

Class		Date	Topic	Papers	Notes	Student Presenter	Project Schedule
1	W	8-Sep	Introduction and overview				
2	M	13-Sep	Introduction to Architectural Simulation	"ZSim: Fast and Accurate Microarchitectural Simulation of Thousand-Core Systems" pdf: https://people.csail.mit.edu/sanchez/papers/2013.zsim.isca.pdf	<i>No presentation, no paper summaries.</i>	N/A	
3	W	15-Sep	Hardware multi-threading and simultaneous multi-threading	(1) Kongetira, Poonacha; Aingaran, K.; Olukotun, K., "Niagara: a 32-way multithreaded Sparc processor," IEEE Micro, vol.25, no.2, pp.21,29, March-April 2005. pdf: https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=1453485 (2) Eggers, S.J.; Emer, J.S.; Leby, H.M.; Lo, J.L.; Stamm, R.L.; Tullsen, D.M., "Simultaneous multithreading: a platform for next-generation processors," in Micro, IEEE , vol.17, no.5, pp.12-19, Sep/Oct 1997. URL: http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=621209&isnumber=13512	<i>No presentation, no paper summaries. Read (2) mainly, skim through (1).</i>	N/A	
4	M	20-Sep	Multi-threaded applications and power management	Ryan Cochran, Can Hankendi, Ayse K. Coskun, and Sherief Reda. 2011. Pack & Cap: adaptive DVFS and thread packing under power caps. In Proceedings of the 44th Annual IEEE/ACM International Symposium on Microarchitecture (MICRO-44). pp. 175-185, 2011. pdf: https://www.bu.edu/peaclab/files/2014/03/cochran_MICRO11.pdf		Daniel Wilson	
5	W	22-Sep	Multi-core cache and memory management	Po-An Tsai, Nathan Beckmann, and Daniel Sanchez. 2017. "Jenga: Software-Defined Cache Hierarchies". In Proceedings of the 44th Annual International Symposium on Computer Architecture (ISCA '17). ACM, New York, NY, USA, 652-665. http://people.csail.mit.edu/poantsai/papers/2017.jenga.isca.pdf		-	Mini Project 1 Out
6	M	27-Sep	OS Scheduling for Multi-core	(1) "Reinventing Scheduling for Multicore Systems": https://www.usenix.org/legacy/event/hotos09/tech/full_papers/boyd-wickizer/boyd-wickizer.pdf (2) Juan Carlos Saez, Manuel Prieto, Alexandra Fedorova, and Sergey Blagodurov. 2010. A comprehensive scheduler for asymmetric multicore systems. In Proceedings of the 5th European conference on Computer systems (EuroSys '10). ACM, New York, NY, USA, 139-152. https://dl.acm.org/doi/pdf/10.1145/1755913.1755929	<i>Paper summaries for (2) only. Skim through (1).</i>	-	
7	W	29-Sep	Processing in memory	Junwhan Ahn, Sungjoo Yoo, Onur Mutlu, and Kiyoun Choi. 2015. PIM-enabled instructions: a low-overhead, locality-aware processing-in-memory architecture. In Proceedings of the 42nd Annual International Symposium on Computer Architecture (ISCA '15), 336-348. https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.703.6945&rep=rep1&type=pdf		Margot Bauman	
8	M	4-Oct	Tiled architectures and dark silicon	(1) Taylor, M.B. et al., "The Raw microprocessor: a computational fabric for software circuits and general-purpose programs," Micro, IEEE , vol.22, no.2, pp.25,35, Mar/Apr 2002. pdf: http://ieeexplore.ieee.org/xpl/login.jsp?tp=&arnumber=997877&url=http%3A%2F%2Fieeexplore.ieee.org%2Fxppls%2Fabs_all.jsp%3Farnumber%3D997877 (2) Conservation cores: reducing the energy of mature computations, Ganesh Venkatesh, Jack Sampson, Nathan Goulding, Saturnino Garcia, Vladyslav Bryksin, Jose Lugo-Martinez, Steven Swanson, and Michael Bedford Taylor, Proceedings of the 15th Architectural support for programming languages and operating systems (ASPLOS), pages 205-218, 2010. pdf: http://doi.acm.org/10.1145/1736020.1736044	<i>Paper summaries and student presentation for (2) only. Skim through (1).</i>	Lucas Neves	
9	W	6-Oct	Neuromorphic computing	M. Davies et al., "Loihi: A Neuromorphic Manycore Processor with On-Chip Learning," in IEEE Micro, vol. 38, no. 1, pp. 82-99, January/February 2018. https://ieeexplore.ieee.org/document/8259423		Dylan Pollack	Mini Project 1 Due
	M	11-Apr	No class				
10	T	12-Oct	Meltdown and Spectre: Vulnerabilities in Modern Architectures	https://meltdownattack.com/ Focus on the Meltdown paper mainly.	<i>Paper summary and presentation only for Meltdown. Skim through website for Spectre.</i>	Kellen Jay	

20	M	15-Nov	Sustainability in data centers	Zhenhua Liu, Yuan Chen, Cullen Bash, Adam Wierman, Daniel Gmach, Zhikui Wang, Manish Marwah, and Chris Hyser. 2012. Renewable and cooling aware workload management for sustainable data centers. SIGMETRICS Perform. Eval. Rev. 40, 1 (June 2012), 175-186. https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.221.6442&rep=rep1&type=pdf	<i>Skim through the part with theorems, focus on the rest.</i>	Efe Sencan	Mini Project 3 Due	
21	W	17-Nov	Quantum computing, co-design	(1) https://www.ibm.com/topics/quantum-computing (2) T. Tomesh and M. Martonosi, "Quantum Codesign," in IEEE Micro, vol. 41, no. 5, pp. 33-40, 1 Sept.-Oct. 2021, doi: 10.1109/MM.2021.3094461. https://ieeexplore.ieee.org/stamp/stamp.jsp?amumber=9472953	<i>Read the paper but no paper summaries. Browse through (1) to learn about QC. Student presenter should discuss with the instructor before preparing the presentation.</i>	Niantong Dong		
22	M	22-Nov	Project status updates					
	W	24-Nov	<i>Thanksgiving Recess</i>					
23	M	29-Nov	Approximate Computing	Subrata Mitra, Manish K. Gupta, Sasa Misailovic, and Saurabh Bagchi. 2017. Phase-aware optimization in approximate computing. In Proceedings of the 2017 International Symposium on Code Generation and Optimization (CGO '17). IEEE Press, Piscataway, NJ, USA, 185-196. https://dl.acm.org/citation.cfm?id=3049853		Samir Farhat		
24	W	1-Dec	Programmable Performance Counters, Security Analytics	Phmon: a programmable hardware monitor and its security use cases L. Delshadtehrani, S. Canakci, B. Zhou, S. Eldridge, A. Joshi, M. Egele, 29th USENIX Security Symposium (USENIX Security 20), 807-824. https://www.usenix.org/system/files/sec20spring_delshadtehrani_prepub.pdf		Daniel Wilson		
25	M	6-Dec	Project presentations	<i>No paper.</i>		-		
26	W	8-Dec	Project presentations	<i>No paper.</i>		-		
	R	9-Decem					Project Submission Due	
			*Schedule is subject to change.					