MA/MFA Computational Arts

Programme Specification

Awarding Institution:
University of London (Interim Exit Awards made by Goldsmiths' College)
Teaching Institution: Goldsmiths, University of London
Final Award:
Programme Name: MFA Computational Arts
Total credit value for programme: 360 MFA (180 MA)
Name of Interim Exit Award(s):
MA Computational Arts
Postgraduate Certificate in Computational Arts
Postgraduate Diploma in Computational Arts
Duration of Programme:
2 years full-time or 4 years part-time (MFA Computational Arts)
1 year full-time or 2 years part-time (MA Computational Arts)
UCAS Code(s): Not applicable
HECoS Code(s):
(100366) Computer Science
(101361 (creative arts and design
QAA Benchmark Group: Computing
FHEQ Level of Award: Level 7
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 Computational Arts Masters at Goldsmiths is a hands-on program for the next generation of digital artists to develop practical skills in the fields of creative coding, physical computing and computational arts.

Students from all backgrounds are encouraged to be inventive, multidisciplinary and ambitious as they find themselves programming computers, building robots and designing generative systems. The computational arts field has grown dramatically in recent years and

our students are at the forefront of this cultural change, making art by controlling complex computational technology in creative ways.

The programme is itself a multi-disciplinary research and postgraduate centre. The programme aims to bring together ideas and paradigms from computer science, art, and cultural theory, providing you with the necessary technical, theoretical and historical background to develop new aesthetics for computer media. As a graduate, you will be able to mediate between the worlds of computer science, technology, the arts and culture generally.

At Goldsmiths we understand that technology always exists in a human context. We ensure that you don't just understand the technology but also the people who use that technology and those who are affected by it. We believe it is vital to understand why you are using technology and the role it plays in the work you are creating. It is also important from an ethical point of view, to understand the human and environmental impacts of the technology you create so that you can make sure your choices are considered and responsible. From the start of the first year in Computational Arts you will be encouraged to think about the way you use technology and the data that underpins your practice. Throughout the degree you will do project work in which you be asked to think about your use of technology and about the social, environmental and professional impacts of the installations you are building. The projects also afford you an opportunity to apply your skills in practice and develop the real-world skills that employers need, beyond technical skills: developing innovative ideas, understanding the user experience, planning your time, presenting your work and evaluating your projects. By the end of the programme you will become Creative Technologists and Digital Artists armed with an extensive knowledge of a wide range of technologies together with a deep understanding of the contexts in which they are used and experienced.

The MFA Computational Arts is a two-year programme, while the MA Computational Arts is a one-year programme. In those first two terms in the MA/MFA you will learn the fundamentals of programming and you will be led through a series of lectures, intensive hands-on workshops and individual or group projects in order to sharpen your technical skills. Through topics such as generative art, computer vision, genetic programming, machine learning, physical computing, you will receive highly specialised training in creative computing in a collaborative and stimulating environment. You will be exposed to real world scenarios, such as interactive public installations, robotics, computational sculptures, games, generative art pieces and more, and learn how to make them your own using technologies taught in the labs.

Since computational artworks don't necessarily involve computers and screens, you will also be encouraged to produce works across a diverse range of media. Supported by studio technicians in state-of-the-art facilities, you will be producing works using tools such as 3D printers, laser cutters, CNC mills and other fabrication technologies. At the heart of all these, will be code that you will write.

You will also engage in theory seminars in current issues relating to contemporary issues in Culture, Art, Science and Technology. During the summer term you will be participating in

seminars, crit sessions and workshops providing you with support and ensuring that by the end of year 1 you will produce high-quality work (as part of the exhibition) as well as written work contextualising your work in theoretical debates about artistic practice, science and culture.

If you choose to finish after the exhibition of the first year, you'll be graduating with an MA Computational Arts.

In the second year of the MFA you will engage in regular group and individual meetings with tutors, deliver mini-projects and assignments as you develop with more independence your arts practice and work towards the final exhibition. You are also encouraged to take advantage of the culture of auditing that exists across the college and attend modules both in and outside of the department of computing (subject to permission from the module leader).

Programme entry requirements

We welcome applications from anyone interested in a demanding two-year full-time programme that encourages an attitude towards artistic creation which is active, critical and aware of modern traditions, historical antecedents and new developments in art, design, technology and computer science.

