



Programme Title	BSc (Hons) Computer Games Programming
Awarding Body	Ravensbourne University London
Teaching Institution	Ravensbourne University London
Final Award	Level 6 – BSc (Hons) Computer Games Programming
Interim awards	Level 5 – Dip HE Computer Games Programming Level 4 – Cert HE Computer Games Programming
UCAS Code	
QAA Subject Benchmark	Computing
PRSB reference	n/a
Mode of study	Full Time
Date produced/amended	06/02/2021
Course Leader	TBC

Distinctiveness

BSc (Hons) Computer Games Programming is a games making course that gives students fundamental skills in the core games development technologies, programming languages and games production methodologies used in AAA and independent games production.

The course reflects forward thinking industry practice in its approach to programming for games, incorporating good programming practice, established game programming patterns and software development practice alongside co-operating with other developers to make compelling games products.

The course enables a firm grounding in the games development process and core technologies alongside deeper understanding of the programming and scripting languages used in development as well as the theoretical models at the heart of effective programming.

The course engages students in well-defined industry skillsets to enable individual and team based games making. This includes; computer programming methodologies, game programming patterns, game engine technologies, programming and scripting in game engines, mathematics and physics for programming, production methodologies (Scrum, Lean, Waterfall), games (and software) development cycles, concepting and ideation, prototyping, documentation, 2D/3D art pipelines, AI for game agents, UX/UI and team working.

The course differs from the Games Development suite of pathways in its clear focus on computer and data science and programming for games applications rather than the gameplay driven scripting within games engines that forms the basis of technical delivery on those courses.

The course is designed using a Universal Design for Learning framework that has universal utility for the diverse cohort that Ravensbourne attracts. It supports the multiple learning inputs and outputs that students with challenges require to thrive, accepting that allowances for the increasing levels of neuro-diversity within the cohort improves learning outcomes for all.

The three main precepts of UDL are:

- 1) Provide Multiple Means of Engagement: Affect represents a crucial element to learning, and learners differ markedly in the ways in which they can be engaged and motivated to learn. In order to build engagement, there must be multiple options to foster both attention and commitment in all learners to address the unique variability in interest, effort and perseverance, and self-regulation strategies.
- 2) Provide Multiple Means of Representation: Representation guidelines remind us to provide multiple formats when teaching to activate all students' recognition networks.
- 3) Provide Multiple Means of Action and Expression: It's imperative to engage students and represent content so it is accessible, but in order to determine if students have learnt content, instructors must assess learning using multiple strategies so students have options regarding the type of assessment and ways in which they can present evidence of learning.

A games making course at heart, the framework encourages self-efficacy and team building through project work, encouraging creative and innovative outcomes to a broad range of games industry briefs including mobile, console and PC based outcomes or through encouraging debate and action through a range of active industry and social issues.

The distinctiveness of the course comes from “games first” approach putting making at the centre of teaching, pushing students to develop their own practice in a supportive and critical environment and to engage with the wider elements of games culture and practice.

The Mindsets and Skillsets Manifesto: Five Principles

Ravensbourne developed its Mindsets and Skillsets Manifesto as part of an institution-wide Portfolio Review. This was the culmination of a significant process that included a broad literature review; various outputs from national and international conferences and institutional visits; a ‘Futures in the Making Symposium’ attended by academic faculty - featuring an industry panel and a second panel of high profile external academics; a ‘20 / 20 / 20 Visiting Lecture Programme’; and market analysis of existing courses and the university’s academic framework. The final Manifesto also drew from the institution’s Strategic Plan and the Director’s post-2018 vision document.

The Mindsets and Skillsets Manifesto consists of Five Principles that creates the basis of a vision that informs a new academic framework, its new curriculum, and all course level learning outcomes. This Manifesto underpins the validation and revalidation documents presented here, and is briefly articulated in the following way:

1. Cultivate - where the individual thrives

- *Holistic Education: beyond the discipline*
- *Life Skills: resilience, self-efficacy, multiple intelligence*

Extending the norms of skills-acquisition and competency-based approaches Cultivate nurtures the creative individual beyond the academy, embracing the holistic notion of educating the whole person.

