COMP30022 IT Capstone Project

Semester 2, 2025

Welcome!

Overview of Lecture

THE UNIVERSITY OF MELBOURNE

- Welcome and introductions
- What this subject is about
  - Transition to workforce
- Logistics: schedules (lectures and workshops); projects; assessment

Teaching Team

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Supervisors :

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Mentor v tutor (not scrum master)

Guest lecturers

Handbook Description

- *This subject is the capstone project for the Informatics major and the Computing and Software Systems major in the BSc. Students will work on a real life problem in a small team, supervised by a member of staff. Each team will analyse the information needs of users and develop working computational solutions. Students are expected to apply sound principles studied over the course of their degree to the formulation and solution of their problem.*

Role of a capstone subject

- Tie together what you have learned in your degree
- Facilitate your transition to world of employment
- Meet accreditation requirements

- University of Melbourne initiative for New Generation Capstone Units
  - Integration and extension of prior knowledge; Authentic and contextualised experiences; Challenging and complex scenarios; Student independence and agency; A concern with critical enquiry and creativity; Active dissemination and celebration

- *Problem: How to scale to 500 students and remain realistic!*

Key Points

- Teams of 5, self-selected more or less: all members must be in the same workshop; exceptions in extreme situations
- Each team assigned a mentor - primary resource and determinant of progress
- One lecture, one 2-hour workshop per week – including a stand up meeting with supervisor (*Attendance at workshops required, appreciate attendance at lectures!)*
- Professional practice: repository required, agile framework (inception +3 week sprints), lightweight logging of activity, peer review, report writing, ethics, reflection over the semester
- Assessment on both process and product; on both group and individual
- ***Logistics more defined than previous years (continuous improvement)***

2025 Projects

Projects determined by workshop

- ICN Victoria
- Customizable AI Use Scales Across Assessment Formats
- Provision IT
- Medical Pantry
- Research, Innovation and Commercialisation Apps
- Mental health service Navigation using LLMs
- Open Gateway Project
- Networking Companion
- We Roster

- Algorithms in Action
- New Methods of Marketing and Purchasing
- Revamping Object Oriented Software Development with GenAI
- Forensic Tool for Detecting DeepFake & Synthetic Media
- No Moss
- Food Science App
- Assignment Moderation Tool
- Scheduling of Care Program
- Terrain
- Brokerage App

- See Canvas page for a Zoom recording introducing each project
- Register with a workshop supervisor
- We will not be able to accommodate first-preference for everyone, please be flexible

How to choose a project

- Learning experience is paramount
- Opportunity to learn skills you might not otherwise encounter
- Don’t restrict yourself only to projects you already have skills for
- Interest is a good motivating factor
- You will need to sign an IP agreement (to be provided). If you have concerns, discuss with Prof. Leon Sterling

A word about teams

- Software development is a team activity
- Communication is essential
- Bigger teams raise bigger issues
- Diversity is likely to be a strength, rather than a weakness
- New acquaintances often better team members than friends
- All are responsible for a team's success
- You will learn more about teams if you continue to the M. Eng (Software)
- Insistence on teams of 5 done for scalability purposes

Lecture Strands

- Evolving due to student feedback
- Agile development
- Software lifecycle – requirements, design, coding, testing, deployment
- Professional tools
- Ethics, professionalism & working in a team
- Student experience
- Transition to industry
- Gen AI use

Student quote

- COMP30022 is the first project I have ever been exposed to that has a complete development process, innovative, autonomous and requires the integration of fragmented knowledge. Admittedly, from my previous subject studies and project experience, I already had most of the knowledge that could be used in the development of this project, However, the challenge and sense of achievement of piecing together my existing and newly learned knowledge in this project, working in a team of five to deliver a real-world application-level app was unprecedented.

Student Quotes

- *The IT Project subject was a great experience. As a capstone subject, it pulled together all I had learnt over the past two and a half years at university. I then was required to demonstrate this knowledge in a real-world environment, working as a member of a software development team in order to deliver a product to a client. It was an incredibly rewarding experience, and one which I know will be very valuable to me as I transition into the workplace.*
- *This was honestly the most helpful subject for my career. It really brought all the pieces together throughout my degree and was a lot of fun.*
- *The Subject IT Project (COMP30022) has been the best subject that I have taken up in my undergraduate degree. The amount of real-world experience provided in this subject surpassed my expectations.*
- *There is no doubt that this subject is the most valuable one in my undergraduate studies.*

- *Freedom does not mean we will not learn anything; freedom with clear purpose actually helps us achieve a lot, as is evidenced in our project.*

Student quotes

- This subject was the most practical one I have taken so far at university, with a great deal of emphasis on career advice and making the transition from university study to the workforce. In the lectures, there were representatives from all sorts of technology industries, and they had advice on every aspect, from going into academic work, into large organizations, or even startups- and this was really insightful for me in making an informed decision for my own career after university. Everything about the subject is what I expect to see in the industry, from delegating work, to differing motivation and productivity levels across team members.
- .. it took me a few weeks to understand why this subject does not teach any language that we have to use before I realized that this subject is teaching how to work instead of how to code.

