

H6PSP: Problem Solving and Programming Concepts

Module Code:	H6PSP
Long Title	Problem Solving and Programming Concepts APPROVED
Title	Problem Solving and Programming Concepts
Module Level:	LEVEL 6
EQF Level:	5
EHEA Level:	Short Cycle
Credits:	5
Module Coordinator:	Lisa Murphy
Module Author:	FRANCES SHERIDAN
Departments:	School of Computing
Specifications of the qualifications and experience required of staff	Master's degree in computing or cognate discipline. May have industry experience also.
Learning Outcomes	
<i>On successful completion of this module the learner will be able to:</i>	
#	Learning Outcome Description
LO1	Solve a range of classic puzzles.
LO2	Develop problem solving capabilities.
LO3	Express algorithmic solutions to defined problems using accepted documentation methods.
LO4	Apply the basic components of programming.
Dependencies	
Module Recommendations	
No recommendations listed	
Co-requisite Modules	
No Co-requisite modules listed	
Entry requirements	See section 4.2 Entry procedures and criteria for the programme including procedures recognition of prior learning

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Module Content & Assessment			
Indicative Content			
Problem Solving • Introduction to Problem Solving			
Strategies for Problem Solving & Design Creative Thinking Elements Heuristic vs Algorithmic Problems Steps to solving a problem Creative thinking			
Flow Charts What is a Flow Chart Flow Charts with songs Flow Chart Syntax Rules for drawing Flow Charts			
Pseudocode & GitHub What is Pseudocode Six steps to writing Pseudocode Introduction to Github			
Variables and IPO Variables Constants IPO Chart Development			
Encapsulations Abstraction vs Encapsulation Meaning of classes and methods and when they are used			
Evaluating Algorithmic Solutions – Part 1 Test Driven Development Testing Behaviours Clean Code			
Evaluating Algorithmic Solutions – Part 2 Acceptance Criteria – Making sure they meet this What value is being added to testing? Clean Code			
Calculations and IF Statements Operators i.e. Boolean, logic etc IF Statements			
Loops What is a loop and when might you use one Different types of loops			
Project Work Project Work			
Assessment Breakdown			%
Coursework			100.00%
Assessments			
Full Time			
Coursework			
Assessment Type:	Continuous Assessment	% of total:	20
Assessment Date:	n/a	Outcome addressed:	1,2,3,4
Non-Marked:	No		
Assessment Description: Weekly quizzes and debugging exercises			
Assessment Type:	Continuous Assessment	% of total:	40
Assessment Date:	n/a	Outcome addressed:	3,4
Non-Marked:	No		
Assessment Description: Each individual will be required to script an application using the concepts they have used throughout the module			
Assessment Type:	Project	% of total:	40
Assessment Date:	n/a	Outcome addressed:	1,2,3,4
Non-Marked:	No		
Assessment Description: Each group of students will be presented with a problem for which they have to creatively think of how to solve it. The group will be required to develop flow charts, pseudocode, IPO and show evidence of testing.			
No End of Module Assessment			
No Workplace Assessment			
Reassessment Requirement			
Coursework Only <i>This module is reassessed solely on the basis of re-submitted coursework. There is no repeat written examination.</i>			
Reassessment Description A project that meets all learning outcomes will be provided to the student.			

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Module Workload				
Module Target Workload Hours 0 Hours				
Workload: Full Time				
Workload Type	Workload Description	Hours	Frequency	Average Weekly Learner Workload
Lecture	No Description	24	Per Semester	2.00
Tutorial	No Description	12	Per Semester	1.00
Independent Learning	No Description	89	Per Semester	7.42
Total Weekly Contact Hours				3.00
Workload: Part Time				
Workload Type	Workload Description	Hours	Frequency	Average Weekly Learner Workload
Lecture	No Description	24	Every Week	24.00
Tutorial	No Description	12	Every Week	12.00
Independent Learning	No Description	89	Every Week	89.00
Total Weekly Contact Hours				36.00

Module Resources	
<i>Recommended Book Resources</i>	
Roland Backhouse. (2011), Algorithmic Problem Solving, 1st. Wiley, p.432, [ISBN: 9780470684535]. Maureen Sprankle & Jim Hubbard. (2011), Problem Solving & Programming Concepts, 9th. Pearson Education, p.524, [ISBN: 978-027375221]. Walter Savich. (2014), Java: An Introduction to Problem Solving and Programming, 7th. Addison-Wesley.	
<i>Supplementary Book Resources</i>	
Herbert Schildt. (2014), Java: A Beginner's Guide, 6th. McGraw-Hill Osborne, p.728, [ISBN: 978-007180925]. Robert C. Martin. (2009), Clean Code, Pearson Education, p.431, [ISBN: 9780132350884].	
<i>This module does not have any article/paper resources</i>	
<i>This module does not have any other resources</i>	
Discussion Note:	