AMERICA'S TOP YOUNG SCIENTIST

HTTPS://WWW.YOUNGSCIENTISTLAB.COM/CHALLENGE

NICE Alignment: Securely Provision and Oversee and Govern
NICE Skills Alignment: Skills vary by individual challenge

A video competition in which students in grades 5-8 in the United States are asked to create a 1–2-minute video describing a unique solution to an everyday problem. Ten finalists are chosen to compete in the National Finals.

ÅNGSTROMCTF

HTTPS://2019.ANGSTROMCTF.COM/

NICE Alignment: Operate and Maintain & Protect and Defend
NICE Skills Alignment: System and network administration, programming, reverse engineering

A capture-the-flag (CTF) competition hosted and organized entirely by students at Montgomery Blair High School! CTF cybersecurity competitions have become an increasingly popular way for students to learn more about cybersecurity and develop and refine their hacking skills. These competitions are designed to educate and inspire high school students through interactive hacking challenges.

APPS 4 DIGITAL PEACE

HTTPS://CYBERTECHACCORD.ORG/CYBERSECURITY-TECH-ACCORD-ANNOUNCES-NEW-CONTEST-IN-PARTNERSHIP-WITH-THE-UN-OFFICE-OF-DISARMAMENT-AFFAIRS/

NICE Alignment: Oversee and Govern
NICE Skills Alignment: Analyze, policy, legal, strategize

Competition to stimulate new thinking from innovating young minds across the world. The goal of the competition is to develop original technology-based solutions, such as mobile applications, to both help limit the use of the internet as a domain of conflict, and to increase the stability of our online environment. Apps 4 Digital Peace is meant to complement the work of the United Nations in promoting an open, secure, stable, accessible and peaceful cyber environment through addressing existing and potential cyber threats, through

- Ensuring respect for international law in cyberspace,
- Ensuring respect for human rights in cyberspace,
- Adherence to voluntary norms, rules and principles,
- Fostering confidence building, and
- cybersecurity capacity building.

CONRAD CHALLENGE

HTTPS://WWW.CONRADCHALLENGE.ORG/

NICE Alignment: Securely Provision and Oversee and Govern
NICE Skills Alignment: Skills vary by individual challenge

The Conrad Challenge is an annual, multi-phase innovation and entrepreneurship competition that encourages young adults to participate in designing the future. Each year, teams of 2-5 students, ages 13-18, from around the world create products and/or services to address some of the most pressing global and local challenges. They become entrepreneurial problem-solvers, addressing challenging social, scientific and societal issues through utilizing their creativity and critical-thinking skills. Participants work together to identify challenges and develop solutions to some of the world's most complex problems in any of the following categories: Aerospace & Aviation, Cyber-Technology & Security, Energy & Environment, Health & Nutrition, Transforming Education Through Technology, Smoke-Free World: Eliminating & Reducing Teen Vaping, and Smoke-Free World: Re-purposed Farmlands & Tobacco Crops. Teams may submit in multiple categories, if desired.

CSAW CAPTURE THE FLAG (CTF)

HTTPS://WWW.CSAW.IO/

NICE Alignment: Operate and Maintain & Protect and Defend
NICE Skills Alignment: Skills vary by individual challenge

CSAW is the most comprehensive student-run cyber security event in the world, featuring 9 hacking competitions, workshops, and industry events. Final events are hosted by 6 global academic centers.

CYBER 9/12 STRATEGY CHALLENGE

HTTPS://WWW.ATLANTICCOUNCIL.ORG/PROGRAMS/SCOWCROFT-CENTER-FOR-STRATEGY-AND-SECURITY/CYBER-STATECRAFT-INITIATIVE/CYBER-912/

NICE Alignment: Operate and Maintain & Oversee and Govern
NICE Skills Alignment: Analyze, investigate, policy, legal, strategize

The Cyber 9/12 Strategy Challenge is an annual cyber policy and strategy competition where students from across the globe compete in developing policy recommendations tackling a fictional cyber catastrophe.

