Standards: Idaho Content Standards Science, pgs. 67, 70-71, 75-79; Idaho Content Standards Mathematics, pgs. 124, 132, 134, 139, 141, 160-162; and Idaho Division of Career Technical Education Pre-Engineering Program Standards, pgs. 1-3
Note: This course is an elective and covers only select content standards from the pages listed.

DC Introduction to Electrical and Computer Engineering BSU: Alignment Table

	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8
HS-PSC-1.5		x		x				x
HS-PSC-3.2				x	x			
HS-PSC-3.3			x	x	x			x
HS-PSC-3.4		x	x	x	x			x
HS-PSP-1.5				x	x			
HS-PSP-1.6		x		x				x
HS-PSP-2.1				x	x			
HS-PSP-2.2			x	x	x			x
HS-PSP-2.3		x	x	x	x			x

HS-PSP-2.5			x	x	x			x
HS-PSP-3.2							x	
N.Q.A.				x	x	x		
A.CED.A				x	x	x		
A.REI.D					x			
F.IF.B						x		
F.IF.C				x	x	x		
F.BF.A				x	x			
S.ID.A.					x			
S.ID.C					x			
S.IC.B					x	x		
1.1.1			x		x			
1.1.2			x		x			
1.1.3	x	x	x		x			x
2.2.3		x		x			x	x
3.1.1	x		x		x			x
3.1.2	x	x	x		x			x
3.1.3	x	x	x		x			x
3.1.4			x		x			x
3.2.1			x					
3.2.2			x					
3.2.3			x					

4.2.6				**x**	**x**			
4.3.2				**x**	**x**	**x**		
4.3.5				**x**	**x**	**x**		
4.3.6				**x**	**x**	**x**		
4.3.7				**x**	**x**	**x**		
6.3.2				**x**	**x**			
6.3.3				**x**	**x**			
6.3.5		**x**		**x**	**x**			
6.3.6				**x**	**x**			
6.3.7			**x**	**x**	**x**			**x**
6.4.1						**x**		

DC Introduction to Electrical and Computer Engineering BSU: Course Map
Unit 1: What is Electrical and Computer Engineering?

Idaho Standards	Unit Objectives
Pre-Engineering Program Standards 1.1.3 Engage in career exploration and leadership development. 3.1.1 Define engineering. 3.1.2 Research career opportunities and the educational requirements for a given engineering field. 3.1.3 Create an education and career plan for a career in engineering.	• discuss the history and foundations of electrical engineering and computer science. • explain the different specialties in electrical engineering, computer engineering, and computer science. • discuss your own personal interests and career goals.
Lesson 1: Introduction to Electrical and Computer Engineering	

Lesson Objectives 1. describe the people and things important to engineering and computer science. ○ correlation: 1.1.3, 3.1.1 2. reflect on what important technology is most critical in your life. ○ correlation: 1.1.3, 3.1.1	Assessments ● Objective 1: U1D1: People and Things of Engineering and Computer Science…And You ● Objective 2: U1D1: People and Things of Engineering and Computer Science…And You
Lesson 2: What Do Engineers Do?	
Lesson Objectives 1. distinguish the specialty areas in electrical engineering (EE), computer engineering (CE), and computer science (CS). ○ correlation: 3.1.1, 3.1.2 2. explain what electrical engineering (EE), computer engineering (CE), and computer science (CS) graduates can do. ○ correlation: 3.1.1, 3.1.2	Assessments ● Objective 1: U1A1: Where Could I Work? ● Objective 2: U1A1: Where Could I Work?
Lesson 3: Charting Your Path	
Lesson Objectives 1. discuss your career values. ○ correlation: 3.1.3 2. identify your “favorite” area of specialization. ○ correlation: 3.1.1, 3.1.2 3. assess your values in relation to selecting preferred specializations. ○ correlation: 3.1.1, 3.1.2	Assessments ● Objective 1: U1A2: My Perfect Job ● Objective 2: U1A2: My Perfect Job ● Objective 3: U1A2: My Perfect Job

