COMP[39]151 Course Information for Session 2, 2017

(The present document ($Revision: 1.14 $) is available online at http://www.cse.unsw.edu.au/~cs3151/17s2/admin/outline.html).

This document describes two subjects: COMP3151 and COMP9151. The only difference between them is that the former is for undergraduate students only whereas the latter is for post-graduate students only. In both cases, this is a 6UoC credit subject. These UoC are not for free.

Prerequisites and Follow-Ons

For COMP3151: (COMP1521 and COMP2521) or COMP1927; for COMP9151: COMP9024; excluded COMP9151 for COMP3151 and vice versa. For most students, the 3rd year is more appropriate than the 2nd for taking this subject.

Related courses include COMP3153/COMP9153, COMP6752, COMP4121, COMP4161, and COMP9243.

Update Policy

This course introduction should be relatively stable at the beginning of session. Any updates after the initial publication in week one will be discussed in class and announced under the header **Fresh stuff** in the menu on the left hand side of the COMP[39]151 web site.

Course Overview by Keywords

Concurrency = processes + communication. Communication via shared variables vs message passing. Models of concurrency: true concurrency vs interleaving. Abstractions: atomicity, locks and barriers, semaphores, monitors, threads, RPC, rendezvous, transactional memory. Classical problems: mutual exclusion, dining philosophers, dining cryptographers, sleeping barber, termination detection, gravitational *N*-body problem.

Practical work: assignments consisting of (a) programming tasks to be solved in C + some concurrency library such pthreads or MPI, *and, simultaneously* a model checker specification language called Promela + (b) proofs of program properties.

Course Objectives

After successfully completing this course, you are able to

- design and implement multi-threaded, parallel, and distributed programs,
- talk, write, and reason about such programs, and
- appreciate the complexities involved in the previous two.

Graduate Attributes

are important because the disciplinary knowledge that students develop at university is not adequate in itself as the basis for their future lives. Instead, graduates need qualities and skills that equip them for lifelong learning. These include critical thinking and problem-solving skills, communication skills, information literacy skills, and group work skills. says one of too many UNSW policies.

- **Critical thinking and problem-solving skills** will be fostered by tutorial exercises, assigments, and even lectures.
- **Communication skills**, both oral and written, are sharpened by writing and presenting mathematical thought in tutorials and by writing mathematical text for assignments.
- **Group work skills** are developed while solving problems with peers in tutes and in groups of two for assignments.

Teaching "Strategy" and "Rationale"

Learning in this course happens in lectures (where the white-board is used more than slides), tutorials (where the exploration of questions is guided by the tutor), and assignments (where concepts are reinforced and translated into problem-solving and coding practice).

Keeping Informed and Staying in Touch

Course Web Site

Important notices related to this course will be displayed on the *course home page*, which is located at http://www.cse.unsw.edu.au/~cs3151/. It is your responsibility to check this page regularly.

Email

cs3151 to students

Only in rare cases urgent information may also be sent to your UNSW email account. At the end of the session, each student will receive via email an invitation to fill in a detailed online survey.

Students to cs3151

Only requests of a confidential nature should be sent via email to the course account, cs3151. Everything else should be posted on the message board described next. If in doubt, send email and be prepared to receive the one-line answer: "*This can be asked on the forum.*" Emails originating from non UNSW/CSE accounts are routinely ignored.

Message Board

A message board for this subject is set up. All but the truly confidential questions should be posted there.

RSS Feed

Notifications about anything deemed noteworthy and related to this subject are maintained as an RSS feed. The newest items of that feed are also displayed first on the subject website.

Staff

Name	Role
Kai Engelhardt	Lecturer-in-Charge
Liam	Tutor

Tutorials

You should attend a 1 hour tutorial each week. The page on class details shows tutorial times and rooms. Tutes start in week two.

Part of the allocated tutorial time will be devoted to solving problems and discussing solutions related to lecture topics, while the remaining time will be used to discuss topics relevant to assignments if appropriate.

Students will be required to present partial tutorial problem solutions under the guidance of the tutor.

Consultations

If you need a consultation, make an appointment via email.

Text Book

The required textbook for this course is *Principles of Concurrent and Distributed Programming* 2nd edition, M Ben-Ari, Addison-Wesley, 2006.

Additional notes are made available on the course website.

Assessment Summary

The assessable components of the course are:

- 40% assignments submitted in pairs (distributed over 1 smaller and 2 larger assignments worth 6, 17, resp., 17 marks each and due approximately at the end of week 4, 8, and 12, respectively.)
- 10% Mid-session examination (1 hour during the 2h lecture in week 6)
- 50% Final Examination (2 hours, to be scheduled for the November/December examination period)
- 1 bonus mark for filling in an online course survey at the end of the session.

There will be no multiple-choice questions in these exams. Being able to recognise answers is not good enough to pass this course.

Late Penalties

Late assignment submissions incur a (0.5% * maximum mark / hour) penalty for four days, after which submissions are no longer accepted. A submission which is handed in 3 days 23 hours and 1 second late will thus be marked down by 48% of the maximum mark.

As a hurdle requirement, your exam mark (= max(mid-session + final, 6/5 * final)) must be a pass (at least 30/60) in order to pass the course. The final mark will be the sum of the assessable components and bonus marks as listed above if the hurdle requirement is met. Otherwise, it is capped by 49.

