



Agile Software Development (40-475)

Dr. Raman Ramsin

Undergraduate Course, 3 Units, Elective (Computer Engineering)

Prerequisite: Systems Analysis and Design (40-418)

Overview

The aim of this course is to familiarize undergraduate students of Computer Engineering with the concepts, principles, and methods of agile software development. After a review of agile principles and the XP methodology, students will gain knowledge on the DSDM and DAD methodologies, and will use them, along with patterns and agile practices, to develop a software system.

Topics and Schedule

- 1) Introduction to the History, Basic Concepts, Manifesto, Principles, and Limitations of Agile Development (3 sessions – each session is 90 minutes in duration)
- 2) Introduction to XP (Extreme Programming) (3 sessions)
- 3) DSDM Methodology (Dynamic Systems Development Method)
 - Framework, Principles and Rules (2 sessions)
 - Roles (2 sessions)
 - Sequential Phases (1 session)
 - Iterative Phases (2 sessions)
 - Practices (2 sessions)
- 4) DAD Methodology (Disciplined Agile Delivery)
 - Framework (2 sessions)
 - Process (3 sessions)
 - Roles (2 sessions)
- 5) Agile Practices: Refactoring, Team Management, Design and Kanban (5 sessions)
- 6) Agile Planning (2 Sessions)
- 7) Patterns (3 sessions)

Exams and Course Project

- Two exams (Midterm and Final) – Comprising 60% of the total grade.
- Two assignments – Comprising 10% of the total grade.
- Course project – Comprising 30% of the total grade.
 - Project activities will be assigned and completed throughout the semester.

Main References

- D. Wells, *Extreme Programming: A Gentle Introduction*. Published online at: <http://www.extremeprogramming.org>, 2013 (visited: 20 September 2022).
- DSDM Consortium, *The DSDM Project Framework Handbook*. Agile Business Consortium, Published online at: <https://www.agilebusiness.org/page/TheDSDMAgileProjectFramework>, 2014 (visited: 20 September 2022).
- S.W. Ambler, M. Lines, *Choose Your WoW: A Disciplined Agile Delivery Handbook for Optimizing Your Way of Working*. Project Management Institute, 2020.
- M. Fowler, *Refactoring: Improving the Design of Existing Code, 2nd ed.* Addison-Wesley, 2019.
- Agile Alliance, *Agile 101: Subway Map to Agile Practices*. Published online at: <https://www.agilealliance.org/agile101/subway-map-to-agile-practices/>, 2015 (visited: 20 September 2022).
- E. Gamma, R. Helm, R. Johnson, J. Vlissides, *Design Patterns: Elements of Reusable Object-Oriented Software*. Addison-Wesley, 1995.