You do not need to know how to code. The course caters for both people that know how to code and those that are only just beginning by providing a variety of classes at all levels.

You will normally hold a second-class undergraduate degree in a creative practice such as art, design, music, drama, studio arts, dance or a computer-based discipline (suitable people from other backgrounds, such as psychology, architecture, or cultural studies will also be considered.) Alternatively, you may have sufficient comparable and practical experience to take advantage of this programme. Applicants from the UK and EU are often asked to attend an interview.

You will also be required to submit a portfolio of work in whatever form is your practice (dance, painting, photography, film, music, code, architecture etc).

If your first language is not English you should normally have an IELTS minimum score of 6.5, with a 6.5 in writing and no element lower than 6.0. In exceptional cases we may accept you with a lower score, but we might then ask you to attend one of the programmes offered by the English Language Centre (ELC) at Goldsmiths, University of London as they especially help you prepare for academic study. This is to ensure that you are able to complete work on your seminar presentations and essay in accordance with assessment requirements.

Programme learning outcomes

Students who successfully complete the Postgraduate Certificate in Computational Arts (60 credits) will be able to:

Knowledge and understanding

Code	Learning outcome	Taught by the following module(s)
A1	Evidence a personal understanding of the conventions and techniques, which underlie your studio practice, and critical thinking.	Computational Arts-based Research and Theory.
A2	Demonstrate some understanding of technology to be able to be innovative in the use and perhaps the design of new technologies at a high level.	All taught modules.

Cognitive and thinking skills

Code	Learning outcome	Taught by the following module(s)
B1	Demonstrate some ability to assess and analyse your work with your peers.	Computational Arts-based Research and Theory; Workshops in Creative Coding 1 & 2.
B2	Demonstrate how creative practice has been considered in the light of your critical and cultural research.	Computational Arts-based Research and Theory.
B3	Structure an essay based on your personal research according to your identified aims.	Computational Arts-based Research and Theory.

Subject specific skills and professional behaviours and attitudes

Code	Learning outcome	Taught by the following module(s)
C1	Produce art/sound/writing/performance works using a limited range of digital design tools and techniques.	Computational Arts-based Research and Theory; Workshops in Creative Coding 1 & 2.
C2	Employ a range of tools and techniques to make standalone screen-based images.	Workshops in Creative Coding 1 & 2.
C3	Make various kinds of digital moving images, both animated and filmed.	Workshops in Creative Coding 1 & 2.

C4	Make art/sound/writing/performance works that involve some specialist tools or view of digital systems.	Workshops in Creative Coding 1 & 2.

Transferable skills

Code	Learning outcome	Taught by the following module(s)
D1	Apply some creative and critical evaluation skills to your own strengths and weaknesses as an artist working within an emerging discipline.	All taught modules.
D2	Critically assess some of the key aspects of contemporary techno scientific culture.	Computational Arts-based Research and Theory.
D3	Synthesise a range of topics and critical perspectives whilst developing your own critical perspective and research interests.	Computational Arts-based Research and Theory.
D4	Communicate effectively in both speech and written texts.	All taught modules.
D5	Apply self-management skills, study independently, set personal goals, manage workloads and meet deadlines.	All taught modules.

Students who successfully complete the Postgraduate Diploma in Computational Arts (120 credits) will be able to:

Knowledge and understanding

Code	Learning outcome	Taught by the following module(s)
A1	Evidence a personal understanding of the conventions and techniques, which underlie your studio practice, and critical thinking.	Computational Arts-based Research and Theory.
A2	Demonstrate deep understanding of technology to be able to be innovative in the use and perhaps the design of new technologies at a high level.	All taught modules.

Cognitive and thinking skills

Code	Learning outcome	Taught by the following module(s)

B1	Demonstrate a clear assessment of your artistic production and research and with reference to ethical, social, environmental and professional issues.	All taught modules.
B2	Speak critically about your work concerns to your peers.	All taught modules.
B3	Demonstrate how creative practice has been considered in the light of your critical and cultural research.	Computational Arts-based Research and Theory.
B4	Present your own research papers and critical thinking to others.	All taught modules.
B5	Structure an essay based on your personal research according to your identified aims.	Computational Arts-based Research and Theory.

