

William D. Ford Career and Technical Center

**36455 Marquette St,
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2024-2025

Cybersecurity and Ethical Hacking I

State CIP: 11.1003 Computer and Information Systems Security / Information Assurance

Course Number: 2910

PSN: 21460

Instructor: Joshua Rychlicki

NOTICE: It may be necessary to modify this document during the year. A current version will be available online.

Course Description

Cybersecurity is a comprehensive year-long course designed to prepare students for a career or further study in the field of cybersecurity. Students focus on identifying threats, protecting systems and networks, detecting malicious activities, responding to threats and attacks, and recovering from attacks. Not only does Cybersecurity introduce the breadth of cybersecurity concepts and skills, it also prepares students to verify their technical know-how through the CompTIA IT Fundamentals and Security+ certification. The course includes dozens of hands-on lab activities, in which students use virtual machines and various operating systems to simulate and defend against attacks. More than just a course on “how to hack”, Cybersecurity lays a foundation of understanding cyber law and policy, Linux, networking technology basics, risk assessment, cryptography, and a variety of essential cybersecurity tools – all the essential knowledge and skills needed to begin a future in the cyber workforce.

Course Materials

Course Web Site: <https://classroom.google.com>

Each student will have a unique account to access course resources and submit electronic work.

Hardware & Software (partial list)

- Networked Computers: Both Mac & PC
- Virtualbox VM
- Kali Linux and Windows 7 VM Images
- Interactive Screens
- Internet Gateway, Routers, Switches, Wireless Access Point, Rackmount Servers
- Hacking Tools, including Rubber Duckies, capture devices, and sniffers

Electronic Resources

The course employs a great deal of technology and therefore utilizes many on-line resources. The instructor will supply students with links that range from instructor created materials to online tutorials applicable to student tasks. In addition, students are encouraged to enrich the learning community by sharing exceptional resources they find.

Course Credit

This is a year-long course (2 semesters) which meets each week day (Monday through Friday). Upon successful completion of each semester, students earn 1.5 credits*. Articulation credit may be earned based on instructor review and articulation agreements in place.

Labs

Students will complete many labs related to cybersecurity during the course. Periodically, people outside of class will review/evaluate student work. The goal of these projects is to give students direct experience identifying, protecting, detecting, responding, and recovering data from security breaches. Some example projects include:

- Virus Infection
- Credential Harvesting
- Remote Access Tools
- Wireshark Data Collection
- Ransomware
- Brute Force Attacks
- Phishing
- Server Configuration
- Small Business Project
- Small/ Medium Business Policy and Implementation Consultation
- Cybersecurity Portfolio

State CTE Competencies:

- Information Technology Fundamentals
 - 8 Competencies
- Information Protection (Data Security), Asset (Management, Access, Maintenance), Laws, Ethics, & Governance
 - 13 Competencies
- Risk Assessment, Threat Detection, Communications, Response, Recovery, & Business Environment Awareness/Training
 - 11 Competencies
- Career-Ready Practices
 - Problem Solving
 - Collaboration
 - Personal Management
 - Communication

Timeline Planning

Below is a general indication of topics covered during a 10-week marking period; *modifications may be necessary*.

Semester 1 Topics

Marking Period 1: IT Fundamentals - IT Concepts and Terminology, Infrastructure, Applications and Software, Software Development, Database Fundamentals, Security, Small Business Proposals

Marking Period 2: Introduction to Linux, Forensics, Passwords, Encryption and Cryptography, Authentication and Security Protocols

Semester 2 Topics

Marking Period 3: Social Engineering, Threat Vectors, Malware and Attacks

Marking Period 4: Malware and Attacks, Architecture and Design, Network Security, Mobile Devices and PKI, Governance, Risk, and Compliance

Evaluation and Grading

Students are evaluated in a variety of ways. In addition to regular assignments and coursework, students are given Unit Tests upon completion of units. These tests are designed to determine both how well a student can understand key concepts as well as how well he/she can perform certain skills (actually creating solutions using the computer). Students earn points for assignments and these are then the basis for determining a marking period grade. A student's grade is determined by how many of the available points he/she has earned.

