

ECE-298 S2021

LIVE WEBEX SESSION – LAB1



ECE-298 IS AN “OPEN – ENDED” COURSE TOPICS

YOU WILL BE DEVELOPING YOUR OWN SOLUTION FOR YOUR TEAM PROJECT

YOU WILL BE DEVELOPING YOUR OWN BEST JUDGEMENT FOR YOUR DESIGN DECISIONS.

THIS WILL BE AN OPPORTUNITY TO EXPERIENCE ENGINEERING DESIGN MATTERS IN A TYPICAL DESIGN PROCESS FOR A MODEST (BUT NOT TRIVIAL) EMBEDDED ENGINEERING PROJECT.

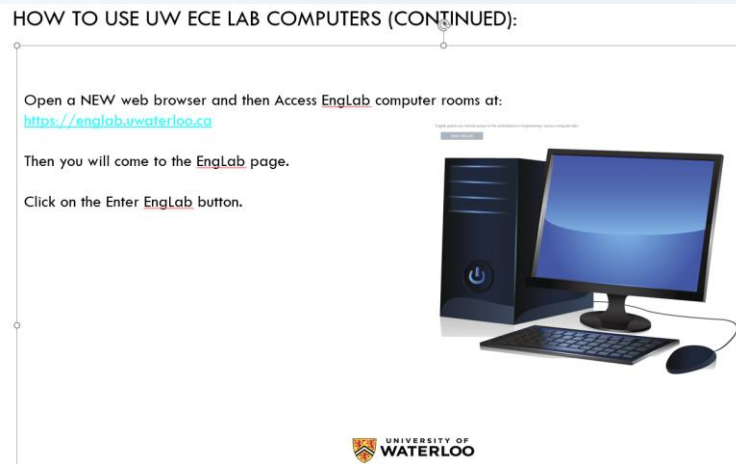
RUBRICS WILL BE PROVIDED DURING THE TERM TO GUIDE YOU INTO SOME IMPORTANT PERSPECTIVES DURING YOUR DEVELOPMENTS.

IN AN ENGINEERING FIRM, A REVIEW MEETING WITH OTHER DEPARTMENTS IS HELD AFTER EACH PROJECT PHASE IS COMPLETED BUT FOR THIS COURSE THERE IS INSUFFICIENT TIME TO COVER THESE ASPECTS.



SETUP FOR ECE-298 ONLINE LAB PROJECTS

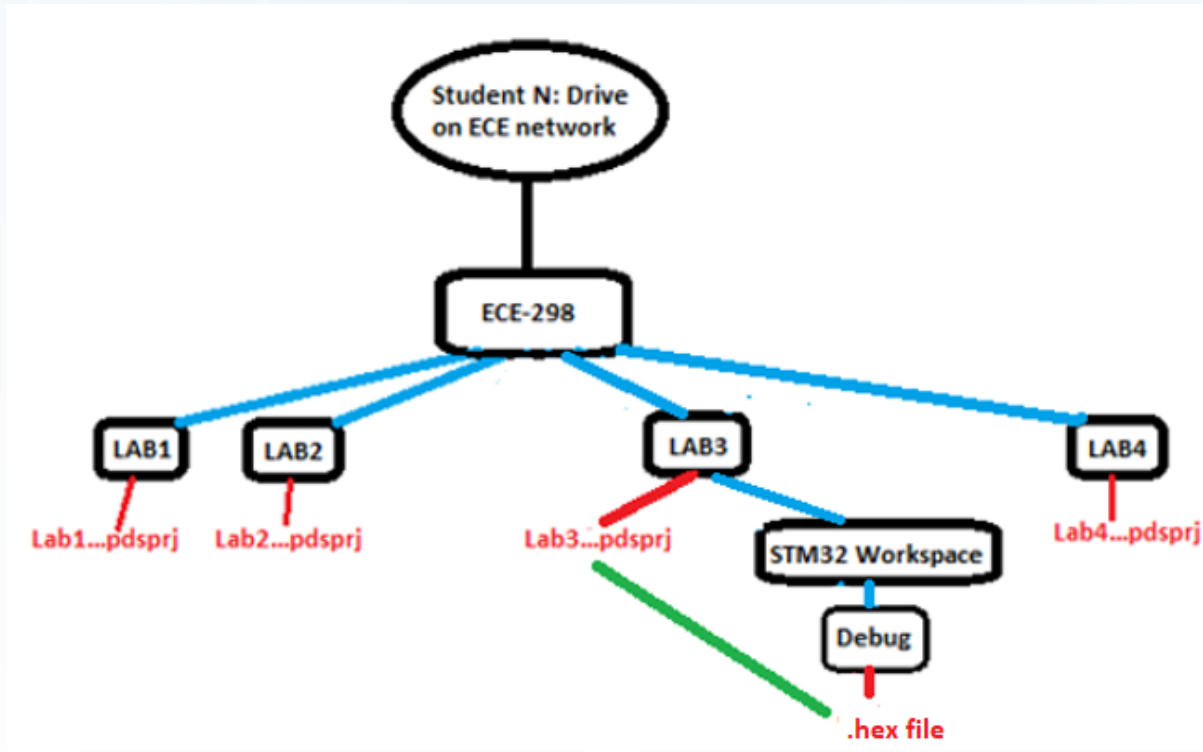
- **For UW Lab computers** (via englab): you will be working on an ECE computer workstation with access to the N: drive for this lab course.



