



Coding: Python - An Introduction
Course Leader: Ivan Ruby, Concordia University, Montreal
SummerUp 2022
Course Description

Course Name: *Coding: Python (An Introduction)*

Who Should Apply: You are a Black student, Ontario resident, who will be in Grade 11 or Grade 12 in September 2022, and you are keen to develop your skills in writing code. For this particular coding course, we will provide priority admission to specific student groups. SummerUp 2022 offers two other coding courses which are wide open to all eligible students. However, this particular coding course is a ‘research project’ and is available to the following ranked groups of applicants:

1st: *Leadership by Design* (LBD) students who are in cohorts C21 & C20, and who are enrolled in the PursueSTEM activity.

2nd: Other eligible *Leadership by Design* students.

3rd: All other applicants.

Visit the SummerUp Website: <https://lileaders.com/summerup/>

What

Coding: Python (An Introduction) provides an opportunity to students who will be in Grades 11 and 12 in September 2022 to learn the fundamentals of coding using Python. This programming language is widely used to introduce learners to coding and is well regarded in fields such as data management and analysis, finance, science, and engineering.

[Toronto has developed into a major technology hub](#) and this spells the expansion of job opportunities in the city’s digital technology sector. The student planning a career in STEM fields such as engineering, health science, all sciences, finance, and digital technology would be well advised to take this coding course. Besides, coding lets you do cool things at school such as design websites and games.

We are presenting this coding opportunity to students who are new to coding, and to those who have a basic grounding in coding and wish to reinforce their knowledge. Take this course and, thereafter, continue to expand your knowledge in Python until you acquire a level of proficiency that sets you up for the post-secondary opportunity you select. As well, this course will enable you to enhance your coding skills knowing it will widen your post-secondary options and expand your career opportunities. However, you need not plan a specific career in programming to find benefits from coding know-how. Whatever career you pursue...be it in business, medicine, engineering, entrepreneurship, the arts, or social sciences...your working knowledge of coding will serve you well. Enter your post-secondary studies or the job market with proficiency in coding and you enter with a distinct advantage.

Should you complete this python-language course, you will have the opportunity to subsequently enroll in an additional course (*Arduino: Finding Solutions*) which teaches how to use your coding skills to identify a real-world problem, design, and prototype a solution, and showcase it. This unique course *Arduino: Finding Solutions*, will be offered to eligible PursueSTEM and other Leadership by Design (LBD) students in fall 2022. [An Arduino is an open-source electronics platform](#) based on easy-to-use hardware and software.

Why this Matters

Generally, this SummerUp course in *Coding: Python – An Introduction* will enable you to:

- develop relevant personal and career skills such as problem-solving, creative thinking and critical judgment,
- develop a keen appreciation of modern-day career opportunities such as automation, simulation, forecasting, and data analytics,
- enhance your career pathway in fields such as research, business, medicine, STEM, and social sciences, and
- improve your prospects for admission into selected post-secondary studies.

Specifically, at the end of this SummerUp course in *Coding: Python* you should be able to:

- describe the process for creating computer programs,
- create and execute Python scripts,
- apply basic elements of the Python programming language (control, selection and repetition statements, variables of simple data types, input/output, and functions) to solve problems, and
- apply strategies for troubleshooting (or debugging) Python scripts

Admissions Information

Who: You are a Black student, Ontario resident, who will be in Grade 11 or Grade 12 in September 2022, and you are keen to develop your skills in writing code. For this particular coding course, we will provide priority admission to specific student groups. SummerUp 2022 offers two other coding courses which are wide open to all eligible students. However, this particular coding course is a ‘research project’ and is available to the following ranked groups of applicants:

1st: *Leadership by Design* (LBD) students who are in cohorts C21 & C20, and who are enrolled in the PursueSTEM activity.

2nd: Other eligible *Leadership by Design* students.

3rd: All other applicants.

In entering this course, you must have a suitable computer and reliable Internet access. A smartphone is not a suitable device for this program. As well, you must commit to attending all scheduled learning sessions (see dates and times below).

Admissions Process: All eligible applicants will be considered for admission. Refer to application deadlines at <https://lileaders.com/summerup/>. Applicants must attend an orientation session.

Start/Stop Dates: *Coding: Python (An Introduction)* will be offered over ten sessions starting Tuesday, July 19 and ending Thursday, August 4, 2022. Each 90-minute session will commence at 4.30 p.m. and end at 6.00 p.m.

Meeting Pattern: Here are the meeting dates for this 10-session coding course:

Week 1: Tuesday, July 19; Wednesday, July 20; Thursday, July 21 (4.30 to 6.00 p.m.)

Week 2: Tuesday, July 26; Wednesday, July 27; Thursday, July 28 (4.30 to 6.00 p.m.)

Week 3: Tuesday, August 2; Wednesday, August 3; Thursday, August 4 (4.30 to 6.00 p.m.)

Week 4: Tuesday, August 9 (4.30 to 6.00 p.m.)

Mode: Online. Students must have a suitable computer and reliable Internet access. A smartphone is not a suitable device for this course.

Faculty

Ivan Gonçalves Dos Santos Ruby

Ivan Ruby is a Ph.D. Candidate in Educational Technology (Doctor of Philosophy [Ph.D.] Education), at Concordia University, Montreal, Quebec. He is from Mozambique and has always been passionate about computer programming and the opportunities it can provide for individual and community empowerment.

His current research interests are in understanding the difficulties novice learners face in computer programming and exploring alternatives to overcome these difficulties.



In delivering this coding course, Ivan Ruby seeks to help students develop a ‘coding mindset’. [In a December 2018 article](#) by Ivan Ruby and his Ph.D. supervisor, Dr. Ann-Louise Davidson, the authors wrote:

We want to propose that beginner coders could start with an attractive and engaging activity but should also explicitly develop what could be called “the coding mindset.”

This mindset represents a gradual development of computer programming knowledge and strategies but also includes analyzing systems, solving problems, persisting in front of errors, being resourceful, and collaborating.

To teach the coding mindset, educators need to include more explicit foundational computer science concepts and competencies, such as [creating algorithms to solve problems, debugging existing programs, and designing systems to accomplish new tasks or gather data](#).

Special Note:

SummerUp is a program designed to serve and support the personal and professional aspirations of Ontario’s Black youth. The program is developed and presented by the **Lifelong Leadership Institute** (LLI), and it is primarily funded by the Ontario Ministry of Education. The quality of the SummerUp experience is assured by the contributions of a diverse group of individuals, educators, institutions, and corporations – all of which are committed to championing the well-being, development, and advancement of Black youth.

The Lifelong Leadership Institute also offers the **Leadership by Design** program which provides extensive leadership-development opportunities to Black youth.

The **SummerUp** 2022 program is primarily funded by the Ontario Ministry of Education.

