MSc Computer Games Programming

Programme Specification

Awarding Institution:
University of London (Interim Exit Awards made by Goldsmiths' College)
Teaching Institution: Goldsmiths, University of London
Name of Final Award and Programme Title: MSc Computer Games Programming
Name of Interim Exit Award(s):
Postgraduate Certificate in Computer Games Programming
Postgraduate Diploma in Computer Games Programming
Duration of Programme: 1 year full-time or 2 years part-time
UCAS Code(s): Not applicable
HECoS Code(s): (101020) Computer Games Programming
QAA Benchmark Group: Computing
FHEQ Level of Award: Level 7
Programme accredited by: Not applicable
Date Programme Specification last updated/approved: June 2020
Home Department: Computing
Department(s) which will also be involved in teaching part of the programme:
Not applicable

Programme overview

This MSc is a core part of our unique portfolio of post-graduate programmes in the areas of Games and the Creative (Computer Games, TV, Film, Design, Virtual Reality) industries.

This programme supports the most urgent needs of industry in multicore and procedural programming and serves to reinforce its reputation in the UK and abroad. Students on this programme, who learn technical skills to meet the needs of the games and creative industries, will work alongside students learning to be artists, musicians, writers, choreographs, creators, interested in collaborating with these areas (games) or in learning and using these new technologies in their own practice.

Programme entry requirements

This Masters course is aimed at graduates with an interest in working and intervening in computing in the Games and related industries (e.g. TV, Film, Design, Advertising and

VR/AR/MR). Some candidates may come via the traditional academic route, while others will have experience of working within the Games field in some way prior to undertaking the course. Candidates will normally have an undergraduate degree in the computing, engineering or mathematical sciences. In all cases, applicants will be expected to be interested in and capable of working in interdisciplinary contexts. An upper second class honours degree or its equivalent in a relevant discipline is normally required. In exceptional circumstances, outstanding practitioners, or individuals with strong commercial experience may arrive at the course via other routes. Non-native speakers of English will normally have to satisfy the University of London requirements of IELTS (6.5), and may be encouraged to use the resources of the English Language Centre.

Candidates will be required to demonstrate sufficient proficiency at programming in an industrially-relevant language, such as C, C++, C#, Python, Lua, or Java, prior to being accepted and enrolled on the MSc programme. This may take the form of a test, or during an interview, of a practical challenge to program a well-known method or algorithm. Students will be asked to attend for interview where appropriate. Students will be expected to present a small portfolio of work including programming samples, demos and graphics.

Aims of the programme

This Masters programme is aimed at graduates with an interest in working and intervening in computing in the Games Programming industry. The curriculum prepares students to be ready to work in the games and related industries as soon as they graduate. The possibility of doing an industry internship as part of this programme, counting towards the Final project, augments the readiness and success of our graduates. The MSc aims to keep track of important developments of relevance to these industries, such as advances made in hardware, graphics software, software engineering, parallel and GPU programming, and the increasing impact of Artificial Intelligence and Machine Learning.

The programme also encourages students to share activities and projects with students on other programmes, including the MA in Games: Art and Design, and the MA and MSc in Virtual and Augmented Reality., mimicking practice in these industries. This is facilitated by a invitations to industry speakers and visitors to deliver seminars, workshops and participation in other programme activities.

What you will be expected to achieve

Learning outcomes for the PGCert, PGDip and MSc:

Knowledge and understanding

Code	Learning outcome	Taught by the following module(s)
A1	Show knowledge and ability with the main concepts and methodologies of the games and interactive entertainment.	All taught modules
A2	Understand the collaborative and team management aspects of projects that operate in the context of games and interactive entertainment.	All taught modules
A3	Object Oriented programming (typically, in C++, C# or Java) and scripting (e.g., Python or Lua).	Introduction to Programming for Games ; Advanced Programming for Games and Interactive Graphics
A4	Apply the taught advanced programming and core concepts in graphics, perception (e.g., graphics, audio, touch), and A.I.	Introduction to Programming for Games; Advanced Programming for Games and Interactive Graphics; Mathematics and Graphics for Computer Games 1; Maths and Graphics for Computer Games 2

