

## Topics by Section

3.2 Stable matchings, Gale-Shapley Proposal Algorithm

4.1 separating set/vertex cut, connectivity,  $\kappa(G)$ ,  $k$ -connectivity, disconnecting set of edges,  $k$ -edge-connectivity, edge-connectivity,  $\kappa'(G)$ , edge cut

Whitney's Theorem (4.1.9) If  $G$  is a simple graph,  $\kappa(G) \leq \kappa'(G) \leq \delta(G)$ .

Them 4.1.11 If  $G$  is 3-regular, then  $\kappa(G) = \kappa'(G)$ .

4.2 internally disjoint  $uv$ -paths,  $xy$ -cut

Whitney's Theorem (4.2.2) A graph  $G$  with at least 3 vertices is 2-connected if and only if for each pair  $u, v \in V(G)$  there exist internally disjoint  $uv$ -paths.

Theorem 4.2.4 (a list of 4 statements equivalent to being 2-connected)

Menger's Theorem: If  $x, y$  are nonadjacent vertices of the graph  $G$ , then the minimum number of edges in an  $xy$ -cut is equal to the maximum number of pairwise internally disjoint  $xy$ -paths.