



## Introduction to Computer Science

Recommended for Girls Ages 10-14

### Course Overview:

In this introductory course you will use Scratch, a drag-and-drop programming language, to learn the fundamentals and creative power of computer science. In the first week of the course you will spend your mornings working on projects that are designed to teach the Girls Who Code Core4 Programming Concepts (loops, variables, conditionals, and functions) which are used to build everything from websites to apps and robots. In the afternoons you will dive into the world of physical computing with *Makey Makey*, learning about circuits and designing devices that interact with the programs you programmed earlier that day. In week two, you and your team members will take the knowledge and skills you gained the first week to design, build, and present a project about a topic or issue that matters to you. Every day, you will learn about one of the numerous female role models in the field of technology. By the end of the program you will have built your technical skills, forged new friendships, and recognized that you are part of a large sisterhood of girls in tech.

### Is This Course for Me?

This introductory computer science course is a great fit for you if you:

- **Are new to computer science and programming.** This program is for beginners! You don't need any previous programming experience or expertise in math and science.
- **Like to be curious and creative.** You will learn how computer science crosses with the arts, social science, design, and other fields.
- **Want to design and make things that interact with your code.** In this program you will use *Makey Makey* to build a video game controller, interactive art piece or other creation that you and your friends can use to play the games, view the stories, or control the programs you write with Scratch. *Makey Makey* is an electronic invention kit that allows you to connect everyday objects to computer programs.
- **Want to impact the world around you.** You will see how you can use computer science to make change.
- **Would like a "Girls First" environment.** Campus is a safe and supportive environment for you and other girls to build confidence, bravery, and technical skills. Each day you will participate in team building activities to help you build new friendships and to learn about other women that are making an impact in tech.

### What Types of Things Will I Build?

In this Campus program you will build projects in Scratch, like [this game](#) that teaches you about the scarcity and importance of water or [these animations and games](#) that teach players about strong women in history. You'll also design and build a controller or interface device for your Scratch project. You might decide to build an [instrument you can play](#), an interactive art piece or story (like [this](#) or [this](#)), or maybe a [controller for a game](#).

### What Will I Learn?

By the end of program, you will be able to:

- Explain each of the GWC Core4 using both technical terminology and real-life analogies.
- Use the Core4 in Scratch to solve a problem of your choice.
- Use your creativity to design and build a controller or piece of interactive art for your Scratch project.
- Build resilience, confidence, and bravery and connect computer science with social justice.
- Identify various industries that make use of computer science.
- Name various women leaders in the technical field, and explain their contribution to society.
- Explain how computer science can affect your community.
- Explain how you can be a strong ally to other girls in technology.

### What Will I Take Home?

At the end of the course you will take home your Scratch projects, a *Makey Makey* kit and your individual *Makey Makey* interface devices.

### What Does a Typical Day Look Like?

Each day of Campus could look a little different but the schedule below will give you an idea of what to expect most days during the program. The second week of Campus typically involves more project work time because you will be working to complete your capstone project.

A Typical Day in Campus
<p><b>Morning (9:00AM-12:30PM)</b>  <b>Welcome &amp; Team Building:</b> Your instructor will go over the plan for the day and lead your class through a fun activity designed to help you get to know the other girls in your class better.  <b>Coding Instruction:</b> Learn a core CS concept through a mix of hands-on activities, instruction, reading, and coding.  <b>Mini Coding Project:</b> Practice using the day’s CS concept in a small project. Sometimes projects will be individual and sometimes they will be with a partner!</p> <p><b>Lunch (12:30PM-1:15PM)</b>            During this lunch block, students and teachers will relax and get to know each other. We also encourage classes to head outside for fresh air and some physical activity if space allows.</p> <p><b>Afternoon (1:15PM-4:00PM)</b>  <b>Women in Tech Spotlight:</b> Learn about a female role model in the tech industry.  <b>Makey Makey Lab:</b> Use <i>Makey Makey</i> to learn about interface devices (for example a game controller) and build different interface devices for your mini coding project.  <b>Daily Wrap Up:</b> Share your work with your peers and reflect on what you learned that day.</p>

### What Will I Learn Each Day?

The schedule below will give you a feel of what your two weeks in Campus might look like!

