NextWaveSTEM

Digital Defenders: Cybersecurity

Designed for learners in Grades 9-12

Course Description:

Students will explore the history, key tenets, and skills used in cybersecurity. Following three overarching themes (cryptography and codebreaking, hacking and ethics, cybersecurity and social media) students will evaluate the impact and uses of cybersecurity through various games, simulations, hands-on activities, and projects.

Equipment, Curriculum, and Training Available:

- 15 Lesson Hours
- Curriculum and supporting materials
- Ongoing product and curriculum support
- Professional development
- Facilitation by a trained STEM instructor (optional)

Lesson	Learning Target Examples
1. Data Breaches in Business	Define the phrases "data breach" and "personal identifiable information".
2. Mathematics and Codebreaking	Identify the role mathematics plays on codebreaking.
3. Cybersecurity and You	Compare the need for cybersecurity in a business and personal settings.
4. Privacy and Data Encryption	Define encryption while exploring the Caesar cipher and Random Substitution Cipher.
5. Protect Yourself with Secure Passwords	Explore various methods of multi factor authentication.
6. Cyberattacks	Identify and explain types of cyber attacks such as brute force, dictionary attack, exploiting software vulnerabilities, Denial-of-Service(DoS), and malware.
7. Cybersecurity and the IoT (Internet of Things)	Determine relationships between hacking and the Internet of Things (IoT).
8. Digital Forensics	Explain how digital information gathered through digital forensics is used in courts.
9. Ethics in Cyber Interactions	Debate ethics in regards to right to privacy or right to security of PII.
10. Cyber Legislation	Investigate current proposed cybersecurity legislation.
11. PII (Personal Identifiable Information) and Social Media	Explore ways that social media increases access to personal information.
12. Social Engineering	Compare the differences between social engineering and cyber attacks.
13. Social Media Risks	Identify specific risks to PII in social media platforms such as phishing, pretexting, baiting, and quid pro quo.
14. Social Media Safety	Identify individual user practices that ensure information is protected on social media platforms.
15. Trends in Cybersecurity	Identify current and emerging technology trends that will impact cybersecurity practices