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IT Fundamentals+

General Information

Description

IT Fundamentals teaches the basics of getting around a computer and the internet. Students will first learn about the hardware components of a computer and how they work. This means they can identify the parts of a computer such as the CPU, RAM, etc., and can explain their purpose. Students will then explore the nature of software from operating systems, file types, sound files, and video files. The course contains activities such as creating and securing PDFs, installing open-source content, updating device drivers, and configuring firewalls. The course concludes with some fundamentals about operating system security. This course is the precursor to the Networking curriculum and Cybersecurity.

Expectations and Outcomes

Here are some additional outcomes:

- Students can set up, configure, and perform maintenance on various computing devices.
- Students have a firm grasp of the hardware within computing systems and the role that various parts have within that system.
- Students can identify various peripherals and connectors.
- Students can configure different operating systems and use virtualization to set up virtual operating systems.
- Students can explain the process of software development and can identify the steps necessary to program instructions to computers.
- Students have a fair grasp of networking infrastructure, basic security within that infrastructure, and how databases play a role within that infrastructure.

Course Materials

Prerequisites

- IT Fundamentals

Device Requirements

Any device with an Internet connection is sufficient.

- Some exercises including cloud computing requires a physical computer. Students may use VMs instead if such a device is lacking.

Additional Information and Resources

Course Length	Delivery Method	Recommended Age Group
90 hours	**Online / Classroom**	**Middle - High School (Ages 12+)**

Certifications Offered	Pathway Alignment	Standards Aligned

CompTIA IT Fundamentals+		**CSTA** **ISTE** **K-12 Framework**	

Attention to Equity and Diversity

Rex Academy is dedicated to bringing this course to all interested students, regardless of their backgrounds or the zip code which they reside in.

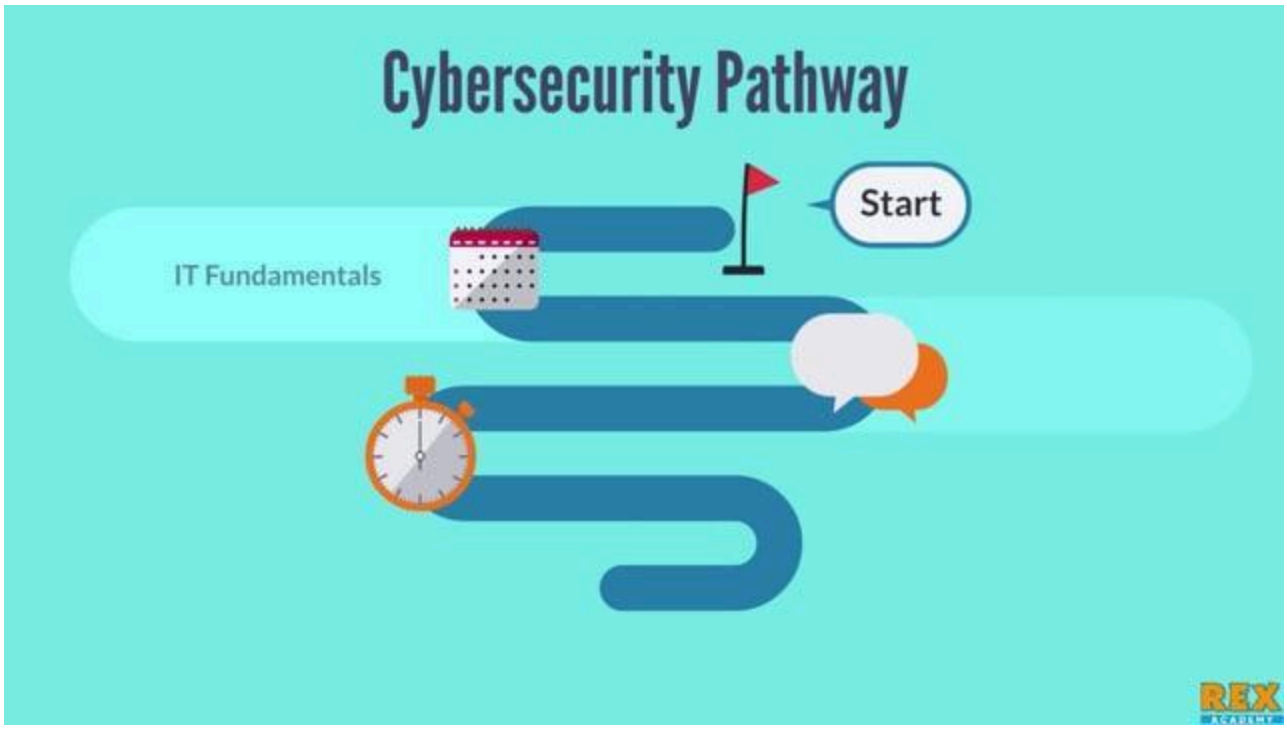
As such, special attention has been given to the curriculum in the following manner:

1. Rex Academy's IT Fundamentals content can run on any device (Chromebooks, tablets, phones, PCs, etc). The Internet connection needs to be minimal. We are determined to remove all obstacles to access.
2. The Virtual Machines (VMs) are also entirely online based, removing the need for any hardware or software configuration.
3. The course can be absorbed in a direct classroom setting or in an after-school environment. Students can learn in groups or individually.
4. Instruction and assessment are performed in various ways, thus accommodating various learning styles.

Course Syllabus

Unit Number	Topic	Brief Description
Chapter 1	Welcome to IT Fundamentals	This unit introduces students to the course.
Chapter 2	Understanding Computer Basics	Students learn the basics of IT, computation, and what qualifies as a computer. In addition, we also examine basic terminology, number systems, and the basics of the Internet.
Chapter 3	Main Computer Hardware	Students examine motherboards, CPUs, and other internal mechanisms of a computer along with their functionalities.
Chapter 4	Various Computing Devices	Students examine smart phones, tablets, televisions, and IOT devices that connect to the Internet along with connection types such as Bluetooth, wireless, NFC, etc.
Chapter 5	Peripherals and Storage	Students examine input devices such as printers, displays, and other USB connections.

Unit Number	Topic	Brief Description
Chapter 6	Operating Systems 101	Students learn basic operating system configuration.
Chapter 7	Software Management	Students learn the difference between free and proprietary software. We examine licenses, copyright issues, and how to avoid pirated software.
Chapter 8	Software Development	Students will examine the fundamentals of programming languages and how they work. We will look at data types, writing conditionals, iteration, and lists.
Chapter 9	Computer Maintenance and Troubleshooting	Students will examine techniques on how to deal with performance issues from hardware, software, and connectivity.
Chapter 10	Network Infrastructure	Students examine the basics of how the Internet works and all of the various hardware and software components required to keep the world connected.
Chapter 11	**Cybersecurity**	Students will examine various security threats to computing systems such as phishing attacks, spam, and ransomware. Students will also learn to harden their systems against such attacks.
Chapter 12	**Databases**	Students learn about databases and the role that they play in storing data securely on the Internet.
Exam Preparation	**Final Exam**	We help students prepare for the CompTIA IT Fundamentals+ exam.


Cybersecurity Pathway
Start
IT Fundamentals