F27SE Data Structures and Algorithms in C

COURSE DETAILS
Course Code: F27SE
Full Course Title: Data Structures and Algorithms in C
SCQF Level: 7
SCAF Credits: 15
Available as Elective: No

DELIVERY LEVEL
Undergraduate: Yes  Postgraduate Taught: No  Postgraduate Research: No
Additional Information:

COURSE AIMS
To develop further skills and techniques in programming in a high-level language.

LEARNING OUTCOMES – SUBJECT MASTERY

- To understand properties of and algorithms for fundamental static, dynamic and linked data structures
- To know when to deploy fundamental data structures and algorithms in practical problem solving
- To gain mastery of fundamental linear and recursive programming techniques
- To know when to deploy linear and recursive programming techniques in practical problem solving
- To understand fundamental techniques for processing very large data sets from files
- To understand correspondences between different programming techniques
- To understand correspondences between different data structures and algorithms

LEARNING OUTCOMES – PERSONAL ABILITIES

To understand how the choice of algorithms and data structures determines the efficacy of proposed solutions to problems

To be able to explain the implications of choosing particular algorithms and data structures for the time and space behaviour of solutions.
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SYLLABUS

- static structures – tables
- linear techniques e.g. search, delete, update
- string & text processing
- dynamic structures - stacks & queues
- recursive techniques – linear recursion, accumulation recursion
- sorting & searching e.g. binary search, quicksort, merge sort, hash tables
- linked structures – lists – construction, traversal, delete, update
- linked structures – trees – construction, traversal, delete, update, balance
- file processing
- data structures and algorithms examples based on C programming language

COURSE RELATIONSHIPS

N/A

LOCATION AND ASSESSMENT METHODS

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