Every Hodge class on a product of two complex projective K3 surfaces induces a homomorphism of rational Hodge structures between the respective transcendental lattices. Under the hypothesis that this morphism is an isometry of rational quadratic spaces, Mukai, Nikulin and recently Buskin have proven that the corresponding Hodge class is algebraic, confirming the Hodge conjecture in this context. In this talk, I will show that the hypothesis of isometry is too restrictive by constructing geometrically some families of isogenies between K3 surfaces whose transcendental Hodge structures are nonisometric. This is a collaboration with Alessandra Sarti and Davide Cesare Veniani.