Subject specific skills and professional behaviours and attitudes

Code	Learning outcome	Taught by the following module(s)
C1	Produce art/sound/writing/performance works using a range of digital design tools and techniques.	Computational Arts-based Research and Theory; Workshops in Creative Coding 1 & 2.
C2	Employ a range of tools and techniques to make web- based or standalone screen-based and digitally printed images.	Workshops in Creative Coding 1 & 2.
C3	Make various kinds of digital moving images, both animated and filmed.	Workshops in Creative Coding 1 & 2.
C4	Create installations that involves an embedded computer system.	All taught modules.
C5	Make art/sound/writing/performance works that involve some specialist tools or view of digital systems.	Workshops in Creative Coding 1 & 2.

Transferable skills

Code	Learning outcome	Taught by the following module(s)
D1	Apply a high level of creative and critical evaluation skills to your own strengths and weaknesses as an artist working within an emerging discipline as well as interpret and respond to user feedback data on interactive systems.	All taught modules.

D2	Critically assess some of the key aspects of contemporary techno scientific culture.	Computational Arts-based Research and Theory.
D3	Synthesise a range of topics and critical perspectives whilst developing your own critical perspective and research interests.	Computational Arts-based Research and Theory.
D4	Communicate effectively in both speech and written texts.	All taught modules.
D5	Apply self-management skills, study independently, set personal goals, manage workloads and meet deadlines.	All taught modules.
D6	Anticipate and accommodate change and work within contexts of, flexibility, uncertainty and creative risk particularly in the rapidly changing world of new technology.	All taught modules.

Students may exit after successful completion of the first year of the programme (180 credits) with an MA Computational Arts, with the following knowledge and skills:

Knowledge and understanding

Code	Learning outcome	Taught by the following module(s)
A1	Evidence a personal understanding of the conventions and techniques, which underlie your studio practice, and critical thinking.	Computational Arts-based Research and Theory.
A2	Demonstrate deep understanding of technology to be able to be innovative in the use and perhaps the design of new technologies at a high level.	All taught modules.

Cognitive and thinking skills

Code	Learning outcome	Taught by the following module(s)
B1	Demonstrate a clear assessment of your artistic production and research and with reference to ethical, social, environmental and professional issues	All taught modules.
B2	speak critically about your work concerns to your peers.	All taught modules.

B3	Demonstrate how creative practice has been considered in the light of your critical and cultural research.	Computational Arts-based Research and Theory.
B4	Present your own research papers and critical thinking to others.	All taught modules.
B5	Structure an essay based on your personal research according to your identified aims.	Computational Arts-based Research and Theory.

Subject specific skills and professional behaviours and attitudes

Code	Learning outcome	Taught by the following module(s)
C1	Produce art/sound/writing/performance works using a range of digital design tools and techniques.	Computational Arts-based Research and Theory; Workshops in Creative Coding 1 & 2.
C2	Employ a range of tools and techniques to make web- based or standalone screen-based and digitally printed images.	Workshops in Creative Coding 1 & 2.
C3	Make various kinds of digital moving images, both animated and filmed.	Workshops in Creative Coding 1 & 2.
C4	Create installations that involves an embedded computer system.	All taught modules.
C5	Make art/sound/writing/performance works that involve some specialist tools or view of digital systems.	Workshops in Creative Coding 1 & 2.

Transferable skills

Code	Learning outcome	Taught by the following module(s)
D1	Apply a high level of creative and critical evaluation skills to your own strengths and weaknesses as an artist working within an emerging discipline as well as interpret and respond to user feedback data on interactive systems.	All taught modules.
D2	Critically assess some of the key aspects of contemporary techno scientific culture.	Computational Arts-based Research and Theory.
D3	Synthesise a range of topics and critical perspectives whilst developing your own critical perspective and research interests.	Computational Arts-based Research and Theory.

D4	Communicate effectively in both speech and written texts.	All taught modules.
D5	Apply self-management skills, study independently, set personal goals, manage workloads and meet deadlines.	All taught modules.
D6	Anticipate and accommodate change and work within contexts of, flexibility, uncertainty and creative risk particularly in the rapidly changing world of new technology.	All taught modules.
D7	Work effectively as part of a team.	All taught modules; Final Project in Computational Arts.
D8	Understand the processes of teamwork and collaboration through fund-raising, publicity and distributing your work to a wider public through exhibitions, internet and web site dissemination.	All taught modules; Final Project in Computational Arts.

