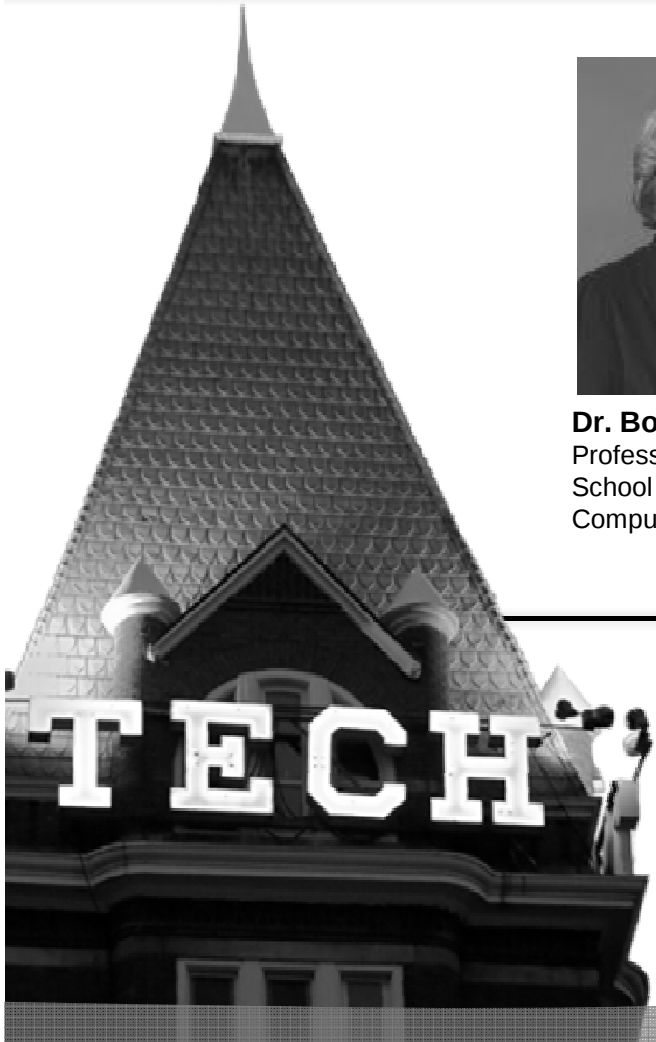


Frequency Response



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Understanding and displaying the frequency response of systems



Module 4:

- ⦿ Sinusoids and Phasors
- ⦿ Impedance
- ⦿ Analysis of Sinusoidal Systems
- ⦿ Transfer Functions
- ⦿ Frequency Spectrum
- ⦿ Frequency Response
- ⦿ Filtering

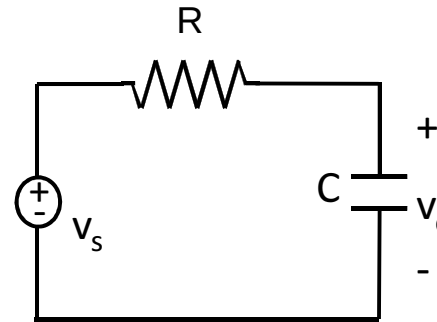
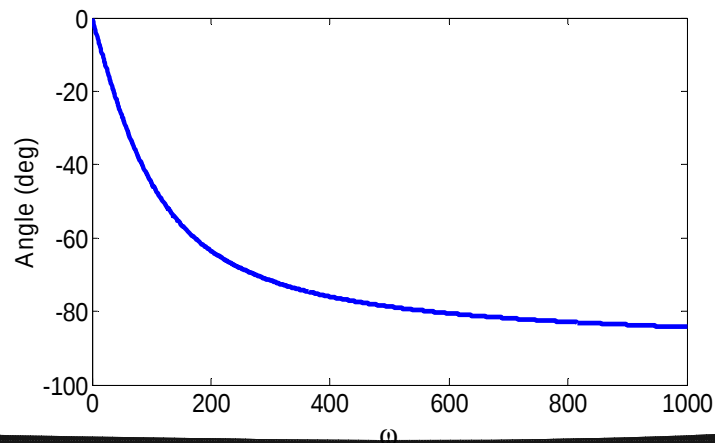
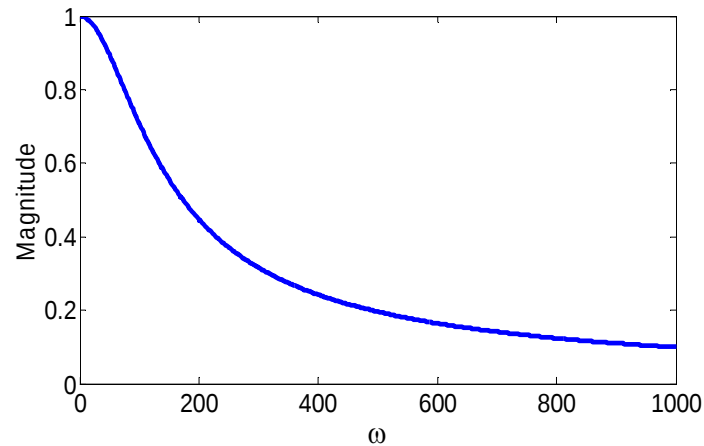
Previous Lessons

