

CSS224 Computer Architectures

Semester 1, Academic Year 2016

Course Description Computer evolution. Conventional computer architectures. CPU and ALU structures and design. Instruction sets. Hardwired and microprogrammed control. Pipelining. Array and vector processors. Multiprocessor systems. Memory organizations. Cache memory. I/O organizations.

Instructor Cholwich Nattee; cholwich at siit tu ac th or cholwich at gmail com
Office: 6F, Sirindhralai building
Office hours: Tuesday 13:00–16:00; Wednesday 13:00–14:20; Thursday 10:40–16:00

Main Textbooks

D. A. Patterson and J. L. Hennessy, *Computer Organization and Design: The Hardware/Software Interface, 4th edition; ARM edition*, Morgan Kaufmann, ISBN: 978-81-312-2274-4.

R. E. Bryant and D. R. O'Halloron, *Computer Systems: A Programmer's Perspective, 2nd edition*, 2011, Pearson/Prentice Hall, ISBN: 978-0-13-610804-7.

Lecture Notes The lecture notes will be given in form of *partial note*¹. Some parts of the course contents will be given with the notes. You will need to attend the lecture and take notes yourself in order to get the whole contents. I have no plan to provide a single complete package of partial notes for the whole semester. The notes will be provided to you chapter by chapter since they will be tailored based on your study pace.

The notes are available at the Bangkadi Copy Center and <http://cholwich.org/css224/>

Classes

Section 1: Tuesday 10:40–12:00; Wednesday 10:40–12:00 at BKD 2605

Section 2: Tuesday 09:00–10:20 at BKD 2601; Wednesday 14:40–16:00 at BKD 3214

Grading

Attendance	5%	Checked at 15 minutes after the scheduled start time; Door will be locked.
In-class exercises	5%	Conducted once at the end of each lecture
Assignments	10%	Tentatively 3–4 individual works
Midterm Examination	40%	October 4, 2016; 13:30–16:30
Final Examination	40%	December 13, 2016; 13:30–16:30

Rules and Regulations

1. When I TALK, you LISTEN. Be respectful to your classmates and your instructor. Keep your voice down. No chitchatting. Do not disturb the class. Use some technologies if you want to communicate with your friends in the class e.g. Twitter, Line, paper note & pencil, etc.
2. 15 minutes rule: if you attend the class 15 minutes or more after the scheduled class time, you may not earn attendance credit for that day. If your attendance credit is less than 70%, you will NOT be allowed to sit in the final examination according to TU Regulation.
3. An attendance credit will be given to the students who volunteer or call by the Victim Picker to do the exercises in front of the classroom. However, it will not be given more than the attendance portion.
4. You must attend your own section in order to gain your attendance credit.
5. All communication devices must be off or on silent mode during lecture.
6. You are not allowed to talk on the phone in class. In case of emergency, you have to take your phone call outside.

¹based on the inspiration from Dr.Nirattaya Khamsemanan

7. You may sleep in class, but do not snore during class time.
8. Videotaping, Taking a photograph, Voice recording and any other ways of recording the lecture are not allowed in class.
9. No pets are allowed in the classroom.
10. Dress appropriately to class e.g. no shorts.

Should you fail to follow any of these rules, you may be asked to leave the classroom, and/or more penalties will be applied.

Topics

1	Computer Evolution and Architectures
2	Computer Instructions and Instruction Set Architectures
3	CPU and ALU Structures (Single-Cycle Implementation)
4	Pipelining
5	Memory Hierarchy
6	Storage and I/O
7	Multicores, Multiprocessors and Clusters
8	Array and Vector Processors

Academic Integrity

A fundamental tenet of all educational institutions is academic honesty; academic work depends upon respect for and acknowledgment of the work and ideas of others. Misrepresenting someone else's work as one's own is a serious offense in any academic setting and it will not be condoned.

Academic misconduct includes, but is not limited to, providing or receiving assistance in a manner not authorized by the instructor in the creation of work to be submitted for academic evaluation (e.g. papers, projects, examinations and assessments—whether online or in class); presenting, as one's own, the ideas, words or calculations of another for academic evaluation; doing unauthorized academic work for which another person will receive credit or be evaluated; using unauthorized aids in preparing work for evaluation (e.g. unauthorized formula sheets, unauthorized calculators, unauthorized programs or formulas loaded into your calculator, etc.); and presenting the same or substantially the same papers or projects in two or more courses without the explicit permission of the instructors involved.

A student who knowingly assists another student in committing an act of academic misconduct shall be equally accountable for the violation, and shall be subject to the sanctions and other remedies described in The Student Code. Sanctions shall include, but are not limited to, a letter sent to the Dean of Students of the University; a grade of 0 on the assignment, quiz or exam; a grade of F for the course.