Programme Specification

BSc (Hons) Games Programming

Awarding Institution:	The University of Bolton		
Teaching Institution:	The University of Bolton		
Division and/or Faculty/Institute:	Arts and Media Technologies		
Professional accreditation	Professional body	Professional body URL	Status of graduates
	N/A	N/A	N/A
Final award(s):	BSc (Hons)		
Interim award(s)	N/A		
Exit or Fallback award(s)	Certificate of Higher Education in Games Programming Diploma of Higher Education in Games Programming		
Programme title(s)	Games Programming		
UCAS Code	G450		
JACS Code	I610		
University Course Code(s)	GAM0005 – Full-time GAM5005 – Part-time		
QAA Benchmark Statement(s)	Computing 2007		
Other internal and external reference points	QAA Academic Infrastructure, including the Framework for Higher Education Qualifications and the Code of Practice UK Quality Code for Higher Education University of Bolton awards framework Skillset guidelines for games programming.		
Language of study	English		
Mode of study and normal period of study	Full time – 3 years Part time – 5 years		

Admissions criteria

Two A/AS levels with at least one A/AS level in a Mathematics / science / computing area, or, National Diploma (or equivalent) in a Computing / Games related area.

You should also have five GCSEs at grade C or above (or equivalent) including English and Mathematics.

If English is not your first language you will also need IELTS 6.0 (or equivalent)

Students with a technical computing background may be accepted on to the course, but will need to attain a minimum mark from a diagnostic mathematics test and attend an interview.

All students will need to attain a minimum mark from a diagnostic mathematics test.

Additional admissions matters

Not applicable

Fitness to practise declaration

Not applicable

Aims of the programme

The principal aims of the programme are to:

1. To provide students with a broad education in game programming, game design, development and technology, with a special emphasis on the technical aspects of game production.

2. To equip students with the skills (especially programming) and knowledge necessary to pursue a successful career in industries specialising in the creation and distribution of leisure and entertainment computing technologies.

3. To use games programming methods and techniques as a vehicle for introducing the theoretical, intellectual, creative and dynamic aspects of games computing.

Distinctive features of the programme

- Three years of programming using C++, the principal programming language in games development.
- Tuition and practise in Object Orientated Programming and Design techniques relevant for games development.
- Advanced programming data structures and algorithms for game development.
- Application of mathematics and physics for the modelling of realistic movement and behaviours with 2D and 3D games.
- Teamwork with games designers and artists, as well as programmers.
- The use of advanced programming techniques, including: artificial intelligence, multi-core programming and network programming.

Programme learning outcomes
K. Knowledge and understanding On completion of the programme successful students will be able to demonstrate systematic knowledge and understanding of:
1. Formal analysis of game play & game design.
2. The underlying theory, concepts and principles of computer game development.
3. The business constraints and financial requirements in computer game development.
4. Scientific principles to enable realistic behaviour within games.
C. Cognitive, intellectual or thinking skills On completion of the programme successful students will be able to demonstrate the ability to:
1. Critically evaluate leisure software in both conceptual and completed forms.
2. Analyse and specify computer-based systems for use in interactive entertainment.
3. Deploy effectively the methods and tools used in the definition, construction and development of fully functioning computer games
P. Practical, professional or subject-specific skills On completion of the programme successful students will be able to demonstrate the ability to:
1. Use appropriate theory, practice and tools, for the specification, design, and implementation of computer-based games
2. Use core analytical techniques and design tools
3. Work as part of a development team
4. Write appropriate computer programs
T. Transferable, key or personal skills On completion of the programme successful students will be able to demonstrate the ability to:
1. Communicate effectively, orally and in writing
2. Manage and organise
3. Solve numerical problems and analyse information
4. Solve practical programming problems

5. Study independently, evaluate and reflect and satisfactorily set goals
6. Undertake research and demonstrate literature review skills
7. Demonstrate employability skills

Programme structure

The BSc (Hons) Degree in Games Programming programme is 3 years full-time and up to 5 years part-time. Students take 17 core modules, as outlined in the table below. Overall, the number and level of credits for this qualification are 120 credits at Level HE4, 120 credits at HE5 and 120 credits at HE6 – making 360 credits.