Additionally, students who successfully complete the MFA Computational Arts will be able to:

Knowledge and understanding

Code	Learning outcome	Taught by the following module(s)
A1	As above.	

Cognitive and thinking skills

Code	Learning outcome	Taught by the following module(s)
B1	Apply cognitive skills to a written discussion of your own work within its artistic and cultural context.	Computational Arts-based Research and Theory.

Subject specific skills and professional behaviours and attitudes

Code	Learning outcome	Taught by the following module(s)
C1	Apply the above technical and studio outcomes to your own studio-based arts practice and produce a substantial single work.	Final Project in Computational Arts; Studio Practice.
C2	Apply the above technical and studio outcomes to your own studio-based arts	Studio Practice.

	practice and produce a substantial coherent body of original work.	
C3	Present your work in the context of a professional level exhibition, performance or similar public presentation.	Studio Practice.
C4	Apply the cognitive outcomes to a substantial written critical analysis of your own work within its artistic and cultural context.	Studio Practice.

Transferable skills

Code	Learning outcome	Taught by the following module(s)
D1	As above.	

Mode of study

On Campus

Programme structure

Year 1

The first year consists of taught courses each of which has an end of term project. The purpose of year one is to hone your technical skills using state-of-the art techniques and tools and to begin the directed study of critical issues that impinge on arts practice, computational systems, and the interactions between the two.

You will have lectures, labs and seminars with a series of tutors for three or four days a week depending on your timetable. You will work with popular open-source programming environments such as Processing, openFrameworks and Arduino and will learn how to program in languages such as Java, Javascript and C++. You'll also learn basic physics and electronics in order to design and build interactive physical devices.

As part of the compulsory modules, you will be introduced to programming and creative computation and you study generative art, sound synthesis and you develop your own software to manipulate images and video. You will also be introduced to more advanced topics in computational art such as systems complexity, computer vision, communication protocols for making networked art pieces, artificial intelligence, genetic algorithms and other advanced topics to broaden your expertise and skillset. At the same time you will be introduced to physical computing and microcontrollers and you will be trained to use sensors to make interactive physical objects. We encourage students to produce works across a diverse range of media. Supported by studio technicians in state-of-the-art facilities, our students also produce physical objects using tools such as 3D printers, laser

cutters, CNC mills and other fabrication technologies. You will be expected to produce a small project for each of the half-term modules.

While sharpening your technical skills you will take part in a series of computational arts research and theory seminars followed by tutorial sessions on theoretical, computational, and cultural concepts. Seminar topics include: Critical Theory, Feminist Technoscience, Science and Technology Studies, Data Practices, Computational Aesthetics, Ubiquity, Materiality, Speculation, Science Fiction, Post-colonial Computing.

You will also be able to pick from a selection of modules made available by the department that year. Examples might include, but are not limited to, topics such as:

- Extended Reality for Creative Practice.
- Programming for Artists and Designers.
- Visual Game Design.
- Interactive Narrative and Digital Storytelling.
- Physical Computing.
- Computational Form and Process.
- Data and Machine Learning for Artistic Practice.
- Approaches to Play.
- Advanced Audio-visual Processing.
- Special Topics in Programming for Performance and Installation.

The department of computing in agreement with other departments may at times also make available courses run by other departments such as Neuroaesthetics and Creativity (offered by the Psychology department).

On days when you are not taught you are expected to work in the studio or use other technical resources independently or on collaborative work.

During the summer you will participate in MA/MFA only seminars, crit sessions, and masterclasses, providing you with support and ensuring that by the end of year you will produce high-quality work (as part of the exhibition). We regularly invite world-class artists and curators to explain their work and engage in critical dialogue with the students. This allows students to develop a wider understanding of the contemporary art scene and how their work sits within the professional art world. Finally, social events, like trips to galleries, local cultural spaces and participation in hackathons offer the opportunity to students to further debate contemporary issues in art and train themselves technically.

Graduating at the end of year 1 secures you an MA Computational Arts.

