

<b>When and where</b>	Lecture Palmer 3020 12:55-2:15 – T,R	Lab (Sec 002) – NE 2380 – 9:10-10:50 T
<b>Instructor</b>	Prof. Wm Ted Evans, PhD, PE (Ohio)-Office: NE 1607, Phone 419-530-3349, cell 419-343-3681 Email: <a href="mailto:William.evans@utoledo.edu">William.evans@utoledo.edu</a> web: <a href="http://www.eng.utoledo.edu/~wevans">www.eng.utoledo.edu/~wevans</a>	
<b>Office Hours</b>	9:30-12:00 T,R	
<b>Prerequisite</b>	EET 1010 with a minimum grade of D- and (MATH 1330 with a minimum grade of D- or MATH 1340 with a minimum grade of D-)	
<b>Textbooks</b>	<p>All of the titles are available for free in both pdf and odt formats on my college web site: <a href="https://urldefense.com/v3/http://www.mvcc.edu/jfiore_!!LoBwckfm!znGyXduRkA4usxUd1VhwZMMYFDNeXvH5YUmOhHdPZWHXaxW2rdYf1uf1xgYVMDtQDvE17iU\$">https://urldefense.com/v3/ http://www.mvcc.edu/jfiore_!!LoBwckfm!znGyXduRkA4usxUd1VhwZMMYFDNeXvH5YUmOhHdPZWHXaxW2rdYf1uf1xgYVMDtQDvE17iU\$</a> &lt;<a href="https://urldefense.com/v3/http://www.mvcc.edu/jfiore_!!LoBwckfm!znGyXduRkA4usxUd1VhwZMMYFDNeXvH5YUmOhHdPZWHXaxW2rdYf1uf1xgYVMDtQDvE17iU\$">https://urldefense.com/v3/ http://www.mvcc.edu/jfiore_!!LoBwckfm!znGyXduRkA4usxUd1VhwZMMYFDNeXvH5YUmOhHdPZWHXaxW2rdYf1uf1xgYVMDtQDvE17iU\$</a>&gt;</p> <p>&gt; I also maintain a mirror at <a href="https://urldefense.com/v3/http://www.dissidents.com_!!LoBwckfm!znGyXduRkA4usxUd1VhwZMMYFDNeXvH5YUmOhHdPZWHXaxW2rdYf1uf1xgYVMDtQ5LvNgpw\$">https://urldefense.com/v3/ http://www.dissidents.com_!!LoBwckfm!znGyXduRkA4usxUd1VhwZMMYFDNeXvH5YUmOhHdPZWHXaxW2rdYf1uf1xgYVMDtQ5LvNgpw\$</a> &lt;<a href="https://urldefense.com/v3/http://www.dissidents.com_!!LoBwckfm!znGyXduRkA4usxUd1VhwZMMYFDNeXvH5YUmOhHdPZWHXaxW2rdYf1uf1xgYVMDtQ5LvNgpw\$">https://urldefense.com/v3/ http://www.dissidents.com_!!LoBwckfm!znGyXduRkA4usxUd1VhwZMMYFDNeXvH5YUmOhHdPZWHXaxW2rdYf1uf1xgYVMDtQ5LvNgpw\$</a>&gt;</p> <p>&gt; They all use a Creative Commons non-commercial, share-alike with attribution license so you are free to edit them for your courses. For those who want hard copies, print versions are available through Amazon (<a href="https://urldefense.com/v3/http://www.amazon.com/author/jimfiore_!!LoBwckfm!znGyXduRkA4usxUd1VhwZMMYFDNeXvH5YUmOhHdPZWHXaxW2rdYf1uf1xgYVMDtQ2AJXtfc\$">https://urldefense.com/v3/ http://www.amazon.com/author/jimfiore_!!LoBwckfm!znGyXduRkA4usxUd1VhwZMMYFDNeXvH5YUmOhHdPZWHXaxW2rdYf1uf1xgYVMDtQ2AJXtfc\$</a> &lt;<a href="https://urldefense.com/v3/http://www.amazon.com/author/jimfiore_!!LoBwckfm!znGyXduRkA4usxUd1VhwZMMYFDNeXvH5YUmOhHdPZWHXaxW2rdYf1uf1xgYVMDtQ2AJXtfc\$">https://urldefense.com/v3/ http://www.amazon.com/author/jimfiore_!!LoBwckfm!znGyXduRkA4usxUd1VhwZMMYFDNeXvH5YUmOhHdPZWHXaxW2rdYf1uf1xgYVMDtQ2AJXtfc\$</a>&gt; ) at very modest cost (generally \$6-\$8 for lab manuals, \$12-\$15 for texts)</p> <p>I started a YouTube channel with supporting videos. This is a work in progress. Just search for "Electronics with Professor Fiore".</p>	
<b>Useful References</b>	ELEGOO Upgraded Electronics Fun Kit w/Power Supply Module, Jumper Wire, Precision Potentiometer, 830 tie-Points Breadboard for Arduino, STM32 by <a href="#">ELEGOO</a>	
<b>Grading</b>	<b>Pop Quizzes 10%, Labs 20%, Hour Exam I 20%</b> <b>Hour Exam II 20%, Final Exam 30% (Comprehensive)</b> <b>(A &gt;= 90, B &gt;= 80, C &gt;= 70, D &gt;= 60)</b>	
