## Application: Linear Time Invariant Systems

Input: 
$$x(t)$$
System 1
Output:  $y_1(t)$ 
System 2
$$F_1(s) = \frac{1}{a_1s^2 + b_1s + c_1}$$

$$F_2(s) = \frac{1}{a_2s^2 + b_2s + c_2}$$

$$y_1(t) = x(t) * f_1(t)$$

$$y_2(t) = y_1(t) * f_2(t)$$

$$= x(t) * f_1(t) * f_2(t)$$

$$= x(t) * (f_1(t) * f_2(t))$$

 $f_1(t) * f_2(t) =$ Impulse response for total system