



### **Introduction:**

The Winter Python Research Program will be a 2 week winter program held between December 21, 2020 and January 1, 2021. There will be 10 1-hour sessions total (all held on weekdays). Students will learn basic Python programming (no prerequisites). During the program the students should expect to create the following:

1. Final project
2. GitHub profile
3. Research-style paper

A computer science project and research paper looks impressive on a prospective student's college application, that too done during a pandemic!. Successful students will receive

1. Certificate of completion.
2. One college application advice session
3. Letters of recommendations for the high performing students who build good projects and generally take the time out of their day to succeed in our program.

### **Sign Ups**

Sign up for the program here: <https://tinyurl.com/WinterPRP>

Website URL: <https://www.saleskoch.com/programming-skills.html>

### **Expectations**

Students are expected to be in good communication with the instructors – by this, we mean if they need to skip a class or will be late for any reason, they should notify us in advance. Students are also expected to complete homework assignments by the due dates given. Finally, there will be an expectation of creating a project that will somehow be beneficial to the community (for instance, something to do with the environment or COVID data or the recent election).

### **Meet the Instructors**

The Winter Python Research Program will be run by Aneesha Sreerama and Shreya Kochar, two alumni of Mission San Jose High School who graduated in 2019. Aneesha is a Data Science student and teaching assistant at Northeastern University. Aneesha will start a data sciences internship at Wayfair after the holiday season. Shreya is a Computer Science student and

teaching assistant at Wellesley College. Shreya will be interning at Microsoft this summer for software engineering and product management.

### Cost

\$175 per student for all classes.

### Contact information:

Feel free to send any questions to [shreya.kochar@wellesley.edu](mailto:shreya.kochar@wellesley.edu) or [sreerama.a@northeastern.edu](mailto:sreerama.a@northeastern.edu).

### Structure

We will be using Google classroom, so every student is expected to have a gmail account and access to the internet. We will also be meeting over Zoom daily for lecture and to discuss the relevance of the topics of the day. Shreya and Aneesha will be hosting several after-hour sessions to get to know students as well, in addition to providing support with homework and talking about future goals.

### Class Schedule

Note: We understand that people may have issues making days such as Christmas and New Years. For this reason, we will be recording sessions and sending them out to students who happen to miss class.

Class Number	Dates	Topic	Homework
1	Monday (12/21)	Discussion around what computer science is, what data science is, and why people talk about them so much Parents are welcome to this session to learn about the program and ask any questions as well	N/A
2	Tuesday (12/22)	Basic Python I: PythonTutor website introduction and debugging, basic syntax, introduction to variables, discuss different data types, printing	PSET 1: 3-4 problems on very basic Python coding <b>Due by next class</b>
3	Wednesday (12/23)	Basic Python II: more basic Python practice, basic introduction to booleans, introduction to basic useful functions (type function, len function, etc.)	PSET 2: 3-4 problems utilizing these skills <b>Due by next class</b>
4	Thursday (12/24)	Introduction to conditionals and more on booleans	PSET 3: 3-4 problems utilizing these skills

			<b>Due by next class</b>
5	Friday (12/25)	Functions: difference between defining functions vs calling them, parameters, returns vs. void functions	PSET 4: 3-4 problems utilizing these skills <b>Due by next class</b>
6	Monday (12/28)	Loops I: More on returns vs. print (student time to ask questions), introducing loops (for vs. while), lists, string splicing	PSET 5: 3-4 problems utilizing these skills <b>Due by next class</b>
7	Tuesday (12/29)	Loops II: More lists and strings, (student time to ask questions), practice problems on loops	PSET 6: 3-4 problems utilizing these skills <b>Due by next class</b>
8	Wednesday(12/29)	Basic nested loops, more of a flex day	PSET 7: 3-4 problems utilizing these skills <b>Due by next class</b>
9	Thursday (12/30)	Work on Project in breakout rooms, feel free to ask questions	N/A
10	Friday (01/01)	Project presentation day	N/A