**Diagram showing Kernel (ker) and Image (Im) of a linear mapping.**

Let the set of vectors $E \subseteq U$ be a vector space with $(E, +, .)$.

Consider any linear mapping $f : E \to F$, then $f$, $\ker(f)$ and $\mathrm{Im}(f)$ can be represented by this diagram.

*But do not take it literally – it is just a metaphor! Please use it to help you understand the mathematical notation in the lecture notes.*