

## **BSc Creative Computing**

### **Programme Specification**

**Awarding Institution:**

University of London (Interim Exit Awards made by Goldsmiths' College)

**Teaching Institution:** Goldsmiths, University of London

**Final Award:**

BSc (Hons) Creative Computing

BSc (Hons) Creative Computing with Work Experience

MSci Creative Computing

MSci Creative Computing with Work Experience

**Programme Name:**

BSc (Hons) Creative Computing

BSc (Hons) Creative Computing with Work Experience

MSci Creative Computing

MSci Creative Computing with Work Experience

MSci Creative Computing (Virtual and Augmented Reality)

MSci Creative Computing (Virtual and Augmented Reality) with Work Experience

**Total credit value for programme:** BSc 360, MSci 480

**Name of Interim Exit Award(s):**

Certificate of Higher Education in Creative Computing

Diploma of Higher Education in Creative Computing

**Duration of Programme:**

3 years full-time (BSc Creative Computing)

4 years full-time (BSc Creative Computing with Work Experience)

4 years full-time (MSci Creative Computing)

5 years full-time (MSci Creative Computing with Work Experience)

6 years part-time (BSc Creative Computing)

7 years part-time (BSc Creative Computing with Work Experience)

8 years part-time (MSci Creative Computing)

9 years part-time (MSci Creative Computing with Work Experience)

**UCAS Code(s):** G452

**HECoS Code(s):**

(100366) Computer Science (50%)

(100361) Creative arts and Design (50%)

**QAA Benchmark Group:** Computing; Art and Design

**HEQ Level of Award:** Level 6 (Level 7 MSci)

**Programme accredited by:** Not applicable

**Date Programme Specification last updated/approved:** February 2023

**Home Department:** Computing

**Department(s) which will also be involved in teaching part of the programme:** Not applicable

## **Programme overview:**

The BSc/MSci in Creative Computing is designed to prepare students to become specialist technology creatives within the creative industries. Graduates will be both technical experts and creative thinkers and makers. Creative Computing prepares students for a range of technical and creative careers within media, art, games and related areas by providing the necessary knowledge, skills and creative freedom to develop new and critically informed ideas.

The programme has two core components. The first equips students with a range of key technical skills in programming for audio and visual media. These skills are delivered at the same level as traditional courses in computer science but form a specialist audio-visual perspective. The second core component is the application of these skills within practical projects – creating software applications, websites, interactive audio-visual artworks and games. In this way, students are encouraged to develop practical and theoretical knowledge through experiencing the tools and techniques of creative computing and developing their own unique portfolio of technical, creative and critically informed practice.

The programme has been developed to encompass the unique ethos of the Department of Computing that combines technical rigour with a creative, critical and socially engaged approach to studying computing. We have a diverse pedagogical approach that includes considerable practice-based project work in addition to technical and theoretical learning. Graduates will not only be technical and creative professionals, but also have the expertise and confidence in developing new technology that is socially beneficial and ethically informed.

## **Programme entry requirements:**

Successful applicants will be expected to have at least BBB at A2 level, or equivalent.

An A2 level qualification, or equivalent, relating to science, technology and mathematics is preferred. However, we encourage applications from those without a formal qualification in these areas who can demonstrate relevant knowledge, skills and experience.

All applicants may be called for an interview, at which time they may be asked to take a computer aptitude test. Applicants should have a grade B in GCSE Mathematics, or equivalent.

Applicants whose first language is not English must have received a score of 6.0 or more in the IELTS (or equivalent) examination for written English.

Applications cannot be made directly for admission to the MSci. Admission to the MSci year is only offered by progression from Level 6 of the BSc and is dependent on achieving an equivalent of a 2.1 or above at Levels 5 and 6 of the programme.

## Programme learning outcomes

The aim of this programme is to produce graduates who are independent, creative and reflective computing practitioners. Our graduates should have:

- knowledge of computing technologies across a range of core and specialist topics
- understanding of the contexts in which computing technologies subsist in industry, with an emphasis on the creative industries
- the ability to design and implement software systems
- the ability to work independently and in groups and reflectively evaluate their own work.