Unit 2: Learning the Basics

Idaho Standards	Unit Objectives
Idaho Content Standards Science HS-PSC-1.5 Communicate scientific and technical information	● identify basic electrical and electronic components, including the parts of an Arduino board.

about why the molecular-level structure is important in the functioning of designed materials. HS-PSC-3.4 Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy. HS-PSP-1.6 Communicate scientific and technical information about why the molecular-level structure is important in the functioning of designed materials. HS-PSP-2.3 Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy. **Pre-Engineering Program Standards** 1.1.3 Engage in career exploration and leadership development. 2.2.3 Match tools to their intended use and purpose. 3.1.2 Research career opportunities and the educational requirements for a given engineering field. 3.1.3 Create an education and career plan for a career in engineering. 6.3.5 Describe the relationship of voltage, current, and resistance.	● construct a simple Arduino project. ● explain the requirements for a Bachelor of Science (BS) degree in electrical engineering (EE), computer engineering (CE), or computer science (CS) at BSU and other Idaho universities.
Lesson 1: Electronic Devices and Their Connection	
Lesson Objectives 1. identify basic electrical and electronic components. ○ correlation: 2.2.3 2. describe how electricity flows in a circuit using the water analogy and basic terminology. ○ correlation: 6.3.5	Assessments ● Objective 1: U2L1: Electronic Devices and Their Connection–Drawing the Circuit interactive ● Objective 2: U2A1: Electronic Devices and Their Connections Quiz
Lesson 2: First Arduino Project	
Lesson Objectives 1. complete the Arduino setup process for your device. ○ correlation: 2.2.3 2. demonstrate the first LED blinking light and modify the code slightly to change behavior.	Assessments ● Objective 1: U2A2: Arduino Setup ● Objective 2: U2A2: Arduino Setup

○ correlation: HS-PSC-1.5, HS-PSP-1.6	
Lesson 3: Building a Simple Circuit	
Lesson Objectives 1. construct a simple Arduino project on the breadboard and show it behaves correctly. ○ correlation: HS-PSC-3.4, HS-PSP-2.3	Assessments ● Objective 1: U2D1: Circuit Building Reflections
Lesson 4: EE, CE, and CS in College	
Lesson Objectives 1. compare and contrast the requirements for electrical engineering (EE), computer engineering (CE), and computer science (CS) degrees at Idaho universities. ○ correlation: 1.1.3, 3.1.2, 3.1.3	Assessments ● Objective 1: U2D2: Comparing Program Requirements

Unit 3: Becoming an Engineer

Idaho Standards	Unit Objectives
Idaho Content Standards Science HS-PSC-3.3 Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative positions of particles (objects). HS-PSC-3.4 Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy. HS-PSP-2.2 Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative positions of particles (objects). HS-PSP-2.3 Design, build, and refine a device that works within given constraints to convert one form of energy into another	● identify major issues in ethics that might be experienced as an engineer. ● describe ways to improve your current study habits and explain some of the theory behind how we learn. ● complete a more advanced Arduino UNO R3 project and report your experience.

