



Cyber Security Initiative for Nevada Teachers

Implementing Cyber Security Concepts into IT Essentials

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Course Overview

This course prepares students for the CompTIA A+ exam, covering the fundamentals of computer hardware and software. We will introduce concepts of basic networking, network security, and the responsibilities of an IT professional.

Lesson Objectives

1. Define information technology (IT) and describe the components of a personal computer.
2. Describe how to protect people, equipment, and environments from accidents, damage, and contamination.
3. Perform a step-by-step assembly of a desktop computer.
4. Set up a home or small business network.
5. Explain the purpose of preventive maintenance and identify the elements of the troubleshooting.
6. Analyze the real world issues of computer espionage and the far-reaching implications of a cyber attack.



Lesson Overview

Module 1 - Configuring a Router for a Home or Small Business Network

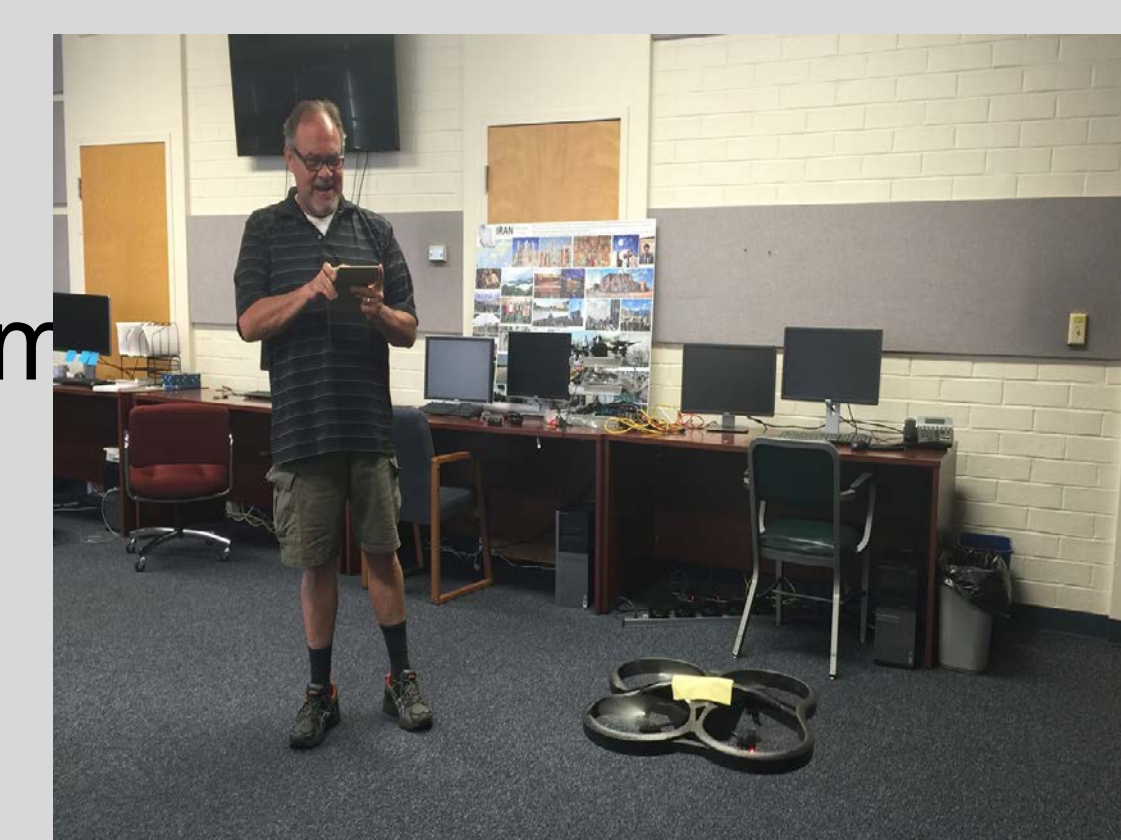
- Taught as a four-day module (three days of lecture and instruction followed by an hour and a half hands-on labs).
- Students will understand the concepts of SSID, broadcast channel, network security and adjusting settings in the firmware that allow for higher levels of cyber security.
- Materials required: CompTIA A+ Certification Prep by Michael Meyers, lecture with PowerPoint, 5 wireless routers, Cain&Abel software, Kali Linux, student workstations, network and Internet connectivity.

Module 2 - Introducing Computer Programming using Scratch

- Taught as an eight-day module (six days of lecture, instruction and video and two one-and-a-half hour sessions for hands-on activities).
- The students work in pairs on projects that interest them.
- Lessons will be geared to not overwhelm the students, but to allow for student success and avoid frustration.
- Materials needed: Chromebooks, access to the Internet, tutorials from <https://scratch.mit.edu/help/videos/>, guest speakers and teachers from UNR and Fallon Naval Air Station.

Module 3 - Social Media Investigation

- Taught as a four-day module (three days of lecture and instruction followed by an hour and a half hands-on lab).
- Students will be able to find all the information collected in the metadata files, and whether or not it is shared.
- Students will look at the source code from the security of the workstation.
- Materials required: Chromebooks, Internet access, social media access and the documentary *Citizenfour*.



Evaluation

To assess student learning, specifically in the modules containing cyber security concepts, all students in the IT Essentials course will be given a pre-test comprised of practice questions for the CompTIA A+ exam; the same test will be given at the end of the semester. Data will be collected from ONLY questions that will be reviewed in the cyber security modules developed this summer.

Pre-test August 17th, 2016

Post-test December 16th, 2016



References

Crook, Stamati, (2016). *Scratch Lesson Plan*, . Retrieved from:<http://scratched.gse.harvard.edu/resources/scratch-lesson-plan>

Meyers, Mike, (2016). *CompTIA A+ Certification All-in-One Exam Guide, Ninth Edition*. New York City:McGraw-Hill Education.

Wu, Chwan-Hwa (2013). *Introduction to Computer Networks and Cybersecurity*.Grand View Heights, OH: CRC Press, LLC.

Author Unknown, (2016). *Getting Started*, 1. Retrieved from <https://scratch.mit.edu/help/videos>

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