

**Eastern West Virginia Community and Technical College  
COURSE ASSESSMENT REPORT**

<b>Course Title and Number:</b> DC/AC Circuits, WTT 120	<b>Academic Term and Year of Assessment Activity (Ex: Fall, 2014):</b> Fall, 2020
<b>Report Submitted By:</b> E. Putze	<b>Number of Students Assessed:</b> 6
<b>Date Report Submitted:</b> 1-13-2021	<b>Number of Sections Included:</b> 1
<b>Course Delivery Format (list all modalities used in sections assessed. Ex: web based, VDL, traditional section, hybrid course, etc.):</b> Lab work, reading, Blackboard assignments, workbook exercises, demonstrations, lecture	

<b>Course Role in the Curriculum</b>
<b>Provide a description of the role the course serves in the curriculum (i.e. general education requirement, program technical core, restricted elective, etc.). Note all as appropriate.</b>
<u>Role in College Curriculum:</u> Technical Core for Wind Energy Technology and Electromechanical Technology
<u>Catalog Description:</u> This course will introduce students to the skills and technology involved in both DC and AC circuits and their use in the modern electronics field. Students will develop a basic understanding of electronics through lecture, labs and project based activities. Transformer theory and applications will be studied. Resonance theory and practical uses of circuits are discussed

<b>Assessment Methods</b>
<b>Provide a description of the assessment process used. Include description of instrument and performance standards in description. Note all methods.</b>
<u>Lab Exercises &amp; Demonstrations:</u> LabVolt electrical components were used for lab exercises and demonstrations. The following topics were covered: safety procedures and equipment, DC & AC electricity, current, voltage, resistance, power, voltage sources, DC & AC circuits, Ohm's Law, electromagnetism, and transformers. The instructor was present throughout all labs; facilitated learning through demonstration and interaction with students; and observed student performance.
<u>Reading Assignments, Written Exercises, &amp; Blackboard Assignments:</u> The following topics were covered by reading and Blackboard assignments: safety procedures and equipment, DC & AC electricity, current, voltage, resistance, power, voltage sources, DC & AC circuits, Ohm's Law, electromagnetism, and transformers.
<u>Blackboard Tests:</u> Blackboard tests, which were primarily multiple choice, were based on material in <i>AC/DC Principles and Applications</i> ; Paul T. Shultz; American Technical Publishers (ATP) and Blackboard assignments. Selected questions from tests given were used for assessment.
<u>Hands-On Tests:</u> Each student was required to assemble simple electrical circuits, configure electrical measuring tools, analyze and interpret results, and understand

vocabulary.

**Assessment Results**

Provide a summary of results including tables/charts. Incorporate information from previous assessments as appropriate. Append additional pages if necessary. If appending, include notation in box to "See attached".

<b>Course Outcome &amp; Indicator</b>	<b># of Students Answering Correctly</b>	<b># of Students Answering Incorrectly</b>	<b>Composite</b>
1(a)	5	1	6
1(b)	6	0	6
1(c)	6	0	6
1(d)	6	0	6
1(e)	6	0	6
1(f)	4	2	6
1(g)	6	0	6
1(h)	6	0	6
2(a)	6	0	6
2(b)	5	1	6
2(c)	6	0	6
2(d)	6	0	6
2(e)	5	1	6
2(f)	6	0	6
2(g)	5	1	6
3(a)	6	0	6
3(b)	5	1	6
3(c)	5	1	6
3(d)	4	2	6
3(e)	5	1	6
4(a)	5	1	6
4(b)	4	2	6
5(a)	6	0	6
5(b)	6	0	6
5(c)	6	0	6
5(d)	6	0	6
5(e)	6	0	6
5(f)	6	0	6
5(g)	6	0	6
5(h)	4	2	6
5(i)	6	0	6
<b>Total Answers</b>	170	16	186
<b>Percentage</b>	91.4%	8.6%	100%

Course Level Assessment Summary of Outcomes, Indicators and Results				
Add additional rows to table if necessary				
Learning Outcomes (Insert learning outcomes assessed during this cycle)	Indicator (Insert indicators used for each outcome: exam question, scoring rubric, etc. Be specific)	Percent of Correct Responses	Percent of Incorrect Responses	Performance Standard Met (75%)* (yes or no)
Learning Outcome 1:  <i>Basic understanding of DC electricity</i>	(a) <u>Question (M/C)</u> : "Power efficiency is always greater than one."  <u>Answer</u> : "False"	83.3%	16.7%	Yes
Learning Outcome 1:  <i>Basic understanding of DC electricity</i>	(b) <u>Question (M/C)</u> : "The flow of electrons in a conductor is:"  <u>Answer</u> : "Current"	100%	0%	Yes
Learning Outcome 1:  <i>Basic understanding of DC electricity</i>	(c) <u>Question (M/C)</u> : "Voltage is:"  Answer: "Electromotive force (EMF), Electrical pressure, & Potential difference"	100%	0%	Yes
Learning Outcome 1:  <i>Basic understanding of DC electricity</i>	(d) <u>Question (M/C)</u> : "The total resistance of a number of resistances connected in series is always:"  <u>Answer</u> : "Greater than the value of the largest resistance"  OR  (d) <u>Question (M/C)</u> : "The total value of a number of resistances connected in parallel is always:"  <u>Answer</u> : "Less than the value of the smallest resistance"	100%	0%	Yes