Students who successfully complete the **Certificate of Higher Education** will demonstrate the following knowledge, understanding, skills and personal attributes:

## Knowledge and understanding

Code	Learning outcome	Taught by the following module(s)
A1	Basic knowledge of a programming language and its features	This will primarily be taught in the first-year programming modules via lectures and programming exercises.
A2	Knowledge of contemporary practice in at least one subdomain of computing	This will be taught in Designing Digital Interactions and specialist modules for individual programmes.
A3	The mathematical and computational principles underlying computing with sound and image	This will be taught in Graphics 1 and Sound and Signal 1 modules. Teaching will be via lectures and practical work. Assessment will be via practical coursework.

## Cognitive and thinking skills

Code	Learning outcome	Taught by the following module(s)
B1	Computational Problem solving	This will primarily be taught in the first-year programming modules. Teaching will be via problem solving and programming exercises and assessment will be via practical programming coursework and examination. This skill will be applied across the programme.
B2	Analyse, to a basic level, the requirements of computing software from a number of perspectives (technical, creative, user-centred, social and business) and design a basic software solution based on this analysis	This will be taught in the first-year specialist modules. This will be taught by presenting examples, and students undertaking practical work to a specific brief.

## Subject specific skills and professional behaviours and attitudes

Code	Learning outcome	Taught by the following module(s)
C1	Program basic computer software	This will be taught in the first-year programming module and applied across the curriculum. This will be taught primarily through practical programming work.
C2	Develop complete, though limited computing projects, individually and in groups	This will be taught by students doing practical work with guidance from staff in the practical modules in the first year.

## Transferable skills (Elements)

Code	Learning outcome	Taught by the following module(s)
D1	Have core numeracy, literacy and IT skills to a graduate level.	Numeracy and IT skills are core to a computing degree and will feature throughout the curriculum.
D2	Be able to effectively present themselves and their work orally and in writing to a professional level.	Assessment throughout the programme will include considerable written and oral presentation.

Students who successfully complete the **Diploma of Higher Education** in Creative Computing will be able to:

## Knowledge and understanding

Code	Learning outcome	Taught by the following module(s)
A1	<p>Knowledge of a range of topics in computing including web technologies, multimedia, networking, databases and a number of more advanced topics.</p> <p>Knowledge of most will be sufficient to apply to moderately complex application; some will be studied in greater depth.</p>	<p>A range of specialist modules including:</p> <ul style="list-style-type: none"> <li>• Designing Digital Interactions Data</li> <li>• Dynamic Web Applications</li> </ul> <p>Teaching will be via lectures and practical lab work. Assessment will be via examinations and practical coursework</p>
A2	<p>Programming languages, their features and the differences between languages. Knowledge will be sufficient for professional level software development.</p>	<p>This will primarily be taught in the first- and second-year programming and specialist technical modules. Specialist technical modules will teach languages appropriate to the domain (sound, image, embedded systems etc.) and compare them to other languages and general programming language concepts. Teaching will be via lectures and practical programming work. Assessment will be via written reports</p>

		on practical programming coursework.
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## Cognitive and thinking skills

<b>Code</b>	<b>Learning outcome</b>	<b>Taught by the following module(s)</b>
B1	Apply computational thinking to the design and implementation of moderately complex computing systems	This will primarily be taught in the first- and second-year programming and project modules. This skill will be applied across the programme.
B2	Analyse and evaluate moderately complex computing systems and technologies with reference to efficiency, correctness and suitability to users' needs	This will be taught across the curriculum, but primarily in the programming and specialist technical modules. Students will learn these skills primarily through guided practical work in lab settings and independent project work. They will be assessed via practical programming course work and projects.

## Subject specific skills and professional behaviours and attitudes

Code	Learning outcome	Taught by the following module(s)
C1	Apply a small number of specific technologies, methods and tools to the analysis, design and implementation of software. Some technologies will be known to a basic level and others in greater depth.	<p>A range of specialist courses including:</p> <ul style="list-style-type: none"> <li>• Designing Digital Interactions</li> <li>• Dynamic Web Applications</li> <li>• Graphics</li> <li>• Sound and Signal</li> <li>• Creative Computing Projects</li> </ul> <p>Students will do practical lab work and coursework applying these technologies in a number of contexts. They will be assessed via practical coursework.</p>

## Transferable skills

Code	Learning outcome	Taught by the following module(s)
D1	Be able to reflect on and evaluate their work	Creative Computing Projects and other second year modules.
D2	Work in teams to plan and execute small-scale projects	Creative Computing Projects and other modules requiring group work.