- ⦿ Introduced the transfer function
- ⦿ Introduced the Frequency Spectrum to represent the frequency content of signals

Lesson Objectives

- ◎ Introduce the frequency response as a way of showing how a system processes signals of different frequencies
- ◎ Introduce Bode plots

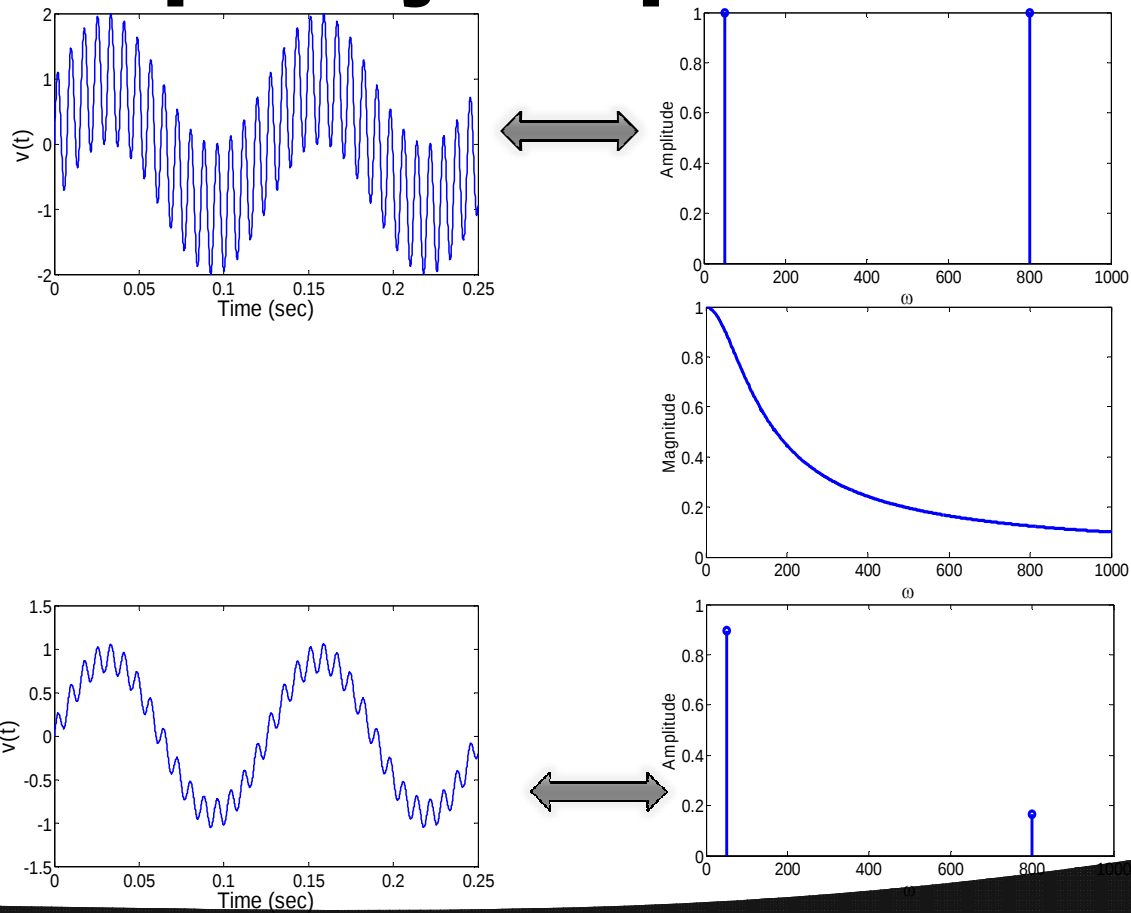
Frequency Response



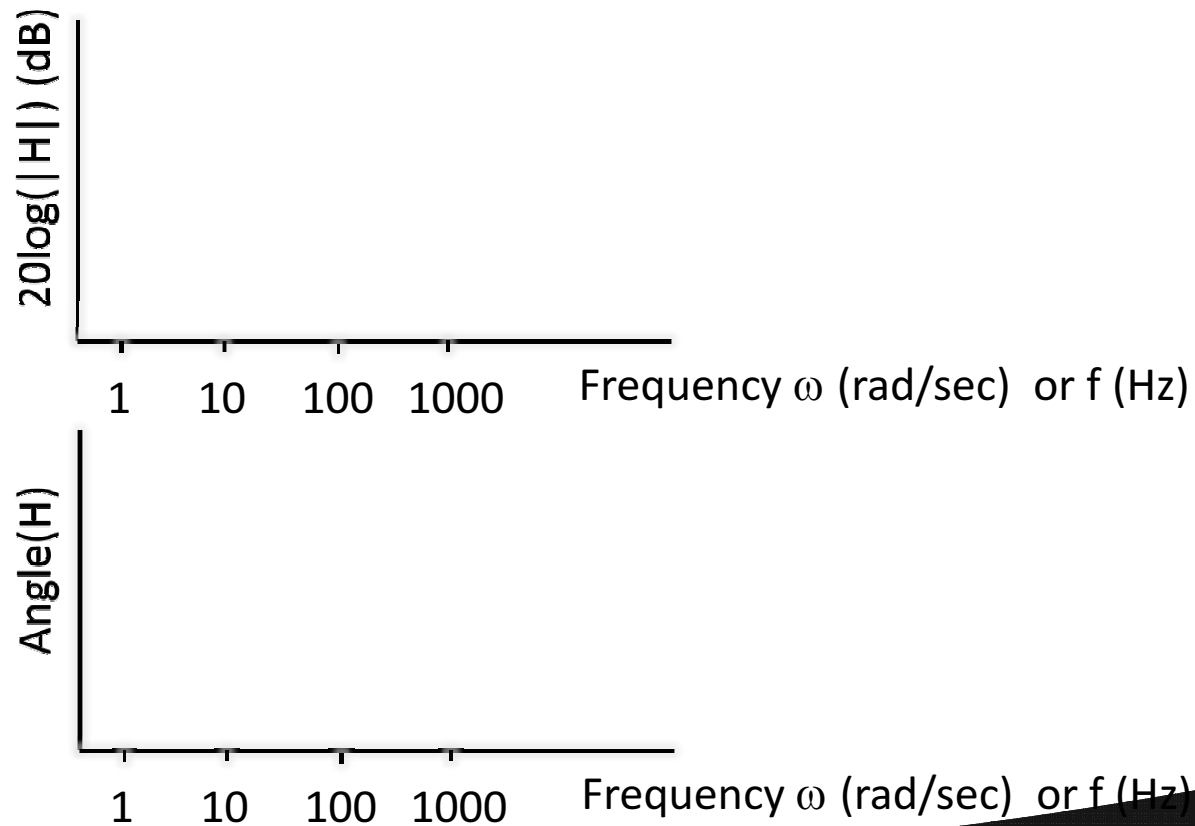
