

Module Title

Problem Solving And Modelling In Computing

Reference	CM1014	Version	5
Created	September 2017	SCQF Level	SCQF 7
Approved	July 2007	SCQF Points	30
Amended	September 2017	ECTS Points	15

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.

Learning Outcomes for Module

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. Descriptive statistics. Measures of central tendency and dispersion. Probability rules. Objects, classes, inheritance, messages, polymorphism, class hierarchy, structural view, user view, interaction view, CASE tool. Specify different lifecycles (linear and spiral models) and associated software process activities (waterfall, RUP, agile and prototyping).

Module Delivery

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

Indicative Student Workload

	Full Time	Part Time
Contact Hours	96	N/A
Non-Contact Hours	204	N/A
Placement/Work-Based Learning Experience [Notional] Hours	N/A	N/A
TOTAL	300	N/A
<i>Actual Placement hours for professional, statutory or regulatory body</i>		

ASSESSMENT PLAN

If a major/minor model is used and box is ticked, % weightings below are indicative only.

Component 1

Type:	Coursework	Weighting:	100%	Outcomes Assessed:	1, 2, 3, 4
Description:	A piece of coursework.				

MODULE PERFORMANCE DESCRIPTOR**Explanatory Text**

The calculation of the overall grade for this module is based on 100% weighting of Component 1. An overall minimum grade D is required to pass the module.

Module Grade	Minimum Requirements to achieve Module Grade:
A	To achieve an A, the student needs to achieve an A in Component 1
B	To achieve a B, the student needs to achieve a B in Component 1
C	To achieve a C, the student needs to achieve a C in Component 1
D	To achieve a D, the student needs to achieve a D in Component 1
E	To achieve an E, the student needs to achieve an E in Component 1
F	To achieve an F, the student needs to achieve an F in Component 1
NS	Non-submission of work by published deadline or non-attendance for examination

Module Requirements

Prerequisites for Module	None, in addition to course entry requirements.
Corequisites for module	None.
Precluded Modules	None.

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.