

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

**Department of Computer Science  
2018-2019.1**

Course Syllabus	
<b>Course Title: Database system</b>	<b>Course code: 750763</b>
<b>Course Level: Master</b>	<b>Course prerequisite(s) and/or corequisite(s): None</b>
<b>Lecture Time:</b>	<b>Credit hours: 3</b>

Academic Staff Specifics				
Name	Rank	Office Location	Office Hours	E-mail Address

### Course Description

This course is intended for students already accepted to study the MSc in Computer Science in the Faculty of Information Technology. Students can expect to gain from the course the skills and techniques required to undertake Database techniques at MSc level. It aims to emphasize the concepts of different advanced DB models. The practical aspect should be emphasized.

### Course Objectives

Database management has evolved from a specialized computer application to a central component of a modern computing environment, and, as a result, knowledge about database systems has become an essential part of an education in computer science. This course aims to offer advanced skills in DB, we present the fundamental concepts of database management focusing on their advanced and practical aspects. So, the goal is to study some advanced technologies in the database area that have been adopted in real applications and to survey products and applications that embody these technologies. Advanced topics from the following will be covered: Relational Database, Object Oriented and Object Relational Databases; XML/Semi-structured Data Management; Querying, Transaction and Distributed Databases; Data mining and Information Retrieval Techniques. The practical aspect should be emphasized.

### Course Components

#### Textbooks

Abraham Silberschatz, Henry F. Korth, and S. Sudarshan, Database System Concepts, 6<sup>th</sup> Edition, McGraw Hill, International Edition, 2010.

*In addition to the above, the students will be provided with handouts by the lecturer.*

### Teaching Methods

Duration: 15 weeks, 45 hours in total. Lectures: 24 hours, 2 per week. Tutorial (case study in classroom): 12 hours, 1 per week. Laboratories: 15 hours in total, 1-hour per week (personal). Exams: 6 hours (for the mid and final exam). The last week is reserved for practical works examination and seminars.

### Learning Outcomes

#### A. Knowledge and understanding

- A1. Be prepared for some of the demands of, and skills required for, work in IT and IT-related industries
- A2. Having been introduced to the skills and knowledge necessary to Database

#### B. Intellectual skills (thinking and analysis)

- B1. Understand A wide range of principles, methodologies, and tools available to the Database developer. All these direction informed by research.
- B2. Understand the professional and ethical responsibilities of the practicing computer professional including understanding the need for quality.
- B3. Understand the application of computing in a business context

**C. Practical skills**

- C1. Solve a wide range of problems related to the Database design, Analysis, development, and use.
- C2. Design, develop, and use of different kind of advanced Database models.
- C3. Plan and undertake a major individual project, and prepare and deliver coherent and structured verbal and written technical report

**D. Transferrable skills**

- D1. Have skills and knowledge necessary to undertake the project
- D2. Be able to display an integrated approach to the deployment of communication skills,
- D3. Use IT skills and display mature computer literacy;
- D4. Strike the balance between self-reliance and seeking help when necessary in new situations, and display personal responsibility by working to multiple deadlines in complex activities.

**Learning Outcomes Achievement**

- A2, B3, C1, and C2 are assessed by quizzes and examinations
- A1, B1, B2, C1, C2, C3, D1, D2, D3, and D4 are assessed by practical and research works

**Assessment Instruments**

Allocation of Marks	
Assessment Instruments	Mark
Midterm examination	30%
Final Exam (written unseen exam)	40 %
Reports, research projects	30%
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.*

**Practical Submissions**

*The assignments that have work to be assessed will be given to the students in separate documents including the due date and appropriate reading material.*

**Documentation and Academic Honesty**

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

Any completed homework must be handed in the class 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.

You should hand in with your assignments:

- A brief report to explain your findings.
- Your solution of given problem

For the research report, you are required to write a report similar to a scientific 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 definition, summary of contribution, related work, and is likely where the bulk of your sources will appear.
- *Methods (Algorithms and Implementation):* Describe your methods here. Summarize the algorithms (if any) generally, highlight features relevant to your project, and refer readers to your references for further details. Information from sources must be rephrased in own words, “copy-and-paste” from documents, found for example on the Internet, is NOT allowed. It is allowed to use short quotations, or figures, from other documents, but then the source MUST be clearly stated in the reference list (please check copy rights). Papers not fulfilling these rules will be failed.
- *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/Module Academic Calendar

