Proof →

Let us take an ordered matrix $\alpha = \{v_1, v_2, \ldots, v_n\}$ for V

and $\beta = \{w_1, w_2, \ldots, w_m\}$ for W

Let T be any linear transformation in $L(V, W)$.
Then we can find the matrix of T with to bases α and β and let us call it $[T]_{\alpha \to \beta}$

The mapping $\phi : L(V, W) \to F^{m \times n}$ which take a linear transformation T to its matrix $[T]_{\alpha \to \beta}$ is an isomorphism!

Note: ϕ depends on choice of α and β