Hello, this is Engineering Measurement & System Monitoring, learning outcome 3.

Now we have built our model of a RLC circuit, we want to put values into our model to get our output. We would expect an output like this with a little overshoot and take a bit of time to settle, so we need to analyse the responses.

We are going to put into our model R equals one, L equals one and C equals one to produce a system response, to then fill this table in. We will then change the value of C and get the response to analyse, which might change the rise time, overshoot or settling time for example. Then we go on to change other variables. So back in Matlab’s command line we can check the current value of the variables. The run the model we go to Analysis tab on the top line of the window, then Control Design and click Linear Analysis. This will take a little bit of time as the computer has to a lot of processing. A graph will appear in blue; the legend can be renamed so it is related to the inputs that resulted in the response. Add labels to the line to evaluate the characteristics of rise time (which will be marked at 90% of the set point), peak overshoot, settling time and steady state. The value will be summarised in this table. Points can be clicked on the line to get the exact values to save reading of the graph. Frequency will have to be calculated, the two points can be marked where it crosses the set point for one cycle, then the frequency can be calculated from this time difference. Then we go back to Matlab command line to change the value of C to zero point five and repeat analysis by clicking step in the linear analysis tool window. The second response will now appear in red and it needs the legend changed to match the inputs used. The results from the system responses are put in the table which will aid the identification of trends in the report. With the two responses appearing on the same graph it can easily be seen the differences between rise time, peak overshoot and settling time.

Thank you for listening.