Module Code	Module title	Core/Option/ Elective (C/O/E)	Credits	Length (1, 2 or 3 periods)
GAM4000	Scholarship	C	20	1
GAM4001	Introduction to Level Design	C	20	1
GAM4003	Introduction to Games Programming	C	20	1
GAP4001	Object Orientated Games Programming	C	20	1
GAM4002	Mechanics and Metrics	C	20	1
GAP4000	Games Mathematics	C	20	1
GAM5000	Employability and Enterprise	C	20	1
GAP5000	Data Structures for Games	C	20	1
GAP5002	Software Engineering	C	20	1
GAP5003	Applied Physics	C	20	1
GAM5001	Project Portfolio	C	20	1
GAP5001	Games Hardware Architecture and Peripherals	C	20	1
GAM6000	Research	C	20	1
GAP6000	Advanced Games Techniques	C	20	1
GAP6001	Advanced Game Engine Architecture	C	20	1
GAP6002	Advanced Game Implementation	C	20	1
GAM6001	Major Project	C	40	1

Learning and teaching strategies

Learning and teaching methods apply a blended style. This may include lectures, seminars, tutorials and critiques, self-directed learning, e-learning and laboratory/workshop sessions, as well as online sessions and support. Practical skills are acquired through technical introduction and support, workshop sessions, demonstrations and activity-based assignments. Active learning is promoted with a strong practical theme, throughout.

Learning activities (KIS entry)

	Course Year		
	HE4	HE5	HE6
Scheduled learning and teaching activities	28%	28%	19%
Guided independent study	72%	72%	81%
Placement/study abroad	0		

Assessment strategy

Assessment is carried out at key points during teaching. Formative assessment with either verbal and/or written feedback is offered during each module. Written feedback is provided following summative assessment.

Assessment tasks are linked to the objectives of each module and are normally completed by the end of each module. Types of assessment evidence can include: assignments, projects, in-class tests, examinations and presentations.

Assessment methods (KIS entry)

	Course Year		
	1	2	3
Written exams	10%	25%	15%
Coursework	70%	67%	70%
Practical exams	20%	8%	15%

Assessment regulations

Assessment Regulations for Undergraduate Modular Programmes

Grade bands and classifications

Grade Description	Mark %	Honours Degree Classification
Work of exceptional quality	70+	i
Work of very good quality	60-69	ii.i
Work of good quality	50-59	ii.ii
Work of satisfactory quality	40-49	iii
Borderline fail	35-39	
Fail	Below 35	

Honours classification

You will normally be awarded the honours classification resulting from the application of either Rule ACM20 or Rule ACM6.

Rule ACM20

A weighted average of the marks from modules worth a total of 200 credits at Levels HE5 and HE6 combined, including the marks from modules worth no more than 80 credits at least at Level HE5 (weighted 30 percent) and marks from modules worth at least 120 credits at Level HE6 (weighted 70 percent), which represent the best marks achieved by you at those Levels.

Where the average falls unequivocally into one of the following bands: 48.00 - 49.99, 58.00 - 59.99, 68.00 - 69.99; and you have achieved marks clearly in an honours classification category higher than their average for modules worth at least 110 credits, then you will be awarded an honours degree in the classification category one higher than that indicated by your average.

Rule ACM6 (an alternative if you do not have sufficient marks at Levels HE5 and 6 to apply ACM20)

A simple average of the equally weighted marks from modules worth 120 credits at Level HE6 which represent the best marks achieved by you at that Level.

Where the average falls unequivocally into one of the following bands: 48.00 – 49.99, 58.00 – 59.99, 68.00 – 69.99; and you have achieved marks clearly in an honours classification category higher than their average for modules worth at least 70 credits, then you will be awarded an honours degree in the classification category one higher than that indicated by their average.

Where you have marks available for fewer than 120 credits at Level HE6, honours classification shall normally be based **solely** on a simple average of the available marks for modules at Level HE6, subject to there being marks for a **minimum of 60 credits awarded by the University**. **Upgrading of the honours classification will not normally be available where there are marks available for fewer than 120 credits at Level HE6**, unless this is explicitly approved.

Role of external examiners

External examiners are appointed for all programmes of study. They oversee the assessment process and their duties include: approving assessment tasks, reviewing assessment marks, attending assessment boards and reporting to the University on the assessment process.

Support for student learning

- The programme is managed by a programme leader.
- An Induction programme introduces the student to the University and their programme.

- Each student has a personal tutor, responsible for support and guidance.
- Personal Development Planning (PDP) is integrated into all programmes.
- Feedback on formative and summative assessments is provided.
- A Student Centre providing a one-stop shop for information and advice.
- University support services include: housing, counselling, financial advice, careers and a disability.
- A Chaplaincy.
- Library and IT services.
- Student Liaison Officers attached to each Faculty.
- The Students' Union advice services.
- Faculty and Programme Handbooks which provide information about the programme and University regulations.
- The opportunity to develop skills for employment .
- English language support for International students.
- Support for work-related opportunities and placements.
- Support for employability and preparation for employment.

