

COM 421, 430, Software Engineering I, II

American University of Central Asia
Software Engineering Department

1 Course Information

Course IDs

COM 421, 3705

COM 430, 3881, 3881

Course Repository

<https://github.com/auca/com.421-430>

Place

AUCA, laboratory G31

Time

Monday 10:50

Friday 10:50

2 Prerequisites

COM 117, Programming II

COM 324, Algorithm Analysis

3 Contact Information

Instructor

Toksaitov Dmitrii Alexandrovich

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Office

AUCA, Room 315

AUCA, Media Laboratory

Office Hours

Monday 12:45–17:00

Tuesday 15:35–17:00

Thursday 12:45–17:00

Friday 12:45–17:00

4 Course Overview

The course introduces students to software engineering, teaching each of the individual steps of the software life cycle: requirements, design, coding, testing and software delivery. The course covers estimating man months to complete a project and writing project proposals. Along with the theory, students will go through all the stages of software development on their own projects. This is a two-semester course designed for Software Engineering majors and minors.

5 Topics Covered

- Software engineering concepts
- Software development methodologies
- Agile software development
- Requirements engineering
- System design and modeling
- System implementation
- Software testing
- Software evolution
- Project management
- Dependability and security

6 Practice Tasks

Students are required to finish 6 practice tasks. The tasks are based on topics discussed during lectures. Each task should be finished during the class to receive a grade.

7 Course Projects

The course contains two projects for each semester. Each project requires to develop a software product for an imaginary customer. Small teams of 4 students will compete to deliver solutions to a specified problem. Teams will go through all steps of software production such as requirements specification, software design, construction, testing, deployment, and maintenance. Students will get a chance to practice agile methodologies such as Scrum and Kanban, work with Version Control Systems (VCS) such as Git or Mercurial, work with project management systems, learn to test their systems, try out Test-Driven Development, practice Continuous Integration (CI) and Continuous Delivery (CD).

8 Final Quizzes

At the end of each semester students will get a quiz on topics discussed during the course.

9 Reading

Software Engineering (9th Edition) by Ian Sommerville (AUCA Library Call Number: QA76.758.S657 2011, ISBN: 978-0137035151)

9.1 Supplemental Reading

1. The Mythical Man-Month: Essays on Software Engineering, Second Edition by Frederick P. Brooks Jr. (ISBN: 858-0001065793)
2. Extreme Programming Explained: Embrace Change, 2nd Edition by Kent Beck, Cynthia Andres (ISBN: 978-0321278654)
3. Essential Scrum: A Practical Guide to the Most Popular Agile Process by Kenneth S. Rubin (ISBN: 007-6092046028)
4. Test Driven Development: By Example by Kent Beck (ISBN: 978-0321146533)
5. Code Complete: A Practical Handbook of Software Construction by Steve McConnell (AUCA Library Call Number: QA76.76.D47M39 2004, ISBN: 079-0145196705)
6. Design Patterns: Elements of Reusable Object-Oriented Software by Erich Gamma, Richard Helm, Ralph Johnson, John Vlissides (AUCA Library Call Number: QA 76.64 D47 1995, ISBN: 978-0201633610)
7. Refactoring: Improving the Design of Existing Code by Martin Fowler, Kent Beck, John Brant, William Opdyke, Don Roberts (AUCA Library Call Number: QA76.76.R42 F695 1999, ISBN: 978-0201485677)

10 Grading

- Practice tasks (20%)
- Course project (several parts)
 - Major part of the final grade (60%)
- Final quiz (20%)
 - 90%–100%: A
 - 80%–89%: A-

- 70%–79%: B+
- 65%–69%: B
- 60%–64%: B-
- 56%–59%: C+
- 53%–55%: C
- 50%–52%: C-
- 46%–49%: D+
- 43%–45%: D
- 40%–42%: D-
- Less than 39%: F

11 Rules

Students are required to follow the rules of conduct of the Software Engineering Department and American University of Central Asia.