Transfer Function

$$H(\omega) = \frac{1}{1 + j\omega CR}$$

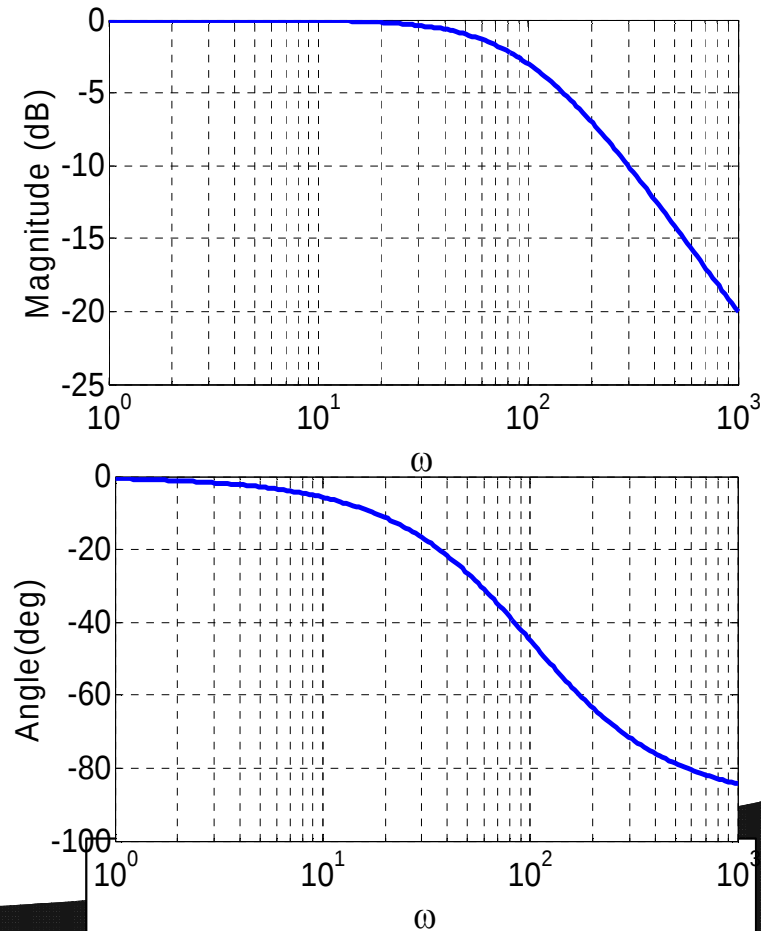
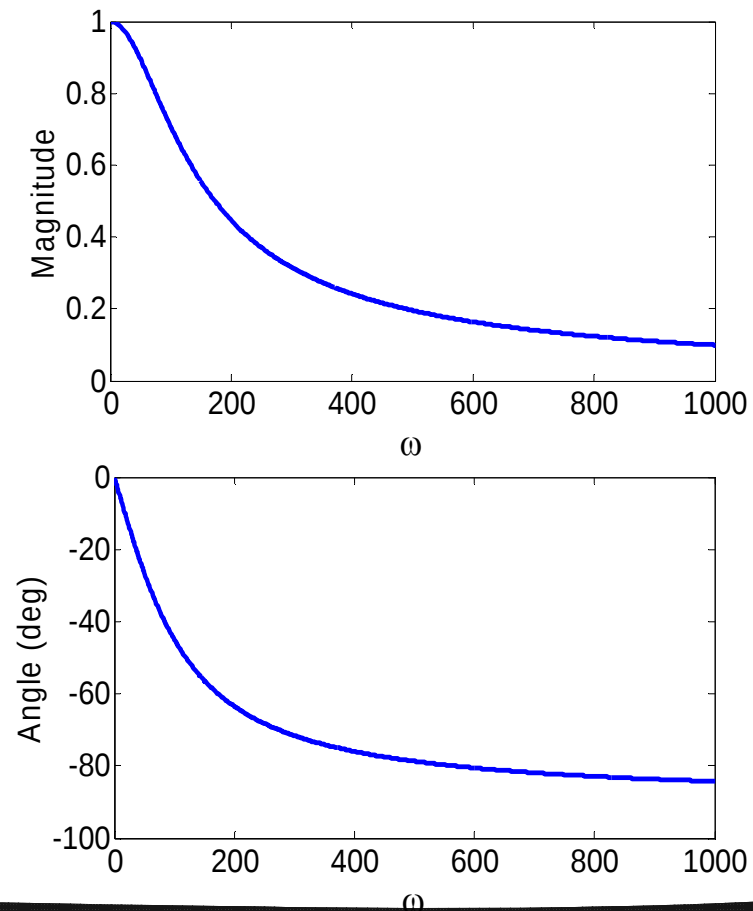
Frequency Response