Day 1	Day 2	Day 3	Day 4	Day 5
<p><b>Morning:</b> Intro to Scratch &amp; Loops  <b>--Lunch--</b>  <b>Afternoon:</b> Intro to Makey Makey</p>	<p><b>Morning:</b> Intro to Variables  <b>--Lunch--</b>  <b>Afternoon:</b> Makey Makey Lab - Conductive Objects</p>	<p><b>Morning:</b> Intro to Conditionals  <b>--Lunch--</b>  <b>Afternoon:</b> Makey Makey Lab - Interactive Drawings</p>	<p><b>Morning:</b> Intro to Functions  <b>--Lunch--</b>  <b>Afternoon:</b> Makey Makey Lab - Simple Buttons</p>	<p><b>Morning:</b> Putting it all Together  <b>--Lunch--</b>  <b>Afternoon:</b> Makey Makey Lab - Open Design Time</p>
Day 6	Day 7	Day 8	Day 9	Day 10
<p><b>Morning:</b> Capstone Project Planning &amp; Design  <b>--Lunch--</b>  <b>Afternoon:</b> Project Prototyping</p>	<p><b>Morning:</b> Project Development  <b>--Lunch--</b>  <b>Afternoon:</b> Makey Makey Project Planning</p>	<p><b>Morning:</b> Project Development  <b>--Lunch--</b>  <b>Afternoon:</b> Project Testing &amp; Development</p>	<p><b>Morning:</b> Project Development  <b>--Lunch--</b>  <b>Afternoon:</b> Project Testing &amp; Development</p>	<p><b>Morning:</b> Project Final Touches &amp; Reflection  <b>--Lunch--</b>  <b>Afternoon:</b> Project Demos &amp; Presentations</p>



## Website Design & Development

Recommended for Girls Ages 13-18

### Course Overview:

In this course you will use JavaScript, HTML and CSS to learn the fundamentals of website design and development. In week one, you and other girls in your class will launch a personal website portfolio and work together on projects that are designed to teach you essential programming concepts including variables, conditionals, and functions in JavaScript. You will also learn and practice implementing design principles to build more effective and usable websites and web applications. In week two, you and your peers will take what you have learned and use it to influence the world around you by designing, building, and presenting an interactive website that highlights a topic or issue that matters to you. At the end of the program you will leave with a digital portfolio of your projects that you can use and share in the future.

### Is This Course for Me?

This course is a great fit for you if you:

- **Are new to text-based programming.** No previous programming experience or expertise in math and science is required. If you've taken a programming course using a block-based programming language like Scratch then this would be a great next step.
- **Like to be curious and creative.** You will learn how computer science intersects with the arts, social science, and graphic design fields and how to apply universal design principles to increase the impact and usefulness of websites and applications.
- **Want to learn skills that prepare you for college and the 21st century.** The skills you gain in this course can help you design your own digital portfolio or website.
- **Want to impact the world around you.** You will see how you can use computer science right now to make change.
- **Would like a "Girls First" environment.** Campus is a safe and supportive environment for you and other girls to build confidence, bravery, and technical skills. Each day you will participate in team building activities to help you build new friendships and to learn about other women that are making an impact in tech.

### What Types of Things Will I Build?

In this Campus program you'll design and build websites that have impact, like [this one](#) designed to help people de-stress or [this one](#) designed to help people swap clothing and reduce waste!

