

① HARDWARE CONNECTIONS

— SHOW DIAGRAM

- Include a screen shot of the Bode Analyzer (ELVIS) showing the measured frequency response of your circuit

— SHOW INP /OUT DATA

— SHOW MAG / PHASE PLOTS

② DATA PROCESSING

— DESCRIBE MATLAB PROCESSING

— SHOW MATLAB CODE

— SHOW TRANSFER FUNCTION IN "S"
(LAPLACE)

③ MODEL VALIDATION

The finish line of P2 is to demonstrate that the frequency response of your model matches the experimental frequency response that you have measured with your VI and also the "theoretical" frequency response of your circuit. To show this you have to modify the BandPassFilterFRF.m file on Canvas to show all three frequency response traces in the same gain and phase vs. frequency plots. These plots (gain and phase) compare (i) your measured frequency response, (ii) the frequency response from your Matlab model, (iii) the the "theoretical" frequency response of your circuit.

WHAT TO DO ONCE YOUR MAG / PHASE
DATA LOOKS GOOD ?

⇒ TAKE MAG / PHASE DATA TO MATLAB

→ USE ID DATA TO CREATE DATA
OBJECT

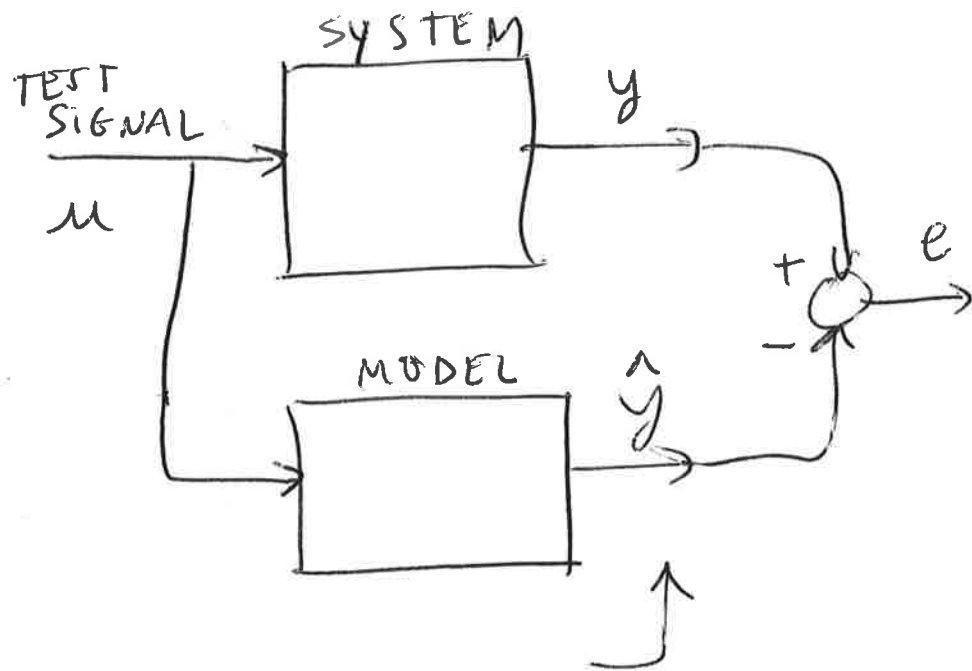
→ USE ETFE TO FIND THE
TRANSFER FUNCTION
OF THE SYSTEM

$$\boxed{\frac{a_1 s + a_2}{b_1 s^2 + b_2 s + b_3}}$$

TO TEST THE QUALITY OF YOUR MODEL

① ETFE WILL GIVE YOU A CORRELATION VALUE (\sim INDIRECT MEASURE OF MODEL QUALITY)

②



$\hat{}$: means "ESTIMATE OF"

the best test of quality
IS TO TAKE TIME DOMAIN SIGNALS
AND COMPARE \hat{y} VS y