Week	Basic and support material to be covered	HW
(1)	<b>Chapter 1 Introduction: Data modeling /</b> Modeling concepts and tools, Database Languages, Relational Databases, Object-Based and Semi structured, Transaction Management, Data Mining and Analysis, Database Architecture. <b>Tutorial on relevant research papers</b>	PW Modelling Tools
(2)	<b>Chapter 2. Advanced Relational Databases /</b> Relational Model, Advanced SQL. <b>Tutorial on relevant research papers</b>	PW on SQL
(3)	Other Relational Languages: Datalog, ... <b>Tutorial on relevant research papers</b>	PW on QBE, Datalog
(4)	<b>Chapter 3. Object-based Databases and XML /</b> Object-Based Databases, <b>Tutorial on relevant research papers</b>	RW on Relat. Modeling
(5)	XML. <b>Tutorial on relevant research papers</b>	
(6)	<b>Chapter 5 Transaction management/</b> Transactions, Concurrency Control, Recovery System	PW on SQL Transactions
(7)	<b>Tutorial on relevant research papers</b>	
(8)	<b>Mid Exam</b>	
(9)	<b>Chapter 7. System architecture/</b> Database-System Architectures, Parallel Databases. <b>Tutorial on relevant research papers</b>	PW on Distributed DB
(10)	Distributed Databases. <b>Tutorial on relevant research papers</b>	
(11)	<b>Tutorial on relevant research papers</b>	RW on transaction and DB architecture
(12)	<b>Chapter 8. Others topics/</b> My Relevant research works study	

(13)	Tutorial, seminars	
(14)	Homework Final Exam	
(15)	<b>Written Final Exam</b>	

### Expected workload

On average students need to spend 2 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

*Students will be expected to give the same attention to these references as given to the Module textbook(s)*

1. Ramez Elmasri (Author) Shamkant Navathe (Author). [Fundamentals of database systems](#) Boston: Pearson Education Limited 2014 6th ed.
2. Ramez Elmasri (Author) Shamkant B. Navathe (Author). [Database systems: models, languages, design, and application programming](#) New Delhi: Dorling Kindersley/Pearson 2013 6th ed.
3. Abraham Silberschatz (Author) Henry F. Korth (Author) S. Sudarshan (Author). [Database system concepts](#) New York, NY: McGraw-Hill 2011 6th ed. , international ed.
4. Ramez Elmasri (Author) Shamkant B. Navathe (Author). [Database systems: models, languages, design, and application programming](#) Boston: Pearson 2011 6th ed.
5. Thomas Kyte (Author). [Expert Oracle database architecture: Oracle database 9i, 10g, and 11g: programming techniques and solutions](#) [Berkelet, Calif.]: APress 2010 2nd ed.
6. Thomas M. Connolly (Author) Carolyn E. Begg (Author). [Database systems: a practical approach to design, implementation, and management](#) Boston: Addison-Wesley/Pearson 2010 5th ed.
7. Peter Rob (Author) Carlos Coronel (Author). [Database systems: design, implementation, and management](#) Boston, Massachusetts: Thomson/ Course Technology 2007 7th ed.
8. C. J. Date (Author) Hugh Darwen (Author). [Databases, types and the relational model: the third manifesto](#) Reading, Massachusetts: Addison - Wesley 2007 3rd ed.
9. [Fundamentals of database systems](#) Ramez Elmasri (Author) Shamkant Navathe (Author) Boston: Pearson Addison Wesley 2007 5th ed.

### Research papers (sample):

A recent list will be provided following the progression in the course during the Tutorials.

### My relevant research work study

1. Bio-inspired Variability Modeling in Databases, CS MSc Thesis, Philadelphia University, 2017
2. Systems Variability Modeling: A Textual Model Mixing Class and Feature Concepts. International Journal of Computer Science & Information Technology (IJCSIT) Vol 5, No 5, 2014
3. A Bio-Inspired Approach to Selective Inheritance Modeling. International Journal Of Software Engineering and Its Applications, ITSEIA, Vol. 8, No. 1, 2014

### Website(s):

<http://ecourse.philadelphia.edu.jo/login/index.php> // Prof. S. Ghoul  
<http://db-book.com/> // Textbook 6th edition website  
<http://www.cs.yale.edu/homes/avi/db-book/db5/index.html> // Textbook 5th edition website  
<http://db.cs.sfu.ca/sections/publication/dood/dood.html>