We extend the edge-coloring notion of core (subgraph induced by the vertices of maximum degree) to $t$-core (subgraph induced by the vertices $v$ with $d(v) + \mu(v) > \Delta + t$), and find a sufficient condition for $(\Delta + t)$-edge-coloring. In particular, we show that for any $t \geq 0$, if the $t$-core of $G$ has multiplicity at most $t + 1$, with its edges of multiplicity $t + 1$ inducing a multiforest, then $\chi'(G) \leq \Delta + t$. This extends previous work of Ore, Fournier, and Berge and Fournier. More generally, we prove bounds on the fan number of a graph $G$, a parameter introduced by Scheide and Stiebitz as an upper bound on the edge chromatic number. We give an exact characterization of the multigraphs $H$ such that $\text{Fan}(G) \leq \Delta(G) + t$ for all graphs $G$ having $H$ as their $t$-core. We show how this characterization implies a theorem of Hoffman and Rodger about cores of $\Delta$-edge-colourable simple graphs. (Received September 26, 2017)