



Welcome to one of the most effective Science, Technology, Engineering, and Math (STEM) competitions in the nation focusing on the fundamentals of cyber security.

High schools across the nation are invited to participate in the Cyber Foundations competition focusing on the fundamentals of cybersecurity. Students will learn, compete, and win awards, and scholarships for their achievements.

Got skills? Take the challenge.

What is Cyber Foundations?

Cyber Foundation is the entry-level competition in a series of increasingly challenging contests sponsored by the ACES Foundation. The mission of the ACES Foundation is to significantly reduce the shortage in the cyber workforce by identifying, recruiting and placing the next generation of cyber security professionals.

Cyber Foundations focuses on the fundamentals of cybersecurity, the three topical areas in the competition are representative of the foundation skills needed by any person hoping to become a skilled cyber professional. The nation is facing a shortage of cybersecurity professionals whom can fill the ranks in the private and public sector to help secure the nation's infrastructure. Cyber Foundations was developed to offer high school students the fundamental knowledge of cybersecurity as an addition to, or part of their STEM education, to help broaden the pipeline of future cybersecurity professionals.

Cyber Foundations has two parts: (1) on-line tutorials, video and audio education materials that allow students to expand their knowledge, and (2) quizzes that allow students to demonstrate mastery. Three topics are presented and tested: networking, operating systems, and system administration. Each topic has a separate set of educational materials and a separate test. Educators are invited to use the materials in the classroom, however it is not required. The program does not require any activity by educators, but educators can greatly improve the success of their students if they choose to participate.

How do schools sign up?

How to get started

If you are a student interested in cybersecurity, you may approach your teacher or principal and present the competition to them. A teacher, principal or school administrator need to register the school as this person will act as the school coordinator responsible for distributing access codes to the students and collaborate with the Cyber Foundations team were necessary.

If you are a teacher or school administrator, ask your students if they are interested in participating and register your school and view the material together with your students and help them prepare for the competition.

After school programs, Civil Air Patrol teams, computer clubs and other groups are welcome to register as well!

If you are a home-schooled student, or if your school has not signed up, you can register as an individual to compete.

How to register

- The school coordinator establishes a personal account on the Cyber Foundations website.
- The school coordinator proceeds to register the school.
- The school coordinator submits a payment for the registration fee via check, credit card or school purchase order.
- Once a payment has been confirmed, the school coordinator receives access codes the students will need to register with.
- Access codes are distributed by the school coordinator and students proceeds by registering personal accounts on the Cyber Foundations website, using the access codes.

Is there a registration fee?

Yes, schools may register for a fee of \$100.00 which allows an unlimited number of students from the school to participate. Individuals may register for \$25.00.

Some schools may be eligible for the Fee Waiver Program. For more information visit: www.cyberfoundations.org

Pursue a career in cybersecurity.

“Last year, one of our students came in first place in the state of Maryland. He got a full scholarship to the University of Texas and a summer internship with the federal government. I have students who've gotten accepted to Rochester Institute of Technology and the University of Maryland because of their involvement in the Cyber Foundations Challenge.”

Jeffrey Hanson,
Director of the
Academy of
Information
Technology,
Damascus High
School, MD.

Tutorial Modules

What topics do the tutorials cover?

Module 1, Networking:

A firm understanding of Network fundamentals is essential to being able to secure a network or attack one. This module provides a broad overview of networking, covering the fundamental concepts needed to understand computer attacks and defenses from a network perspective. This module focuses on the various protocols used at each layer, with a particular focus on the Networking layer.

Module 2, Operating Systems:

This module introduces the students to computer operating systems, with a strong emphasis on command line usage. The first half focuses on Linux, guiding students through using a CentOS LiveCD in VMware Player and teaching important concepts and commands. The second half focuses on Windows, particularly Windows 7, and covers important topics that all advanced computer users should know.

Module 3, System Administration:

This module is intended to provide students with the tools they need to perform common administrative functions in some of the most popular scripting environments. The module will examine PHP and PERL in the context of an Apache webserver, and then it will examine using GNU BASH and Microsoft Powershell scripting from the command line to complete every day administrative functions.

Help Students Prepare

Any teacher or administrator who likes computers can add value: teachers in technology courses, teachers in computer programming courses, and even the system administrator who runs the computers at the school can help. There are a few ways teachers can help their students to study and prepare for the competition. Some teachers actually show the Cyber Foundations programs in class. This approach is found most often in technology programs such as Cisco Academies. Other teachers tell the kids which programs to do as homework and then discuss the materials and go over the quizzes in class.

The Quizzes

Each tutorial module ends with an online competition day where students skills will be tested in a series of quiz questions, and each competition-day quiz can be completed in 40 - 90 minutes. Student will be ranked based on the number of points scored and in case of a tie, the time it took the students to answer the questions will determine the ranks.

Each question is worth a specific number of points depending on the level of difficulty. After all the three quizzes, the final ranks will be determined by the students' cumulative scores from the quizzes.

Awards

Opportunities for students who do well in these competitions range from awards and recognition by government and business leaders, to internships and scholarships. For example, the U.S. Navy has authorized [full, four-year scholarships](#) for high school students who excel in ACES competitions. An overview of available scholarships and awards may be viewed at <https://www.cyberfoundations.org/>

What would
you say to
others
considering
participating?

"Go ahead and try it! There's nothing to lose and so many interesting new things to learn. I participated last fall, this past spring, and I'm already planning to participate in the fall. I was surprised by the scope of the challenge and how much it covers. It also taught me a lot about how easily our devices and data can be hacked, exploited, stolen and replicated. It's scary!"

Gavy A.
Newark, DE.

When is the next competition?

- Monday Aug. 1st: Registration opens at 8am Eastern Time
- Monday Oct. 15th: Registration for participation must be completed
- Monday Oct. 15th: Last day to submit payment
- Saturday Oct. 20th: Online tutorial for Module 1 (Networking) open
- Tuesday Oct. 30th: Last day to enter registration codes (students)
- Friday Nov. 2nd: Competition for Module 1
- Saturday Nov. 3rd: Online tutorial for Module 2 (Operating Systems) open
- Friday Nov. 16th: Competition for Module 2
- Saturday Nov. 17th: Online tutorial Module 3 (System Administration) open
- Friday Dec. 7th: Competition for Module 3
- Monday Dec. 31st: Access to content expires

Where can I find more information, or register to compete?

For more information visit www.cyberfoundations.org or contact Sonny Sandelius at ssandelius@sans.org or (347) 515.3883.

Learn. Compete. Win.

"As a State Coordinator being able to connect high school students to the challenges of the Cyber workforce, what better way than through the Cyber Foundation Challenge!"

Erin Flynn
Manager of Admissions Outreach and Events
RI Cyber Foundations Competition State Coordinator
New England Institute of Technology, RI

www.cyberfoundations.org