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INTRODUCTION

CTE Educators, CTSO Advisors and STEM Mentors:

The Career and Technical Student Organization (CTSO) is regarded as an integral part of career and technical education (CTE). Extracurricular alliances are important as students prepare to evolve into productive citizens and assume roles of leadership in their communities. Educators have discovered that CTSO’s are powerful instructional tools that work best when incorporated into career and technical education curriculum.

Cybersecurity and CTE programs have rapidly developed in middle and high schools in response to the critical demand for skilled workforce across the country. In Colorado Springs, Pikes Peak Community College used support from the National Initiative for Cybersecurity Education to create CyberPrep, a regional ecosystem comprised of representatives higher education, school districts, businesses and the National Cybersecurity Center (NCC) that works together to stimulate student interest in cyber careers. From this initiative, the National Cybersecurity Center Student Alliance (NCCSA) was born.

The NCCSA is the only CTSO in the United States to focus solely on cybersecurity. It’s an important resource that encourages students to develop their interest in cybersecurity and technology into meaningful career paths. Students participating in the NCCSA learn about careers that are:

- in great demand,
- offer high pay,
- encourage lifelong skill development,
- highly dynamic,
- transferable across all industries, and
- serve a higher purpose.

The NCCSA is a proper fit as the NCC continues its work to develop cyber talent. The Alliance will build and strengthen cyber knowledge, skills and abilities that will help pros meet industry and government demand for talent.

The Alliance and this guide were created under the standards of the CyberPrep program and by experts at Pikes Peak Community College, Colorado Springs School District 11 and the NCC. This guide provides teachers, advisors and mentors an easy starting point for establishing an NCCSA chapter at their school or institution. The NCC team is another resource you can count on during your chapter leadership journey.

Cybersecurity is quickly becoming one of the most important and meaningful professional fields in the world. Thank you for your dedication to building our nation’s cybersecurity workforce. Good luck on creating your NCCSA chapter!
PURPOSE

Mission

The NCCSA will help develop the next generation of cybersecurity talent and reduce the workforce gap by exposing students to the challenges and advantages of cybersecurity through training, competitions and leadership opportunities.

The NCCSA focuses on:

- **Leadership**: The NCCSA fosters and develops positive leadership skills.
- **Ethics**: Students learn the responsibility that comes with knowing cybersecurity principles.
- **Cyber Competitions**: Cyber competitions help elevate interest in cybersecurity and teach teamwork and problem solving.
- **Community Service**: Giving back connects students to their community and builds a healthy mentality toward empathy.
- **Awards and Recognition**: When students are given positive feedback and are recognized for progression, they continue to work hard and do their best. The NCCSA recognizes students as they make strides toward the highest level of academic achievement.
- **College Preparation**: The NCCSA helps prepare students for college. Components such as leadership development, educational programs and academic scholarships help students on their road to collegiate success.
- **Scholarships**: NCCSA members have access to scholarship programs, supplemental educational programs and awards recognition.
- **Career Exploration**: NCCSA members have access to publications, digital resources and business professionals that will help guide them in their career path decisions.
- **Networking**: Students receive networking opportunities with their peers while participating in social events, seminars and competitions. They also participate with industry professionals in business-focused workshops and seminars.
WHY NCCSA?

Technology continues to take an increasingly greater role in our everyday lives. As the world becomes more connected through wireless communications, the Internet of Things and cloud computing, the benefits are sometimes negated by numerous, aggressive and well-trained individuals searching for vulnerabilities in new systems.

To help mitigate the disruptive effects on our digital infrastructure, an army of well-trained cybersecurity professionals is needed. Even though cybersecurity is one of the fastest growing fields, a lack of qualified experts is putting the United States at risk. It is imperative that we close this gap by training the next generation of cyber warriors to combat and defeat any threats.

**A new type of warfare – state-sponsored hacking:** Even though hacking perpetrated by foreign governments has been taking place for years, state-sponsored hacking poses a threat to our political systems and critical infrastructure. A well-trained populace and a robust professionally trained cyber workforce will go a long way to ensuring our protection.

To create an educated society, the NCCSA is preparing students to take the reins in the cybersecurity infrastructure, industries, policymaking and education.

**Starting early:** Studies show that when students are introduced early to a concept, they build interest through the years. This is true for cybersecurity. By introducing students to the NCCSA in middle school, and providing training to elementary school children, they will maintain interest throughout their education and help cultivate the cyber workforce of the future.

**Closing the gap:** In addition to early-stage education, training, events, internships and mentorships, help tighten the gap between cybersecurity jobs and the qualified professionals to fill them.

