

## Liverpool John Moores University

Title: Foundations of Computer Science  
Status: Definitive  
Code: **4215COMP** (127973)  
Version Start Date: 01-08-2021

Owning School/Faculty: Computer Science and Mathematics  
Teaching School/Faculty: Computer Science and Mathematics

Team	Leader
Martin Randles	Y
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**Academic Level:** FHEQ4      **Credit Value:** 20      **Total Delivered Hours:** 46  
**Total Learning Hours:** 200      **Private Study:** 154

### Delivery Options

Course typically offered: Semester 1

Component	Contact Hours
Lecture	33
Practical	11

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Report	AS1	An exercise in modelling a practical scenario	50	
Exam	AS2	Examination	50	2

### Aims

*To enhance students' problem-solving skills through the use of mathematics and computer science techniques, including formal principles of modelling, enabling students to apply these techniques in the analysis and design of practical computational systems*

## Learning Outcomes

After completing the module the student should be able to:

- 1 Apply appropriate mathematical concepts and operations to solve problems.
- 2 Demonstrate critical thinking, analytical reasoning, and problem-solving skills.
- 3 Identify a problem and analyze it in terms of its significant parts and the information needed to solve it.
- 4 Formulate and evaluate possible solutions to problems, and select and defend the chosen solutions.

## Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

Report	1	3
Examination	2	4

## Outline Syllabus

*Propositions and predicates, logical connectives, truth tables, Boolean Algebra  
Proof Methods*

*Concepts of set theory, set membership, union, intersection and difference*

*Cartesian products; coordinate systems; vectors and matrices*

*Relations, inverse relations, composition*

*Functions and their properties; composition. Recursive definitions*

*Combinatorics*

*Trees and Graphs*

## Learning Activities

Learning activities will be through lectures and practical tutorials where students will be encouraged to ask questions and discuss case studies. The practical tutorials will be based around supported labs where students will be encouraged to put the theory gained in lectures and tutorials into practice.

## Notes

This module is intended to provide students with a strong foundation in the topics underpinning computer science. The module engages the student with modelling systems and analysis techniques that are used to investigate and understand computing and software engineering problems. The intention is for the student to develop a scientific and engineering ethos that will enable the computer science student to understand the science of computing and translate this into practice.