- **Categories:** There are three categories for graded work: Projects/ Labs, which will form 40% of the grade; Classwork, which will make up 25% of the grade; and Assessments, which will make up 35% of the grade. Projects and Labs consist of performance tasks that are to be completed individually or in groups, classwork includes guided notes, case study responses, daily comprehension quizzes and other in-class tasks, and assessments will include unit tests and skills tests.
- **Late Work:** Most late work will be accepted without penalty for two weeks past the original due date. After two weeks, work can earn a maximum of half credit when completed. Assessments, projects, and classroom can be resubmitted for regrading any time during each marking period until the final week of each marking period. Some assignments are time-sensitive and must be completed in class on the day assigned. They typically include reflective assignments that lose relevance over time and weekly news story sharing.
- **Academic Dishonesty:** Academic dishonesty is taken very seriously in the course. When not working in groups, do not share answers with other students. If academic dishonesty is discovered, a discussion will be held with the instructor and the principal to determine penalties, including loss of credit, suspension, or other consequences. All work should be submitted in a student's own words, not copied from other sources, including AI engines.
- **Accommodations:** The goal of the class is for every student to be successful in whatever way they can be. If at any time a student thinks that an accommodation will help them be more successful, that accommodation will be made available, within reason, including preferential seating, having materials electronically read to them, additional peer help and mentoring, or other resources to help the student. Communication is the key and any requests will be thoroughly considered by the instructor.
- **Grading Scale:** Based on the percentage of points earned, a student will be assigned a letter grade:

| | |
|---------------|-----|
| 90% or higher | = A |
| 89 - 75% | = B |
| 74 - 50% | = C |
| 49 – 25% | = D |
| under 25% | = E |

Classroom Procedures

- **Entering Class:** When entering class, log in to your assigned computer, open Google Classroom, and open the Daily Agenda for the class period.
- **Getting Help from Instructors:** Always try to get help from classmates before asking the instructor (C2B4ME) If classmates cannot provide the solution, please feel free to ask the instructor.
- **Submitting Assignments:** All assignments should be submitted via Google Classroom. Assignments not submitted through Google Classroom will not be graded. Be sure to have permissions set correctly in order for the instructor to see them.
- **End of Class:** Each class will conclude with a check for understanding. Be sure to participate and complete the activity, so the instructor can assess your understanding.

Student Leadership

All students will apply their knowledge and leadership skills through classroom competitions. The goal of these competitions are for students to develop workplace competencies, such as teamwork, leadership, communication, critical thinking and academic proficiency that are aligned with industry standards and expectations. Leadership skills are fostered by encouraging students to develop and participate in the planning and decision making, as well as run for elected positions within the classroom. All projects are developed and evaluated by people in the industry. Students may also participate in individual contests with other Career Tech Centers and post-secondary institutions.

Employability

As a facility, the William D. Ford Career Technical Center has chosen to address “Employability” as a key area to both track and promote employer-desired practices. As a result of building discussions and input from our local business partners, we have found that attendance, attitude, and effort (work ethic) are primary concerns related to a person’s employability. As such, a score reflecting each student’s overall **employability is tracked weekly and graded**.

Students may receive high marks by consistently working productively, taking a leadership role, by assisting other students, or seeking out additional topics of study/work from the instructor. Students will be marked down if their behavior/attitude is inappropriate. Some examples of inappropriate behavior include: tardiness, not doing work, unable to work well with others, abusing equipment and/or school property.

Work-Based Learning

Work-based learning is a valuable experience in which every student in Career and Technical Education is required to participate. All students will be given opportunities to attend a minimum of one field experience each school year. Those students who do not attend the scheduled experience(s) will be required to find a site where they will spend a minimum of one class period in a business related to their program of study. The student will be required to get the teacher’s signed permission, the parent/guardian’s signed permission, fill out a training agreement to be signed by the site supervisor, and provide their own transportation to and from the site. Upon completion of the field experience, the student will turn in a question and answer assignment provided by the teacher regarding the experience.

Certification Testing

Qualifying students in this course are eligible to sit for the CompTIA Security+ and IT Fundamentals exam, which provides an industry credential that will support students in gaining employment in the future. William D. Ford Career Technical Center's students with a grade of 65% or higher and fewer than 10% absences are eligible. This opportunity is offered at no cost to families.

