



sudoCYBER

CTSO Starter Guide

**Cyber Career & Technical Student
Organization Starter Guide 2018-
2019**

A handbook to assist teachers and districts in establishing a
cyber focused CTSO for the STEM classroom.

Introduction

Dear CTE Educator,

The career and technical student organization (CTSO) is regarded as an integral part of career and technical education (CTE). Extracurricular student organizations play an important part in preparing students to become productive citizens and to assume roles of leadership in their communities. Educators have found that the CTSO is a powerful instructional tool that works best when it is integrated into the career and technical education curriculum.

Cybersecurity CTE courses and programs have been rapidly developed in middle and high schools in response to the critical demand for a skilled workforce in the state, region, and country. Through a grant from the National Initiative for Cybersecurity Education (NICE), a program within the National Institute of Standards and Technology (NIST), the CyberPrep program was formed by Pikes Peak Community College (PPCC). CyberPrep has created a regional ecosystem composed of representatives from PPCC, regional public school districts, regional businesses, and the National Cybersecurity Center which is based in Colorado Springs. Through the CyberPrep program, these organizations have collaborated to develop and launch programs to stimulate student interest in cyber careers, CTE education programs, and internship programs. As existing national CTSOs lack focused programming in cyber, the **sudoCYBER** student organization has been created to support the adoption of cybersecurity school curriculum. Educators have recognized the need for a CTSO developed to specifically meet the needs of students interested in cybersecurity.

The **sudoCYBER** CTSO and this Starter Guide were created under the CyberPrep program through the collaboration of PPCC Workforce Development, Colorado Springs School District 11 and the National Cybersecurity Center.



The National Cybersecurity Center (NCC) in Colorado Springs, CO, provides cybersecurity leadership, services, and training to a growing ecosystem of citizens that are paying attention to the cyber needs of our nation. The NCC's commitment to workforce development highlights the importance of education initiatives that serve to build and strengthen those with cyber knowledge, skills, and abilities that will help to meet industry and government demand for talent. The NCC has partnered with Colorado's CyberPrep group, including educators from Colorado Springs school districts and Pikes Peak Community College as well as regional industry employers that acknowledge the workforce development needs in cybersecurity.

sudoCYBER will be an important resource to help students turn their interest in finding and fixing security breaches and protecting our mobile, flexible, and connected ways of life into meaningful career paths. Students that participate in **sudoCYBER** will learn about careers that are in high demand, provide high pay, encourage lifelong skill development, are highly dynamic, are transferrable across all industries and organizations, and serve a higher purpose as the digital line of cyber professionals is increasingly recognized and appreciated as an important and meaningful vocation.

This starter guide is meant to be a handbook that provides teachers with an easy starting point for establishing a cyber-focused Career & Technical Student Organization chapter at your school or institution. Good luck with your **sudoCYBER** CTSO!

Why is a Cybersecurity CTSO necessary?

Because the skills gap in cybersecurity talent represents a critical regional and national imperative, there is a strong need for opportunities for students to learn about cyber pathways while developing their knowledge, skills, and abilities in a fun, extracurricular environment. Effective Career and Technical Education Student Organizations present students with the chance to learn about diverse career opportunities within the associated field, and a cyber CTSO will keep up with the latest developments in the field of technology.

Cybersecurity is more than the prelude of information technology departments and technologists, it is a *Domain* encompassing every organization, private or public sector, existing at every level and function within an organization. Single individuals, large organizational departments, and huge national divisions are all part of the ecosystem that requires cyber attention. As technology becomes increasingly integrated into our systems, infrastructure, and lifestyle, we have become more dependent on it. This dependency creates a need for a population with the knowledge, skills, and abilities to meet the regional and national imperative for cyber talent. A significant workforce gap exists while education strives to catch up with industry demand for workers with the interest and foundational skillsets to consider a diverse set of career opportunities. Rapid innovations in technology demand that cybersecurity solutions are constantly expanding and evolving, requiring vigilance on the part of consumers of technology as well as those that understand and work with technology daily. Existing CTSOs do not holistically address the field of cybersecurity. A CTSO focused on cyber will offer students a depth and breadth of opportunities to observe, learn, interact, explore, collaborate, network, and build skills in this vast and critical field. The national CyberPatriot competition is integrated into the CTSO and will expand the scope of cyber events.

