

CSCI 5010: Software Architecture

Department of Computer Science and Engineering

Course Syllabus – Fall, 2022

Instructor:	Javier Pastorino (website)	Class Days:	Mon & Wed
Email:	javier.pastorino@ucdenver.edu	Class Times:	9:30 – 10:15am
Office:	LSC 320-E	Classroom:	LSC 844
Office Hours:	<i>Tuesdays</i> . Schedule appointment on Calendly .		

Course Description

Catalog Data

This course will focus on two major areas. The first part of the course will cover Software Requirements Analysis and Development as well as Software Architecture and the Soft Skills needed by high level Software Architects. The second part of the course will cover how Persistent Data fits into different types of Software Systems. The primary focus of the second part of the course will be on incorporating larger scale Enterprise Data Systems into Software Systems and will be an application of the first part of the course material.

Course Format

This course will be conducted in an in-person setting with two 75-minute sessions each week.

Prerequisites

BS in Computer Science or equivalent experience or instructor permission, or Graduate Standing.

Co-requisites

This course has no co-requisites.

Textbooks & Tools

The course will require the following textbook:

- **Software Architecture in Practice, 4th Edition.** Len Bass, Paul Clements, and Rick Kazman. Addison-Wesley. ISBN-13: 978-0-136-88609-9. (**Required**)
- **Documenting Software Architectures, Views and Beyond, 2nd Edition.** P. Clements, F. Bachmann, L. Bass, et. al. Addison-Wesley. ISBN-13: 978-0-321-55268-6 ([Recommended](#))
- **Clean Architecture: A Craftsman's Guide to Software Structure and Design.** R. Martin. Pearson. ISBN-13: 978-0-134-49416-6 ([Supplemental](#))
- Other materials may be announced to deepen knowledge in specific topics.

Topics

- Software architecture. Quality Attributes
- Architectural solutions: interfaces, virtualization, cloud, and mobile architectures.
- Designing and evaluating architectures.
- Software architecture and the organization.

Course Schedule:

Week	Date	Topic	Readings
#1	Mon, Aug 22	Introduction. What is Software Architecture?	Ch 1
	Wed, Aug 24	Why is Software Architecture important?	Ch 2
#2	Mon, Aug 29	Software Design Best Practices	
	Wed, Aug 31	Quality Attributes & Design Patterns	Ch 3 - 14
#3	Mon, Sep 05	Labor Day - No classes	
	Wed, Sep 07	Quality Attributes & Design Patterns	
#4	Mon, Sep 12	Quality Attributes & Design Patterns	
	Wed, Sep 14	Quality Attributes & Design Patterns	
#5	Mon, Sep 19	Quality Attributes & Design Patterns	
	Wed, Sep 21	Review	
#6	Mon, Sep 26	Quiz #1	
	Wed, Sep 28	Architectural Solutions: Interfaces	Ch 15
#7	Mon, Oct 03	Architectural Solutions: Interfaces	
	Wed, Oct 05	Documenting Software Architectures	Ch 22
#8	Mon, Oct 10	Documenting Software Architectures	
	Wed, Oct 12	Documenting Software Architectures	
#9	Mon, Oct 17	Architecture and Requirements	Ch 19
	Wed, Oct 19	Architecture and Requirements	
#10	Mon, Oct 24	Designing an Architecture	Ch 20
	Wed, Oct 26	Designing an Architecture	
#11	Mon, Oct 31	Evaluating an Architecture	Ch 21
	Wed, Nov 02	Review	
#12	Mon, Nov 07	Quiz #2	
	Wed, Nov 09	Virtualization and Cloud Architectures	Ch 16
#13	Mon, Nov 14	Cloud Architectures	Ch 17
	Wed, Nov 16	Mobile Architectures	Ch 18
#14	Mon, Nov 21	Fall Break	
	Wed, Nov 23	Fall Break	
#15	Mon, Nov 28	Managing Architecture Debt	Ch 23
	Wed, Nov 30	The role of Software Architects in Projects	Ch 24
#16	Mon, Dec 05	The role of Software Architects in Projects	
	Wed, Dec 07	Architecture Competence	Ch 25
Finals	Mon, Dec 12	Finals Week - Final Exam - TBA	
	Wed, Dec 14	Finals Week - Final Exam - TBA	

The previous schedule is tentative, and it may change. Please, check the current one on Canvas.

Assessments

There will be four types of assessments in this course.

- **Homework:** There are specific problems assigned from the relevant chapters for most lectures. These will not be turned in nor graded, but you be expected to participate in the discussion of problems like these during class.
- **Quizzes:** There will be two (2), in-class quizzes throughout the semester that will cover the assigned material.
- **Final Exam:** There is a final, comprehensive exam during final's week. This will be closed book and closed notes.

