COMP23420 Software Engineering
Semester 2
Week 1: Introduction

Dr Liping Zhao
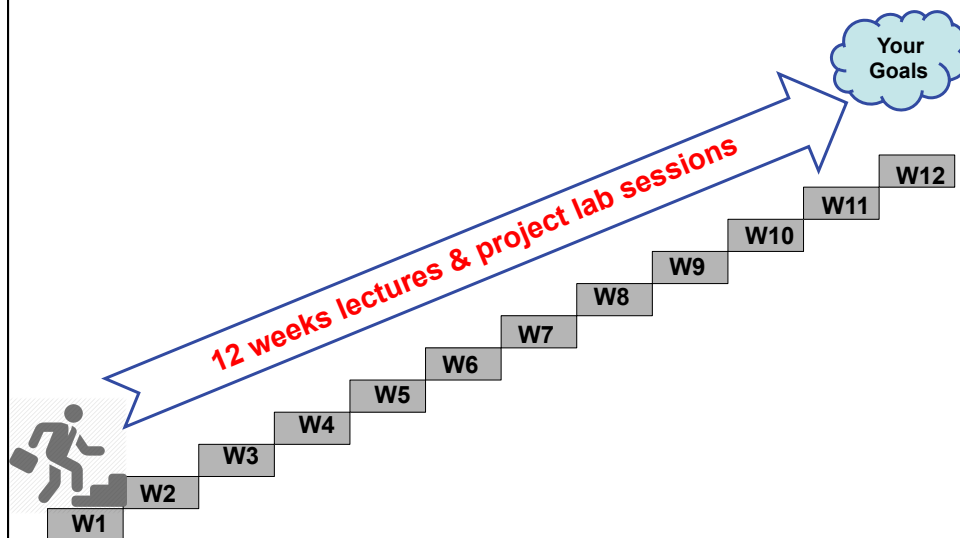School of Computer Science

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Course Aims

1. To learn software engineering concepts, principles, processes and methods

2. To simulate a real world software engineering team project *in vitro*

3. To develop your "soft" skills through the team project
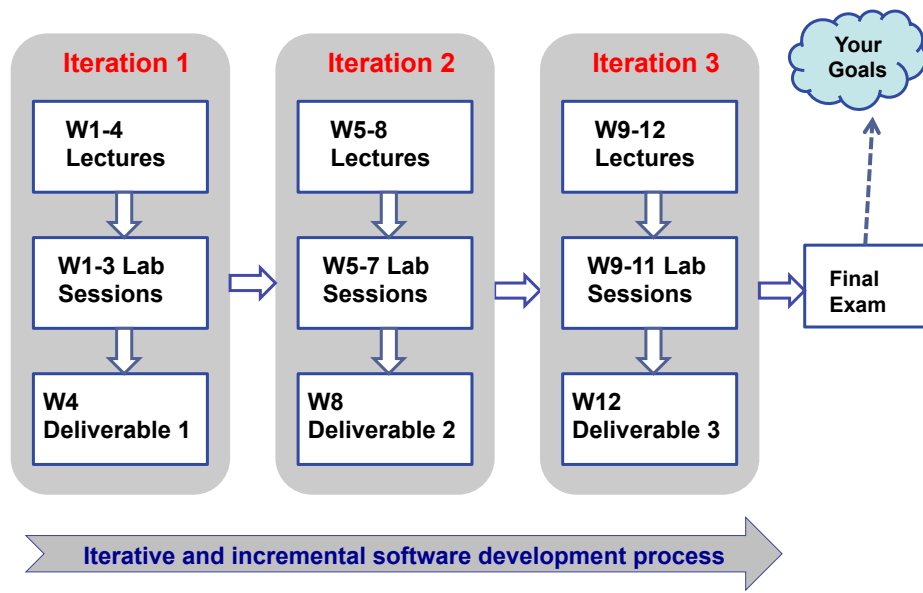
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Today's Objectives

