

CSC 255/455 Schedule, Spring 2016 (updates 1/23, 3/26)

Week	Lecture	Date	Topic	Reading	Assignment
1	1	13-Jan	introduction		
2	2	18-Jan	MLK day, no class		
	3	20-Jan	value numbering, local	EAC Ch. 8	trivia due
3	4	25-Jan	value numbering, superlocal	EAC Ch. 8	
	5	27-Jan	LLVM lecture by Criswell		LVN due
4	6	1-Feb	data flow analysis, AVAIL and LIVE	EAC Ch. 9.2, 10.2	GCC/LLVM assigned
	7	3-Feb	data flow properties	Kam/Ullman 1976	
5	8	8-Feb	def-use chains, dead-code elimination	AK Ch. 4.4	inst cnt due
	9	10-Feb	static single assignment	EAC Ch. 9.3, 10.3.2, 12.3	hw 1
6	10	15-Feb	static single assignment		
	11	17-Feb	PRE, ILP, register allocation	EAC Ch. 13.1-4	hw 1 due
7	12	22-Feb	mid-term exam (in class)		
	13	24-Feb	URCC intro and programming		urcc assigned
8	14	29-Feb	interprocedural, alias and point-to	AK Ch. 11.2.2	
	15	2-Mar	CFL reachability, point-to, correctness	Reps paper	control flow due
9	16	14-Mar	introduction: high-level transformation	AK Ch. 1	
	17	16-Mar	dependence theory	AK Ch. 2	local valnum due
10	18	21-Mar	(cancelled, DOE workshop)		
	19	23-Mar	Allen-Kennedy vectorization algorithm	AK Ch. 2.4.3	
11	20	28-Mar	parallelism: loop interchange, scalar expansion, node splitting,	AK Ch. 5.2-5.5, 8.4 7.3	def-use due
	21	30-Mar	control dependence	AK Ch. 7.3	
12	22	4-Apr	data-parallel languages/compiler	AK Ch. 14.1-4.2	hw2 assigned
	23	6-Apr	memory performance and locality	unpublished texts	
13	24	11-Apr	dynamics: LRU stacks, reuse distance		dead-code due
	25	13-Apr	locality: unroll-and-jam, blocking	AK Ch. 8.4	hw2 due
14	26	18-Apr	sharing: working set, footprint	unpublished texts	hw3 assigned
	27	22-Apr	locality optimization		
15	28	25-Apr	auto-tuning, verification	lecture slides	
		27-Apr	review		hw3 due
		4-May	final exam (1:30pm to 3:30)		

EAC: Engineering a compiler, by Cooper and Torczon

AK: Optimizing compilers for modern architectures, by Allen and Kennedy