- **Attendance:** Attendance is required for this course. As with all science courses, you will have an easier time learning the material if you attend the lectures and participate in class discussions. Attendance will be controlled but not graded.
- **Project and Assignments:** There will be a term project with four (4) incremental deliverables.

Due Dates: all assessments due dates will be posted on Canvas. If an assessment deadline is postponed, that change will be reflected on the assessment page on Canvas.

Late Work Policy: All assignments are due on the assigned due date. Any assignment not turned in by the due date are late. Late assignments that are turned in within two (2) days will have 20% deducted. No submissions will be accepted after two (2) days late, and those will get a grade of 0%.

Grading Policy

- **Grade Dissemination:** All grades will be posted on Canvas. If you want to discuss the assessment feedback or grade schedule an appointment no later than a week after the assessment grades are posted. After that the grades will be final.
- The **Final Grade** will be distributed among the assessments following the table below.

Assessment Group	Grade
Quizzes	40%
Project	40%
Final Exam (comprehensive)	20%

- **Final Letter Grade** will be converted using the following scale:

0	F	60	61	D-	63	64	D	66	67	D+	69	70	C-	73	74	C	76	77	C+	79	80	B-	83	84	B	86	87	B+	89	90	A-	93	94	A	100
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- **Grades of “Incomplete”:** The current university policy concerning incomplete grades will be followed in this course. Incomplete grades are given only in situations where unexpected emergencies prevent a student from completing the course and the remaining work can be completed the next semester. Your instructor is the final authority on whether you qualify for an incomplete.

Communications

Class wide announcements will be posted on Canvas announcements. Make sure you have configured the notifications not to miss those. You can set email notifications or use the Canvas app in your mobile device with push notifications.

If you need to contact me, please **use email**, do not use Canvas messages (I don't read those). I usually reply to emails within 24-48 hours. My email is listed at the beginning of this document. Include **CSCI5010** in your subject line for a quick response. However, to discuss exercises/problems, please schedule an appointment during my office hours, as I will usually not be able to answer those questions over email. Office appointments are required and provided in a first in first served basis. Use the Calendly online system (link on top of the document) to schedule an appointment.

Code of Conduct

Student expectations

- **Civility:** Our commitment is to create a climate for learning characterized by respect for each other and the contributions each person makes to class. Student should follow the same commitment.
- **Professionalism:** Since mobile devices can be a distraction during class, I ask that all devices be put into “silent” mode and not utilized during class; this include any notifications that you have in your devices while on a remote session.
- **Classroom Devices:** Out of respect for everyone in the classroom, if you would like to record the lectures you must first receive my approval. I generally will approve the request, but I first would like to speak with you concerning the scope of the recording. Otherwise, all electronic devices like cellphones or tables, should be put away during class, unless actively used for class-related activities.

Collaboration and Cheating

I encourage you to review material and discuss ideas with other students, and to work on problems you encounter. Discussions often help to clarify problems and resolve difficulties — feel free to take advantage of this to improve your understanding of the material, and to complete assignments, but **make sure you then create your own work**. It’s important that you go through the program design, coding, and debugging processes yourself, or you will not be developing your own programming skills and understanding.

If you have any questions about what this means, please see me.

We reserve the right to use automated similarity metrics to detect plagiarism in this course.

All students must create their work on their own!

Any instances of cheating will result in a zero for the assignment, a grade of zero (an “F”) in the course, or sanctions determined by the college (including suspension and expulsion). Sharing solutions (whole or partial) it is not allowed, and it is considered plagiarism. Using somebody else’s solution as your own is also considered plagiarism. This includes taking someone else’s solution with or without their permission or asking a third party, like a tutor, for the solution. If you need help come to your instructor’s or TA’s office hours. All students must follow the [College of Engineering, Design and Computing - Student Honor Code](#).

Mental Health Resources:

CU Denver faculty and staff understand the stress and pressure of college life. Students experiencing symptoms of anxiety, depression, substance use, loneliness or other issues affecting their mental well-being, have access to campus support services such as the [Student and Community Counseling Center](#), the [Wellness Center](#), and the [Office of Case Management](#). Students also have access to the [You@CUDenver](#) on-line well-being platform available 24/7. More information about mental health education and resources can be found at [Lynx Central](#) and CU Denver’s [Health & Wellness](#) page. Students in imminent crisis can contact [Colorado Crisis Services for immediate assistance](#) 24/7 or walk-in to the counseling center during regular business hours.

Last updated on August 16, 2022.