

PYTHON FUNDAMENTALS

TOTAL PD HOURS: 6

Option 1: Full day Pd

Option 2: Three 90 min sessions

Why Python?

Python is an interpreted text based general purpose programming language, which is **a key requisite of the 7-10 Digital Technologies Curriculum**. Python is also the only professional programming language that was designed with beginners in mind, it is intuitive and easy to use

What are the student outcomes?

Students learn about core concepts of programming: branching, iteration and functions. They apply these to create four applications which perform the following:

- Simulation of an intelligent conversation
- User Authentication using passwords and/or secret questions
- A game where user guesses a number and the program informs the user of his accuracy over time
- A program that encrypts and decrypts messages using the Caesar Cypher

What is our pedagogical approach?

The content delivery is enhanced with a pedagogy developed specifically for the learning and teaching of coding and robotics. Throughout the course students will learn to:

- Create algorithms which can be represented in the form of flowcharts, which are in turn easy to translate to code.
- Build programs in separate stages each of which can be tested
- Get insight and understanding from error messages, vastly improving their troubleshooting abilities

Topics Covered:

1. Python Interpreter Expressions
Variables and Data Types
2. String Concatenation and Replication
3. User Inputs
4. Loops and Iteration
5. if, Else statements
6. User Authentication
7. While Loops
8. Guess the number game
9. Functions
10. Caesar Cypher Encryption
11. Caesar Cypher Decryption

Included Support Materials:

- Course PDF booklet with each activity, program and assessment
- Assessment Marking sheets for each of the 3 assessments.
- **Digital Technologies Curriculum Links document**
- Online course access with a video tutorial for each lesson
- Online course access with program file solutions to each activity and assessment

What you will be able to do with this PD:

- You will be able to deliver between 11 -15 hours of structured class activities
- You will be able to assign and mark three assessments which will assess your students conceptual understanding as well as implementation
- You will be able to meet and exceed **4 out of 10 Yr 7 - 8 content descriptors from the Digital Technologies Curriculum**

ABOUT TECHXELLENT PD:

Techxellent creates courses in Scratch, Python, GameMaker or Arduino to meet the needs of the **Digital Technologies curriculum**. Our PD's give you free access to our courses and all the resources and training you need to deliver them in your classroom. On every topic that we offer, we provide a two year road map to becoming an expert.

What you get with every PD:

- Access to an online course where everything you learned is available to you in easy to follow online video tutorials
- Access to advanced learning resources that go beyond the material covered in the PD
- A realistic roadmap to achieving excellence in the given technology platform

Format options:

1. Teacher only training for half day or full day
2. A full day with 3 hours of teacher training and 3 hours of teaching your students with you

Pricing options:

- 3 hour rate is \$500+GST
- Daily rate is \$800+GST

GET IN TOUCH

If you would like to find out more about how Techxellent can facilitate the teaching and learning of STEM subjects at your school, please contact us on **0413 101 912** or email us on sanjin@techxellent.com.au, or visit our website at www.techxellent.com.au.

HOW TO IMPLEMENT THIS COURSE?

Thus far you have been presented with a course designed to meet the needs of the Digital Technologies Curriculum which consists of a learning sequence of lessons each of which is available to you in the form of a video tutorial and a document, you also have access to assessments and marking schemes. Now the only choice left to be made is how to implement this course in your classroom. Here are four options that take into account different levels of staff expertise:

1. Full Day PD

This option is ideal for teachers with an engineering or IT background that already have some experience teaching coding in their classroom.

Over the whole day PD your teachers learn the core theoretical concepts of Python and quickly grow in confidence and competence. Upon the completion of the PD teachers are ready to start teaching their class the very next day.

Total Cost:

\$890+GST Full Daily rate

2. Two or more Half Day PD's

This is our most popular format, it entails your teachers having an after school PD focused on the first half of the course. Teachers then go out and teach the first 5-7 lessons before having another PD where they share their experience and learn how to make small adjustments to their pedagogy and also clear up any misconceptions in their understanding of the subject matter.

Total Cost:

\$450+GST for each 90 minute Session

3. After School PD + 3 team taught lessons

Diving into teaching coding or robotics for the first time is not easy, especially for teachers that are yet to achieve mastery over content. No problem!, we provide the PD and a running start, Up to three of your teachers will team teach the crucial first 3 lessons with a Techxellent expert teacher and then take over teaching the course once both they and their students are competent and confident with the core topics.

Total Cost:

\$1900+GST (Includes 4 visits to your school)

4. Resource Creation

We can create supplementary tutorials to make our course fit an integrated curriculum combining coding with mathematics or any of the sciences. We can also create formative and summative assessments appropriate for students and help you with the grading. Creating and marking coding assessments for the first time tends to be a real challenge as student ability in coding tends to be distributed in a double hump curve (very few average students with a majority either doing really well or struggling)

Total Cost:

\$80+GST per hour

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