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MODULE DESCRIPTOR

Module Title

Software Design and Development

Reference	CM1113	Version	2
Created	June 2022	SCQF Level	SCQF 7
Approved	March 2021	SCQF Points	15
Amended	July 2022	ECTS Points	7.5

Aims of Module

To provide students with an introduction to the principles of structured software development including the design, implementation and testing of programs.

Learning Outcomes for Module

On completion of this module, students are expected to be able to:

1	Identify the main structural and functional elements of a programming language used in a software development task.
2	Demonstrate a structured approach to the design of programs when constructing software solutions to problems.
3	Evaluate the appropriate use of standard collection structures and algorithms when solving programming problems.
4	Demonstrate appropriate strategies for testing solutions to software development problems.

Indicative Module Content

Software Basics: Variable, data types, declarations and expressions, iterative and conditional programming constructs, methods. Modelling and Design: Iterative design strategies. OO Concepts: Encapsulation, abstraction, data hiding, inheritance, polymorphism, code reuse. Security aspects of object oriented software development. OO Programming: Classes and objects, arrays, simple data structures, Application Programming Interfaces.

Module Delivery

The module will be delivered through a mixture of lectures and laboratory sessions.

Indicative Student Workload	Full Time	Part Time
Contact Hours	40	N/A
Non-Contact Hours	110	N/A
Placement/Work-Based Learning Experience [Notional] Hours	N/A	N/A
TOTAL	150	N/A
Actual Placement hours for professional, statutory or regulatory body		

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ASSESSMENT PLAN

If a major/minor model is used and box is ticked, % weightings below are indicative only.

Component 1

Type:	Coursework	Weighting:	100%	Outcomes Assessed:	1, 2, 3, 4
Description:	An extended software development coursework carried out in a student-led development team.				

MODULE PERFORMANCE DESCRIPTOR

Explanatory Text

This module is assessed on a pass/unsuccessful basis. The Module Grade is based on performance in Component 1 (coursework) as detailed below.

Module Grade	Minimum Requirements to achieve Module Grade:
Pass	Pass in C1.
Fail	Fail, i.e. unsuccessful, in C1.
NS	Non-submission of work by published deadline or non-attendance for examination

Module Requirements

Prerequisites for Module	None.
Corequisites for module	None.
Precluded Modules	None.

INDICATIVE BIBLIOGRAPHY

1	SCIORE, E., 2019. Java Program Design. Apress, Berkeley, CA ISBN-13: 978-1-4842-4143-1 https://doi-org.ezproxy.rgu.ac.uk/10.1007/978-1-4842-4143-1
2	DAVIS, A., 2020. Modern Programming Made Easy., Apress, Berkeley, CA. ISBN-13: 978-1-4842-5568-1. https://doi-org.ezproxy.rgu.ac.uk/10.1007/978-1-4842-5569-8
3	THOMAS, D. and HUNT, A., 2019. The Pragmatic Programmer: Your journey to mastery, 20th Anniversary Edition. Addison Wesley. ISBN-13: 978-0135957059
4	SOMMERVILLE, I., 2015. Software Engineering. 10th Ed. Pearson.
5	VICKERS, P., 2008. How to Think like a Programmer: Problem Solving for the Bewildered. Cengage Learning EMEA. ISBN-13: 978-1408065822
6	Charatan, Q., 2019, Java in Two Semesters, Springer, ISBN-13: 978-3-319-99419-2 https://doi-org.ezproxy.rgu.ac.uk/10.1007/978-3-319-99420-8
7	Sage, K., 2019, Concise Guide to Object-Oriented Programming, Springer, ISBN-13: 978-3-030-13303-0 https://doi-org.ezproxy.rgu.ac.uk/10.1007/978-3-030-13304-7
8	OGIHARA, M., 2018, Fundamentals of Java Programming, Springer, ISBN-13: 978-3-319-89490-4 https://doi-org.ezproxy.rgu.ac.uk/10.1007/978-3-319-89491-1