COMPUTER SCIENCES CREDIT

The requirements to receive credit for each of the four (4) CS PLTW HS courses in the Business/IT Program are the following:

1) **Complete a PLTW Computer Science course:**
   - Computer Science Essentials (CSE) will transfer as **IS&T 1310**
     Exposure to Computer Experience (3 hrs.)
   - Computer Science Principles (CSP) will transfer as **IS&T 1311**
     Exposure to Computing Principles (3 hrs.)
   - Computer Science Applications (CSA) will transfer as **IS&T 1312**
     Computer Programming Exposure (3 hrs.)
   - Cybersecurity (SEC) will transfer as **IS&T 1314**
     Exposure to Cybersecurity (3 hrs.)

2) **Earn a (B) average (80%+) in each course.**

3) **Have one of the following EOC PLTW scores:**
   - stanine of “6” or higher for each course (waived for 20-21 SY’s)
   - scale score that earns an achievement level descriptor of “accomplished” or “distinguished”.

4) **Pay the $250 fee per course accepted.**

5) **Attach an official high school transcript which includes graded semester(s) of your PLTW course.**
COURSE RESUME SKILL SETS

COMPUTER SCIENCE ESSENTIALS (CSE)

Program Design and Development • Create programs using procedural, event-driven and object-oriented programming (OOP) paradigms • Design a user interface (UI) based on human-computer interaction (HCI) principles • Use image processing to control program flow and vehicle movement • Debug and test code

Web Development • Use Django® to develop website applications

Interpretation of Documentation • Create task reflection with the Interpreted Performance Guide • Create task reflection with the Interpreted Performance Guide Response Template • Use application programming interfaces (APIs)

Programming Languages • MIT App Inventor based on Blockly • VEX® Coding Studio based on RobotC • Python® • HTML/CSS

Tools and Software • MIT App Inventor based on Blockly • VEX® Coding Studio based on RobotC • Cloud9

Professional Skills • Pair Programming • Agile Project Development/Scrum • Accountability to a team • Collaboration on design and implementation • Presentation/Communication • Public Speaking • Ethics
COMPUTER SCIENCE PRINCIPLES (CSP)

**Program Design and Development** • Create programs using procedural, event-driven, and object-oriented programming (OOP) paradigms • Design a user interface (UI) based on human-computer interaction (HCI) principles • Debug and test code • Create annotated programs with in-code commenting and documentation

**Web Development** • Explain how client-side code, server-side code, and databases are used together to implement a website

**Interpretation of Documentation** • Use application programming interfaces (APIs) •

**Data Analysis and Visualizations** • Use and create software to display charts and graphs • Analyze large data sets through computational techniques • Use coding to automate data analysis • Interpret data visualizations

**Modeling and Simulation** • Create simulations using agent-based simulation software • Use agent-based simulations to observe emergent behaviors • Describe any limits to the predictive power of a given simulation

**Programming Languages** • Python® • Scratch • MIT App Inventor • PHP

**Tools and Software** • Full-featured integrated development environment (Enthought Canopy for Python) • Git and GitHub • Microsoft® Excel® • Linux® Environment and Bash

**Professional Skills** • Pair Programming • Agile Project Development/Scrum • Teamwork and Collaboration • Presentation/Communication • Public Speaking • Ethics • Cybersecurity Best Practices
COMPUTER SCIENCE APPLICATIONS (CSA)

*Computational Thinking Practices* • Program Design and Algorithm • Development • Code Logic • Code Implementation • Code Testing • Documentation *Alignment to Introductory College-level Programming Course* • Program design and algorithm development by determining if required code segments produce a given output. • Code logic by determining the output, value, or result of given program code given initial values. • Code implementation by writing and implementing program code. • Code testing by analyzing program code for correctness, equivalence, and errors. • Documentation by describing the behavior and conditions that produce the specified results in a program. • Ethical Computing by understanding the ethical and social implications of computer use. *Programming Language* • Java *Tools and Software* • Microsoft Visual Studio Code • Interactive code editor *Professional Skills* • Presentation/communication • Technical writing • Public speaking • Collaboration • Ethics
Information Security • Evaluate and define information security needs • Authenticate and authorize access to information • Organize and protect information stored in a file system Security Algorithms • Analyze and improve cryptography algorithms • Apply various encryption measures to secure information Data Abstraction • Analyze network traffic at varying levels of abstraction • Recognize patterns in traffic flow to identify cybersecurity events • Recognize signatures and symptoms of malware to identify an attack Computer Systems/Networks • Manage operating system resources necessary for network configuration • Implement protection measures to secure computers and devices on a network • Monitor network activity and traffic flow Threat Investigation • Analyze the evidence of a cybersecurity event • Identify system vulnerabilities that permitted an attack and the user actions that can secure the system • Know and use digital forensics investigative techniques Industry Standard Tools • Virtual machines with a variety of configurations • Network visualization and topology tools • Penetration testing software • Packet analysis software Professional Skills • Ethical Hacking • Collaboration in Cyber Teams • Agile Project Development/Scrum • Teamwork and Collaboration • Presentation/Communication • Public Speaking • Ethics