Resources for Improving the Cybersecurity Pipeline

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ABSTRACT

Improving the Pipeline [1] is a capacity-building NSF funded project to increase the number of Information Assurance and Cyber Defense (IA/CD) professionals. The project developed course materials to allow instruction of college-level cybersecurity concepts to high-school students. The goal was to make the content more accessible, and in turn, to introduce the prospect of a career in security to younger students. Course materials created for this grant are freely available. This paper discusses how to access the materials.

CCS CONCEPTS

• **Social and professional topics** → **Computing education programs**; • **Security and privacy**;

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1 THE MODULES

Fourteen content modules were developed and delivered to program participants. Each module was developed to minimize the prerequisite knowledge and focuses on one area of security. Most of the modules can be used as standalone materials.

Modules were developed for the following topics:

- Introduction to Security
- Basics of Computing
- Programming Basics
- Security by Design
- Basics of Networking
- Network Security
- Wireless Security
- Encryption - Protecting Confidentiality
- Hashing - Protecting Integrity
- Protecting Availability

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- Social Engineering
- Risk
- Policy, Legal Issues and Professionalism
- Contingency Planning

In addition to being used in a similar after-school program, the modules can be used for shorter experiences such as career days and summer camps. Although the modules were used primarily with 11th and 12th grade students, several modules were successfully used with middle school students.

Each module contains a presentation as well as hands-on activities. Some presentations include activities within the presentation itself. Some modules also have an overview document providing additional information about the module.

2 ACCESSING THE MODULES

The modules are offered freely through a Creative Commons Non-Commercial license. Some activities used with the modules were adapted from Creative Commons. While materials are freely available, we ask that you publicly give credit for the development of materials.

As the modules were developed with support from the National Science Foundation, the modules are freely available via Google Drive. Those requesting access to the materials will be asked to complete a short survey. The survey will be used to track dissemination of grant materials and only be used for grant reporting purposes. Access to the materials will be available upon completion of the survey. The survey can be found at <https://forms.gle/p7JWbTn8iNBjZnR68>. If further information is desired, email the authors or email cyber.pct@gmail.com.

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REFERENCES

- [1] Sandra Gorka, Alicia McNett, Jacob R. Miller, and Bradley M. Webb. 2017. Improving the Pipeline: Modules for an After-School Program for Preparing Information Assurance and Cyber Defense Professionals. In *Proceedings of the 18th Annual Conference on Information Technology Education (SIGITE '17)*. ACM, New York, NY, USA, 183–183. <https://doi.org/10.1145/3125659.3125715>