Buckinghamshire New University

PROGRAMME SPECIFICATION

1. Key Information

Programme Title:	BSc (Hons) Animatronics Design
Awarding Institution:	Buckinghamshire New University
Teaching Institution(s):	Buckinghamshire New University
Subject Cluster:	Visual Arts
Award Title (including separate Pathway Award Titles where offered):	BSc (Hons) Animatronics Design
Pathways (if applicable)	N/A
FHEQ level of final award:	Level 6
Other award titles available (exit qualifications):	CertHE in Animatronics Design DipHE in Animatronics Design BSc in Animatronics Design
Accreditation details:	
Length of programme:	2 Years
Mode(s) of Study:	Full Time
Mode of Delivery:	In person (on-site) delivery
Language of study:	English and Art & Design
QAA Subject Benchmark(s):	Engineering
Other external reference points (e.g. Apprenticeship Standard):	N/A
Course Code(s):	BSANDEFT
UCAS Code(s):	
Approval date:	
Date of last update:	31/01/9999

2. Programme Summary

Animatronics is a growing market within the Special Effects industry (SFX) that is being driven largely by new engineering system design technologies. Until recently, it has been a sub-set of other skills within the entertainment, film & television arena and is now a specialist subject in its own right. Prior to Computer Generated Imagery animatronics was lacking the sophistication and support of materials and engineering systems. With state of the art technologies today animatronics does not so much need to compete with GCI but they work very much in collaboration. Students are attracted to the multi-disciplinary and interactive nature of Animatronics, where they can gain practical skills and knowledge within the special and physical effects workshops and studios. Each commission, often initiated by a screenwriter's imagination, requires a unique response, delivering imaginative, practical and

effective solutions. The inventiveness of animatronics aspires to give the 'wow' factor and an approach that will maintain 'suspension of disbelief' when viewed by the audience. Film makers are even adapting video game animated 3D characters into animatronics. Working on 'Five Nights at Freddy's', "Gil Kenan, director of the 'Poltergeist' remake, will be using real, full-sized animatronics for his film version of the game"[1] ...... "Kenan has not opted for CGI because he prefers to project the robots to be real and unnerving".[2]

In addition to the growth within the film & television and entertainment sector, animatronics is being used within other industries. For example, the medical profession is using biomechanics for prostheses that look and move realistically and are investigating ways in which animatronics can be used to teach the deaf to lip read or to train surgeons. The growth of animatronics within industries outside the entertainment sector is very much in its infancy, and this creates an opportunity for the graduates to be pioneers within this specialist area. The growth seen within the animatronics industry is currently an untapped revenue stream for the University.

The subject is capable of introducing new students to Animatronics Design from within the working population as well as college and school leavers. It is this growth in new applications in the discipline that will provide recruitment opportunities both now and in the future. Animatronics Design, as a subject, is attractive to students from undergraduate study through to postgraduate Master's level and MPhil/PhD study.

The course will be taught mainly at High Wycombe, with some access to the BNU base at Pinewood Studios.

3. Programme Aims and Learning Outcomes

Programme Aims

This programme aims to:

1. Enable students to investigate, research and critically engage with the principles of animatronics design and production process

2. Develop an understanding of the relevant art, science and technology that support the creation of functional lifelike animatronics models.

3. Develop an understanding of appropriate materials and applications, to gain an essential grounding in the artistic, scientific and technological principles that underpin the process and production of animatronics.

4. Develop an understanding of the cultural, historical and managerial skills required to successfully service the animatronics industry.

5. Offer a breadth of experience across a range of technologically based mixed-media which enables students to focus on animatronics production and provide an awareness of the special effects production pipeline so that further study and research can be pursued at BSc (hons) level.

---

[1] http://www.latinoshealth.com/articles/8500/20150813/five-nights-at-freddys-movie-release-date-plot-rumors-real-full-size-animatronics-to-be-used-in-film.htm
[2] http://www.vinereport.com/article/five.nights.at.freddys.movie.will.have.a.story.that.was.never.seen.before.director.teases.new.animatronics/2626.htm

Programme Learning Outcomes

Knowledge and Understanding (K)

On successful completion of the programme you will be able to:

ID	Learning Outcome
K1	Demonstrate a critical and conceptual understanding of the theories and practices involved in creating physical artefacts, i.e. animatronics and/or CGI models.
K2	Identify the industry's creative needs: processes, practices, operations, applications and techniques involved for the production of animatronics models.
K3	Research and discuss the social, cultural, ethical, aesthetic and organisational contexts of animatronics production.
K4	Evidence understanding of the core principles of engineering and appropriate skills required for the design and fabrication of animatronics models.

