Philadelphia University
Faculty of Information Technology
Department of Software Engineering
Second Semester, 2015/2016

Course Syllabus

Title: Software Requirements	**Code: 0721230**
Level: 2	**Prerequisite(s) and/or Co-requisite(s): 0721110**
Lecture Time: 13:10-14:00 09:45 -11:00	**Credit hours:** 3

Academic Staff Specifics

Name	Rank	Office	Office Hours	E-mail Address
Dr Maouche Mourad	Associate Professor	**Room 602** **IT Building**	Sun, Tues, Thurs: 11:00 -12:00; 14.00-15.00 Mon-Wed: 11– 12.00	mmaouch@philadelphia.edu.jo

Course module description:

This course covers the following major topics related to the Requirement Engineering discipline:
Requirement Problem, Requirements Engineering Discipline, Requirements Engineering and the Software Development Cycle, Requirement Engineering Activities, Understanding Stakeholders Needs, Categories of Requirements, Requirement Elicitation, Analysis of Requirements, Requirements Engineering Documents (SRS,…), Managing scope, risks, priorities, changes, Goal oriented Requirement Engineering.

Course module objectives:

This course aims to:

- Introduce the activities, concepts, and techniques needed in the eliciting, analyzing, documenting, validating, and managing requirements for complex systems.
- Explain how requirements engineering fits into a broader systems development process
- Provide an understanding of the main challenges in requirements Engineering.

Text Book:

Title: Requirements Engineering – From System Goals to UML Models to Software specifications.
Author: Axel van Lamsweerde.
Editor: Wiley
Year of edition: 2009

Support materials :

Textbook & Slides

Teaching methods:

Duration: 16 weeks, 48 hours in total, Lectures: 37 hours, Tutorials: 07 hours, Lab: 03 hours

Learning outcomes:

At the end of this module, students will be able to

- **Knowledge and understanding**

1. Understand the basic concepts related to requirement engineering (A2)
2. Recognize the importance of the requirement phase in the software development process (A1)
3. Recognize some requirements-related problems that can arise on a software project (A4)
4. Understand the different activities inherent to the requirement engineering discipline (A4)
5. List and Explain the different kinds of requirements (A4)

- **Cognitive skills (thinking and analysis).**

6.Identify stakeholders, their goals and work with them effectively (B2)
7. Describe functional and non-functional requirements in semi-formal and informal languages (B1)
8. Analyze Requirements (consistency, ambiguity,..) (B2, B6)
9. Manage requirements change. (B5)
10. Determine project scopes. (B5)
11. Validate and prototype requirements.(B5)
12. Negotiate and prioritize requirements. (B6)
13. Evaluate requirements related risks (B8)

- **Practical skills**

14. Conduct interviews for requirements elicitation. (C9)
15. Build questionnaires for requirement elicitation. (C9)
16. Write Requirement documents (vision, SRS documents). (C7)
17. Prepare and deliver coherent and structured verbal and written technical report. (C7)

- **Transferable skills**

18. Communicate effectively with non –specialist as well computer scientist (D4)
19. Work as part of team (D6)
20. Display personal responsibility by working to multiple deadlines in complex activities. (D7)
21. Display an integrated approach to the deployment of communication skills, use IT skills and display mature computer literacy. (D8)
22. Solve Problems (D3)

Assessment of Learning Outcomes

Learning outcomes A1, A2, A4 and D3 are assessed by examinations and quizzes; Learning outcomes (B1, B2, B5, B6, B8) are assessed by examinations and assignments; Learning outcomes C7, C9, D4, D6, D7, D8 and D3 are assessed by projects.

Assessment instruments

- Short reports
- Quizzes.
- Home works
- Final examination

Allocation of Marks	
Assessment Instruments	**Mark**
First examination	20 %
Second examination	20 %
Final examination: 40 marks	40%
Quizzes, home works, projects	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.*

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 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 (room IT 602) 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.

You should hand in with your assignments:

1- A printed listing of your test programs (if any).
2- A brief report to explain your findings.
3- Your solution of questions.

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/module academic calendar

Week	Basic and support material to be covered	Homeworks
(1)	***Lecture 1***: *Course Overview* ***Lecture 2***: *What is requirement engineering? Why requirement engineering?* ***Lecture 3***: *Requirements Engineering: a preliminary definition/ The problem world and the machine solution*	
(2)	***Lecture 4***: *System requirements vs. Software requirements/ Scope of Requirements Engineering: the WHY, WHAT, WHO dimensions* ***Lecture 5***: *Types of Statements involved in Requirements Engineering* ***Lecture 6***: *Categories of requirements/ functional requirements*	
(3)	***Lecture 7***:*functional requirements* ***Lecture 8:****Non- functional requirements* ***Lecture 9***:*Non-functional requirements*	
(4)	***Lecture 10***:*The RE process* ***Lecture 11***:*Target qualities for RE process/ Types of RE errors & flaws* ***Lecture 12***: *Requirements in the software life cycle/ The requirements problem*	
(5)	**Tutorial**	**Homework1**
(6) **First Exam**	***Lecture 13***: *What are goals?*	

	Lecture 14*: The granularity of goals/ Goal types* ***First Exam***	
(7)	***Lecture 15****: Behavioral goals vs Soft Goals* ***Lecture 16****: Functional vs Non-functional Goals* ***Exam correction***	
(8)	***Lecture 17****: The central role of goals in the RE process* ***Lecture 18****: Scenarios as concrete vehicles for goal elicitation/validation* ***Lecture 19****: Artefact-driven elicitation techniques*	
(9)	***Lecture 20****: Artefact-driven/ stakeholder-driven elicitation techniques* ***Lecture 21****: Stakeholder-driven elicitation techniques* **Tutorial**	
(10)	**Tutorial** ***Lecture 22****: Inconsistency management* ***Lecture 23****: Risk Management*	**Homework2**
(11) **Second Exam**	***Lecture 24*** *:Requirements evaluation* ***Second Exam*** ***Lecture 25****: Free documentation in unrestricted natural language*	
(12)	***Exam correction*** ***Lecture 26****: Disciplined documentation in structured NL: local rules on writing statements* ***Lecture 27****:* SRS structure	
(13)	***Lecture 28****: Requirements inspections and reviews* **Tutorial** ***Lecture 29:*** *Formal checking*	**Homework3**
(14)	***Lecture 30****: Variants / Change anticipation* **Tutorial** **Laboratory**	
(15)	**Laboratory** ***Lecture 31****: Traceability management for evolution support* ***Lecture 32:*** *Change control*	
(16)	**Laboratory** **Revision**	

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

Books

Title: Requirements Engineering
Author(s)/Editor(s): Elizabeth Hull, Ken Jackson and Jeremy Dick.
Publisher: Springer, 2011

Title: Software Requirements- Styles and Techniques
Author(s)/Editor(s): Søren Lauesen.
Publisher: Addison-Wesley, 2002.

Title: Requirements Engineering for Software and Systems
Author(s)/Editor(s): Phillip A. Laplante
Publisher: Auerbach Publications, 2013