- Refer to the “Remote Access to ECE Lab Computers” pdf on Learn for further setup details

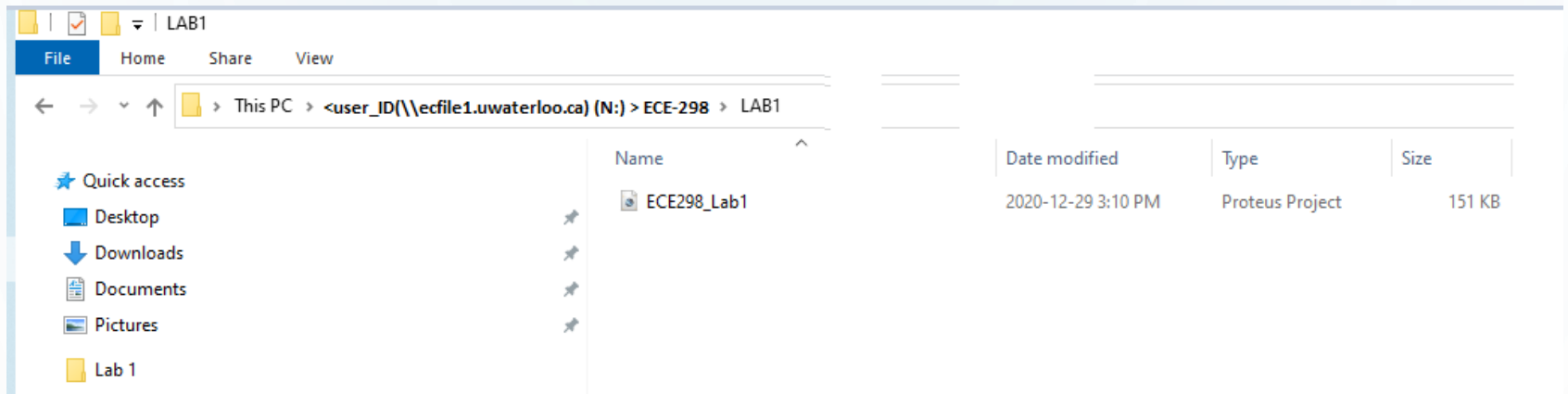
SETUP FOR ECE-298 ONLINE LAB PROJECTS

- Once logged into an EngLab ECE Computer you should create an ECE-298 folder for the course on the N: drive. During the term you will create your Lab Project Folders on the <drive> for each unique LAB Session.



