COURSE DETAILS

Course Code: F28DA
Full Course Title: Data Structures and Algorithms
SCQF Level: 8
SCAF Credits: 15
Available as Elective: No

DELIVERY LEVEL

Undergraduate: Yes
Postgraduate Taught: No
Postgraduate Research: No

COURSE AIMS

To introduce core algorithms and data structures used in a wide range of applications in Computer Science.

To further develop skills in algorithm and data structure design, and the development of medium sized programmes.

LEARNING OUTCOMES – SUBJECT MASTERY

- Ability to analyse and hence choose suitable algorithms and data structures for a given problem
- To design and implement medium sized programs based on a range of standard algorithms and data structures and making appropriate use of Libraries
- Understanding the distinction between abstract Abstract Data Type (ADT) properties and concrete ADT realisations
- Appreciation of need for integration of multiple ADTs in substantial programs
- Appreciation of efficiencies/reassurances from ADT reuse
- Appreciation of security aspects of algorithm complexity

LEARNING OUTCOMES – PERSONAL ABILITIES

- To be able to critically analyse and hence choose suitable algorithms and data structures for a given problem
- To be able to convey the advantages and disadvantages of alternative data structures and algorithms
- To develop practical problem-solving skills in the context of programming
- To be able to plan & execute a substantial software project

SYLLABUS
F28DA Data Structures and Algorithms

- Algorithm and data structure topics including: advanced trees, string processing, simple cryptography, graphs, hash tables
- Algorithm/data structure choice, design and deployment

NOTE: Courses F27SA Software Development 1, F27SB Software Development 2 are pre-requisites for this course, or courses F28PA Software Development A, F28PB Software Development B must be taken on the same year as this course, or equivalent.

COURSE RELATIONSHIPS

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LOCATION AND ASSESSMENT METHODS

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ALP - Assessment is 100% examination. Summative coursework will be assessed by the ALP and moderated by HWU. All summative coursework must be completed to a satisfactory standard (Grade D) for a student to pass the course but will not form part of a student’s final grade.