

## Liverpool John Moores University

Title: COMPUTER SCIENCE APPLICATIONS  
Status: Definitive  
Code: **6119COMP** (121292)  
Version Start Date: 01-08-2021

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

Team	Leader
Somasundaram Ravindran	Y

**Academic Level:** FHEQ6      **Credit Value:** 20      **Total Delivered Hours:** 55  
**Total Learning Hours:** 200      **Private Study:** 145

### Delivery Options

Course typically offered: Semester 1

Component	Contact Hours
Lecture	11
Practical	44

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Report	AS1	A report is prepared detailing how a functional programming solution is delivered to solve a given problem	90	
Practice	AS2	The student demonstrates the working software in the laboratory	10	

### Aims

*The aims of this module are to present the basic ideas of functional programming languages whilst demonstrating the main elements of good programming style; allowing the illustration of some uses and applications for functional programming*

## Learning Outcomes

After completing the module the student should be able to:

- 1 Expound on the main features and advantages of a functional programming language
- 2 Evaluate how algorithms are implemented in a functional programming language
- 3 Analyse how functional programming techniques are used to solve problems

## Learning Outcomes of Assessments

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

Problem Solution	1	3
Working Software	2	

## Outline Syllabus

*Classification of Programming Languages*

*Distinctive Features of Functional Programming Languages*

*The Lambda Calculus - syntax and semantics*

*Higher-order functions*

*Currying and Uncurrying*

*Recursion*

*Type systems*

*Numerical Types and Operations*

*Lists Processing*

*Overview of Advanced features: e.g., modules; interactive programs; lazy evaluation; proving program properties.*

## Learning Activities

The module will be supported by a series of short lectures based around the principles of functional programming as a computer science discipline. The major learning in the module is problem based with the students taking the short lecture series followed by practicals where their own research is used to produce a functional program that solves a given problem.

## Notes

The module combines many of the concepts taught over the course of the Computer Science Programme such as complexity theory and algorithm design.