

# Digitale Signalverarbeitung

*Zusammenfassung*

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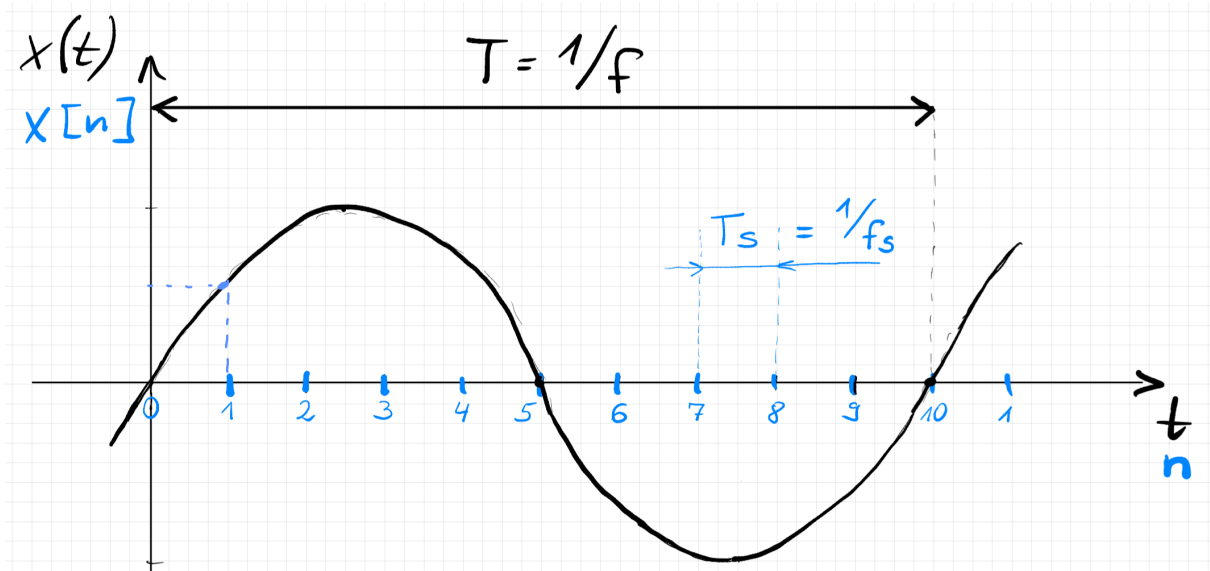
## Digital Signals in the Time Domain

### Signal Analysis

#### Sampling of Analog Signals

By sampling  $x(t)$  in the interval of  $T_S$  we get the sequence of signal values  $x[n]$  with  $-\infty \leq n \leq +\infty$

$$x(n \cdot T_S) = x[n]$$



Signal	Property
causal	$x[n] = 0$ for $n < 0$
real	$x[n]$ Real
complex	Re & Im or Amplitude & Phase

### Basic Digital Signals

unit impulse	unit step	periodical signal
$\delta[n] = \begin{cases} 0 & n \neq 0 \\ 1 & n = 0 \end{cases}$	$u[n] = \begin{cases} 0 & n < 0 \\ 1 & n \geq 0 \end{cases}$	$x[n] = x \left[ n + \frac{T_0}{T_S} \right]$ with $\frac{T_0}{T_S} = k$

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