

South Carolina IT Fundamentals Syllabus

High School (140 Contact Hours)

Course Overview and Goals

South Carolina IT Fundamentals introduces students to the foundational concepts, skills, and practices that define the information technology field. Students explore cybersecurity principles, cryptography, operating systems, networking, data management, and introductory programming, developing both technical knowledge and professional readiness. Through hands-on labs, projects, and real-world scenarios, students build the skills needed to troubleshoot systems, protect data, and communicate effectively as IT professionals. By the end of the course, students will be prepared to pursue industry certifications, further CS coursework, and careers across the computing disciplines.

Learning Environment

The course utilizes a blended classroom approach. The content is a mix of web-based and physical activities. Each module of the course is broken down into lessons. Lessons are composed of short video tutorials, interactive learning pages, quizzes, explorations, simulations, and free-response prompts. Each module ends with a comprehensive quiz that assesses students' mastery of that module's material.

More Information

Browse the content of this course at <https://codehs.com/course/28312/overview>

Prerequisites

The IT Fundamentals course is designed for complete beginners with no previous background in computer science. The course is highly visual, dynamic, and interactive, making it engaging for those new to computer science.

Technology Requirements

To complete all activities and exercises in this course, students must have access to the 3rd party sites and tools listed here: [South Carolina IT Fundamental Course Links](#)

Course Breakdown

The full standards alignment can be found at

https://codehs.com/standards/framework/south_carolina_it_fundamentals/mapping/2228

Module 1: Cybersecurity and You (3 weeks/15 hours)

In this module, students delve into key areas such as personal data collection, the reliability of online information, cyber ethics and laws, personal data security, cybersecurity essentials, and strategies to combat common cyber threats and their prevention, equipping individuals with the knowledge to navigate the digital landscape responsibly and securely.

Browse the full content of this unit at <https://codehs.com/course/28312/explore/module/41127>

Topics Covered	<ul style="list-style-type: none"> ● Digital Footprint and Responsibility ● Personal Data Collection and Security ● Cyber Ethics and Laws ● Evaluating online information ● Cybersecurity Essentials ● Common Cyber Attacks and Prevention
Example Assignments	<ul style="list-style-type: none"> ● What is Your Digital Footprint? <ul style="list-style-type: none"> ○ Students audit their online presence and reflect on how personal information shared across platforms contributes to a digital footprint that others can access. ● Cyberbullying Case Study <ul style="list-style-type: none"> ○ Students analyze a real-world cyberbullying scenario, identify warning signs, and propose evidence-based prevention and response strategies. ● Data and the CIA Triad <ul style="list-style-type: none"> ○ Students explore the Confidentiality, Integrity, and Availability framework and apply it to a real-world data security scenario, documenting how each principle is upheld or violated.

Module 2: Cryptography (2 weeks/10 hours)

In this module, students will dive into the history of cryptography systems, the motivation behind using encryption systems, and modern cryptography systems. This includes explaining the core concepts of Public Key Infrastructure and hash functions. Students will also explore the importance of digital certificates, and authentication methods.

Browse the full content of this module at <https://codehs.com/course/28312/explore/module/41128>

Topics Covered	<ul style="list-style-type: none"> ● Cryptography: Then, Now and Future ● Symmetric Encryption ● Asymmetric Encryption ● Public Key Encryption ● Authentication Methods ● Digital Certificates
Example Assignments	<ul style="list-style-type: none"> ● Enhanced Caesar Cipher <ul style="list-style-type: none"> ○ Students modify the Caesar cipher by applying a variable shift and encode a secret message, then attempt to crack a classmate's encoded message using brute force and letter frequency analysis. ● Diffie-Hellman Visualizer Reflection <ul style="list-style-type: none"> ○ Students use an interactive visualizer to step through the Diffie-Hellman key exchange and explain in their own words how two parties can establish a shared secret over an insecure channel. ● Guess the Hash <ul style="list-style-type: none"> ○ Students use a hash tool to explore how hashing works and reflect on why hashing—rather than encryption—is used to store passwords securely. partner see, type in a simple word (about 3-7 letters long) as your password. You'll see the corresponding hash in the output box.

Module 3: Project: Create an Escape Room (1 week/5 hours)

In this project, students will create an escape room using what they have learned about ciphers and cryptography.

Browse the full content of this module at <https://codehs.com/course/28312/explore/module/41129>

Topics Covered	<ul style="list-style-type: none">● Ciphers● Cryptographic puzzles● Iterative design and testing
Example Assignments	<ul style="list-style-type: none">● Plan and Create Puzzles<ul style="list-style-type: none">○ Students design a set of cryptography-based puzzles, specifying the cipher or security concept used in each and how clues lead players from one room to the next.● Test the Escape Room<ul style="list-style-type: none">○ Students exchange escape rooms with a peer group, attempt to solve the puzzles, and provide structured feedback that the designers use to revise their final version.

Module 4: System Administration (4 weeks/20 hours)

In this module, students will compare and contrast common operating systems (Windows, Linux, OS) and explain the importance of application security. They will investigate security options and implement user accounts to enforce authentication and authorization. Students will also demonstrate how to work with basic and advanced command prompts.

