EERI418 Pracitcal experiment design

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Table 1: Values to be measured/calculated

Variables and parameters	Symbol and unit
Armature Volatage	$v_a(t)[\text{V}]$
Armature Current	$i_a(t)[\text{A}]$
Motor Speed	$\omega(t) = \dot{\theta}(t)[\text{rad/s}]$
Armature Resistance	$R_a\ [\Omega]$

The purpose of this lab session is to design experiments to determine the time constants τ_a and τ_l, where:

$$\tau_a = \frac{L_a}{R_a}$$

$$\tau_l = \frac{R_a J}{R_a b + K_b K_m}$$

This will be done using two experiments:

- First, the motor's speed will be measured as it slows down. This makes it possible to determine the moment of innertia and the mechanical time constant

- Second, the Speed will be realted to different values for the armature current and voltage.

These values will be digitally captured and used to determine the nessecary parameters.