Critical life-skills are investigated and multiple intelligences explored through a model that supports professional and personal development to create and support resilient and inclusive individuals prepared for work in the ever-changing creative industries and for living with wider societal and cultural flux in the 21st century.

2. Collaborate - where disciplines evolve

- *Blurring Disciplines: petri dish for new thinking and practice*
- *Shape-Shifters: new practice demands new practitioners*

The Collaborate model enables students with discipline-specific knowledge to apply their own creative thinking, design and media practices and methodologies and production techniques to interdisciplinary and transdisciplinary projects.

Interdisciplinary project models integrate subject knowledge and working methods from a range of disciplines to create synthesis of practice, whilst the transdisciplinary model creates new and extended disciplinary modes through the unity of intellectual and practice-based frameworks to reach beyond single disciplinary perspectives.

3. Integrate - where education engages industry

- *Professional Modes: education mirrors industry*
- *Depth and Breadth: specialists and generalists*

A model that integrates academic delivery with industry practice; enabling subject-specific, interdisciplinary student teams to replicate modes of working found within relevant professional models; the Production House in Film and TV, the Design Studio in communication and media design, the Fashion House in fashion

and textiles, the Advertising Agency in advertising and promotion and the Architecture Practice in architecture and interiors.

Typically the Integrated Team, with each member assigned a specific role, works to a phased delivery that may include the Discover, Define, Develop and Deliver stages of the Design Double Diamond. Integrate challenges traditional constraints in the teaching of the solo practitioner and embraces the notion of disciplinary discovery and practice through team working.

4. Advocate - where purpose meets practice

- *Citizen Practitioners: tackling real-world problems*
- *Self to Selves: from the individual to the collective*

Putting purpose first, Advocate recognises the responsibility for creative education to address the unprecedented environmental, social and economic challenges facing humankind; tomorrow's designers and media practitioners are increasingly aware of their responsibilities as global citizens to engage with complex ethical issues related to climate change, social justice, interdependence, wellbeing and biodiversity.

Advocate puts studio projects and commercial and charitable industry commissions at the centre of the educational experience enabling student's real-world opportunities to improve the communities in which they live and work and in turn begin to transform the wider world.

5. Originate - where creativity meets technology

- *Mind-Sets & Skill-Sets: the dynamism of ideas + technology*
- *Applied Mastery: leveraging theory, practice and innovation*

Sitting at the intersection of creativity and technology, Originate enables the merging of visionary mind-sets and skill-sets to provide provocative and challenging design and media approaches. The amalgamation of theory and practice, Originate embraces both integrated and agile design-thinking and design-doing practice and research methodologies to forge dynamic technologically-savvy and creativity-driven responses and solutions to given and self-directed industry-leading projects.

Programme aims

- To understand the fundamentals of good programming and how that applies to games making
- To prepare you for a career as a games maker, either in the AAA or independent markets.
- To use technology to bring stories and game experiences to life.
- To enable you to specialise within the coding discipline that best suits your skills.
- To build a critical language and understanding about games and games development.
- To develop a solid understanding of games technologies enabling you to respond to changes in the development landscape quickly and confidently.

Programme Learning Outcomes

The course provides opportunities for students to develop and demonstrate knowledge and understanding, qualities, skills and other attributes in the following areas.

On completion of the course students will be able to:

LO1 CULTIVATE

- **Technical Competence**
- **Subject Knowledge**
- **Resilience**

Level 4

Demonstrate capacity for developing discipline specific knowledge and technical competencies, supporting academic & practical self-efficacy and emerging employability abilities.

Level 5

Evidence capacity for evolving discipline specific knowledge and technical competencies, supporting academic & practical self-efficacy and evolving employability skills.

Level 6

Evidence and contextualise capacity for utilising and synthesising discipline specific knowledge and technical competencies to support academic & practical self-efficacy and advancing employability proficiencies.

LO2 COLLABORATE

- **Inter-disciplinary Working**
- **Coproduction**

Level 4

Demonstrate capacity for developing engagement with inter-disciplinary and trans-disciplinary practices. Demonstrate capacity to engage with cooperative interactions and partnerships/teamwork.