### What Will I Learn?

By the end of program, you will be able to:

- Explain and use core programming concepts like variables, functions and conditionals in JavaScript.
- Use HTML, CSS, and JavaScript to build a web page.
- Use your presentation and teamwork skills in order to create and present a project.
- Build resilience, confidence, and bravery and connect computer science with social justice.
- Identify 3 different industries that make use of computer science.
- Name at least 2 women leaders in the technical field, and explain their contribution to society.
- Identify a clear next step for pursuing a technical career after high school.
- Explain how you can use computer science to impact your community.
- Explain how you can be a strong ally to other girls in technology.

### What Will I Take Home?

At the end of the course you will take home your multi-page portfolio website.

### What Does a Typical Day Look Like?

Each day of Campus could look a little different but the schedule below will give you an idea of what to expect most days during the program. The second week of Campus typically involves more project work time because you will be working to complete your capstone project.

A Typical Day in Campus	
<p><b>Morning (9:00AM-12:30PM)</b>  <b>Welcome &amp; Team Building:</b> Your instructor will go over the plan for the day and lead your class through a fun activity designed to help you get to know the other girls in your class better.  <b>Coding Instruction:</b> Learn a core CS concept through a mix of hands-on activities, instruction, reading and coding practice.  <b>Mini Coding Project:</b> Practice using the day's CS concept in a small project. Sometimes projects will be individual and sometimes they will be with a partner!</p>	
<p><b>Lunch (12:30PM-1:15PM)</b>            During this lunch block, students and teachers will relax and get to know each other. We also encourage classes to head outside for fresh air and some physical activity if space allows.</p>	
<p><b>Afternoon (1:15PM-4:00PM)</b>  <b>Women in Tech Spotlight:</b> Learn about a female role model in the tech industry.  <b>Dev Workshop:</b> Dive deeper on topics and projects, learning how to implement web design best practices or how to implement APIs (Application Program Interfaces allow your website to talk to other websites).  <b>Daily Wrap Up:</b> Share your work with your peers and reflect on what you learned that day.</p>	

### What Will I Learn Each Day?

The schedule below will give you a feel of what your two weeks in Campus might look like!

Day 1	Day 2	Day 3	Day 4	Day 5
<p><b>Morning:</b> Intro to HTML &amp; CSS  <b>--Lunch--</b>  <b>Afternoon:</b> Build Your Personal Website</p>	<p><b>Morning:</b> HTML &amp; CSS Deep Dive  <b>--Lunch--</b>  <b>Afternoon:</b> Intro to JavaScript- Adding Interactive Buttons</p>	<p><b>Morning:</b> JavaScript  <b>--Lunch--</b>  <b>Afternoon:</b> Dev Workshop - Designing for the User (UI &amp; UX)</p>	<p><b>Morning:</b> Intro to Functions  <b>--Lunch--</b>  <b>Afternoon:</b> Dev Workshop - Using APIs</p>	<p><b>Morning:</b> Putting it all Together  <b>--Lunch--</b>  <b>Afternoon:</b> Dev Workshop - Open Design Time</p>
Day 6	Day 7	Day 8	Day 9	Day 10
<p><b>Morning:</b> Capstone Project Planning &amp; Design  <b>--Lunch--</b>  <b>Afternoon:</b> Project Prototyping</p>	<p><b>Morning:</b> Project Development  <b>--Lunch--</b>  <b>Afternoon:</b> Project Testing &amp; Development</p>	<p><b>Morning:</b> Project Development  <b>--Lunch--</b>  <b>Afternoon:</b> Project Testing &amp; Development</p>	<p><b>Morning:</b> Project Development  <b>--Lunch--</b>  <b>Afternoon:</b> Project Testing &amp; Development</p>	<p><b>Morning:</b> Project Final Touches &amp; Reflection  <b>--Lunch--</b>  <b>Afternoon:</b> Project Demos &amp; Presentations</p>



## Wearable Tech & Fashion Design

Recommended for Girls Ages 13-18

### Course Overview:

In this course you will explore the ever-expanding world of wearable tech using LilyPad Arduino and the text-based programming language, C. During week one, you will concentrate on learning the basics of C and the GWC Core4 programming Concepts: loops, variables, conditionals, and functions. You will spend your afternoons in the wearables workshop, where you'll design and build projects that teach you about circuits, sensors, and techniques for creating wearables. For your capstone project in week two, you and your peers will take what you have learned and use it to influence the world around you by designing, building, and presenting a piece of wearable tech that solves a social problem or that reflects your personal interests. At the end of the program you will take home your arduino project code and a piece of wearable tech that you designed and made during the course!

