

## Liverpool John Moores University

Title: PROBLEM SOLVING FOR DATA SCIENCE  
Status: Definitive  
Code: **4123COMP** (122192)  
Version Start Date: 01-08-2021

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

Team	Leader
Andrew Laws	Y
Mark Evans	

**Academic Level:** FHEQ4      **Credit Value:** 20      **Total Delivered Hours:** 55  
**Total Learning Hours:** 200      **Private Study:** 145

### Delivery Options

Course typically offered: Semester 2

Component	Contact Hours
Lecture	11
Practical	44

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Report	AS1	Design Model	40	
Artefacts	AS2	Software Implementation & Test	60	

### Aims

*To develop skills in computational thinking that can be used to develop programs to solve subject specific problems*

### Learning Outcomes

After completing the module the student should be able to:

- 1 Understand and use computational thinking to design solutions to problems
- 2 Design solutions and understand their implementation in a suitable programming language
- 3 Construct and apply effective test plans

### **Learning Outcomes of Assessments**

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

Design Model	1	
Software Implementation & Test	2	3

### **Outline Syllabus**

*Computational thinking – decomposition, pattern recognition, abstraction, algorithms*  
*Top-down design/successive refinement*  
*Pseudo-code and diagram techniques*  
*Practical exercises using compound control structure*  
*Practical exercises using methods/functions*  
*Solving problems with classes/objects*  
*Practical exercises using classes/objects*  
*Practical exercises on error handling*  
*Testing – test data, test cases, test plans, test strategies (unit, system)*  
*Practical exercises on testing*

### **Learning Activities**

Learning will largely be based on practical exercises and problem solving activities. Lectures will be used to introduce topics, which will be reinforced through practical work.

### **Notes**

The practical exercises will be related such that they lead to the development of a larger software implementation.