

**KELLOGG COMMUNITY COLLEGE**  
**INDUSTRIAL ELECTRICITY/ELECTRONICS**  
**COURSE OPTIONS**

**SPRING 2022**

Certificate: 30 credits

Associate in Applied Science: 60 credits (combination of industrial electricity/electronics, technical electives, and general education credit requirements)

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Module Subject Code and Number	Module Title	Credit	Contact Hours	Lab Fees	Tuition	Total Cost
<input type="checkbox"/> INEL C910-2201	ELECTRIC ELECTRONICS ORIENTAT	2.0	0.00	0.00	0.00	0.00
The orientation must be completed at the EAC in Albion prior to registration. Please call 517-630-8169 to verify available orientation times.						
<b>UNIT 05 ELECTRICAL THEORY</b>						
<input type="checkbox"/> INEL 05010-2201	ELECTRICAL SAFETY	0.17	4.0	3.00	43.86	46.86
<b>UNIT TOTAL</b>		<b>0.17</b>	<b>4.0</b>	<b>3.00</b>	<b>43.86</b>	<b>46.86</b>
<b>UNIT 10 MATHEMATICS FOR ELECTRICIANS</b>						
<input type="checkbox"/> INEL 10010-2201	ELECTRICAL MATH 1	0.08	2.0	13.00	20.64	33.64
<input type="checkbox"/> INEL 10020-2201	ELECTRICAL MATH 2	0.25	6.0	3.00	64.50	67.50
<input type="checkbox"/> INEL 10030-2201	ELECTRICAL MATH 3	0.25	6.0	3.00	64.50	67.50
<b>UNIT TOTAL</b>		<b>0.58</b>	<b>14.0</b>	<b>19.00</b>	<b>149.64</b>	<b>168.64</b>
<b>UNIT 15 ELECTRICAL THEORY</b>						
<input type="checkbox"/> INEL 15010-2201	ELECTRICAL THEORY	0.25	6.0	23.00	64.50	87.50
<input type="checkbox"/> INEL 15020-2201	STATIC ELECTRICITY	0.25	6.0	23.00	64.50	87.50
<input type="checkbox"/> INEL 15030-2201	CALCULATORS AND ELECTRONICS	0.25	6.0	23.00	64.50	87.50
<input type="checkbox"/> INEL 15040-2201	DEVICES AND SYMBOLS	0.25	6.0	23.00	64.50	87.50
<input type="checkbox"/> INEL 15050-2201	MULTIMETER	0.33	8.0	23.00	85.14	108.14
<input type="checkbox"/> INEL 15060-2201	OHM'S LAW	0.33	8.0	23.00	85.14	108.14
<input type="checkbox"/> INEL 15070-2201	SERIES CIRCUITS	0.33	8.0	23.00	85.14	108.14
<input type="checkbox"/> INEL 15080-2201	PARALLEL CIRCUITS	0.33	8.0	23.00	85.14	108.14
<input type="checkbox"/> INEL 15090-2201	COMBINATION CIRCUITS	0.33	8.0	23.00	85.14	108.14
<input type="checkbox"/> INEL 15100-2201	MAGNETISM	0.25	6.0	23.00	64.50	87.50
<input type="checkbox"/> INEL 15110-2201	ALTERNATING CURRENT	0.25	6.0	23.00	64.50	87.50
<input type="checkbox"/> INEL 15120-2201	OSCILLOSCOPE	0.33	8.0	23.00	85.14	108.14
<input type="checkbox"/> INEL 15130-2201	INDUCTANCE	0.42	10.0	23.00	108.36	131.36
<input type="checkbox"/> INEL 15140-2201	CAPACITANCE	0.42	10.0	23.00	108.36	131.36
<input type="checkbox"/> INEL 15150-2201	RLC CIRCUITS	0.33	8.0	23.00	85.14	108.14
<input type="checkbox"/> INEL 15160-2201	CONDUCTION	0.33	8.0	23.00	85.14	108.14
<input type="checkbox"/> INEL 15170-2201	THEORY OVERVIEW	0.21	5.0	23.00	54.18	77.18
<b>UNIT TOTAL</b>		<b>5.19</b>	<b>125.0</b>	<b>391.00</b>	<b>1339.02</b>	<b>1730.02</b>
<b>UNIT 20 ELECTRICAL MOTOR CONTROLS 1</b>						
<input type="checkbox"/> INEL 20010-2201	ELECTRICAL MOTOR CONTROLS	0.42	10.0	23.00	108.36	131.36
<input type="checkbox"/> INEL 20020-2201	MANUAL MOTOR CONTROLS	0.50	12.0	23.00	129.00	152.00
<input type="checkbox"/> INEL 20030-2201	CONTROL TRANSFORMERS	0.42	10.0	23.00	108.36	131.36
<input type="checkbox"/> INEL 20040-2201	CONTROL LADDER LOGIC	0.67	16.0	23.00	172.86	195.86
<input type="checkbox"/> INEL 20050-2201	CONTROL RELAYS MOTOR STARTERS	0.50	12.0	23.00	129.00	152.00
<input type="checkbox"/> INEL 20060-2201	INTRODUCTION TROUBLESHOOTING	0.33	8.0	23.00	85.14	108.14
<input type="checkbox"/> INEL 20070-2201	SYSTEMS TROUBLESHOOTING	0.42	10.0	23.00	108.36	131.36
<input type="checkbox"/> INEL 20080-2201	AUTOMATIC INPUT DEVICES	0.42	10.0	23.00	108.36	131.36
<input type="checkbox"/> INEL 20090-2201	ELECTRONIC SENSORS	0.33	8.0	23.00	85.14	108.14
<input type="checkbox"/> INEL 20100-2201	BASIC TIMER CONTROL	0.33	8.0	23.00	85.14	108.14
<input type="checkbox"/> INEL 20110-2201	TIMERS AND COUNTERS	0.25	6.0	23.00	64.50	87.50
<b>UNIT TOTAL</b>		<b>4.59</b>	<b>110.0</b>	<b>253.00</b>	<b>1184.22</b>	<b>1437.22</b>
<b>UNIT 25 ELECTRICAL MOTOR CONTROLS 2</b>						
<input type="checkbox"/> INEL 25010-2201	REVERSING MOTOR CONTROL	0.33	8.0	23.00	85.14	108.14

