A $k$-magic square of order $n$ is an arrangement of the numbers from 0 to $kn - 1$ in an $n \times n$ matrix, such that each row and each column has exactly $k$ filled cells, each number occurs exactly once, and the sum of the entries of any row or any column is the same. A magic square is called $k$-diagonal if its entries all belong to $k$ consecutive diagonals. In this talk we show that a $k$-diagonal magic square exists if and only if $n = k = 1$ or $3 \leq k \leq n$ and $n$ is odd or $k$ is even.