

Software Design and Architecture (OO Design & Programming)

Course Introduction
Term 3, 2025

COMP2511, CSE, UNSW



Our Team

Course Convenor and Lecturer [Week 07 to 10]:

Dr Jesse Laeuchli (j.laeuchli@unsw.edu.au)

Lecturer [Week 01 to 05]:

Dr Ashesh Mahidadia (a.mahidadia@unsw.edu.au)

Course Admin Team:

Alvin Cherk, Daniel Khuu, Michael Mospan, Grace Kan

Tutors:

30+ passionate tutors!

Course Account Email: **cs2511@cse.unsw.edu.au**

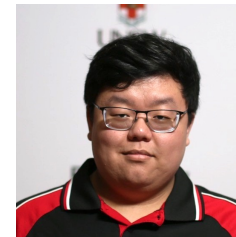
*(Unless you specifically require to contact a member of the admin team, please use the **above email** for any queries related to the course.)*



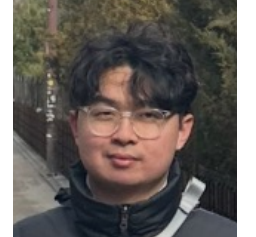
Jesse



Ashesh

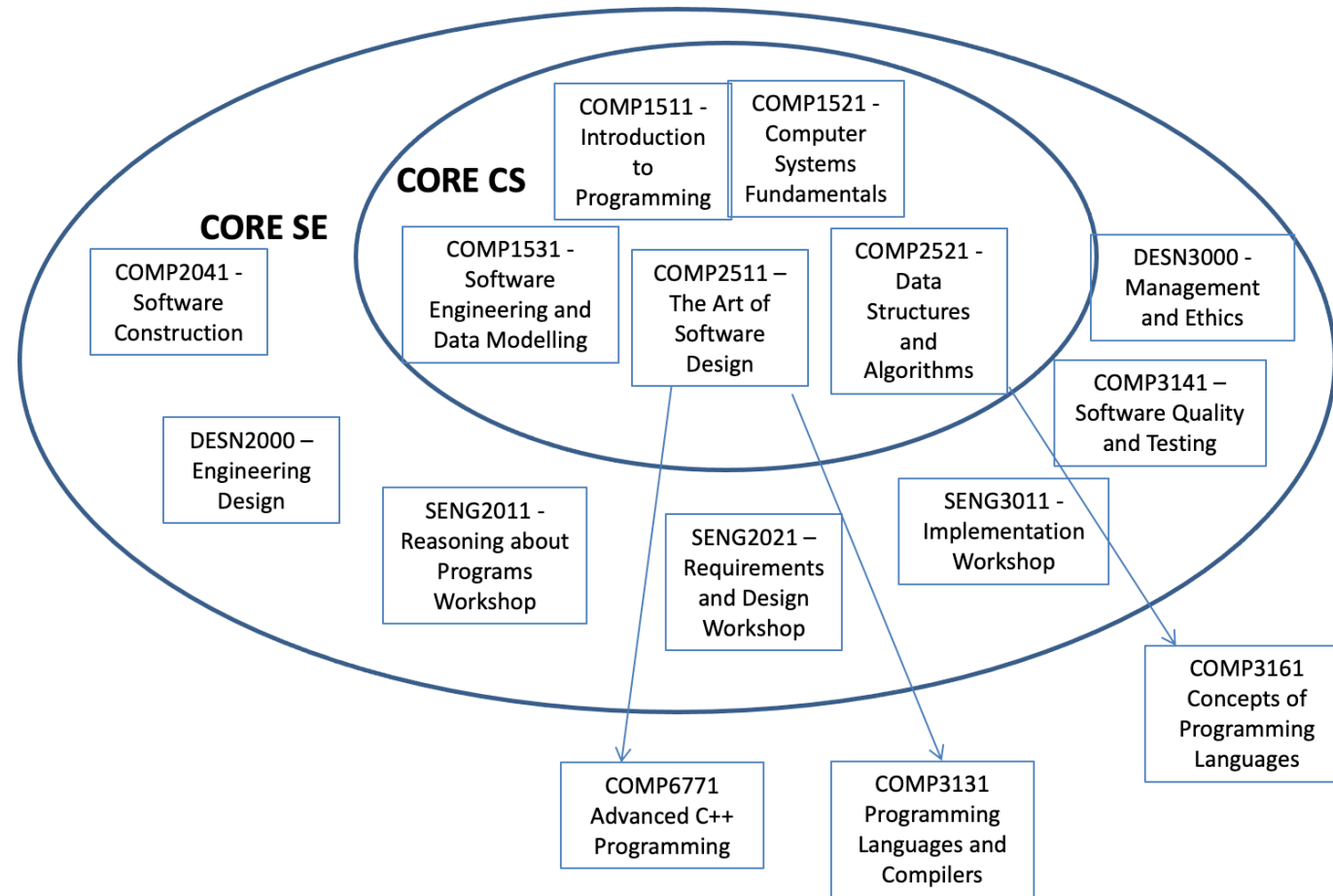


Alvin



Daniel

Course Context



The Story So Far: Course Context

COMP1511: Solving problems with computers, the wonder and joy of programming

COMP1521: Getting right down into the silicon

COMP1531: Solving problems in a team; programming in the large

COMP2521: Solving problems at scale using data structures and algorithms

COMP2511???

COMP2511

- ❖ We can write code, but how do we write good code?
- ❖ Designing elegant and beautiful software.
- ❖ Shades of Grey - things aren't clear cut; writing good software is an art.
- ❖ Grow from a programmer into a software engineer by following a systematic design and development strategy.

COMP 2511 Major Themes

- ❖ Analyse characteristics of **elegantly written software**, and learn how to create and maintain well-designed codebases
- ❖ Apply widely used **Software Design** and **Architectural Patterns** to create **extensible, flexible, maintainable** and **reusable software systems**
