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| **Course Code & Number: Name:** | |
| **Course Developer/Author:  Email:** | **eLearning Instructional Designer: Nickolas Gallegos** |

**Module Number and Title:** Directly from the *Course Design Plan: Modules* section. You will create a module design plan for each module on that document.

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| **Hardware Hacking** |

Module Overview: Directly from the *Module Overview* column from the *Course Design Plan: Modules* section*.*

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| **In this module, students will learn what systems utilize the I2C protocol and what vulnerabilities exist in this protocol. They will utilize a device to hack into I2C communication between devices.** |

Module Objectives:In the space below, provide the module objectives. There are typically 1 – 5 module objectives that describe what the students will be able to do after completing this module.Identify the course objective(s) that align with each module objective and, if necessary, describe the relationship. Objectives should encourage higher level thinking. *For assistance with writing effective course objectives, please refer to these resources:* [Bloom’s Taxonomy](http://cft.vanderbilt.edu/guides-sub-pages/blooms-taxonomy/) *and* [OPA Resource](http://www.depts.ttu.edu/opa/resources/docs/Program_Assessment_Handbook_4_13_2015.pdf) (page 7)*.*

**For K-12 courses,** **leave the Module Objectives blank in the beginning**—you will align modules to TEKS first, and then, at the end of development, you will write succinct module objectives that integrate TEKS with the actual tasks of the module.

| **Module Objectives**  By the completion of this module, students will be able to: | **Bloom’s Taxonomy Level** | **Assessment Strategy** | **Course Objectives Alignment (#)** |
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| 1. Identify what devices utilize serial protocols | Understand |  |  |
| 1. Utilize a hardware device to hack into a device within an embedded system | Apply |  |  |
| 1. Identify hardware vulnerabilities in embedded systems | Understand |  |  |
| 1. Define key terms like I2C, SPI, UART, etc.… | Remember |  |  |

Task Outline:In the table below, provide a title for each task students will need to complete in order to learn the topic/content. Describe the task and the reasoning for including in this module. Finally, note the module objective(s) that each task aligns with. **For K-12 courses,** list the detailed TEKS item that the task aligns with or supports (TEKS 1A, 1B, etc.). A K-12 example has been provided to illustrate how this document works. [Gagne’s Nine Events of Instruction](http://citt.ufl.edu/tools/gagnes-9-events-of-instruction/)

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| **Step # of** [Gagne’s Nine Events…](http://citt.ufl.edu/tools/gagnes-9-events-of-instruction/) | **Task Title** | **Task Description/Rationale**   1. Write in first or second person, addressing students directly. 2. Include rationale or purpose for the task. Relate to Module Objectives where appropriate. 3. Explicit instructions for completing the task. | **Module Objective Alignment (#) or TEKS** |
| *1* | *Opening Activity* | *Below is a new clip about a controversial issue in the last presidential election. As you learn more about the presidency in this lesson, you’ll be able to look back on what you see here and decide if your understanding of this event has changed at all. Watch the video, take a few notes, and then take the Lesson Opener quiz to make sure you understood the most important parts.[link to video]* | 8B, 10B, 11C |
| 1 | Discuss about what serial protocols are and the types that exist | Discuss serial protocols and what they’re used for. Specifically explain I2C since it will be utilized. Also talk about what devices use serial communication and the pros and cons of serial communication. |  |
| 2 | Explain how the required device works | Show the device that will allow us to hack into I2C communication between devices. Explain how it will be used and any related information to aid in understanding. |  |
| 3 | Explain how to perform the hack | Go through the steps to perform the hack. |  |
| 4 | Perform the hack | Perform the hack with the students by walking through the steps one at a time. |  |
| 5 | Review and explain the vulnerability in the serial device | Discuss what was accomplished and how to interpret the information acquired. Explain the ways that this type of attack can be prevented and detected. |  |
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