



CSCI222/CSCI822/MCS9222

Systems Development

Subject Introduction

Who am I?

- Hoa Khanh Dam
 - PhD in Computer Science - [RMIT University](#), Australia
 - M.App.Sc. in Information Technology - [RMIT University](#)
 - Bachelor of Computer Science - [University of Melbourne](#)
- Previous positions:
 - Technical Architect / Project Manager at B.A.O. Solutions
 - Software Engineer at Exari Systems.
- Some of my research interests that you may be interested:
 - Software Engineering Analytics.

More info at <http://www.uow.edu.au/~hoa>

CSCI222 – Autumn and Spring

- **Should you be here this session?**
- **CSCI222 is scheduled for both Autumn and Spring**
- **CSCI204 is a pre-requisite for CSCI222**
 - (If you enrol with only CSCI124, you will be marked as "provisional" and will be disenrolled later in session.)

Systems Development

- **Lectures:**
 - Monday 16:30 – 18:30
 - Wednesday 09:30 – 10:30
- **Laboratory:**
 - Monday 13:30 - 15:30
 - Tuesday (half lab) 08:30 – 10:30

Lecturers

- Dr Hoa Dam
 - Office: 3.201 (consultation hours only, other time requires appointment)
 - Consultation time:
 - Monday 09:30 – 11:30
 - Wednesday 10:30 – 12:30
 - Email: hoa@uow.edu.au
- Tutor: Daniel Avery

Email notes

Avoiding the junk filter

- Use your UoW account
- Make subject relevant
 - Eg CSCI222 task analysis assignment question
- Provide a heading
- Make sure language is set to English

**Please DO NOT ring me or leave a message
on my phone.**



Why have CSCI222?

What role does it fill in your CS studies?

What is this subject about?

- This subject provides a framework for **understanding and developing the necessary skills to successfully undertake the major third year software project.**
- The subject provides an introduction to the practical aspects of the development of a software application following a well defined process.
- Students will gain experience in the software development cycle, including requirements, design, and implementation, and also learn to exploit implementation support technologies.
- Assignments will provide experience of structured development work in a small group setting.
- The implementation language used in illustrations and assignments is C++.

What are the objectives?

- **On successful completion of this subject, students will be able to:**
 1. Design a software application of moderate size and complexity, making effective use of design tools.
 2. Use appropriate tools to develop and implement a software application of moderate complexity
 3. Create, plan, and implement a test plan for a software application.
 4. Work in a group following a defined software development process

Preparation for the capstone project

- **The capstone project**
 - “capstone” of the degree
 - Regarded as main demonstration of student ability in CS
 - Larger in scale than any previous development task
 - Requires planning
 - Requires development over a significant period of time
 - Involves group work
- Other **core** subjects provide the technical programming skills
 - C++ from **CSCI114, CSCI124, and CSCI204**
 - Algorithms, Data structures from **CSCI103, and CSCI203**
 - Systems functions and processes from **CSCI212**
 - Database concepts from **CSCI235**

CSCI222 contributions

- **Group work**
 - Occurs in other subject, but here gets some emphasis and quality of group work is assessable (not just resulting product)
- **Process models**
 - How to organize a development process that is longer than the 10-day deadline of a typical assignment
- **Design models**
 - Planning how to build an elaborate system, and documenting that plan
- **Development tools and strategies**
 - Maintaining a developing code base
- **etc**

Software Engineering in your degree

- **Software Engineering provided via**
 - **Core subject:**
 - **CSCI222 Systems Development**
 - **Elective subjects:**
 - **CSCI205 Development Methods and Tools**
 - **CSCI311 Software Process Management**
 - **CSCI318 Software Engineering Practices and Principles**

What is Software Engineering?

- **Classical Engineering**
 - Electronics & Electrical Engineering
 - Civil Engineering
 - Chemistry Engineering
 - Mechatronics Engineering

=> **Software Engineering is**

"the application of a systematic, disciplined, quantifiable approach to the development, operation, and maintenance of software; that is, the application of engineering to software" (IEEE standard 610.12-1990).

