UNIVERSITY OF LONDON

BSc Computer Science

Module Specification

Key Information			
Module title	Discrete Mathematics		
Level	4	Credit value	15
Member Institution	Goldsmiths	Notional study hours and duration of course	150
Module lead author/ Subject matter expert	Dr Lahcen Ouarbya		
Module co-author	Abdelkrim Alfalah		

Rationale for the module

Discrete mathematics covers mathematical topics relating to discrete structures and processes that students of computer science will encounter throughout their study. It includes topics such as set theory, logic, functions, series, recursion and induction, graphs, and trees. By studying this module, you will gain a mathematical understanding of these topics that will support you throughout your studies in computer science.

Aims of the module

This module helps you to hone your skills in thinking abstractly. It also introduces you to many of the standard discrete models used to help understand and design computational systems. Through this module, you will develop the fundamental discrete mathematical tools that will support you throughout the BSc programme. Particular attention is paid to notions of experimentation, reasoning, and generalisation.

Topics covered in this module:

The topics listed here are an approximation of what will be covered. The topics presented may be slightly revised to ensure currency and relevance. Students will be advised of any changes in advance of their study.

1. Sets
2. Boolean Algebra
3. Propositional Logic
4. Predicate Logic
5. Functions
6. Recursion and Mathematical Induction
7. Relations
8. Graphs
9. Trees
10. Counting

Approximately 10-12 hours of study will be required per topic. The remaining study time is intended for coursework and examination preparation.

Learning outcomes for the module

Students who successfully complete this module will be able to:

1. Manipulate Boolean expressions and interpret them as set descriptors
2. Interpret logical statements, produce truth tables, and prove logical properties
3. Explain the relationship between recursion and induction and do simple induction proofs
4. Describe the correspondence between relations and graphs, and prove properties of special relations
5. Define properties of trees and graphs

Assessment strategy, assessment methods

Summative and Formative Assessments
The module will contain a range of summative and formative assessments. Summative assessments are assessments which contribute directly towards your final grade. Formative assessments do not count directly towards your final grade. Instead, they provide you with opportunities for low stakes practice, and will often provide some sort of feedback about your progress. For example, a practice quiz might provide you with feedback about why a particular answer was wrong.

This module will have a large number of quizzes which will allow you to gauge your progress.

Assessment Activities
The table below lists the assessment activity types you might encounter taking the module. It also states if that type of assessment can be automatically graded. For example, multiple choice quizzes can be automatically graded, and so can some programming assignments. It also states if that type of assessment will be found in the summative coursework and the summative examination. More details about the summative assessments are provided below:

Assessment activity type	**Can it be automatically graded with feedback in some cases?**	**CW**	**Examination**
Quiz	X	X	X

Writing task		X	X

Pass Mark

In order to pass this module, you must achieve at least 35% in each element of summative assessment and an overall weighted average of 40%, subject to the application of rules for compensation. Please refer to the programme regulations for more information.

Summative Assessment Elements

As this is a module that has a significant amount of theory it is assessed as a theory-based module. This means that the summative assessment is composed of two elements, whose weightings are listed in the table below.

Summative Assessment Component	Percentage of final credit	Deadline
Coursework	50%	Mid session
Examination	50%	End of session

The coursework comprises a variety of practical exercises and quizzes which in total will take up to 25 hours of study time to complete. The examination will be two hours long, and consist of written answer and multiple choice questions.

Learning resources

The module will draw on a number of different, largely web-based, public resources as well as the resources produced as bespoke material for this module. The standard text book for the module will be:

Kenneth H. Rosen, *Discrete Mathematics and Its Applications (7th Edition),* 2012

Recommended extra reading:

David Mackinson, *Sets, Logic and Maths for Computing*, Springer Verlag. 2012