Level 5

Demonstrate capacity for employing approaches that utilise inter-disciplinary and trans-disciplinary working methods.

Demonstrate capacity to employ cooperative interactions and partnerships/teamwork to support professional development.

Level 6

Demonstrate ability to combine strategies that synthesise inter-disciplinary and trans-disciplinary working methods into personal practice.

Evidence aptitude to synthesise cooperative interactions and partnerships/teamwork in personal working methodologies.

LO3 INTEGRATE

- **Communication & Presentation**
- **Networking**
- **Professional Practice**

Level 4

Demonstrate emerging ability to develop communication and presentation strategies (including narrative & storytelling) in physical, written and oral forms.

Demonstrate emerging capacity to engage with industry interactions, and professional working practices to support practical and theoretical development.

Level 5

Demonstrate capacity for developing coherent and aligned communication and presentation approaches (including narrative & storytelling) in physical, written and oral forms.

Evidence evolving ability to combine academic development with industry interactions, practices and professional working models in order to develop disciplinary discovery and personal practice.

Level 6

Demonstrate effective competence to employ coherent and aligned communication and presentation strategies in physical, written and oral forms.

Evidence ability to effectively synthesise academic development with industry interactions, practices and professional working models in order to facilitate disciplinary discovery and personal professional practice.

LO4 ADVOCATE

- **Critical Reflection**
- **Professional Identity**

Level 4

Demonstrate capacity for Critical Reflection, to consider and support personal and professional development.

Demonstrate emerging working approach/attitude that identifies consideration of social and ethically responsible working methods and how this informs personal practice.

Level 5

Evidence ability to engage with Critical Reflection, to review, analyse and interpret personal and professional development.

Evidence developing working process that identifies consideration and interpretation of social and ethically responsible working methods and how this guides personal professional practice.

Level 6

Evidence ability to utilise Critical Reflection, to review, analyse, interpret and evaluate personal and professional development.

Identify a coherent working ethos that identifies consideration of social and ethically responsible working methods and how this aligns and supports personal professional practice.

LO5 ORIGINATE

- **Research**
- **Experimentation**
- **Ideation**

Level 4

Demonstrate capacity for emerging enquiry methods to support practical and theoretical development in physical, written and oral forms.

Demonstrate capacity to consider ideas, materials, tests and outcomes that may inform practical and theoretical development in physical, written and oral forms.

Level 5

Evidence capacity for considered and aligned enquiry processes to inform practical and theoretical development in physical, written and oral forms.

Evidence capacity to combine ideas, materials, tests and outcomes into solutions that inform and guide practical and theoretical development in physical, written and oral forms.

Level 6

Evidence capacity for rigorous enquiry processes that support and facilitate practical and theoretical development in physical, written and oral forms.

Evidence capacity to combine & synthesise ideas, materials, tests and outcomes into solutions to inform and support and enable practical and theoretical development in physical, written and oral forms.

