**Project Description**

The team will create coding lessons in Python to be included in the Virtual Virginia AP CSP course. The team will create appropriate **Python Labs** and **Module Projects** covering the content in **Modules 4 and 5** (below) of the proposed Virtual Virginia Scope and Sequence. Each module ends with a culminating project. Ideally, students would be able to build upon their previous labs to create the projects.

Lessons do not have to be complex, just enough to give students a general idea of how to use the content covered in the lesson. For example, the first lab is meant for students to get familiar with the repl.it IDE. So “Python Lab #1” could be a simple shell of a “Hello, World” program where they have to change “Hello, World” to “I hate TikTok.” The way the teacher coding lessons were built was great, so if you wanted to work in that style (or repurpose those lessons), that would work for me.

[AP CSP Scope and Sequence](https://docs.google.com/document/d/1y56pfZ-Mae0Xj3LbOl98S1FNGntY2eYp_enjEWgho2U/edit?usp=sharing)

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| *Module 4: Introduction to Python Programming* | | | | |
| *4.1* | *Intro to Python* | *Algorithms and Programming*  *Creative Development*  *Data* | * *Introduction to IDE* * ***Scaffolded Python Lab #1 (practice with IDE)*** * *Debugging simple programs* * *Daily journal* * *Quiz #5 - Code Tracing and Debugging* | ***AP***  *AAP-1*  *AAP-2*  *AAP-3*  *CRD-2*  *DAT-1*  *DAT-2*  ***VDOE***  *CSP.9*  *CSP.10*  *CSP.12* |
| *4.2* | *Variables and Data Types* | *Algorithms and Programming*  *Creative Development*  *Data* | * *What are “variables?”* * *What are “data types”* * *Variables in Python* * *Code tracing variables* * *Debugging programs with variables* * ***Scaffolded Python Lab #2 (variables and data types)*** * *Daily journal* | ***AP***  *AAP-1*  *AAP-2*  *AAP-3*  *CRD-2*  *DAT-1*  *DAT-2*  ***VDOE***  *CSP.9*  *CSP.10*  *CSP.12* |
| *4.3* | *Conditionals and Random Numbers* | *Algorithms and Programming*  *Creative Development*  *Data* | * *What is a ‘conditional statement?”* * *What are “random numbers?”* * *Conditional statements and random numbers in Python* * *Code tracing conditional statements and random numbers* * *Debugging programs with conditionals and random numbers* * ***Scaffolded Python Lab #3 (conditionals and random numbers)*** * *Daily journal* | ***AP***  *AAP-1*  *AAP-2*  *AAP-3*  *CRD-2*  *DAT-1*  *DAT-2*  ***VDOE***  *CSP.9*  *CSP.10*  *CSP.12* |
| *4.4* | *Functions* | *Algorithms and Programming*  *Creative Development*  *Data* | * *The need for functions* * *Functions in Python* * *Code tracing with functions* * *Debugging programs with functions* * ***Scaffolded Python Lab #4 (Functions)*** * *Daily journal* | ***AP***  *AAP-1*  *AAP-2*  *AAP-3*  *CRD-2*  *DAT-1*  *DAT-2*  ***VDOE***  *CSP.9*  *CSP.10*  *CSP.12* |
| *4.5* | *Objects* | *Algorithms and Programming*  *Creative Development*  *Data* | * *What is an “object?”* * *Objects and classes in Python* * *Code tracing with classes* * *Debugging programs with classes* * ***Scaffolded Python Lab #5 (Objects)*** * *Daily journal* * *Quiz #6 - Code Tracing and Debugging* | ***AP***  *AAP-1*  *AAP-2*  *AAP-3*  *CRD-2*  *DAT-1*  *DAT-2*  ***VDOE***  *CSP.9*  *CSP.10*  *CSP.12* |
| *4.6* | ***Module 4 Project*** | *Algorithms and Programming*  *Creative Development*  *Data* | * *Using Python Lab #5 as a base, students create their own Python program using programming concepts learned in Module 2.* * *Students create video of project* * *Students answer practice prompts based on Create Task* * *Daily journal* | ***AP***  *AAP-1*  *AAP-2*  *AAP-3*  *CRD-2*  *DAT-1*  *DAT-2*  ***VDOE***  *CSP.9*  *CSP.10*  *CSP.12* |
| *Module 5: Advanced Python Programming* | | | | |
| *5.1* | *More Objects* | *Algorithms and Programming*  *Creative Development*  *Data* | * *More about objects and classes in Python* * *Debugging programs with classes* * ***Scaffolded Python Lab #6 (More objects)*** * *Daily journal* | ***AP***  *AAP-1*  *AAP-2*  *AAP-3*  *AAP-4*  *CRD-1*  *CRD-2*  *DAT-1*  *DAT-2*  *IOC-1*  *IOC-2*  ***VDOE***  *CSP.9*  *CSP.11* |
| *5.2* | *Lists/Arrays* | *Algorithms and Programming*  *Creative Development*  *Data* | * *Introduction to data structures* * *What is a “list?”* * *Lists in Python* * *Code tracing with Lists* * *Debugging programs with Lists* * ***Scaffolded Python Lab #7 (Lists)*** * *Daily journal* | ***AP***  *AAP-1*  *AAP-2*  *AAP-3*  *AAP-4*  *CRD-1*  *CRD-2*  *DAT-1*  *DAT-2*  *IOC-1*  *IOC-2*  ***VDOE***  *CSP.9*  *CSP.11* |
| *5.3* | *Loops* | *Algorithms and Programming*  *Creative Development*  *Data* | * *What is a “loop?” (iteration)* * *Loops in Python* * *Code tracing with loops* * *Debugging programs with loops* * ***Scaffolded Python Lab #8 (Loops)*** * *Daily journal* | ***AP***  *AAP-1*  *AAP-2*  *AAP-3*  *AAP-4*  *CRD-1*  *CRD-2*  *DAT-1*  *DAT-2*  *IOC-1*  *IOC-2*  ***VDOE***  *CSP.9*  *CSP.11* |
| *5.4* | *Parameters* | *Algorithms and Programming*  *Creative Development*  *Data* | * *What is a “parameter?”* * *Parameters in Python* * *Code tracing with parameters* * *Debugging programs with parameters* * ***Scaffolded Python Lab #9 (Parameters)*** * *Daily journal* | ***AP***  *AAP-1*  *AAP-2*  *AAP-3*  *AAP-4*  *CRD-1*  *CRD-2*  *DAT-1*  *DAT-2*  *IOC-1*  *IOC-2*  ***VDOE***  *CSP.9*  *CSP.11* |
| *5.5* | ***Module 5 Project*** | *Algorithms and Programming*  *Creative Development*  *Data* | * *Using Python Lab #9 as a base, students create their own programs using programming concepts learned in Module 3.* * *Students create video of project* * *Students answer practice prompts based on Create Task* * *Daily journal* | ***AP***  *AAP-1*  *AAP-2*  *AAP-3*  *AAP-4*  *CRD-1*  *CRD-2*  *DAT-1*  *DAT-2*  *IOC-1*  *IOC-2*  ***VDOE***  *CSP.9*  *CSP.11* |

**Coding Lesson Deliverables**

There are eleven deliverables for this project: five (5) Python Labs and a Module Project in Module 4, and four (4) Python Labs and a Module Project in Module 5.

Each Python Lab and Module Project should contain the following:

* Presentation (or other means) for directions
* Code “skeletons” for students to use to start projects
* Tester program with test cases for teachers.