ECE-298 LAB PROJECT FOLDER

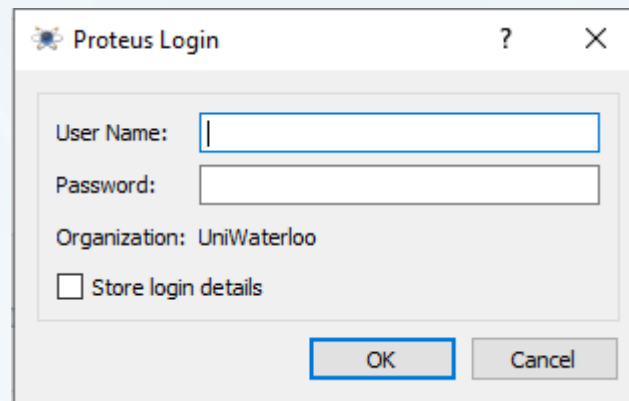
Zipped LAB folders are downloaded from LEARN into your N: drive :/ECE-298 directory. To Launch Proteus and load your starting file you just have to double-click on the Proteus Project file downloaded into the Lab project folder



ECE-298 PROTEUS SIGN-IN FOR LAB PROJECTS

After Proteus Launches you will have to sign-in with the Parameters available on Learn in the file:

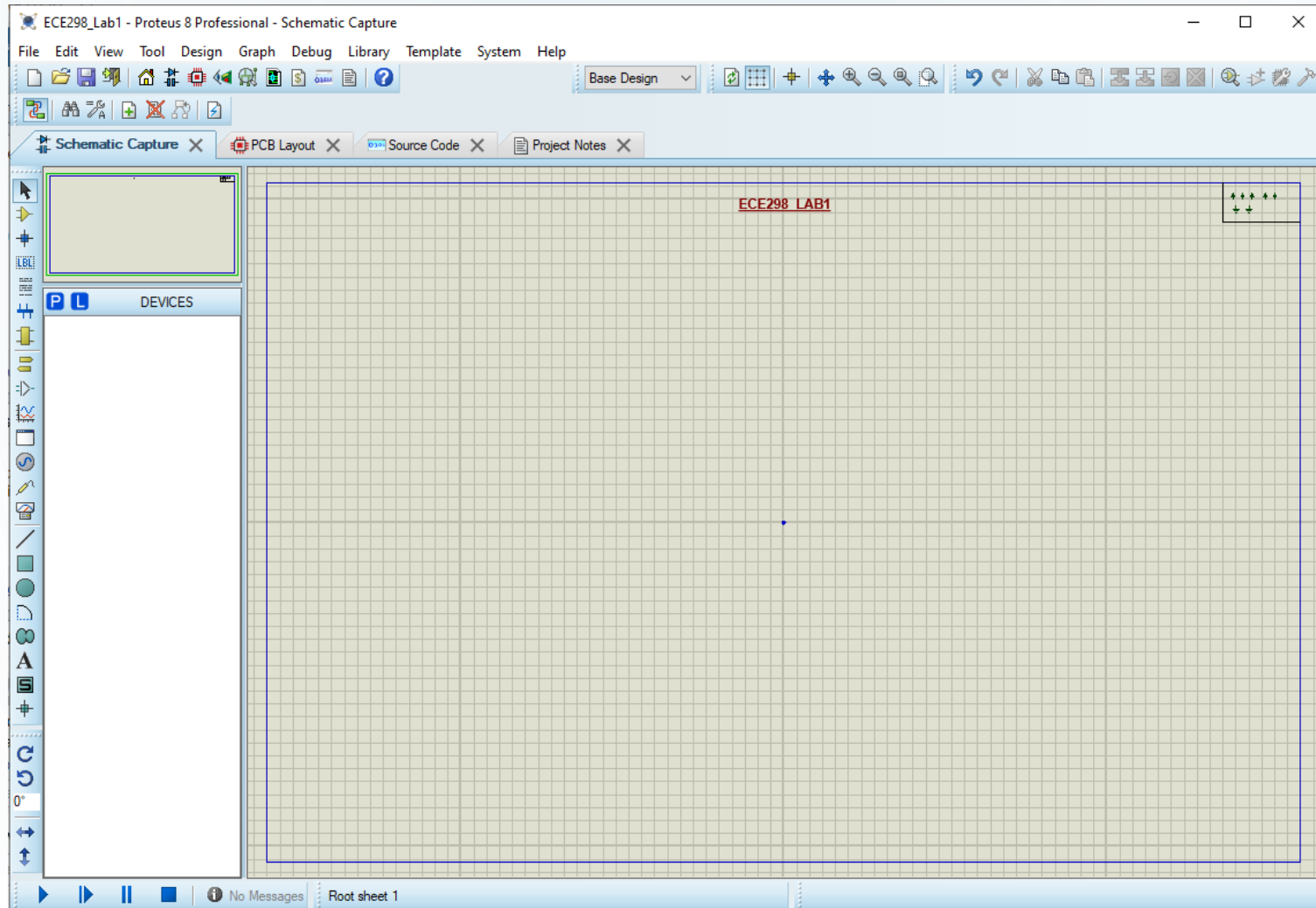
“Access to Proteus Tools”



