CORE CONCEPTS TABLE OF CONENTS

C1. Safety

**Leadership Alignment:**

Students will be open and responsive to new and diverse perspectives with respect to classroom and school safety.

Students will listen effectively to decipher meaning, including knowledge, values, attitudes and intentions during SAFETY TRAINING.

Students will conduct themselves in a respectable professional manner during group activities.

C2. Career planning (Tri-Tech Portfolio)

**Leadership Alignment:**

Students will set goals with tangible and intangible success criteria.

Students will demonstrate abilities to multi-task when completing portfolio documents will working simulations on other projects.

Students will conduct themselves in a respectable professional manner during cross program group projects.

Students will know when it is appropriate to listen and when to speak during presentations and lectures.

C3. Security ethics, security levels, security threats and defensive security.

**Leadership Alignment:**

Students will act responsibly with the interests of the larger community in mind when writing their personal Computer ethics document.

Students will analyze and evaluate major alternative points of view writing their personal Computer Ethics document.

Students will respond open-mindedly to different ideas and values when discussing security issues related to the computer lab.

C4. Linux installation, configuration, directory structure and Bash. Linux users and permissions

**Leadership Alignment:**

Students will work effectively in a climate of ambiguity and changing priorities when securing systems and networks.

Students will demonstrate commitment to learning Linux as a lifelong process.C5. Linux command line and introduction to BASH scripting. (BASH)

**Leadership Alignment:**

Students will understand leaning BASH takes years of practice and patients and is a life-long learning process.

Students will understand how BASH works with other computer languages.

C6. Linux server service installation and configuration. (Apache2, VSFTPD, Samba, and SSH)

**Leadership Alignment:**

Students and the program instructor will demonstrate commitment to learning Linux server configuration as a lifelong process.

Students will understand how all the systems in the Linux operating system are interrelated.

C7. HTML

**Leadership Alignment:**

Students elaborate, refine, analyze and evaluate their own ideas in order to improve and maximize creative web designs using HTML5 and CSS.

Students will learn to be flexible when given feedback on web design when using HTML to create web sites and change the design.

C8. Cryptography, encryption, security keys and authentication introduction.

**Leadership Alignment:**

Students will analyze how parts of a whole interact with each other to produce a web-based authentication application. (User login)

C9. GIT and Github.com basics.

**Leadership Alignment:**

Students will act on creative ideas to make a tangible and useful contribution group programming published at Github.com

C10. Introduction to computer programming (Python, PHP, C, C++, Java, and SQL)

**Leadership Alignment:**

Students will view failure as an opportunity to learn when debugging source code using a variety of programming languages.

Students will view failure as an opportunity to learn.

Students and the program instructor will demonstrate commitment to learning to code as a lifelong process.

C11. Computer basics

**Leadership Alignment:**

Students will analyze how parts of a whole interact with each other when designing a custom computer.

C12. Networking.

**Leadership Alignment:**

Students will use various types of reasoning as appropriate to the situation when designing a networking in the Network Bid Simulation.

Students will identify and ask significant questions that clarify various points of view and lead to better solutions when designing a virtual network.

Students will demonstrate ability to work effectively and respectfully when working on CAT 5e networking cabling. (RJ45 Modular Jacks and 568B Punch Down)

C13. Linux Virtualization

**Leadership Alignment:**

Students will analyze how parts of a whole interact with each other to produce a computer network environment.

Students will use and manage information when creating a report from access log data derived from a network monitoring tools

C14. Microsoft

**Leadership Alignment:**

Students will analyze how parts of a whole interact with each other to produce a virtual computer and network.

Students will use and manage information when creating a report from access log data derived from a virtual machine configuration tests.

C15. Mathematics, base conversions, logic gates and computer science mathematics.

**Leadership Alignment:**

Students will understand the importance of Mathematics in Computer Science.

Student will understand why mathematics is a prerequisite to progress as a professional software developer.

C16. Introduction to electronics and micro-controllers (Arduino)

**Leadership Alignment:**

Students will understand how micro-controllers interact with each other to produce overall outcomes in complex systems.

C17. Year 1 Projects

**Leadership Alignment:**

Students will leverage the strengths of others to accomplish a group project with final project presented to the entire group.

Students will solve different kinds of non-familiar problems in both conventional and innovative ways creating CTF (Capture The Flag) cyber security problems.

Students will leverage social and cultural differences to create new ideas and increase both innovation and quality of work during group projects.

Students will prioritize, plan and manage work to achieve the intended result when working on a culminating project.

ADVANCED CONCEPTS TABLE OF CONTENTS

A1. Windows server installation and configuration

**Leadership Alignment:**

Students will understand how Microsoft Windows interacts with Linux/Unix system to produce overall outcomes in complex systems.

Students will understand of Windows system services work together to provide server services.

A2. Advanced networking.

**Leadership Alignment:**

Students will analyze how parts of a whole interact with each other to produce a computer network environment.

A3. Advanced Linux server configuration.

**Leadership Alignment:**

Students will understand Linux takes years to master and there is always something new to learn because it is evolving.

Students and the program instructor will demonstrate commitment to learning Linux as a lifelong process.

Linux is a lifestyle.

A4. Advanced authentication.

Cryptography, encryption and standard security keys advanced.

**Leadership Alignment:**

Students demonstrate initiative to advance skill levels towards a professional level when configuring system requiring secure authentication.

A5. Advanced Computer Programming (Python, PHP, C, C++, Java, and SQL)

**Leadership Alignment:**

Students will view failure as an opportunity to learn when debugging source code using a variety of programming languages.

Students will view failure as an opportunity to learn. .

A6. United States Cyber Patriot team competition. https://www.uscyberpatriot.org

**Leadership Alignment:**

Students will manage time and projects effectively during US Cyber Patriot competitions.

Students work positively and ethically during US Cyber Patriot competitions.

A7. Advanced Projects

AWS (Amazon Web Services) Linux configuration and security rules.

Advanced projects: Docker, Kubernetes, and Facebook CTF (Capture The Flag)

Year 2 Projects

**Leadership Alignment:**

- Students will leverage the strengths of others to accomplish a group project with final project presented to the entire group.

- Students will solve different kinds of non-familiar problems in both conventional and innovative ways creating CTF (Capture The Flag) cyber security problems.

- Students will demonstrate initiative to advance skill levels towards a professional level while presenting group and individual projects to the group.

- Student will monitor, define, prioritize and complete tasks without direct oversight during a long-term culminating project.

- Students will adapt to varied roles, jobs responsibilities, schedules and contexts when working on projects.