Cognitive and thinking skills

Code	Learning outcome	Taught by the following module(s)
B1	Be able to efficiently design a software or a system to fulfill a given high-level task (e.g., for an interactive computer vision game application)	Introduction to Programming for Games; Advanced Programming for Games and Interactive Graphics
B2	Be able to come up with original and innovative ideas that fit the context, both creative and technical.	All taught modules
B3	Be conversant with the Games industry, with terminology and current state of the industry in multiple format areas and articulate views and opinions.	All taught modules

Subject specific skills and professional behaviours and attitudes

Code	Learning outcome	Taught by the following module(s)
C1	Be able to devise projects and other forms of research that actively work with and test the main concepts and methodologies of the Games sector.	All taught modules
C2	Be comfortable and familiar with team work under tight scheduling.	All taught modules
C3	Explore and use a range of technologies, middlewares and languages (both compiled and scripted)	Introduction to Programming for Games; Advanced Programming for Games
C4	Be familiar with the main software project management techniques, e.g., waterfall, agile, xp, x-discipline, and critically evaluate those approaches.	Games and Interactive Entertainment Business and Practice
C5	Be able to able to work in a team in a commercial product development environment and engage in production issues and where appropriate management issues, to be an effective team member.	Games and Interactive Entertainment Business and Practice
C6	Experience in evaluating a particular research question of relevance to computer games or entertainment graphic systems. (MSc only)	Final Project
C7	Independent development of a piece of software in support of the explored research question. (MSc only)	Final Project

Transferable skills

Code	Learning outcome	Taught by the following module(s)
D1	Develop the ability to work in a multidisciplinary context (games software/production, maths, business/IP, presentation/marketing, art/design, cultural/social impacts) and to transfer information and collaborative materials from one kind of work to another.	All taught modules

Code	Learning outcome	Taught by the following module(s)
D2	To be able to develop learning strategies for the ongoing acquisition of skills and knowledge.	All taught modules
D3	To be able to communicate ideas, plans and projects to different kinds of collaborators	All taught modules
D4	To design, take part in and lead team-based projects, as well as be able to plan and undertake independent projects.	All taught modules
D5	To be able to produce extended written work of a high academic standard.	All taught modules
D6	To be able to orally present (e.g., in seminars) state-of-the- art research in the studied fields (e.g., in computer graphics).	All taught modules
D7	Appropriately plan and design, present and evaluate, a research project in computer game (MSc only)	Final Project
D8	Experience in writing an extended report in support of a research project. (MSc only)	Final Project

How you will learn

The MSc consists of compulsory modules (5 main 15 CATS modules, and 3x 15 CATS amongst a choice from “options” [availability subject to change]) and a Final project (60 CATS). Students are required to accumulate 180 CAT points (credits) to graduate - the equivalent of 8 x 15 credits and a Final project valued as 60 credits.

NB: Taught options may not all be available each year; but at least one option each semester will be available to allow students to fulfil their degree requirements. A range of teaching methods is employed to support the learning outcomes detailed above. Students take modules organised around the recognised protocols of lectures, labs and seminars, as well as individual tutorials to discuss work and general progress, workshops, project work and student presentations. Throughout the programme students are involved in the development of projects via the use of the lab facilties.

Students are encouraged to study independently and to make full use of the extensive libraries available to all University of London students. Students are strongly encouraged to attend the full range of seminars taking place throughout the University of London and

beyond. Events of particular interest to this cohort are publicised through the notice board in the department and via an e-mail list.

How you will be assessed

Exams/Courseworks (including projects) Exams and courseworks test the student's understanding of concepts and examples presented in class. Includes programming challenges. Projects for a given module represent a more ambitious challenge, with room for novelty or the test/implementation of state-of-the-art topics seen in class. Typically, a project may stand as the final coursework or exam of a given module.