Learning and Teaching methods	Assessment Strategy
<p><i>To include the progression Level 4- 5 -6</i></p> <p>All Levels: All levels will adopt a hybrid “Digital First” strategy in terms of teaching. Units will blend the best in class in terms of digital delivery and face to face with sessions taught using digital delivery platforms such as Discord, Microsoft Teams, alongside VLE’s to capture sessions asynchronously, and other sessions using face to face teaching including workshops and tutorials. The course will be able to adapt quickly and seamlessly to changes in accessibility and social proximity.</p> <p>Level 4:</p> <p>At Level 4 skills will be developed through a combination of workshops, lectures, seminars and group exercises, self-directed study, as well as individual or group tutorials.</p> <p>This will include blended units where students will engage with online resources provided by the institution and from outside resources (Pluralsight, Unity Learn or similar) or sessions will be run using a digital platform.</p> <p>Students will engage with and be trained in the use of digital platforms for effective delivery of outcomes including games, presentations, documentation and prototypes.</p> <p>All unit briefs will be created with the digital first strategy in mind but leverage appropriate face to face teaching. Some units will feature online delivery as part of the normal delivery schedule.</p> <p>In addition, students may also test their developing disciplinary knowledge with collaborative learning exercises and challenges as directed by unit briefs using both digital and physical spaces to achieve goals.</p> <p>In particular, Level 4 will provide a set of technical and theoretical competencies that enable students to engage with the practice of games development and programming, how to manage learning in a</p>	<p><i>This should cover the general assessment strategy for the course. Summarise the assessment methods and types of assessments to be applied across the course e.g. project learning, seminars, workshops etc.</i></p> <p><i>Also to include explanation of the role of formative and summative assessments</i></p> <p>Level 4:</p> <p>At level 4 students will be introduced to the types of assessment that will be used across the entire course. They will be introduced to working from a brief.</p> <p>Students will have an opportunity to develop different ways of presenting work to tutors and peers.</p> <p>Assessment will include a variety of tasks such as games development, blogs, reports, presentations and evidence of experimentation and research. It will require students to demonstrate working code in a manner appropriate to the specific brief i.e. when code should be compiled and how uncompiled code should be delivered.</p> <p>Students can express these through a variety of media: written, recorded video, recorded audio and image-based work are acceptable.</p> <p>Students will be encouraged to engage with professional qualifications in Unity and Unreal award schemes as part of their professional development, but this will not form part of unit assessment.</p> <p>Each unit has a Formative assessment point where students are given feedforward/feedback on work so far and advice and guidance on how to develop and complete projects. This can take the form of a</p>

<p>creative HE environment and develop a theoretical appreciation of games technology and its place in broader culture of game development.</p> <p>Students will also be introduced to what it means to be creative and how creative people initiate, plan and execute projects alongside rigorous technical due diligence.</p> <p>Students will also discover ideas around programming patterns and object-oriented programming methodologies.</p> <p>Through set tasks and project work students will be introduced to technical workflows and approaches to prototyping that are common in industry and students will explore how these can inform their creative and professional process.</p> <p>Learning is facilitated by permanent and sessional teaching staff, who are practising professionals themselves and bring an important industry-informed perspective to the course.</p> <p>Students will be introduced to industry through skills, discussion of key topics and direct interaction with industry.</p> <p>Level 5: Skills acquired at Level 5 are developed further through a combination of workshops, lectures, seminars, group exercises, self-directed study, as well as individual or group tutorials within the digital first strategy.</p> <p>Students will work alongside BA(Hons) Games Development students on a key collaborative unit enabling students to develop team working and understanding of key development workflows.</p> <p>These units will inform Level 6 units around portfolio creation and Final Major Project and enable students to make career choices around their industry discipline.</p> <p>In addition, students will test their developing disciplinary knowledge in collaborative scenarios with the opportunity to take part in the common Elective system offering collaborative opportunities both within Ravensbourne and in external contexts.</p> <p>Students will also be introduced to what currently constitutes innovative practice within games design and explores the interplay of innovation and technological development.</p>	<p>group code review, one on one with a tutor or small group as per the project brief for the unit.</p> <p>Each unit has a Summative assessment point where a final grade is awarded and feed forward if given to the student.</p> <p>Level 5: At level 5 the types of assessment evidence required across the units are similar to level 4 in scope and breadth.</p> <p>However, students will be encouraged to self-direct their study within particular skill sets. Students will be exposed to the wide range of programming roles within industry and encouraged to investigate them further.</p> <p>Formative Assessment In Level 5 students will be provided with Formative assessment feedforward/feedback via individual tutorials, group presentations and individual presentations.</p> <p>In addition, in Level 5 there is more opportunity for collaborative work with peer and industry feedback. There is more opportunity for students to engage</p>
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Visiting speakers and specialists will be invited to deliver lectures or practical workshops, bringing their own specialism and examples of industry work into the sessions.

Students will also agree their dissertation topic with the appropriate department at this level ready for the Level 6 dissertation unit.

The dissertation unit allows for technical research for students wanting to develop technical expertise or perform a deep dive into a game technology relevant to their disciplines.

