Some notation for the PhD course Graph Theory

$E(G)$ set of edges in G.

$V(G)$ set of vertices in G.

K_n complete graph on n vertices.

$K_{m,n}$ complete bipartite graph on $m+n$ vertices.

G^{c} the complement of G. (Diestel uses notation $\overline{G}$).

$L(G)$ line graph of G.

$c(G)$ number of components of G.

$o(G)$ number of odd components in G (i.e. number of components with an odd number of vertices.)

$d_G(v)$ degree of a vertex v in G.

$N_G(v)$ set of neighbors in G of a vertex v.

$\delta(G)$ minimum degree in G.

$\Delta(G)$ maximum degree in G.

$\alpha(G)$ independence number of G, i.e., the size of the largest independent set in G.

$\beta(G)$ minimum size of a vertex cover in G.

$\alpha'(G)$ size of a maximum matching in G.

$\beta'(G)$ minimum size of an edge cover in G.

$d_G(u,v)$ distance between u and v, i.e., length of a shortest path between u and v

$\kappa(G)$ connectivity of G, i.e. the greatest k such that G is k-connected.

$\kappa'(G)$ edge-connectivity of G, i.e. the greatest k such that G is k-edge-connected. (Note: $\lambda(G)$ in Diestel)

$\chi(G)$ chromatic number of G, i.e. minimum k such that G has a proper k-coloring.

$\chi'(G)$ chromatic index (edge-chromatic number) of G, i.e. minimum k such that G has proper k-edge coloring.

$\omega(G)$ clique number of G, i.e. the size of a maximum clique in G.

$\chi_l(G)$ list-chromatic number (or choice number of G), i.e. the smallest number k such that if L is a list assignment for the vertices of G such that $|L(v)| \geq k$ for every $v \in V(G)$, then G has an L-coloring.

$\chi'_l(G)$ list-chromatic index (or list edge chromatic number of G), i.e. the smallest number k such that if L is a list assignment for the edges of G such that $|L(e)| \geq k$ for every $e \in E(G)$, then G has an L-edge-coloring.

$\text{ex}(n, H)$ the largest number of edges in a graph G on n vertices that does not contain H as a subgraph.

$\mathcal{G}(n, m)$ "the random graph", i.e. the probability space consisting of all graphs with n vertices and m edges, and where all such graphs are equally likely.

$\mathcal{G}(n, p)$ "the binomial random graph", i.e. the probability space of graphs on n vertices where each edge independently occurs in G with probability p.