Academic School / Department: School of Liberal Arts

Programme: Computer Science

FHEQ **Level:**   4

Course Title: Data and Algorithms

Course Code: DGT 4103

Student Engagement Hours: 120 (standard 3- credit BA course)

Lectures: 15
Lab: 30
Independent / Guided Learning: 75

Semester: Fall, Spring

Credits: 12 UK CATS credits
                                      6 ECTS credits
                                      3 US credits

Course Description:
This course introduces students to standard data structures and algorithms and provides them with the necessary skills to manipulate them mathematically and transform them to efficient computer programs.

Prerequisites:
MTH 3000 (or Mathematics assessment exemption)

Aims and Objectives:
By the end of this course, students will be able to sufficiently understand data structures and algorithms and to choose and define them for efficient problem solving. To be able to do this, students will gain an in depth understanding of time complexity, and other algorithmic concepts such as recursions, sorting and hashing.

Programme Outcomes:

COMPSC: A2, A4, B5, B7 and C6

A detailed list of the programme outcomes are found in the Programme Specification.

This is located at the archive maintained by Registry and found at:
https://www.richmond.ac.uk/programme-and-course-specifications/

Learning Outcomes:

By the end of this course, successful students should be able to:

- Understand, choose and define data structures and algorithms for problem solving
- Demonstrate understanding of abstraction to create algorithms
- Estimate time complexity of algorithms for problem solving
- Create efficient programs using algorithms

Indicative Content:

- Understanding Data Structures
- Analysis of Algorithms
- Problem solving
- Time complexity
- Recursion
- Sorting
- Hashing

Assessment:

This course conforms to the University Assessment Norms approved at Academic Board and located at: https://www.richmond.ac.uk/university-policies/

Teaching Methodology:

- Lectures, practical demonstrations and step-by-step software tutorials, class workshops, one-to-one tutorials.

Indicative Text(s):

"Introduction to Algorithms" by Thomas Cormen and Charles Leiserson, Fourth Edition, The MIT Press, 2022.

See syllabus for complete reading list

Change Log for this CSD:

Nature of Change	Date Approved & Approval Body (School or AB)	Change Actioned by Registry Services