

## Byte Academy Tech Syllabus Timeline



### Full-Stack Python

#### Phase 1-1: Python Basics

- Runtime Environment Setup, Git and GitHub Repository Setup
- Linux Development Environment, Bash Commands, Linux File System, Navigating the terminal
- Python Installation, Running Python Programs using Sublime / IDLE / nano
- Programming Fundamentals: Introduction to python, Data Structures, File Operations, Iteration, Control flow, Functions and Functional Programming, Built-In Functions.
- Best Practices: Keeping it simple, DRY code, naming conventions, comments and documentation
- Python Standard Library (standard libraries typically include definitions for commonly used algorithms, data structures, and mechanisms for input and output)
- **Weekend:** Python mini project: Well- documented Python module; (one to two-hour mini project which could be finished in class so that the students can discuss with peers and get feedback from the teacher/TA.)

#### Phase 1-2: Beyond the basics

- Quiz 1 - Week 1 Syllabus
- Python Object Oriented Programming: Classes, Objects, Inheritance
- Regular Expressions
- Big O Notation, Data Structures, Algorithms (Sorting and Searching)
- DBMS Introduction
- **Weekend** – Interview Questions on Data Structures and Algorithms

#### Phase 1-3: Databases

- Quiz 2 - Week 2 Syllabus
- SQL Joins
- SQLite3, Postgress SQL and MySQL
- Introduction to APIs
- CRUD and HTTP Verbs
- MVC – Model View Controller
- Data Formats – XML, JSON and CSV
- **Weekend** - Building a terminal application with the MVC Design pattern, persisting data in SQL, and utilizing APIs to grab data in JSON format

#### Phase 1-4: Web Scraping and Phase 1 Assessment

- Introduction to Web Scraping using Beautiful Soup and Selenium
- Introduction to Pandas and Matplotlib
- Phase 1 Assessment



## **Phase 2 - 1: Introduction to Web Development**

- Quiz 3 - Week 3 Syllabus
- Web Development Introduction
- Introduction to HTML and CSS
- CSS Specificity
- CSS Pseudo Classes
- CSS Positioning
- CSS Media Queries
- CSS Grid Systems
- CSS Responsive Design
- **Weekend** - Front End Static Web Page Assignment

## **Phase 2 - 2: Deeper into Front end with JavaScript**

- Quiz 4 - Week 4 Syllabus
- Introduction to JavaScript
- Higher Order Functions. Call-backs, Closure
- JavaScript Scope
- Document Object Model
- Event Listeners
- jQuery
- Chrome Dev Tools
- **Weekend** – Build a JavaScript Web Application

## **Phase 2 - 3: Python Web Frameworks Flask**

- Quiz 5 - Week 5 Syllabus
- Setting up virtual environments
- Introduction to Flask
- Request Response Cycle
- What is the Request Object?
- HTML Forms
- Jinja Templating
- HTTP Verbs
- Sending a response in different formats. (JSON, HTML Templates)
- SQL Alchemy Introduction
- (Weekend) - Building a full stack web application that will make requests to HTTP API's, and persist information in a SQL database. Utilize HTML, CSS, JavaScript, AJAX, Flask, and SQL

## **Phase 2 - 4: Python Web Frameworks - Django**

- Quiz 6 - Week 6 Syllabus
- Introduction to Django
- Django Directory Structure
- Django Models
- Django Forms / Templating
- Building more full stack applications
- Review for Phase 2 Assessment



## **Phase 3 - 1: Java Script Frameworks and Deeper into Backend**

- Quiz 7 - Week 7 Syllabus
- Angular JS, Node JS, React JS
- D3.js / C3.js
- AJAX Introduction
- What happens when you type google.com in the browser?
- Password Hashing
- User Sessions
- REST APIs
- Single Page Applications
- (Weeklong / Weekend Part 1) - 2-3 days building a RESTful API in Flask that will talk to a SQL Database, accept requests & return JSON Responses.
- (Weeklong / Weekend Part 2) - 2-3 days building a Single Page Application that will consume the RESTful API just built using HTML, CSS, JS, AJAX, and Flask

## **Phase 3 -2: Final Project Phase, Deep Dive Lectures, and Mock Interviews**

- Students Lectures – ES6, Flexbox, SASS/SCS
- Students will do 3 projects
- Each project done in 2 week sprints
- There will be 1 group project, 1 solo project, and the third project is optional between solo or group
- Deploy Final Projects on Digital Ocean

