



Dear parents and students,

STEM Centre Australia is excited to offer our 'Introduction to Programming - Python' course!

**Are you interested in joining our voyage of leading-edge learning and discovery?**

#### **Why STEM is important?**

According to the Australian Government Industry Employment Projections Report (2015), over the next five years, employment is predicted to increase in professional, scientific and technical services by 14 per cent and in health care by almost 20 per cent. The Australian Bureau of Statistics has estimated that some STEM-related jobs, such as information and communication technologies professionals and engineers, have grown at about *1.5 times the rate of other jobs* in recent years.

International research shows that building STEM capacity across the population is critical in helping to support innovation and productivity *regardless of occupation or industry*. Consistent with this research, industry surveys show that STEM literacy is increasingly becoming part of the core capabilities that Australian employers need.

A renewed national focus on STEM in school education is critical to ensuring that all young Australians are equipped with the necessary STEM skills and knowledge that they will need to succeed.

## How we embody STEM concepts in our courses

STEM Centre Australia develops courses and delivers engaging learning experiences in STEM-related fields targeted towards school-aged and tertiary students, as well as educators. Aligned with the Australian Curriculum, STEM Centre Australia offers several new, innovative and exciting courses to boost our students' knowledge, interest and awareness in highly sought-after STEM fields.

At STEM Centre Australia, we know that STEM is about implementing learning strategies that engage learners in authentic and collaborative problem solving, whereby solutions are created by drawing upon deep disciplinary knowledge of science, technologies and mathematics. Additionally, STEM learning encourages both critical and creative thinking. These skills are essential in all 21st century occupations. Our approach to STEM education optimises the development of STEM-capable individuals; people who thrive personally and professionally, make informed decisions in their daily life and are empowered to follow STEM careers and lead innovation at any age.

The STEM Centre Australia team consists of experts from leading Australian industries and institutions within the disciplines of science, technology, engineering, mathematics and education. In alignment with the National STEM School Education Strategy, we have developed a hands-on approach to scientific, mathematical and technological literacy, utilising learning modules, appropriate self- and peer-assessments and practicals.

## Introduction to Programming – Python – Phase 1 (Beginner)

### Course Description

“Introduction to Programming – Python” is a comprehensive course aimed at developing deep-rooted understanding of the fundamentals of programming and coding for beginners and those looking to enhance their programming skills.

The course is designed and structured to promote clear thinking and problem solving, whilst utilising programming tools to translate ideas into well-defined coding routines. Python, a well-recognised and heavily used programming language in the industry, offers a suitable learning platform for young coders that need access to a broad variety of coding resources, without exposing them to unnecessarily complex syntax requirements.

In particular, the course emphasizes on several important and generic programming concepts such as variables, functions, algorithms, simple data structures, objects and object-oriented programming. All lessons are conducted by qualified and experienced professionals within relevant leading Australian industries, thus providing a real-life approach to programming and coding. More broadly, this course will foster and nurture students' curiosity towards STEM, ensuring the development of deeper engagement and learning.

### Course Structure

Students will be placed in an appropriate age- and skill-matched group, ensuring the best possible success in achieving expected learning outcomes, as follows:

1. Foster and nurture students' curiosity towards STEM, ensuring the development of deeper engagement and learning
2. Understand the core concepts of software development, programming- in particular Python, including syntax, loops and recursion statements, conditionals, sub-routines, variables, data-type and object oriented programming
3. Develop and implement fundamental mathematical and logical reasoning and algorithm flow
4. Learn and gain practical experience with interactive and guided sessions that often go beyond the course notes and tailor the experience to individual students
5. Synthesise and implement new learning; undertake critical and creative thinking; identify and solve problems
6. Work effectively individually and as a team in project design and evaluation tasks

## Introduction to Programming – Python – Phase 2 (Intermediate)

### Course Description

“Introduction to Programming – Python – Intermediate” is an ideal course for those students who have already gained an initial exposure to Python programming and are looking to challenge themselves further.

The course is designed and structured to align with Australia Digital Technologies curriculum while following a Project-Based Learning (PBL) approach that engages students in rich and authentic learning experiences. We have established a strong commitment to innovation and contemporary pedagogies to teach advanced concepts and practices in programming through this course.

As Python is a well-recognised and heavily used programming language in the industry, we have designed several exciting projects which emphasise its importance in an interactive and hands-on manner, including:

- Graphical User Interface (GUI) development using Python
- Scientific and Graphics Calculator Application development using Python
- Microbit based integrated sensor system development using Python
- Game development using Python

More broadly, this course will enhance the students’ ability and skill set in applications-based advanced project development, while exposing to “systems development lifecycle” which is crucial for future programmers.