Browse the full content of this module at <https://codehs.com/course/28312/explore/module/41130>

Topics Covered	<ul style="list-style-type: none">● Operating Systems● Software and Applications● Software licenses and copyright● Application Security● Browser Configuration● System Administration● Command Line Interface
Example Assignments	<ul style="list-style-type: none">● Lab: Configuring a Computer<ul style="list-style-type: none">○ Students follow a guided lab to configure system settings, create a user account, and document the steps taken and changes made to the system.● Lab: Navigating with the CLI<ul style="list-style-type: none">○ Students use the command line interface to navigate a directory structure, create and move files, and execute basic commands, submitting a log of commands run.● Windows Defender Antivirus<ul style="list-style-type: none">○ Students explore the Windows Defender interface, run a simulated scan, and explain what each security feature does and why it matters for protecting a system.● Comparing Operating Systems Quiz<ul style="list-style-type: none">○ Students compare Windows, macOS, and Linux across dimensions including file systems, security features, software availability, and appropriate use cases.

Module 5: IT Concepts (4 weeks/20 hours)

In this module, students explore the structure and design of the internet and networks, and how this design affects the reliability of network communication, the security of data, and personal privacy. Students will learn how the Internet connects computers all over the world by use of networking protocols.

Browse the full content of this module at <https://codehs.com/course/28312/explore/module/41131>

Topics Covered	<ul style="list-style-type: none">● Encoding Text, Numbers, and Images in Binary● IP Addresses● Routing and Packets● Protocols: TCP, UDP, HTTP/HTTPS● How do Websites Work?● OSI Model● Impact of the Internet● Emerging Technology
Example Assignments	<ul style="list-style-type: none">● Create a Color Pixel Image<ul style="list-style-type: none">○ Students encode RGB color values in binary and use a pixel editor to create an original piece of pixel art, then calculate the file size of their image.● Submarine Cable Map Exploration<ul style="list-style-type: none">○ Students use an interactive submarine cable map to explore the physical infrastructure of the internet and reflect on how geography affects connectivity and resilience.● Troubleshooting with the OSI Model<ul style="list-style-type: none">○ Students apply the seven-layer OSI model to diagnose a series of simulated network problems, identifying at which layer each failure occurs.● Research a Technology<ul style="list-style-type: none">○ Students research an emerging technology, analyze its potential societal impacts (positive and negative), and present their findings to the class.

Module 6: IT Infrastructure (4 weeks/20 hours)

In this module, students will learn about the physical elements of computers and networking such as motherboards, RAM, routers, and the use of port numbers, ethernet, and wireless devices.

Browse the full content of this module at <https://codehs.com/course/28312/explore/module/41132>

Topics Covered	<ul style="list-style-type: none">● Internal Components of a Computer● Peripheral Devices● Network Devices● Storage Options● Network Communication● Network Management● Mobile Device Connectivity
Example Assignments	<ul style="list-style-type: none">● Lab: Computer Disassembly<ul style="list-style-type: none">○ Students disassemble and reassemble a computer, identifying and documenting each internal component, its function, and how it connects to the motherboard.

	<ul style="list-style-type: none"> ● Build a Computer <ul style="list-style-type: none"> ○ Students use an online configurator to select compatible internal components for a computer within a given budget, justifying each choice based on use-case requirements. ● Lab: Design a Distribution Frame <ul style="list-style-type: none"> ○ Students plan and document the cable layout for a small office network distribution frame, accounting for device count, cable management, and labeling standards. ● Iptables <ul style="list-style-type: none"> ○ Students write and apply basic iptables firewall rules to allow or block specific types of network traffic, then test their configuration in a simulated environment.
--	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Module 7: Project: IT Professional (2 weeks/10 hours)

In this project, students will explore cybersecurity career pathways and build skills that will be needed within these fields such as communication. In this project, students will explore the troubleshooting methodology and utilize it to solve sample IT support issues.

Browse the full content of this module at <https://codehs.com/course/28312/explore/module/41133>

Topics Covered	<ul style="list-style-type: none"> ● Troubleshooting Methodology <ul style="list-style-type: none"> ○ Identify the problem ○ Research past solutions ○ Establish a theory ○ Test the theory ○ Establish a plan of action ○ Implement the solution ○ Verify functionality ○ Document findings ● Customer Service and Communication ● Contributing to a Knowledge Base ● Creating an Instructional Video
Example Assignments	<ul style="list-style-type: none"> ● Act it Out! <ul style="list-style-type: none"> ○ Students role-play an IT support interaction, applying professional communication and active-listening techniques while resolving a simulated customer issue. ● You're On Your Own Now! <ul style="list-style-type: none"> ○ Students independently work through a new help-desk scenario, applying the full troubleshooting methodology without guided prompts and documenting each step of their process. ● Draft a KB Article <ul style="list-style-type: none"> ○ Students write a structured knowledge base article documenting the cause, solution, and prevention steps for a common IT problem they resolved during the project.

