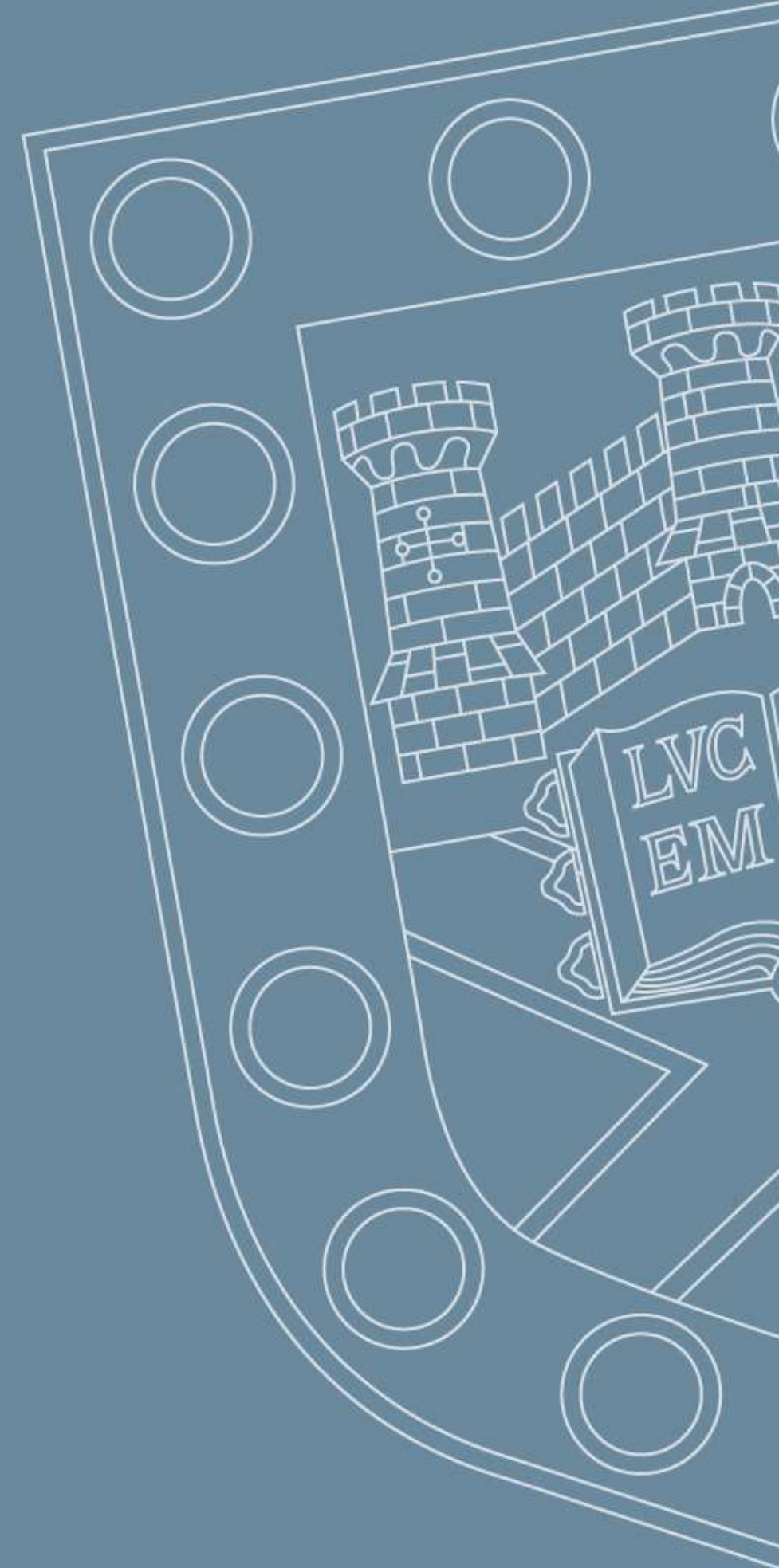# Python programming

Introducing Python

INTRODUCING PYTHON

What is a programming language?

There are very many programming languages. Each of them is,

- An invention

- A tool

- A standard

- An abstraction

INTRODUCING PYTHON

An invention – languages for programming

Early digital computers, and other programmable machines, had unique codes that controlled them.

In the late 1950s Grace Hopper, a mathematician with the US Navy, led a team that created the first machine independent programming languages.

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Tool or machine?

"A tool is usually more simple than a machine; it is generally used with the hand, whilst a machine is frequently moved by animal or steam power. "

Charles Babbage

INTRODUCING PYTHON
Programming tools

Languages for programming computers were developed as tools to translate software designs into runnable codes.

These first translation programs were called compilers.

Today programmers have many specialist tools.

Compilers, interpreters, editors, debuggers…

INTRODUCING PYTHON
Standardised languages

Most, but not all, programming languages conform to a published standard.

This has several benefits.

For example, it ensures programs written in the language can be used on a variety of different computer systems.

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Programming languages provide useful abstractions

Digital computers process ones and zeros, that's all.

Programming languages allow numbers, words, even pictures and sounds, to be manipulated in ways that make sense to humans.

INTRODUCING PYTHON
The grammar of Python

Computer programs are made up of statements.

```
greeting = "Hello, world!"
print(greeting)
```

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The Python interpreter

Python is an *interpreted* programming language.

When we run a Python program the interpreter reads each line of the program text and converts it to computer instructions.