**Fundamental education awareness:** While not everyone who joins the NCCSA may not choose a cybersecurity career, participation in the Alliance is no less important. All businesses, large and small, across all industries, need an informed population that understands and can protect organizations from cybersecurity threats. Cybersecurity in now a part of our cultural literacy and without this basic knowledge, vulnerabilities will persist in keeping us in state of exposure.

**Benefits**
The NCSSA offers numerous benefits for students and, in a wider perspective, for the country. Technology literacy is quickly becoming part of the common core of our public schools. Just as traditional topics, technology literacy standards will be developed to ensure students have the necessary skills to succeed in high school, college and career pursuits.

Another benefit is the generation of cyber safety awareness among the general population. To create an educated society, the NCCSA is preparing students to take the reins in the cybersecurity infrastructure, industries, policymaking and education.
NCCSA GOALS

- Inspire students to pursue careers in cybersecurity.
- Aggressively advance efficient cyber defensive posture.
- Increase the cybersecurity awareness among general population.
- Promote and teach cyber ethics.
Starting a Chapter
STARTING A CHAPTER

Five Steps to Build a NCCSA Chapter

Step 1: Find an Advisor

Every NCCSA chapter is led by an advisor who may be a school administrator, teacher or any faculty member.

The Advisor’s Role

A chapter’s success rests on the shoulders of student members; however, without the advisor’s guidance, success would be possible. The advisor is instrumental in organizing and stimulating chapter development. He or she gains the support of the school administration and community.

The chapter advisor should:

• Manage the active operations of the chapter.
• Direct, chaperone and coordinate supervision of chapter activities.
• Organize the selection process for chapter officers and provide officer training.
• Encourage civic responsibility.
• Assist in the maintenance of necessary chapter records.
• Establish rules and guidelines that help students lead themselves while remaining consistent with school policies.
• Hold regular chapter meetings and ensure they are conducted in a business-like manner.
• Assist members in developing an annual program of work, including a budget and calendar.
• Help members with planning and preparing chapter promotional materials.
• Ensure school administrators, faculty, students and the public are informed of chapter activities and outstanding student achievements.
• Be knowledgeable of the guidelines for district/regional, state and national competitive events and activities, and coordinate participation at all levels.

Step 2: Recruit Three Chapter Members and Create an Executive Board

Each NCCSA chapter is required to have a minimum of three members. The creation of an executive board with the three officers is recommended.

Why Recruit?

The most important resource any organization has is its membership. The more dependable, enthusiastic members you attract, the more you can accomplish. Make your chapter stronger by keeping these points in mind.

• A large and diverse membership makes for rich brainstorming sessions, unique projects, and lightened individual workloads.
• Bigger is better when it means that you have resources to dedicate to many worthy activities.
• NCCSA recognition and influence are assured when a larger portion of your student body and, by extension, your community is involved in activities.
• Members enhance the chapter, while the chapter enriches members.
• NCCSA offers students the following benefits and advantages:
  o Potential internships
  o Testing skills with competitive events
  o Rewards, scholarships and recognition opportunities
  o Networking
  o Options for certification

Executive Board Offices
Most chapters should have at least three officers on their executive board. It is suggested that each executive board includes the following offices:

• Chief executive officer/President
• Chief operations officer/Vice president
• Chief technology officer/Secretary
• Chief revenue officer/Treasurer (optional)

Step 3: Create Bylaws

Bylaws are the rules by which a chapter regulates its affairs and the behavior of its members. The NCCSA strongly recommends that each chapter create bylaws for itself. Bylaws samples are offered in Appendix A.

Step 4: Create a Program of Work

The program of work is the chapter’s action plan. Strong plans include well-defined goals and objectives, deadlines and assigned tasks. The program of work is important because it ensures careful planning and a detailed layout for the fiscal year. A sample program of work is in Appendix C.

Step 5: Set Officer and General Meetings Dates/Agendas

Successful chapters schedule meeting dates and locations at the beginning of the year. This ensures the chapter’s meeting place is secured and provides enough time to publicize meetings to members and prospective members. Agendas are also valuable meeting tools. See Appendix E for agenda examples.
BUILDING A CHAPTER

Advisors should:

- Complete the chapter application at CyberCTSO.org/registration.
- Meet with principals and the CTE director to gain approval and support.
- Elect student officers.
- Contact the NCC advisor with questions pertaining to registration.
- Integrate the NCCSA and resources into the curriculum.
- Hold monthly (at least) meetings.
- Recruit new members.
- Create chapter visibility: Volunteerism, public relations, memberships drives, etc.