Software Engineer is the best job in US in 2011

Source: <http://www.braintrack.com/college-and-work-news/articles/software-engineer-ranked-best-job-for-2011-11010502>

All students need some Software Engineering

- All students need to be able to “read” design models expressed in the Unified Modelling Language
 - Widely used (sometimes misused) in industry
 - As a junior employee, you won’t be creating UML designs but you had better understand the designs for the project that you are working on.
- All students need to be familiar with the different development process models that are in common use
 - You had better not look blank if the recruitment interviewer asks you to characterise “agile methodologies”
- All students need an understanding of testing strategies employed in software developments – and be capable of testing their code.

Key topics

- **SE development activities**
- **SE process models**
- **Software testing**
 - CppUnit test
- **Teamwork**
- **Version management**
- **UML modelling**
- **Rational Unified Process**
- **Requirements**
- **Software Architecture**
- **Distributed Systems**
- **User Interface Design**

Books

- **Reference books:**
 - Software development for small teams: a RUP-centric approach, Gary Pollice et al.
 - The rational unified process: an introduction, P. Kruchten
 - “Software Engineering” by Ian Sommerville
 - Unit Test Frameworks
 - P. Hamill
 - Using UML: Software Engineering with Objects and Components, P. Stevens and R. Pooley
- **Some are e-resources**

Resources

- **Lectures**
 - PDF files with slides from lectures
- **Assignments**
- **Supplementary materials**

One-stop shop: **eLearning**

Overall Assessment

- **Assessment**
 - Exam 40%
 - A1 (group) 15%
 - A2 (group) 30%
 - Labs 15%
 - Some labs are assessable
 - Some labs are used for working on the assignments and “meeting the clients”.

Assessment – continuous assessment components

- **Assignments are group projects**
 - **Students are responsible for organizing themselves into groups of 4-5 people.**
 - **Group members must be in the same cohort (CSCI222 or CSCI822 or MCS9222)**
 - **E.g. all group members must be CSCI822 students.**
 - **Part of the assessment is based on measures of how well the group members worked together**

Groups

- The groups for assignments should have 4-5 members each.
- *Formation of groups is your responsibility.*
- You will **have to submit details of group membership (via email) by Friday, Week 2.**
 - This email contains the subject code that all of your group members enrol in (e.g. CSCI222) and the UOW username of your group members.
- It is recommended all group members are in the same lab (but not mandatory).

A balanced group is a healthy group

- Try to get a balanced group
 - “manager”
 - “chief programmer”
 - “tester”
 - “analysts and designers”
- Substantial part of mark for group assignments relates to process – you need to be organized and show that you are organized!
- *Groups that fail to be established on time start with a penalty mark!*

Assignment submission

- Submitted in the lecture.
 - Check the assignment specification for detailed instructions.
- One page group peer assessment document submitted in hard copy
 - Specifies relative contributions of each member
 - Is signed by each member
 - Original submitted in lecture period
 - Each group member has photocopy
 - *The “relative contributions”, as agreed by all group members, determine any mark adjustments for those individuals whose contributions were less than average*

Individual contributions to group

- Use scheme similar to that which has been used in some 300-level SE subjects
 - Project assigned a mark
 - Individuals
 - “contributed” 100% of group mark
 - “limited contribution” 50% of group mark
 - “almost no contribution” 10% of group mark
 - “no contribution” 0% of group mark
 - If group agrees, they can assign different percentages – e.g. Tom, Dick, 100%, Sue 80%, Harry 5%

Sorry – but you can't get 200% of group mark just because your colleagues rated as “almost no contribution”!

