

What's examinable, and what's just illustration?

Course pages 2019 – 20

Algorithms

Syllabus

Course materials

Microchallenges

For supervisors

For tickers

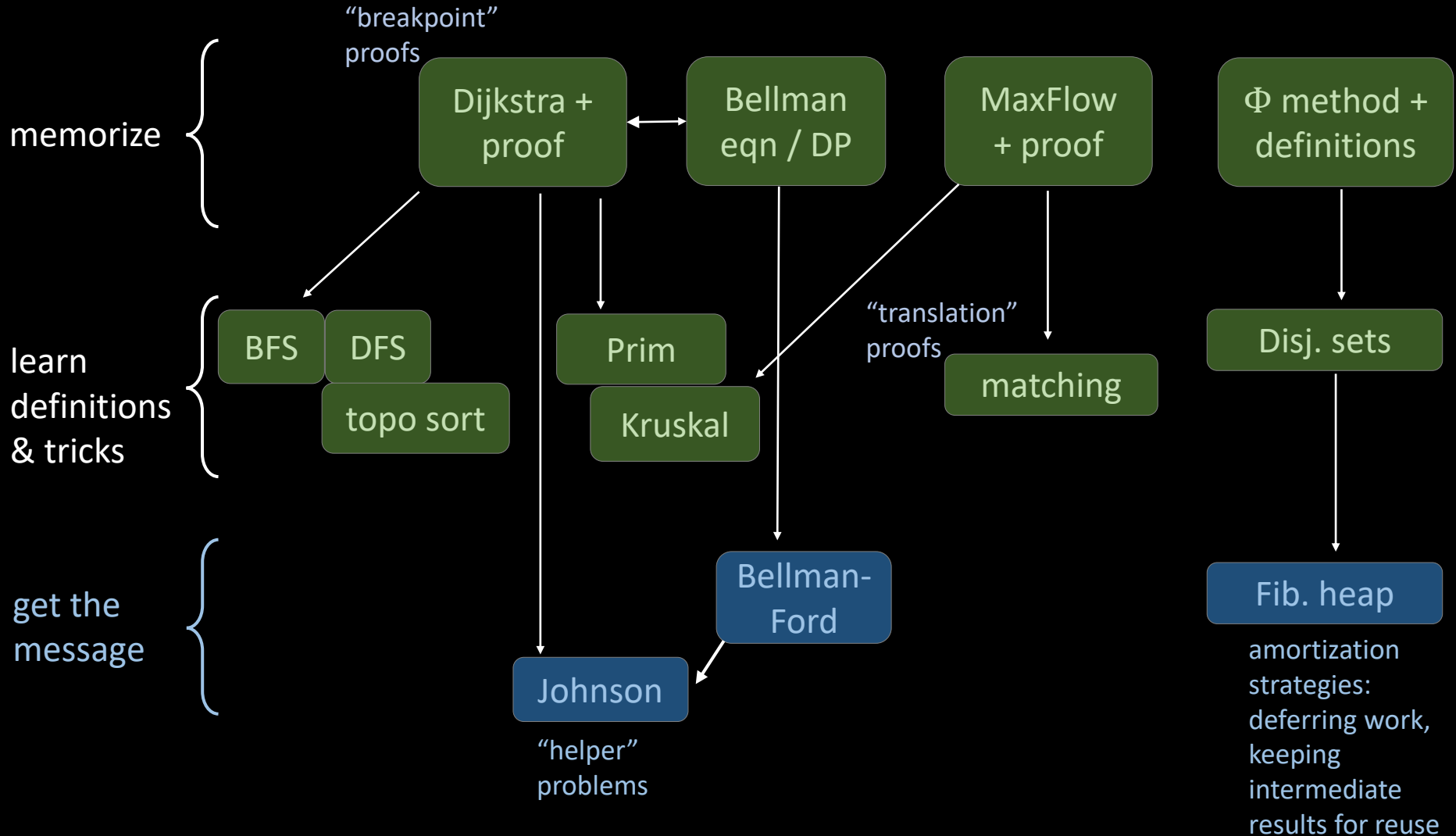
Lectures

Graph algorithms. Graph representations. Breadth-first and depth-first search. Topological sort. Minimum spanning tree. Kruskal and Prim algorithms. Single-source shortest paths: Bellman-Ford and Dijkstra algorithms. All-pairs shortest paths: ~~matrix multiplication~~ dynamic programming and Johnson's algorithms.

Flow networks. Maximum flow: Ford-Fulkerson method, Max-Flow Min-Cut Theorem. Matchings in bipartite graphs.

Advanced data structures. Binomial heap. Amortized analysis: aggregate analysis, potential method. Fibonacci heaps. Disjoint sets.

Geometric algorithms. ~~Intersection of segments. Convex hull: Graham's scan, Jarvis's march.~~



The exam will ask you to design algorithms for problem domains you've not studied, and it will ask you to analyse algorithms you've not seen. Revise by doing exercises.

The example sheets are examinable material (except for starred questions).