### Is This Course for Me?

This course is a great fit for you if you:

- **Are new to text-based programming or have some programming experience.** If you've taken a programming course using a block-based programming language like Scratch then this would be a great next step. Even if you have some experience with a text-based language like JavaScript or Python, this course would still be a great fit! You will be coding in the text-based language C, but we'll teach you all that you need to know to start designing and coding wearable tech.
- **Like to be curious and creative.** You will learn how computer science and wearable technology crosses with the health, sports and fitness, art, fashion, design, and other creative fields.
- **Want to make something physical or like to tinker.** You will see how you can use computer science, simple electronics, and everyday materials to design, build and test wearable tech. No prior sewing experience required, but there will be some sewing in this course!
- **Would like a "Girls First" environment.** Campus is a safe and supportive environment for you and other girls to build confidence, bravery, and technical skills. Each day you will participate in team building activities to help you build new friendships and to learn about other women that are making an impact in tech.

### What Types of Things Will I Build?

You will have the chance to build a variety of mini projects using a variety of materials. Your final project will be unique to you, but some examples of capstone projects include a [turn signal bike jacket](#) or a [dress that monitors air quality!](#)

### What Will I Learn?

By the end of program, you will be able to:

- Explain each of the GWC Core4 using technical terminology and real-life analogies.
- Use the Core4 while programming in C with the Arduino development environment.
- Use the LilyPad Arduino and other project materials to design and create a piece of wearable tech.
- Build your presentation and teamwork skills in order to create and present a project you design.
- Build resilience, confidence, and bravery and connect computer science with social justice.
- Identify 3 different industries that make use of computer science.
- Name at least 2 women leaders in the technical field, and explain their contribution to society.
- Identify a clear next step for pursuing a technical career after high school.
- Explain how you can use computer science to impact your community.
- Explain how you can be a strong ally to other girls in technology.

### What Will I Take Home?

At the end of the course you will take home your Arduino project code and at least one piece of wearable tech that you designed and built.

## What Does a Typical Day Look Like?

Each day of Campus could look a little different but the schedule below will give you an idea of what to expect most days during the program. The second week of Campus typically involves more project work time because you will be working to complete your capstone project.

A Typical Day in Campus
<p><b>Morning (9:00AM-12:30PM)</b>  <b>Welcome &amp; Team Building:</b> Your instructor will go over the plan for the day and lead your class through a fun activity designed to help you get to know the other girls in your class better.</p> <p><b>Coding Instruction:</b> Learn a core CS concept through a mix of hands-on activities, instruction, reading and coding practice.</p> <p><b>Mini Coding Project:</b> Practice using the day's CS concept in a small project. Sometimes projects will be individual and sometimes they will be with a partner!</p> <p><b>Lunch (12:30PM-1:15PM)</b>            During this lunch block, students and teachers will relax and get to know each other. We also encourage classes to head outside for fresh air and some physical activity if space allows.</p> <p><b>Afternoon (1:15PM-4:00PM)</b>  <b>Women in Tech Spotlight:</b> Learn about a female role model in the tech industry.</p> <p><b>Wearables Workshop:</b> In this makerspace lab you will work on simple wearable projects using LilyPad Arduino and guidance from your teachers to prepare you to design your own wearable tech in week two.</p> <p><b>Daily Wrap Up:</b> Share your work with your peers and reflect on what you learned that day.</p>

## What Will I Learn Each Day?

The schedule below will give you a feel of what your two weeks in Campus might look like!

