

## TEE “Title of Course” Crosswalk

Local Course Curriculum / Units / Unit Descriptions	<b>Title of Standards:</b> Technology and Engineering <b>Date of Copyright:</b> 2013 <b>Organization:</b> Wisconsin Department of Public Instruction	<b>Title of Standards:</b> Wisconsin Standards for Mathematics <b>Date of Copyright:</b> 2011 <b>Organization:</b> Wisconsin Department of Public Instruction
<p><b>Unit 1.1 - Introduction to Electronics</b></p> <ul style="list-style-type: none"> <li>• Safety and best practices in electronics</li> <li>• Calculations and measurement used in the design and verification of circuit characteristics</li> <li>• Functions of common analog and digital components used in electronics</li> <li>• Technical skills utilized throughout electronics</li> </ul>	<p><b>EHS1.d.7.h:</b> Assess workplace conditions with regard to personal and environmental health and safety.</p> <p><b>EHS1.d.8.h:</b> Identify different workplace systems that protect and enhance personal and environmental health and safety.</p> <p><b>EHS1.d.9.h:</b> Describe employee rights and responsibilities to maintain workplace health and safety, including compliance with rules and laws.</p> <p><b>EL1.a.13.h:</b> Calculate current, voltage or resistance using Ohms Law and Kirchoff's Voltage Law.</p> <p><b>EL1.a.14.h:</b> Describe Watts Law.</p> <p><b>EL1.a.17.h:</b> Convert fixed numbers to scientific notation.</p> <p><b>EL1.a.18.h:</b> Explain the difference between conventional current theory and electron current theory.</p> <p><b>EL2.a.8.h:</b> Explain the basic operation of the following electronic components: Capacitors, Resistors, Diodes, Transistors, Insulators, Conductors, Switches, Fuses, Circuit Breakers, Batteries and Power Supplies.</p> <p><b>EL2.a.9.h:</b> Recognize the following electronic components by constructing simple circuits: Capacitors, Resistors, Diodes, Transistors, Insulators, Conductors, Switches, Fuses, Circuit Breakers, Batteries and Power Supplies.</p> <p><b>EL2.a.10.h:</b> Demonstrate multimeter and usage.</p> <p><b>EL2.a.11.h:</b> Explain the reasons for flux usage and describe it's interaction between metals.</p> <p><b>EL2.a.12.h:</b> List types of solder and reasons for choosing each.</p> <p><b>EL2.a.13.h:</b> Describe and demonstrate the differences between good and bad mechanical and electrical solder connections.</p> <p><b>EL2.a.14.h:</b> Analyze the process of manufacturing a printed circuit board and construct a soldered circuit.</p> <p><b>EL3.a.5.h:</b> Identify and describe the operation of common electronic components.</p> <p><b>EL3.a.6.h:</b> Perform basic soldering techniques and printed circuit board construction.</p> <p><b>EL3.a.7.h:</b> Analyze simple analog and digital circuits using common electronic test equipment and</p> <p><b>EL3.a.8.h:</b> Determine the characteristics of analog and digital signals.tools</p> <p><b>EL3.a.9.h:</b> Translate data specifications into truth tables and extract logical expressions.</p> <p><b>EL3.a.10.h:</b> Use Boolean algebra and DeMorgan's Theorem to simplify logic expressions.</p> <p><b>EL3.a.11.h:</b> Convert binary, hexadecimal and octo numbers to base 10.</p> <p><b>EL3.a.12.h:</b> Add, subtract, multiply and divide binary, hexadecimal and octo numbers.</p> <p><b>EL4.a.7.h:</b> Design a combinational logic circuit using basic logic gates.</p> <p><b>EL4.a.8.h:</b> Simulate and prototype a logic circuit.</p> <p><b>EL4.a.9.h:</b> Design a combinational logic circuit incorporating negative logic.</p>	<p><b>The Real Number System -Extend The Properties Of Exponents To Rational Exponents.</b></p> <ol style="list-style-type: none"> <li>1. Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents. For example, we define <math>5^{1/3}</math> to be the cube root of 5 because we want <math>(5^{1/3})^3 = 5(1/3)^3</math> to hold, so <math>(5^{1/3})^3</math> must equal 5. (N.RN.1)</li> <li>2. Rewrite expressions involving radicals and rational exponents using the properties of exponents. (N.RN.2)</li> </ol> <p><b>Quantities -Reason Quantitatively And Use Units To Solve Problems.</b></p> <ol style="list-style-type: none"> <li>1. Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.</li> <li>2. Define appropriate quantities for the purpose of descriptive modeling.</li> <li>3. Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. (N.Q .3)</li> </ol> <p><b>Algebra: Seeing Structure In Expressions -Interpret The Structure Of Expressions</b></p> <ol style="list-style-type: none"> <li>1. Interpret expressions that represent a quantity in terms of its context. (A.SSE.1)</li> <li>2. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.* (A.SSE.3)</li> </ol> <p><i>Linear, Quadratic, And Exponential Models -Construct And Compare Linear, Quadratic, And Exponential Models And Solve Problems</i></p> <ol style="list-style-type: none"> <li>1. Distinguish between situations that can be modeled with linear functions and with exponential functions.             <ol style="list-style-type: none"> <li>1.b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. (F.LE.1.b)</li> </ol> </li> <li>2. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table). (F.LE.2)</li> </ol>

	<p><b>EL4.a.10.h:</b> Simulate and prototype a logic circuit employing negative logic.</p> <p><b>EL7.a.6.h:</b> Demonstrate the safe usage of appropriate tools, procedures and operation of equipment.</p> <p><b>EL7.a.7.h:</b> Describe personal safety precautions for working with electric and electronic devices electrical shock.</p> <p><b>EL7.a.8.h:</b> List various degrees of current the human body can tolerate.</p> <p><b>EL7.a.9.h:</b> Explain the concept of First Aid and its particular importance to workers in electric and electronic fields.</p> <p><b>EL7.a.10.h:</b> List applicable governing fire safety regulations NEC (National Electrical Code) and NFPA 70 (National Fire Protection Association).</p> <p><b>EL7.a.11.h:</b> Explain the cause of solder fumes and the effects of lead poisoning.</p> <p><b>EL7.a.12.h:</b> List causes and precautions to prevent or reduce solder splatter.</p> <p><b>ENG3.a.5.h:</b> Explain technological problems must be researched before they can be solved.</p> <p><b>ENG3.a.6.h:</b> Not all problems are technological and not every problem can be solved using technology.</p> <p><b>ENG3.a.7.h:</b> Research and development is a specific problem-solving approach that is used intensively in business and industry to prepare devices and systems for the marketplace.</p> <p><b>ENG3.b.5.h:</b> Describe how many technological problems require a multidisciplinary approach.</p>	