CYBERPATRIOT

HTTPS://WWW.USCYBERPATRIOT.ORG/

NICE Alignment: Operate and Maintain & Protect and Defend
NICE Skills Alignment: System and network administration

CyberPatriot is a program established for the K-12 education of students in cyber security by the Air Force Association. There are three branches of the program, including the National Youth Cyber Defense Competition, AFA CyberCamps, and Elementary School Cyber Education Initiative. The Cyber Defense Competition starts at the state and then regional level. Top competitors are then given an all-expense paid trip to the national finals. At nationals, participants compete for national recognition and scholarship money.

ECYBERMISSION

HTTPS://WWW.ECYBERMISSION.COM/

NICE Alignment: Operate and Maintain & Protect and Defend
NICE Skills Alignment: System and network administration, programming, reverse engineering

eCYBERMISSION is a web-based science, technology, engineering, and mathematics (STEM) competition for students in grades six through nine. Students are challenges to

explore how STEM works in their world while working as a team to solve problems in their community. Teams compete virtually in state and regional competitions and in-person through the National Judging & Educational Event (NJ&EE). Student prizes are awarded at the state, regional, and national levels by grade level. Three mission areas National Security & Safety, Robotics, and Technology connect with cybersecurity.

EXPLORAVISION

HTTPS://WWW.EXPLORAVISION.ORG/WHAT-EXPLORAVISION

NICE Alignment: Securely Provision and Oversee and Govern
NICE Skills Alignment: Skills vary by individual challenge

Participants engage in real-world problem solving, rooted in STEM. The challenge is to look 20 years into the future and communicate a new future technology.

HIGH SCHOOL CAPTURE THE FLAG (HSCTF)

HTTPS://HSCTF.COM/

NICE Alignment: Operate and Maintain & Protect and Defend
NICE Skills Alignment: System and network administration, programming, reverse engineering

HSCTF ("High School Capture the Flag") is the first CTF designed by high schoolers for high schoolers. Unlike other CTFs, HSCTF isn't purely about computer security. It extends the CTF model of competition to other areas of computer science such as the design and analysis of algorithms and programming languages. Each challenge will still have a flag, and most of our challenges will fall into the traditional CTF categories of cryptography, reverse engineering, programming languages, forensics, and recon.

Capture the Flag (CTF) competitions are traditionally targeted at college students or industry professionals. HSCTF is a CTF designed for younger students who might be interested in computer science.

HONEYNET PROJECT CHALLENGES

HTTPS://WWW.HONEYNET.ORG/CHALLENGES

NICE Alignment: Operate and Maintain
NICE Skills Alignment: Skills vary by individual challenge

Challenges give students the opportunity to analyze attacks and share their findings. Individuals and organizations learn about threats, and how to learn and analyze them. Even better, individuals can see the write-ups from other individuals, learning new tools and technique for analyzing attacks. A sample solution is posted at the end of each challenge. Submissions received are judged by our members and the top three submissions are recognized and awarded with small prizes.

JUNIOR SCIENCE AND HUMANITIES SYMPOSIA (JSHS)

HTTPS://WWW.JSHS.ORG/ABOUT-JSHS/

NICE Alignment: Securely Provision and Oversee and Govern
NICE Skills Alignment: Skills vary by individual challenge

The Junior Science and Humanities Symposia (JSHS) Program is a tri-service – U.S. Army, Navy, and Air Force – sponsored STEM competition which promotes original research and experimentation in the sciences, technology, engineering, and mathematics (STEM) at the high school level and publicly recognizes students for outstanding achievement. By connecting talented students, their teachers, and research professionals at affiliated symposia and by rewarding research excellence, JSHS aims to widen the pool of trained talent prepared to conduct research and development vital to our nation. Several categories connect with cybersecurity.

KRYPTOS CHALLENGE

HTTPS://WWW.CWU.EDU/MATH/KRYPTOS

NICE Alignment: Securely Provision & Investigate
NICE Skills Alignment: Encryption algorithms and stenography, digital forensics, cryptography, networking

κρυπτοσ or kryptos, is a contest open to undergraduate and high school students. The theme of the contest is centered around the breaking, or cryptanalysis, of ciphers (secret writing). Each challenge presents contestants with a brief scenario together with some ciphertext (encoded message). The goal is to discover the original English plaintext message! Clues to help break the cipher may be contained in the actual ciphertext or in the details of the accompanying scenario. While it is not the intent of this contest to test overly technical aspects of cryptanalysis or advanced mathematical algorithms, some familiarity with basic codemaking and codebreaking is certainly helpful.