Analysis and Criticality (C)

On successful completion of the programme you will be able to:

ID	Learning Outcome
C1	Evaluate information derived from a drawing, conceptual 3D models and associated visual content, e.g. storyboards, treatments for film and television scripts.
C2	Critically analyse movement and the realistic and non-realistic attributes of animatronics models for on screen and apply these underlying concepts to synthesise realism in response to special effects briefs for the design and development of animatronics models.
C3	Manipulate the imaginative involvement of the audience through the analysis, synthesis and interpretation of a brief for animatronics design and fabrication.

Application and Practice (P)

On successful completion of the programme you will be able to:

ID	Learning Outcome
P1	Demonstrate knowledge of contemporary issues relating to animatronics production.
P2	Effectively conceive, draw, conceptually design, construct, problem solve and apply the necessary tools and skills through the production and post-production processes, to produce a finished animatronics models/ prototype.
P3	Understand and demonstrate a knowledge of the various Special Effects/ creative industry job description/roles and critically reflect upon the processes of animatronics production.

Transferable skills and other attributes (T)

On successful completion of the programme you will be able to:

ID	Learning Outcome
T1	Demonstrate the ability to undertake research in a specific area of animatronics production related to the professional framework.

T2	Time management: To prioritise workload, manage pressure and adapt production pipelines as required. To meet deadlines and develop a high level of interpersonal communication and conceptualising skills. To manage a dynamic teamwork environment.
T3	Apply, experiment and adapt the acquired skills in computer applications and the process and practice of designing animatronics models and/or CGI to fulfil a wide range of special effects film & television design briefs.
T4	Demonstrate the ability to design, develop and problem solving in coding and programming for an accurate engineering system design.

Graduate Attributes

The BNU Graduate Attributes: Knowledge and its application; Creativity; Social and ethical awareness and responsibility; Leadership and self-development with the focus on the development of being a innovative leader in professional and creative capacities, who are equipped to operate in the 21st Century labour market and make a positive impact as global citizens.

On this programme, attributes are developed through the designing of theoretical and practice-based modules which develop the students' advanced specialised skills, tailored to cater for the needs of the Animatroncs Design sector within the creative industry. Throughout the programme both analogue/traditional and digital skills are embedded within module design and provide an in-depth knowledge of the students', covering the process and practice of special effects (K1- 4).

•   When designing an Animatronics model for special effects film and television, show critical evaluation skills and an exploration of appropriate research methods are further developed to be able to design, analyse, synthesise, pre-visualise and manage a animatronics brief covering script to screen (C1-3).

•   Actively engages the student with the industry requirements and needs, i.e. time management, health & safety, prioritising workloads, manage pressure, adapt production pipelines as required to meet deadlines and develop a high level of interpersonal communication skills to manage a dynamic teamwork environment (T2-3, P1-2,3).

•   Design, concept, development and problem solving to be able to construct effective and a convincing finished artefact using appropriate analogue, digital technology and tools related to animatroenics design and production disciplines. The programme will also facilitate opportunities to further study and research within the field of special effects, pursued at mater level (P1-2, 3).

4. Entry Requirements

The University's general entry requirements will apply to admission to this programme with the following additions / exceptions:

As the key aim of this programme is to provide knowledge and skills in all related areas of animatronics design and fabrication for film & television, the course will be recruiting applicants with a broad base of appropriate skills within the field of engineering arts & system design and enable them to focus on an area relevant to their career aspirations. Applicants must have A' levels in a relevant subject such as Maths, Physics, Computer Science or Design Technology is required. Alternatively, a BTEC National Diploma qualification in a relevant subject.

In addition, applicants will need to have a suitably appropriate portfolio of work in areas such as, Animation, Electronics, Mechanical Engineering, Model-making, Sculpture/Model Making, Engineering Product Design, and Manufacturing Design.

