EC 504 - Fall 2019

Tentative Syllabus:

This is a tentative ordered syllabus discussing what we will cover in class. Deviations will occur, depending on class progress

1. Fundamentals
    - Analysis of algorithms
        - Asymptotic notation
        - Recurrences
        - Average Case
        - Amortized analysis
    - Overview of C/C++ -- Style vs Efficiency

2 Basic 1D data structures and algorithms
        - Searching and Sorting
            - Worst, best, average case analysis of algorithms
        - Stacks and queues
            - Addressing, expected number of probes, Bloom filters

2. Basic Trees and Data Structures
    - Balanced search trees
        - AVL, Red-Black
        - Self-adjusting
    - Priority queues
        - Heaps, binomial heaps and Fibonacci heaps
        - Leftist heaps, tries, treaps
3. 2D Graphs and Networks
    - Representations
    - Traversals
    - Minimum spanning trees
    - Shortest paths
    - Max Flow
    - Min-Cost flow

4 Possible Advanced topics
    - Fast Fourier Transforms
    - NP Completeness
    - Quantum Computing