# SE480 – Software Architecture I

College of Computing and Digital Media
DePaul University

Term: Autumn 2019
Classroom section: Thu 5:45PM – 9:00PM, 14EAS 00801 at Loop Campus
Course homepage: https://d2l.depaul.edu/d2l/home/700976
Drop date (no penalty): September 24, 2019

Instructor: Steven Engelhardt
Office hours: Thu 4:00PM – 5:30PM, CDM 428
Phone #: 312-362-8735 (only during office hours)
Email: sengelha@depaul.edu

## Description

The software architecture process is concerned with describing, evaluating, and designing systems at the architectural level. This course will discuss the role of architecture and the architect in the software development cycle. It will introduce architectural patterns and tactics, architecture assessment techniques, architecture driven design, and techniques for documenting architectures. The course will involve design, development, and assessment activities.

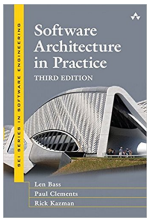
## Prerequisite(s)

SE450

## Contacting the Instructor

The best way to contact me is via email at sengelha@depaul.edu. Emails will be returned within 24 hours. If you need to meet with me please either come to regular office hours or email me to set up an alternate meeting time. I do not have access to voice mail on my office phone.

## Readings




**Required**: Bass, Clements, and Kazman. *Software Architecture in Practice, Third Edition.* Upper Saddle River, N.J. : Addison-Wesley, 2013. ISBN: 978-0-321-81573-6.

Lecture notes and supplementary materials may be provided by the instructor.

## Learning Objectives

Following this course all students should be able to:

- *Understand* the role of the Software Architect

- *Argue* the importance and role of software architecture in large-scale software systems
- *Identify* architecturally significant requirements
- *Map* a functional architecture onto a technical architecture
- *Understand* principles of good architectural design
- *Select* and *implement* appropriate architectural styles (patterns) and tactics/strategies
- *Design* preliminary software architectures which take into consideration quality goals such as reliability, performance, and scalability
- *Communicate* and *describe* software architectures both verbally and in writing
- *Evaluate* the coming attractions in software architecture research and practice

## Course Outline

*The below course outline is tentative and may be subject to change.*

| Wk | Date | Topics Covered | Required Reading(s) | Assignments |
|---|---|---|---|---|
| 1 | Sep 12 | Introduction and overview | SAIP Ch. 1-4 | |
| 2 | Sep 19 | Availability, safety | SAIP Ch. 5, 12 | Quiz 1 Due |
| 3 | Sep 26 | Security, observability | SAIP Ch. 9 | HW1 Due |
| 4 | Oct 3 | Performance, scalability | SAIP Ch. 8 | Quiz 2 Due |
| 5 | Oct 10 | Interoperability, modifiability, testability, deployability | SAIP Ch. 6, 7, 10 | HW2 Due |
| 6 | Oct 17 | Architectural patterns | SAIP Ch. 13 | Quiz 3 Due |
| 7 | Oct 24 | Architecture in the lifecycle | SAIP Ch. 15-22 | HW3 Due |
| 8 | Oct 31 | Service-oriented architecture, microservices | Supplemental | Quiz 4 Due |
| 9 | Nov 7 | Cloud-native architecture, reactive architecture, event-driven architecture | Supplemental | HW4 Due |
| 10 | Nov 14 | Case studies, industry examples | Supplemental | Quiz 5 Due |
| 11 | Nov 21 | Final exam | | HW5 Due |

## Grading

Grades in the course will be determined as follows:

| | |
|---|---|
| Quizzes | **25%** |
| Quiz 1 | 5% |
| Quiz 2 | 5% |
| Quiz 3 | 5% |
| Quiz 4 | 5% |
| Quiz 5 | 5% |
| Homework | **50%** |
| HW1 | 10% |
| HW2 | 10% |
| HW3 | 10% |
| HW4 | 10% |
| HW5 | 10% |
| Final Exam | **25%** |
| **Total** | **100%** |

# Course Policies

## Changes to Syllabus

This syllabus is subject to change as necessary during the quarter. If a change occurs, it will be thoroughly addressed during class, posted under Announcements in D2L and sent via email.

## Online Course Evaluations

Evaluations are a way for students to provide valuable feedback regarding their instructor and the course. Detailed feedback will enable the instructor to continuously tailor teaching methods and course content to meet the learning goals of the course and the academic needs of the students. They are a requirement of the course and are key to continue to provide you with the highest quality of teaching. The evaluations are anonymous; the instructor and administration do not track who entered what responses. A program is used to check if the student completed the evaluations, but the evaluation is completely separate from the student's identity. Since 100% participation is our goal, students are sent periodic reminders over three weeks. Students do not receive reminders once they complete the evaluation. Students complete the evaluation online in CampusConnect.

## Academic Integrity and Plagiarism

This course will be subject to the university's academic integrity policy. More information can be found at http://academicintegrity.depaul.edu/. If you have any questions be sure to consult with your professor.

## Academic Policies

All students are required to manage their class schedules each term in accordance with the deadlines for enrolling and withdrawing as indicated in the University Academic Calendar. Information on enrollment, withdrawal, grading and incompletes can be found at: http://www.cdm.depaul.edu/Current%20Students/Pages/PoliciesandProcedures.aspx

## Students with Disabilities

Students who feel they may need an accommodation based on the impact of a disability should contact the instructor privately to discuss their specific needs. All discussions will remain confidential. To ensure that you receive the most appropriate accommodation based on your needs, contact the instructor as early as possible in the quarter (preferably within the first week of class), and make sure that you have contacted the Center for Students with Disabilities (CSD) at:

Email: csd@depaul.edu
Lewis Center 1420
25 East Jackson Blvd.
Phone number: (312)362-8002
Fax: (312)362-6544
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