form of energy. HS-PSP-2.5 Develop and use a model of two objects interacting through electric or magnetic fields to illustrate the forces between objects and the changes in energy of the objects due to the interaction. **Pre-Engineering Program Standards** 1.1.1 Explore the role of professional organizations and/or associations in the engineering industry. 1.1.2 Define the value, role, and opportunities provided through career technical student organizations. 1.1.3 Engage in career exploration and leadership development. 3.1.1 Define engineering. 3.1.2 Research career opportunities and the educational requirements for a given engineering field. 3.1.3 Create an education and career plan for a career in engineering. 3.1.4 Describe the importance of collaboration in the engineering industry. 3.2.1 Identify current engineering codes of ethics and their purpose. 3.2.2 Describe ethical engineering issues. 3.2.3 Analyze the ethical issues involved in an engineering failure. 6.3.7 Create series and parallel circuits, using the basic laws of electricity and Kirchhoff's law.	
Lesson 1: Ethics in Engineering	
Lesson Objectives 1. describe the differences and similarities between ethics and morals. ○ correlation: 3.2.2, 3.2.3 2. identify issues of ethics that are critical for professional engineers and computer scientists. ○ correlation: 3.2.2, 3.2.3 3. apply personal or professional ethics to example cases. ○ correlation: 3.2.1, 3.2.2, 3.2.3	Assessments ● Objective 1: U3L1: Ethics in Engineering–What Are Ethics? interactive ● Objective 2: U3D1: An Ethical Dilemma Example ● Objective 3: U3D1: An Ethical Dilemma Example

Lesson 2: Having a Growth Mindset	
Lesson Objectives 1. identify strategies to help you be successful in college. ○ correlation: 1.1.1, 1.1.2, 1.1.3 2. describe the research into the science of learning. ○ correlation: 1.1.1, 1.1.2, 1.1.3	Assessments ● Objective 1: U3A1: Growth Mindset and Study Habits Notes ● Objective 2: U3A1: Growth Mindset and Study Habits Notes
Lesson 3: Effective Study Habits	
Lesson Objectives 1. identify strategies to help you be successful in college. ○ correlation: 1.1.1, 1.1.2, 1.1.3 2. describe the research into the science of learning. ○ correlation: 1.1.1, 1.1.2, 1.1.3	Assessments ● Objective 1: U3A1: Growth Mindset and Study Habits Notes ● Objective 2: U3A1: Growth Mindset and Study Habits Notes
Lesson 4: Intermediate Arduino Project	
Lesson Objectives 1. explain the role of sensors in Arduino projects. ○ correlation: HS-PSC-3.3, HS-PSC-3.4, HS-PSP-2.2, HS-PSP-2.3, HS-PSP-2.5, 6.3.7 2. complete an Arduino project that uses an LCD display as an output device. ○ correlation: HS-PSC-3.3, HS-PSC-3.4, HS-PSP-2.2, HS-PSP-2.3, HS-PSP-2.5, 6.3.7	Assessments ● Objective 1: U3A2: Thermometer Project Reflection ● Objective 2: U3A2: Thermometer Project Reflection

Unit 4: Circuit Analysis Basics

Idaho Standards	Unit Objectives
Idaho Content Standards Science HS-PSC-1.5 Communicate scientific and technical information about why the molecular-level structure is important in the functioning of designed materials. HS-PSC-3.2 Create a computational model to calculate the change in the energy of one component in a system when the	● identify various circuit topologies. ● analyze series and parallel resistor networks. ● analyze electronic circuits using simple measurement equipment.

change in energy of the other component(s) and energy flows in and out of the system are known. HS-PSC-3.3 Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative positions of particles (objects). HS-PSC-3.4 Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy. HS-PSP-1.5 Plan and conduct an investigation to provide evidence that an electric current can produce a magnetic field and that a changing magnetic field can produce an electric current. HS-PSP-1.6 Communicate scientific and technical information about why the molecular-level structure is important in the functioning of designed materials. HS-PSP-2.1 Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known. HS-PSP-2.2 Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative positions of particles (objects). HS-PSP-2.3 Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy. HS-PSP-2.5 Develop and use a model of two objects interacting through electric or magnetic fields to illustrate the forces between objects and the changes in energy of the objects due to the interaction. **Idaho Content Standards Mathematics** N.Q.A. Reason quantitatively and use units to solve problems. A.CED.A. Create equations that describe numbers or relationships.	