What's in a name?

How do you name a new CTSO? You ask the students! The NCC and our partners worked with high school and middle school students in a naming and branding exercise. The result? “**sudo**,” the one command to rule them all. Pronounced like “sue dough,” it stands for “super user do!” For those that know the open-source operating system Linux, a system administrator (or power user) has **sudo** as one of the most important commands in their arsenal. Utilizing the **sudo** command is much better than logging in as root or using the su “switch user” command. “**sudo**” allows users to run programs with the security privileges of another user, by default as the superuser. System administrators can give certain users or groups access to some or all commands without those users having to know the root password. It also logs all commands and arguments so there is a record of who used it for what, and when the action happened. The **sudo** command also makes it easier to practice the principle of least privilege (PoLP), which is a computer security concept that helps control system access and potential system exploits and compromises.

How will a cyber CTSO benefit a school?

sudoCYBER offers students the chance to gain exposure to and explore the range of careers available to them in cybersecurity while building skills that complement their classroom learning. They will discover the important roles played by non-IT elements within organizations and begin to understand how workers at all levels of businesses and organizations contribute to the maintenance of safe security postures.

The **sudoCYBER** CTSO supports information technology, cybersecurity, and computer science CTE programs and provides an additional platform for the development of problem-solving and critical thinking skills. This CTSO also benefits a school as it will be part of a network of regional cybersecurity academic and business organizations that are committed to cyber education and opportunities for students. Participating students will be able to take advantage of rigorous and challenging learning opportunities outside the classroom, which will in turn strengthen their learning in other high school academic programs. Simple to implement, **sudoCYBER** meets the requirements for CTE program approvals.

What does a cyber CTSO look like?

Founded in the 2018-19 school year, **sudoCYBER** is a local, school-based student organization with a structure and operation aligned with traditional CTSOs. Cyber CTSOs utilize the **sudoCYBER** name, logo, and colors (red, white, and blue). The organization utilizes the school's (or district's) CTE program Advisory Council. Student officers participate in a regional Fall Leadership Conference and all **sudoCYBER** members attend the Careers and Skills Conference in the Spring. Students benefit from networking opportunities with other regional teams as well as local industry partners. While there are no national or regional CTSO membership fees currently, student member dues are at the discretion of the local school **sudoCYBER** CTSO.

Steps to Implementation of the **sudoCYBER** CTSO

A school, district, or sponsoring teacher (or a pair of teachers, or a group of teachers) identifies and understands the need for a Career and Technical Education Student Organization that focuses on cyber and cybersecurity. Each CTSO has a constitution and/or set of bylaws which outlines rules for the organization, including how membership in the CTSO is determined. To be a viable CTSO, the organization must be available to ALL students participating in the program area. The following steps should be taken:

1. Become familiar with the **sudoCYBER** Starter Guide
2. Recruit student members
3. Hold first meeting and elect student officers
4. Adopt the bylaws outlined in the starter guide (or create chapter bylaws); the bylaws should be reviewed every year for relevancy and updated as needed; print the set of bylaws being used by your CTSO and keep them in a file folder or binder tabbed and marked "Bylaws" so that they are available to refer to as needed.
5. Schedule regular meetings
6. Establish a Program of Work for the chapter
7. Join the network of other **sudoCYBER** chapters
8. Participate in conferences, competitive events, and collaboration with other chapters
9. Join CyberPatriot
10. Track progress of events / activities for the school year; document organizational activities for review in future years