Students will develop their industry knowledge through the lens of their pathway with talks directed at each discipline, development of specific pathway skills and research into likely roles and pursuing accreditation in key technologies.

Level 6:

Skills acquired at Level 4 and 5 will be developed and perfected at Level 6 through lectures, seminars, workshops, self-directed study and individual tutorials.

A large proportion of project-based work will be initiated and developed by students themselves, with a view to mastering skills particular to their interests within the discipline.

Students will be encouraged to delve deeper into their particular interests through individual tutorials and programmes of study initiated by the students themselves using online and physical resources.

Students will be offered increased responsibility for their own learning undertaking a major project. Whilst students will be encouraged to work in multi-discipline teams to facilitate the most complete playable game outcomes, individuals can undertake major projects tied to the discipline.

This could be, but is not limited to fully realised games, world building and environment builds, level or mission design, architectural visualisations, VR/AR/XR experiences experimental mechanics or UX/UI and art installation using game technologies.

with external industry professionals and present to industry panels.

Summative Assessment

This will happen at the end of each unit and involve the submission for formal assessment of the types of evidence required by each. Again, outcomes for each unit will be as flexible as possible, focusing on engagement with the problems the brief describes rather than prescribed work products. Students will need to provide working builds and project files for assessment, if appropriate.

Level 6:

In level 6 the types of assessment evidence required across the units are similar to level 5 but are more individually focused.

Formative Assessment

In Level 6 students will be provided with **Formative** assessment feedforward/feedback via individual tutorials, group presentations and individual presentations.

In addition, in Level 6 there is more opportunity and encouragement for students to engage with peer and industry feedback.

Summative Assessment

This will happen at the end of each unit and involve the submission for formal assessment of the types of evidence required by each.

Again, outcomes for each unit will be as flexible as possible, focusing on engagement with the

<p>Students are expected to take on professional attitudes to time and project management, quality assurance, playtesting and deployment.</p> <p>Visiting lecturers will be invited to deliver lectures and/or practical sessions related to their area of work and students will develop an outward facing portfolio to aid graduate progression.</p> <p>Written work (outside of dissertations) will focus upon critical analysis and reflection of project-based work, with a view to encouraging ongoing development. Within the sphere of theoretical study, students will develop and write a dissertation which explores an area of their subject in depth.</p> <p>Students will be expected to interface directly with industry through mentoring, competition and research.</p>	<p>problems the brief describes rather than prescribed work products. Students will need to provide working builds and project files for assessment, if appropriate.</p>
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Unit Code	Unit Title	Credits
Level 4		
CGP21102	Introduction to Gaming Architectures and Algorithms	15
CGP21103	Introduction to Programming (C++)	30
CGP20104	Maths and Physics for Games	30
CGP20105	Mechanics and Prototypes	30
	Themes In Contemporary Culture	15
Level 5		
CGP21202	How to Work in A Games Studio (Dual Coded with GMD)	30
CGP21203	Game Engines and Scripting Languages (C#, C++)	15
CGP21204	Artificial Intelligence for Games	30
	Big Ideas and Philosophies	7.5
	Dissertation Proposal	7.5
	Departmental Elective	15
	Institutional Elective	15
Level 6		
CGP21302	Networking for Games	15
CGP21303	Final Major Project 1 – Pre Production	30
CGP21304	Final Major Project 2- Production	45
	Dissertation	30

<p>Entry Requirements</p> <p>Students will normally be expected to possess five GCSEs (grade C or above) or equivalent (including English, Maths and Physics) and also to hold at least one of the following or equivalent UK or international qualification:</p> <ul style="list-style-type: none"> • 2 A Levels (grades A-C) or 4 AS Levels (grades A-C) • 2 vocational A Level (grades A-C) • Level 3 Foundation Diploma or National Diploma • Advanced Diploma (grades A-C)
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- International Baccalaureate (28 points or above)

Where an applicant's first language is not English, proof of competence in English will be required. For undergraduate and postgraduate programmes, this will normally take the form of an approved English language test at B2 level in the Common European Framework of Reference. Any test for proficiency in English must have been achieved within 18 months preceding the date of entry. Individual programmes may have higher language requirements. Ravensbourne's international department will advise applicants on the language requirements for particular programmes.