Students who successfully complete the **BSc (Hons) Creative Computing** or the **MSci Creative Computing** will be able to:

## Knowledge and understanding

Code	Learning outcome	Taught by the following module(s)
A1	A broad range of advanced topics in computing including web technologies, multimedia, networking, databases and a number of more advanced topics. Knowledge of most will be sufficient to apply to moderately complex application; some will be studied in greater depth.	A range of specialist modules including: <ul style="list-style-type: none"> <li>• Creative embedded systems</li> <li>• Graphics 2</li> <li>• Sound &amp; Signal 2</li> <li>• Dynamic Web Applications</li> <li>• 3rd year options</li> </ul>
A2	Programming languages, their features and the differences between languages. Knowledge will be sufficient for professional level software development	This will primarily be taught in the first- and second-year programming and specialist technical modules. Specialist technical modules will teach languages appropriate to the domain (sound, image, embedded systems etc.) and compare them to other languages and general programming language concepts. Teaching will be via lectures and practical programming work. Assessment will be via written reports on practical programming coursework.
A3	Uses of digital media in the creative industries and of the aesthetic principles used by digital content creators, sufficient to create professional level work	This will be taught in the first- and second-year Creative Computing Project modules.
A4	The mathematical and computational principles underlying the representation and manipulation of digital media.	This will be taught in the Graphics 2 and Sound & Signal 2 options, and third-year option modules.



Code	Learning outcome	Taught by the following module(s)
A5	Analyse advanced computer science arguments and synthesise them into coherent discussion (MSci only)	Taught by Advanced Topics in Computing 2.

## Cognitive and thinking skills

Code	Learning outcome	Taught by the following module(s)
B1	Apply computational thinking to the design and implementation of moderately complex computing systems	This will primarily be taught in the first- and second-year programming and specialist technical modules. This skill will be applied across the programme but particularly in Creative Computing Projects and the final year project.
B2	Analyse and evaluate moderately complex computing systems and technologies with reference to efficiency, correctness and suitability to users' needs	This will be taught across the curriculum, but primarily in the programming and specialist technical modules, Creative Computing Projects and the final year project.
B3	Propose, plan, research and evaluate a significant piece of project work, under supervision of an expert.	Creative Computing Projects and final year project module.
B4	Computational problem solving	This will primarily be taught in the first- and second-year programming and specialist technical modules. This skill will be applied across the programme but particularly in Creative Computing Projects and the final year project.
B5	Critical awareness and analysis of creative work, to the standards of academic study.	This will be taught in the first- and second-year Creative Computing Projects modules.
B6	Implement programs based on advanced algorithms found in research papers (MSci only)	Taught in Advanced Topics in Computing 2.

## Subject specific skills and professional behaviours and attitudes

Code	Learning outcome	Taught by the following module(s)
C1	Specify, design and implement a substantial and complete computer software system with reference to relevant user or artistic requirements	This will be taught in the Creative Projects modules and the final year project
C2	Program computer software to a professional level	This will be taught in the first- and second-year programming modules, specialist technical modules, and applied across the curriculum and in particular in the final year project
C3	Apply specific advanced technologies, methods and tools to the analysis, design and implementation of software. Some technologies will be known to a basic level and others in greater depth.	Third-year options
C4	Acquire and manipulate digital media and assets to a professional level	This will be taught in the first-year modules Creative Computing, Graphics 1 and Sound and Signal 1, projects modules and third-year option modules.
C5	Execute a significant piece of creative work, under supervision of an expert	Final year project module
C6	Read and understand research papers and be able to write discussions about them (MSci only)	Level 7 Options and Project

## Transferable skills (Elements)

Code	Learning outcome	Taught by the following module(s)
D1	Have core numeracy, literacy and IT skills to a graduate level	Numeracy and IT skills are core to a computing degree and will feature throughout the curriculum. Students will be required to document, describe and evaluate their work both

