Course Syllabus CYB: Cybersecurity

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Website	http://www.andersonctc.org/Page/561
Extra Help	Before and after School Monday-Thursday by request

Overview

Cybersecurity is a full-year course designed to expose high school students to the ever-growing and far-reaching field of cybersecurity. This will be accomplished through problem-based learning, where student's roleplay as cybersecurity experts and train as cybersecurity experts do.

Students are to use what they learn throughout this course to better society and to improve cyberspace for all. Students will build their understanding of ethical responsibility in the digital world and will revisit the topics of ethics and digital citizenship in each unit of study. Students should remember that it is their responsibility to use what they are learning in positive ways, as well as understand the consequences (in the classroom, in school, and in their lives) for poor decision making.

Course Objective

Cybersecurity is designed with strong connections to the National Cybersecurity Workforce Framework (also known as the NICE Framework or NCWF). Created by the National Institute of Standards and Technology (NIST), this framework identifies standards that have been developed by numerous academic, industry, and government organizations. The framework objectives address topics that span K-12 education and guide learning progressions. The objectives also incorporate many of the big ideas and learning objectives outlined by the College Board and addressed in AP CSP and AP CSA. In addition, the course integrates Computer Science Teachers Association (CSTA) standards.

Learning Environment:

The course provides students with a broad exposure to the many aspects of digital and information security, while encouraging socially responsible choices and ethical behavior. It inspires algorithmic and computational thinking, especially "outside-the-box" thinking. Students explore the many educational and career paths available to cybersecurity experts, as well as other careers that comprise the field of information security. The following is a list of the units of study in the course:

Unit 1 Personal Cybersecurity

Unit 2 System Security

Unit 3 Network Security

Unit 4 Applied Cybersecurity

Lab Requirement:

Students do nearly all of their work in the PLTW Security Labs, or security labs for short. Using a Chrome browser only, students execute a variety of security labs to practice their cybersecurity skills in a safe and isolated environment.

Assessment Task	Evaluation Criteria	Grade Weights
Major Projects Employability-Attendance, Attitude, Communication, Follows Directions, Integrity, Prepared For Class, Punctuality, Respectful, Ethical considerations, Self-Management, Initiative	Completion, Accuracy Rubric Checklist	60%
Minor Daily activities, notebook, quizzes	Completion, Accuracy	40%

Tests:

Students are required to take the EOC at the end of the semester.

Engineering Notebook:

Every student is expected to construct an online notebook of their work, notes, and assessments throughout the year. This student engineering notebook will be checked on a quarterly basis for completeness.

Quiz:

At the end of each unit, students take a summative multiple choice unit quiz covering items such as: vocabulary, case studies, and multiple choice concept questions.

Homework:

Students will be expected to complete any assignments which they cannot complete in class at home when the time constraint demands. Students should be able to complete assigned class work within the school day. After school-work time may be available with prior teacher arrangement.

Late Policy:

Students are expected to complete projects as per the assigned due date. If an assignment is submitted late the student will receive an 11 point penalty for the first day (A or B day) and 10 points each successive day the project is late.

SUPPLIES

The student must provide a black or blue pen every day. Students are provided with a class engineering notebook, and an electronic folder. Notebooks may be taken home but students must bring materials to class each day. Failure to be prepared will affect Employability grade.

AFTER SCHOOL TUTORING

Throughout the year I will be available to assist students outside the obligated class time. Students are welcome to come to my room before or after school Monday-Thursday. They only need to inform the teacher a day before the intended session of tutoring. Email: kgodlewski@andersonctc.org

Classroom Rules

1. Be on time, prepared, and present for class.
2. Have a good attitude about learning and actively participating in class.
3. Follow all written and oral directions and safety precautions.
4. Absolutely no horseplay!
5. Complete all assignments in a timely fashion.
6. Be respectful of others and their property.
7. Get the instructor's permission before getting/using tools or materials from the storage room.
8. Do not download or access inappropriate programs or content on the internet. This includes games.
9. Refrain from eating in class. Water will be allowed as long as they have a lid. i.e. no aluminum drink cans, or open cups.
10. All students will remain in class until all classroom supplies are returned to their designated areas.

11.   Leave seats in their respective positions.
12.   Discard any trash from the seat and/or surrounding area, in the proper receptacle.
13.   Follow all other school and district rules.
14.   Return tablets to charging station every day!
15.   Ensure the safety and proper usage of Android tablet on a daily basis.

Consequences

- Warning
- Loss of break/Cleaning duty
- Call home to parent/guardian
- Referral
- *If a student acts in a manner that is totally unacceptable or unsafe, he or she may be immediately removed from class with a disciplinary referral.*

Course Outline

Unit 1: Personal Cybersecurity

Students learn the basic concepts of cybersecurity by leveraging their familiarity with technology they use every day, such as mobile devices and apps as well as exploring the risks associated with how they use their email, personal files, and social networking sites.

Personal Cybersecurity

Lesson 1.1   Introduction to Cybersecurity

Lesson 1.2   Security and the Internet

Lesson 1.3   Protect Your Data

Unit 2: System Security

Students broaden their cybersecurity knowledge from a personal system to a networked system. They learn how to assess the value of information security and delve deeper into types of malware. They learn the security vulnerabilities of web services and how to secure an Ecommerce site.

System Security

Lesson 2.1   Information Architecture

Lesson 2.2   Information Vulnerabilities

Lesson 2.3   Client-Server Security

Lesson 2.4   The Hacked Site

Unit 3: Network Security

Students learn the technical aspects of a highly networked world and the risks to information we all share. They learn networking concepts, such as subnets, dynamic host configuration, packet analysis,

and virtual networks. They learn the types of malware that can attack systems on a network and how to secure and protect a system against them.

Network Security

Lesson 3.1   Files and Processes

Lesson 3.2 Attacks from the Net

Lesson 3.3   Analyzing the Net

Lesson 3.4   The Security Race

Unit 4: Applied Cybersecurity

Students explore cybersecurity in an applied field. They learn methods of cryptography and practice basic tenants of digital forensics. They process a crime scene to solve the mystery and explore the possible consequences of the crime.

Applied Cybersecurity

Lesson 4.1   Cryptography

Lesson 4.2 Digital Forensics

Lesson 4.3 Red-Team, Blue-Team

Get signed and returned before the end of the 3rd day of class.

I have read the 3 class starter documents and have discussed the contents with my child:

1) Class syllabus (see http://www.andersonctc.org/Page/561)

2) Parent/student handbook (see andersonctc.org under the students tab)

3) Computer Internet Use Agreement (see andersonctc.org under the students tab)

_____

Student Name

_____

Student Signature

_____

Parent/Guardian Name

_____

Parent/Guardian Signature

_____

Parent/Guardian Email *(please print clearly)*