## Introduction to Programming – Python – Phase 3 (Advanced)

### Course Description

“Introduction to Programming – Python – Advanced” is an ideal course for those students who had already gained an initial exposure to Python programming, functions, object-oriented programming (OOP) and looking to learn by real life hardware implementation and application.

The course is designed and structured to align with Australia Digital Technologies curriculum while following a Project-Based Learning (PBL) approach that engages students in rich and authentic learning experiences. We have established strong commitment to innovation and contemporary pedagogies to teach advanced concepts and practices in programming through this course.

Further emphasising the importance in excelling Python; a well-recognised and heavily used programming language in the industry, we have designed several exciting projects for students to undertake in an interactive and hands on manner, such as;

- Programming using Microbit based integrated sensor system development with various sensors
  - Temperature sensing
  - Wind-speed data
  - IoT applications
  - Smart-phone app initialization and more
- Game development using Python

More broadly, this course will enhance the students’ ability and skills set in applications based advanced project development, while exposing to “systems development lifecycle”, which is crucial for future programmers.

*An exciting introduction to the world for programming - enriching your child with the tools and resources to master the discipline of coding. The course is designed to allow every student to discover their own pace while providing the solid foundations for future development. Your child will benefit not only from the engaging and interactive sessions with our tutors, but also from the well-structured course notes designed to promote self-regulated and active learning strategies.*

All lessons are conducted by qualified and experienced professionals within relevant Australian industries and institutions, thus providing a real-life approach to STEM-related fields.

## Course information

### FACE-TO-FACE LESSONS

#### Phase 1 (Beginner) – School years 6 – 12

- 6 weekly sessions x 1.5 hr per session
- Starting in School Term 4:
  - Group 1: Starting 1st November 2020, Sundays 9.30 am – 11.00 am
- Full course fee: \$249
- **Registration closes by 23rd October 2020**

#### Phase 2 (Intermediate) – School years 6 – 12

- 6 weekly sessions x 1.5 hr per session
- Starting in School Term 4:
  - Group 1: Starting 1st November 2020, Sundays 11.00 am – 12.30 pm
- Full course fee: \$249
- **Registration closes by 23rd October 2020**

#### Phase 3 (Advanced) – School years 6 – 12

- 6 weekly sessions x 1.5 hr per session
- Starting in School Term 4:
  - Group 1: Starting 1st November 2020, Sundays 1.00 pm – 2.30 pm
- Full course fee: \$249
- **Registration closes by 23rd October 2020**

### Location

STEM Centre Australia Campbelltown Centre  
27 Montacute Road  
Campbelltown SA 5074

### ONLINE LESSONS

#### Phase 1 (Beginner) – School years 6 – 12

- 6 weekly sessions x 1.5 hr per session
- Starting in School Term 4:
  - Group 1: Starting 2nd November 2020, Mondays 5.30 pm – 7.00 pm
- Full course fee: \$249
- **Registration closes by 26th October 2020**

#### Phase 2 (Intermediate) – School years 6 – 12

- 6 weekly sessions x 1.5 hr per session
- Starting in School Term 4:
  - Group 1: Starting 3rd November 2020, Tuesdays 6.00 pm – 7.30 pm
- Full course fee: \$249
- **Registration closes by 26th October 2020**

## ONLINE LESSONS (continued)

### Phase 3 (Advanced) – School years 6 – 12

- 6 weekly sessions x 1.5 hr per session
- Starting in School Term 4:
  - Group 1: Starting 3rd November 2020, Tuesdays 7.30 pm – 9.00 pm
- Full course fee: \$249
- **Registration closes by 26th October 2020**

### Features of Online Classes

- Live Online Classes via Zoom Video Conferencing App
- Easy to use Learning Management System (LMS)
- Fees include the delivery of course handbook within the Adelaide metropolitan area.

### How to Enrol

- Step 1: Complete the Online Enrolment Form [HERE](#).
- Step 2: Pay STEM Centre Australia the course fee in advance by **23/10/2020 (face-to-face lessons) or 26/10/2020 (online lessons)**. An invoice will be sent to you with the payment details once the enrolment form is completed.

We look forward to guiding your child on this voyage of discovery, which will see them excel well beyond their regular school classroom. With limited places available, secure your child's future today by contacting us on 0412 258 554 or [info@TutorsSA.com.au](mailto:info@TutorsSA.com.au).

Kind regards,  
*STEM Centre Australia Team*

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