Programme Specification

BSc (Hons) Games Programming with Foundation

Awarding Institution:	The University of Bolton
Teaching Institution:	The University of Bolton
Division and/or Faculty/Institute:	Creative Technologies Academic Group

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 Foundation Certificate in Higher Education Diploma in Higher Education
Programme title(s)	Games Programming
UCAS Code	G450
JACS Code	I610
University Course Code(s)	Full-time – GAM0007
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 – 4 years

Admissions criteria

BSc (Hons) with Foundation

For UCAS tariff points please refer to our website (www.bolton.ac.uk).

You will have at least one but preferably two A2-levels (or equivalent) in any subjects. In addition 5 GCSEs at Grade C or above including English and Mathematics will usually be required.

Students with non-traditional qualifications but relevant experience or a suitable portfolio of work which is deemed a reasonable substitute for the qualifications may be made an offer.

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

Interviews will usually be conducted on a one to one basis either in person or via telephone by a member of the course team. Applicants may at some point be required to show a portfolio and may be asked a variety of questions designed to assess their suitability for the course.

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

Aims of the programme

The principal aims of the programme are to:

- To develop academic and professional skills to allow for opportunity to study at higher levels and enhance career development
- To provide with a broad and fundament knowledge of computing technologies
- To provide students with a broad education in game programming, development and technology, with a special emphasis on the technical aspects of game production
- 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
- 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

- Four years of programming with 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

The overall learning outcomes for the programme are outlined, in detail, below.

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. Knowledge of the underlying theory, concepts and principles of computer game development.
3. An understanding of the business constraints and financial requirements in computer game development.
4. Scientific principles to enable realistic behaviour within games
5. A broad range of fundamental computer technologies

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.
4. Explain fundamental computer methods and tools

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.
5. Describe and utilise computer systems and software

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.
8. Outline and demonstrate appropriate and ethical testing and research strategies

Programme Structure

The BSc (Hons) Degree with Foundation in Games Programming is a 4 years full-time programme. Students take 23 core modules, as outlined in the table below. Overall, the number and level of credits for this qualification are 120 credits at Level HE3, 120 credits at Level HE4, 120 credits at HE5 and 120 credits at HE6 – making 480 credits

Module Code	Module Title	Status	Credits	1,2 or 3 Trimester
Level FE3				
CTF3001	Fundamentals of Programming	C	20	1
CTF3002	Logical Analysis and Problem Solving	C	20	1
CTF3003	Introduction to Digital Entertainment Technology	C	20	1
CTF3004	Foundation Project	C	20	1
CTF3005	Computers in Society	C	20	1
CTF3006	Networks and Hardware	C	20	1
Level HE4				
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
Level HE5				
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
Level HE6				
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			
	1	**2**	**3**	**4**
Scheduled learning and teaching activities	30%	28%	27%	17%
Guided independent study	70%	72%	73%	83%
Placement/study abroad	0%	0%	0%	0%

Assessment strategy

Assessment tasks are linked to the learning outcomes of each module and are normally completed by the end of each module. Types of assessment include:

Written examinations (unseen or open-book), written reports, assignments, projects, case study analyses, in-class tests (practical, written or online), demonstrations and presentations.

Feedback is continuous, with formative critique sessions and over-the-shoulder verbal feedback as classes progress. Students will also receive formal written feedback in response to their assignment submissions.

Assessment methods (KIS entry)

	Course Year			
	1	**2**	**3**	**4**
Written exams	0%	10%	25%	15%
Coursework	92%	70%	67%	70%
Practical exams	8%	20%	8%	15%

Assessment regulations

This programme by the University assessment regulations.