	<ol style="list-style-type: none"> <li>1. No eating, drinking, or smoking in classrooms.</li> <li>2. There are no make-up exams for this course. If you have a problem or conflict and cannot attend an exam, let me know beforehand and we will try to work something out. No credit will be given for a missed exam that we haven't made arrangements about beforehand unless you have a <i>really excusable</i> emergency. Cell phone use will not be allowed. If you do not have a calculator, buy one and bring it to class.</li> </ol> <p><b><i>Cheating is not allowed and will be punished by rules of U of Toledo Student Handbook.</i></b></p> <p><b>Laboratory procedures:</b></p> <ul style="list-style-type: none"> <li>• <b>Safety:</b> In working to ensure laboratory safety, all of our labs have paper dispensers installed with sanitizer spray, I ask you to have students spray a paper towel with disinfectant and to decontaminate work surfaces,</li> </ul>	

	<p>equipment, keyboard, mice, etc. at the beginning and end of the laboratory activities.</p> <ul style="list-style-type: none"> <li> <b>Delivery Mode:</b> Following is the list of ET instructional laboratories and their social distancing capacity: <table border="1" data-bbox="690 289 1377 762"> <thead> <tr> <th>ROOM</th> <th>CAP</th> <th>DESC</th> </tr> </thead> <tbody> <tr> <td>NE1230</td> <td>15</td> <td>CET Multipurpose</td> </tr> <tr> <td>NE1290</td> <td>12</td> <td>CET Materials Testing Lab</td> </tr> <tr> <td>NE1410</td> <td>12</td> <td>MET Materials Testing Lab</td> </tr> <tr> <td>NE1430</td> <td>12</td> <td>MET Fluid and Thermal Science Lab</td> </tr> <tr> <td>NE1540</td> <td>26</td> <td>Drafting Lab</td> </tr> <tr> <td>NE2300</td> <td>12</td> <td>IT System Administration Lab</td> </tr> <tr> <td>NE2330</td> <td>11</td> <td>EET Electrical Lab</td> </tr> <tr> <td>NE2350</td> <td>10</td> <td>EET PLC Hardware Lab</td> </tr> <tr> <td>NE2360</td> <td>12</td> <td>CSET Local Area Network Lab</td> </tr> <tr> <td>NE2380</td> <td>15</td> <td>Automatic Controls Lab</td> </tr> <tr> <td>NE2390</td> <td>16</td> <td>EET PLC Computer Lab</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>If the number of students enrolled in you lab session is larger than the social distancing capacity, you can choose to do either of the following, remember it is not a one size fits all approach: Split your laboratory in two sessions, i.e. reduce the allocated experimental time to 1/2 of the original time. Students can complete the experimental part in the lab, and data analysis can be done remotely.</li> </ul> </li> </ul>	ROOM	CAP	DESC	NE1230	15	CET Multipurpose	NE1290	12	CET Materials Testing Lab	NE1410	12	MET Materials Testing Lab	NE1430	12	MET Fluid and Thermal Science Lab	NE1540	26	Drafting Lab	NE2300	12	IT System Administration Lab	NE2330	11	EET Electrical Lab	NE2350	10	EET PLC Hardware Lab	NE2360	12	CSET Local Area Network Lab	NE2380	15	Automatic Controls Lab	NE2390	16	EET PLC Computer Lab
ROOM	CAP	DESC																																			
NE1230	15	CET Multipurpose																																			
NE1290	12	CET Materials Testing Lab																																			
NE1410	12	MET Materials Testing Lab																																			
NE1430	12	MET Fluid and Thermal Science Lab																																			
NE1540	26	Drafting Lab																																			
NE2300	12	IT System Administration Lab																																			
NE2330	11	EET Electrical Lab																																			
NE2350	10	EET PLC Hardware Lab																																			
NE2360	12	CSET Local Area Network Lab																																			
NE2380	15	Automatic Controls Lab																																			
NE2390	16	EET PLC Computer Lab																																			
<b>Catalog descriptions</b>	This course involves transient analysis of first order, reactive DC circuits and steady state analysis of reactive circuits under AC conditions. Frequency response, three-phase analysis, oscilloscope usage and PSpice simulation methods are included.																																				
