C0S430: Software Engineering

Spring 2010

Instructor: Suad Alagić

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1 Lecture Hours

Monday, Wednesday 2:45 - 4:00 PM

2 Office Hours

Monday, Wednesday 1:15 - 2:45 PM

3 Textbooks

• B. Bruegge and A.H. Dutoit, Object-oriented Software Engineering, Prentice Hall.

• J. Albahari and B. Albahari, C# 3.0 in a Nutshell, O’Reilly.

• K. R. M. Leino and P. Muller, Using Spec# language, methodology, and tools to write bug-free programs, Tutorial, Microsoft Research 2009.

4 Prerequisites

This course requires background in object-oriented programming languages.

5 Course Contents

• The first part of the course is an overview of the main principles, methodologies and tools of object-oriented software engineering.

• The second part of the course covers a specific object-oriented software technology to be used for implementing the projects in the course.

• The third part of the course will cover object design with contracts based on the C# assertion language Spec#.

• A major component of the course is a case study. This is a design and implementation project to be carried out through the project assignments in the course.
6 Topics

Specific topics to be covered are:

- Modeling with UML
- Requirements elicitation
- Analysis: from use cases to objects
- System design
- Object design with contracts
- Object-oriented software technology: C#.
- Object-oriented assertion languages: Spec#
- Mapping models to code.

7 Course outcomes

- The general main outcome is the students’ ability to apply design and development principles in the construction of software systems of varying complexity.
- More specifically, an outcome is the ability to use the totality of techniques and tools of object-oriented software engineering.
- Another specific outcome of this course is the acquired knowledge and experience in using C# software technology.
- A more advanced outcome is the knowledge and experience with the design and programming by contract and the usage of object-oriented assertion languages, Spec# in particular.
- A practical outcome is experience in the design and implementation of a complex case study.

8 Grading

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<tr>
<th>Percentage of the overall grade</th>
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<tr>
<td>Project Assignments</td>
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<td>Mid-term Exam</td>
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<td>Final Exam</td>
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9 Final Exam

The final exam according to the USM schedule.