

# Syllabus

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CS 346: Application  
Development

# Introductions

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- Instructional Support Coordinator

Teaching Assistants

- See [website](#)



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MC 6461

# What is this course about?

CS 346 Application Development  
LAB, LEC, TST 0.50

Introduction to **full-stack application design and development**. Students will work in **project teams** to design and build complete, working applications and services using standard tools. Topics include **best practices** in design, development, testing, and deployment.

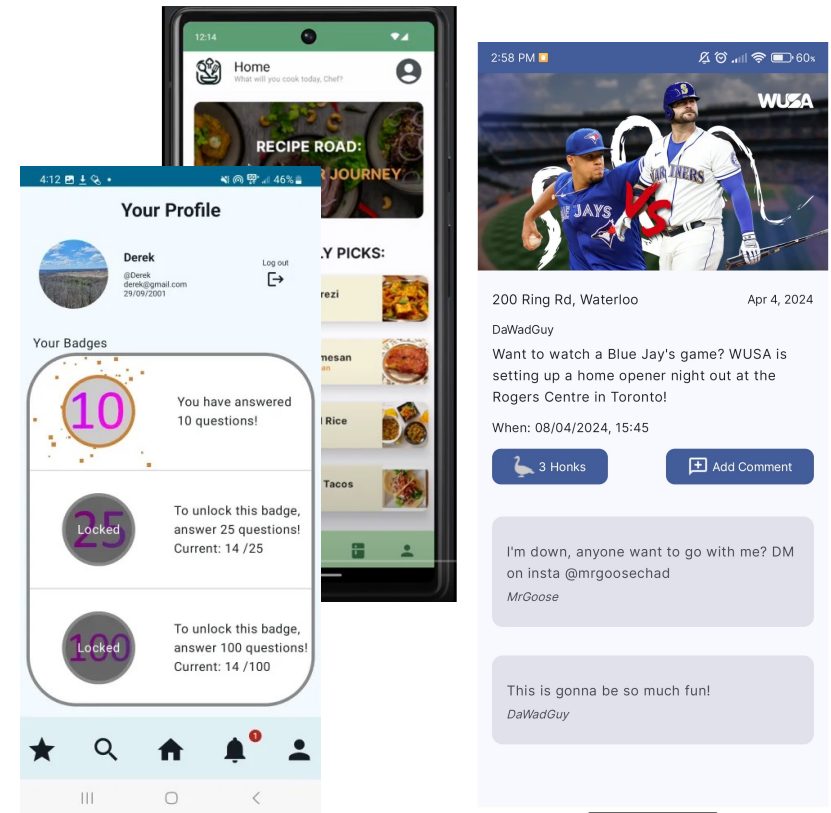
Prerequisites: CS 246; Computer Science students only.

<https://student.cs.uwaterloo.ca/~cs346/1251/>

# What will you do?

## You will design + build an application!

- Teams of 4 people
- Produce a well-designed, robust application
  - You choose what application to build!
  - Mobile or desktop using our tech stack.
  - Basic requirements (e.g., graphical, saves data, uses cloud services).
  - You and your team pick advanced features suitable for your application.
- Bi-weekly releases
  - Demo to your TA, submit releases.
  - Produce docs/artifacts along the way.



<https://student.cs.uwaterloo.ca/~cs346/1249/course-project/gallery/>

# What will you learn?

## Iterative development

- Work on a project team, where you need to collaborate and coordinate work.
- Learn an interesting and useful tech stack, with a modern programming language.
- Learn mobile development, graphical user interfaces, database connectivity.
- Apply relevant design practices i.e., design principles, patterns.

## Best practices

- Build software the way that you would in industry. This includes software development practices. e.g., code branching/merges, issue tracking, unit testing, software releases.
- Just like real-life, you will demo your progress!

## Teamwork

- Communication, teamwork, collaboration skills.
- It will be ~~fun challenging frustrating~~ rewarding!

# Course Website

Welcome

**Structure**

1. Outline
2. Course plan
3. Course schedule
4. Lecture notes ★
5. Project teams
6. Contact us

**Course Project**

7. Getting started
  - 7.1. Requirements
  - 7.2. Forming teams

☰ ✎ 🔍 CS 346 Application Development 🖨

## CS 346 Winter 2025

Welcome to CS 346 for the Winter 2025 term!

This is a course about designing and building software.

Modern software is often too complex for a single person to develop on their own. By working together, you and your project team will use best-practices to design and build a commercial-quality, robust, full-featured application, using a modern technology stack. As much as possible, we aim to explore modern development practices and technologies.