<b>Topics and reading assignments - Course Objectives:</b>	<p>In this course students are expected to:</p> <ol style="list-style-type: none"> <li>Develop an understanding of the analytical techniques used for reactive circuits under DC and steady state AC conditions.</li> <li>Develop an understanding of the laboratory skills used to evaluate reactive circuits under DC and steady state AC conditions.</li> <li>Analyze and interpret laboratory data from basic reactive circuits.</li> <li>Work effectively in the laboratory with lab partners.</li> <li>Identify and solve reactive circuit problems under DC and steady state AC conditions.</li> <li>Communicate the results of circuit analyses in written reports.</li> </ol>																																				
<b>Course Outline - Major Content Areas</b>	<ul style="list-style-type: none"> <li>Sinusoidal wave properties.</li> <li>Complex numbers and phasors.</li> <li>Properties of capacitors and their behavior under DC conditions.</li> <li>Properties of inductors and their behavior under DC conditions.</li> <li>Behavior of transformers.</li> <li>Steady state behavior of RC circuits under AC conditions.</li> <li>Steady state behavior of RL circuits under AC conditions.</li> <li>Steady state behavior of RLC circuits under AC conditions.</li> <li>Analyses of basic filter circuits.</li> <li>Superposition, Thevenin's theorem and Norton's theorem under AC conditions.</li> <li>An introduction to three phase systems.</li> </ul>																																				

Labs	<ul style="list-style-type: none"> <li>• An introduction to the Multisim 7 simulation software with sinusoidal sources</li> <li>• The oscilloscope and the signal generator</li> <li>• Capacitors – RC circuits and time constants</li> <li>• Measuring RC time constants with an oscilloscope</li> <li>• Inductors – RL circuits and time constants</li> <li>• Series RC circuits with AC sources</li> <li>• The frequency response of a series RC circuit</li> <li>• Series / parallel RC circuits with AC sources.</li> <li>• Series RL circuits with AC sources.</li> <li>• Series RLC resonant circuits. • Parallel RLC resonant circuits.</li> </ul>
Schedule of Classes	
1-19-21	Review Ch. 8 - DC - Fiore – Assign various problems end of Ch. 8
	<a href="#">Introduction to Capacitors</a> <a href="#">DC Electrical Circuit Analysis: RC Circuits Part 1</a> <a href="#">DC Electrical Circuit Analysis: RC Circuits Part 2</a>
1-26-21	Review Ch. 9 - DC - Fiore – Assign various problems end of Ch. 9
	<a href="#">Introduction to Capacitors</a> <a href="#">DC Electrical Circuit Analysis: RC Circuits Part 1</a> <a href="#">DC Electrical Circuit Analysis: RC Circuits Part 2</a>
2-2-21	Review Ch. 10 – DC Fiore – Assign various problems end of Ch. 10
2-9-21	Review Ch. 1 – AC Fiore – Assign various problems end of Ch. 1 – Lab 3 – due 2/23/21
	<a href="#">AC Electrical Circuit Analysis: Introduction</a> <a href="#">Complex Numbers</a> <a href="#">AC Electrical Circuit Analysis: Fundamentals</a> <a href="#">TINA-TI Basic AC Simulations</a> <a href="#">TINA-TI Frequency Response Simulation</a> <a href="#">AC Electrical Circuit Analysis: Reactance</a> <a href="#">AC Electrical Circuit Analysis: Impedance</a>
