COMP 4045: Parallel Computer Architecture
Shoaib Akram
Semester 1, 2027
Tentative Course Outline

1. Instruction and Memory-Level Parallelism (2 Lectures)
2. Introduction to Parallel Architectures and Programming (1 lecture)
3. Cache Coherence (2 lectures)
4. Memory Consistency Models (2 lectures)
5. Hardware Prefetching (2 lectures)
6. Synchronization and Transactional Memory (2 lectures)
7. Multithreading and Chip Multiprocessors (2 lectures)
8. Processing in Memory (2 lectures)
9. Reliability (2 lectures)
10. Dataflow and Data-Parallel Architectures (1 lecture)
11. Graphics Processing Units (2 lectures)
12. Memory Tiering (2 lectures)
13. DRAM and NAND Flash (2 lectures)

Schedule of Assessments:
1. 2/22 – 2/28
2. 3/1 – 3/7
3. 3/8 – 3/14: Homework released
4. 3/15 – 3/21: Homework due, Assignment released
5. 3/22 – 3/28: Project proposals due
6. 3/29 – 4/4: Assignment due
7. 4/5 – 4/11
8. 4/12 – 4/18
9. 4/19 – 4/25: Midterm
10. 4/26 – 5/2
11. 5/3 – 5/9
12. 5/10 – 5/16: Projects due
13. 5/17 – 5/23: Literature review + presentation due
14. 5/24 – 5/30
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.. Final Exam
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Assessment Scheme:
Homework (5%), Assignment (8%), Midterm (20%), Projects (22%), Literature Review (15%), Final Exam (30%)