



IT-Adventures CD Venue

Purpose of the Course

Hello, and welcome to the Cyber Defense venue of IT-Adventures! This after school program is offered to students by a sponsored educator and supported by professionals who act as mentors. The in-school program is meant to provide exposure to IT and cyber security in a broad sense. The motivation to achieve this exposure is to be prepared for a competition at the end of the school year that will utilize your collective understanding of the material presented throughout the school year.

Objectives

- Apply cyber security concepts and tools to a virtual environment.
- Use security concepts, practices, and tools to prevent violations of security policy.
- Make use of a variety of virtual components within a testing environment to simulate real world applications and services.
- Use IT administrative practices to implement and maintain an IT environment that serves a purpose.
- Participate in a competition that tests your individual and your team's ability to defend against outsider attacks.

Additional Resources

Videos: [Introduction to Cyber Literacy](#):

<https://www.youtube.com/playlist?list=PLzQX06Oo2BXS4JsXtPuy6tmKyApQIAuS1>



Before You Begin

As with any new skill, mastery takes practice, and cyber security as a discipline is no exception. Our increasingly interconnected world has begun to recognize the importance of securing digital systems. The skills you learn here will be in demand as long as computers remain in existence. As you begin your journey, you will soon realize that there are vast numbers of resources at your disposal that can assist you. Do not be discouraged when you hit a roadblock because somebody out there knows the answer. More often than not, they are willing to help you. People that seek to solve society's toughest challenges often have the most rewarding and fulfilling careers.

A final note:

Be an ethical cyber-citizen! Never use what you learn to cause harm to computers outside of the testing platforms we provide for you!

Schedule of Topics:

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| <p>September</p> | |
| <p>Module 1</p> | <p>IT-Adventures Objective and Schedule:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Module 1 Outline <input type="checkbox"/> Module 1 Slideshow <input type="checkbox"/> Module 1 Activity 1 <input type="checkbox"/> Module 1 Activity 2 |
| <p>Module 2</p> | <p>Information Technology Environments:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Module 2 Outline <input type="checkbox"/> Module 2 Slideshow <input type="checkbox"/> Module 2 Activity 1 <input type="checkbox"/> Module 2 Check of Knowledge |
| <p>Module 3</p> | <p>Virtual Machine Setup:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Module 3 Outline <input type="checkbox"/> Module 3 Slideshow <input type="checkbox"/> Module 3 Activity 1 <input type="checkbox"/> Module 3 Activity 2 <input type="checkbox"/> Module 3 Check of Knowledge |



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| Module 4 | Navigating Linux File System: <ul style="list-style-type: none"> <input type="checkbox"/> Module 4 Outline <input type="checkbox"/> Module 4 Slideshow <input type="checkbox"/> Module 4 Activity 1 <input type="checkbox"/> Module 4 Activity 2 |
| October | |
| Module 5 | File Permissions and Network Tools: <ul style="list-style-type: none"> <input type="checkbox"/> Module 5 Outline <input type="checkbox"/> Module 5 Slideshow <input type="checkbox"/> Module 5 Activity 1 <input type="checkbox"/> Module 5 Activity 2 <input type="checkbox"/> Module 5 Check of Knowledge |
| Module 6 | DNS and Directory Servers: <ul style="list-style-type: none"> <input type="checkbox"/> Module 6 Outline <input type="checkbox"/> Module 6 Slideshow <input type="checkbox"/> Module 6 Activity 1 |
| Module 7 | Email and Firewalls: <ul style="list-style-type: none"> <input type="checkbox"/> Module 7 Outline <input type="checkbox"/> Module 7 Slideshow <input type="checkbox"/> Module 7 Activity 1 <input type="checkbox"/> Module 7 Activity 2 |
| Module 8 | 7 Layers of Cyber Security & Vulnerabilities: <ul style="list-style-type: none"> <input type="checkbox"/> Module 8 Outline <input type="checkbox"/> Module 8 Slideshow <input type="checkbox"/> Module 8 Activity 1 |
| November | |
| Module 9 | Web Vulnerabilities: <ul style="list-style-type: none"> <input type="checkbox"/> Module 9 Outline <input type="checkbox"/> Module 9 Slideshow |