International, and EU applicants for whom English is not a first language are expected to hold an IELTS qualification, with a score of 6.0, and no individual element lower than 5.5, or an equivalent qualification as listed on the University website. However, as part of the selection process, all applicants are required to attend an interview to demonstrate their strengths in addition to any formal entry requirements.

If entry requirements are not met you may, if you have relevant professional experience, still be invited for interview, where you will be required to demonstrate the necessary knowledge and understanding for entry onto the course.

Previous study, professional and / or vocational experiences may be recognised as the equivalent learning experience and permit exemption from studying certain modules in accordance with our accreditation of prior learning (APL) process.

5. Programme Structure

Pathway 1 or stand-alone course **[add further tables for each additional pathway]**

Level	Modules (Code, Title and Credits)	Exit Awards
Foundation Year[3]	**Core modules:** **Option modules:** No option modules are available at this level.	**N/A.** No credit is awarded at this Level.
Level 4	**Core modules:** CAD4066, 2D Visualization, 20 Credits CAD4067, Computer Aided Design, 20 Credits CAD4068, Introduction to Programming, 20 Credits CAD4069, Chemical Studies and Technological Applications, 20 Credits CAD4070, SFX Character Design 1, 20 Credits CAD4071, Introduction to Animatronics Engineering, 20 Credits **Option modules:** No option modules are available at this level.	**Certificate of Higher Education**, awarded on achievement of 120 credits at Level 4
Level 5	**Core modules:** CAD5084, 3D Modelling & Simulation, 20 Credits CAD5085, Control and Signal Writing, 20 Credits CAD5086, SFX Character Design 2, 20 Credits CAD5087, SFX Rigging & Manufacturing, 20 Credits CAD5088, Animatronics Engineering System Design, 20 Credits CAD5089, Advanced Prosthetics Production, 20 Credits	**Diploma of Higher Education**, awarded on achievement of 240 credits, including a minimum of 120 credits at Level 5

[3] Modules on the Foundation Year only apply to learners who are enrolled on the "with Foundation Year" programme.

	Option modules: As this a fast-track specialist 2-years degree programme, no option modules are available at this level.	
Level 6	**Core modules:** CAD6030, Creative and Professional Development, 20 Credits CAD6041, Dissertation, 20 Credits CAD6042, Pre-production, 20 Credits CAD6043, Professional Practice & Business Management, 20 Credits CAD6044, Final Major Project, 60 Credits **Option modules:** As this a fast-track specialist 2-years degree programme, no option modules are available at this level.	**Ordinary Degree**, awarded on achievement of 300 credits, including 60 credits at Level 6 and 120 credits at each of Levels 4 and 5 **Honours Degree**, awarded on achievement of 360 credits, including 120 credits at each of Levels, 4, 5 and 6

Please note: Not all option modules will necessarily be offered in any one year. Other option modules may also be introduced at a later stage enabling the programme to respond to changes in the subject area.

6. Learning, Teaching and Assessment

Learning and teaching

The style of teaching and learning methods will vary according to whether the module is theoretically based, or skills based.

Teaching sessions will consist of a variety of methods and approaches from lectures, demonstrations in workshops, exercises applying technology and software, step-by-step worksheets, self-study, one-to-one tutorials, group work and criticism sessions, presentations in class and tutorial guidance via the internet and online resources.

Students will learn how to use and safely apply the relevant technologies and techniques within workshops guided by the tutor. All students will be expected to use open-access time to investigate, experiment and explore the available technology before they begin assignment work.

Students will have regular telephone and email access to academic tutors and will increasingly use 'Blackboard', the University's virtual learning environment. Students will be required to demonstrate their knowledge and skills in animatronics design via presentations, demonstrations and the artefacts they produce, e.g. 2/3D CAD drawing, CGI models & simulation, control & signal writing, rigging, manufacturing, programming/ coding, structure engineering as well as design & fabrication.

Students will be encouraged to reflect on how they apply their knowledge and understanding of a wide range of animatronics design applied within special effects film and television. Lectures and seminars will reinforce the need for 'personal reflection' to enable the student to understand how the artefact is being received by the client/audience and assess the 'believability' or 'realism' of selected scenes or sequences. Working in groups within tutorials, students will be encouraged to research a topic and present a solution to their peers in class.