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<b>UNIT 25 ELECTRICAL MOTOR CONTROLS 2 (CONTINUED)</b>						
<input type="checkbox"/> INEL 25020-2201	BRAKING METHODS	0.42	10.0	23.00	108.36	131.36
<input type="checkbox"/> INEL 25030-2201	REDUCED VOLTAGE STARTING	0.33	8.0	23.00	85.14	108.14
<input type="checkbox"/> INEL 25040-2201	INTRO FREQUENCY DRIVES (AC)	0.33	8.0	23.00	85.14	108.14
<input type="checkbox"/> INEL 25050-2201	AC DRIVES SPEED TORQUE CNT	0.33	8.0	23.00	85.14	108.14
<input type="checkbox"/> INEL 25060-2201	AC DRIVES ACCEL AND DECEL	0.33	8.0	23.00	85.14	108.14
<input type="checkbox"/> INEL 25070-2201	AC DRIVES TROUBLESHOOTING	0.33	8.0	23.00	85.14	108.14
<input type="checkbox"/> INEL 25080-2201	SCR MOTOR CONTROL	0.42	10.0	23.00	108.36	131.36
<b>UNIT TOTAL</b>		<b>2.82</b>	<b>68.0</b>	<b>184.00</b>	<b>727.56</b>	<b>911.56</b>
<b>UNIT 35 NEC ELECTRICAL CODE (NEC)</b>						
<input type="checkbox"/> INEL 35010-2201	GENERAL WIRING FUNDAMENTALS	0.25	6.0	17.00	64.50	81.50
<input type="checkbox"/> INEL 35020-2201	WIRE RACEWAY AND BOX SIZING	0.33	8.0	17.00	85.14	102.14
<input type="checkbox"/> INEL 35030-2201	BRANCH CIRCUITS	0.33	8.0	17.00	85.14	102.14
<input type="checkbox"/> INEL 35040-2201	SERVICE FEEDER CALCULATIONS	0.25	6.0	17.00	64.50	81.50
<input type="checkbox"/> INEL 35050-2201	GROUNDING AND BONDING	0.33	8.0	17.00	85.14	102.14
<input type="checkbox"/> INEL 35060-2201	OVERCURRENT PROTECTION	0.33	8.0	17.00	85.14	102.14
<input type="checkbox"/> INEL 35070-2201	MOTOR CIRCUIT WIRING	0.25	6.0	17.00	64.50	81.50
<input type="checkbox"/> INEL 35080-2201	TRANSFORMERS	0.25	6.0	17.00	64.50	81.50
<input type="checkbox"/> INEL 35090-2201	GENERAL HAZARDOUS LOCATIONS	0.25	6.0	17.00	64.50	81.50
<input type="checkbox"/> INEL 35100-2201	HEALTH CARE FACILITIES	0.25	6.0	17.00	64.50	81.50
<input type="checkbox"/> INEL 35110-2201	EMERGENCY POWER SYSTEMS	0.33	8.0	17.00	85.14	102.14
<input type="checkbox"/> INEL 35120-2201	INDUSTRIAL APPLICATIONS	0.33	8.0	17.00	85.14	102.14
<input type="checkbox"/> INEL 35130-2201	SPECIAL APPLICATION WIRING	0.25	6.0	17.00	64.50	81.50