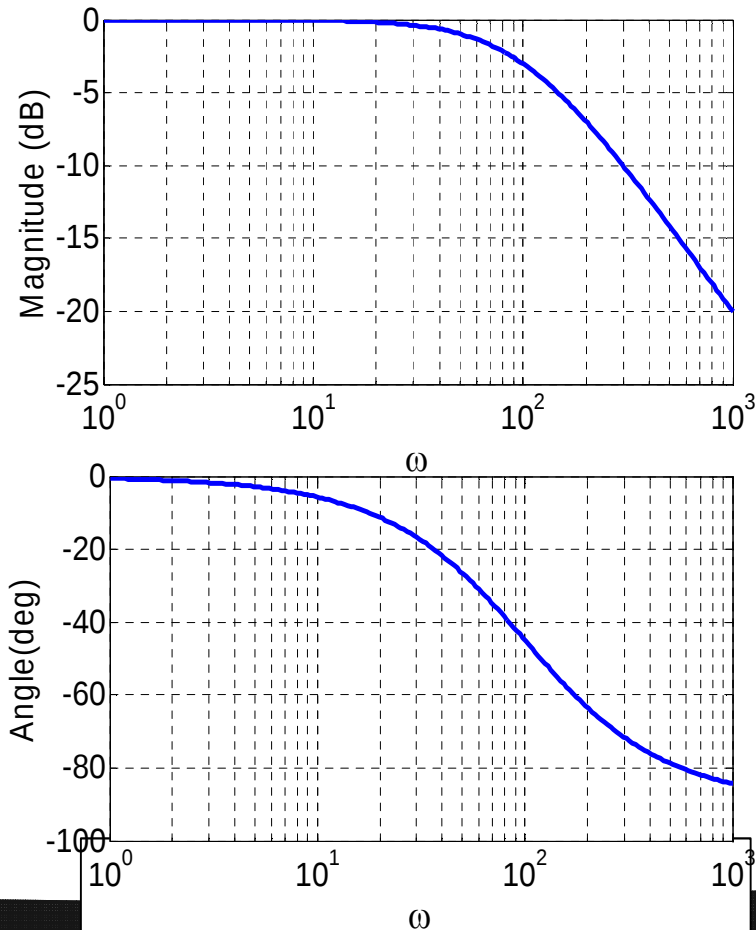
Bode Plots



Linear Plot and Bode Plot

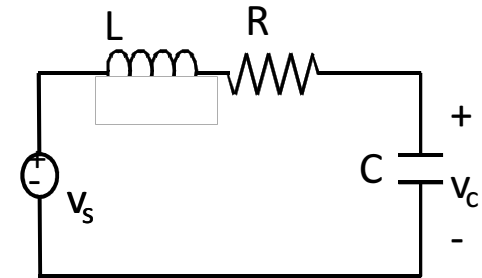
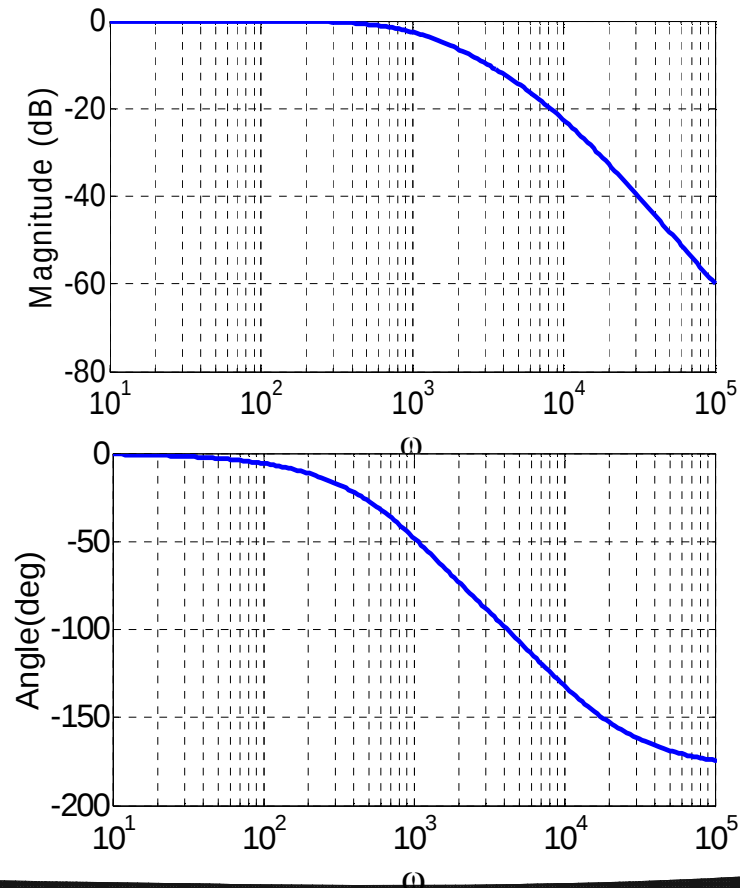


Bode Plot First-Order Characteristics



$$H(\omega) = \frac{1}{1 + j\omega CR}$$

Bode Plot of RLC Circuit



$$H(\omega) = \frac{1}{(1 - LC\omega^2) + RCj\omega}$$

Bode Plot of RLC Circuit