Student Conduct

The two large assignments are done in pairs. Pair work assignments will be marked as a group, i.e. groups of one will be marked the same as groups of two. Both group members are expected to contribute equally. In submitting your assignment, you are agreeing you have contributed equally unless we receive an agreed-to statement from both group members identifying differing levels of contribution.

All assignment submissions are routinely submitted to plagiarism detection. Recall that you are bound by various university policies. The following is plagiarised from John Shepherd's COMP1521 17s2 outline.

> The **Student Code of Conduct** (Information, Policy) sets out what the University expects from students as members of the UNSW community. As well as the learning, teaching and research environment, the University aims to provide an environment that enables students to achieve their full potential and to provide an experience consistent with the University's values and guiding principles. A condition of enrolment is that students *inform themselves* of the University's rules and policies affecting them, and conduct themselves accordingly.
>
> In particular, students have the responsibility to observe standards of equity and respect in dealing with every member of the University community. This applies to all activities on UNSW premises and all external activities related to study and research. This includes behaviour in person as well as behaviour on social media, for example Facebook groups set up for the purpose of discussing UNSW courses or course work. Behaviour that is considered in breach of the Student Code Policy as discriminatory, sexually inappropriate, bullying, harassing, invading another's privacy or causing any person to fear for their personal safety is serious misconduct and can lead to severe penalties, including suspension or exclusion from UNSW.
>
> If you have any concerns, you may raise them with your lecturer, or approach the School Ethics Officer, Grievance Officer, or one of the student representatives.
>
> **Plagiarism** is defined as using the words or ideas of others and presenting them as your own. UNSW and CSE treat plagiarism as academic misconduct, which means that it carries penalties as severe as being excluded from further study at UNSW. There are several on-line sources to help you understand what plagiarism is and how it is dealt with at UNSW:
>
> - Plagiarism and Academic Integrity
> - UNSW Plagiarism Procedure
>
> Make sure that you read and understand these. Ignorance is not accepted as an excuse for plagiarism. In particular, you are also responsible that your assignment files are not accessible by anyone but you by setting the correct permissions in your CSE directory and code repository, if using. Note also that plagiarism includes paying or asking another person to do a piece of work for you and then submitting it as your own work.
>
> UNSW has an ongoing commitment to fostering a culture of learning informed by academic integrity. All UNSW staff and students have a responsibility to adhere to this principle of academic integrity. Plagiarism undermines academic integrity and is not tolerated at UNSW. Plagiarism at UNSW is defined as using the words or ideas of others and passing them off as your own.
>
> If you haven't done so yet, please take the time to read the full text of
>
> - UNSW's policy regarding academic honesty and plagiarism
>
> The pages below describe the policies and procedures in more detail:
>
> - Student Code Policy
> - Student Misconduct Procedure
> - Plagiarism Policy Statement
> - Plagiarism Procedure
>
> You should also read the following page which describes your rights and responsibilities in the CSE context:
>
> - Essential Advice for CSE Students

Course Evaluation and Development

Each year, the content of this document and, more importantly, the course is changed based on survey results from the previous years *if necessary*. In the first lecture I discuss these survey results and explain whether and how the course is changed to address those problems indicated in the surveys that can be fixed.

2014

Some points for criticism were the following.

- *We need more/longer tutes.*
  Getting more than 1h of tute per week in a 3rd year course is only possible with external funding for the course. I don't see that happening in 17s2.
- *We need more/better feedback on individual proof attempts.*
  This is always difficult. Something that seemed to work when I trialled it once in the past was to sit down with students to review their graded assignment submission and point out what worked and what didn't in their proof attempts. Depending on class size and resourcing, perhaps this can be re-introduced in some form or another.
- *Promela...*

> ...is a necessary evil I'm afraid. There are alternatives and I should perhaps accept assignment work using other tools. The pen-and-paper "proofs" I witnessed in earlier editions of the course made me mandate tool use - they were 99% wishful thinking.

2013

Some points for criticism were the following.

- *There are no lecture recordings.*
  I have no means to record what I do on the white board. I believe that poor recordings of half the content are worse than no recordings because they trick some students into believing they can skip lectures. Attending lectures has multiple purposes: to ask questions, to take notes (e.g. of what's on the board or what's said), to interact.
- *A 3h final exam would be better.*
  I believe that our students are typically overassessed and undereducated. Adding an hour to the final would only aggravate the former problem.
- *Assignment feedback was too slow.*
  This is a tricky one. The assignments in this course are not only hard to complete but also hard to mark. Discussing solutions in class or in the tutes should help alleviate this inherent problem at least somewhat.

2011

In the 2011 survey a student wrote

> Also tell them (the next class) this -> "ASK MORE QUESTIONS. You may feel intimidated because the nicta/4thyears/postgrads already know the answer, but the rest of us mere mortals (like 70% of the class) are AS LOST AS YOU. Do everyone a favour and ask. The worst that can happen is a meteor hits you in the face - and what are the odds of that?"

which I hereby pledge to be telling 49% more often than before.

Many students expressed that having more maths in the 2nd hour of the 2h lecture wasn't working. For 13s2 the material is re-ordered to avoid maths overload if possible.

Maintained by: COMP[39]151
Last modified: Mon Jul 24 09:51:03 AEST 2017