



## Tronics Online: *Live and Interactive*

2018 Semester 2 Series 2: Tronics-Online – Years 5, 6 and 7

4.30 pm – 6.30 pm

Fee: \$268

### Python Fundamentals

Imagine a world without programming: no internet, no mobile phones and no video games. Without programming, even airports and electricity grids become dangerous and unmanageable. Still the future of programming is a lot more exciting than the past: artificial intelligence, virtual reality and cutting-edge scientific research using supercomputers. And for you this future has to start somewhere, and Python is a really good place to start. It is a powerful programming language that was designed to be easy to learn. In this program you will learn how to use Python to write programs that have conversations with people, draw fractals and amazing geometric shapes, measure memory and sports performance and discover all the palindromes in the English language.

#### What you need:

- Computer/laptop
- Internet connection
- Notepad and pencil case
- Headphones or speakers

### 15 November

#### Session 1: Introduction to Python (Inputs, Variables, Loops and If Statements)

In this session we will introduce Python and start off by creating some variables (strings floats and integers) and then proceeding to do some algebra and string operations. With the concept of variables under our belt we will introduce loops and if statements to build a customized greeting program and do some repeating mathematical operations (times tables and factorization)

### 22 November

#### Session 2: Functions and Visual Program Outputs

In this session we will build on what we learned to create stunning geometric patterns and begin to understand shapes in terms of computer algorithms. We will start by creating polygons, then assembling them into patterns like honeycombs and finally we will learn about functions which allow us to recycle code and even to do something called recursion which is used to create all the amazing graphics you see in the Pixar movies.

# The BRAINWAVES Club

**Online: *Live and Interactive***

**2018 Semester 2 Series 2: Tronics-Online – Years 5, 6 and 7**

**29 November**

## **Session 3: Building Applications in Python**

By the time this session begins we are getting pretty fluent with the basics which allows us to create some really powerful and entertaining programs. We will start with a reaction time program which measures how fast you can react to a GO signal in milliseconds. We will then go on to create a memory training game in which you have to guess sequences of numbers or words. We will finish off with a program which loads all the words in the English language and then discovers which ones are palindromes.

**6 December**

## **Session 4: Text File Analysis**

In this session we are going to take the importing of text files to the next level. We will import entire books (famous ones that you have probably read or heard of) and then we are going to create algorithms which count the most popular words and discover what words are most popular, where the book takes place and who the protagonist is.

## **About the club leader: Sanjin Dedić**

**Sanjin** is a teacher and a robotics engineer with a background in product development. His main passion is presenting advanced programming and robotics in a way that can be embraced and understood by young people, especially primary school students. In doing so he hopes to inspire young and imaginative minds to join in creating the hi-tech world that is developing around us.

