



The University of Jordan

Accreditation & Quality Assurance Center

COURSE Syllabus

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| 1 | Course title | Special Topics |
| 2 | Course number | (1902494) |
| 3 | Credit hours (theory, practical) | 3 Credit Hours |
| | Contact hours (theory, practical) | 3 Credit Hours |
| 4 | Prerequisites/corequisites | Principles of Statistics, Software Engineering and Database |
| 5 | Program title | BSc Computer Information System (CIS) |
| 6 | Program code | 1902 |
| 7 | Awarding institution | The University of Jordan |
| 8 | Faculty | King Abdullah II School for Information Technology |
| 9 | Department | Department of Computer Information Systems |
| 10 | Level of course | Bachelor |
| 11 | Year of study and semester (s) | Fall semester- 2016/2017 |
| 12 | Final Qualification | Bachelor |
| 13 | Other department (s) involved in teaching the course | None |
| 14 | Language of Instruction | English , |
| 15 | Date of production/revision | Sept. 2016 |
| 16 | Required/ Elective | Elective |

16. Course Coordinator:

Office numbers, office hours, phone numbers, and email addresses should be listed.

Dr. Hamad Alsawalqah

Office number: CIS-223, Office Hours: 11-12: Sun, Tue, Thu; Or by appointment, Tel. 22643,

Email: h.sawalqah@ju.edu.jo

17. Other instructors:

None

18. Course Description:

The course covers software economics principles and techniques that seek to enable significant improvements in software design and engineering through economic reasoning about product, process, program, and portfolio and policy issue. This includes: Economic Analysis, Business Case Analysis, Risk Evaluation & Management, quality management, Outsourcing, Global S/W Dev. & Software Six Sigma, and Software Process Dynamics.

19. Course aims and outcomes:

The Goal

The main goal of this course is to equip a student with the necessary knowledge about what he has to deal with if he was a CEO of a software company or a manager of a software development team.

A. Aims

The main objectives of the special topics course (Software engineering economics and management) are:

- 1- To understand the role of software engineering economics and management in helping decision makers to produce high-quality software within the available resources.
- 2- To equip students with knowledge on software engineering economics and management, their basic concepts, and how to utilize this knowledge.
- 3- To provide and equip students with the skills and techniques required to write and present a software related business cases.

B. Knowledge and Understanding:

- 1- Students will be expected to understand the importance of how software economics can lead to fundamental improvements in software design and engineering, in theory and practice.
- 2- Describe the role of software economics and management in improving IT related processes in software development firms.
- 3- Students will be expected to appreciate the reasons for developing a business case and understand the properties of good business case.

C. Intellectual skills:

- 1- Students should be able to understand and evaluate techniques can be used to formally assess the risks that can have an impact on project success.
- 2- Identify the basic concepts and principles to the economic analysis of different improvement's proposals.
- 3- Students will be expected to demonstrate how a software team can communicate and coordinate projects in the context of global software development and outsourcing.
- 4- Identify the basic concepts and principles of software six sigma, and software process dynamics.

D. Subject-Specific skills

- 1- Describe how economic assessment techniques can be applied to evaluate and justify different alternatives of a proposed improvement.
- 2- Students will be expected to have an appreciation of key measures of software economics, risk, and quality and how these might be used within a software project management framework.

E. Transferable skills

- 1- Demonstrate how a software project manager makes decisions at different levels to improve the way his team/ company do their work.
- 2- Students should be able to identify how the knowledge of economics analysis techniques, the principles of software six sigma and global software development can affect and wide their perspective while making decisions.
- 3- Present how they can present their proposals for improvement using business case.

20. Topic Outline and Schedule:

| Topic | Week | Instructor | Achieved ILOs | Evaluation Methods | Reference |
|---|--------|------------|--|--|---|
| <i>Introduction to software engineering economics and management</i> | 1 | | A.1, A.2 B.1 | T: Lecture L: Reading lecture notes and book chapter A: in Class questions | Text Book: Chapter 2 |
| <i>Making a Business Case: Principles, Rules, Analysis Tools :</i> Business Process Model, Improving a Process, Identifying Improvement Needs, Steps for writing business case, contents of business case, Break-even analysis, Cause and effect analysis, Cost/benefit analysis, Value chain analysis, Investment opportunity analysis, Pareto analysis, Payback analysis, Sensitivity analysis, Trend analysis, Wrapping up your business case | 2 - 5 | | A.2, A.3, B.3, C.2, D.1, D.2, E.1 | T: Lecture and Demo using MS Excel L: Reading lecture notes, A: in class questions and students' presentations on economic analysis techniques | References: 1 ~ 4 |
| <i>Risk Management:</i> What's Risk? Risk Management Process, Risk Assessment: Risk Identification techniques, Risk Analysis Techniques, Risk prioritization Techniques Risk Control: Risk Management Planning, Risk Resolution Techniques, Risk Monitoring Techniques. | 6 - 8 | | C.1, D.2 | T: Lecture and Demo L: Reading lecture notes and external material provided by the lecturer A: in class discussions on the extra material, presentations on risk management techniques | Text Book: Chapter 5 Reference: 5 ~ 6 |
| Review and Midterm Exam | 8 | | | | |
| <i>Software Economic Analysis and Decision Making, Software Quality Management</i> | 9 - 10 | | A.2, B.2, D.1, E. 1, E. 2 | T: Lecture L: Reading lecture notes and external material provided by lecturer A: Oral Quiz | Text Book: Chapters 1 and 2 Reference: 5 ~ 6 |
| Review and Quiz | 11 | | | | |
| <i>Software process dynamics, Outsourcing, Global S/W Dev. & Software Six Sigma</i> | 12 -14 | | D. 2, C. 3, C. 4, E. 2 | T: Lecture L: Reading lecture notes and book | Text Book: Chapters 1 and 2 |