[Assessment Regulations for Undergraduate Modular Programmes](#)

Grade bands and classifications

Grade Description

Honours Degree	Mark	BTEC Equivalent
i	70%+	Distinction
ii.i	60-69%	Merit
ii.ii	50-59%	Pass
iii	40-49%	Pass
Borderline Fail	35-39%	Fail
Clear Fail	Below 35	Fail

Support for student learning

- The programme is managed by a programme leader.
- The foundation year has a dedicated coordinator / year tutor
- 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 Academic Group.
- The Students' Union advice services.
- Student 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.
- Utilising industry contacts to review course material

Other sources of information (Hyperlinks)

Student portal http://www.bolton.ac.uk/Students/Home.aspx
Students Union http://www.ubsu.org.uk/
Student Handbook
Programme Handbook
Student Entitlement Statement
Module database
Moodle
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 / B.Morris
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Foundation Year - Learning outcomes map

Module title	Code	Status (C/O/E)	K5	C4	P3	P4	P5	T1	T2	T3	T4	T8
Fundamentals of Programming	CTF3001	CORE		DTA	DA	DTA	DTA		DTA	DTA	DTA	DTA
Logical Analysis and Problem Solving	CTF3002	CORE		DTA	DA		DA	DT	DTA			DTA
Introduction to Digital Entertainment Technology	CTF3003	CORE	DTA	DTA	DA		D	DA	DTA			
Foundation Project	CTF3004	CORE			DTA		D	DTA	DTA		DTA	
Computers in Society	CTF3005	CORE	DTA	DTA	DA		DA	DTA	DTA			
Networks and Hardware	CTF3006	CORE	DTA	DTA	DA		DTA	D	DTA			DTA

K. Knowledge and understanding   P. Practical, professional and subject specific skills C. Cognitive, Intellectual and thinking skills   T. Transferable, key or personal skills

Degree - Learning outcomes map

Module title	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	CORE	TA		DT			TA	TA								TA	TA			TA	TA	
Introduction to Level Design	GAM4001	CORE	TA	TA				TA	TA	TA		TA		TA			TA	TA			TA		TA
Introduction to Games Programming	GAM4003	CORE	TA	TA				TA		TA		TA		TA	TA		TA			TA	TA		TA
Object Orientated Games Programming	GAP4001	CORE	TA	TA		TA		DT		TA		TA	TA		DTA		TA	TA	TA	TA	TA		TA
Mechanics and Metrics	GAM4002	CORE	TA	TA				TA	TA	TA		TA		TA			TA	TA			TA	TA	TA
Games Mathematics	GAP4000	CORE				TA											TA		TA				DT
Employability and Enterprise	GAM5000	CORE			DTA												DTA				DT	DT	DTA
Data Structures for Games	GAP5000	CORE	TA	TA				TA	DTA	TA		TA	TA		DTA		TA	DT	TA	DTA		TA	
Software Engineering	GAP5002	CORE	TA	TA				TA	DTA	TA		TA	TA		DTA		TA	DTA	TA	DTA	TA	TA	
Applied Physics	GAP5003	CORE				DTA				TA		TA	TA		TA				TA	TA			
Project Portfolio	GAM5001	CORE	DTA	DTA	D	D		DTA	DA	DTA		DTA	DTA		DTA		DA	DT		DTA	DA	DA	DA
Games Hardware Architecture and Peripherals	GAP5001	CORE	TA	TA		DTA		TA	DTA	TA		TA	TA		TA		TA	DT	TA	TA	TA	TA	DA
Research	GAM6000	CORE	D	D	D			D	D								DA				DTA	DTA	
Advanced Games Techniques	GAP6000	CORE	DTA	DTA		D		D	DA								DA		DTA			DA	
Advanced Game Engine Architecture	GAP6001	CORE	DTA	DTA	D	DA		D	DTA	DTA		DTA	DTA		DA		DA	DT	DTA	DA	DA	DA	DA
Advanced Game Implementation	GAP6002	CORE	DA	DA	D	DA		D	DA	DA		DA	DA		DA		DA	DA	DA	DA	DA	DA	DA
Major Project	GAM6001	CORE	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

Programme specification: Games Programming BSc (Hons) with Foundation
Date: July 2013