MITRE CYBER ACADEMY

HTTPS://MITRECYBERACADEMY.ORG/

NICE Alignment: Analyze and Protect and Defend
NICE Skills Alignment: Steganography, software exploitation, computer forensics, cryptography, networking

MITRE presents an annual STEM Capture the Flag challenge that is open to both current students and professionals. While current professionals may compete in the competition for education and training purposes, only eligible high school and college teams are able to obtain winning prizes, scholarships, and internships.

NATIONAL CYBER LEAGUE (NCL)

HTTPS://NATIONALCYBERLEAGUE.ORG/

NICE Alignment: Operate and Maintain & Protect and Defend
NICE Skills Alignment: System and network administration

The National Cyber League (NCL) is the most inclusive, performance-based, learning-centered collegiate cybersecurity competition today! The NCL, powered by Cyber Skyline, enables students to prepare and test themselves against practical cybersecurity challenges that they will likely face in the workforce, such as identifying hackers from

forensic data, pentesting and audit vulnerable websites, recovering from ransomware attacks, and much more! Open to U.S. high school and college students, the NCL is a community and virtual training ground that allow students to develop and demonstrate their technical cybersecurity skills, helping students bridge the gap from curriculum to career!

NORTH AMERICAN COMPUTATIONAL LINGUISTICS OPEN COMPETITION

HTTPS://WWW.NACLOWEB.ORG/

NICE Alignment: Securely Provision & Investigate
NICE Skills Alignment: Encryption algorithms and stenography, digital forensics, cryptography, networking

NACLO is a contest in which high-school students solve linguistic puzzles. In solving these puzzles, students learn about the diversity and consistency of language, while exercising logic skills. No prior knowledge of linguistics or second languages is necessary. Professionals in linguistics, computational linguistics and language technologies use dozens of languages to create engaging problems that represent cutting edge issues in their fields. The competition has attracted top students to study and work in those same fields. It is truly an opportunity for young people to experience a taste of natural-language processing in the 21st century.

NSA CODEBREAKER CHALLENGE

HTTPS://CODEBREAKER.LTSNET.NET/CHALLENGE

NICE Alignment: Securely Provision & Investigate
NICE Skills Alignment: Encryption algorithms and stenography, digital forensics, cryptography, networking

The NSA Codebreaker Challenge provides students with a hands-on opportunity to develop their reverse-engineering / low-level code analysis skills while working on a realistic problem set centered around the NSA's mission.

ONLINE OLYMPIAD IN LINGUISTICS

HTTPS://ONLING.ORG/

NICE Alignment: Securely Provision & Investigate

NICE Skills Alignment: Encryption algorithms and stenography, digital forensics, cryptography, networking

The Online Olympiad in Linguistics was conceived as an annual competition that would allow secondary school students from all over the world to get closer to understanding the scientific beauty of language. It can also serve as practice before the (offline) International Linguistics Olympiad, which takes place every summer and brings together students from many countries. Unlike the IOL, however, the Online Olympiad is well suited for problems that involve real-time interaction and feature multimedia materials.

PACTF

HTTPS://2019.PACTF.COM/

NICE Alignment: Operate and Maintain & Protect and Defend
NICE Skills Alignment: System and network administration

PACTF includes two rounds, each one week-long. During each round, you can pick any two-day span to grab as many flags as you can! Choose wisely: Once your two days run out, you won't be able to score more points in that round. Don't worry about being too slow, though! Even if your two-day timer is over, you can still test your skills against problems in previous rounds. There are scoreboards for each individual round, and there is an overall all-time scoreboard.

PITCOCTF

HTTPS://PICOCTF.COM/

NICE Alignment: Operate and Maintain & Protect and Defend
NICE Skills Alignment: System and network administration

picoCTF is a free computer security game targeted at middle and high school students, created by security experts at Carnegie Mellon University. The game consists of a series of challenges centered around a unique storyline where participants must reverse engineer, break, hack, decrypt, or do whatever it takes to solve the challenge.

REDPWN CTF

HTTPS://CTF.REDPWN.NET/

NICE Alignment: Operate and Maintain & Protect and Defend
NICE Skills Alignment: System and network administration, reverse engineering, cryptography

redpwnCTF is a cybersecurity competition hosted by the redpwn CTF team. It's online, jeopardy-style, and includes a wide variety of computer science and cybersecurity challenges. Compete in challenge categories such as binary exploitation, reverse engineering, cryptography, and web to earn points.