<input type="checkbox"/> INEL 35140-2201	NEC REVIEW	0.17	4.0	17.00	43.86	60.86
<b>UNIT TOTAL</b>		<b>3.90</b>	<b>94.0</b>	<b>238.00</b>	<b>1006.20</b>	<b>1244.20</b>
<b>UNIT 50 ELECTRICAL CONTROL WIRING</b>						
<input type="checkbox"/> INEL 50010-2201	ELECTRICAL CONTROL WIRING	0.42	10.0	65.00	108.36	173.36
<input type="checkbox"/> INEL 50020-2201	ELECTRICAL CONTROL SYSTEMS	1.00	24.0	75.00	258.00	333.00
<b>UNIT TOTAL</b>		<b>1.42</b>	<b>34.0</b>	<b>140.00</b>	<b>366.36</b>	<b>506.36</b>
<b>UNIT 55 INDUSTRIAL ELECTRONICS</b>						
<input type="checkbox"/> INEL 55010-2201	USING THE OSCILLOSCOPE	0.67	16.0	21.00	172.86	193.86
<input type="checkbox"/> INEL 55020-2201	METERS FOR ELECTRONICS	0.33	8.0	21.00	85.14	106.14
<input type="checkbox"/> INEL 55030-2201	ELECTRONIC SOLDERING	0.25	6.0	21.00	64.50	85.50
<input type="checkbox"/> INEL 55040-2201	SOLDERING PRINTED CIRCUIT BOAR	0.25	6.0	21.00	64.50	85.50
<input type="checkbox"/> INEL 55050-2201	DIODES	0.25	6.0	21.00	64.50	85.50
<input type="checkbox"/> INEL 55060-2201	POWER SUPPLIES	0.50	12.0	21.00	129.00	150.00
<input type="checkbox"/> INEL 55070-2201	PHOTO DEVICES	0.33	8.0	21.00	85.14	106.14
<input type="checkbox"/> INEL 55080-2201	SOLID STATE DEVICES	0.83	20.0	21.00	214.14	235.14
<input type="checkbox"/> INEL 55090-2201	ELECTRONIC TIMING	0.33	8.0	21.00	85.14	106.14
<input type="checkbox"/> INEL 55100-2201	AMPLIFIERS	0.83	20.0	21.00	214.14	235.14
<input type="checkbox"/> INEL 55110-2201	DIGITAL LOGIC FUNDAMENTALS	0.50	12.0	21.00	129.00	150.00
<input type="checkbox"/> INEL 55120-2201	DIGITAL LOGIC APPLICATIONS	0.42	10.0	21.00	108.36	129.36
<input type="checkbox"/> INEL 55130-2201	PROXIMITY SWITCHING	0.17	4.0	21.00	43.86	64.86
<input type="checkbox"/> INEL 55140-2201	PHOTOELECTRIC DEVICES	0.17	4.0	21.00	43.86	64.86
<input type="checkbox"/> INEL 55150-2201	FIBER OPTIC FUNDAMENTALS	0.33	8.0	21.00	85.14	106.14
<input type="checkbox"/> INEL 55160-2201	FIBER OPTIC LAB	0.25	6.0	21.00	64.50	85.50
<b>UNIT TOTAL</b>		<b>6.41</b>	<b>154.0</b>	<b>336.00</b>	<b>1653.78</b>	<b>1989.78</b>