2-16-21	Review Ch. 2 – AC Fiore – Assign various problems end of Ch. 2 – No Lab, No Class Tuesday
	<a href="#">AC Electrical Circuit Analysis: Series RLC Circuits</a> <a href="#">AC Electrical Circuit Analysis: Series RLC Simulation</a>
2-23-21	Review Ch. 3 – AC Fiore – Assign various problems end of Ch. 3 – Lab 4 – due 3/2/21
	<a href="#">AC Electrical Circuit Analysis: Parallel RLC Circuits</a> <a href="#">AC Electrical Circuit Analysis: Parallel RLC Simulation</a>
3-2-21	Review Ch. 4 – AC Fiore – Assign various problems end of Ch. 4 – Lab 5 – due 3-9-21
	<a href="#">AC Electrical Circuit Analysis: Series-Parallel RLC Circuits</a> <a href="#">AC Electrical Circuit Analysis: Series-Parallel RLC Simulation</a>
3-9-21	Review Ch. 5 – AC Fiore – Assign various problems end of Ch. 5 – Lab 6
	<a href="#">AC Electrical Circuit Analysis: Thevenin's Theorem</a> <a href="#">AC Electrical Circuit Analysis: Thevenin's Theorem Example</a> <a href="#">AC Electrical Circuit Analysis: Source Conversions</a> <a href="#">AC Electrical Circuit Analysis: Dependent Sources, Part 1</a> <a href="#">AC Electrical Circuit Analysis: Dependent Sources, Part 2</a> <a href="#">AC Electrical Circuit Analysis: Superposition Theorem</a> <a href="#">AC Electrical Circuit Analysis: Maximum Power Transfer Theorem</a> <a href="#">AC Electrical Circuit Analysis: Maximum Power Transfer With Thevenin's Theorem</a>
	Review Ch. 6 – AC Fiore – Assign various problems end of Ch. 6 – Lab 7

	<a href="#"><u>AC Electrical Circuit Analysis: Mesh Analysis Introduction</u></a> <a href="#"><u>AC Electrical Circuit Analysis: Mesh Analysis Example, Part 1</u></a> <a href="#"><u>AC Electrical Circuit Analysis: Mesh Analysis Example, Part 2</u></a> <a href="#"><u>AC Electrical Circuit Analysis: Nodal Analysis</u></a> <a href="#"><u>AC Electrical Circuit Analysis: Nodal Analysis Example, Part 1</u></a> <a href="#"><u>AC Electrical Circuit Analysis: Nodal Analysis Example, Part 2</u></a>
	Review Ch. 7 – AC Fiore – Assign various problems end of Ch. 7 – Lab 8
	<a href="#"><u>AC Electrical Circuit Analysis: Three Phase Systems Part 1</u></a> <a href="#"><u>AC Electrical Circuit Analysis: Three Phase Part 2</u></a> <a href="#"><u>AC Electrical Circuit Analysis: Power Calculations</u></a> <a href="#"><u>AC Electrical Circuit Analysis: Power Analysis, Example 1</u></a> <a href="#"><u>AC Electrical Circuit Analysis: Power Analysis, Example 2</u></a>
	Review Ch. 8 – AC Fiore – Assign various problems end of Ch. 8 – Lab 9
	<a href="#"><u>AC Electrical Circuit Analysis: Series Resonance</u></a> <a href="#"><u>AC Electrical Circuit Analysis: Series Resonance Example</u></a> <a href="#"><u>AC Electrical Circuit Analysis: Parallel Resonance Introduction</u></a> <a href="#"><u>AC Electrical Circuit Analysis: Parallel Resonance Example</u></a>
	Review Ch. 9 – AC Fiore – Assign various problems end of Ch. 9 – Lab 10
	Review Ch. 10 – AC Fiore – Assign various problems end of Ch. 10 – Lab 11
	<a href="#"><u>Bode Plots</u></a> <a href="#"><u>Decibels, Part 1</u></a> <a href="#"><u>Decibels, Part 2</u></a>