Ceremonies

- **New member induction:** Introduce new members in a semi-formal ceremony. Have new members introduce themselves and share their reasons for joining and how they plan to contribute.
- **Chapter installation:** Chapter installation is complete when it receives a charter from the NCC. A ceremony is appropriate to signify the start of a new horizon for members.
- **Officer installation:** Officers should be sworn in and sign a decree of duty to ensure they perform their responsibilities.

Membership

Membership in NCCSA shall be through the NCC. All high schools and middle schools are eligible to join. Active members may be any middle school or high school students who are presently enrolled in a public school, private school or are home schooled.

NCCSA chapters take STEM studies outside of the classroom via field trips, mentoring and internships with local and national technology businesses and educational institutions.

Chapter Structure

NCCSA chapters take STEM studies outside of the classroom via field trips, mentoring and internships with local and national technology businesses and educational institutions. They participate in competitive events, attend local and national leadership conferences, and learn to apply leadership skills in the decision-making process. The chapter leadership hierarchy consists of:

- Chief executive officer/President
- Chief operations officer/Vice president
- Chief technology officer/Secretary
- Chief revenue officer/Treasurer *(optional)*

At a minimum, a chapter needs to have a president, vice president and secretary.
Roles

Look for student leaders who will fulfill these responsibilities:

- Facilitate an environment where all members can grow professionally.
- Keep members informed about organizational activities.
- Include all members in a dynamic program of work and welcome their suggestions.
- Conduct chapter business in proper procedure and maintain complete, current records and minutes.

Elections

When considering officer candidates, look for members who are enthusiastic and knowledgeable about cybersecurity and motivated to put in the work needed in order to be proficient. At a minimum, you need three officers to run your chapter: president, vice president and secretary. Elections may occur as soon as the chapters is started. You may opt to elect officers from the floor; however, the NCCSA recommends selecting officer candidates through an application process

Recruiting Mentors

Recruiting mentors is paramount to the success of the NCCSA. It is the responsibility of everyone involved with the chapter – from students to mentors to the NCC – to recruit professionals from local industries. At the NCC, we will make presentations on the benefits of volunteering with the NCCSA and emphasize the importance of growing our nation’s cyber infrastructure.

Many people have friends, family and professional acquaintances that are in STEM industries; however, mentors are not required to be a cybersecurity professional. Cybersecurity is an umbrella term for many disciplines that help keep data secure and defend against network intrusion. This means that software developers, web developers, support specialist, programmers, IT managers, video surveillance installers and financial analysts all have a part in teaching chapter members about cybersecurity.

Recruiting members is paramount to the success of the NCCSA. Mentor and community support ensure that the chapter gets off the ground and offer guidance along the way.

Using comprehensive community outreach, the NCC recruits a network of professionals to serve as mentors and advisors. Using the power of three, we ask companies and organizations to provide a trio of mentors: one for Windows, one for Ubuntu and one for Cisco networking. The goal is to have multiple professional volunteers working together for a common cause.

The Mentor Role

Mentors serve as technical advisors and role models to chapters and CyberPatriot teams and work with as many, or as few, teams as they choose in their area. The mentor-team relationship is left to mentors and advisors to determine. Mentors need not be part of the school faculty or staff and are often community members who are technically proficient and enjoy helping youth explore a new
technical field. Mentor and community support ensure that the chapter gets off the ground and offer guidance along the way.
Recruiting Advisors

First, we must establish the difference between advisors and mentors.

**The Advisor Role**
Advisors are responsible for all aspects of a chapter’s CyberPatriot activities and preparation and must be part of the school or organization the team represents (e.g. teacher). The NCCSA chapter advisor does not have a technology or cyber background.

Outreach to teachers starts with a partnership between school principals and district administrators. To start, call a meeting with those individuals and outline the purpose and plans of the NCCSA. The next step is to meet with teachers.

It is preferred and stressed that an advisor should be part of the school staff or organization. If a school does not have a staff member to serve as an advisor, volunteers from local industry will be enthusiastically accepted.

Volunteering

Volunteering is fundamental to a high-performing NCCSA chapter. Community engagement coupled with a positive outlook about issues beyond their personal lives gives students a broader outlook on the world and helps develop empathy for others.

All opportunities for volunteer work are viable. Students should perform at least 10 hours of volunteer work each semester.

Other Opportunities

Chapter members may be involved in recognition programs. Some great tools for recruitment, recognition and professional development include:

- Windows Recognition
- Ubuntu Recognition Awards
- Cisco Recognition Awards

These awards are explained later in this guide.