- To introduce the course as a whole
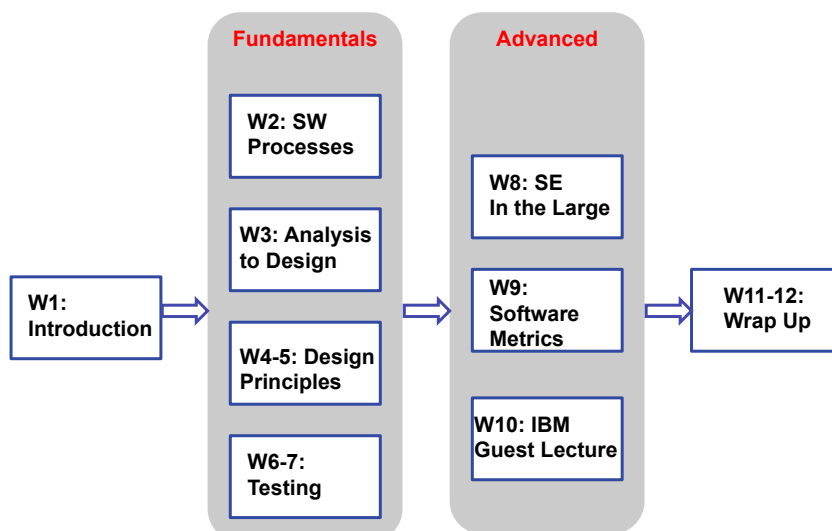- To introduce the team project
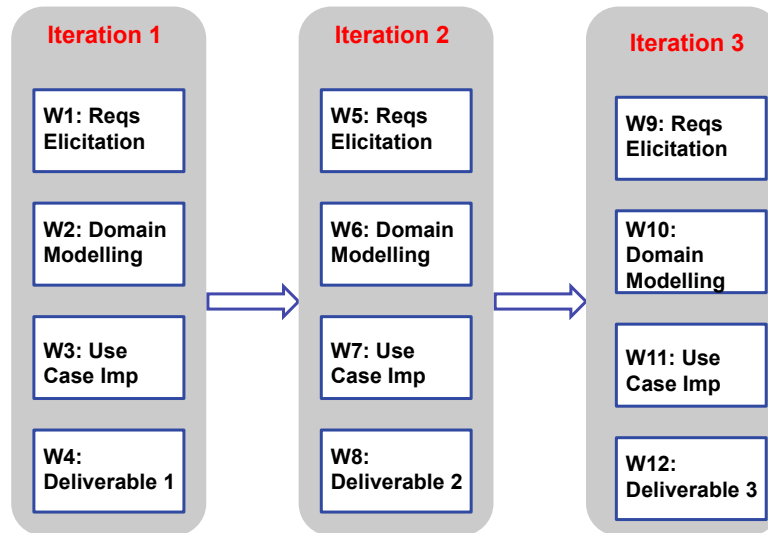
Roadmap: High-Level View

Your Goals

W12
W11
W10
W9
W8
W7
W6
W5
W4
W3
W2
W1

12 weeks lectures & project lab sessions

Roadmap: Overall Structure

Iteration 1	Iteration 2	Iteration 3	Your Goals
W1-4 Lectures	W5-8 Lectures	W9-12 Lectures	
W1-3 Lab Sessions	W5-7 Lab Sessions	W9-11 Lab Sessions	Final Exam
W4 Deliverable 1	W8 Deliverable 2	W12 Deliverable 3	

Iterative and incremental software development process

Roadmap: Lecture Plan

Fundamentals

- W2: SW Processes
- W3: Analysis to Design
- W4-5: Design Principles
- W6-7: Testing

Advanced

- W8: SE In the Large
- W9: Software Metrics
- W10: IBM Guest Lecture

W1: Introduction

W11-12: Wrap Up

Roadmap: Team Project Plan

Iteration 1

- W1: Reqs Elicitation
- W2: Domain Modelling
- W3: Use Case Imp
- W4: Deliverable 1

Iteration 2

- W5: Reqs Elicitation
- W6: Domain Modelling
- W7: Use Case Imp
- W8: Deliverable 2

Iteration 3

- W9: Reqs Elicitation
- W10: Domain Modelling
- W11: Use Case Imp
- W12: Deliverable 3

Assessment Breakdowns

- 3 project deliverables (total 40%)
  - Iteration 1: 10% (Week 4 Lab)
  - Iteration 2: 15% (Week 8 Lab)
  - Iteration 3: 15% (Week 12 Lab)
- 1 final written exam: 55%
- Second year tutorials: 5%

Project Lab Schedule

➤ Location: G23, Kilburn Building

➤ Lab sessions
  – Thursdays 11.00 – 13.00 (**Group R**)
  – Fridays 9.00 – 11.00 (**Group T**)
  – Fridays 11.00 – 13.00 (**Group Q**)

Project Introduction

• Work as a team to design and implement a bus driver scheduling & rostering system for the Greater Manchester Passenger Transport Executive (GMPTE)

• The system is called "Integrated Bus Management System (IBMS)"

