We study universal cycles of the set $P_{n,k}$ of $k$-partitions of the set $[n]$ and prove that the transition digraph associated with $P_{n,k}$ is Eulerian. We use this result to prove that U-cycles of $P_{n,k}$ exist for all $n \geq 3$ when $k = 2$ and for odd $n$ when $k = n - 1$. We also prove that U-cycles do not exist for $n$ even when $k = n - 1$ or when $S(n - 2, k - 2)$ is odd ($3 \leq k < n - 1$). (Received September 16, 2014)