Essays

Assessed essays test the ability of the student to sustain a coherent and original argument on the basis of their reading and research throughout the duration of the module. Students are expected to discuss the content of their report with their module convenor.

Dissertation (Final project)

The written and programming component of the dissertation develops and assesses the capacity of students to work independently, to define a research and development problem and design the research and presentation and, where applicable, to collect suitable and reliable data. The dissertation promotes and tests the ability to construct a clear argument on a complex and extensively treated topic.

Marking criteria

Mark	Descriptor	Specific Marking Criteria
80-100%	Distinction (Outstanding/ Exceptional)	A mark in the 80s or even the 90s will be awarded in the case of really accomplished work, demonstrating high levels of scholarship and originality.
70-79%	Distinction	Awarded when candidates show evidence of an excellent application of appropriate knowledge, understanding and skills as specified in the module learning outcomes. Demonstration of a thorough grasp of relevant concepts, methodology and content appropriate to the subject discipline; indication of originality in application of ideas, in synthesis of material or in performance; insight reflects depth and confidence of understanding of the material.
60-69%	Merit	Awarded when candidates show a good application of appropriate knowledge, understanding and skills as specified in the module learning outcomes. Demonstration of a sound

Mark	Descriptor	Specific Marking Criteria
		level of understanding based on a competent grasp of relevant concepts, methodology and content; display of skill in interpreting complex material; organisation of material at a high level of competence
50-59%	Pass	Awarded when there is clear evidence of a satisfactory application appropriate, knowledge, understanding and skills as specified in the module learning outcomes. Demonstration of an adequate level of understanding of relevant concepts, methodology and content; display of sufficient skill to tackle some complex problems; appropriate organisation of material.
30-49%	Fail	Awarded when there is not a satisfactory application of appropriate knowledge, understanding and skills as specified in the module learning outcomes. There may be confusion and incoherence and unfocused comment on the state of-the-art. Documentation or realisation of projects or coursework would characteristically be weak and fragmentary.
10-29%	Bad fail	Awarded when only some but not all of the learning outcomes specified for the module have been achieved. Typically a candidate in this position will not have satisfied the examiners that they have read and understood the essential texts of the module. Research involved in the writing of coursework, the realisation of projects or the dissertation will be poorly organised and inadequately discussed.
1-9%	Very bad fail	A submission that does not even attempt to address the specified learning outcomes (shall be deemed a non-valid attempt and unit must be re-sat).
0%	Non submission or plagiarised	A categorical mark representing either the failure to submit an assessment or a mark assigned for a plagiarised assessment

How the programme is structured

Part time candidates will be expected to pass all of their first year curriculum elements before progressing onto the second year. Full-time and second year part-time candidates will be required to have passed all taught course elements before proceeding to their Final Project with dissertation.

After the successful completion of all taught units, the students will have the possibility to obtain an interim award (PGDip) if they decide not to pursue and complete the Final Project.

Full-time mode

Module Title	Module Code	Credits	Level	Module Status	Term
Introduction to Programming for Games	IS71030B	15	7	Compulsory	1
Mathematics and Graphics for Computer Games 1	IS71021B	15	7	Compulsory	1
Games Design and Games Analytics	IS74022A	15	7	Compulsory	1
Advanced Programming for Games	IS71026B	15	7	Compulsory	2
Business and Practice	IS71025B	15	7	Compulsory	2
Option modules to the value of 45 CATS (from a list annually approved by the Department)	Various	45	7	Optional	1,2
Final Project	IS74019A	60	7	Compulsory	3

Part-time mode

Academic year of study 1

Module Title	Module Code	Credits	Level	Module Status	Term
Introduction to Programming for Games	IS71030B	15	7	Compulsory	1
Mathematics and Graphics for Computer Games 1	IS71021B	15	7	Compulsory	1
Business and Practice	IS71025B	15	7	Compulsory	2
Optional modules up to the value of 45 CATS (from a list annually approved by the Department)	Various	15/30/45	7	Optional	1/2/3

