Axler 7.A exercise 3 May 31, 2021

Suppose $T\in\mathcal{L}(V)$ and U is a subspace of V. Prove that U is invariant under T iff U^\perp is invariant under T^* .

This implies that both directions, since $U=U^{\perp^\perp}$ and $T=(T^*)^*$