DIGITAL FILTERING REFERENCES

1. A wide range of digital filter applications and review of basics.

How Do I Learn DSP? http://www.redcedar.com/learndsp.htm

INTRODUCTION TO DIGITAL FILTERS WITH AUDIO APPLICATIONS JULIUS O. SMITH
Center for Computer Research in Music and Acoustics (CCRMA)
https://ccrma.stanford.edu/~jos/filters/

A book (795 pages) that covers many of the topics in DSP- Check the Table of Contents for specific topics   http://www.ece.rutgers.edu/~orfanidi/intro2sp/orfanidis-i2sp.pdf

2. Very good series of video lectures about DSP by a real expert – but with basic presentation.

http://ocw.mit.edu/resources/res-6-008-digital-signal-processing-spring-2011/video-lectures/

3. Try Oppenheim's Design of IIR Filters when you are a bit more advanced in DSP

http://ocw.mit.edu/resources/res-6-008-digital-signal-processing-spring-2011/video-lectures/lecture-14-design-of-iir-digital-filters-part-1/

ANALOG FILTERS 3/31/2013

1. Analog Filter Calculators – Try It!

http://www.analog.com/designtools/en/filterwizard/   ANALOG FILTER WIZARD

Select type of filter and the frequency characteristics – the Wizard will design the filter and plot results.

http://sim.okawa-denshi.jp/en/CRlowkeisan.htm

This page is a web application that design a RLC low-pass filter. Use this utility to simulate the Transfer Function for filters at a given frequency, damping ratio ζ, Q or values of R, L and C. The response of the filter is displayed on graphs, showing Bode diagram, Nyquist diagram, Impulse response and Step response.

2. Analog Filter Tutorials

http://www.maximintegrated.com/app-notes/index.mvp/id/733

Abstract: This comprehensive article covers all aspects of analog filters. It first addresses the basic types: first- and second-order filters, highpass and lowpass filters, notch and all-pass filters, and high-order filters. The tutorial then explains the characteristics of the different implementations, such as Butterworth

filters, Chebychev filters, Bessel filters, elliptic filters, state-variable filters, and switched-capacitor filters.

3.   Analog Filter Tutorials (Continued)

http://www.niu.edu/~mfortner/labelec/lect/p575_07a.pdf

Filter Circuits with passive components that correspond to various types of filters

4. Analog Filter Design Demystified

Abstract: This article shows how to design analog filters. It starts by covering the fundamentals of filters, goes on to introduce the basic types like Butterworth, Chebyshev, and Bessel, and then guides the reader through the design process for lowpass and highpass filters. Included are the derivation of the equations and the circuit implementation.

http://doctord.dyndns.org/courses/Topics/Filters/Analog%20Filter%20Design%20Demystified%20-
%20Maxim_Dallas.htm

Here is a whole series of lectures that would be useful to DSP students.

MIT OpenCourseWare- Signals and Signals
http://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-003-signals-and-systems-fall-2011/lecture-videos-and-slides/

This is Lecture 25 on Edison through CDs – It is particularly interesting!
http://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-003-signals-and-systems-fall-2011/lecture-videos-and-slides/lecture-25-audio-cd/

Instructor: Dennis Freeman

Description: The final Signals and Systems lecture explains how audio playback evolved from the fragile Edison cylinder phonograph to durable modern optical disks, through the application of digital signal processing concepts.

1.   **For a serious reader, here is a good tutorial about Sampling and filtering.**

http://www.wescottdesign.com/articles/Sampling/sampling.pdf

Miscellaneous Articles

Commercially Available filters:

http://www.freqdev.com/products/filters/lowpass.html?gclid=CNzRmq66u70CFWdk7Aod2jAAnw

Mechanical "filters" to reduce oscillations = Theory is the same as our electronic filters.

A **tuned mass damper**, also known as a **harmonic absorber**, is a device mounted in structures to reduce the amplitude of mechanical vibrations. Their application can prevent discomfort, damage, or outright structural failure. They are frequently used in power transmission, automobiles, and buildings.

http://en.wikipedia.org/wiki/Tuned_mass_damper