F.IF.C. Analyze functions using different representations. F.BF.A. Build a function that models a relationship between two quantities. **Pre-Engineering Program Standards** 2.2.3 Match tools to their intended use and purpose. 4.2.6 Report measurements by using and reading precision measuring tools. 4.3.2 Produce drawings from sketches. 4.3.5 Apply basic elements (e.g., title block information, dimensions, and line types) in a technical drawing. 4.3.6 Identify basic industry standard symbols on sketches, drawings, and blueprints. 4.3.7 Produce various types of drawings (e.g., part, assembly, pictorial, orthographic, isometric, and schematic), given an engineering design. 6.3.2 Measure circuit values, using a multimeter. 6.3.3 Calculate power in a system that converts energy from electrical to mechanical. 6.3.5 Describe the relationship of voltage, current, and resistance. 6.3.6 Calculate values of current, resistance, and voltage in a circuit, using Ohm's law. 6.3.7 Create series and parallel circuits, using the basic laws of electricity and Kirchhoff's law.	
Lesson 1: Circuit Topologies	
Lesson Objectives 1. differentiate between series and parallel elements in a circuit. ○ correlation: HS-PSC-1.5, HS-PSP-1.6, 6.3.3, 6.3.5, 6.3.6, 6.3.7 2. calculate the effective resistance of networks of resistors. ○ correlation: HS-PSC-3.2, HS-PSP-2.1, N.Q.A., A.CED.A., F.IF.C., F.BF.A., 6.3.3, 6.3.5, 6.3.6, 6.3.7	Assessments ● Objective 1: U4L1: Circuit Topologies–Knowledge Check: Series and Parallel Resistor interactive ● Objective 2: U4A1: Ohm's Law and Equivalent Resistance

Lesson 2: Drawing Circuits in Tinkercad	
Lesson Objectives 1. create a simple circuit using Tinkercad. ○ correlation: HS-PSC-3.3, HS-PSC-3.4, HS-PSP-2.2, HS-PSP-2.3, HS-PSP-2.5, 4.3.2, 4.3.5, 4.3.6, 4.3.7 2. draw a circuit with more components in Tinkercad. ○ correlation: HS-PSC-3.3, HS-PSC-3.4, HS-PSP-2.2, HS-PSP-2.3, HS-PSP-2.5, 4.3.2, 4.3.5, 4.3.6, 4.3.7	Assessments ● Objective 1: U4A2: RGB LED Circuit Drawing ● Objective 2: U4A2: RGB LED Circuit Drawing
Lesson 3: Test and Measurement in Tinkercad	
Lesson Objectives 1. measure current and voltage in a circuit. ○ correlation: HS-PSP-1.5, 4.2.6, 6.3.2, 6.3.3, 6.3.5, 6.3.6, 6.3.7 2. describe what a diode is and how it behaves in a circuit. ○ correlation: HS-PSC-1.5, HS-PSP-1.6, 2.2.3	Assessments ● Objective 1: U4A3: Tinkercad Drawing Analysis ● Objective 2: U4A3: Tinkercad Drawing Analysis

Unit 5: Success as an Engineer

Idaho Standards	Unit Objectives
Idaho Content Standards Science HS-PSC-3.2 Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known. HS-PSC-3.3 Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative positions of particles (objects). HS-PSC-3.4 Design, build, and refine a device that works within	● identify opportunities for experiential learning during college. ● discuss how experiential learning could be part of your college plan. ● draw simple circuit schematics from an English-language description of the circuit. ● measure more complex circuit behavior.

given constraints to convert one form of energy into another form of energy. HS-PSP-1.5 Plan and conduct an investigation to provide evidence that an electric current can produce a magnetic field and that a changing magnetic field can produce an electric current. HS-PSP-2.1 Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known. HS-PSP-2.2 Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative positions of particles (objects). HS-PSP-2.3 Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy. HS-PSP-2.5 Develop and use a model of two objects interacting through electric or magnetic fields to illustrate the forces between objects and the changes in energy of the objects due to the interaction. **Idaho Content Standards Mathematics** N.Q.A. Reason quantitatively and use units to solve problems. A.CED.A. Create equations that describe numbers or relationships. A.REI.D. Represent and solve equations and inequalities graphically. F.IF.C. Analyze functions using different representations. F.BF.A. Build a function that models a relationship between two quantities. S.ID.A. Summarize, represent, and interpret data on a single count or measurement variable. Use calculators, spreadsheets, and other technology as appropriate. S.ID.C. Interpret linear models. S.IC.B. Make inferences and justify conclusions from sample surveys, experiments, and observational studies.	