Assessment

As per the teaching and learning activities, assessments are also comprised by a range of different methods. The following assessment activities are used on this programme:

- **Written work/Dissertation** – This will be mainly in the form of written documents, where students are requested to present research material in specific subjects and analyse, edit and reference to fit the desired outcomes.

- **Blogs/Reports** – Students are encouraged to document their entire learning progress throughout the programme, and some of that documentation will be asked to be delivered in the form of reflective blogs and critically evaluative reports and will be assessed (applies to formative and summative assessments) and marked (applies to summative assessments only).

- **Portfolio/Showreel** – As well as the written documentation on the different activities, visual portfolios are essential when presenting their work to prospective employers. Students are taught on the different processes involved in producing an industry-standard portfolio and will be assessed on the outcomes.

- **Presentation** – Presentation skills are a key element when working in teams and presenting ideas. Throughout the degree, students are expected to produce coursework and may present it to a range of audiences.

- **Practical Skills via Timed assessments** - One of the most important elements of the programme, is the standard of practical skills students are achieving, and the ability to accomplish practical tasks within a given duration, mirroring industry practice and expectations.

- **Group-based work** – This mode of assessment develops transferable skills in the areas of oral communication, negotiation and interpersonal skills. Working in a group can also promote the sharing of ideas and practical problem-solving skills. Students will have the opportunity to undertake team-based projects; where they are assessed, the grade for the assignment will be a combination of a shared grade as a group (70%) based on specific assessment criteria, and peer assessment (30%).

Assessment strategies support students' understanding of their learning processes and are designed to foster a deep approach to learning. Strategies also promote autonomous learning and self-evaluation as vital elements within the overall learning process.

Formative feedback and feed-forward are considered a vital part of the assessment process. More formal oral and/or written formative feedback is given at key identified points, usually during student-led presentations of work in progress. At these points, a formative grade based upon performance up to that stage is applied, to help students establish action planning and critical awareness. Grades given at this stage are only indicative and can go down as well as up at the summative assessment point.

Self and peer-evaluation constitute an important part of formative assessment and, on occasion, of the formal summative assessment process.

Summative assessment will take place at the end of the module. Submitted work will be assessed on the achievement of the module Learning Outcomes and awarded a grade based upon the Assessment Criteria. The assessments will take place with a full review of the briefs and all the supporting development work, which should clearly document the breadth and depth of research and the development of conceptual ideas for each project undertaken.

All assessments that contribute to final grades will be assessed against clear assessment criteria stated in assignment briefs; these assessment criteria are directly linked to grading descriptors, and they will be used to evaluate the submitted work and produce written feedback. Marks will be produced following rigorous quality mechanisms that ensure academic judgement remains fair and consistent and comparable with the wider educational sector.

Contact Hours

You can expect to receive approximately 16-18 hours of scheduled learning activities per week and will be expected to undertake the equivalent of independent study, including the development of practical skills in studios/workshops. As stated above the learning hours will be constructed from a variety of learning types (methods), which includes: lectures; seminars; tutorials/supervisions; demonstrations, practical classes and workshops; supervised time in studio/workshop; fieldwork/external visits; work-based learning; independent study; completion of assessment tasks.

7. Programme Regulations

This programme will be subject to the following assessment regulations:

- Academic Assessment Regulations, with the following exceptions:

  - Level Six students must pass the FMP module in order to be awarded their Ordinary Degree. This module may not be compensated.
  - The calculation of this award will be as follows: Level 5: 33%; Level 6: 67%
  - Referral Opportunities: As with any award at Buckinghamshire New University, if a student has not received a pass mark for a module or piece of assessment, they may be required to be reassessed in the component(s) that they have failed.

