UNIVERSITY of BRADFORD

Faculty of Engineering and Informatics

Programme Specification

Programme title: BSc (Hons) Virtual and Augmented Reality

Academic Year:	2019-20
Degree Awarding Body:	University of Bradford
Partner(s), delivery organisation or support provider (if appropriate):	
Final and interim award(s):	BSc (Honours) [Framework for Higher Education Qualifications (FHEQ) level 6]
	BSc (Ordinary) [Framework for Higher Education Qualifications (FHEQ) level 6]
	Diploma of Higher Education [Framework for Higher Education Qualifications level 5]
	Certificate of Higher Education [Framework for Higher Education Qualifications level 4]
Programme accredited by (if appropriate):	
Programme duration:	3 years full time; 4 years full-time including a year of study abroad and/or a work placement
QAA Subject benchmark statement(s):	Computing; Art and Design; Communication, , Media, Film and Cultural Studies;
Date last confirmed and/or minor modification approved by Faculty Board	March 2019

Please note: This programme specification has been published in advance of the academic year to which it applies. Every effort has been made to ensure that the information is accurate at the time of publication, but changes may occur given the interval between publishing and commencement of teaching. Any change which impacts the terms and conditions of an applicant's offer will be communicated to them. Upon commencement of the programme, students will receive further detail about their course and any minor changes will be discussed and/or communicated at this point.

Introduction

Through the BSc Virtual and Augmented Reality, students will become efficient and ultimately expert in one or more of the following skills; 3D Modelling, Animation, Digital Scanning, Photogrammetry, Motion Capture, Still and Moving Image Capture and Production, Cinematography, Look Development - Lighting and Rendering, Digital Compositing, Programming, Games design, Application Development, Web Development, etc., all of which create a proficient Virtual Reality Artist.

As Virtual and Augmented reality are capable of producing ever more sophisticated and spectacular output, students must combine the artistic skills and ideas with a technical and scientific understanding to get the most from it.

Graduates who can demonstrate strong creative, technical and scientific aptitude along with a critical understanding of the workings of the industry are very much in demand. Studying the tools and conducting research pertaining to their field will equip graduates for a rewarding career.

The School of Media Design and Technology is part of Bradford University's Faculty of Engineering and Informatics (EI), and it offers cutting edge undergraduate and postgraduate degree programmes in the fields of computer animation, visual effects, film and television production and computer games development. These are delivered against a background of internationally-recognised research in computer animation, virtual reality, distributed virtual environments, visualization, imaging, multimedia, digital video, human computer interaction, artificial intelligence and more.

The School is a partner of Creative Skillset, the sector skills council for the creative industries, which is an acknowledgement of its clear links to industry and indicates the relevance of its programmes for employment in the media sector. Our other partners include the BBC, National Media Museum, and Bradford UNESCO City of Film.

Employability is one of our key values, and our graduates go on to exciting jobs in the film, animation, visual effects, games, interactive and wider new media industries, regularly winning national and international awards for their work. While our programmes provide students with specific sets of practical production skills, they also enhance their overall employability through their extensive use of team-working and problem-solving approaches to learning.

Programme Aims

The programme is intended to:

Equip students who wish to develop expertise in the creative, aesthetic, scientific and technical aspects of Virtual Reality and Augmented Reality with the skills needed to use the latest industry techniques and technologies, whilst emboldening students to research into the fringe of industry.

The main emphasis is on content creation; be it artistic or technical (helping students to produce a strong portfolio of work on graduation), the programme provides students with an appreciation of the social, aesthetic, and business contexts within which such media artefacts are produced and circulated.

Whilst creating content is of the utmost importance to creating a portfolio of which will in-turn get students the career they are studying for, research skills will place students apart from others and at the forefront of industry, something employers is voicing as lacking from graduates.

The School provides an Honours degree programme which enables students to develop an integrated range of knowledge, understanding and skills in the field of Virtual and Augmented Reality through critical engagement with principles, applications, content design and production practice. In addition, the programme actively aims to encourage students to develop a portfolio of appropriate transferable skills and attributes.

For the **Virtual and Augmented Reality** programme, these aims are achieved by:

- Delivering opportunities for shared learning with other programmes offered by the School such as Film and Television production, Visual Effects, Games and Animation, with increasing specialization as students move towards graduation. The final year of the programme focuses mainly on project production, allowing students to integrate the skills and knowledge developed in the first two years of the programme;

- Providing a supportive, structured environment in which students are encouraged to develop independent learning skills;

- Develop subject knowledge and understanding; develop discipline skills and personal transferable skills, enabling graduates to pursue programmes of further study, or to move directly into responsible employment.