Additional Activities & Optional Credentials

- Governor’s High School Cyber Challenge
- PicoCTF
- National Career-Technical Honor Society (min. course GPA & overall GPA)
- TryHackMe
- National Cyber League
- Year 2 of Course: Successful completion of Year 1 and Permission of Instructor

Post Secondary Articulated Credit

Students may be eligible to receive free college credit for the successful completion of this course. The qualifications and number of college credit hours available varies by program and the college with which it is affiliated. This course has articulated credit agreements with the following colleges/ universities:

- Wayne County Community College
- Schoolcraft College

Classroom Rules & Acceptable Use Policy

We have an impressive array of equipment available for **students' educational use**. It is essential that students behave appropriately and use district property as intended. To ensure safety and equipment availability, parents and students are asked to **review and sign off** on the following expectations and guidelines. An additional **Special Acceptable Use Policy** will be required for Cybersecurity because of the sensitive nature of the information in the class.

1. District Equipment & Property

School tools (computers, cameras, scanners, tablets, microphones, etc.) are the property of the district and are to be used **solely** in the pursuit of learning and mastering course skills.

Any use of district property not related to class activities and assigned course work is not allowed. If a student is unsure how to use equipment *properly* he/she/they is responsible for checking with the instructor. If the appropriateness of an activity is unclear, students shall seek permission beforehand.

Students are expected to know and follow proper techniques for using any equipment used in class. If a student is unclear how to use/care for equipment, he/she/they shall seek assistance beforehand.

Tampering with equipment in the classroom and/or network is taken seriously and has resulted in disciplinary and/or legal action. You will receive an additional Acceptable Use Policy solely for this class.

2. Classroom Safety

Students are expected to know and follow proper safety measures for day-to-day activities as well as for emergencies. Procedures are discussed & demonstrated in class.

3. Personal Electronics

Due to increasing problems regarding safety and distractions, **all personal electronics are not permitted to be used in class. A separate agreement regarding personal electronics must be filled out by each student and parent.**

4. Respect & Accountability

Students shall respect their peers & school personnel and receive the same in return.

Students shall properly return equipment to their designated areas.

Students shall maintain clean work areas (including the Commons) so they are presentable, in good working order, and ready for others to use.

5. Students are not permitted to eat outside food in any classroom at Career Tech, including the Cybersecurity classroom. If students have food they bring with them and arrive before the bell rings, food can be eaten in the Commons area.

6. Students shall maintain regular attendance to class. Employability scores are a combination of attitude, attendance, and effort.

7. All school and district policies apply. Modifications may be made as necessary.

Important Note: Students may lose equipment privileges if they do not return this form & abide by these policies.

By signing below, I verify that I understand all of the procedures and policies in the Student Handbook. I will follow them as stated and give my best effort to adhere to all policies that contribute to the safety and order of the WDFCTC Cybersecurity Lab.

Student Sign Off:

Student Printed Name

Student Signature

Date

By signing below, my parent or guardian agrees to support the instructors in maintaining safety and order in the Cybersecurity Lab.

Parent/Guardian Sign Off:

Parent/Guardian Printed Name

Parent/Guardian Signature

Date

Important Note: Students may lose equipment access if they do not return this form & abide by these policies.

Instructor Pledge:

By signing below, the instructor agrees to provide an environment conducive to learning course skills, to make available experiences that facilitate learning and promote awareness of job opportunities.

Instructor, Joshua Rychlicki

Date

It is the policy of the Wayne-Westland Community Schools board of Education to prohibit any acts of unlawful discrimination in all matters dealing with students, employees or applicants for employment. The Wayne-Westland Schools reaffirms its policy of equal educational and employment opportunities for all persons without regard to race, color, gender, religion, age, height, weight, marital status or disability which is unrelated to an individual's qualifications for employment or promotion, or which is unrelated to an individual's ability to utilize and benefit from the School District's services, activities, benefits, privileges or programs. Inquiries concerning the application of Title VI, Title IX, Section 504 and Title II legislation should be directed to the Executive Director of Student and Legal Affairs, Wayne-Westland Community Schools, 36745 Marquette, Westland, MI 48185 (734-419-2083).