

CSC 583 – Software Engineering Process/Software Architecture

Instructor	Jack Han	E-Mail	jhan@csudh.edu
Classroom	II 3310	Class Meeting	Tuesday 7:00pm – 9:45pm
Office Room	NSM A133	Office Hours	Monday 5pm-7pm
Office No.	310 243 2624		

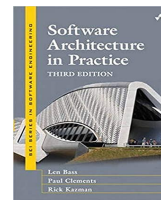
CATALOG DESCRIPTION:

The main object of this course is to introduce software architecture and the technical, project, business and professional contextual lenses; describe how decisions are made based on the desired quality attributes for a software system; devote to how a software architecture is related to the other portion of the life cycle; deal with the business of architecting from economic, organizational, and constructive perspectives; and discuss some important emerging technologies and how architecture relates to these technologies. The course provides a detailed sight of the software architecture and design that stresses the design and manufacture of complex software products, including software quality attributes, software architecture and design space, software architecture models and styles, and software architecture patterns and tactics. The course will focus not only on the principles of software architecture and design, but also on the implementation and practices of software architecture development.

PRE-REQUISITE: CSC481: Software Engineering
CSC321: Programming Languages or
CSC582: Object-oriented Analysis and Design

TEXTBOOK:

Bass, L., Clements, P., and Kazman, R.,
Software Architecture in Practice, 3rd Ed.
Addison Wesley, 2013,
ISBN-13: 978-0-321-81573-6



REFERENCES:

1. Qian, K., Fu, X., Tao, L., Xu, C., and Diaz-Herrera, J., *Software Architecture and Design Illuminated*, Jones and Bartlett, 2010, ISBN-13: 978-07637-5420-4.
2. Shaw, M., and Garlan, D., *Software Architecture: Perspectives on an Emerging Discipline*, Prentice Hall, 1996, ISBN-10: 0-13-182957-2
3. Taylor, R., Medvidovic, N., and Dashofy, E., *Software Architecture: Foundations, Theory, and Practice*, John Wiley & Sons, Inc., 2009, ISBN-13: 978-0470167748

COURSE LEARNING OUTCOMES:

This course takes a pragmatic approach aimed at providing a real-world software architecture styles and design experience. It will introduce the basic concepts of software architecture, architecture styles, quality attributes, architecture patterns, views and tactics, as well as architecture design guidelines. The class will discuss the software architecture design space, software structures, elements, and connectors. The class will have a semester-long project to provide students hands-on experience of software architecture design.

At the end of the course, students will be expected to

1. Understand the software architectural structures and views, including module structures, component-and-connector structures, and allocation structures;
2. Understand various software architecture contexts such as technical context, project life-cycle context, business context, professional context;
3. Understand software quality attributes including availability, interoperability, modifiability, performance, security, testability, and usability;
4. Master various architecture tactics and patterns, such as layered patterns, broker pattern, MVC pattern, pipe-and-filter pattern, client-server pattern, peer-to-peer pattern, multi-tier pattern, service-oriented architecture pattern, publish-subscribe pattern, shared-data pattern, map-reduce pattern, and blackboard pattern;
5. Be able to make various decisions for software architecture design based on the tactics of quality attributes;
6. Understand the functions and influence of the software architecture in the project life cycle, including requirements, analysis, design, implementation; and testing;
7. Be able to design, develop, analyze, document, and evaluate software architectures in terms of the software requirements and constraints.

REQUIREMENTS:

There will be ONE (1) mid-term test and ONE (1) final test, both of which will be essays.

SIX (6) quizzes will be given after class meetings, which will be multiple choices, truth/false, and short answer questions.

SIX (6) group discussions will be scheduled for every other week. Each group should discuss the given questions and summarize your discussions as the question answers for submission.

TWO (2) parts of a group project will be given for architecture design and analysis and will be scheduled for group presentation.

GRADING BREAKDOWN:

Quizzes:	18%,	3% each
Group Discussions:	24%,	4% each
Group Projects:	20%,	10% each
Midterm Essay:	18%	
Final Essay:	20%	

GRADING SCALE:

[95,100] = A	[90-95) = A-	
[85-90) = B+	[80-85) = B	[75-80) = B-
[70-75) = C+	[65-70) = C	[60-65) = C-
[55-60) = D+	[50-55) = D	below 50 = F

COURSE OUTLINE (Tentatively and subject to change)

Week	Topic and Chapter	Quizzes	Project
1 (8/30)	Lecture 1 - Part One: Introduction (Ch. 1-3)		
2 (9/6)	Group discussion 1	Quiz 1	
3 (9/13)	Lecture 2 - Part Two: Quality Attributes (Ch. 4-9)		Part 1
4 (9/20)	Group discussion 2	Quiz 2	
5 (9/27)	Lecture 3 - Part Two: Quality Attributes (Ch. 10-14)		
6 (10/4)	Group discussion 3	Quiz 3	
7 (10/11)	Project Part 1 Presentation		
8 (10/18)	Midterm Essay		
9 (10/25)	Lecture 4 Part Three: Architecture in the Life Cycle (Ch. 15-18)		
10 (11/1)	Group discussion 4	Quiz 4	
11 (11/8)	Lecture 5 - Part Three: Architecture in the Life Cycle (Ch. 19-22)		Part 2
12 (11/15)	Group discussion 5	Quiz 5	
13 (11/22)	Lecture 6 - Part Four: Architecture and Business (Ch. 23-25)		
14 (11/29)	Group discussion 6	Quiz 6	
15 (12/6)	Project 2 Presentation		
16 (12/13)	Final Essay		

COMPUTER INFORMATION LITERACY EXPECTATIONS

It is expected that students will:

1. Use Microsoft Word for word processing unless otherwise approved by the instructor,
2. Be familiar with using email as a communication tool and check your official campus email account at least every other day;
3. Be able to access websites and online course materials which may require Flash and other plug-ins;
4. Use the library databases to find articles, journals, books, databases and other materials;
5. Be able to create an effective PowerPoint presentation;
6. Be able to record audio (ideally video) to share with the instructor via the web; and
7. Have regular access to a computer and internet access for the term of this course.