Programme Learning Outcomes

To be eligible for the award of Certificate of Higher Education at FHEQ level 4, students will be able to:

LO1. Describe the core underpinning knowledge and apply the fundamental principles and skills related to Virtual and Augmented Reality to straightforward situations with defined requirements;

LO2. Describe a range of widely used computing applications in the field including features of and limitations on their use;

LO3. Utilise basic programming and software manipulation in the creation of virtual and augmented products;

LO4. Collect, organise and present different data types using appropriate techniques within Virtual and Augmented Reality

LO5. Critique and develop lines of argument in regard to basics of Virtual and Augmented Reality including pertaining disciplines such as; film production, animation, visual effects, games design/development;

LO6. Define and understand the relationship between all pertaining disciplines; including Film, Games, Application and Animation.

LO7. Utilise Virtual and Augmented reality techniques and theories to create, visual medium, assets and applications;

LO8. Demonstrate and apply Virtual and Augmented Reality design principles based on research, data collection and skills attained;
LO9. Work effectively as individuals and in groups. Use personal skills to communicate effectively in a range of situations;
LO10. Communicate accurately and reliably with a range of audiences using basic theories and concepts of the subjects of study.

Additionally, to be eligible for the award of Diploma of Higher Education at FHEQ level 5, students will be able to:

LO11. Apply knowledge and skills in virtual and augmented reality production to the management, analysis and assessment of specific complex applications, challenges and production issues;
LO12. Apply knowledge of investigative and research principles to demonstrate an understanding of how to evaluate designs, processes and products;

LO13. Demonstrate and implement a mid-level understanding of film production, animation, visual effects, games design/development; in relation to the pertaining industry;

LO14. Use personal and technical skills to communicate effectively within computing environments with other professionals.

To be eligible for the award of BSc (Ordinary) at FHEQ level 6, students will be able to:

LO15. Critique the social, political, cultural, technical, and business conditions of virtual and augmented reality production and reception in national and international contexts;

LO16. Apply the awareness of the concepts surrounding sustainability to the varied disciplines of virtual and augmented reality production;

To be eligible for the award of BSc (Honours) at FHEQ level 6, students will be able to:

LO17. Demonstrate knowledge of and competence in major software applications packages, with particular reference to film, 2D and 3D animation, visual effects, games production and games design;

LO18. Demonstrate the ability to coherently combine and integrate a number of different data and media types, and to make informed judgements in the context of rapidly developing and converging media industries;

LO19. Exercise the ability to apply, in practice, current principles and techniques for virtual and augmented reality and be able to appraise critically the relative efficiency of different approaches virtual and augmented reality problem solving;

LO20. Command practical skills in pre-production, production, post production, data management and presentation, interpretation of information, IT and communication skills, and demonstrate experience of creative and systematic problem solving through reflective and enquiring learning. This includes teamwork and leadership, effective project management and personal management.

Curriculum

Each year, or stage, of an Honours programme comprises 2 semesters with 60 credits being studied in each semester.

Stage 1

FHEQ Level	Module Title	Core/ Option/ Elective	Credit	Study Period	Module Code
4	Introduction to Computer Programming for Games	Core	20	Sem 1	GAV4005-B
4	Introduction to 3D Computer Animation	Core	20	Sem 1	GAV4007-B

4	Creativity and Imagination	Core	20	Sem 1	FAM4001-B
4	3d Character Modelling and Animation	Core	20	Sem 2	GAV4003-B
4	Introduction to Virtual Reality	Core	20	Sem 2	GAV4013-B
5	Application Programming Development	Core	20	Sem 2	GAV5019-B

At the end of stage 1, students will be eligible to exit with the award of Certificate of Higher Education if they have successfully completed at least 120 credits and achieved the award learning outcomes.

Stage 2

FHEQ Level	Module Title	Core/ Option/ Elective	Credit	Study Period	Module Code
5	Augmented Reality, Design, Principles and Practice	Core	20	Sem 1	GAV5023-B
5	Soundscapes	Core	20	Sem 1	FAM5001-B
5	3D and VR Workflows and Theory	Core	20	Sem 1	GAV5022-B
5	Look Development, Lighting and Advanced Rendering	Core	20	Sem 2	GAV5016-B
5	Advanced Game Technology and Development	Core	20	Sem 2	GAV5025-B
5	Digital Compositing and Post Production	Option	20	Sem 2	GAV5018-B
5	Motion Capture and Digital Scanning	Option	20	Sem 2	GAV5017-B
5	Storytelling, Narrative and Experience	Option	20	Sem 2	FAM5019-B

At the end of stage 2, students will be eligible to exit with the award of Diploma of Higher Education if they have successfully completed at least 240 credits and achieved the award learning outcomes.

Stage 3

FHEQ Level	Module Title	Core/ Option	Credits	Semester (s)	Module Code
6	Individual Project	Core	40	1	GAV6003-D
6	Major Project Preproduction	Core	20	1	GAV6007-B
6	Major Project Production	Core	40	2	GAV6008-D

5	Motion Capture and Digital Scanning	Option	20	2	GAV5017-B
5	Environment Set and Prop Creation	Option	20	2	GAV5014-B

At the end of stage 3, students will be eligible for the award of Honours Degree of Bachelor if they have successfully completed at least 360 credits and achieved the award learning outcomes.