Year 2

The work is done in small seminars and studio-based teaching— but you will be expected to take much more responsibility for your own work. By the end of the first year, you will be expected to have developed a plan for your main second year project and you will get appropriate level of supervision.

Year two students are warmly encouraged to audit any class offered by the department or Goldsmiths in general.

Your MFA show will be informed by some of the theoretical considerations discussed in the seminars. You will also write an essay that engages in the cultural and historical context of your work.

Students studying part-time in year one, will decide their options in consultation with the programme leader.

Full-time mode

Academic year of study 1

Module Title	Module Code	Credits	Level	Module Status	Term
Computational Arts-based Research and Theory	IS71076B	30	7	Compulsory	1-2
Workshops in Creative Coding 1	IS71014B	15	7	Compulsory	1
Workshops in Creative Coding 2	IS71015B	15	7	Compulsory	2
Final Project in Computational Arts	IS71020B	60	7	Compulsory	3
60 credits of optional modules can be selected from an annually approved list. Other appropriate Level 7 modules can be taken with the approval of the programme leader	Various	60	7	Optional	1 & 2

NB that the availability of optional modules depends on student demand and staff availability.

Academic year of study 2

Module Title	Module Code	Credits	Level	Module Status	Term
Studio Practice	IS72010B	75	7	Compulsory	1-3
Computational Arts Critical Studies	IS72011B	60	7	Compulsory	1-3
Curating Computational Art and Professional Development		15	7	Compulsory	1-3

30 credits of optional modules can be selected from an annually approved list (see indicative list in full-time mode above). Other appropriate Level 7 modules can be taken with the approval of the programme leader	Various	30	7	Optional	1 & 2

Part-time mode

Academic year of study 1

The following path is recommended to the students.

Module Title	Module Code	Credits	Level	Module Status	Term
Computational Arts-based Research and Theory	IS71076B	30	7	Compulsory	1-2
Workshops in Creative Coding 1	IS71014B	15	7	Compulsory	1
Workshops in Creative Coding 2	IS71015B	15	7	Compulsory	2

NB that the availability of optional modules depends on student demand and staff availability.

Academic year of study 2

Module Title	Module Code	Credits	Level	Module Status	Term
Final Project in Computational Arts	IS71020B	60	7	Compulsory	3
60 credits of optional modules can be selected from an annually approved list (see indicative list in full-time mode above). Other appropriate Level 7 modules can be taken with the approval of the programme leader.	Various	60	7	Optional	1-2

Academic year of study 3 and 4

Module Title	Module Code	Credits	Level	Module Status	Term
Computational Arts Critical Studies (to be taken in year 3)	IS72011B	60	7	Compulsory	1-3
30 credits of optional modules (to be taken during years 3 and/or 4) can be selected from an annually approved list (see indicative list in full-time mode above). Other appropriate Level 7 modules can be taken with the approval of the programme leader.	Various	30	7	Optional	1 or 2
Studio Practice (to be taken in year 4	IS72010B	75	7	Compulsory	1-3
Curating Computational Art and Professional Development (to be taken in year 4)		15	7	Compulsory	1-3

In year two, apart from the four compulsory modules above, you will also be encouraged to audit other classes offered by the department that fit your research interests and further develop your technical skills. Subject to agreement from the respective tutor, you can also audit other classes across Goldsmiths as well as classes across most Universities that form the University of London.

Subject to availability you will also have access to all the technical facilities in the department in order to further develop your practice.

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 also have access to 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

Not applicable.

Employability and potential career opportunities

Our programme opens multiple career options including:

- Solo artists/performers working independently and responding to commissions.
- Creative technologist in digital/creative agencies.
- Software developer in creative industries.
- Educator in creative computing at all levels.
- Technicians in arts/computing/digital fabrication environments.
- Postgraduate Researchers.

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

Year 2 (2nd year MFA only): In order to progress to the 2nd year and the MFA assessment, students must fulfil the requirements for a pass at MA level (pass all 120 credits of taught modules plus the 1st year studio project of 60 credits). Students who fail one module in year one may progress to year two and re-sit that module in the second year.

Students who fail the essay in year one may re-sit the paper in September.

Tuition fee costs

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

Specific programme costs

Not applicable.