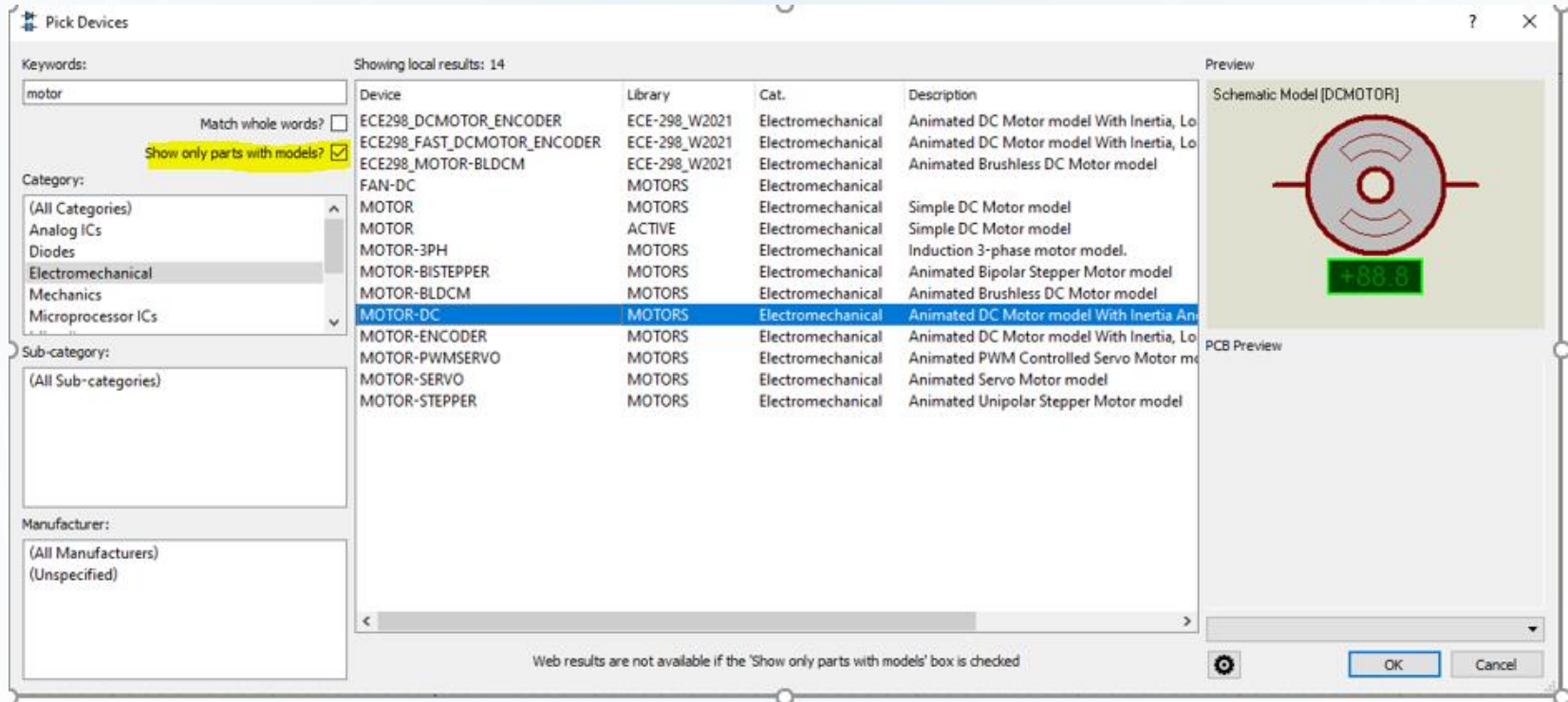
The image shows a 'Proteus Login' dialog box. It has a title bar with a Proteus logo, a question mark, and a close button. The main area contains three input fields: 'User Name:' with a text box, 'Password:' with a text box, and 'Organization: UniWaterloo'. Below these is a checkbox labeled 'Store login details'. At the bottom are 'OK' and 'Cancel' buttons.

