

COMPUTER TECHNOLOGY CLUSTER

T53111 Information Technology Support (5230)

(Former Title: Computer Tech Support)

Open to grades 9, 10, 11, 12

2 semesters, 1 credit per semester

Approximate cost per semester: TBD

Meets requirements: THD, AHD, Core 40

Recommendation(s): Digital

Applications and Responsibility or Electronics Computer Technology I

This course allows students to explore how computers work. Students learn the functionality of hardware and software components as well as suggested best practices in maintenance and safety issues. Through hands-on activities and labs, students learn how to assemble and configure a computer, install operating systems and software, and troubleshoot hardware and software problems. Students may earn an industry-based certification at the end of the course.

T51201 Computer Science for Cybersecurity (4801)

Open to grades 9, 10, 11, 12

2 semesters, 1 credit per semester

Approximate cost per semester: TBD

Meets requirements: THD, AHD, Core 40

Note: Qualifies for Quantitative Reasoning

Note: Fulfills Core 40 Science credit

Computer Science introduces the structured techniques necessary for the efficient solution of business-related computer programming logic problems and coding solutions, using Python and Linux. The fundamental concepts of programming are provided through explanations and effects of commands, and hands-on utilization of lab equipment to produce accurate outputs. Topics include the CIA Triad, program flowcharting, pseudo coding, and hierarchy charts as a means of solving problems related to security. The course covers creating file layouts, program narratives, user documentation, system flowcharts for

business problems, input/output techniques, looping, modules, selection structures, file handling, and offers students an opportunity to apply skills in a laboratory/hands-on environment.

T51211 Cybersecurity I (5253)

Open to grades 10, 11, 12

Required: Computer Science for Cybersecurity for Perkins V Pathway

2 semesters, 1 credit hour per semester

Approximate cost per semester: TBD

Meets requirements of: THD, AHD, Core 40

Note: Qualifies for Quantitative Reasoning

Note: Fulfills Core 40 Science credit

In this course, students learn and practice skills necessary to perform the role of a Cybersecurity Specialist. Students will discuss the evolution of information security into cybersecurity and the relationship of cybersecurity to nations, businesses, society, and people. Laboratory and classroom components are used to cover key elements such as information security, systems security, network security, mobile security, and defense and mitigation techniques. The core concepts of confidentiality, integrity, and availability are covered. Students will be exposed to multiple cybersecurity technologies and learn how to analyze the threats, vulnerabilities, and risks present in these environments. Students will also develop strategies to mitigate potential cybersecurity problems. Students will utilize the Project Lead the Way curriculum and have multiple opportunities to compete in state and national competitions.

T51221 Cybersecurity II (5253)

Open to grades 11, 12

Required: Computer Science for Cybersecurity and Cybersecurity I

2 semesters, 1 credit hour per semester

Approximate cost per semester: TBD
Meets requirements of: THD, AHD, Core 40
Note: Qualifies for Quantitative Reasoning

Note: Fulfills Core 40 Science credit
Cybersecurity II introduces the secure software development process, including designing secure applications, writing secure code designed to withstand various attacks, and security testing and auditing. It focuses on the security issues a developer faces, common security vulnerabilities and flaws, and security threats. The course explains security principles, strategies, coding techniques, and tools that can help make software fault tolerant and resistant to attacks. Students will write and analyze code that demonstrates specific security development techniques. Students will also learn about cryptography as an indispensable resource for implementing security in real-world applications. Students will learn the foundations of cryptography using simple mathematical probability. Information theory, computational complexity, number theory, and algebraic approaches will be covered.

T51231 Cybersecurity III (5253)

Open to grade 12

Required: Computer Science for Cybersecurity and Cybersecurity I and II
2 semesters, 1 credit hour per semester
Approximate cost per semester: TBD
Meets requirements of: THD, AHD, Core 40
Note: Qualifies for Quantitative Reasoning

Note: Fulfills Core 40 Science credit
Cybersecurity III Capstone will showcase students' knowledge in designing secure applications, writing secure code designed to withstand various attacks, and security testing and auditing. It focuses on educating and explaining the security issues a developer faces, common security vulnerabilities and flaws, and security threats to end users. Students will further their understanding of cryptography using mathematical probability.

T53112 Networking 1 (5234)

Open to grades 10, 11, 12

2 semesters, 2 credits per semester
Approximate cost per semester: TBD
Meets requirements: THD, AHD, Core 40
Recommendation: Information Technology Support (formerly Computer Tech Support)

Networking Fundamentals introduces students to concepts of local and wide area networks, home networking, networking standards using the IEEE/OCI Model, network protocols, transmission media and network architecture/topologies. Security and data integrity are introduced and emphasized throughout this course. The purpose of this course is to offer students the critical information needed to successfully move into a role as an IT professional supporting networked computers. Concepts covered include TCP/IP client administration, planning a network topology, configuring the TCP/IP protocol, managing network clients, configuring routers and hubs as well as creating a wireless LAN.

T53122 Networking 2: Servers (4588)

Open to grades 11, 12

2 semesters, 2 credits per semester
Approximate cost per semester: TBD
Meets requirements of: THD, AHD, Core 40
Prerequisites: Networking 1

Networking 2: Servers focuses on learning the fundamentals of networking, routing, switching and related protocols. In this course, students learn both the practical and conceptual skills that build the foundation for understanding basic networking, routing and switching. Students are introduced to the two major models used to plan and implement networks: OSI and TCP/IP. The OSI and TCP/IP functions and services are examined in detail. Students will learn how a router addresses remote networks and determines the best path to those networks, employing static and dynamic routing techniques.