REGENERON SCIENCE TALENT SEARCH (STS)

HTTPS://WWW.SOCIETYFORSCIENCE.ORG/

NICE Alignment: Dependent upon research area
NICE Skills Alignment: Dependent upon research area

The nation's oldest and most prestigious science competition. Entrants to this competition must conduct an original research project and supplement their applications with recommendation letters and transcripts.13 alumni have won the Nobel Prize. Forty finalists are selected and receive an all-expenses-paid trip to Washington, D.C. for in-depth judging.

SANS ACES

HTTPS://WWW.CYBERACES.ORG

NICE Alignment: Operate and Maintain
NICE Skills Alignment: Networking, operating systems, system administration

SANS Cyber Aces Online is online content that teaches the core concepts needed to assess and protect information security systems. Content was developed by SANS, and includes an engaging, self-paced, easy to use combination of tutorial and videos. It's available as open courseware so you can take it anytime. For each of modules,

competitors will participate in a national competition by taking an on-line multiple-choice quiz.

SANS NETWARS

HTTPS://WWW.SANS.ORG/NETWARS

NICE Alignment: Securely Provision and Operate and Maintain
NICE Skills Alignment: Skills range by individual competitions

The SANS Institute offers a series of challenge types through their NetWars modules. These challenges are available for a wide variety of skill levels, and even feature a miniaturized physical city over which challenge participants can attempt to compete for the cyber resources. A wide range of competitions are available throughout the year in locations around the world.

TJCTF

HTTPS://TJCTF.ORG/

NICE Alignment: Operate and Maintain & Protect and Defend
NICE Skills Alignment: System and network administration

TJCTF is a Capture the Flag (CTF) competition hosted by TJHSST's Computer Security Club. It is an online, jeopardy-style competition targeted at high schoolers interested in Computer Science and Cybersecurity. Participants may compete on a team of up to 5 people and will solve problems in categories such as Binary Exploitation, Reverse Engineering, Web Exploitation, Forensics, and Cryptography in order to gain points.

U.S.A MATHEMATICAL TALENT SEARCH (USAMTS)

HTTP://WWW.USAMTS.ORG/

NICE Alignment: Securely Provision & Investigate

NICE Skills Alignment: Encryption algorithms, digital forensics, cryptography, networking

A monthly online mathematics competition where students are given one math problem to solve. Because of the level of difficulty, students (middle and high school) have the remainder of the month to work out solutions. Students' solutions are graded by mathematicians, and comments are returned to the students to develop their problem-solving skills and writing abilities. Participants are eligible for various prizes, such as books and software throughout the year. Additionally, the top scorers are invited to take the American Invitational Mathematics Examination (AIME), a process necessary for applying to the USA Mathematical Olympiad Team. The USAMTS is primarily sponsored by the National Security Agency.

U.S. CYBER CHALLENGE / CYBER QUESTS

HTTPS://WWW.USCYBERCHALLENGE.ORG/

NICE Alignment: Securely Provision, Oversight & Development
NICE Skills Alignment: Skills range by individual competitions

Cyber Quests are a series of fun but challenging on-line competitions allowing participants to demonstrate their knowledge in a variety of information security realms. Each quest features an artifact for analysis, along with a series of quiz questions. Some quests focus on a potentially vulnerable sample web server as the artifact, challenging participants to identify its flaws using vulnerability analysis skills. Other quests are focused around forensic analysis, packet capture analysis, and more. The quests have varying levels of difficulty and complexity, with some quests geared toward beginners, while others include more intermediate and ultimately advanced material.

ZERO ROBOTICS TOURNAMENT

HTTP://ZEROROBOTICS.MIT.EDU/TOURNAMENTS/

NICE Alignment: Securely Provision
NICE Skills Alignment: Programming, debugging, testing and validation

An international programming competition where students must program satellites to complete certain objectives (such as avoid obstacles, collect objects, etc.) while preserving resources such as fuel. The competition is provided through a partnership with MIT and NASA. The competition culminates in the finals where winning teams'

satellites compete aboard the International Space Station (ISS). Students watch via a live feed from the ISS while NASA astronauts provide commentary.