Proteus Login	
User Name:	<input type="text"/>
Password:	<input type="password"/>
Organization:	UniWaterloo
<input type="checkbox"/> Store login details	
<input type="button" value="OK"/> <input type="button" value="Cancel"/>	

ECE-298 LAB1 STARTER PROJECT

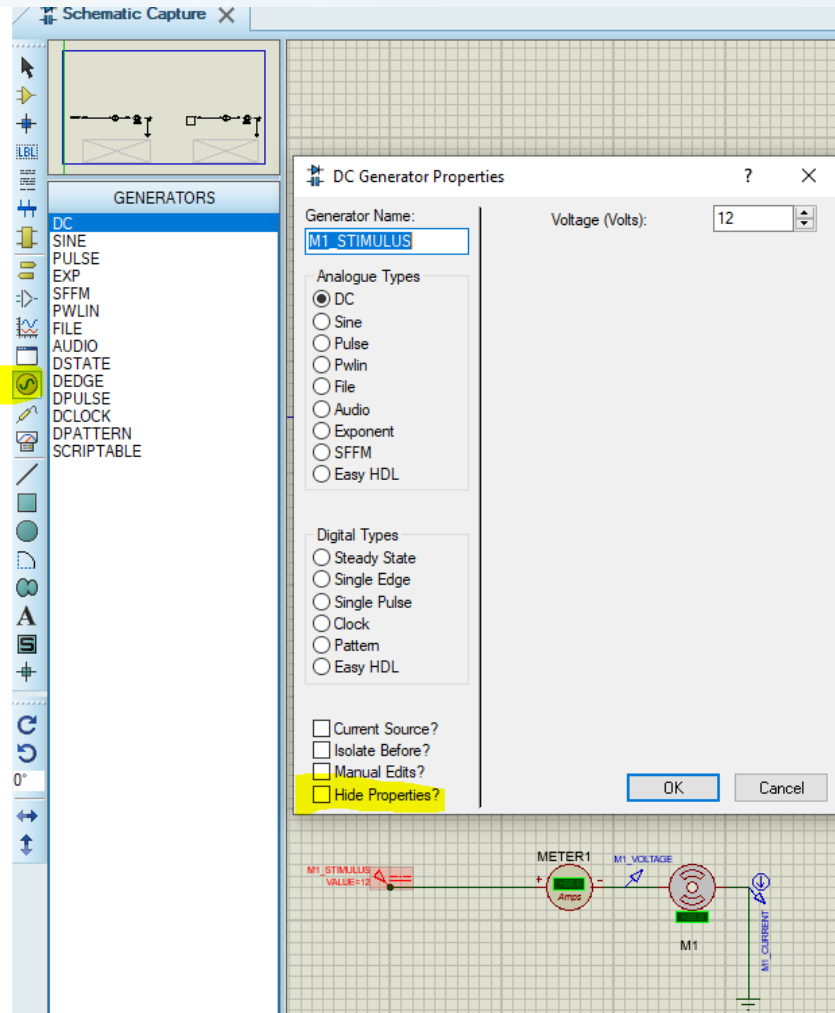