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| | <input type="checkbox"/> Module 9 Activity 1 <input type="checkbox"/> Module 9 Activity 2 |
| Module 10 | Network & Vulnerability Scanning: <ul style="list-style-type: none"> <input type="checkbox"/> Module 10 Outline <input type="checkbox"/> Module 10 Slideshow <input type="checkbox"/> Module 10 Activity 1 <input type="checkbox"/> Module 10 Activity 2 |
| Module 11 | Free Week: |
| | THANKSGIVING BREAK |
| December | |
| Module 12 | Auditing and Remediation: <ul style="list-style-type: none"> <input type="checkbox"/> Module 12 Outline <input type="checkbox"/> Module 12 Slideshow <input type="checkbox"/> Module 12 Activity 1 <input type="checkbox"/> Module 12 Activity 2 |
| Module 13 | Physical Security & Social Engineering: <ul style="list-style-type: none"> <input type="checkbox"/> Module 13 Outline <input type="checkbox"/> Module 13 Slideshow <input type="checkbox"/> Module 13 Activity 1 <input type="checkbox"/> Module 13 Activity 2 |
| Module 14 | Free Week: <ul style="list-style-type: none"> <input type="checkbox"/> Module 14 Outline <input type="checkbox"/> Fall Evaluations |



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| Return From Winter Break | |
| Module 15 | Review/Overview of Venue: <ul style="list-style-type: none"> <input type="checkbox"/> Outline <input type="checkbox"/> CDC Venue Review Slideshow <input type="checkbox"/> Jeopardy! |
| Module 16: Practice CDC Week 1 | Practice CDC: <ul style="list-style-type: none"> <input type="checkbox"/> Activity 1 - Red Team Setup <input type="checkbox"/> Activity 2 - Blue Team Setup |
| Practice CDC Week 2 | Practice CDC: <ul style="list-style-type: none"> <input type="checkbox"/> Attack Phase |
| Practice CDC Week 3 | Practice CDC: <ul style="list-style-type: none"> <input type="checkbox"/> Switched Attack Phase |
| March/April | |
| Module 17 | CDC Overview and Details: <ul style="list-style-type: none"> <input type="checkbox"/> CDC Slideshow <input type="checkbox"/> Venue Evaluations |
| CDC Prep Week 1 | CDC Scenario Setup Phase: <ul style="list-style-type: none"> <input type="checkbox"/> Setup |



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| CDC Prep Week 2 | CDC Scenario Setup Phase: <input type="checkbox"/> Setup |
| CDC Prep Week 2 | CDC Scenario Setup Phase: <input type="checkbox"/> Setup |
| April | |
| | CDC Venue Evaluation Due: <input type="checkbox"/> Venue Evaluations |
| Week 25 | CDC Attack Phase @ Iowa State University |



Cyber Defense Competition Description:

If you are wondering what the weeks leading up the competition will look like in addition to the competition itself here is a brief overview:

There are two phases to the competition. The setup phase and the competition date itself. The setup phase begins about a month before the competition. Students are given access to their scenario documents and their network of servers. All of the server hosting and networking is provided to the students and all they will need is a laptop in order to access them. During the setup phase, students are given a network of servers and programs that they must find and remediate security issues from within. During the competition day, there will be three color teams. Besides the school's team (blue), there will be a red team and a green team. The red team is composed of industry professionals who will attempt to break into the student's network during the eight-hour attack phase. The green team will represent the normal users of the services that are being provided by the students. Throughout the competition, the green team will periodically attempt to make use of the services to see if they function as they normally should.

The students themselves will form part of the blue team, and you will be evaluated based on your ability to maintain a usable and secure network.