Course Level Assessment Summary of Outcomes, Indicators and Results				
Add additional rows to table if necessary				
Learning Outcomes (Insert learning outcomes assessed during this cycle)	Indicator (Insert indicators used for each outcome: exam question, scoring rubric, etc. Be specific)	Percent of Correct Responses	Percent of Incorrect Responses	Performance Standard Met (75%)* (yes or no)
Learning Outcome 1:  <i>Basic understanding of DC electricity</i>	1 (e) <u>Question (T/F)</u> : "In a DC series circuit, the current is the same at each point in the circuit."  <u>Answer</u> : "True"  OR  (e) <u>Question (T/F)</u> : "In a DC series circuit, the current can vary at each point in the circuit."  <u>Answer</u> : "False"	100%	0%	Yes
Learning Outcome 1:  <i>Basic understanding of DC electricity</i>	(f) <u>Question (T/F)</u> : "In a DC series circuit, the applied voltage is equal to the sum of the voltage drops across each circuit component."  <u>Answer</u> : "True"	66.7%	33.3%	No
Learning Outcome 1:  <i>Basic understanding of DC electricity</i>	(g) <u>Question (M/C)</u> : "In a DC series circuit, the largest resistance has:"  <u>Answer</u> : "the largest voltage drop"	100%	0%	Yes
Learning Outcome 1:  <i>Basic understanding of DC electricity</i>	(h) <u>Question (T/F)</u> : "In a DC series circuit, the total resistance is the sum of all the resistors in the circuit."  <u>Answer</u> : "True"	100%	0%	Yes
Learning Outcome 2:	(a) <u>Question (M/C)</u> : "Current that periodically reverses its direction of flow is:"	100%	0%	Yes

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Learning Outcomes (Insert learning outcomes assessed during this cycle)	Indicator (Insert indicators used for each outcome: exam question, scoring rubric, etc. Be specific)	Percent of Correct Responses	Percent of Incorrect Responses	Performance Standard Met (75%)* (yes or no)
<i>Basic understanding of AC electricity</i>	<u>Answer:</u> "Alternating current"			
Learning Outcome 2: <i>Basic understanding of AC electricity</i>	(b) <u>Question (M/C):</u> "The actual power used in an electrical circuit is:" <u>Answer:</u> "True power"	83.3%	16.7%	Yes
Learning Outcome 2: <i>Basic understanding of AC electricity</i>	(c) <u>Question (M/C):</u> "A circuit connected in series has:" <u>Answer:</u> "Only one path for current flow" OR (c) <u>Question (M/C):</u> "A circuit connected in parallel has:" <u>Answer:</u> "Multiple paths for current flow"	100%	0%	Yes
Learning Outcome 2: <i>Basic understanding of AC electricity</i>	(d) <u>Question (M/C):</u> "A parallel circuit has:" <u>Answer:</u> "at least two paths for electron flow"	100%	0%	Yes
Learning Outcome 2: <i>Basic understanding of AC electricity</i>	(e) <u>Question (T/F):</u> "Loads connected in parallel have the same voltage drop:" <u>Answer:</u> "True"	83.3%	16.7%	Yes
Learning Outcome 2: <i>Basic</i>	(f) <u>Question (M/C):</u> "The total current in an electrical circuit containing parallel loads:"	100%	0%	Yes