- ❖ Apply the principles of **Object-Oriented Design** to solve problems.

COMP 2511 Major Themes

- ❖ Create **medium-scale systems** from scratch, and work on existing systems as part of the Software Development Life Cycle.
- ❖ For **specific software development scenarios**, evaluate different design and architectural paradigms and methodologies based on their origins and suitability.
- ❖ Create software solutions using **an enterprise programming language** within an integrated development environment (IDE).

Credit teaching material

- ❖ No textbook, the lecture slides cover the required topics.
- ❖ However, you are strongly encouraged to read additional material and the reference books.
- ❖ In the lecture notes, some content and ideas are drawn from:
 - *Head First Design Patterns* , by Elisabeth Freeman and Kathy Sierra, The State University of New Jersey
 - *Head First Software Architecture*, by Raju Gandhi, Mark Richards, Neal Ford, O'Reilly Media, Inc.
 - *Fundamentals of Software Architecture*, 2nd Edition, by Mark Richards, Neal Ford
 - *Refactoring: Improving the design of existing code*, by Martin Fowler
 - Material from many popular websites.

How do we obtain our educational objectives?

- ❖ **Lectures:** 4-hour lectures (9 weeks)
- ❖ **Tutorials:**
 - ❖ A 1-hour tutorial session per week, which is scheduled before the lab.
 - ❖ Online Tutorials/Labs will be run via **MS Teams** .
 - ❖ Tutorials are understanding-driven - interactive examples to illustrate concepts discussed in lectures
 - ❖ Solutions and recording to tutorials posted at the end of each week

How do we obtain our educational objectives?