ECE-298 LAB1 – PARTS FROM LIBRARIES



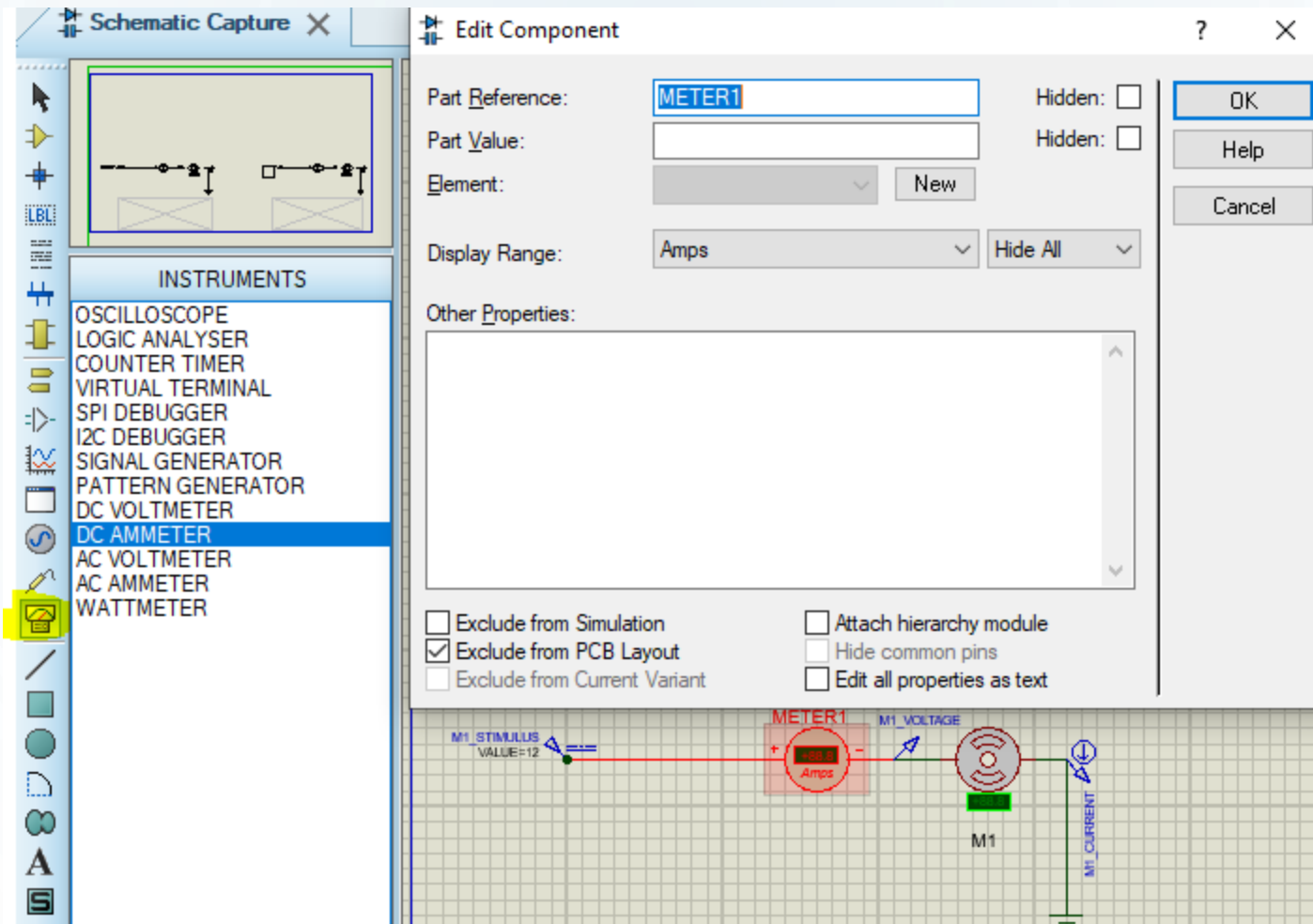
MAKE SURE that for Labs 1,2,3 that the parts searching box “Show only parts with models” is **CHECKED**.

ECE-298 LAB1 -- SIGNAL GENERATORS



MAKE SURE to
UNCHECK the
HIDE Properties
so that the
Parameters can
be seen on the
schematic