Methods for evaluating and enhancing the quality of learning opportunities

- Programme committees with student representation.
- Module evaluations by students.
- Student surveys, e.g. National Student Survey (NSS).
- Annual quality monitoring and action planning through Programme Quality Enhancement Plans (PQEPs), Data Analysis Report (DARs) Subject Annual Self Evaluation Report (SASERs), Faculty Quality Enhancement Plans (FQEPs), University Quality Enhancement Plan (UQEP) .
- Peer review/observation of teaching.
- Professional development programme for staff.
- External examiner reports.

Other sources of information

Student portal http://www.bolton.ac.uk/Students/Home.aspx
Students Union http://www.ubsu.org.uk/
Faculty Handbook http://www.bolton.ac.uk/students/
Module database; http://modules.bolton.ac.uk
External examiners reports
http://www.bolton.ac.uk/Quality/QAEContents/ExternalExaminersReports/Home.aspx
The university careers service and web pages at http://www.bolton.ac.uk/Careers/Home.aspx

Document control

Author(s)	S. Manning
Approved by:	Sarah Riches University Validation Event
Date approved:	12 July 2012
Effective from:	2012/13
Document History:	

Learning outcomes map

Module title	Mod Code	Status C/O/E	K1	K2	K3	K4		C1	C2	C3		P1	P2	P3	P4		T1	T2	T3	T4	T5	T6	T7
Scholarship	GAM4000	C	TA		DT			TA	TA								TA	TA			TA	TA	
Introduction to Level Design	GAM4001	C	TA	TA				TA	TA	TA		TA		TA			TA	TA			TA		TA
Introduction to Games Programming	GAM4003	C	TA	TA				TA		TA		TA		TA	TA		TA			TA	TA		TA
Object Orientated Games Programming	GAP4001	C	TA	TA		TA		DT		TA		TA	TA		DTA		TA	TA	TA	TA	TA		TA
Mechanics and Metrics	GAM4002	C	TA	TA				TA	TA	TA		TA		TA			TA	TA			TA	TA	TA
Games Mathematics	GAP4000	C				TA											TA		TA				DT
Employability and Enterprise	GAM5000	C			DTA												DTA				DT	DT	DTA
Data Structures for Games	GAP5000	C	TA	TA				TA	DTA	TA		TA	TA		DTA		TA	DT	TA	DTA		TA	
Software Engineering	GAP5002	C	TA	TA				TA	DTA	TA		TA	TA		DTA		TA	DTA	TA	DTA	TA	TA	
Applied Physics	GAP5003	C				DTA				TA		TA	TA		TA				TA	TA			
Project Portfolio	GAM5001	C	DTA	DTA	D	D		DTA	DA	DTA		DTA	DTA		DTA		DA	DT		DTA	DA	DA	DA
Games Hardware Architecture and Peripherals	GAP5001	C	TA	TA		DTA		TA	DTA	TA		TA	TA		TA		TA	DT	TA	TA	TA	TA	DA
Research	GAM6000	C	D	D	D			D	D								DA				DTA	DTA	
Advanced Games Techniques	GAP6000		DTA	DTA		D		D	DA								DA		DTA			DA	
Advanced Game Engine Architecture	GAP6001	C	DTA	DTA	D	DA		D	DTA	DTA		DTA	DTA		DA		DA	DT	DTA	DA	DA	DA	DA
Advanced Game Implementation	GAP6002	C	DA	DA	D	DA		D	DA	DA		DA	DA		DA		DA	DA	DA	DA	DA	DA	DA
Major Project	GAM6001	C	DA	DA	DA	DA		A	DA	DA		DA	DA		A		DTA	DTA	A	DA	DTA	DTA	DA

K. Knowledge and understanding   P. Practical, professional and subject specific skills C. Cognitive, Intellectual and thinking skills   T. Transferable, key or personal skills
(Developed = D, Taught = T, Assessed = A)