Resources

COLORADO / CTE RESOURCES	
Colorado CTE Website	http://www.coloradostateplan.com/
Colorado CTSO Websites	http://www.coloradostateplan.com/ctso.htm
CCCS General Procedures	https://www.cccs.edu/sp-3-125c-general-computer-and-information-systems-procedures/
Pikes Peak Community College	https://www.ppcc.edu/cyber-defense-center/resources
CYBER PATRIOT RESOURCES	
CyberPatriot (AFA)	https://www.uscyberpatriot.org/
CyberCamp (AFA)	https://www.uscyberpatriot.org/special-initiatives/afa-cybercamp-program/program-overview
GENERAL / NATIONAL RESOURCES	
NICE Framework	https://www.nist.gov/itl/applied-cybersecurity/nice/resources/nice-cybersecurity-workforce-framework
National Cybersecurity Center	https://cyber-center.org/
National Center for Systems Security and Information Assurance	http://www.cssia.org/
National Cybersecurity Framework	https://csrc.nist.gov/publications/detail/nistir/8193/draft
STUDENT / TEACHER RESOURCES	
Stay Safe Online	https://staysafeonline.org/
Hacker High School	http://www.hackerhighschool.org/home.html
Cyber Degrees Resources	https://www.cyberdegrees.org/resources/the-big-list/
Cyber Degrees General Info	https://www.cyberdegrees.org/
ICT Essentials Suite	http://www.ictcertified.com/ict-for-schools/schools-overview.php
National Cyberwatch Center Curriculum	https://www.nationalcyberwatch.org/programs-resources/curriculum/
CAREER RESOURCES / PROFESSIONAL ORGANIZATIONS	
AFCEA	https://www.afcea.org/site/
CompTIA	https://www.comptia.org/
ISSA	https://issa.site-ym.com/default.aspx
IEEE	https://cybersecurity.ieee.org/
ISC2	https://www.isc2.org/
US Dept of Labor Apprenticeships	https://www.dol.gov/apprenticeship/
CareerWise	https://www.careerwisecolorado.org/
Jobs in Cybersecurity	https://www.cyberdegrees.org/jobs/
sudoCYBER	Info@sudoCYBER.org
CONTACT INFORMATION	

Bylaws

Recommended sudoCYBER CTSO Bylaws

ARTICLE I

Name

The official name of this organization shall be “**sudoCYBER** Career & Technical Student Organization,” also known as the **sudoCYBER** CTSO or simply **sudoCYBER**.

ARTICLE II

Mission

The **sudoCYBER** CTSO will prepare students for careers in the cyber industry through education and leadership opportunities.

ARTICLE III

Purpose

The primary purpose of **sudoCYBER** is to serve the needs of its members and strengthen the cyber classroom instruction. This will be done through the following efforts:

1. Foster student interest and enthusiasm for the pursuit of cyber careers.
2. Expose students to the range of career opportunities in cybersecurity and requirement for all business function to participate in maintaining an effective security posture.
3. Expose students to the post-secondary degree and certification programs available to them.
4. Create an ethical cyber culture.
5. Further explore and exercise cybersecurity knowledge and skills in real-world applications.
6. Engage with industry representatives.
7. Develop the critical thinking and problem-solving skills required to defend in a continuously changing cyber domain.
8. Foster the development of leadership and teamwork skills.
9. Foster the development of communication skills.
10. Establish patriotism, citizenship, and sense of community as essential principles.

ARTICLE IV

Organization

Section 1. **sudoCYBER** is a local CTSO for cyber, cybersecurity, and related Career and Technical Education programs.

Section 2. A local program advisory committee of industry, educational, management, and labor leaders will serve as an advisory council for the CTSO.

Section 3. The **sudoCYBER** Chapter is a group of students involved in the CTSO. The “chapter” could be considered any of the students who are currently enrolled in or who have been enrolled in a CTE cybersecurity or technology program and have signed up to be part of the organization.

ARTICLE V Membership

Membership composition:

sudoCYBER is an organization of, by, and for students who are or have been enrolled in a secondary or post-secondary Career and Technical Education cybersecurity or technology program.

ARTICLE VI Industry Guidance

Industry guidance will be provided by the local advisory council.

ARTICLE VII Membership Fees

Fees will be determined by the local chapter.

ARTICLE VIII Student Offices

Section 1. **sudoCYBER** student offices will consist of four elected members who will be elected by the general membership of the **sudoCYBER** CTSO and be overseen by the advisor.

