



# RC Time Constants

## Assignment Checklist

Course #      Course Title  
**VEE301**      **Applied Electricity and Electronics**

Area      Competency  
**A**      **RC Time Constants**

<u>Task</u>	<u>Task/Skill</u>	<u>Started</u> mm/dd/yy	<u>Completed</u> mm/dd/yy
<b>1</b>	<b>RC Time Constants - Theory</b>	( / / )	( / / )

The student will demonstrate how variations in the value of resistance and capacitance in and RC circuit effect the charge time of the capacitor. Studying an online lesson, the student will apply various formulas to solve for time constant, charge time, and capacitor voltage. To demonstrate their proficiency, the student will complete a study guide and then pass a quiz with a perfect score.

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
<b>a</b>	( )	<b>A1a</b>	<b>Reading Assignment</b>	RC Time Constants
		<b>Source:</b>	Time Constants Web Page	
<b>b</b>	( )	<b>A1b</b>	<b>Study Guide</b>	RC Time Constants
<b>c</b>	( )	<b>A1c</b>	<b>Reading Assignment</b>	Resource Links
<b>d</b>	( )	<b>A1d</b>	<b>Quiz</b>	RC Time Constants – 100%

<u>Task</u>	<u>Task/Skill</u>	<u>Started</u> mm/dd/yy	<u>Completed</u> mm/dd/yy
<b>2</b>	<b>RC Time Constants – Excel Model</b>	( / / )	( / / )

The student will use the Excel Model to calculate and print the charge curves for various combinations of resistance and capacitance in RC circuits. The student will experiment with at least 5 combinations of standard values that result in total charge times of approximately 5, 10, 20, 30, and 40 seconds.

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
<b>a</b>	( )	<b>A2a</b>	<b>Computational Model</b>	RC Time Constants
		<b>Source:</b>	Time Constants Web Page	

<u>Task</u>	<u>Task/Skill</u>	<u>mm/dd/yy</u>	<u>mm/dd/yy</u>
<b>3</b>	<b>RC Time Constants – Experiment</b>	( / / )	( / / )

The student will build a test circuit using a solderless circuit board and then experiment with various combinations of resistance and capacitance. Using a stopwatch, the student will measure the voltage across the capacitor at one-second intervals up until the capacitor is fully charged. Plugging the time hacks into a spreadsheet, you'll then model a performance curve of your experiment and compare it to the calculated baseline value in the model.

<u>Sub</u>	<u>Init</u>	<u>Code</u>	<u>Type of Task</u>	<u>Task Description</u>
<b>a</b>	( )	<b>A3a</b>	<b>Experiment</b>	RC Time Constants
		<b>Source:</b>	RC Time Constants Experiment	