8. Support for learners

The following systems are in place to support you to be successful with your studies:

- The appointment of a personal tutor to support you through your programme
- A programme handbook and induction at the beginning of your studies
- Library resources, include access to books, journals and databases - many of which are available in electronic format – and support from trained library staff
- Access to Blackboard, our Virtual Learning Environment (VLE), which is accessible via PC/ Mac, laptop, tablet or mobile device
- Access to the My BNU portal where you can access all University systems, information and news, record your attendance at sessions, and access your personalised timetable
- Academic Registry staff providing general guidance on University regulations, exams, and other aspects of students and course administration
- Central student services, including teams supporting academic skills development, career success, student finance, accommodation, chaplaincy, disability and counselling
- Support from the Bucks Students' Union, including the Students' Union Advice Centre which offers free and confidential advice on University processes.

9. Programme monitoring and review

BNU has a number of ways for monitoring and reviewing the quality of learning and teaching on your programme. You will be able to comment on the content of their programme via the following feedback mechanisms:

- Formal feedback questionnaires and anonymous module 'check-ins'
- Participation in external surveys
- Programme Committees, via appointed student representatives
- Informal feedback to your programme leader

Quality and standards on each programme are assured via the following mechanisms:

- An initial event to approve the programme for delivery
- An annual report submitted by the External Examiner following a process of external moderation of work submitted for assessment
- The Annual Monitoring process, which is overseen by the University's Education Committee
- Review by the relevant PSRB(s)
- Periodic Subject Review events held every five years

- Other sector compliance and review mechanisms

10. Internal and external reference points

Design and development of this programme has been informed by the following internal and external reference points:

- The Framework for Higher Education Qualifications (FHEQ)
- The QAA Subject Benchmark Statement – see detailed mapping below
- The QAA Art & Design and Engineering Characteristics Statement
- The BNU Qualifications and Credit Framework
- The BNU Grading Descriptors
- The University Strategy, Impact 2022

Mapping of Subject Benchmark Statement and any relevant Apprenticeship Standard to Programme Learning Outcomes

Subject Benchmark Statement / Apprenticeship Standard:	Knowledge and understanding (K)					Analysis and Criticality (C)					Application and Practice (P)					Transferable skills and other attributes (T)				
Benchmark / Standard requirement	K1	K2	K3	K4	K5	C1	C2	C3	C4	C5	P1	P2	P3	P4	P5	T1	T2	T3	T4	T5
Art and Design 6.4,i present evidence that demonstrates some ability to generate ideas independently and/or as self-initiated activity and/or in response to set briefs	✔		✔			✔		✔			✔	✔	✔			✔	✔	✔		
6.4.iii demonstrate proficiency in observation, investigation, enquiry, visualisation and/or making	✔		✔				✔				✔	✔					✔		✔	
6.4.iv make connections between intention, process, outcome, context	✔	✔	✔				✔	✔			✔	✔	✔					✔		

Subject Benchmark Statement / Apprenticeship Standard: Benchmark / Standard requirement	Knowledge and understanding (K)					Analysis and Criticality (C)					Application and Practice (P)					Transferable skills and other attributes (T)				
	K1	K2	K3	K4	K5	C1	C2	C3	C4	C5	P1	P2	P3	P4	P5	T1	T2	T3	T4	T5
and methods of dissemination..																				
6.5.ii the broad critical and contextual dimensions of the student's discipline(s);	✔	✔				✔					✔	✔	✔			✔	✔			
6.5.ii the issues which arise from the artist's or designer's relationship with audiences, clients, markets, users, consumers, and/or participants; major developments in current and emerging media and technologies in their discipline(s);	✔		✔			✔	✔	✔			✔	✔	✔			✔		✔		
6.5.iii major developments in current and emerging media and technologies in their discipline(s);	✔	✔	✔				✔	✔			✔		✔			✔		✔		
6.5.iv the significance of the work of other	✔		✔					✔					✔					✔		

Subject Benchmark Statement / Apprenticeship Standard:	Knowledge and understanding (K)					Analysis and Criticality (C)					Application and Practice (P)					Transferable skills and other attributes (T)				
Benchmark / Standard requirement	K1	K2	K3	K4	K5	C1	C2	C3	C4	C5	P1	P2	P3	P4	P5	T1	T2	T3	T4	T5
practitioners in their discipline(s).																				