Code	Learning outcome	Taught by the following module(s)
		in traditional reports and on web pages, culminating in their final year dissertation.
D2	Be able to reflect on and evaluate their work	The final year project will have specific learning outcomes on reflection and self-evaluation
D3	Be independent and creative learners and workers	Our degree programmes have a particular focus, unusual in Computing courses, on independent and creative work, starting with first-year programming and continuing in Creative Computing Practice and culminating in the final year project. Students will be expected to tackle complete, independent projects of their own devising from the very beginning and will be expected to independently research and learn specialist topics.
D4	Be able to work effectively in groups	Many modules will include group work.
D5	Be able to present themselves and their work orally and in writing to a professional level.	Taught throughout the programme
D6	Construct synoptic arguments about advanced concepts (MSci only)	Level 7 Options and Project

The above learning outcomes are in concurrence with typical learning outcomes for Computing degrees as identified by the QAA subject benchmark.

## Mode of study

On campus

## Programme structure

### Full-time mode – BSc (Hons) Creative Computing

#### Academic year of study 1

Module Name	Module Code	Credits	Level	Module Type	Term
Introduction to Programming	IS51031B	15	4	Compulsory (non-compensatable)	1
Front End Web	IS51018C	15	4	Compulsory	1
Designing Digital Interactions	IS51019B	15	4	Compulsory	1
Graphics 1	IS51030B	15	4	Compulsory	2
Sound and Signal 1	IS51029B	15	4	Compulsory	2
Creative Computing Project 1	IS51025A	15	4	Compulsory	2
Identity, Agency & Environment 1	CC5001A	15	4	Compulsory	1
Identity, Agency & Environment 2	CC5002A	15	4	Compulsory	2

#### Academic year of study 2

Module Name	Module Code	Credits	Level	Module Type	Term
Creative Embedded Systems		15	5	Compulsory	1
Dynamic Web Applications	IS52027E	15	5	Compulsory	1
Data Programming for Artificial Intelligence		15	5	Optional	1
Generative Drawing	IS52	15	5	Optional	1
Creative Game Engine Development		15	5	Optional	2
Graphics 2	IS52049A	15	5	Optional	2
Sound and Signal 2	IS52051A	15	5	Optional	2
Audio for Games and Immersive Experience		15	5	Optional	2
Creative Computing Project 2	IS52030B	30	5	Compulsory	2,3

Module Name	Module Code	Credits	Level	Module Type	Term
The Goldsmiths Elective (Chosen from a list made available annually of modules which provide an opportunity to undertake study in another discipline without pre-requisites or prior knowledge)	Various	15	5	Optional	1
Goldsmiths Social Change Project	CC52	15	5	Optional	2

## Academic year of study 3 for BSc Creative Computing with Work Experience

Module Name	Module Code	Credits	Level	Module Type	Term
Work Placement		-	6	Compulsory	1,2,3

## Academic year of study 3 for BSc Creative Computing (and 4 for BSc Creative Computing with Work Experience)

Module Name	Module Code	Credits	Level	Module Type	Term
Final Project in Creative Computing Prototype		15	6	Compulsory (Non-compensatable)	1
Final Project in Creative Computing	IS53028X	30	6	Compulsory (Non-compensatable)	2,3
Optional modules to a value of 75 credits from an annually approved list	Various		6	Optional	1,2

## Academic year of study 4 for MSci Creative Computing (year 5 of MSci with work experience)

Module Name	Module Code	Credits	Level	Module Type	Term
Optional modules from the approved list of Masters modules		60	7	Optional	1,2

Module Name	Module Code	Credits	Level	Module Type	Term
Final Project in Computational Arts	IS71020B	60	7	Compulsory	1,2,3

## Academic year of study 4 for MSci Creative Computing (Virtual and Augmented Reality) (year 5 of MSci with work experience)

Module Name	Module Code	Credits	Level	Module Type	Term
Augmented Reality		15	7	Compulsory	1
Virtual Reality		15	7	Compulsory	2
Optional modules from the approved list of Masters modules		30	7	Optional	1,2
Final Project in Virtual and Augmented Reality (Programming and Computer Science pathway)		60	7	Compulsory	1,2,3

## Part-time mode – BSc (Hons) Creative Computing

### Academic year of study 1

Module Name	Module Code	Credits	Level	Module Type	Term
Introduction to Programming	IS51031B	15	4	Compulsory (non-compensatable)	1
Graphics 1	IS51030B	15	4	Compulsory	2
Identity, Agency & Environment 1	CC5001A	15	4	Compulsory	1
Identity, Agency & Environment 2	CC5002A	15	4	Compulsory	2

### Academic year of study 2

Module Name	Module Code	Credits	Level	Module Type	Term
Front End Web	IS51018C	15	4	Compulsory	1

Designing Digital Interactions	IS51019B	15	4	Compulsory	1
Creative Computing Project 1	IS51025A	15	4	Compulsory	2
Sound and Signal 1	IS51029B	15	4	Compulsory	2

### Academic year of study 3

30 credits per term of compulsory and optional modules.

