Course Description

This course focuses on the theoretical and practical aspects of the requirements engineering process.

Students will be introduced to the fundamental concepts related to requirements. This includes understanding various requirements types, risks and impact in the requirements process, how requirements evolve, and techniques for eliciting, analyzing, evaluating, managing, and writing requirements.

Individual classes in this course will be a mixture of traditional lectures accompanied by hands-on workshops that emphasize the interactive nature of requirement development process.

To facilitate stronger interactions and better understanding, in-class attendance or remote connection during class time is recommended.

Course Objectives. After completing the course, the students will be able to
- Understand requirements engineering concepts;
- Recognize and describe different types of requirements (functional, non-functional and constraints);
- Elicit and analyze requirements from stakeholders;
- Specify requirements effectively in a requirements document;
- Assure the quality of requirements through verification and validation processes;
- Maintain and manage requirements, including dealing with requirements change and traceability;
- Adapt the requirements development process to the software/system development methodology (e.g., waterfall, iterative, agile);
- Assess effectiveness of the requirements development process;
- Check that requirements are complete and disjoint;
- Understand and leverage the relationship between requirements, architecture, code, and testing;
- Understand and apply alternative (modern) approaches to requirements engineering

Assignments include specific deliverables from in-class exercises, participation in the discussion board, and take-home assignments. More information will be provided in the first lecture and throughout the course.

Required technology: Some assignments require access to a computer that runs Java, preferably MS Windows 7/8. For some in-class assignments students should bring laptop to class. More information will be provided during the first lecture.

Prerequisites: Assignments require some familiarity with Java or similar programming language.

Method for communication outside classroom: email.

First class: 1/27/2015
Due dates for Assignments will be provided during the first lecture and throughout the course.
No class: 3/17/2015 (spring break)

Course attendance policy: Students must attend the following classes: Midterm, Final, Classes (two in-class assignments), Student presentation(s).

Grading procedures: Grading is calculated based on a sum of the weighted scores from (tentative): Midterm (20%), Final (30%), Assignments (40%), Student Presentation (10%). More information will be provided during the first lecture.

**Required/Recommended Textbooks**


Papers and articles will be handed out as necessary. More information will provided during the first lecture.

**Course Outline**

The following topics are planned to be covered, however changes may occur:

- Fundamentals of Requirement Engineering
- Types of Requirements
- Requirements Elicitation Methods
- Use Cases and Documenting Requirements
- Prototyping, Elicitation, and Refinement
- Requirements Modeling
- Requirements Analysis: Prioritization and Conflict Negotiation
- Requirements Management & Measurement
- Requirements Verification & Validation
- Requirements in Agile Methods
- Advanced requirements development and analysis
- The relationship between requirements, architecture, code, and testing;
- Optional approaches to requirements engineering