If one of U, V is finitely generated, the answer is “yes”. In general, however, the answer is “no”, as we can show by the following example over R = Z. Take $U = V = \oplus_p \mathbb{Z}_p$, where p ranges over all primes. Let $\varepsilon \in E := \mathrm{Hom}_{\mathbb{Z}}(V, V)$ be the identity map from V to V. We claim that ε has *infinite* additive order in E (which certainly implies that E is not a semisimple Z-module). For any natural number n, take a prime $p > n$. Then

$(n \cdot \varepsilon)(0, \ldots, 1, 0, \ldots) = (0, \ldots, n, 0, \ldots) \neq 0$

if the 1 appears in the coordinate corresponding to $\mathbb{Z}_p$. Therefore, $n \cdot \varepsilon \neq 0 \in E$, as claimed.