Subject Benchmark Statement / Apprenticeship Standard:	Knowledge and understanding (K)					Analysis and Criticality (C)					Application and Practice (P)					Transferable skills and other attributes (T)				
Benchmark / Standard requirement	K1	K2	K3	K4	K5	C1	C2	C3	C4	C5	P1	P2	P3	P4	P5	T1	T2	T3	T4	T5
Engineering be pragmatic, taking a systematic approach and the logical and practical steps necessary for often complex concepts to become reality	✔	✔	✔			✔	✔	✔			✔	✔	✔	✔		✔	✔	✔		
seek to achieve sustainable solutions to problems and have strategies for being creative, innovative and overcoming difficulties by employing their skills, knowledge and understanding in a flexible manner	✔	✔	✔			✔	✔				✔	✔	✔			✔	✔			
be skilled at solving problems by applying their numerical, computational, analytical and technical skills, using appropriate tools	✔	✔	✔				✔	✔			✔	✔	✔	✔		✔	✔	✔		

Subject Benchmark Statement / Apprenticeship Standard:	Knowledge and understanding (K)					Analysis and Criticality (C)					Application and Practice (P)					Transferable skills and other attributes (T)				
Benchmark / Standard requirement	K1	K2	K3	K4	K5	C1	C2	C3	C4	C5	P1	P2	P3	P4	P5	T1	T2	T3	T4	T5
be risk, cost and value-conscious, and aware of their ethical, social, cultural, environmental, health and safety, and wider professional responsibilities	✓	✓	✓			✓		✓			✓	✓		✓	✓	✓	✓			
be familiar with the nature of business and enterprise in the creation of economic and social value	✓	✓	✓			✓	✓	✓			✓	✓		✓	✓	✓	✓	✓		
appreciate the global dimensions of engineering, commerce and communication	✓	✓	✓				✓	✓			✓		✓	✓		✓		✓		
be professional in their outlook, be capable of team working, be effective communicators, and be able to exercise responsibility and sound management approaches.	✓	✓	✓					✓				✓	✓	✓		✓	✓	✓		

Mapping of Programme Learning Outcomes to Modules

Programme Learning Outcome	Knowledge and understanding (K)					Analysis and Criticality (C)					Application and Practice (P)					Transferable skills and other attributes (T)				
Module Code (Core)	K1	K2	K3	K4	K5	C1	C2	C3	C4	C5	P1	P2	P3	P4	P5	T1	T2	T3	T4	T5
Level 4																				
Introduction to Programming	✔	✔	✔			✔					✔	✔				✔	✔	✔		
Computer Aided Design	✔	✔				✔	✔				✔	✔	✔			✔	✔			
2D Visualization	✔	✔				✔		✔			✔					✔	✔	✔		
Introduction to Animatronics Engineering	✔	✔	✔			✔		✔			✔	✔				✔	✔	✔		
SFX Character Design 1	✔	✔	✔			✔	✔	✔			✔					✔				
Chemical Studies and Technological Applications	✔	✔				✔	✔	✔	✔							✔				
Level 5																				
SFX Character Design 2	✔	✔				✔	✔	✔			✔	✔		✔		✔	✔	✔		
3D Modelling & Simulation	✔	✔	✔			✔	✔	✔				✔				✔				
Control and Signal Writing	✔		✔				✔			✔			✔			✔	✔			
Animatronics Engineering System Design	✔	✔				✔					✔	✔				✔				

Programme Learning Outcome	Knowledge and understanding (K)					Analysis and Criticality (C)					Application and Practice (P)					Transferable skills and other attributes (T)				
Module Code (Core)	K1	K2	K3	K4	K5	C1	C2	C3	C4	C5	P1	P2	P3	P4	P5	T1	T2	T3	T4	T5
Advanced Prosthetics Production	✓		✓				✓		✓	✓			✓						✓	✓
SFX Rigging & Manufacturing	✓	✓						✓	✓		✓	✓					✓		✓	✓
Level 6																				
Professional Practice & Business Management	✓						✓	✓				✓	✓			✓	✓		✓	✓
Pre-production	✓	✓	✓	✓				✓						✓	✓	✓		✓	✓	✓
Creative and Professional Development	✓		✓				✓					✓					✓		✓	✓
Dissertation	✓		✓			✓		✓					✓				✓		✓	✓
Final Major Project	✓	✓	✓			✓		✓						✓	✓		✓		✓	✓