Assignment return

- **Markers write short note explaining your mark**
- **Marking scheme email-ed back to you**

Public Service Announcements

Health and security issues

- I'm supposed to tell you that
 - **If** building on fire, earthquakes occurring, terrorists raiding, alien invasions from outer-space, ...
 - **Then** leave building in orderly fashion and assemble outside.
 - See little map at theatre entrance for location of assembly area.
- You've been told



University of Wollongong

STANDARD FIRE ORDERS

ACTIONS TO BE CONSIDERED ON DISCOVERING A FIRE

R “**RESCUE**” any person/s in immediate danger.



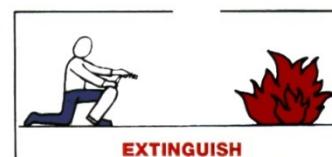
A “**ALARM**” Raise the alarm. Contact the Emergency Services on **0 000**. Contact University Security on extension **4900**. Activate Break Glass Alarm.



C “**CONTAIN**” Close doors to contain the fire.

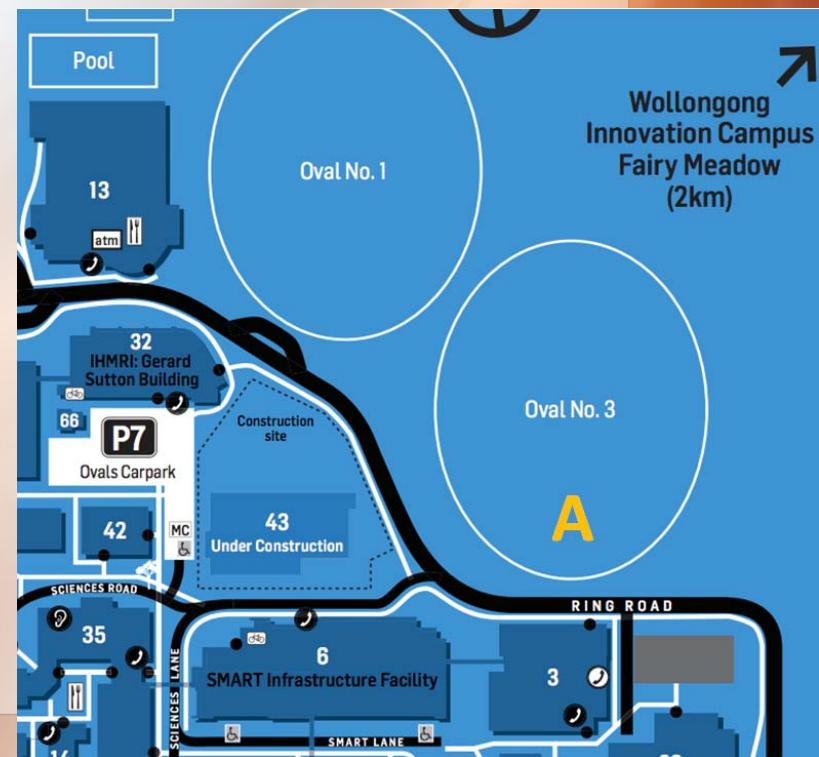


E “**EXTINGUISH**” Attempt to extinguish the fire only if you are trained and it is safe to do so.



Follow the directions of Building Wardens.

My Building Warden is.....



Q & A

- **Q: Can we obtain a HD in this subject?**
 - A: “Yes, we can!”
- **Q: Great! Sounds easy but how?**
 - A: Sure, you need to do very well in the Lab (5%), the assignments (55%) and the exam (40%).
- **Q: Of course, but still how?**
 - A: Yes, you need to attend the lectures regularly (very important in this subject), read reference texts, and read Lecture slides.
 - You should also do Lab exercises
- **Q: Hmm, it's not that easy but it's ok, I can do it in just only 1 week before the exam, huh?**
 - A: No, you have to do it every week.
- **Q: Oh no, it's so difficult ☹. I don't want a HD anymore, I just want a P. So less work?**
 - A: Yes, but you still have to do the same things.

Any further questions?