Day 1	Day 2	Day 3	Day 4	Day 5
<p><b>Morning:</b> Intro to Arduino &amp; C</p> <p style="text-align: center;"><i>--Lunch--</i></p> <p><b>Afternoon:</b> Intro to Circuits &amp; Wearables</p>	<p><b>Morning:</b> Intro to Variables in C</p> <p style="text-align: center;"><i>--Lunch--</i></p> <p><b>Afternoon:</b> Wearables Workshop - DIY Light Up Pin</p>	<p><b>Morning:</b> Intro to Conditionals in C</p> <p style="text-align: center;"><i>--Lunch--</i></p> <p><b>Afternoon:</b> Wearables Workshop - Multiple LED Circuits</p>	<p><b>Morning:</b> Intro to Functions in C</p> <p style="text-align: center;"><i>--Lunch--</i></p> <p><b>Afternoon:</b> Wearables Workshop - Make Your Own Button &amp; Switch</p>	<p><b>Morning:</b> Putting it all Together</p> <p style="text-align: center;"><i>--Lunch--</i></p> <p><b>Afternoon:</b> Wearables Workshop - Exploring Other Sensors</p>
Day 6	Day 7	Day 8	Day 9	Day 10
<p><b>Morning:</b> Capstone Project Planning &amp; Design</p> <p style="text-align: center;"><i>--Lunch--</i></p> <p><b>Afternoon:</b> Project Prototyping</p>	<p><b>Morning:</b> Project Development</p> <p style="text-align: center;"><i>--Lunch--</i></p> <p><b>Afternoon:</b> Project Testing &amp; Development</p>	<p><b>Morning:</b> Project Development</p> <p style="text-align: center;"><i>--Lunch--</i></p> <p><b>Afternoon:</b> Project Testing &amp; Development</p>	<p><b>Morning:</b> Project Development</p> <p style="text-align: center;"><i>--Lunch--</i></p> <p><b>Afternoon:</b> Project Testing &amp; Development</p>	<p><b>Morning:</b> Project Final Touches &amp; Reflection</p> <p style="text-align: center;"><i>--Lunch--</i></p> <p><b>Afternoon:</b> Project Demos &amp; Presentations</p>



## **iPhone App Development**

Recommended for Girls Ages 13-18

### **Course Overview:**

In this course you will use the Swift programming language and Apple's XCode development environment to design and build your own iPhone or iPad apps. In week one, you will learn the fundamentals of Swift and build your confidence developing in the XCode environment by working alongside other girls in your class on small projects that are designed to teach the GWC Core4 programming Concepts: loops, variables, conditionals, and functions. In week two, you will develop your teamwork and leadership skills while applying the Core4 to design, build, and present an iPhone or iPad app that solves a social problem or that reflects your interests. At the end of the program you will be able to take home your iPhone or iPad app and a portfolio of Swift projects!

### **Is This Course for Me?**

This course is a great fit for you if you:

- **Have had some exposure to computer science and programming.** You likely have some programming experience and are looking for a new language to learn. Maybe you've participated in a GWC program, taken an introductory class at school, or tried out another programming camp. Prior programming languages could be block-based (ex. Scratch) or text-based (ex. Python, JavaScript). This course has been designed for students new to the Swift programming language, so you don't need any prior experience with Swift!
- **Like to be curious and creative.** You will learn how computer science and the app development process intersects with graphic design, user experience design, and other creative fields.
- **Want to make something you can share with friends.** In this course you will be able to create apps that you can use and share with friends or your community.
- **Would like a "Girls First" environment.** Campus is a safe and supportive environment for you and other girls to build confidence, bravery, and technical skills. Each day you will participate in team building activities to help you build new friendships and to learn about other women that are making an impact in tech.