Lecture Schedule (tentative)

- Week 1 - Subject Intro
- Week 2 - Agile and Tools
- Week 3 - Requirements
- Week 4 - Guest Lecture (Transition to industry - Former Student Perspective)
- Week 5 - Architecture and coding
- Week 6 - Guest Lecture (Transition to industry - Employer Perspective)
- Week 7 - Evaluation and Testing
- Week 8 - Guest Lecture (Transition to industry - Experienced Professional Perspective)
- Week 9 - Deployment by DevOps
- Week 10 - Ethics and professionalism
- Week 11 - Delivery and Handover
- Week 12 - Presentations

Assessment

- Team processes and progress 45%
  - 15% after week 6
  - 15% after week 9
  - 15% after week 12
- Final product report: 25%
- Team presentation 10%
- Individual contribution including contribution statement and peer feedback 20%

Tools

- Flexibility to choose tools that suit your project …
- … but you should be using professional tools
- Your mentor must be able to access everything
- Consider tools for:
  - **Teamwork** (e.g. Confluence)
  - **Project management** (e.g. Trello, JIRA)
  - **Communication** (e.g. Slack, Teams)
  - **Source control** (e.g. GitHub)
  - **Code development**
  - **Testing**
  - **Deployment**

Goals for first week

- Lock down team, workshop time and project
- Establish repository and communication tools

Use of Gen-AI in Software Project subjects

Observations

- Software subjects prepare students for realistic projects
  - Students need to be exposed to ‘right’ way to use tools
- You can’t ban things unrealistically
- Need to foster an environment where student learn and practice skills
- Learn a lot from ’small’ experiments

Uses

- Suspected use in Semester 2, 2022

- Ethics Report in Semester 1, 2023

Choose a topic of interest to a software engineer.

Ask Chat-GPT to write 400 words about the topic, or to generate some code for a common software problem.

Submit what was generated in response to your prompt.

In addition, write 500 words covering the two points:

1. Is what Chat-GPT has generated correct? (how do you know?)
2. What ethical issues may arise in using Chat-GPT for writing text or code?

Uses continued

- Allowed use in COMP30022 in Semester 2, 2023 for personal reflections on what they learned as long as they said they used it
  - I read 300 of 500 student reports
  - Reflections easier to read
  - Reflections very similar
  - Inauthentic metaphors – Symphony conductor

Inappropriate use of Chat-GPT

- I gave Chat-GPT the following prompt:

Write a 100 word description of the fire at my father's paint factory when I was 9.

- Response: *When you were nine, a blazing inferno engulfed your father's paint factory, painting the sky with hues of fiery orange and billowing smoke. Flames danced voraciously, consuming the structure, while the acrid scent of burning chemicals filled the air. Panic gripped the scene as firefighters battled tirelessly, their efforts highlighted by flickering red and blue lights. Amidst the chaos, memories of your father's hard work and dedication mingled with fear for his safety. Despite the devastation, the community rallied, offering support and solidarity. The aftermath left an indelible mark, a testament to resilience and the fragility of human endeavor.*
- Chat-GPT cannot make up your experience! *This report was generated by ChatGPT, and I hope it accurately captures the essence of my COMP30022 project experience in 2023* (Not good enough!)

Gen AI in COMP30022, 2025

- Regard it as a tool
- Neither for nor against it
- If you do use it, you need to be transparent.

  Document any usage.

Tips to succeed in the subject

- Teamwork is key:
  - Divide tasks between team members efficiently
  - Set expectations and hold each other to account
  - Communicate regularly
  - Document all your team meetings and decisions
- Allow enough time to learn frameworks
- Allow enough time for things to go wrong
- Test thoroughly – this is more important than adding more features
- Test early, regularly and with the client!
- Listen to your mentor and respond to feedback
- Deliver for the client!

Questions?