Course Specification

Course Summary Information		
1	**Course Title**	BSc (Hons) Game Programming
2	**Course Code**	US1500
3	**Awarding Institution**	Birmingham City University
4	**Teaching Institution(s)** (if different from point 3)	
5	**Professional Statutory or Regulatory Body (PSRB) accreditation** (if applicable)	Not applicable

6	**Course Description**
	Do you aspire to be a master game programmer? Our BSc (Hons) Game Programming course is designed to propel you into the dynamic world of game development. Immerse yourself in our advanced game programming labs, equipped with the latest software and hardware, including high-performance PCs and VR development kits. This course offers a blend of theoretical knowledge and practical skills in areas like AI, mobile and console game development, and graphics programming. Collaborations with industry giants and proximity to game studios provide unparalleled networking opportunities and insights into real-world applications. Get ready to make your mark in the gaming industry, showcasing your skills in prestigious competitions like the Global Game Jam. Our facilities are specifically designed to provide a real-world gaming development environment. You will have access to cutting-edge game development PCs and console development platforms. We emphasise hands-on learning with tools like Unity, Unreal Engine, and custom game engines developed in-house. The course also fosters a practical understanding of hardware used in game development, from mobile devices to high-end gaming consoles. Through our partnerships with leading technology companies and game development studios, you will have the unique opportunity to work on collaborative projects, gaining invaluable industry experience. These collaborations enable you to stay ahead of technological trends and learn directly from experts in the field.

7	**Course Awards**		
7a	**Name of Final Award**	**Level**	**Credits Awarded**
	Bachelor of Science with Honours Game Programming Bachelor of Science with Honours Game Programming with Professional Placement Year	6 6	360 480
7b	**Exit Awards and Credits Awarded**		
	Certificate of Higher Education Game Programming Diploma of Higher Education Game Programming Bachelor of Science Game Programming	4 5 6	120 240 300

8	**Variations from the University Academic Regulations**		
	Not applicable.		

9	**Delivery Patterns**		
Mode(s) of Study	**Location(s) of Study**	**Duration of Study**	**Code(s)**
Full Time	City Centre	3 years	US1500
Professional Placement	City Centre	4 years	US1501

10	**Entry Requirements**	
	Home:	The admission requirements for this course are stated on the course page of the BCU website at https://www.bcu.ac.uk/.
	EU:	
	International:	
	Access:	N/A

11	**Course Aims**
	• To provide students with a solid foundation in game programming principles, focusing on developing the essential skills required in the gaming industry. • To cultivate advanced technical competencies in programming languages, tools, and technologies pivotal to game development. • To enhance students' understanding of the complete game development cycle, fostering their ability to contribute effectively to various stages of project development. • To encourage interdisciplinary collaboration, preparing students to work effectively in diverse teams, mirroring industry practices. • To foster innovation and problem-solving skills, equipping students to address and overcome challenges in game programming. • To align the curriculum with industry standards, ensuring students are well-prepared for career opportunities in the gaming sector. • To develop project management and teamwork skills, essential for success in the collaborative environment of game development. • To promote an understanding of professional and ethical standards in the gaming industry, preparing students for responsible roles. • To encourage lifelong learning and adaptability, enabling students to keep pace with the rapidly evolving field of game programming. • To assist students in building a professional portfolio that showcases their skills and projects, enhancing their employability and career prospects in the gaming industry.

12	**Course Learning Outcomes**
	Knowledge and Understanding
1	Understand core concepts and principles of game programming, including algorithms, data structures, and software engineering practices relevant to game development.
2	Comprehend the role of various programming languages and their application in creating diverse game components.
3	Grasp the methodologies involved in the game development lifecycle, from concept to deployment.

4	Recognise the importance of the inter-relationship between game design, game mechanics and the player experience.
5	Understand the principles of artificial intelligence, physics, and graphics in the context of game development.
	Skills and Other Attributes
6	Demonstrate the ability to apply programming skills to develop functional and engaging game software.
7	Utilise various game development tools and engines to create and manage game assets, environments, and gameplay elements.
8	Develop effective problem-solving strategies and innovative solutions in game programming challenges.
9	Collaborate within multidisciplinary teams, effectively communicating technical concepts to non-technical members.
10	Conduct and implement project management and quality assurance processes to ensure the successful completion of game projects.

13	**Level Learning Outcomes**
	Upon completion of Level 4 / the Certificate of Higher Education, you will be able to:
	• Demonstrate a foundational understanding of programming concepts and their application in game development. • Apply basic game design principles to create simple game assets and environments. • Understand the role of different game development tools and their application in creating games. • Collaborate effectively in a team to produce a basic game project.
	Upon completion of Level 5 / the Diploma of Higher Education, you will be able to:
	• Develop more complex game applications, integrating advanced programming techniques. • Analyse and apply sophisticated game mechanics and user interaction concepts. • Utilise advanced game development software and tools to enhance game design and functionality. • Manage a game development project, demonstrating effective communication and leadership skills.
	Upon completion of 60 credits at Level 6 / the Bachelor's Degree, you will be able to:
	• Design and implement complex game systems, demonstrating a deep understanding of advanced programming and game development strategies. • Critically evaluate and optimise game performance and user experience. • Exhibit a professional level of technical and creative skills in a comprehensive game development project. • Showcase the ability to innovate and adapt to new trends and technologies in the gaming industry.