Course Level Assessment Summary of Outcomes, Indicators and Results				
Add additional rows to table if necessary				
Learning Outcomes (Insert learning outcomes assessed during this cycle)	Indicator (Insert indicators used for each outcome: exam question, scoring rubric, etc. Be specific)	Percent of Correct Responses	Percent of Incorrect Responses	Performance Standard Met (75%)* (yes or no)
<i>understanding of AC electricity</i>	<u>Answer:</u> "is the sum of the current through all the loads"			
Learning Outcome 2:  <i>Basic understanding of AC electricity</i>	(g) <u>Question (M/C):</u> "The total resistance in a parallel circuit is:"  <u>Answer:</u> "less than the smallest value of resistance"	83.3%	16.7%	Yes
Learning Outcome 3:  <i>Understand proper use of electrical measuring equipment including hand held meters and oscilloscopes</i>	(a) <u>Question (M/C):</u> "When measuring resistance, power to the circuit must be turned:"  <u>Answer:</u> "Off"	100%	0%	Yes
Learning Outcome 3:  <i>Understand proper use of electrical measuring equipment including hand held meters and oscilloscopes</i>	(b) <u>Question (M/C):</u> "When measuring the current through a component, the leads of the DMM are connected in:"  <u>Answer:</u> "series with the circuit power on"	83.3%	16.7%	Yes
Learning Outcome 3:  <i>Understand proper use of electrical measuring equipment</i>	(c) <u>Question (M/C):</u> "When measuring the voltage being applied to a component, the leads of the DMM are connected in:"  <u>Answer:</u> "parallel with circuit power on"	83.3%	16.7%	Yes

Course Level Assessment Summary of Outcomes, Indicators and Results				
Add additional rows to table if necessary				
Learning Outcomes (Insert learning outcomes assessed during this cycle)	Indicator (Insert indicators used for each outcome: exam question, scoring rubric, etc. Be specific)	Percent of Correct Responses	Percent of Incorrect Responses	Performance Standard Met (75%)* (yes or no)
<i>including hand held meters and oscilloscopes</i>				
Learning Outcome 3:  <i>Understand proper use of electrical measuring equipment including hand held meters and oscilloscopes</i>	(d) <u>Question (M/C)</u> : "When measuring current, a digital multimeter (DMM) is:"  <u>Answer</u> : "inserted in series with the power to the circuit turned ON"	66.7%	33.3%	No
Learning Outcome 3:  <i>Understand proper use of electrical measuring equipment including hand held meters and oscilloscopes</i>	(e) <u>Question (M/C)</u> : "Insulation integrity of conductors, motor windings, and transformer windings is measured using:"  <u>Answer</u> : "a megohmmeter"	83.3%	16.7%	Yes
Learning Outcome 4:  <i>Apply mathematical concepts using Kirchhoff's law</i>	(a) <u>Question (calculated numeric)</u> : "Use Kirchhoff's current law to determine the amount of current flowing through branch 3 of a junction if 5.0 A is flowing through branch 1 and -4.0 A is flowing through branch 2."  <u>Answer</u> : "-1 A"  [question variants use different values]	83.3%	16.7%	Yes

Course Level Assessment Summary of Outcomes, Indicators and Results				
Add additional rows to table if necessary				
Learning Outcomes (Insert learning outcomes assessed during this cycle)	Indicator (Insert indicators used for each outcome: exam question, scoring rubric, etc. Be specific)	Percent of Correct Responses	Percent of Incorrect Responses	Performance Standard Met (75%)* (yes or no)
Learning Outcome 4:  <i>Apply mathematical concepts using Kirchhoff's law</i>	(b) <u>Question (calculated numeric)</u> : "Using Kirchhoff's Voltage Law, in a closed circuit loop, if voltage 1 is 10 V and voltage 2 is 5 V, voltage 3 is _____ V."  <u>Answer</u> : "-15"  [question variants use different values]	66.7%	33.3%	No
Learning Outcome 5:  <i>Apply mathematical concepts utilizing OHM's Law</i>	(a) <u>Question (calculated numeric)</u> : "For a circuit with a current of 5 amps and a voltage of 500 volts, the resistance is _____ ohm(s):"  <u>Answer</u> : "100"  [question variants use different values]	100%	0%	Yes
Learning Outcome 5:  <i>Apply mathematical concepts utilizing OHM's Law</i>	(b) <u>Question (calculated numeric)</u> : "A resistor of 600 ohms in a DC series circuit with 7 amps has a voltage drop of _____ V."  <u>Answer</u> : "4,200"  [question variants use different values]	100%	0%	Yes
Learning Outcome 5:  <i>Apply mathematical concepts</i>	(c) <u>Question (calculated numeric)</u> : "The total resistance of a DC series circuit is 200 ohms and the total current is 5 amps. The source voltage is _____ V."	100%	0%	Yes