1. The student offices shall be: President, Vice President, Secretary, and Treasurer.
2. The President runs the meetings.
3. The Vice President assumes parliamentary duties and the role of the president if the president is absent.
4. The Secretary takes, transcribes, distributes, and stores minutes.
5. The Treasurer establishes and maintains a chapter budget and manages fundraisers.

Section 2. The term of each student office will last for a period of one school year.

Section 3. Each student officer candidate shall be a person who is in good standing within **sudoCYBER** and who is currently or has been enrolled as a student in a CTE cybersecurity, technology, or related course or program.

1. For a student officer candidate to run for office, the application process and selection will be determined by a vote of the local chapter membership.
2. The duties of the student officers shall be specified in these Bylaws.

Section 4. Duties of the **sudocYBER** CTSO student officers include:

1. **sudocYBER** student officers shall make themselves available, as necessary, to promote the general welfare of the **sudocYBER** CTSO.
2. **sudocYBER** student officers shall represent the CTSO at the local CTSO Advisory Council meetings.
3. **sudocYBER** student officers should complete the roles of their offices and their chapter's program of work.
 - a. Program of Work is the chapter's plan for activities for the year.
 - b. Each Program of Work has the following components:
 - i. Professional Development
 - ii. Social Activities
 - iii. Financial Leadership Activities
 - iv. Employment-related activities
 - v. Community Service/Service Learning
 - vi. Public Relations
 - c. Chapters should keep records of the Program of Work planned and completed for each school year

ARTICLE IX

Meetings

Local Chapter meetings will be held per the **sudocYBER** CTSO Chapter's Program of Work.

ARTICLE X

Finances

Each chapter of the **sudocYBER** CTSO will follow their district's financial and accounting policies.

ARTICLE XI

Local Governance

The CTSO Advisor and the District CTE Director will provide guidance to the **sudocYBER** CTSO.

ARTICLE XII

Logos, Emblems, and Colors

Section 1. Name and branding for the cybersecurity CTSO is important for growth. The logo, emblems, and colors developed for the **sudocYBER** CTSO is as provided by the founding chapter(s).

Section 2. While using the main **sudocYBER** logo and colors (red, white, and blue) for primary marketing/branding purposes (for instance, on t-shirts, fliers, posters), chapters may develop an additional logo, emblem, or color scheme that may, for instance, match their local school colors. This additional logo or color scheme must retain the name **sudocYBER** and should only be developed by local chapters in accordance with their high school policies. Any additional logos, emblems, or color schemes should represent the cybersecurity industry as they are associated with CTE cyber programs.

ARTICLE XII

Parliamentary Authority

The rules contained in the current edition of **Robert's Rules of Order, Newly Revised**, shall govern the organization in all cases to which they are applicable and in which they are not inconsistent with these Bylaws and any special rules the organization may adopt.

ARTICLE XIV

Amendments

Section 1. These Bylaws may be amended and/or repealed at any local chapter meeting of the **sudoCYBER** CTSO by two thirds vote of all the members.

Section 2. Proposal for Amendment: Any proposal from members on amendments must be in writing and filed prior to the chapter meeting where the vote shall take place. Before suggesting an amendment, it must be discussed with the CTSO Advisor and officers of the chapter.

Section 3. A copy of the Amendments will be kept on file with the district CTE Director.

ARTICLE XV

Dissolution

In the event of dissolution of a local **sudoCYBER** CTSO chapter, all debts must be paid, and the remaining money shall be donated to the high school's (or postsecondary institution's) scholarship fund or donated to the school as the members see fit.

Chapter Sponsors, Teachers, Administrators:

Please notify us that you have started a Sudo CYBER chapter at your school.

- Gretchen Bliss – Pikes Peak Community College, gretchen.bliss@ppcc.edu
- Mary Graft, Ed.D. – National Cybersecurity Center, mary.graft@cyber-center.org
- Bill Tomeo – Colorado Springs School District 11, william.tomeo@d11.org