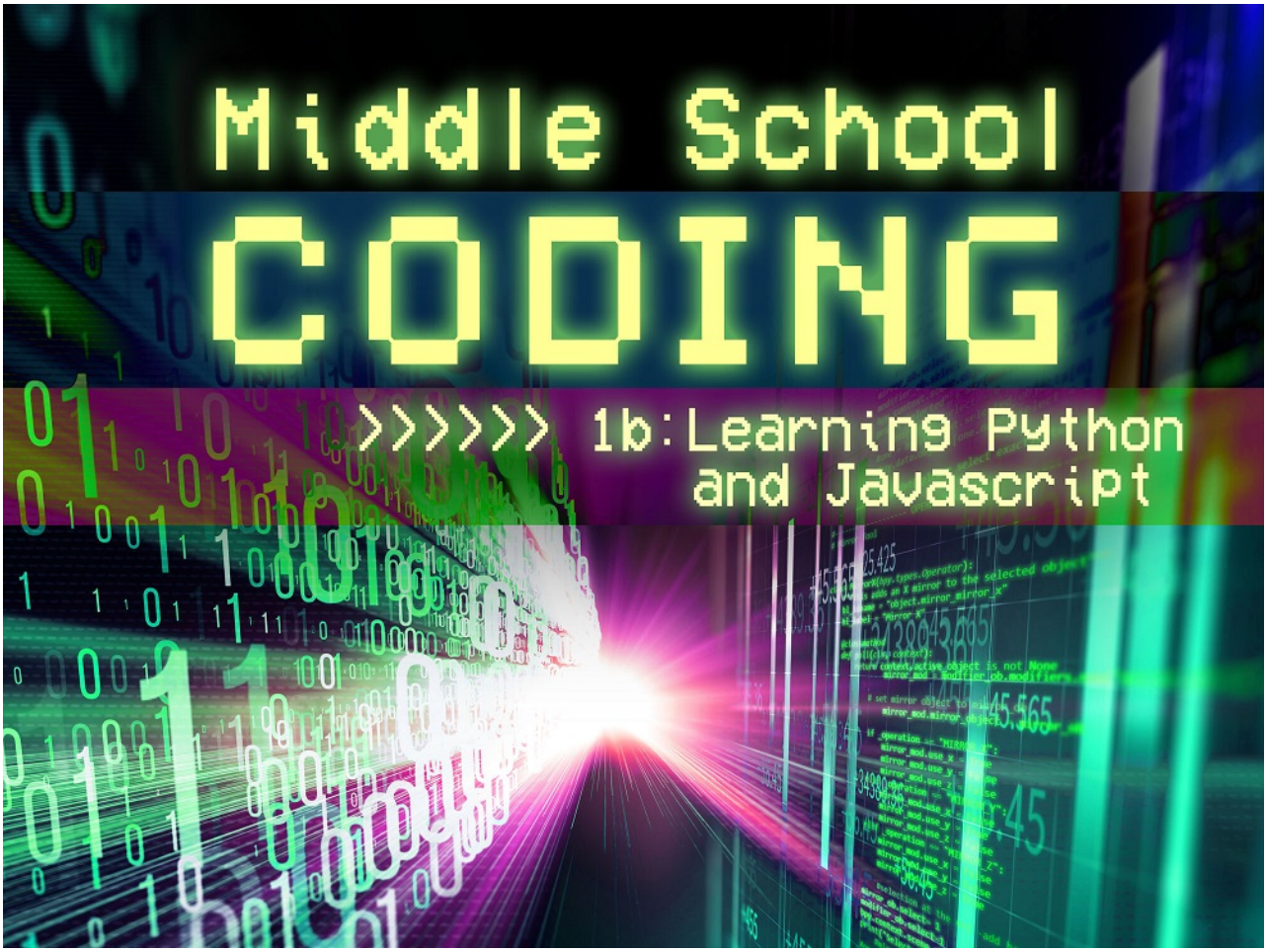
Course **Syllabus**

What you will learn in this course



Middle School Coding 1b: Learning Python and Javascript

Let's take the coding skills you learned in the previous course to the next level! You'll expand your knowledge with Advanced Python, HTML, and JavaScript. You'll further build out your portfolio and start thinking about a career in the fast-growing IT field.

Unit 1: How to Train Your Python

Python is a great language for beginners to learn the ins and outs of programming. Now that you've written a few programs and learned the basics, you're no longer a newbie! It's time to start learning some more intermediate Python skills. We will investigate how lists help keep us organized in real life as well as in our programs. And we'll keep our skills functioning smoothly by learning how to use Python functions. Get ready to train your Python!

What will you learn in this unit?

- Define and use the list data structure in Python
- Iterate over a list in Python using for and while loops
- Write user-defined functions in Python
- Re-structure programs to use functions for greater efficiency

UNIT 1 Assignments

Assignment	Type
Unit 1 Critical Thinking Questions	Homework
Unit 1 Activity 1	Homework
Unit 1 Activity 2	Homework
Unit 1 Discussion 1	Discussion
Unit 1 Discussion 2	Discussion
Unit 1 Quiz	Quiz

Unit 2: Plan the Code, Code the Plan

When it comes to weekends, life goals, and code, planning is quite important! In fact, planning is so essential in programming that it may just save lives. One of the most common ways to plan code is to use a tool called pseudocode. You'll get to see some examples and then start writing your own pseudocode for a text-based adventure game. We're going to plan the code and then code the plan! We'll also expand our information and research skills by analyzing some ads, billboards, and videos. You'll get plenty of hands-on experience in this unit, so roll up your sleeves and let's begin!

