**Definition 11.9** An $(n, M)$ code for a continuous memoryless channel with input constraint $(\kappa, P)$ is defined by an <span style="color:blue">encoding function</span>

$$e : \{1, 2, \cdots, M\} \to \Re^n$$

and a <span style="color:blue">decoding function</span>

$$g : \Re^n \to \{1, 2, \cdots, M\}.$$

Moreover,

$$\frac{1}{n} \sum_{i=1}^{n} \kappa(x_i(w)) \leq P \quad \text{for } 1 \leq w \leq M,$$

i.e., each codeword satisfies the input constraint.