### **What Types of Things Will I Build?**

You will build a variety of simple apps to learn the fundamentals and then you'll have the chance to design and build a more complex app for your capstone project. Examples of what your capstone could look like include an [app that provides teens with resources](#) to support peers with disabilities, or an [app that works to eliminate food waste](#).

### **What Will I Learn?**

By the end of program, you will be able to:

- Explain each of the GWC Core4 using technical terminology and real-life analogies
- Use the Core4 to build iPhone and iPad apps with Swift.
- Use your presentation and teamwork skills to create and present a project you design.
- Build resilience, confidence, and bravery and connect computer science with social justice.
- Identify 3 different industries that make use of computer science.
- Name at least 2 women leaders in the technical field, and explain their contribution to society.
- Identify a clear next step for pursuing a technical career after high school.
- Explain how you can use computer science to impact your community.
- Explain how you can be a strong ally to other girls in technology.

### **What Tech Do I Need?**

This course requires a Mac laptop. You are encouraged to bring your own laptop, but you will also have the option to borrow a device.

### **What Will I Take Home?**

At the end of the course you will take home the code for your iPhone and iPad apps you built over the course.

## What Does a Typical Day Look Like?

Each day of Campus could look a little different but the schedule below will give you an idea of what to expect most days during the program. The second week of Campus typically involves more project work time because you will be working to complete your capstone project.

A Typical Day in Campus
<p><b>Morning (9:00AM-12:30PM)</b>  <b>Welcome &amp; Team Building:</b> Your instructor will go over the plan for the day and lead your class through a fun activity designed to help you get to know the other girls in your class better.  <b>Coding Instruction:</b> Learn a core CS concept through a mix of hands-on activities, instruction, reading and coding.  <b>Coding Project:</b> Build simple apps to learn core concepts and how to build features you could use in your final project during week 2. Sometimes projects will be individual and sometimes they will be with a partner!</p> <p><b>Lunch (12:30PM-1:15PM)</b>            During this lunch block, students and teachers will relax and get to know each other. We also encourage classes to head outside for fresh air and some physical activity if space allows.</p> <p><b>Afternoon (1:15PM-4:00PM)</b>  <b>Women in Tech Spotlight:</b> Learn about a female role model in the tech industry.  <b>Coding Project:</b> In the afternoon you will be working to finish a coding project from the morning, learning about and implementing user experience (UX) or user interface (UI) design, or code or design reviews.  <b>Daily Wrap Up:</b> Share your work with your peers and reflect on what you learned that day.</p>

## What Will I Learn Each Day?

The schedule below will give you a feel of what your two weeks in Campus might look like!

Day 1	Day 2	Day 3	Day 4	Day 5
<b>Morning:</b> Intro to XCode <b>--Lunch--</b> <b>Afternoon:</b> About Me App Project	<b>Morning:</b> Intro To Swift <b>--Lunch--</b> <b>Afternoon:</b> Quiz App Project	<b>Morning:</b> Magic 8 Ball App Project <b>--Lunch--</b> <b>Afternoon:</b> Magic 8 Ball App Project	<b>Morning:</b> Diary App Project <b>--Lunch--</b> <b>Afternoon:</b> Diary App Project	<b>Morning:</b> Diary App Project <b>--Lunch--</b> <b>Afternoon:</b> Diary App Project
Day 6	Day 7	Day 8	Day 9	Day 10
<b>Morning:</b> Capstone Project Planning & Design <b>--Lunch--</b> <b>Afternoon:</b> Project Prototyping	<b>Morning:</b> Project Development <b>--Lunch--</b> <b>Afternoon:</b> Project Testing & Development	<b>Morning:</b> Project Development <b>--Lunch--</b> <b>Afternoon:</b> Project Testing & Development	<b>Morning:</b> Project Development <b>--Lunch--</b> <b>Afternoon:</b> Project Testing & Development	<b>Morning:</b> Project Final Touches & Reflection <b>--Lunch--</b> <b>Afternoon:</b> Project Demos & Presentations