14	Course Learning, Teaching and Assessment Strategy
	The learning, teaching, and assessment strategy for the Game Programming course is structured to provide a dynamic and immersive educational experience. The course utilises a blend of theoretical lectures, practical workshops, and real-world project-based learning to ensure students gain a deep understanding and hands-on experience in programming within game development. **Learning and Teaching Approaches:** • Lectures: Deliver foundational knowledge and emerging trends in game programming. • Workshops: Provide hands-on experience with industry-standard tools and software. • Seminars: Facilitate discussions on case studies and current industry practices. • Group Projects: Promote collaboration and problem-solving skills, simulating real-world game development scenarios. • Guest Lectures: Offer insights from industry professionals, enhancing learning with real-world relevance. **Assessment Strategy:** • Portfolios: Showcase a compilation of students' work, reflecting their technical skills and creativity. • Practical Assignments: Evaluate the application of taught skills in real-world-like scenarios. • Presentations: Develop communication skills, allowing students to articulate their processes and solutions. • Reflective Journals: Encourage students to reflect on their learning journey, fostering self-assessment and critical thinking. • Peer Reviews: Enable students to give and receive feedback, promoting a deeper understanding of the subject matter. **Feedback and Feedforward:** • Continuous Feedback: Provided throughout modules to guide students' learning and project development. • Feedforward: Offers constructive guidance on how to improve and apply skills in future work. • One-on-One Tutorials: Allow for personalised feedback and targeted developmental advice. **Expectations from Students:** • Active participation in all learning activities. • Engagement with peer feedback and collaborative projects. • Self-directed exploration and research to complement structured learning. • Commitment to continuous improvement and receptiveness to feedback.

15	Course Requirements

15a

Level 4:

To complete this course, you must successfully complete all the following CORE modules totalling 120 credits:

Module Code	Module Name	Credit Value
CMP4306	Game Programming	20
CMP4307	Modelling	20
CMP4303	Game Asset Pipeline	20
CMP4305	Game Mechanics	20
CMP4302	Animation	20
CMP4304	Game Design	20

Level 5:

To complete this course, you must successfully complete all the following CORE modules totalling 120 credits:

Module Code	Module Name	Credit Value
CMP5377	High Performance Libraries	20
CMP5402	Mobile Development	20
CMP5376	Game Studio Production	20
CMP5375	Game Engine Architecture	20
CMP5374	Computer Graphics	20
CMP5373	Collaborative Practice	20

Professional Placement Year (optional):

To qualify for the awards of Bachelor of Science with Honours Game Programming with Professional Placement Year, you must successfully complete all the modules listed as well as the following Level 5 module:

Module Code	Module Name	Credit Value
PPY5004	Professional Placement	120

Level 6:

To complete this course, you must successfully complete all the following CORE modules totalling 120 credits:

Module Code	Module Name	Credit Value
CMP6241	Game Artificial Intelligence	20
CMP6244	Network Programming	20
CMP6243	Game Physics	20
CMP6239	Console Game Development	20
CMP6200	Individual Honours Project	40

15b	Structure Diagram

All module credits are 20, unless otherwise stated.

Level 4

SEMESTER ONE	SEMESTER TWO
Core CMP4306: Game Programming CMP4304: Game Design CMP4307: Modelling	Core CMP4305: Game Mechanics CMP4302: Animation CMP4303: Game Asset Pipeline

Level 5

Core CMP5377: High Performance Libraries CMP5402: Mobile Development CMP5376: Game Studio Production	Core CMP5375: Game Engine Architecture CMP5374: Computer Graphics CMP5373: Collaborative Practice

Professional Placement – Year 3 (optional)
PPY5004 Professional Placement Module (120 credits)

Level 6

Core CMP6241: Game Artificial Intelligence CMP6244: Network Programming	Core CMP6243: Game Physics CMP6239: Console Game Development
CMP6200: Individual Honours Project (40 credits)	

16	Overall Student Workload and Balance of Assessment

Overall student *workload* consists of class contact hours, independent learning and assessment activity, with each credit taken equating to a total study time of around 10 hours. While actual contact hours may depend on the optional modules selected, the following information gives an indication of how much time students will need to allocate to different activities at each level of the course.

- *Scheduled Learning* includes lectures, practical classes and workshops, contact time specified in timetable
- *Directed Learning* includes placements, work-based learning, external visits, on-line activity, Graduate+, peer learning
- *Private Study* includes preparation for exams

The *balance of assessment* by mode of assessment (e.g. coursework, exam and in-person) depends to some extent on the optional modules chosen by students. The approximate percentage of the course assessed by coursework, exam and in-person is shown below.

Level 4

Workload

24% time spent in timetabled teaching and learning activity

Activity	Number of Hours
Scheduled Learning	288
Directed Learning	336
Private Study	576
Total Hours	1200

Balance of Assessment

Assessment Mode	Percentage
Coursework	89
Exam	0
In-Person	11

Level 5

Workload

24% time spent in timetabled teaching and learning activity

Activity	Number of Hours
Scheduled Learning	288
Directed Learning	336
Private Study	576
Total Hours	1200

Balance of Assessment

Assessment Mode	Percentage
Coursework	80
Exam	0
In-Person	20

Level 6

Workload

17% time spent in timetabled teaching and learning activity

Activity	Number of Hours
Scheduled Learning	202
Directed Learning	236
Private Study	762
Total Hours	1200

Balance of Assessment

Assessment Mode	Percentage
Coursework	83
Exam	0
In-Person	17