ECE-298 LAB1 – VIRTUAL LAB INSTRUMENTS



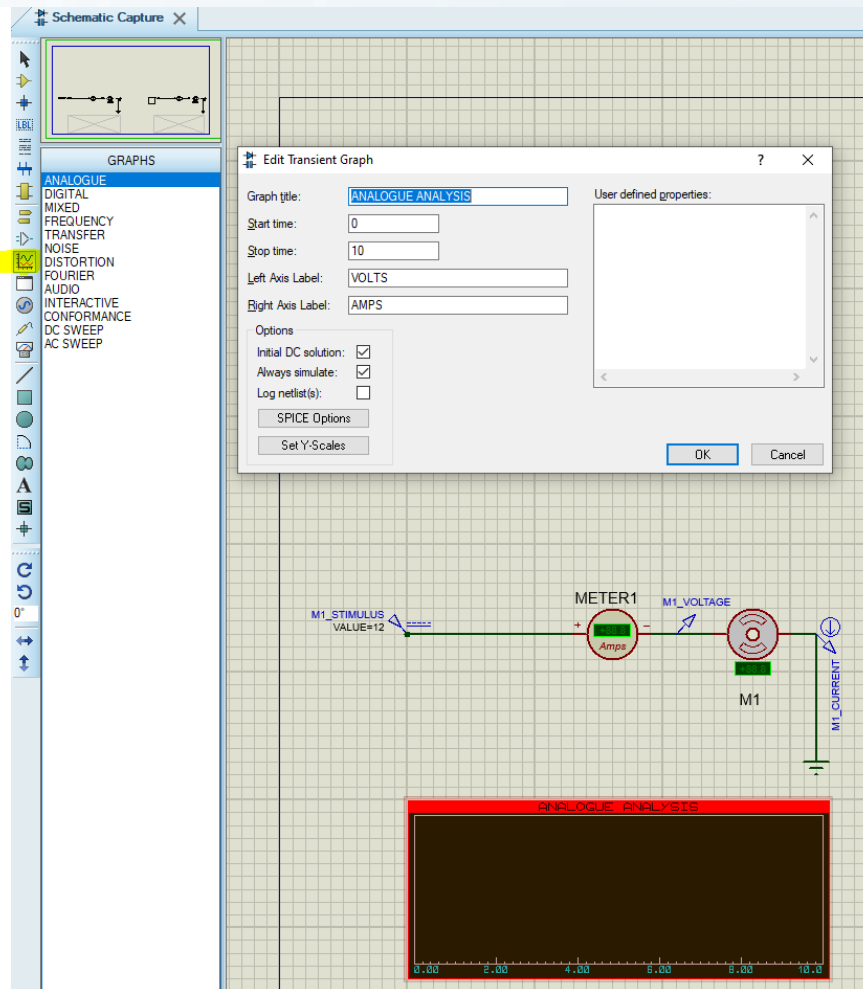
The screenshot shows the 'Edit Voltage Probe' dialog box in LTSpice. The dialog has the following sections:

- Probe Name:** A text field containing 'M1_VOLTAGE'.
- Resistive Loading:**
 - ☐ Load To Ground?
 - Load (Ohms): A text field with a 'Show All' button and a dropdown arrow.
- Waveform Recording:**
 - ☐ Record To File?
 - Filename: A text field with a 'Show All' button and a dropdown arrow.
- Real Time Breakpoint:**
 - Radio buttons: ☒ Disabled, ☐ Digital, ☐ Analog.
 - Trigger Value: A text field with a 'Show All' button and a dropdown arrow.
 - Arm at Time: A text field.
- Isolate after?** ☐
- Buttons:** 'OK' and 'Cancel'.

Below the dialog, a circuit diagram is visible. It shows a voltage source labeled 'M1_STIMULUS' with a value of 12. This source is connected to a meter labeled 'METER1' (Amps). The meter is connected to a probe labeled 'M1_VOLTAGE' (M1). The probe is connected to a ground symbol labeled 'M1_CURRENT'.

NOTE: CURRENT PROBES can **ONLY** provide results on ANALOGUE Graphs.