Pre-Engineering Program Standards 1.1.1 Explore the role of professional organizations and/or associations in the engineering industry. 1.1.2 Define the value, role, and opportunities provided through career technical student organizations. 1.1.3 Engage in career exploration and leadership development. 3.1.1 Define engineering. 3.1.2 Research career opportunities and the educational requirements for a given engineering field. 3.1.3 Create an education and career plan for a career in engineering. 3.1.4 Describe the importance of collaboration in the engineering industry. 4.2.6 Report measurements by using and reading precision measuring tools. 4.3.2 Produce drawings from sketches. 4.3.5 Apply basic elements (e.g., title block information, dimensions, and line types) in a technical drawing. 4.3.6 Identify basic industry standard symbols on sketches, drawings, and blueprints. 4.3.7 Produce various types of drawings (e.g., part, assembly, pictorial, orthographic, isometric, and schematic), given an engineering design. 6.3.2 Measure circuit values, using a multimeter. 6.3.3 Calculate power in a system that converts energy from electrical to mechanical. 6.3.5 Describe the relationship of voltage, current, and resistance. 6.3.6 Calculate values of current, resistance, and voltage in a circuit, using Ohm's law. 6.3.7 Create series and parallel circuits, using the basic laws of electricity and Kirchhoff's law.	
Lesson 1: Experiential Learning	
Lesson Objectives 1. describe the various opportunities available to learn	Assessments ● Objective 1: U5D1: My Future Career Priorities Poster

more about an engineering career while you are in college. ○ correlation: 1.1.1, 1.1.2, 1.1.3, 3.1.1, 3.1.2, 3.1.3, 3.1.4 2. identify resources from the State of Idaho to help you going forward. ○ correlation: 1.1.1, 1.1.2, 1.1.3, 3.1.1, 3.1.2, 3.1.3, 3.1.4	● Objective 2: U5D1: My Future Career Priorities Poster
Lesson 2: Drawing Schematics	
Lesson Objectives 1. draw schematics using a schematic capture tool. ○ correlation: HS-PSC-3.2, HS-PSP-2.1, 4.3.2, 4.3.5, 4.3.6, 4.3.7, 6.3.2 2. apply circuit analysis to schematics. ○ correlation: HS-PSC-3.2, HS-PSP-2.1, 4.2.6, 4.3.2, 4.3.5, 4.3.6, 4.3.7, 6.3.2	Assessments ● Objective 1: U5A1: LED Schematic and Circuit ● Objective 2: U5A1: LED Schematic and Circuit
Lesson 3: Tinkercad Project	
Lesson Objectives 1. create a Tinkercad design for testing. ○ correlation: HS-PSC-3.3, HS-PSC-3.4, HS-PSP-1.5, HS-PSP-2.2, HS-PSP-2.3, HS-PSP-2.5, 4.3.2, 4.3.5, 4.3.6, 4.3.7, 6.3.2 2. measure current in a circuit for a combination of voltage and resistor values. ○ correlation: HS-PSC-3.2, HS-PSP-2.1, N.Q.A., A.CED.A., F.IF.C., F.BF.A., 6.3.2, 6.3.5, 6.3.6, 6.3.7 3. write in order to report on your experiment. ○ correlation: A.REI.D., S.ID.A., S.ID.C., S.IC.B.	Assessments ● Objective 1: U5A2: LED Circuit Project Lab Data ● Objective 2: U5A2: LED Circuit Project Lab Data ● Objective 3: U5A2: LED Circuit Project Lab Data