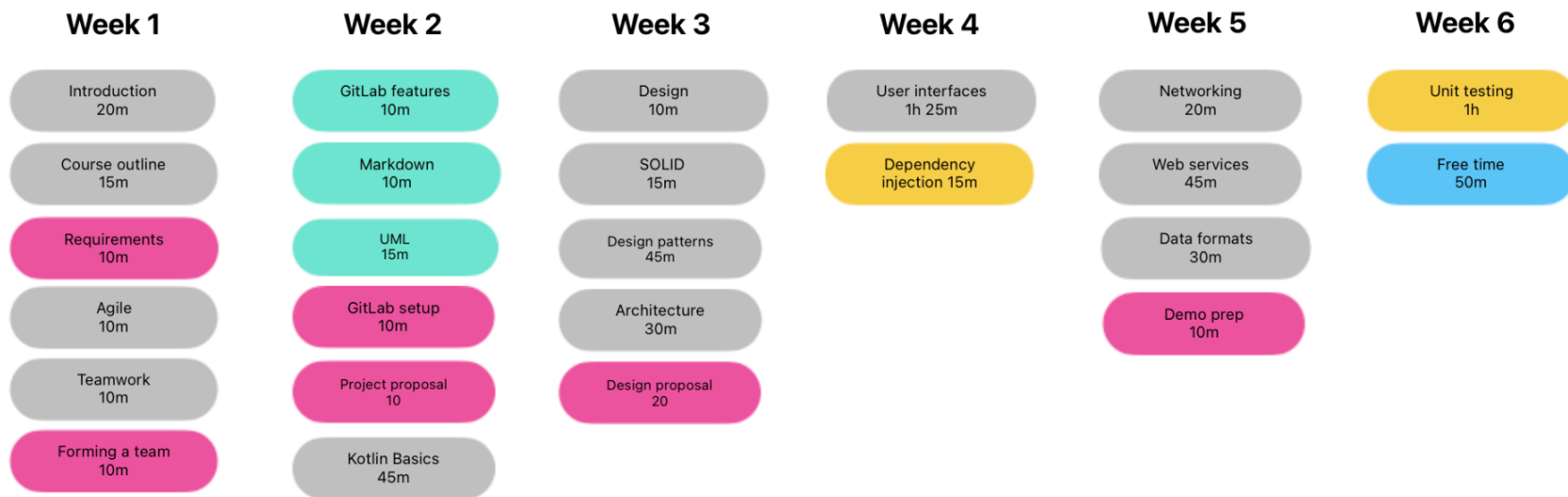
Please [contact the instructor](#) if you have any questions.

<https://student.cs.uwaterloo.ca/~cs346/1251/>

# Structure > Course Schedule

Week	Dates	Main Topics <sup>1</sup>	Quizzes <sup>2</sup>	Project <sup>3</sup>
1	Jan 8, 10	Introduction, Forming teams, Design thinking	Q1	
2	Jan 15, 17	GitLab, Kotlin	Q2	Project setup
3	Jan 22, 24	Design, Gradle, Code structure	Q3	Project proposal
4	Jan 29, 31	User interfaces, Android	Q4	Design proposal
5	Feb 5, 7	Networking, Web services, Git branching	Q5	
6	Feb 12, 14	Unit testing	Q6	Project Demo 1
7	Feb 19, 21	-		
8	Feb 26, 28	Databases, Pair programming	Q7	
9	Mar 5, 7	Cloud services	Q8	Project Demo 2
10	Mar 12, 14	Concurrency	Q9	
11	Mar 19, 21	Packaging, Docker	Q10	Project Demo 3
12	Mar 26, 28	The Future of Kotlin		
13	Apr 2, 4	-		Project Demo 4 Final submission

# Structure > Course Plan



Each week we will have lectures (and I'll likely demo code + apps). You will often have time allocated to working on your project as well – part of Wed, and most of Fri.



# Structure > Lecture Notes

## Week 01 - Introduction, Design thinking

← Topics for the week and my planned ordering.

Welcome to the course! We have a lot of material to cover in the first few weeks so it's important that you attend class. Please [email the instructor](#) or [post on Piazza](#) if you have questions.

### Wed Jan 8



#### Introduction

- Introduction - [slides](#), [website](#)
- Course outline - [assessment](#), [policies](#)

← Slides will always be posted ahead of time. Other links point to course notes that provide more details if you need them.

# Structure > Outline # Assessment

Personal (33%)

Item	What it addresses	Grade
Quizzes	Quizzes covering lecture content.	10 x 2% = 20%
Participation	Attending and participating in the project demos.	4 x 2% = 8%
Team assessment	Rating from your team members at the end of the term	5%

Team (67%)

Item	What it addresses	Grade
Project proposal	Project identified, requirements logged.	5%
Design proposal	Detailed design document.	5%
Project demos	Features completed, release process followed.	4 x 8% = 32%
Final submission	Completed project including documentation.	25%

# Structure > Outline # Policies

## Group Participation

- **You must form teams by the end of week 2.**
- We will help, but we reserve the right to remove you if you don't cooperate.
- **You must participate during the term!** In unusual circumstances, we may adjust grades downward if you do not adequately contribute.

Has not  
been used  
previously



## Attendance

- **You must be free to attend lectures and participate with your team.**
- You **cannot** take this course while on a work term (unless you can somehow attend).

## Code "Sharing"

- You are allowed to share code (up to 25 lines) with appropriate citation.
- You are not allowed to use projects from previous terms (even with this stipulation!)

Note to self:  
Show the course website!

<https://student.cs.uwaterloo.ca/~cs346/1251/>

# Week 01: What to do?

Register for the course!

- Talk to me if you are not registered.
- You must be in all morning or all afternoon sections.
- You must attend in-person; you cannot take this class remotely.

Skim the course website<sup>1</sup>

Attend lectures

Form teams!

- We'll discuss this shortly.

<sup>1</sup> It's more than 600 pages; think of it as *reference material*. Lecture slides are published on the website.