Course Level Assessment Summary of Outcomes, Indicators and Results				
Add additional rows to table if necessary				
Learning Outcomes (Insert learning outcomes assessed during this cycle)	Indicator (Insert indicators used for each outcome: exam question, scoring rubric, etc. Be specific)	Percent of Correct Responses	Percent of Incorrect Responses	Performance Standard Met (75%)* (yes or no)
<i>utilizing OHM's Law</i>	<u>Answer: "1,000"</u>  [question variants use different values]			
Learning Outcome 5:  <i>Apply mathematical concepts utilizing OHM's Law</i>	(d) <u>Question (calculated numeric):</u> "If the voltage source in a parallel circuit is 400 V and the total resistance is 25 ohms, the total current is _____ A."  <u>Answer: "16"</u>  [question variants use different values]	100%	0%	Yes
Learning Outcome 5:  <i>Apply mathematical concepts utilizing OHM's Law</i>	(e) <u>Question (calculated numeric):</u> "If the total resistance in a parallel circuit is 100 ohms and the total current is 10 amps, the total voltage is _____ V."  <u>Answer: "1,000"</u>  [question variants use different values]	100%	0%	Yes
Learning Outcome 5:  <i>Apply mathematical concepts utilizing OHM's Law</i>	(f) <u>Question (calculated numeric):</u> "If the total voltage in a parallel circuit is 600 V and the resistance of a branch is 300 ohms, the current flowing through the branch is _____ amps."  <u>Answer: "2"</u>  [question variants use different values]	100%	0%	Yes

Course Level Assessment Summary of Outcomes, Indicators and Results				
Add additional rows to table if necessary				
Learning Outcomes (Insert learning outcomes assessed during this cycle)	Indicator (Insert indicators used for each outcome: exam question, scoring rubric, etc. Be specific)	Percent of Correct Responses	Percent of Incorrect Responses	Performance Standard Met (75%)* (yes or no)
Learning Outcome 5:  <i>Apply mathematical concepts utilizing OHM's Law</i>	g) <u>Question (calculated numeric)</u> : "The current through each load of three loads connected in parallel is 5 A. The total current in the circuit is ____ A."  <u>Answer</u> : "15"  [question variants use different values]	100%	0%	Yes
Learning Outcome 5:  <i>Apply mathematical concepts utilizing OHM's Law</i>	(h) <u>Question (calculated numeric)</u> : "The equivalent resistance of a 100-ohm resistor connected in parallel with another 100-ohm resistor is ____ ohms."  <u>Answer</u> : "50"  [question variants use different values]	66.7%	33.3%	No
Learning Outcome 5:  <i>Apply mathematical concepts utilizing OHM's Law</i>	(i) <u>Question (calculated numeric)</u> : "If a voltage source of 100 V is applied to two loads connected in parallel, one of 100 ohms and the other of 200 ohms, the voltage across the 100-ohm load is ____ V."  <u>Answer</u> : "100"  [question variants use different values]	100%	0%	Yes

\* Please note if using a different minimum performance standard.

<b>Conclusions</b>
<p><b>Provide a brief summary of conclusions derived based on analysis of data. Append additional pages if necessary. If appending, include notation in box to “See attached”.</b></p> <p>Average of Performances for Each Assessed Learning Outcome:</p> <p>Learning Outcome 1: 93.8%                      Learning Outcome 2: 92.8%                      Learning Outcome 3: 83.3%                      Learning Outcome 4: 75.0%                      Learning Outcome 5: 96.3%</p> <p>The performance standard of 75% was met or exceeded on all five assessed Learning Outcomes.</p> <p>The performance standard of 75% was met or exceeded on 27 out of 31 indicators spread over the five Learning Outcomes assessed.</p>

<b>Previous Assessment Reports and Results</b>
<p><b>Date of Previous Assessment:</b> N/A  <b>List of Outcomes Not Met:</b> N/A  <b>Summary of Actions Taken to Address Unmet Learning Outcomes:</b> Append additional pages if necessary. If appending, include notation in box to “See attached”.</p> <p>N/A</p>

<b>Action Plan and Date for Reassessment</b>
<p><b>Identify action plan for improvement or maintaining current performance levels including outcomes identified for re-assessment, curriculum revision, LOT proposal, new or revised course activities to reinforce learning outcomes, etc. Append additional pages if necessary. If appending, include notation in box to “See attached”.</b></p> <p>N/A</p>

<b>Assessment Committee Recommendation/Approval (To be posted by Assessment Committee Chair)</b>
<p><input type="checkbox"/> Approved as presented</p> <p><input checked="" type="checkbox"/> <b>Approved with recommendations for future reports</b> – Please use the newest form (2019 Revision for future reports). The committee also recommends providing other assessment methods to indicate student success in those areas where test questions alone do not seem indicative of the overall outcome performance success. Provide a deeper look at how a learning outcome with a test question of 67% results in a 75% or 80% overall performance. Finally, if possible, provide more balance with the amount of questions presented for each learning outcomes. Some had two questions on the report, while other outcomes had five or more. However, the committee does understand that this imbalance may be due to the amount of time and emphasis put on various learning outcomes as required by the course and instruction.</p> <p><input type="checkbox"/> Resubmission Required. Reason for Resubmission:</p> <p><b>Date:</b> 1/25/21</p>