

الجامعـــــــــة الهاشـــميـــــــــة
كلية الاميـر الحسين بـــــن عبدالله الثاني لتكنولوجيا المعلـــومات



**The Hashemite University**
**Prince Al-Hussein Bin Abdullah II Faculty for Information Technology**
**Department of Software Engineering**

**Course Syllabus**
**2st Semester 2018/2019**

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|---|---|
| **Course Title:** Software Maintenance and Evolution<br>**Course Number:** 121003714<br>**Prerequisite:** | **Assessment and Course Grade:**<br>• Mid Exam 30%<br>• Paper Presentation 5%<br>• Research Project 25%<br>• Final Exam 40% |
| **Instructor**: Dr. Maen Hammad<br>**Office NO**: IT 323<br>**Contact Info**: mhammad@hu.edu.jo | |
| **Office Hours**: 10-11 | |

## Course Description

The course covers research and advanced topics in software maintenance and evolution. The course aims to cover the recent research issues in these fields. The topics include types of maintenance, evolution of open source projects, reverse engineering, program comprehension, impact analysis, mining software repositories, software visualization and handling bug reports.

## Textbook

1. Object-Oriented and Classical Software Engineering (8th Edition), Stephen Schach (2010), McGraw-Hill
2. Software Evolution, Tom Mens, Serge Demeyer. Springer, 2008.
3. Software Engineering (9th Edition). Ian Sommerville (2010), Addison Wesley

## Additional Reading

- Object Oriented Software Engineering, Using UML, Patterns, and Java. 3rd edition, Bernd Bruegge and Allen H. Dutiot.

## Course Objectives

After completion of this course a student should be able to understand the following concepts:

- Providing a comprehensive coverage of software maintenance principles and terminology.
- Detailing the principles of software evolution.
- Covering the recent research issues in reverse engineering and program comprehension.
- Studying and analyzing the evolution of open source projects
- Software maintenance for large-scale system
- Software Visualization to support program comprehension
- Bug reports triaging and bug prediction.

## Research Project

A semester project is required for all students and will count for 25% of the overall grade. The project should be documented as IEEE proceedings format paper. Topics of the projects are discussed in the class.

## Course Plan

| Week no. | Topic |
|---|---|
| 1 | Introduction |
| 2 and 3 | Software Modeling |
| 4 and 5 | Research Papers (Students Presentations) |
| 6 and 7 | Software Maintenance |
| Mid Exam | |
| 8 | Software Evolution |
| 9 and 10 | Software Metrics |
| 11 and 12 | Refactoring |
| 13 and 14 | Code bad smells |
| 15 and 16 | Research Projects Presentations |
| Final Exam | |