Foundation Year - Module List	Code	Level	Credit	Type	Status (C/O/E)	Assessment 1			Assessment 2		
Module title						Assessment type	Assessment %	Add Y if final item	Assessment type	Assessment %	Add Y if final item
Fundamentals of Programming	CTF3001	FE3	20	STAN	CORE	PRA	50		CW	50	Y
Logical Analysis and Problem Solving	CTF3002	FE3	20	STAN	CORE	CW	50		CW	50	Y
Introduction to Digital Entertainment Technology	CTF3003	FE3	20	STAN	CORE	CW	50		CW	50	Y
Foundation Project	CTF3004	FE3	20	STAN	CORE	CW	100	Y			
Computers in Society	CTF3005	FE3	20	STAN	CORE	CW	50		CW	50	Y
Networks and Hardware	CTF3006	FE3	20	STAN	CORE	CW	50		CW	50	Y

PRA (Practical); PROJ (Project); STAN (Standard); EX (Written Exam); CW (Coursework)

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

PRA (Practical); PROJ (Project); STAN (Standard); EX (Written Exam); CW (Coursework)

Programme specification: Games Programming BSc (Hons) with Foundation
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Foundation Year - Bolton Key Core Curriculum requirements

Module Title	Code	Status (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
Fundamentals of Programming	CTF3001	CORE	DA	D	DA	D		D		D			D			
Logical Analysis and Problem Solving	CTF3002	CORE	DA	D	DA	D	DTA	DTA	D	DTA			D			
Introduction to Digital Entertainment Technology	CTF3003	CORE	DA	D	DA	D		D					D			
Foundation Project	CTF3004	CORE	DTA	DTA	DTA	DTA		D	D	DTA	D	D	D			
Computers in Society	CTF3005	CORE	DA	D	DA	D				D			D	DTA	DTA	DTA
Networks and Hardware	CTF3006	CORE	DA	D	DA	D		D		D			D		D	

D = Development   T = Taught   A = Assessed

Degree - Bolton Key Core Curriculum requirements

Module Title	Code	Status (C/O/E)	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
									Employability						**Bolton Values**	
Scholarship	GAM4000	CORE	DTA	DTA		DTA		DTA	D	D	D	D	D	DTA	D	DTA
Introduction to Level Design	GAM4001	CORE		TA	DTA	DTA		DTA	D	DTA	D	D	D	D	D	D
Introduction to Games Programming	GAM4003	CORE		DTA	DTA	DT		DTA								
Object Orientated Games Programming	GAP4001	CORE		DTA		DT	DTA	DTA								
Mechanics and Metrics	GAM4002	CORE		TA	DA	D	DTA	DTA	D	D	D	TA	T	D	D	D
Games Mathematics	GAP4000	CORE		DTA			DTA	DTA								
Employability and Enterprise	GAM5000	CORE	DTA	DTA		DTA			DT		D	D	DTA	DT	D	DTA
Data Structures for Games	GAP5000	CORE		DTA		DT	DTA	DTA	DTA							
Software Engineering	GAP5002	CORE		DTA		DTA	DTA	DTA	DTA	D	D	D				
Applied Physics	GAP5003	CORE		DTA			DTA	DTA								
Project Portfolio	GAM5001	CORE	D	DTA		DTA		DA	D	DTA	D	D	D	D	D	D
Games Hardware Architecture and Peripherals	GAP5001	CORE		DTA		DT		DTA				D		D	DT	DT
Research	GAM6000	CORE	DTA	DTA	DA	DTA	D	DTA	D	D	D	DA	D	D	D	DTA
Advanced Games Techniques	GAP6000	CORE		DTA			DTA	DTA								
Advanced Game Engine Architecture	GAP6001	CORE		DTA		DT	DTA	DTA	D	D	D	DA	D	D	D	D
Advanced Game Implementation	GAP6002	CORE		DTA		DTA	DTA	DTA	D	D	D	D A	D	D	D	D
Major Project	GAM6001	CORE	D	DTA		DA	DTA	DA	DA	DA	DTA	D	D	D	D	D

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