The curriculum may change, subject to the University's programme approval, monitoring and review procedures.

Study abroad and work placement opportunities

Students have the option to undertake an industrial placement, or of studying or working abroad for a year between stages 2 and 3; this option is strongly encouraged. The School has an industrial training co-ordinator who has contacts with a large number of outside organisations and who assists in helping students find a placement. The University's Study Abroad Office provides a wide range of opportunities and support for students to gain international experience. Both options provide the opportunity to gain valuable experience, and are viewed favourably by prospective employers.

On successful completion of the ENG5002-Z, placement, students will be eligible for the award of University Diploma Industrial Studies.

On successful completion of the ENG5004-Z, study abroad experience, students will be eligible for the award of University Diploma Industrial Studies (International).

Learning and Teaching Strategy

This programme is designed to not only help students make lots of VR and AR content but be able to think critically and creatively about it too. Students will develop their individual skillset and work extensively in teams.

Students will experience a wide range of teaching and learning environments. Concepts, principles and theories are generally explored in formal lectures, discussed and debated in associated tutorials and seminars, and demonstrated in laboratory classes.   Practical skills are developed in studio, laboratory, and workshop sessions, taking advantage of the University's, and its partners', extensive software and hardware provision.   Professional, personal, and presentational skills are developed through discussion and small-scale project work which involves problem solving and design exercises. Reflecting industry practice, these are often tackled through collaborative learning in small groups supported by members of academic staff. Larger–scale project work is used to bring various aspects of the programme together. A particular strength of this programme is the contribution made to the teaching programme by successful practising VR and AR professionals.

Each 20-credit module on the programme requires students to commit 200 hours of study. Some of these hours will be formally timetabled - lectures, laboratories, seminars, tutorials and workshops – and others will involve students in carrying out private study. The balance between these forms of study changes as students pass through the three years of the programme. There are a lot of "contact hours" (time

spent with tutors) in the earlier stages of the programme; the final year is mostly project based, and at this stage students will be expected to manage their own learning, under the general guidance of tutors.

Basic principles and concepts are addressed in the first year (Stage One) of the programme. In the second year (Stage Two) a more analytical approach is taken, and in the final year (Stage Three), Students will have the opportunity to synthesise and critically review the knowledge, understanding, and skills that have gained throughout the programme. Research skills are developed in core modules in semester two in the first year (Stage One) and in semester one of the second year (Stage Two). Students will also have the opportunity to shape elements of their own learning experience, by selecting optional modules, and defining their own project briefs.

The course has a commitment to industry practice within the curriculum. This is reinforced by the industry speakers and guest lecturers which are built into the delivery of our industry facing modules a number of optional, extra curriculum excursions are also available.

Assessment Strategy

Methods of assessment are varied and progress will be assessed using a mix of formal examinations, presentations and seminar papers, reports, laboratory tests, essays, coursework assignments, and projects. The appropriate method is chosen so that students may demonstrate the particular learning outcomes of each module. We develop research skills as an integral part of the assessment in presentations and project work across the programme as a whole through the creation of bibliographies, literature searches of relevant research, and where critiques of existing work in the field forms an essential part. All modules contain elements of practical assessment and these form a working portfolio. Employability is built into all our courses. Employability and destination planning are very much entrenched within the reflective and practical modules throughout the curriculum.

Assessment Regulations

This Programme conforms to the standard University Regulations that are available at the following link:

http://www.bradford.ac.uk/aqpo/ordinances-and-regulations/

Admission Requirements

The University welcomes applications from all potential students and most important in the decision to offer a place is our assessment of a candidate's potential to benefit from their studies and of their ability to succeed on this particular programme. Consideration of applications will be based on a combination of formal academic qualifications and other relevant experience.

The standard entry requirements for the programme are as follows:

Typical offer (UCAS tariff points): 112

- To include 80 points from 2 GCE A levels or equivalent. No specific subject requirements, although subjects related to course content will be an advantage. Or DMM in a relevant BTEC Diploma. International Baccalaureate (see UCAS tariff point requirements).

- GCSE English and Maths minimum grade C or grade 4
- Minimum IELTS at 6.0 or the equivalent

Students may be permitted to transfer to one of the School's other BA/BSc programmes at the end of the first semester of Stage One and, exceptionally, to selected programmes at the end of semester two, Stage One.

Applications are welcome from students with non-standard qualifications or mature students (those over 21 years of age on entry) with significant relevant experience.

Recognition of Prior Learning

If applicants have prior certificated learning or professional experience which may be equivalent to parts of this programme, the University has procedures to evaluate and recognise this learning in order to provide applicants with exemptions from specified modules or parts of the programme.

Minor Modification Schedule

Version Number	Brief description of Modification	Date of Approval (Faculty Board)
2	Revision to curriculum structure	March 2019