

# Computer Science Essentials

# Course Overview

**MASTERY**  
— C O D I N G —

## Cyber Safety

Students learn how to stay safe on the web.

- Privacy is Key*
- Surfing Safely on The Web*
- Creating a Virtual Lock*
- Rebuilding the Walls*
- Computational Illnesses*
- Defense Against the Dark Web*
- PC Bodyguards*

## Digital Citizenship

Students learn netiquette and understand their responsibility being respectful to their fellow netizens.

- Online Humanities*
- Stop Cyberbullying*
- Unearthing Social Media*
- Academic Integrity*
- Source Attribution*
- Copyrights*
- The Creative Commons*

## Hardware and Software

Students differentiation the layers of software (OS, Program, Browser, etc.) and understand the anatomy of a computer.

- A History of Computers*
- Computer Hardware*
- The Mechanical Brain*
- A Box of Bytes*
- The System Core*
- The Computer Manager*
- Computer Tools*

## The Internet

Students understand the building blocks of our internet infrastructure and fundamentals of networking.

- Who Invented the Internet?*
- What Really is the Internet?*
- Internet Addresses*
- Communication*
- A Closer Look at Browsers*
- Cookies*
- Hosting*

# Computer Science Essentials

# Course Overview

**MASTERY**  
— C O D I N G —

## Computational Thinking

Students learn the fundamentals of CS (sequencing, abstraction, iteration, encoding)

*History of Computation*

*What is Encryption?*

*Number Building Blocks*

*Types of Data*

*Logic Gates*

*If, Then*

*Loops*

*Data Structures*

## Algorithms

Students get hands-on experience creating algorithms to solve problems.

*Sequencing*

*Asymptotic Notation I*

*Asymptotic Notation II*

*Search I*

*Search II*

*Sort I*

*Sort II*

*Recursion*

## App Design

Students create mockups and designs for their own programs to gain understanding of the app design process.

*The Process*

*User Stories*

*Designing an Experience*

*Redesigning an Experience*

*Program Pathways*

*Mapping Your Application*

*Creating a Final Design*

## Careers in Technology

Students learn about developers, IT specialists, designers, cybersecurity professionals, and scientists.

*4th Industrial Revolution*

*Developers*

*IT Specialists*

*Engineers*

*Designers*

*Cybersecurity Specialists*

*Analysts*

*Scientists*