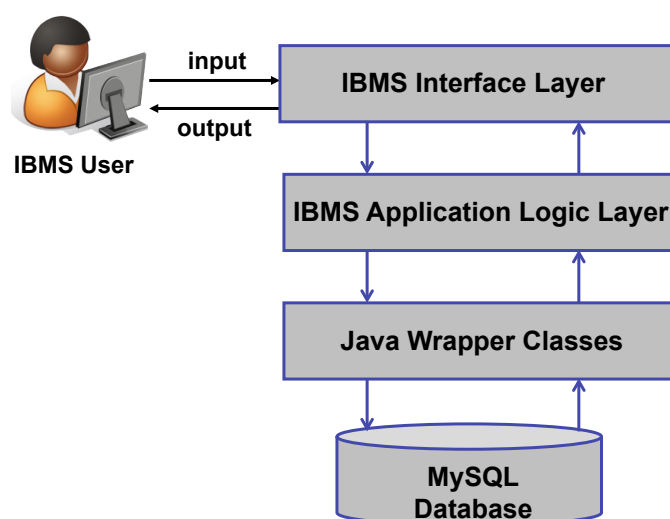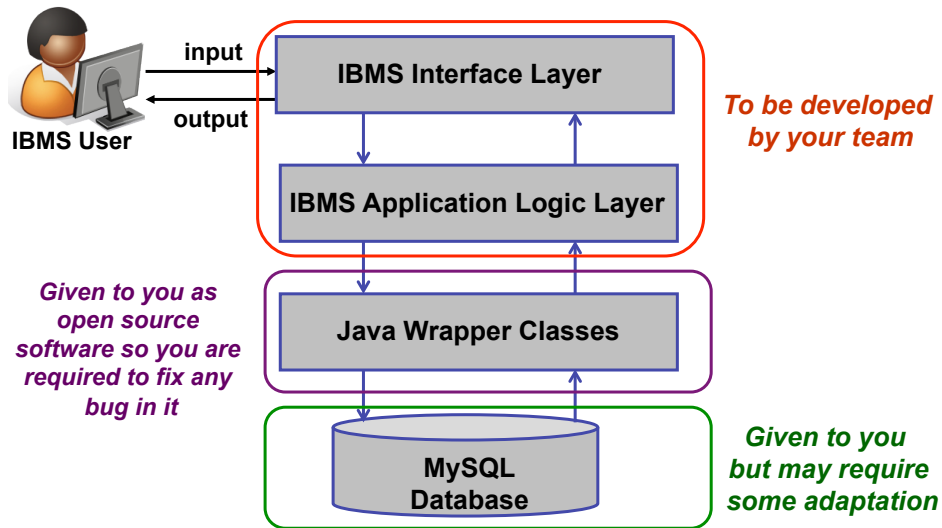• Based on a real world business scenario

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Project Teams

- Team size: 5-1 or 5+1 (much smaller than normal industrial team size)
- Based on similar ability
- Work with a teaching assistant (2-3 teams per TA)
- The team of the best project will win a prestigious IBM award at the end of the semester!

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Project Scope and System Architecture

Development Scope

IBMS User

input

output

IBMS Interface Layer

IBMS Application Logic Layer

To be developed by your team

Java Wrapper Classes

Given to you as open source software so you are required to fix any bug in it

MySQL Database

Given to you but may require some adaptation

Tools for the Project

➢ Java programming language
➢ UML
➢ MySQL database
➢ Git and Gitlab (https://gitlab.cs.man.ac.uk)

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L. Zhao

Project Resources

Located at the School Moodle site:

- Team Project Handbook
- Git concepts
- Instructions for setting up Git and Gitlab
- Detailed Iteration One Tasks
- IBMS Database Wrapper Classes
- IBMS Database Wrapper Class Description
- IBMS Database Access Instruction
- Database Interface Notes
- mysql-connector-java-5.1.12-bin.jar
- Bus Route Timetable
- IBMS Rostering Rules
- Report Template

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Developing "soft" skills through the project

- *"Employers prefer 'soft' skills in graduates"* (http://www.bbc.co.uk/news/education-28560758)

- *"What are the 'soft skills' employers want?"* (https://nationalcareersservice.direct.gov.uk/aboutus/newsarticles/Pages/Spotlight-SoftSkills.aspx)

✓ Communication ✓ Making decisions ✓ Showing commitment ✓ Flexibility ✓ Time management	✓ Leadership ✓ Team player ✓ Creativity & problem solving ✓ Accepting the responsibility ✓ Work under pressure

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Course Lecturers

- Dr Liping Zhao (liping.zhao@manchester.ac.uk)

- Dr John Sargeant (john.sargeant@manchester.ac.uk)

Questions?

Lecture Plan

Week 1: Introduction

Week 2: Software Processes

Week 3: Analysis to design

Week 4: GRASP design principles

Week 5: GRASP design principles

Week 6: Testing concepts and approaches

Week 7: Unit testing using Junit

Week 8: SE in the large

Week 9: Software Measurement

Week 10: **Guest lecture: Agile team working in IBM**

Week 11 - 12: **Wrap up**