Module Name	Module Code	Credits	Level	Module Type	Term
Creative Embedded Systems		15	5	Compulsory	1
Dynamic Web Applications	IS52027E	15	5	Compulsory	1
Creative Game Engine Development		15	5	Optional	2
Audio for Games and Immersive Experience		15	5	Optional	2
Graphics 2	IS52049A	15	5	Optional	2
Sound and Signal 2	IS52051A	15	5	Optional	2
Goldsmiths Social Change Project		15	5	Optional	2

### Academic year of study 4

30 credits per term of compulsory and optional modules.

Module Name	Module Code	Credits	Level	Module Type	Term
Data Programming for Artificial Intelligence		15	5	Optional	1
Generative Drawing	IS51028B	15	5	Optional	1

The Goldsmiths Elective (Chosen from a list made available annually of modules which provide an opportunity to undertake study in another discipline without pre-requisites or prior knowledge)	various	15	5	Optional	1
Creative Computing Project 2	IS52030B	30	5	Compulsory	2,3

## Academic year of study 5 for BSc Creative Computing with Work Experience

Module Name	Module Code	Credits	Level	Module Type	Term
Work Placement	?	60	6	Compulsory	1,2,3

## Academic year of study 5 (and 6 for BSc Creative Computing with Work Experience)

Module Name	Module Code	Credits	Level	Module Type	Term
Optional modules to a value of 60 credits from an annually approved list	Various	60	6	Optional	1,2,3

## Academic year of study 6 (and 7 for BSc Creative Computing with Work Experience)

Module Name	Module Code	Credits	Level	Module Type	Term
Optional module		15	6	Optional	1
Final Project in Creative Computing Prototype		15	6	Compulsory (Non-compensatable)	1



Final Project in Creative Computing	IS53028X	30	6	Compulsory (Non-compensatable)	2,3
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**Academic year of study 7 for MSci Creative Computing (year 8 of MSci with work experience)**

Module Name	Module Code	Credits	Level	Module Type	Term
Optional modules from the approved list of Masters modules		60	7	Optional	1,2

**Academic year of study 7 for MSci Creative Computing (Virtual and Augmented Reality) (year 8 of MSci with work experience)**

Module Name	Module Code	Credits	Level	Module Type	Term
Augmented Reality		15	7	Compulsory	1
Virtual Reality		15	7	Compulsory	2
Optional modules from the approved list of Masters modules		30	7	Optional	1,2

**Academic year of study 8 for MSci Creative Computing (year 9 of MSci with work experience)**

Module Name	Module Code	Credits	Level	Module Type	Term
Final Project in Computational Arts	IS71020B	60	7	Compulsory	1,2,3

**Academic year of study 8 for MSci Creative Computing (Virtual and Augmented Reality) (year 9 of MSci with work experience)**

Module Name	Module Code	Credits	Level	Module Type	Term
Final Project in Virtual and Augmented Reality (Programming and Computer Science pathway)		60	7	Compulsory	1,2,3

## Academic support

Support for learning and wellbeing is provided in a number of ways by departments and College support services who work collaboratively to ensure students get the right help to reach their best potential both academically and personally.

All students are allocated a Personal Tutor (one in each department for joint programmes) who has overall responsibility for their individual progress and welfare. Personal Tutors meet with their student at least three a year either face-to-face, as part of a group and/or electronically. The first meeting normally takes place within the first few weeks of the autumn term. Personal Tutors are also available to students throughout the year of study. These meetings aim to discuss progress on modules, discussion of the academic discipline and reports from previous years if available (for continuing students). This provides an opportunity for progress, attendance and assessment marks to be reviewed and an informed discussion to take place about how to strengthen individual learning and success.