Unit 6: Digital Logic

Idaho Standards	Unit Objectives
Idaho Content Standards Mathematics N.Q.A. Reason quantitatively and use units to solve problems. A.CED.A. Create equations that describe numbers or relationships. F.IF.B. Interpret functions that arise in applications in terms of the context. Include linear, quadratic, exponential, rational, polynomial, square root and cube root, trigonometric, and logarithmic functions. F.IF.C. Analyze functions using different representations. S.IC.B. Make inferences and justify conclusions from sample surveys, experiments, and observational studies. **Pre-Engineering Program Standards** 4.3.2 Produce drawings from sketches. 4.3.5 Apply basic elements (e.g., title block information, dimensions, and line types) in a technical drawing. 4.3.6 Identify basic industry standard symbols on sketches, drawings, and blueprints. 4.3.7 Produce various types of drawings (e.g., part, assembly, pictorial, orthographic, isometric, and schematic), given an engineering design. 6.4.1 Create detailed operational flowcharts and logic in a system-control program.	● convert between binary, decimal, and hexadecimal number systems. ● describe simple logic gates including schematic representation, truth tables, and functionality. ● simplify logic expressions using Boolean algebra.
Lesson 1: Logic Gates	
Lesson Objectives 1. convert between binary, decimal, and hexadecimal number systems. ○ correlation: N.Q.A., A.CED.A., F.IF.B., S.IC.B. 2. describe the fundamental operations of digital logic gates.	Assessments ● Objective 1: U6A1: Binary Conversions ● Objective 2: U6A2: Logic Gate Truth Tables

○ correlation: 6.4.1	
Lesson 2: How Are Logic Gates Made?	
Lesson Objectives 1. create truth tables to describe the function of logic gates. ○ correlation: 6.4.1 2. create more complex functions from basic gates. ○ correlation: 6.4.1	Assessments ● Objective 1: U6A2: Logic Gate Truth Tables ● Objective 2: U6A2: Logic Gate Truth Tables
Lesson 3: Boolean Algebra	
Lesson Objectives 1. identify the rules of Boolean algebra. ○ correlation: 6.4.1 2. draw simple logic schematics with Scheme-it. ○ correlation: 4.3.2, 4.3.6, 4.3.7, 6.4.1 3. simplify Boolean algebra expressions. ○ correlation: N.Q.A., A.CED.A., F.IF.B., F.IF.C., S.IC.B., 6.4.1	Assessments ● Objective 1: U6D1: Logic Gate Challenge ● Objective 2: U6D1: Logic Gate Challenge ● Objective 3: U6D1: Logic Gate Challenge

Unit 7: What is a Computer?

Idaho Standards	Unit Objectives
Idaho Content Standards Science HS-PSP-3.2 Evaluate questions about the advantages of using digital transmission and storage of information. **Pre-Engineering Program Standards** 2.2.3 Match tools to their intended use and purpose.	● describe the functions that make up a modern computer including memory, storage, processing, and input/output devices. ● compare and contrast different types of memory and their advantage/disadvantages. ● explain the techniques used to perform high-speed addition in a modern CPU.
Lesson 1: How Does a Computer Compute?	
Lesson Objectives 1. identify hardware and software components of a	Assessments ● Objective 1: U7A1: Hardware and Software