TECHNOLOGY REQUIREMENTS:

Computer

You must have access to a reliable computer for this course. If you are on campus, and do not have a laptop, you can check out a laptop from the IT User Services Help Desk via [Technology Checkout Program](#). In addition, the [CSUDH Toro Lab](#) offers on campus access to workstations with a wide variety of commonly used software.

Visit the [CSUDH Academic Technology Online Courses Technical Requirements](#) page for more information on technology requirements.

Email:

All email communications from this course will go through your [Toromail](#). Toromail is the CSUDH student email system.

Internet and Campus Wireless Network:

You must have Internet access to participate in this course. If you are on campus, connect your laptop and mobile device to the internet using the [eduroam](#) campus wireless network.

Office 365:

Course work will require you to submit work in Word format (.docx files). Active CSUDH students have access to [Office 365 \(Word, Excel, PowerPoint\)](#) for personal desktop and laptop computers at no cost.

BLACKBOARD LEARN

You may access the course through Blackboard Learn <https://toro.csudh.edu>. You have the flexibility in an online course to study and participate according to your work and personal schedule within each week of study. However, you must still complete assignments by their required due dates.

Your challenge is to dedicate the required time for study within your personal schedule. This syllabus, including the schedule and due dates, should support you in managing time effectively. Marking your study and your online discussion time in your personal calendar also will help.

As part of your personal schedule, make sure you check the Announcements and my Online Office several times a week so that you can see if I have posted any new information about the course.

SPECIAL NEEDS

Online courses are required to meet ADA accessibility guidelines. This means that all aspects of the online learning experience are accessible. Please let the instructor know if you have adaptive software and hardware to assist you with taking this course or if you have any specific needs I should be aware of. The [CSUDH Student Disability Resource Center](#) (SdRC) is available to assist you during this course. The SdRC is available at (310) 243-3660 and can be reached by email at dss@csudh.edu.

TECHNICAL HELP

If you need technical help, refer to the following resources:

Login Issues:

For login issues related to Blackboard, Toromail and MyCSUDH, contact the [IT Help Desk](#) at (310) 243-2500, option 1. You can also create an [online service ticket](#) for login support. The IT

Help Desk also offers walk-in support. Visit the first floor of the library (north), C-108, for in-person help.

Password Resets:

CSUDH offers an easy, self-service [password reset service](https://password.csudh.edu/) at <https://password.csudh.edu/>. For additional assistance with password resets, contact the [IT Help Desk](#).

Blackboard Issues:

For issues or questions with Blackboard, contact the CSUDH Blackboard Support line at (310) 243-2500, option 2. You can also create an [online service ticket](#) for Blackboard support. If you are new to Blackboard or unfamiliar with a specific feature of Blackboard, [CSUDH Academic Technology](#) offers a series of PDF and video-based tutorials. Visit the [CSUDH Academic Technology Tutorials page](#) for more information.

CSU OPEN LAB HOURS

LIB – G 149	
Monday thru Thursday	8:00am to 11:00pm
Friday	8:00am to 5:00pm
Saturday	10:00am to 5:00pm
Sunday	12:00pm to 5:00pm

ACADEMIC INTEGRITY

Academic integrity is of central importance in this and every other course at CSUDH. You are obliged to consult the appropriate sections of the University Catalog and obey all rules and regulations imposed by the University relevant to its lawful missions, processes, and functions. **All work turned in by a student for a grade must be the students' own work.** Plagiarism and cheating (e.g. stealing or copying the work of others and turning it in as your own) will not be tolerated, and will be dealt with according to University policy. The consequences for being caught plagiarizing or cheating range from a minimum of a zero grade for the work you plagiarized or cheated on, to being dropped from the course.

Academic Honor Code:

Programming assignments must be done individually. Failure to do so will result in a violation of the CSUDH Academic Honor Code. The following cases will be considered as violations: identical code, and extremely similar code. Violations will be reported to the Office of Vice President of Academic Affairs.

Definition of Cheating and Plagiarism

CSUDH is dedicated to a high standard of academic integrity among its faculty and students. In becoming part of the California State University academic community, students are responsible for honesty and independent effort. Disciplinary action will be taken against any student who alone or with others engages in any act of academic fraud or deceit. (Read University Regulations in University Catalog)

Student Academic Appeals Process

Authority and responsibility for assigning grades to students rests with the faculty. However, in those instances where students believe that miscommunication, error, or unfairness of any kind may have adversely affected the instructor's assessment of their academic performance, the student has a right to appeal by the procedure listed in the Undergraduate Catalog and by doing so within thirty days of receiving the grade or experiencing any other problematic academic event that prompted the complaint.