All students are also allocated a Senior Tutor to enable them to speak to an experienced academic member of staff about any issues which are negatively impacting their academic study and which are beyond the normal scope of issues handled by Programme Convenors and Personal Tutors.

Students are provided with information about learning resources, the [Library](#) and information available on [Learn.gold \(VLE\)](#) so that they have access to department/programme handbooks, programme information and support related information and guidance.

Taught sessions and lectures provide overviews of themes, which students are encouraged to complement with intensive reading for presentation and discussion with peers at seminars. Assessments build on lectures and seminars so students are expected to attend all taught sessions to build knowledge and their own understanding of their chosen discipline.

All assessed work is accompanied by some form of feedback to ensure that students' work is on the right track. It may come in a variety of forms ranging from written comments on a marked essay to oral and written feedback on developing projects and practice as they attend workshops.

Students may be referred to specialist student services by department staff or they may access support services independently. Information about support services is provided on the [Goldsmiths website](#) and for new students through new starter information and induction/Welcome Week. Any support recommendations that are made are agreed with the student and communicated to the department so that adjustments to learning and teaching

are able to be implemented at a department level and students can be reassured that arrangements are in place. Opportunities are provided for students to review their support arrangements should their circumstances change. The [Disability](#) and [Wellbeing](#) Services maintain caseloads of students and provide on-going support.

The [Careers Service](#) provides central support for skills enhancement, running [The Gold Award](#) scheme and other co-curricular activities that are accredited via the Higher Education Achievement Report ([HEAR](#)).

The [Centre for Academic Language and Literacies](#) works with academic departments offering bespoke academic literacy sessions. It also provides a programme of academic skills workshops and one-to-one provision for students throughout the year

## Placement opportunities

Our degrees include an optional industrial placement year after the second year of study. You will be responsible for securing a placement, but we can support you through this process. Although we encourage you to take the opportunity of a placement year, you can also complete your degree in three years.

We encourage and support students to gain work experience through embedded support in the curriculum and the support and guidance of Personal Tutors. Students on this programme have two options available to them for placements:

- Summer Placement which can be taken as a 3rd year elective module. Takes place in the Summer after 2<sup>nd</sup> year and is for a minimum of 6 weeks.
  - Assessment for this module is based on:
    - a report written by the student to be submitted before end of term 1 of year 3
    - a report from the workplace supervisor who was responsible for the student's work on the placement
- Year out Work Placement which allows a student to upgrade from a 3 year to a 4 year "with Work Experience" degree. Minimum duration of 10 months.
  - This is not a credit bearing module, but the University has a duty of care to the students, so two reports are required from the candidate and two reports from their workplace supervisor describing the progress throughout the placement.

## **Employability and potential career opportunities**

This programme aims to prepare students for a career in creative computing. This is an interdisciplinary field at the intersection of technology and creative work such as interface design; web application development; computer graphics; sound and music production; games and animation; computational art; film and television production and special effects; cataloguing services; multimedia systems analysis; and research and development in media and entertainment. Employers increasingly demand that new recruits are able to add immediate value to their organisation through a mix of creative and technological skills.

Students are supported from the start to the finish of this programme in order to understand the different potential career journeys they can follow and to build a portfolio of work to demonstrate their capability to gain employment or freelance work in that area. Assessment has been designed to facilitate this process through the development of transferable or soft skills listed in the section above. Regular guest lectures from industry support the development of sector knowledge and awareness of different career paths.

The Department's External Advisory Board ensures relevance of all our programmes to the current and future needs of employers. All programmes are designed in consultation with employers to make sure you develop transferable skills to improve your career opportunities and you will be applying your skills to real-world problems through live project briefs and group projects. The board and other employers attend showcase events where you can present your ideas, get feedback and build important connections.

We have dedicated employability resource within the department to build employer relations and manage additional initiatives to support your future career opportunities, including regular communication of external opportunities for mentoring and work experience and an annual Career week (a focussed week of career support every June in the department where you can access alumni panels by programme and a range of industry talks).

## **Programme-specific requirements**

In order to progress to the MSci year, students must achieve the equivalent of a 2.1 or above in the first 3 years of the programme.

## **Tuition fee costs**

Information on tuition fee costs is available at: <https://www.gold.ac.uk/students/fee-support/>

## **Specific programme costs**

Physical computing modules requires the purchase of a hardware kit.