computer. ○ correlation: 2.2.3	
Lesson 2: Memory and Storage	
Lesson Objectives 1. describe different types of computer memory (DRAM, SRAM, registers, Flash, ROM, etc.). ○ correlation: HS-PSP-3.2, 2.2.3 2. compare performance and cost of different memory types. ○ correlation: HS-PSP-3.2, 2.2.3	Assessments ● Objective 1: U7A2: Types of Memory ● Objective 2: U7A2: Types of Memory
Lesson 3: The Brains of the Computer (CPU)	
Lesson Objectives 1. describe the flow of instructions and data through the CPU of a computer. ○ correlation: HS-PSP-3.2, 2.2.3 2. explain how and why computers can do arithmetic so quickly. ○ correlation: HS-PSP-3.2, 2.2.3	Assessments ● Objective 1: U7A3: The CPU Flow ● Objective 2: U7A3: The CPU Flow
Lesson 4: Simple Computer Programming	
Lesson Objectives 1. identify the primary constructs used in most high-level programming languages. ○ correlation: 2.2.3	Assessments ● Objective 1: U7A4: Computer Programming

Unit 8: What's Next?

Idaho Standards	Unit Objectives
Idaho Content Standards Science HS-PSC-1.5 Communicate scientific and technical information about why the molecular-level structure is important in the	● present the final Arduino project. ● identify future objectives and plans for education and career success.

functioning of designed materials. HS-PSC-3.3 Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative positions of particles (objects). HS-PSC-3.4 Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy. HS-PSP-1.6 Communicate scientific and technical information about why the molecular-level structure is important in the functioning of designed materials. HS-PSP-2.2 Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative positions of particles (objects). HS-PSP-2.3 Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy. HS-PSP-2.5 Develop and use a model of two objects interacting through electric or magnetic fields to illustrate the forces between objects and the changes in energy of the objects due to the interaction. **Pre-Engineering Program Standards** 1.1.3 Engage in career exploration and leadership development. 2.2.3 Match tools to their intended use and purpose. 3.1.1 Define engineering. 3.1.2 Research career opportunities and the educational requirements for a given engineering field. 3.1.3 Create an education and career plan for a career in engineering. 3.1.4 Describe the importance of collaboration in the engineering industry. 6.3.7 Create series and parallel circuits, using the basic laws of electricity and Kirchhoff's law.	● describe the hardware and software tools that engineers use.

Lesson 1: What It Means to Study Electrical and Computer Engineering	
Lesson Objectives 1. list education and career goals. ○ correlation: 3.1.2, 3.1.3, 3.1.4 2. identify education paths for electrical and computer engineering. ○ correlation: 1.1.3, 3.1.1, 3.1.2, 3.1.3, 3.1.4 3. describe computer science education opportunities. ○ correlation: 1.1.3, 3.1.2, 3.1.3, 3.1.4	Assessments ● Objective 1: U8A1: My Perfect Job, Take Two ● Objective 2: U8A1: My Perfect Job, Take Two ● Objective 3: U8A1: My Perfect Job, Take Two
Lesson 2: Tools of Engineering and Computer Science	
Lesson Objectives 1. describe several pieces of lab equipment seen in a BSU ECE lab. ○ correlation: 2.2.3 2. describe some of the software tools used by engineers and computer scientists in school and in the workforce. ○ correlation: 2.2.3	Assessments ● Objective 1: U8A2: Engineering and Computer Science Tools ● Objective 2: U8A2: Engineering and Computer Science Tools
Lesson 3: Presenting Your Arduino Project	
Lesson Objectives 1. create a presentation describing your final Arduino project. ○ correlation: HS-PSC-1.5, HS-PSC-3.3, HS-PSC-3.4, HS-PSP-1.6, HS-PSP-2.2, HS-PSP-2.3, HS-PSP-2.5, 6.3.7 2. provide feedback for your fellow classmates' Arduino project presentations. ○ correlation: HS-PSC-1.5, HS-PSC-3.3, HS-PSC-3.4, HS-PSP-1.6, HS-PSP-2.2, HS-PSP-2.3, HS-PSP-2.5, 6.3.7	Assessments ● Objective 1: U8A3: Arduino Project Presentation, U8D1: Arduino Presentation Peer Celebrations ● Objective 2: U8D1: Arduino Presentation Peer Celebrations