Academic year of study 2

Module Title	Module Code	Credits	Level	Module Status	Term
Advanced Programming for Games	IS71026A	15	7	Compulsory	1
Games Design and Games Analytics	IS74022A	15	7	Compulsory	1
Final Project	IS74019A	60	7	Compulsory	2

Module Title	Module Code	Credits	Level	Module Status	Term
Optional modules to the value of 45 CATS (from a list annually approved by the Department) depending on what has been taken in year 1.	Various	15/30/45	7	Optional	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 twice 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 Academic Skills Centre 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.

Links with employers, placement opportunities and career prospects

Graduates of the “MSc Computer Games Programming” are expected to be people who rapidly find work in the Games industry sector, be original thinkers, “hands on” and will often be managers or directors as they progress in their careers. During their course there will be opportunity to meet computer games and recruitment companies through networking events and external lectures

The requirements of a Goldsmiths degree

All taught postgraduate degrees have a minimum total value of 180 credits and involve one calendar year of full-time study. Some programmes may extend over more than one calendar year and, when this is the case, they have a higher total credit value. Programmes are composed of individual modules, each of which has its own credit value. Part-time students normally take modules to the value of 90 credits each year. If a programme has a part-time pathway, the structure will be set out in the section “How the programme is structured” above. Normally, all modules are at level 7 of the Framework for Higher Education Qualifications.

More detailed information about the structure and requirements of a Goldsmiths degree is provided in the Goldsmiths Qualifications and Credit Framework.

Modules

Modules are defined as:

- "Optional" – which can be chosen from a group of modules
- "Compulsory" – which must be taken as part of the degree

Progression

Some programmes may require students to pass specific modules prior to completion of the dissertation/major project (or equivalent). Additionally, where a programme of study extends beyond one calendar year, students may be required to pass specific modules in their first year of study before progressing to the second year. Where this is the case, these requirements will be set out in this Programme Specification.

Award of the degree

In order to graduate, students must successfully complete all modules specified for the programme, as set out within the section "How the programme is structured" above.

Classification

Final degree classification is calculated on the basis of a student's mean average mark (based on credit value) across all modules on the programme.

Masters degrees are awarded with the following classifications:

Distinction – 70%+
Merit – 60-69%
Pass – 50-59%

More detail on the calculation of the final classification is on our website.

Interim exit awards

Some programmes incorporate interim exit points of Postgraduate Certificate and/or Postgraduate Diploma, which may be awarded on the successful completion of modules to the minimum value of 60 credits or 120 credits respectively. The awards are made without classification.

When these awards are incorporated within the programme, the relevant learning outcomes and module requirements will be set out within the “What you will be expected to achieve” section above.

The above information is intended as a guide, with more detailed information available in the Goldsmiths Academic Manual.

Programme-specific rules and facts

General programme costs

In addition to your tuition fees, you will be responsible for meeting standard costs associated with your study. Find out more information at gold.ac.uk/programme-costs.

Specific programme costs

Not applicable.

How teaching quality will be monitored

Goldsmiths employs a number of methods to ensure and enhance the quality of learning and teaching on its programmes.

Programmes and modules are formally approved against national standards and are monitored throughout the year, such as in departmental committees, a variety of student feedback mechanisms and through the completion of module evaluation questionnaires. Every programme has at least one External Examiner who reviews comments annually on the standards of awards and student achievement. External Examiner(s) attend Boards of Examiners meetings and submit an annual written report.

Modules, programmes and/or departments are also subject to annual and periodic review internally, as well as periodic external scrutiny.

Quality assurance processes aim to ensure Goldsmiths’ academic provision remains current, that the procedures to maintain the standards of the awards are working effectively and the quality of the learning opportunities and information provided to students and applicants is appropriate.

Detailed information on all these procedures are published on the Quality Office web pages.