CS166 Syllabus

Below is a (tentative) syllabus for this quarter's offering of CS166. It might change a bit if we move through some of the topics faster or more slowly than anticipated or if people have suggestions for other topics to cover.

Date	Topics	Assignments
T March 29	Range Minimum Queries, Part I Why Study Data Structures?	
Th March 31	Range Minimum Queries, Part II Cartesian Trees The Method of Four Russians	Problem Set One Out
T April 5	Tries Aho-Corasick String Matching Fast String Search with Fixed Patterns	
Th April 7	Suffix Trees Amazingly Simple String Algorithms Why RMQ Matters	Problem Set One Due
T April 12	Suffix Arrays Constructing Suffix Trees The Return of the Cartesian Tree	Problem Set Two Out
Th April 14	2-3-4 Trees Red/Black Trees Data Structure Isometries	
T April 19	Augmented Binary Search Trees Tree Splits and Joins	Problem Set Two Due Problem Set Three Out
Th April 21	Amortized Analysis Two-Stack Queues A Better 2-3-4 Tree Analysis	
T April 26	Binomial Heaps Lazy Binomial Heaps	
Th April 28	Fibonacci Heaps Asymptotically Optimal Dijkstra's and Prim's Algorithms The Annoying Gap Between Theory and Practice	Problem Set Three Due
T May 3	Splay Trees Static Optimality In Search of the Perfect BST	Problem Set Four Out
Th May 5	Count[-Min] Sketches Universal and Pairwise-Independent Hashing More Uses for Hash Functions	

Date	Topics	Assignments
T May 10	Hashing Strategies Linear Probing	
Th May 12	Worst-Case Efficient Hash Tables Cuckoo Hashing	Problem Set Four Due Problem Set Five Out
T May 17	Integer Data Structures van Emde Boas Trees Putting Logs in your Logs	
Th May 19	*x*-Fast and *y*-Fast Tries A Little Something of Everything	Problem Set Five Due
T May 24	Disjoint-Set Forests Slicing Forests for Fun and Profit	
	Midterm Exam Covers topics from PS1 – PS5 7:00PM – 10:00PM, Location TBA	
Th May 26	Euler Tour Trees Why All These Primitives Matter	
T May 31	Where to Go from Here	