| | | | | | |
|---|----|--|-----------|----------------------------------|---------------------|
| | | | | chapter A: in class questions | Reference: 5 ~ 7 |
| <i>Business cases presentation and discussion</i> | 15 | | A.3, E. 3 | A: project discussion | |
| Review and Final Exam | 6 | | | | |

21. Teaching Methods and Assignments:

Development of ILOs is promoted through the following teaching and learning methods:

Students attend classes, ask questions and participate in discussions, prepare and present their presentations about chosen techniques, do the home works, project tasks (business case) during the semester and present their work. A student will use the lab and demos to help them learn how the tools can help them while performing economic assessment. Students will access the e-learning platform for more instruction and supported learning materials.

22. Evaluation Methods and Course Requirements:

Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements:

Assessment (A) Methods: There will be several assessment methods of evaluation the performance of the students such as attending and class participation, presentations, grading the homework, quizzes and project; conducting the Midterm and the Final Exams. Every student is expected to completely adhere to the project strict deadlines; absolutely no exceptions will be given.

Assessment Weights:

Midterm 20%
Participation & Oral Quizzes 15%
Project(Business Case) 15%
Final Exam 50%

23. Course Policies:

MS Excel

MS Project

25. References:**A- Attendance policies:**

A- Attendance policies: Class attendance is mandatory. University regulations will be applied. Regular attendance is essential for satisfactory completion of this course.

B- Absences from exams and handing in assignments on time:

B- Absences from exams and handing in assignments on time: Any student who misses any exam will receive a failing grade. Permission for makeup will be granted only if the student notifies the instructor in due time and presents evidence of an officially excused absence.

C- Health and safety procedures:**D- Honesty policy regarding cheating, plagiarism, misbehaviour:**

D- Honesty policy regarding cheating, plagiarism, misbehaviour: The honour code applies to all work turned in for this course including exams and assignments. It is important that you understand the solutions to all problems, and the best way to gain an understanding is to work them out and write them up by yourself. Hence the policy is that you must submit your own work. You may not share your work with other students, unless it is allowed as group. Violating the policy will be taken as a no submission state for the assignment. University regulations will be preserved at all times.

E- Grading policy:

The Intended Scale is as follows:

| | | | |
|----------|-----|----------|-----|
| Below 50 | F | 50 -53 | - D |
| 54 - 57 | D | 58 - 60 | +D |
| 61 - 63 | - C | 64 - 66 | C |
| 67 - 69 | + C | 70 -73 | - B |
| 74 - 76 | B | 77 - 79 | + B |
| 80 - 84 | - A | 85 - 100 | A |

F- Available university services that support achievement in the course:

Course website: available at: <https://elearning.ju.edu.jo/>

Library and e-Library.

24. Required equipment:**A. Required book (s), assigned reading and audio-visuals:****Text Books**

1. Rick Selby, "Software Engineering: Barry W. Boehm's Lifetime Contributions to Software Development, Management, and Research", Wiley, 2007, ISBN 978-0-470-14873-0

B. Recommended books, materials, and media:

1. Reifer, Don. Making the Software Business Case: Improvement by the Numbers, Addison Wesley, 2001.
2. Jongmoon Baik, Lecture Notes: Software Engineering Economics & Management, KAIST.
3. Donald J. Reifer, Business Case Analysis, University of Southern California and Reifer Consultants, Inc.
4. Business Case Development What, Why and How Dave Angelow – Executive Principal April 2011 Wednesday, Dec 5, 2012 Julen C Mohanty Business Case
5. Royce, Walker, Software Project Management, Addison Wesley, 1998.
6. Ian Sommerville. Software Engineering (9th Edition). Addison Wesley, 2011, ISBN-10: 0-13-703546-0.
7. Tayntor, Christine B. Six sigma software development. Crc Press, 2007.

26. Additional information:

Please visit the course website available at: <https://elearning.ju.edu.jo/>

Name of Course Coordinator: **Dr. Hamad Alsawalqah**-----Signature: ----- Date: **8 Sep , 2016**-----

Head of curriculum committee/Department: ----- Signature: -----

Head of Department: ----- Signature: -----

Head of curriculum committee/Faculty: ----- Signature: -----

Dean: ----- -Signature: -----

Copy to:
 Head of Department
 Assistant Dean for Quality Assurance
 Course File