Registering Your Chapter

You may register your chapter online at [CyberCTSO.org/registration](http://CyberCTSO.org/registration).
ACADEMIC CYBER COMPETITIONS

Competition: The Power of Competitive Events

Competitive events are the heart of the NCCSA. These events provide students a chance to experience hands-on training in an environment that builds skill and confidence. The main competitive event for the NCSSA is the CyberPatriot Competition. It is preferred all NCCSA chapters participate in CyberPatriot; however, participation is not mandatory to be an NCCSA member.

CyberPatriot

CyberPatriot is the National Youth Cyber Education Program created by the Air Force Association (AFA) to inspire K-12 students toward careers in cybersecurity or other science, technology, engineering and mathematics (STEM) disciplines critical to our nation's future.

There are three branches of the program:

• National Youth Cyber Defense Competition
• AFA CyberCamps
• Elementary School Cyber Education Initiative

The Cyber Defense Competition starts at the state level, then regionals. Top competitors from the regional events are awarded an all-expense paid trip to the national finals in Baltimore, Md. At nationals, participants compete for recognition and scholarship money.

Learn more about the CyberPatriot program at uscyberpatriot.org.

Other Competitions

Through the NCSSA, students can compete year-round in events. Since there are many aspects of cybersecurity, no two events are alike, so chapter members are encouraged to participate in as many different events as possible.

Events include:

CSAW Capture the Flag
The Cyber Security Awareness Week was founded by the New York University’s Tandon Engineering School. With locations in North America, the Middle East, Europe and Asia, the event is the largest student-run cybersecurity event in the world. Part of each event includes the prestigious capture the flag. Additionally, an applied research competition, embedded security challenge and policy challenge are presented. In 2016, more than 10,000 high school and college students competed. Details are at csaw.engineering.nyu.edu.

PicoCTF
PicoCTF is a cybersecurity competition open to middle school and high school students. The event, hosted by Carnegie Mellon University, places teams into an interactive environment and storyline where they must hack, decrypt, reverse engineer and break different sandbox
elements. The competition is the largest cybersecurity competition available to middle school and high school students. Information is available at picoc.tf.com.
National Cyber League (NCL)
The NCL is a defensive and offensive puzzle-based, capture-the-flag style cybersecurity competition. Its virtual training ground helps high school and college students prepare and test themselves against cybersecurity challenges they will likely face in the workplace. Learn more at nationalcyberleague.org.

SANS Cyber Aces
SANS Cyber Aces is a free, self-paced course that teaches the core concepts needed to assess and protect information security systems. The course was developed by SANS, the most trusted and largest source for information security training and security certification in the world. The course is an engaging, self-paced, easy-to-use combination of tutorials, videos and quizzes. Since it is open courseware, students can complete it at any time.
APPENDIX A: SAMPLE CHARTER BYLAWS

Note: Each chapter writes its own bylaws. These examples are intended only as a guide.

National Cybersecurity Center Student Alliance
[Insert Chapter Name] Chapter Bylaws

Approved: [Insert date]

Article I. Name

The name of the organization shall be the [Insert Chapter Name] Chapter of the National Cybersecurity Center Student Alliance (NCCSA).

Article II. Purpose

Section 1. The purpose of the NCCSA chapter is to provide opportunities for post-secondary and college students to develop vocational competencies for cybersecurity and technology occupations. The NCCSA also promotes a sense of civic and personal responsibility.

Section 2. The specific goals of the NCCSA are:

- Develop competent cybersecurity skills.
- Strengthen the confidence of students in themselves and their work.
- Create increased interest in and understanding of cybersecurity.
- Encourage members in the development of individual projects that contribute to the improvement cybersecurity awareness.
- Cultivate character, prepare for useful citizenship and foster patriotism.
- Practice efficient cyber safety.
- Inspire scholarship and promote school loyalty.
- Assist in awareness of cybersecurity.

Article III. Membership

Section 1. NCCSA membership shall consist of members of chartered local chapters. Members will hold membership in their state and national chapters. Individual members are recognized only through a state chapter of the NCCSA. In the case where there is no state chapter, the member shall be recognized by the national association.

Section 2. The NCCSA, including state and local chapters, are open for membership to middle school and high school students who are enrolled in computer and/or other STEM-related courses. Members accept the purpose of the NCCSA and pay dues as established by the NCC.
Article IV. Dues and Finance

Section 1. National dues for members shall be forwarded directly to the NCC or shall be submitted by the local chapters.

