

SE480 – Software Architecture I

College of Computing and Digital Media
DePaul University

Term: Autumn 2020

Classroom section: Thursday 5:45PM – 9:00PM, Online via Zoom

Course homepage: <https://d2l.depaul.edu/d2l/home/767377>

Drop date (no penalty): Tuesday, September 22, 2020

Instructor: Steven Engelhardt

Office hours: Thursday 4:00PM – 5:30PM, Online-only, by Appointment

Email: sengelha@depaul.edu

<https://powcoder.com>

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

<https://powcoder.com>

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

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Course Outline

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

Wk	Date	Topics Covered	Required Reading(s)	Assignments
1	Sep 10	Introduction and overview	SAIP Ch. 1-4	
2	Sep 17	Availability, safety, etc.	SAIP Ch. 12	Quiz 1 Due
3	Sep 24	Security, observability	SAIP Ch. 9	HW1 Due
4	Oct 1	Performance, scalability	SAIP Ch. 8	Quiz 2 Due
5	Oct 8	Interoperability, modifiability, testability, deployability	SAIP Ch. 6, 7, 10	HW2 Due
6	Oct 15	Architectural patterns	SAIP Ch. 13	Quiz 3 Due
7	Oct 22	Architecture in the lifecycle	SAIP Ch. 15-22	HW3 Due
8	Oct 29	Service-oriented architecture, microservices	Supplemental	Quiz 4 Due
9	Nov 5	Cloud-native architecture, reactive architecture, event-driven architecture	Supplemental	HW4 Due
10	Nov 12	Case studies, industry examples	Supplemental	Quiz 5 Due
11	Nov 19	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 Campus Connect.

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, please 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
TTY: (773) 325-7296