Agile Software Development

Dr. Raman Ramsin

Undergraduate Course, 3 Units, Elective (Computer Engineering—Software)
Prerequisite: Systems Analysis and Design (40-418)

Overview
The aim of this course is to familiarize undergraduate students of Computer Engineering (Software) with concepts, principles, and methods of agile software development. While gaining knowledge and hands-on experience with the Scrum methodology, students will also be introduced to test-driven development, continuous integration, refactoring, and other agile practices, and their practical use in software projects.

Topics and Schedule
1) Introduction to the History, Basic Concepts, Manifesto, and Principles of Agile Development (1 session – each session is 90 minutes in duration)
2) Introduction to Extreme Programming (XP) (2 sessions)
3) Scrum Methodology
   • Original Process (1 session)
   • Current Framework (2 sessions)
   • Sprint Rules (1 session)
   • Requirements, and Product Backlog (3 sessions)
   • Estimation and Velocity (2 sessions)
   • Sprint Planning (1 session)
   • Sprint Execution (2 sessions)
   • Test-Driven Development and Continuous Integration (4 sessions)
   • Refactoring (4 sessions)
   • Sprint Review (1 session)
   • Sprint Retrospective (1 session)
   • Agile Practices
     o Team Management Practices (1 session)
     o Design Practices and Kanban (1 session)
   • High-Level Planning in Scrum (2 sessions)
4) Process Frameworks for Agile Development: ASDLC and DAD (1 session)

Exams and Course Project
• Two exams (Midterm and Final) – Comprising %60 of the total grade
• One comprehensive course project: Project activities will be assigned and completed throughout the semester – Comprising %40 of the total grade

Main References
• K. Beck, Test Driven Development: By Example, Addison-Wesley, 2002.
• M. Cohn, Succeeding with Agile: Software Development Using Scrum, Addison-Wesley, 2010.
• M. Fowler, Catalog of Refactorings, Published online at: http://refactoring.com/catalog/, December 2013 (last visited on: 3 August 2014).