

Sampling

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STUDY FOR FE

Sampling is defined as the process of converting an analog value into discrete value.

Nyquist –Shannon Sampling Theorem:

A band limited signal is fully defined by its samples if they are taken at a rate of **2X the highest signal frequency**.

Mathematically:

Sampling rate should be $> 2 \times W$

What happens if the signal is sampled at a frequency less than Nyquist sampling rate?

If the signal is sampled at less than the required rate it can not be fully recovered, and aliasing will take place.

Alias frequency = $| \text{Signal frequency} - n \times \text{Sampling frequency} |$

'n' is selected such that $n \times \text{Sampling frequency}$ is closest to signal frequency.