Field Trip # 37	**Digital Logic with the Program Encryption Toolkit**
Developed by:	Todd McDonald
Subject:	Ethical Hacking
Short description:	This is an NSF-sponsored hands-on learning activity where students with some knowledge of computers and programming will learn about basic digital logic and circuits and how security impacts their design.
Educational Level:	11^{th} – 12^{th} Grade
Field trip type:	Workshop
Educational Outcomes:	Students will be able to: • Understand basic types of logic gates like AND, OR, XOR • Interpret or create a truth table for a logic gate • Understand the logic equation of a logic gate using canonical sum of products and product of sums • Create basic components from logic gates • Create polymorphic variants of a logic circuit • Understand how to analyze circuits to see if they are equivalent • Understand the security issues associated with digital logic and circuit designs
Content:	The lesson uses a custom research software called the Program Encryption Toolkit (PET) to help students visualize and create digital logic circuits and components. PET is also used to illustrate basic digital logic principles and security techniques such as obfuscation.
Notes to instructor:	