

**Jerash University**

**Faculty of Computer Science and Information Technology**

**Computer Sciences Department**

**Semester**: Fall Semester 2018/2019

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| **Course symbol and number: 1001210** | **Course Name:** : Data Structures and File Processing |
| **Teaching Language:** English | **Prerequisites: 1001131+1001120**. |
| **Credits:** 3 hours**.** | **Course Level:** 200 |

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| **Course Description** |
| This course aims to introduce deferent types of data structures such as: stacks, Queues, List and Doubly linked list. The course also shows deferent ways for data structures implementation using C++ language (implementation using array of classes, pointers and dynamic allocation). Recursion functions implementations, diversion to iterations is discussed. |

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| **Course Objectives** |
| * The main objective of this course is to provide students with the theoretical background and practical experience to become proficient in different types of data structures. * To deal with stacks, theoretically and practically. * Dealing with Queues, theoretically and practically. * Dealing with linked list and doubly linked list, theoretically and practically. * Dealing with Recursion function and how to turn it to iteration formats. |

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| **Learning Outcomes** |
| At the completion of the course, students will be able to…  1. **Apply** supervised learning algorithms to prediction problems and **evaluate** the results (ABET outcomes: A, B, C)  2. **Apply** unsupervised learning algorithms to data analysis problems and **evaluate** results (ABET outcomes: A, B, C)  3. **Apply** reinforcement learning algorithms to control problem and **evaluate** results (ABET outcomes: A, B, C)  4. **Decide** what kind of problem (supervised, unsupervised, or reinforcement) it is, given a description of a new problem (ABET outcomes: B, C) |

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|  | **Text Book(s)** |
| **Title** | C++: How to Program |
| **Author(s)** | Ditel & Ditel |
| **Publisher** | Printice Hall |
| **Year** | 2005 |
| **Edition** |  |

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|  | **References** |
| **Books** | Ditel & Ditel, C++: How to Program, 5th Edition, 2005, Printice Hall |
| **Internet links** | http://www.jpu.edu.jo/lms |
| **Course link** |  |

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|  | **Instructors** |
| **Instructor** | Dr.Ali Malkawi |
| **Office Location** | الطابق السابع - 715 |
| **Office Phone** |  |
| **E-mail** | [ali.amalkawi@jpu.edu.jo](mailto:Shquier@jpu.edu.jo) |

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| **Topics Covered** | | | |
| **Topics** | **Chapters in Text** | **Week number** | **Teaching hours** |
| **Revision of C++ Programming Concepts**  Functions and Arrays  Pointers and Arrays-based Lists  Object-Oriented Programming (OOP): Classes, Overloading, | **-** | *1* | *3* |
| **Linked Lists**  Linked list operations  Linked list Implementation  Ordered linked list  Doubled linked list | **Ch.2** | *2,3* | *12* |
| **Stacks**  Stacks Operation  Implementation of Stacks as Arrays  Linked Implementation of Stacks  Applications of stacks | **Chp.3** | *4,5* | *12* |
| **Queues**  Queue Operation  Implementations of Queues as Arrays  Circular implementation of Queues  Linked implementation of Queues  Applications of Queues | **Chp.4** | *6,7* | *12* |
| **Recursion**    Introduction to Recursion  Principles of Recursion  Problem solving using recursion  Application of recursion | **Chp.5** |  |  |
| **Searching Algorithms**  Sequential Search  Ordered Search  Binary Search  Performance of Binary Search  Insertion into ordered list  Hashing | **Chp.6** | *8,9* | *12* |

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|  | ***Evaluation*** |  |
| **Assignment and Projects** |  | ***20%*** |
| Project |  | **15%** |
| Presentation & Discussion |  | **5%** |
| **Individual Work** |  | *80%* |
| Attendance, Participation, Home works and short report | Chapter Homework’s, Discussions, Short Presentations | **10%** |
| Quizzes | Unannounced Short quizzes |
| First Exam | Multiple Choice Questions worth 25% and Essay Questions worth 75% of exam grade. | **15%** |
| Second Exam | Multiple Choice Questions worth 25% of and Essay Questions worth 75% of exam grade. | **15%** |
| A Comprehensive Final examination | Multiple Choice Questions worth 25% and Essay Questions worth 75% of exam grade. | **40%** |
| *total* |  | *100%* |

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|  | ***Policy*** |
| ***Attendance*** | *Attendance is very important for the course. In accordance with university policy, students missing more than the allowed absence rate of total classes are subject to failure. Penalties may be assessed without regard to the student's performance. Attendance will be recorded at the beginning or end of each class.* |
| ***Exams*** | *All exams will be CLOSE-BOOK; necessary algorithms/equations/relations will be supplied as convenient.* |

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| **Class Schedule & Room** |

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| **Office Hours** | | |
| Sun: 12 - 2  Mon: 8 - 11  Tues: 12 - 2  Wed: 8 - 11 | | |
|  | \* Or by an appointment through email |  |

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|  | **Teaching Assistant** |
| To announced later on. |  |

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|  | **Prerequisites** |
| **Prerequisites by course** | 1001108 |