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<b>UNIT 75 INTRODUCTION TO CONTROL LOGIX</b>						
<input type="checkbox"/> INEL 75010-2201	INTRO TO COMPACT LOGIX PLCS	0.25	6.0	15.00	64.50	79.50
<input type="checkbox"/> INEL 75020-2201	CREATING RS LOGIX 5000 PROJEC	0.25	6.0	15.00	64.50	79.50
<input type="checkbox"/> INEL 75030-2201	ETHERNET COMMUNICATION PROTO	0.42	10.0	15.00	108.36	123.36
<input type="checkbox"/> INEL 75040-2201	CREATING RS LOGIX 5000 PROGRA	0.42	10.0	15.00	108.36	123.36
<input type="checkbox"/> INEL 75050-2201	TON TOF RTO COUNTER INSTRUCTI	0.42	10.0	15.00	108.36	123.36
<input type="checkbox"/> INEL 75060-2201	CU AND CD COUNTER INSTRUCTION	0.42	10.0	15.00	108.36	123.36
<b>UNIT TOTAL</b>		<b>2.18</b>	<b>52.0</b>	<b>90.00</b>	<b>562.44</b>	<b>652.44</b>
<b>UNIT 70 PANEL VIEW</b>						
<input type="checkbox"/> INEL 70010-2201	INTRODUCTION TO PANEL VIEW	0.17	4.0	10.00	43.86	53.86
<input type="checkbox"/> INEL 70020-2201	TERMINAL OVERVIEW	0.25	6.0	10.00	64.50	74.50
<input type="checkbox"/> INEL 70030-2201	WIRING AND SET UP	0.25	6.0	10.00	64.50	74.50
<input type="checkbox"/> INEL 70040-2201	TERMINAL CONFIGURATION	0.25	6.0	10.00	64.50	74.50
<input type="checkbox"/> INEL 70050-2201	TROUBLESHOOTING MAINTENANCE	0.25	6.0	10.00	64.50	74.50
<input type="checkbox"/> INEL 70060-2201	PROGRAMMING PANEL VIEW	0.83	20.0	10.00	214.14	224.14
<input type="checkbox"/> INEL 70070-2201	PANEL VIEW PLC APPLICATIONS	1.04	25.0	10.00	268.32	278.32
<input type="checkbox"/> INEL 70080-2201	PANEL VIEW PLC COMMUNICATION	0.21	5.0	10.00	54.18	64.18
<b>UNIT TOTAL</b>		<b>3.25</b>	<b>78.0</b>	<b>80.00</b>	<b>838.50</b>	<b>918.50</b>
<b>TOTAL</b>		<b>30.51</b>	<b>735</b>	<b>1734.00</b>	<b>7871.58</b>	<b>9605.58</b>

**FOR OFFICE USE ONLY**

Instructor Approval \_\_\_\_\_ Date \_\_\_\_\_

Total Credit \_\_\_\_\_ Total Contact \_\_\_\_\_ Total Cost \_\_\_\_\_

Please Note: Kellogg Community College offers additional Industrial Electricity/Electronics courses at the Regional Manufacturing Technology Center in Battle Creek, MI.