

# OMSE 531: Software Requirements Engineering

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## Spring 2012 Syllabus

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## About This Course

This course will cover the ideas, methods, techniques and engineering processes used to develop, analyze and refine software requirements. Requirements engineering case studies will be used to illustrate the impact of tools and process on the quality of the software produced.

Formal methods will be presented, and assignments will provide students with experience developing a basic framework for a rule-based requirements analysis system using Prolog.

## Course rationale

Building software is an endeavor that benefits immensely from understanding, discovering and managing the system requirements that will differentiate software that “fits” the needs of the end users from software that fails to meet those needs.

Software requirements engineering today presents software engineers with a rich palette of techniques and methods from which to choose. This course will cover a wide range of these approaches, ranging from informal methods to mathematical formality.

## What to expect

OMSE 531 will focus of software requirements engineering as an essential and integrated element of software development processes. Although the main focus of the course is the role of requirements in the software development lifecycle (SDLC), attention will also be given to the impact of requirements engineering on other SDLC activities as well.

Software engineering processes as well as techniques will be covered.

Students will be expected to complete two individual assignments using the programming language *Prolog* which will focus on rule-based evaluation of formal specifications. Students are not expected to have any previous experience with Prolog prior to this course.

## Text

*Requirements Engineering: Fundamentals, Principles, and Techniques*, Klaus Pohl, First Edition, 830 pp., Springer, 2010. ISBN-10: 3642125778 ISBN-13: 978-3642125775

*Additional readings will be assigned from papers distributed on-line.*

## Course Schedule (Spring Quarter, 2012)

Class Date	Session	Topic	Text	Assignment Due
3-Apr	1	Introduction To Software Requirements Engineering		
10-Apr	2	Fundamentals and Framework	Ch 1-6	
17-Apr	3	Goals and Scenarios	Ch 7-12	
24-Apr	4	Solution-oriented Requirements	Ch 13-15	
1-May	5	Elicitation and Negotiation	Ch 21-26	Req. Framework
8-May	6	Mid-term Examination		
15-May	7	Specification and Documentation	Ch 16-20	
22-May	8	Formal Specification	TBD	
29-May	9	Validation	Ch 27-29	
5-Jun	10	Management	Ch 30-33	Req. Checking
12-Jun	11	Final Examination		

## Measuring Student Progress

Assessment	Points
Quizzes	80
Discussion	80
Assignments	100
Midterm	100
Final	100
<b>Total</b>	<b>460</b>

## **Aims and Objectives of the Course**

Upon completion of this course, each student should be able to:

- A. Outline technical problems encountered in the requirements engineering process
- B. Discuss merits and drawbacks of formal in informal methods used in requirements engineering.
- C. Understand and be able to use various methods for requirements elicitation.
- D. Discuss the use of requirements engineering methods in conjunction with current engineering processes, such as Agile methods.
- E. Develop a basic automated requirements analysis and checking system.
- F. Know how to manage the requirements engineering process for a team of software engineers.

To succeed in this course students will:

- A. Attend lectures
- B. Read assignments from texts and references
- C. Participate in discussions
- D. Complete a series of course assignments
- E. Pass examinations and quizzes.

## General Instructions

The material in each session builds upon the material covered in previous sessions; therefore, it is essential that you not fall behind in your work.

If you are forced to miss deadlines or are unable to participate in on-line activities or assignments due to work or illness, please make arrangements with your professor before you miss so that we can work out a plan to make up missed items. Always contact your professor as soon as possible if you need help or have any questions.

## Weekly Assignments

Readings are assigned each week except for weeks when there are examinations. You are expected to complete the readings in advance, and relate them to the lecture material. On some weeks, you will require to complete an on-line quiz.

There will be an on-line discussion of the material from the weekly reading except for weeks when there are examinations. Timely participation in the discussions is essential for credit.

All assignments are due at the stated time - *no late assignments will accepted and no make-up exams will be given, except in pre-arranged and documented emergency situations.*

## Course Assignments

The course assignments will consist of a variety of small assignments related to the lecture topics. Students will do some work related to the course topics: requirements, design, test planning, and so forth. Some of these assignments will require participation in small teams.

## Policy on Student Collaboration

You are encouraged to discuss the course material and the assignments with other students, but *all assigned work must be done by individual students unless you are explicitly told otherwise by the course professor.* Please read the document detailing OMSE policy on academic honesty. Please contact me, your professor, if you have any doubts about the propriety of your course activities.

## Class Participation

Your class participation grade will be based in part on your attendance and participation in the class discussion periods.