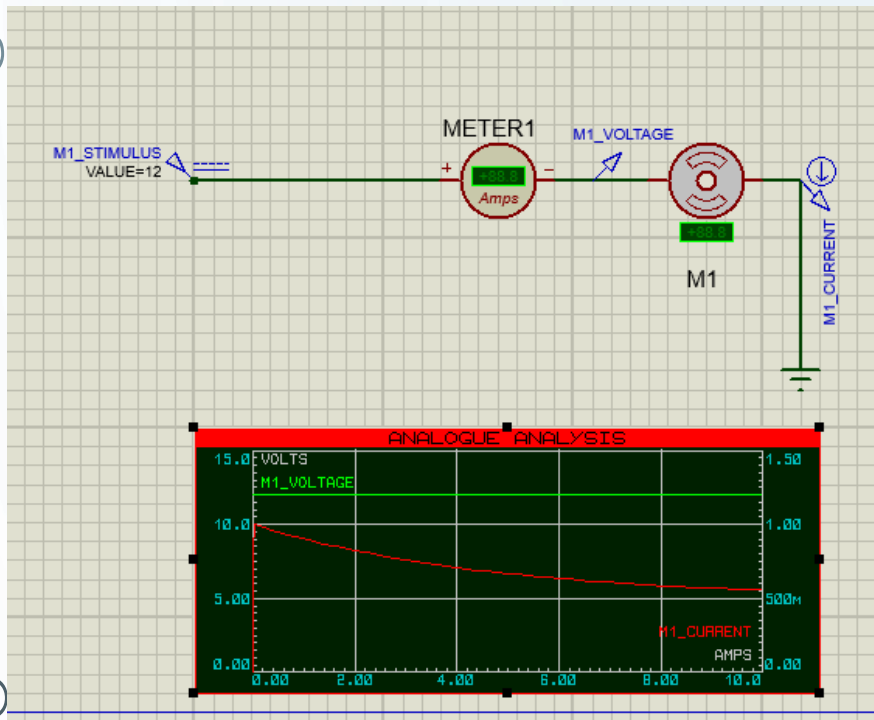
ECE-298 LAB1 GRAPHS



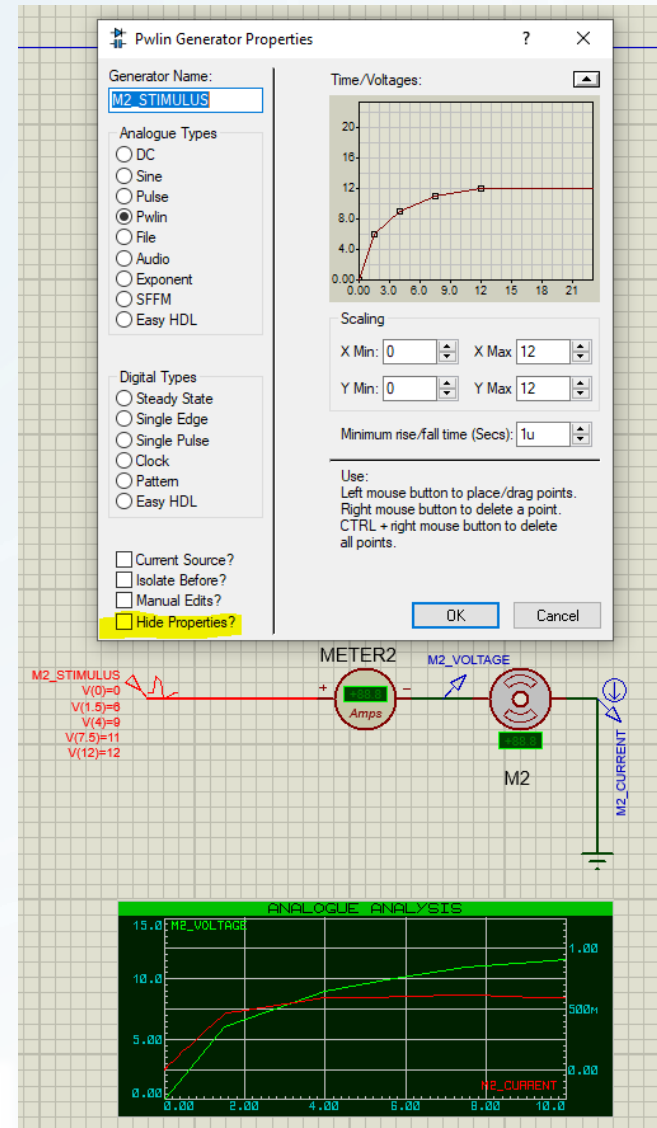
NOTE: CURRENT PROBES
can **ONLY** provide results
on ANALOGUE Graphs.

More on Graphs will be
covered in Lab 2.

ECE-298 LAB1 – SOME POSSIBLE EXPERIMENTS



You can choose to run the circuit in ANIMATION Mode OR within the GRAPH as SIMULATION Mode but not at the same time.



ECE-298 LAB1 USE OF THE OSCILLOSCOPE

An alternative to using a GRAPH is to use an oscilloscope. The “scope” can only be run in ANIMATION Mode. Click on the PAUSE button (lower left) to set up the scope settings. ALWAYS USE **DC COUPLING** for scope channels in this course. Set the Voltage TRIGGER levels appropriately.

