Course Outline Lecturer

Edit Resource (/COMP3211/21T1/resources/55922/edit)

Contents

- Course Details
- Course Summary
- Assumed Knowledge
- Student Learning Outcomes
- Teaching Strategies
- Teaching Rationale
- Student Conduct
- Assessment
- Course Schedule
- Resources for Students
- Course Evaluation and Development

Course Details

Course Code	COMP3211
Course Title	Computer Architecture
Convenor	Hui Guo (/users/z3068443)
Admin	Hui Guo (/users/z3068443)
Classes	Timetable for all classes (/COMP3211/21T1/timetable)
Consultations	Fri. 3-5pm (online)
Units of Credit	6
Course Website	http://cse.unsw.edu.au/~cs3211/21T1/ (http://cse.unsw.edu.au/~cs3211/21T1/)
Handbook Entry	http://www.handbook.unsw.edu.au/undergraduate/courses/current/COMP3211.html (http://www.handbook.unsw.edu.au/undergraduate/courses/current/COMP3211.html)

Course Summary

This course is about the design and implementation of the interface between computer software and hardware.

A study of computer architecture complements the study of programming languages and algorithms, compilers, and operating systems on the software side of the interface, as well as the study of embedded systems, FPGA and VLSI design on the hardware side of the interface .

Assumed Knowledge

Before commencing this course, students should:

- know digital circuits design and be able to model a hardware design with a hardware description language, such as VHDL,
- understand microprocessor operations and assembly programming.<o:p></o:p>

These have been acquired in COMP3222 and its prerequisite courses such as COMP1521.

Student Learning Outcomes

After completing this course, students will:

1. demonstrate a deep understanding of computer hardware design, especially the pipelined RISC processor, hierarchical memory system, and multi-core processor system
2. demonstrate ability to work in teams
3. be able to apply the basic design principles and techniques to build a processor core to meet various requirements, such as performance, cost, power consumption
4. be able to use the simulation tool to investigate and validate the hardware design
5. establish a solid background for studying and development of advanced computing system

This course contributes to the development of the following graduate capabilities:

Graduate Capability	**Acquired in**
Scholars capable of independent and collaborative enquiry, rigorous in their analysis, critique and reflection, and able to innovate by applying their knowledge and skills to the solution of novel as well as routine problems	project design, lab, and tutorial
Entrepreneurial leaders capable of initiating and embracing innovation and change, as well as engaging and enabling others to contribute to change	project design
Professionals capable of ethical, self- directed practice and independent lifelong learning	project design, lab, and tutorial
Global citizens who are culturally adept and capable of respecting diversity and acting in a socially just and responsible way	project design, lab, tutorial, and lecture

Teaching Strategies

- Lectures are used for presenting the background materials, explaining the motivations behind designs, drawing comparisons between competing architectures, connecting the current study with prior knowledge, illustrating avenues for extension to the presented materials, and guiding the direction of the course.
- Tutorials are intended to provide a forum for interaction and discussion. Tutorials will focus on the discussion of the design concepts and architectural/design issues. Problems will be made available to motivate the discussion.
- Labs are used for developing and exercising design, description, and simulation skills. Labs also provides a primary venue for group meetings and work collaborations.
- The project design services as a signature assignment that encourages active and creative learning.

Teaching Rationale

This engineering course is taught the way it is because we have a lot to cover in engineering study: understanding scientific theory, learning how to apply theory to design, developing designs, implementing and testing designs, and gaining appreciation for professional issues. Through lectures, lab exercises, tutorials, and the project design, we hope all these learning aspects can be integrated in our course.

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 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 (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
Tutorials	All topics	Weeks 2-5, 7-9	10%	final result
Assignment	Processor Design	Week 10	20%	final result
Labs	All topics	Weeks 2-7	20%	final result
Final Exam	All topics	Exam period	50%	final result

Course Schedule

Week	Lectures	Tutes	Labs	Assignments	Notes
1	Course intro, ISA, Single cycle processor	Welcome	Lab familiarization Lab 1	-	-
2	Processor peformance, Multi-cycle processor	Tut 1	Lab 1 assessment Lab 2	-	-
3	Pipelining	Tut 2	Lab 2	-	-
4	Pipelining	Tut 3	Lab 2 assessment Lab 3	-	-
5	Memory Hierarchy	Tut 4	Lab 3	project released	-
6	Flexible Week	-	-	-	-
7	Memory Hierarchy	Tut 5	Lab 3 assessment project work	-	-
8	Parallel processing hardware	Tut 6	project check point	-	-
9	Parallel Processing hardware	Tut 7	project work	-	-
10	Course Review	project demonstration	project demonstration	project report due	-

Resources for Students

Texts and recommended readings:

- Textbook: Computer Organization and Design: The Hardware/Software Interface, D.A. Patterson and J.L. Hennessy, 5th Ed., Morgan Kaufmann, 2014
-

- Computer Architecture References:
- Computer Architecture: A Quantitative approach, J.L. Hennessy and D.A. Patterson
- Structured Computer Organisation, A.S. Tanenbaum, 5th Ed., Prentice-Hall.
- Computer Organization & Architecture: Designing for Performance, W. Stallings, 6th Ed., Prentice-Hall

Other resources (on-line)

Course Evaluation and Development

This course is evaluated each session using the myExperience system.

Resource created 6 months ago (Sunday 03 January 2021, 10:55:45 AM), last modified 28 days ago (Friday 28 May 2021, 10:27:57 AM).

Comments
(/COMP3211/21T1/forums/search?forum_choice=resource/55922)
(/COMP3211/21T1/forums/resource/55922)

Add a comment

There are no comments yet.