What will you learn in this unit?

- Write a basic, high-level, structured plan for a program
- Convert a high-level plan to pseudocode
- Define and apply the iterative process to pseudocode and coding
- Write Python code for a basic text-based adventure game
- Identify the main purpose of information and evaluate the soundness of an argument

UNIT 2 Assignments

Assignment	Type
Unit 2 Critical Thinking Questions	Homework
Unit 2 Activity 1	Homework
Unit 2 Activity 2	Homework
Unit 2 Discussion 1	Discussion
Unit 2 Discussion 2	Discussion
Unit 2 Quiz	Quiz

Unit 3: Build a Web Page

We all use the internet, but what is it, exactly? How do all of your favorite web pages work behind the scenes? And what does it take to be a web programmer? All of these questions (and more) will be answered! You'll learn two new languages, HTML and CSS, and use them to make your very own web page. Get ready to take your coding skills in a new direction!

What will you learn in this unit?

- Explain the difference between the internet and the World Wide Web
- Understand how websites are transferred from servers to computers
- Identify and use common HTML tags to build a basic web page
- Use CSS to apply style to an HTML document

UNIT 3 Assignments

Assignment	Type
Unit 3 Critical Thinking Questions	Homework
Unit 3 Activity 1	Homework
Unit 3 Activity 2	Homework
Unit 3 Discussion 1	Discussion

Unit 3 Discussion 2	Discussion
Unit 3 Quiz	Quiz

Middle School Coding 1b Midterm Exam

- Review information acquired and mastered from this course up to this point.
- Take a course exam based on material from the **first** half of the course (Note: You will be able to open this exam only one time.)

MIDTERM Assignments

Assignment	Type
Midterm Exam	Exam
Midterm Discussion	Discussion

Unit 4: Give Your Web Page Some Style

HTML and CSS are markup languages that help us format web pages. It's time to take our skills to the next level by dividing a web page into sections and applying some interesting styles to them. And then, we'll play a fun hide-and-seek game...with red pandas! Bet you didn't see that coming! We'll interact with our web page by using a bit of JavaScript. And we'll end with some interesting spreadsheet tricks. Bring on the fun!

What will you learn in this unit?

- Understand and apply the div tag to web pages
- Use a variety of HTML and CSS to create a web page with pictures that appear when clicked on or hovered over
- Write a basic JavaScript function
- Use JavaScript event listeners to trigger an alert box
- Create a spreadsheet that includes formulas and a graph

UNIT 4 Assignments

Assignment	Type
Unit 4 Critical Thinking Questions	Homework
Unit 4 Activity 1	Homework
Unit 4 Activity 2	Homework
Unit 4 Discussion 1	Discussion
Unit 4 Discussion 2	Discussion
Unit 4 Quiz	Quiz

Unit 5: Buttons and Gadgets

HTML and CSS are great for making static web pages, but by adding JavaScript into the mix, we open up a whole new range of possibilities! Did you ever think you'd be making your very own calculator? We will use JavaScript to create buttons that display the date, calculate the product or quotient of two numbers, and submit passwords. We'll also explore how to use if/else statements and while/for loops in this language. You'll learn how technology has affected our world and how you can stay safe and secure online. And what do shoulders and surfing have to do with any of this? Let's find out!

What will you learn in this unit?

- Implement buttons in HTML that trigger a JavaScript function when clicked
- Write user-defined JavaScript functions
- Implement HTML web forms with text fields and buttons
- Understand and use selection and repetition statements in JavaScript
- Evaluate how technology has affected society

UNIT 5 Assignments

Assignment	Type
Unit 5 Critical Thinking Questions	Homework
Unit 5 Activity 1	Homework
Unit 5 Activity 2	Homework

Unit 5 Discussion 1	Discussion
Unit 5 Discussion 2	Discussion
Unit 5 Quiz	Quiz

Unit 6: Become a Master Exterminator!

Bugs are all around us! No, we're not talking about insects outside—we're talking about bugs (errors) in our code! No matter how much of an expert programmer you are, you will always have to deal with mistakes in your code. Some may be the equivalent of ladybugs—totally harmless and maybe even a tad adorable—while others may be catastrophically huge actaeon beetles. (Have you ever seen one? You'll never forget it if you have!) Once you've learned the tips and tricks in this unit, you will be better equipped to find and fix those annoying bugs in your programs, regardless of the language you're coding in. You'll also develop some skills that will help you in the future, such as creating a publication and using simulations. We'll end by learning some practical skills to help you land your dream job!

What will you learn in this unit?

- Define and complete a trace table to find errors
- Use a debugger tool in an IDE
- Identify common mistakes in Python and JavaScript
- Create a publication using Lucidpress
- Describe how models and simulations help us analyze and solve problems

UNIT 6 Assignments

Assignment	Type
Unit 6 Critical Thinking Questions	Homework
Unit 6 Activity 1	Homework
Unit 6 Activity 2	Homework
Unit 6 Discussion 1	Discussion
Unit 6 Discussion 2	Discussion
Unit 6 Quiz	Quiz

Middle School Coding 1b Final Exam

- Review information acquired and mastered from this course up to this point.
- Take a course exam based on material from **all** units in this course. (Note: You will be able to open this exam only one time.)

FINAL Assignments

Assignment	Type
Final Exam	Exam
Final Exam Discussion	Discussion