Course Outline

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Course Details

Course Code	COMP6752
Course Title	Modelling Concurrent Systems
Convenor	Rob van Glabbeek (/users/z3104740)
Admin	Rob van Glabbeek (/users/z3104740)
Classes	Lectures are recorded, and can be found on the course website. Tutorials are Thursdays 14:00 - 15:00, via zoom. June 4 to July 2, and July 16 to August 6. Each student should do a seminar presentation of 20-30 minutes. Either recorded, or synchronous during class hours, Mondays between 15:00 and 17:00, and/or Tuesdays between 14:00 and 16:00. (/COMP6752/20T2/timetable)
Consultations	Just send us an email with your Skype address (or so) and when you are available. Questions are prefered during the scheduled tutorials, and online in the course chat group.
Units of Credit	6
Course Website	http://cse.unsw.edu.au/~cs6752/ (http://cse.unsw.edu.au/~cs6752/)
Handbook Entry	http://www.handbook.unsw.edu.au/undergraduate/courses/current/COMP6752.html (http://www.handbook.unsw.edu.au/undergraduate/courses/current/COMP6752.html)

Course Summary

This course tries to make students familiar with state-of-the-art techniques in modelling concurrent systems. This is done by comparing some of the more successful semantic models of concurrency found in the literature. The focus will be on the rationale behind the design decisions underlying those models, viewed from philosophical, mathematical and computational perspectives. The course contains important background knowledge for students aiming at a scientific career in which the design of mathematical models of system behaviour is a component.

Topics covered: **Models of concurrent and distributed systems** (e.g. labelled transition systems, process algebra, event structures, Petri nets, Büchi automata), **operational and denotational semantics** , **semantic equivalences and implementation relations** (linear versus branching time, interleaving versus partial order semantics), **modal and temporal logic for concurrent systems** (proof theory and applications).

Assumed Knowledge

To do well in this class students should have the ability to understand and deliver formal mathematical proofs.

At least they should be at ease with concepts like functions, relations, 6-tuples, products and similar elementary mathematical concepts.

Student Learning Outcomes

By the end of the course students should be able to accurately model simple concurrent systems, in particular by being able to make an informed choice, out of the many types of models available, as to which one is (most) suitable for the task at hand. Additionally, they should be able to prove elementary properties of systems modelled thusly.

Teaching Strategies

- Lecturing (recorded) ... introduce concepts, show examples
- Tutorials (life) ... reinforce concepts and provide additional examples
- Instead of slides or textbooks there is a webpage treating the material. While the lectures focus on broad ideas and illustrations, the webpage has formal definitions of relevant concepts.
- Distribution of scientific handouts inviting to self-study
- Challenging weekly homework assignments that invite students to mix the mastered techniques with their own creativity
- Seminar presentations in which students learn how to digest and present relevant material.

Teaching Rationale

This course is taught the way it is because I think this is the best way to achieve the learning outcomes.

Student Conduct

The **Student Code of Conduct** (Information (https://student.unsw.edu.au/conduct) , Policy (https://www.gs.unsw.edu.au/policy/documents/studentcodepolicy.pdf)) 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 accordinTutorials (life) ... reinforce concepts and provide additional examplesgly.

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 (mailto:ethics-officer@cse.unsw.edu.au) , Grievance Officer (mailto:grievance-officer@cse.unsw.edu.au) , or one of the student representatives.

Plagiarism is defined as (https://student.unsw.edu.au/plagiarism) 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 (https://student.unsw.edu.au/plagiarism)
- UNSW Plagiarism Procedure (https://www.gs.unsw.edu.au/policy/documents/plagiarismprocedure.pdf)

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 (https://student.unsw.edu.au/plagiarism)

The pages below describe the policies and procedures in more detail:

- Student Code Policy (https://www.gs.unsw.edu.au/policy/documents/studentcodepolicy.pdf)
- Student Misconduct Procedure (https://www.gs.unsw.edu.au/policy/documents/studentmisconductprocedures.pdf)
- Plagiarism Policy Statement (https://www.gs.unsw.edu.au/policy/documents/plagiarismpolicy.pdf)
- Plagiarism Procedure (https://www.gs.unsw.edu.au/policy/documents/plagiarismprocedure.pdf)

You should also read the following page which describes your rights and responsibilities in the CSE context:

- Essential Advice for CSE Students (https://www.engineering.unsw.edu.au/computer-science-engineering/about-us/organisational-structure/student-services/policies/essential-advice-for-cse-students)

Assessment

Item	Topics	Due	Marks	Contributes to
Weekly homework	All topics	Each week Saturday 5pm	40%	mastering the material
Seminar presentation	Student chooses topic	Choose your slot	20%	independent thinking
Final Exam	All topics	3-hour slot in Exam week	30%	whole understanding
Oral exam	All topics	after written exam	10%	finetuning

Course Schedule

Week	Lectures	Tutes	Assignments	Notes
1	Recorded lectures	Zoom tutorial	Weekly homework	-
2	Recorded lectures	Zoom tutorial	Weekly homework	-
3	Recorded lectures	Zoom tutorial	Weekly homework	-
4	Recorded lectures	Zoom tutorial	Weekly homework	-
5	Recorded lectures	Zoom tutorial	Weekly homework	-
6	Recorded lectures	Zoom tutorial	Weekly homework	-
7	Recorded lectures	Zoom tutorial	Weekly homework	-
8	Recorded lectures	Zoom tutorial	Weekly homework	-
9	Recorded lectures	Zoom tutorial	Weekly homework	-

Resources for Students

Course webpage: http://www.cse.unsw.edu.au/~rvg/6752 (http://www.cse.unsw.edu.au/~rvg/6752/)

Suggested topic for seminar presentations: http://www.cse.unsw.edu.au/~rvg/6752/topics.html (http://www.cse.unsw.edu.au/~rvg/6752/topics.html)

(http://www.cse.unsw.edu.au/~rvg/6752/topics.html) Notes on the material covered each week: http://www.cse.unsw.edu.au/~rvg/6752/notes.html (http://www.cse.unsw.edu.au/~rvg/6752/notes.html)

Weekly homework: http://www.cse.unsw.edu.au/~rvg/6752/homework.html#bottom (http://www.cse.unsw.edu.au/~rvg/6752/homework.html#bottom)

Homework submission interface: http://cgi.cse.unsw.edu.au/~rvg/6752/HWupload.html (http://cgi.cse.unsw.edu.au/~rvg/6752/HWupload.html)

Course Evaluation and Development

This course is evaluated each session using the myExperience system.

The only criticism on this course in the last evaluation was the lack of a textbook, given that there is a steep learning curve. Unfortunately there is no textbook that covers all aspects of this course, and prescribing a handful of textbooks while treating only a chapter or two from each of them appears needlessly expensive.

Resource created about a year ago (Friday 22 May 2020, 05:43:01 PM), last modified about a year ago (Friday 22 May 2020, 06:59:33 PM).

Comments

(/COMP6752/20T2/forums/search?forum_choice=resource/47515)

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There are no comments yet.