

# Software Architecture (SWE 443) – Spring 2017 Syllabus

SWE 443 - Section 001, Spring 2017

Tuesday/Thursday, 9:00-10:15am

Room: TBA

## Instructor:

Dr. Ulrich Norbistrath

Email: [unorbisr@gmu.edu](mailto:unorbisr@gmu.edu)

Phone: 678-856-6638

Web: <http://ulno.net>

Course Homepage: <http://teaching.ulno.net/sa>

Office Hours (only by appointment): Tuesday, 10:30-12:30, alternatively Thursday 10:30-12:30 (room also by appointment)

## Description:

“A picture is worth a thousand words”. Can we apply this also to software and software development? As with so many questions in life, the answer is yes and no. In this class, we will learn how to describe parts of the software development process with images and descriptive words to form different software architectures. We will see how these allow us to break software into components, describe their relations and even help us facilitate agile software development. We will use a methodological approach to design several course projects and review and improve the corresponding architectures. We will use software architectures for different levels of abstraction and learn how to find the correct level of abstraction for a respective problem.

As software architecture plays not only an important role in the actual coding effort, we will also practice its effect on requirements engineering and testability.

Most of the class will be hands-on. Expect to write, design, discuss, and code a lot. We will apply Scrum for our team management and use Kanban to manage our projects. We will manage our code via git on Github.

## Learning Objectives

Upon completion of this course, you should be able to:

- Understand, read, and evaluate different architectural styles for existing software systems.
- Recover the architecture of a software system by analyzing its code.
- Describe a system's architecture accurately using views of the code and run-time structures.
- Use existing tools and architectural frameworks to expedite software design.
- Design a software system that satisfies a specification of requirements.
- Discuss the pros and cons of architectural alternatives.

## Prerequisite

Grade of C or better in SWE/CS 321.

Ability to program in Java.

## Readings

Norbisrath, U., Zündorf, A, Jubeh, R. (2013) Story Driven Modeling. CreateSpace Independent Publishing Platform, 2013, S. 1-333, ISBN 978-1483949253.

We will also be using Slack or Piazza for discussions during the semester.

Additional readings may be provided during the semester.

## Grading

The grade for the course will be based on the following components:

- Assignments (30%)
- Participation in discussions and class presence (10%)

- Mid-term Exam (20%)
- Course project and coding (40%)

The midterm exam is closed book. There is no final exam. Final assessment is based on the course project and its presentation and coding participation.

Contesting of grades on any/all submissions must be requested within one week of the item's return. No grade changes will be considered subsequent to that deadline, or after the final exam meeting.

## **Honor Code**

You are expected to abide by the [University's honor code](#) and the [CS Department's Honor Code and Academic Integrity Policies](#) during the semester. This policy is rigorously enforced. All class-related assignments are considered individual efforts unless explicitly expressed otherwise (in writing). Review the university honor code and present any questions regarding the policies to instructor. Cheating on any assignment will be prosecuted and result in a notification of the Honor Committee as outlined in the GMU Honor Code.

## **Learning Disabilities**

If you are a student with a disability and you need academic accommodations, please see me and contact the [Disability Resource Center \(DRC\)](#) at 993-2474. All academic accommodations must be arranged through the DRC.