Section 2. NCCSA membership dues are $10 a year and are remitted to the NCC for payment of the national dues.

Article V. Officers and Elections

Section 1. NCCSA chapter officers in the chief executive officer (CEO), chief operations officer (COO), chief technology officer (CTO) and chief revenue officer (CRO). These officers and the advisor (ex-officio member) constitute the Executive Committee.

Section 2. Each local chapter has an advisor – a faculty member who believes in the mission and goals of the NCCSA. A local chapter may have as many special-emphasis groups (i.e. CyberPatriot, Girls Go Cyber) under the chapter charter as it deems necessary to meet the interests of all members. The local chapter of NCCSA shall assume full responsibility for coordinating the program for these interest groups.

Article VI. Duties of NCCSA Officers

Section 1. The CEO presides over all chapter meetings, appoints all committees and serves as an ex-officio member of these committees, and promotes the growth and development of the NCCSA.

Section 2. The COO presides in the absence of the CEO and assists the CEO.

Section 3. The CTO keeps an accurate record of the chapter and executive committee meetings.

Section 4. The CRO acts as custodian of the chapter’s funds, collects dues, generates financial reports and sends the membership list with dues to the state and national offices.

Section 5. Officers serve on the Executive Committee and perform such duties as directed by the CEO and the advisor.

Article VII. Meetings

Section 1. At least one regular meeting must be held once a month during the school year. Other meetings may be held as deemed necessary by the CEO with the approval of the Executive Committee.

Section 2. Three members of the chapter constitute a quorum.
Article VIII. Committees

Section 1. The CEO, in consultation with the advisor, appoints the following committees (this is only a suggestion. Local chapters will dictate which committees are needed for their organization): (a) Nominating, (b) Ways and Means, (c) Social and (d) Finance and Fundraising. The CEO appoints additional committees as authorized by the Executive Committee. Duties of committees shall be determined by the Executive Committee.

Section 2. Local chapters may select advisory committees to assist in the growth and development of their respective chapters.

Article IX. Emblems, Insignia and Colors

Section 1. Chapter emblems are the emblems of the NCC.

Section 2. Official emblem and insignia items and designs are described and protected from infringement by registration in the U.S. Patent Office under the Trademark Act of 1946. The manufacture, reproduction, wearing or display of the emblem shall be governed by the Executive Committee.

Section 3. Only members in good standing may use official emblems and insignia.

Section 4. The official colors of NCCSA are blue, red, yellow and white.

Article X. Amendment of the Bylaws

Bylaw amendments shall be submitted in writing at a regular meeting and shall not be voted on until the following regular meeting. A two-thirds vote of the members present shall be required for adoption.
APPENDIX B: SAMPLE PROGRAM OF WORK ACTIVITIES

Professional Development
• Field trips
• Guest speakers
• Career fair

Social Activities
• Pizza party
• Classroom potluck
• Attend a school sporting event as a chapter

Financial Leadership Activities
• Product sales
• Silent auction
• Butter Braids or cookie dough sales

Employment
• Resume writing workshop
• Mock interviews
• Peer reviews of cover letters

Community Service/Service Learning
• Relay for Life or other walks for a cause
• Drives: Canned food, coats, blood, etc.
• Work in a soup kitchen or food pantry

Public Relations
• Set up a Facebook page
• Write an article for the school’s newspaper
• Present to the school board
APPENDIX D: SAMPLE PROGRAM OF WORK
(FALCON HIGH SCHOOL)

August
• Social: Ice cream social

September
• Public relations: Set up class for cyber competition

October
• Professional development: Career guest speaker

November
• Community service: Canned food drive
• NCCSA Advisor Conference

December
• Financial leadership: Cookie dough sales

January
• Employment: Mock interviews

February
• Financial leadership activity: Valentine’s Day flower sale

March
• Employment: Cyber career portfolios

April
• Cyber Student Leadership Conference in Denver

May
• Public relations and professional development: Present to the school board

June
• Public relations and social: Graduation open house

July
• CACTE Professional Development Summit
APPENDIX E: SAMPLE AGENDA

National Cybersecurity Center Student Alliance
[Your Chapter Name] CHAPTER MEETING
[Insert Date]

1. Call to Order: Name, Office (President or vice president)
2. Roll Call: Name (Secretary)
3. Approval of Minutes: Name (Secretary)
4. Treasurer's Report: Name (Treasurer)
5. Other Operational Reports
6. Committee Reports
7. Unfinished Business
8. New Business
9. Date of Next Meeting
10. Adjournment