❖ Labs:

- ❖ 2 hours each week, straight after tutorial
- ❖ Like most CSE core courses
- ❖ Lab retros posted after due date on course website
- ❖ Online Run via MS Teams

Assessments

Coursework (15%)

- ❖ Your coursework mark is made up of marks associated with the lab exercises.
- ❖ There are **eight** labs, each worth **ten** marks.
- ❖ We will cap total coursework marks at 70 (which will translate to 15%), leaving **one lab as a buffer**.
- ❖ If you attend all seven labs, we will add all seven lab marks and cap the total coursework marks to 60.
- ❖ The specific marking criteria for each lab will be outlined in the respective specifications.
- ❖ A general guide for the criteria that your tutor/lab assistant will use to assess you is available on the class webpage.
- ❖ You (students) must get your lab **manually marked** each week
- ❖ Lab09 (in Week 9) is an attendance and participation lab

Assignment I (15%)

- ❖ The marking criteria for the assignment will be outlined in the specification which will be released Tuesday of Week 2.
- ❖ Due Wednesday 3pm Week 5.
- ❖ Completed **individually**.

Assignment II (20 %)

- ❖ The marking criteria for the project will be outlined in the specification which will be released Thursday Week 5.
- ❖ Due **Wednesday 3pm week 10**
- ❖ Completed **individually**.

Final Exam (50%)

- ❖ In 25T3 the COMP2511 exam will be **held in person in the CSE Labs, and invigilated**.
- ❖ **All students** are required to take **the final exam in person**, even if they have enrolled in online classes. In 25T3, there will be no online exams.
- ❖ **Hurdle** : In order to pass the course, it is required for the student to achieve a **minimum of 40%** (20 out of 50) marks **in the final examination**.
- ❖ Students are eligible for a Supplementary Exam if and only if:
 - Students cannot attend the final exam due to illness or misadventure. Students must formally apply for a special consideration, and it must be approved by the respective authority.

Assumed Knowledge

- ❖ Confident programmers
 - Familiar with C and Python/JS programming concepts
- ❖ Able to work in a team
 - Git
 - Working with others
- ❖ Understand basic testing principles
- ❖ Understand basic software engineering design principles (DRY, KISS)

Assumed Knowledge

- ❖ What we don't assume:
 - Knowledge of Java
 - Understanding of Object-Oriented Programming
- ❖ **This is not a Java course**

Course philosophy

- ❖ A step up from first year courses
- ❖ Challenging but achievable
- ❖ Develop skills in time management, teamwork as well as critical thinking
- ❖ Highly rewarding

Support

- ❖ Supporting you is our job :)
- ❖ Help Sessions
 - Lots of them with fantastic tutors
 - Feedback on work, help with problems, clarifying ideas
 - You are expected to have done your own research and debugging before arriving

Support

- ❖ Course [Forum](#)
 - Ask questions and everyone can see the answers!
 - Make private posts for sharing code
 - Response time
- ❖ Course Account - cs2511@cse.unsw.edu.au
 - Sensitive/personal information
- ❖ During the project - [your tutor](#)
- ❖ Go to [help sessions](#) for help on concepts
- ❖ [Post on the forum](#) if you need more immediate lab feedback
- ❖ There are [no late extensions](#) on labs unless in extenuating circumstances, email cs2511@cse.unsw.edu.au

Support - UNSW

- ❖ **Special Consideration** -
<https://student.unsw.edu.au/special-consideration>
- ❖ **Equitable Learning Services** -
<https://student.unsw.edu.au/els>

Mental Health & Wellbeing

- ❖ UNSW Psychology & Wellness - <https://student.unsw.edu.au/mhc>
- ❖ UNSW Student Advisors - <https://student.unsw.edu.au/advisors>
- ❖ Reach out to us at cs2511@cse.unsw.edu.au
- ❖ Check in with each other
- ❖ Talk to someone

Technology Stack

- ❖ Java Version – JDK 17
- ❖ VSCode
- ❖ Gradle 8.8
- ❖ Gitlab (+ CI pipelines)

Feedback

- ❖ We love feedback :)
- ❖ Changes made to the course this term based on constructive student feedback
- ❖ We always want to continuously improve
 - This term, we are incorporating software architecture topics to enhance the course's relevance to real-world applications.
- ❖ Feedback form
- ❖ Course account

Respect

- ❖ Yourself, each other, course staff

It's time to lift off for 25T3 !!!!

