QFO-AP-FI-MO02	اسم النموذج: Course Syllabus	جامعة فيلادلفيا
رقم الاصدار : 1 (Revision)	الجهة المصدرة: كلية تكنولوجيا المعلومات	**Philadelphia University**
التاريخ: 2017/11/05	الجهة المدققة: عمادة التطوير والجودة	
عدد صفحات النموذج:		

Course Title: Introduction To Data Structures and Algorithms	**Course code: 731220 (old 731212)**
Course Level: 2	**Course prerequisite: 721220 (old 721120)**
Lecture Time: 10:10 - 11:00	**Credit hours: 3**

Academic Staff Specifics

Name	Rank	Office Number and Location	Office Hours	E-mail Address
Rania AlZubaidi	Lecturer	333, 3rd floor	**Sun & Tue &Thu** 12:10 – 01:00 **Mon & Wed** 10:45 – 11:15	raniaalzubaidi@yahoo.com

Course Module Description:

This course tends to give the student the concepts and applications of the data structures, including Stacks, Queues, Linked List, Trees, Graphs, and the main Sorting techniques. Object Oriented Programming Language (C++) is used to implement the required data structures.

Course Module Objectives:

The choice of appropriate data structures is critical in the development of efficient algorithms. In fact, it is virtually impossible to create efficient algorithms without a good understanding of a number of fundamental data structures. This module aims at:

- Learning object-oriented programming principles.
- Learning how the choice of data structures and algorithm design methods impacts the program's performance.
- Studying specific data structures such as linked lists, stacks, queues, hash tables, binary trees, binary search trees, and graphs.
- Gaining experience and familiarity with writing programs in C++.

Course Module Components

Text book:
Title**: Data Structures Using C++**
Author(s): **D. S. Malik**
Publisher: **Boston, MA, 2**nd **edition, 2010.**

Support Materials:
In addition to the above, the students will be provided with handouts by the lecturer.

Teaching Methods:

Lectures, discussions, tutorials, problem solving, laboratory, assignments, home works.

Learning Outcomes:

- Knowledge and understanding
- Cognitive skills (thinking and analysis).
- Communication skills (personal and academic).
- Practical and subject specific skills (Transferable Skills).

Assessment Instruments

Assessment Instruments	Mark
First examination	**20%**
Second examination	**20%**
Final Exam (written unseen exam)	**40%**
Reports, Assignments, Quizzes, Home works	**20%**
Total	**100%**

* Make-up exams will be offered for valid reasons only with consent of the Dean. Make-up exams may be different from regular exams in content and format.

Documentation and Academic Honesty

Submit your home work covered with a sheet containing your name, number, course title and number, and type and number of the home work (e.g. tutorial, assignment, and project).

Any completed homework must be handed in to my office by 15:00 on the due date. After the deadline, "zero" will be awarded. You must keep a duplicate copy of your work because it may be needed while the original is being marked.

For the research report, you are required to write a report similar to a research paper. It should include:
- **Abstract**: It describes the main synopsis of your paper.
- **Introduction**: It provides background information necessary to understand the research and getting readers interested in your subject. The introduction is where you put your problem in context and is likely where the bulk of your sources will appear.
- **Methods (Algorithms and Implementation)**: Describe your methods here. Summarize the algorithms generally, highlight features relevant to your project, and refer readers to your references for further details.
- **Results and Discussion (Benchmarking and Analysis)**: This section is the most important part of your paper. It is here that you demonstrate the work you have accomplished on this

project and explain its significance. The quality of your analysis will impact your final grade more than any other component on the paper. You should therefore plan to spend the bulk of your project time not just gathering data, but determining what it ultimately means and deciding how best to showcase these findings.

- **Conclusion**: The conclusion should give your reader the points to "take home" from your paper. It should state clearly what your results demonstrate about the problem you were tackling in the paper. It should also generalize your findings, putting them into a useful context that can be built upon. All generalizations should be supported by your data, however; the discussion should prove these points, so that when the reader gets to the conclusion, the statements are logical and seem self-evident.
- **Bibliography:** Refer to any reference that you used in your assignment. Citations in the body of the paper should refer to a bibliography at the end of the paper.

☐ Protection by Copyright

1. Coursework, laboratory exercises, reports, and essays submitted for assessment must be your own work, unless in the case of group projects a joint effort is expected and is indicated as such.

2. Use of quotations or data from the work of others is entirely acceptable, and is often very valuable provided that the source of the quotation or data is given. Failure to provide a source or put quotation marks around material that is taken from elsewhere gives the appearance that the comments are ostensibly your own. When quoting word-for-word from the work of another person quotation marks or indenting (setting the quotation in from the margin) must be used and the source of the quoted material must be acknowledged.

3. Sources of quotations used should be listed in full in a bibliography at the end of your piece of work.

☐ Avoiding Plagiarism.

1. Unacknowledged direct copying from the work of another person, or the close paraphrasing of somebody else's work, is called plagiarism and is a serious offence, equated with cheating in examinations. This applies to copying both from other students' work and from published sources such as books, reports or journal articles.

2. Paraphrasing, when the original statement is still identifiable and has no acknowledgement, is plagiarism. A close paraphrase of another person's work must have an acknowledgement to the source. It is not acceptable for you to put together unacknowledged passages from the same or from different sources linking these together with a few words or sentences of your own and changing a few words from the original text: this is regarded as over-dependence on other sources, which is a form of plagiarism.

3. Direct quotations from an earlier piece of your own work, if not attributed, suggest that your work is original, when in fact it is not. The direct copying of one's own writings qualifies as plagiarism if the fact that the work has been or is to be presented elsewhere is not acknowledged.

4. Plagiarism is a serious offence and will always result in imposition of a penalty. In deciding upon the penalty the Department will take into account factors such as the year of study, the extent and proportion of the work that has been plagiarized, and the apparent intent of the student. The penalties that can be imposed range from a minimum of a zero mark for the work (without allowing resubmission) through caution to disciplinary measures (such as suspension or expulsion).

Course Academic Calendar:

Week	Topic
1	Introduction to the course
2	Software engineering principles and C++ classes
3	Object Oriented Design (OOD) and C++
4	☐Introduction to data structures and algorithms ☐ Algorithm complexity
5	Pointers and array-based lists
6 7	☐ Linked lists ☐ Recursion **First Exam**
8 9	Stacks
10 11	Queues
12	☐ Trees **Second Exam**
13 14 15 16	☐Searching and hashing algorithms ☐ Sorting algorithms **Final Exam**

Expected workload:

On average students need to spend 2:30 hours of study and preparation for each 50-minute lecture/tutorial.

Attendance Policy:

Absence from lectures and/or tutorials shall not exceed 15%. Students who exceed the 15% limit without a medical or emergency excuse acceptable to and approved by the Dean of the relevant college/faculty shall not be allowed to take the final examination and shall receive a mark of zero for the course. If the excuse is approved by the Dean, the student shall be considered to have withdrawn from the course.

Module References:

Books: (Available in our library***)***
1. Data Structures and Algorithm Analysis in C++, 2006
2. Data Structures and Algorithms in C++, 2005
3. C++ How to program

Journals:

Websites:

http://www.cplusplus.com