Selection Criteria

Ravensbourne will use a number of methods to assess an applicant's suitability for their course of choice. Primarily applicants are selected on the basis of:

- an applicant's prior academic achievement/qualifications and/or previous employment/life experience.
- assessment of the applicant's ability and aptitude to succeed on the course for which s/he has applied.

Students will be selected according to the generic criteria set out below:

Personal attributes

- shows commitment, enthusiasm and interest in the subject area
- initiative and problem solving
- ability to communicate

Creative process

- can generate ideas and use external sources to develop them
- ability to research an idea and follow it through to a finished product

Study skills

- can understand and organise information clearly
- can investigate and analyse information
- shows reasoning and intellectual curiosity

Professional skills

- has shown they can initiate and deliver projects
- can work in a team and with people with different skills
- has shown confidence with IT

Career aspirations

- understands the relevance of the course to her/his career ambitions
- understands current debates within industry

Accreditation of Prior Learning

Applications are welcomed from those who may not possess formal entry qualifications, mature students, those with work experience or with qualifications other than those listed above. Such applicants should demonstrate sufficient aptitude and potential to complete the course successfully. Applicants will be assessed at interview in accordance with Ravensbourne's Accreditation of Prior Learning Policy and Procedure.

Student Support	http://intranet.rave.ac.uk/display/SS/Student+Support
Assessment Regulations	http://intranet.rave.ac.uk/display/RA/Assessment+-+UG+and+PG

Learning Outcomes Mapped to Units

	Level 4				Level 5			Level 6			
Course LOs	CG P2 11 02	CG P2 11 03	CG P2 11 04	CG P2 11 05	CG P2 12 02	CG P2 12 03	CG P2 12 04	CG P2 13 02	CG P2 13 03	CG P2 13 04	
LO1	x	x	x	x		x	x	x	x	x	
LO2		x			x				x	x	
LO3				x	x			x	x	x	
LO4	x		x		x	x	x		x	x	
LO5			x	x		x	x	x	x	x	

Description of the Course

This section will also be used for other purposes, such as prospectus, marketing, website etc.

Become a master programmer and stay at the very forefront of the games evolution. Working side by side with games artists and designers, you will develop a deep technical understanding of games engines and programming architecture. Develop unrivalled skills within programming and scripting, content generation, AI and virtual and augmented reality. With no prior knowledge in coding or programming needed, the course will provide you with the tools and confidence to thrive in the competitive world of gaming.

This course equips students with everything they need to excel in a coding career in the games industries. Develop industry level skill-sets in programming and the ability to solve creative problems. Build the confidence to work both independently and as part of a team. Graduates go on to pursue careers in some of the following roles: games programmer, mobile applications developer and software engineer.

Academic Framework – Course Diagram

	Term1	Term2	Term 3
Level 4	Induction <i>(Inc. contribution from Theory)</i>	Theory Unit – Themes in Contemporary Culture	
120 credits	0 credits	15 credits (Pass/Fail)	
	Introduction to Games Architecture Subject Unit 15 credits		

	Introduction to Programming 30 credits Subject unit	Maths and Physics for Games 30 Credits Subject Unit	Mechanics and Prototypes 30 Credits Subject Unit
Level 5	Theory Unit – Part 1 <i>Big Ideas and Philosophies</i>		Theory Unit – Part 2 <i>Dissertation Proposal</i> 15 credits
	Elective 1: <i>Cross Departmental</i> 15 credits	Elective 2: <i>Cross-Institutional</i> 15 credits	
	Game Engines and Scripting Languages Subject Unit 15 credits	Artificial Intelligence for Games Subject Unit 30 credits	Game Studio (With Game Dev) Subject Unit 30 credits
120 credits			
Level 6	Dissertation /Research Unit 30 credits		
	Networking for Games Subject Unit 15 credits	Final Major Project 1 – Pre-Production Subject Unit 30 Credits	Final Major Project 2 – Production Subject Unit 45 Credits
120 credits			