Programme specification: BSc Games Programming
Date: July 2012

Module listing

Module title	Mod Code	New? ✓	HE Level	Credits	Type	Core/Option /Elective C/O/E	Pre-requisite Module / skills	Assessment 1			Assessment 2		
								Assessment type	Assessment %	Add Y if final item	Assessment type	Assessment %	Add Y if final item
Scholarship	GAM4000	New	4	20	Stan	C		CW	100	Y			
Introduction to Level Design	GAM4001	New	4	20	Stan	C		CW	100	Y			
Introduction to Games Programming	GAM4003	New	4	20	Prac	C		PRAC	40		CW	60	Y
Object Orientated Games Programming	GAP4001	New	4	20	Prac	C		PRAC	40		CW	60	Y
Mechanics and Metrics	GAM4002	New	4	20	Stan	C		CW	50		CW	50	Y
Games Mathematics	GAP4000	New	4	20	Stan	C		CW	70		EXAM	30	Y
Employability and Enterprise	GAM5000	New	5	20	Stan	C		PRAC	50		CW	50	Y
Data Structures for Games	GAP5000	New	5	20	Prac	C		CW	50		CW	50	Y
Software Engineering	GAP5002	New	5	20	Stan	C		CW	50		EXAM	50	Y
Applied Physics	GAP5003	New	5	20	Stan	C		CW	60		EXAM	40	Y
Project Portfolio	GAM5001	New	5	20	Proj	C		CW	20		CW	80	Y
Games Hardware Architecture and Peripherals	GAP5001	New	5	20	Stan	C		CW	50		EXAM	50	Y
Research	GAM6000	New	6	20	Stan	C		CW	100	Y			
Advanced Games Techniques	GAP6000	New	6	20	Stan	C		EXAM	100	Y			
Advanced Game Engine Architecture	GAP6001	New	6	20	Prac	C		CW	100	Y			
Advanced Game Implementation	GAP6002	New	6	20	Prac	C		CW	25		PRA	75	Y
Major Project	GAM6001	New	6	40	Proj	C		PROJ	100	Y			

Type = DISS (Dissertation); FLDW (Fieldwork), INDS (Independent study); OTHR (Other); PLAC (Placement); PRAC (Practical); PROJ (Project); STAN (Standard); WBL (work-based learning)
Assessment = EX (Written Exam); CW (Coursework); PRA (Practical)

Programme specification: BSc Games Programming
Date: July 2012

Bolton Key Core Curriculum requirements

Module Title	Module Code	C/O/E	Employability											Bolton Values		
			PDP	Communication	Team work	Organisation & Planning	Numeracy	Problem solving	Flexibility & adaptability	Action planning	Self awareness	Initiative	Personal impact & confidence	Inter-nationalisation	Environmental sustainability	Social, public and ethical responsibility
Scholarship	GAM4000	C	DTA	DTA		DTA		DTA	D	D	D	D	D	DTA	D	DTA
Introduction to Level Design	GAM4001	C		TA	DTA	DTA		DTA	D	DTA	D	D	D	D	D	D
Introduction to Games Programming	GAM4003	C		DTA	DTA	DT		DTA								
Object Orientated Games Programming	GAP4001	C		DTA		DT	DTA	DTA								
Mechanics and Metrics	GAM4002	C		TA	DA	D	DTA	DTA	D	D	D	TA	T	D	D	D
Games Mathematics	GAP4000	C		DTA			DTA	DTA								
Employability and Enterprise	GAM5000	C	DTA	DTA		DTA			DT		D	D	DTA	DT	D	DTA
Data Structures for Games	GAP5000	C		DTA		DT	DTA	DTA	DTA							
Software Engineering	GAP5002	C		DTA		DTA	DTA	DTA	DTA	D	D	D				
Applied Physics	GAP5003	C		DTA			DTA	DTA								
Project Portfolio	GAM5001	C	D	DTA		DTA		DA	D	DTA	D	D	D	D	D	D
Games Hardware Architecture and Peripherals	GAP5001	C		DTA		DT		DTA				D		D	DT	DT
Research	GAM6000	C	DTA	DTA	DA	DTA	D	DTA	D	D	D	DA	D	D	D	DTA
Advanced Games Techniques	GAP6000	C		DTA			DTA	DTA								
Advanced Game Engine Architecture	GAP6001	C		DTA		DT	DTA	DTA	D	D	D	DA	D	D	D	D
Advanced Game Implementation	GAP6002	C		DTA		DTA	DTA	DTA	D	D	D	D A	D	D	D	D
Major Project	GAM6001	C	D	DTA		DA	DTA	DA	DA	DA	DTA	D	D	D	D	D

Complete the grid using the following (Developed = D, Taught = T, Assessed = A)

Programme specification: BSc Games Programming
Date: July 2012