Module 8: Data Security (4 weeks/20 hours)

In this module, students will learn about the benefits and dangers of collecting and storing large sets of data. They will learn how to prevent attacks such as SQLi and XSS using programming controls. Students will also learn about risk management and how to identify, assess, prioritize, and minimize risks.

Browse the full content of this module at <https://codehs.com/course/28312/explore/module/41134>

Topics Covered	<ul style="list-style-type: none">● Data as a Resource● Database management● Security in Coding● Environmental Controls● Risk Management
Example Assignments	<ul style="list-style-type: none">● Query Exploration<ul style="list-style-type: none">○ Students write and run SQL queries against a sample database to retrieve, filter, and sort records, exploring how structured queries make large datasets useful.● Find the Flags!<ul style="list-style-type: none">○ Students use browser developer tools to inspect page source, console output, and local storage in a simulated capture-the-flag challenge, documenting each flag found and the technique used.● Pen Testing Report<ul style="list-style-type: none">○ Students document the findings of a simulated penetration test, identifying discovered vulnerabilities, their potential impact, and recommended mitigations.● Assess and Prioritize Risks<ul style="list-style-type: none">○ Students work through a structured risk management process for a fictional school network, scoring risks by likelihood and impact and recommending cost-effective controls.

Module 9: Project: The Game of Risk (1 week/5 hours)

In this project, students will design and create a board game or a card game that will help players to identify randomized security vulnerabilities and their appropriate defenses.

Browse the full content of this module at <https://codehs.com/course/28312/explore/module/41135>

Topics Covered	<ul style="list-style-type: none">● Risk Management● Prototyping● Testing
Example Assignments	<ul style="list-style-type: none">● Prototype Game and Instructions<ul style="list-style-type: none">○ Students build an initial version of their cybersecurity risk game and write clear, complete instructions that allow an unfamiliar player to understand the rules and objectives.● Improve Your Game<ul style="list-style-type: none">○ Students incorporate peer feedback from playtesting sessions to revise the rules, balance, and visual design of their game before creating the final version.

Module 10: Programming Concepts (3 weeks/15 hours)

In this module, students are introduced to the fundamentals of programming by learning how to write basic code in Python using print statements, variables, user input, and arithmetic expressions. They'll explore data types, string operations, comments, and the role of programming languages in creating interactive programs.

Browse the full content of this module at <https://codehs.com/course/28312/explore/module/41148>

Topics Covered	<ul style="list-style-type: none"> ● How to Think Like a Programmer (Problem Decomposition, Algorithms, Computational Thinking) ● The Language of Computers (Types of Programming Languages, Language Hierarchy) ● Variables and Data Types ● Printing in Python ● User Input and Type Conversion ● Mathematical Operators ● Software Development
Example Assignments	<ul style="list-style-type: none"> ● Algorithm #1 — PB&J <ul style="list-style-type: none"> ○ Students write a precise, step-by-step algorithm for making a peanut butter and jelly sandwich, discovering how ambiguity in instructions causes unexpected computer behavior. ● Introduce Yourself <ul style="list-style-type: none"> ○ Students write a Python program that uses multiple print statements to display a formatted self-introduction, practicing basic syntax and program structure. ● Hello <name> <ul style="list-style-type: none"> ○ Students write a Python program that prompts for the user’s name and responds with a personalized greeting, combining user input with string output. ● App Development Plan <ul style="list-style-type: none"> ○ Students apply the software development lifecycle to plan an original app idea, defining the problem, target users, key features, and a development timeline.

(Optional Module) Career and Workplace (10-15 hours)

Students explore computing career pathways, student organizations, certification opportunities, and workplace skills. They practice professional communication through resume writing and mock interviews, and learn essential personal safety practices in technology environments. Students taking more than one CodeHS course in their pathway may have already completed some of these activities in a previous course.

Browse the full content of this module at <https://codehs.com/course/28312/explore/module/41717>

Topics Covered	<ul style="list-style-type: none"> ● Computing Careers and Certifications ● Student Organizations (CTSOs) and Parliamentary Procedure ● Work-Based and Service Learning ● Resume and Interview Preparation ● Workplace Safety
Example Assignments	<ul style="list-style-type: none"> ● Computer Science Career Exploration <ul style="list-style-type: none"> ○ Students research an IT career of interest, exploring required technical skills, typical salary ranges, educational pathways, and companies or colleges that offer relevant programs. ● Write Your Resume! <ul style="list-style-type: none"> ○ Students create a professional resume tailored to an entry-level IT or technology position, incorporating career exploration research and feedback from a peer review. ● Interview Skills Practice <ul style="list-style-type: none"> ○ Students practice answering common behavioral and technical

	<p>interview questions, then reflect on their communication strengths and areas for improvement.</p> <ul style="list-style-type: none">● Safety Precautions<ul style="list-style-type: none">○ Students identify common physical safety hazards in IT work environments—including electrical risks, ergonomic strain, and chemical exposure—and describe appropriate preventive measures for each.
--	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------