

Course Overview and Goals

The Introduction to the Internet course is a first year computer science course introducing the basics of designing a web page, and how information is represented digitally and sent over the Internet. Students will create a personal portfolio website showing projects they build throughout the course.

With a unique focus on creativity, problem solving and project based learning, Introduction to the Internet gives students the opportunity to explore several important topics of computing using their own ideas and creativity to develop an interest in computer science that will foster further endeavors in the field.

Learning Environment: The course utilizes a blended classroom approach. The content is a mix of web-based and physical activities. Students will write and run code in the browser, create websites and digital presentations, and engage in in-person collaborative exercises with classmates. Teachers utilize tools and resources provided by CodeHS to leverage time in the classroom and give focused 1-on-1 attention to students.

Programming Environment: Students write and run programs in the browser using the CodeHS online editor. Students will also create several webpages using HTML and CSS. These webpages will be hosted on the CodeHS website so that they can keep a running portfolio of their creative projects, and easily share their programs with the world.

Quizzes: Each lesson includes at least one formative short multiple choice quiz. At the end of each unit, students take a summative multiple choice unit quiz that assesses their knowledge of the concepts covered in the unit.

Prerequisites: The Introduction to the Internet 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.

Course Breakdown

Unit 1: Web Design (6 weeks/30 hours)

Objectives / Topics Covered	● Creating webpages using HTML ○ Links ○ Images ○ Lists ○ Tables ○ Inline styling ● Styling webpages with CSS ○ Creating CSS rules ○ CSS classes ○ CSS IDs ● How webpages are requested and delivered
Example Assignments / Labs	● Links ○ Learn how to link different pages together ○ Example Exercise: Create a webpage that provides links to your favorite books ● Images ○ Learn how to add and format images ○ Example Exercise: Create a collage of images ● Tables ○ Learn how to create and style tables ○ Example Exercise: Create a table describing your favorite music artists and songs ● Styling with CSS ○ Use CSS to add background colors, font colors, font styles, borders, and position elements on the page ○ Example Exercise: Create CSS classes and IDs to apply formatting to a BINGO board ○ Example Exercise: Create CSS classes to style a music library web page ○ Example Exercise: Create CSS Rules to put a Karel puzzle together ● Viewing websites ○ How are web pages served to your computer? ○ Where do web pages live? ● Final Project ○ Build your own homepage using everything you've learned in the module ○ This homepage will serve as your personal portfolio of creative projects as you continue through the course!

Unit 2: Digital Information (2 weeks/10 hours)

Objectives / Topics Covered	• How digital data is represented • Encoding data • Converting and using different number systems ◦ Binary • Manipulating images at the pixel level
Example Assignments / Labs	• Encoding data ◦ Create your own encoding scheme ◦ Encode images using binary ◦ Example Activity: ■ Write a message by encoding the characters in binary, using the ASCII codes. • Using different number systems ◦ Convert numbers between decimal and binary ◦ Example Activity: ■ Earn a high score playing the decimal to binary game game. Click on the digits to change their values and make the binary number match the target decimal value. • Pixel Images ◦ Encoding black and white images ◦ Pixel values in binary ■ Create a checkerboard by giving each pixel a binary value

Unit 3: The Internet (7 weeks/35 hours)

Objectives / Topics Covered	• Structure of the internet • How network data is transmitted • Hardware involved in the transmission of data • How the internet has impacted everyday life
Example Assignments / Labs	• Structure of the internet ◦ Explore the differences between IPv4 and IPv6. Why are we running out of addresses? ◦ Explore the different levels of the internet. ◦ Example Activity ■ Trace a website request from the server, through the network, and to your computer • How data is transmitted ◦ How are internet packets able to find their way to your computer?

	○ Explain in your own words how a request from your computer travels through the various levels of servers to reach and return the correct webpage and resources? ○ Example Activity: ■ As a class, create a protocol that will allow one classmate to send another classmate a note, without the need for talking to each other. ● Hardware involved ○ Explore the role of routers ○ Why are protocols so important? ○ Explore how data is able to be transmitted across the ocean by using underwater cables ● Final Project ○ Create a presentation, graphic, video, or audio recording detailing a specific Internet-Based Innovation. The subject may be a product that depends on the internet for its core functionality, a cyber security innovation, or social phenomenon. What is the purpose of the innovation? What are the beneficial and harmful effects this innovation has had?
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